

**IMPORTANT: You must read the following before continuing.** The following applies to the prospectus (the “**Prospectus**”) following this page, and you are therefore advised to read this carefully before reading, accessing or making any other use of the Prospectus. In accessing the Prospectus, you agree to be bound by the following terms and conditions, including any modifications to them any time you receive any information from Joint stock company “National atomic company “Kazatomprom” (the “**Company**”) as a result of such access. The Prospectus has been prepared solely in connection with the proposed offering of the securities to certain institutional and professional investors as described herein. You acknowledge that this electronic transmission and the delivery of the Prospectus is confidential and intended only for you.

THE FOLLOWING PROSPECTUS MAY NOT BE FORWARDED OR DISTRIBUTED OTHER THAN AS PROVIDED BELOW AND MAY NOT BE REPRODUCED IN ANY MANNER WHATSOEVER. THIS PROSPECTUS MAY ONLY BE DISTRIBUTED IN “OFFSHORE TRANSACTIONS” AS PERMITTED BY REGULATION S UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”) OR WITHIN THE UNITED STATES TO QIBs (AS DEFINED BELOW) IN RELIANCE ON RULE 144A UNDER THE SECURITIES ACT (“**RULE 144A**”) OR ANOTHER EXEMPTION FROM, OR TRANSACTION NOT SUBJECT TO, REGISTRATION UNDER THE SECURITIES ACT. ANY FORWARDING, DISTRIBUTION OR REPRODUCTION OF THIS PROSPECTUS IN WHOLE OR IN PART IS UNAUTHORISED. FAILURE TO COMPLY WITH THIS DIRECTIVE MAY RESULT IN A VIOLATION OF THE SECURITIES ACT OR THE APPLICABLE LAWS OF OTHER JURISDICTIONS. NOTHING IN THIS ELECTRONIC TRANSMISSION CONSTITUTES AN OFFER OF SECURITIES FOR SALE IN ANY JURISDICTION WHERE IT IS UNLAWFUL TO DO SO. THE SECURITIES HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE SECURITIES ACT OR WITH ANY SECURITIES REGULATORY AUTHORITY OF ANY STATE OR OTHER JURISDICTION OF THE UNITED STATES AND MAY NOT BE OFFERED, SOLD, PLEDGED OR OTHERWISE TRANSFERRED EXCEPT (1) IN ACCORDANCE WITH RULE 144A TO A PERSON THAT THE HOLDER AND ANY PERSON ACTING ON ITS BEHALF REASONABLY BELIEVE IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A (A “**QIB**”), OR (2) IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH RULE 903 OR RULE 904 OF REGULATION S UNDER THE SECURITIES ACT, IN EACH CASE IN ACCORDANCE WITH ANY APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. OR PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE STATE OR LOCAL SECURITIES LAWS.

In any Member State of the European Economic Area, the following Prospectus may only be distributed to qualified investors within the meaning of article 2(1)(e) of the Directive 2003/71/EC (as amended, the “**Prospectus Directive**”) (“**Qualified Investors**”). In the United Kingdom, the information contained in the following Prospectus is directed solely at persons: (i) having professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Market Act (Financial Promotion) Order 2005 (the “**Order**”); or (ii) to persons of a kind described in Article 49(2) (a) to (d) of the Order (all such persons together being referred to as “**Relevant Persons**”). Any investment activity to which the following Prospectus relates is only available to, and will only be engaged in with, Relevant Persons. The Prospectus and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other person. Persons who are not Relevant Persons must not rely on or act upon the information contained in this Prospectus.

**Confirmation of Your Representation:** In order to be eligible to view this Prospectus or make an investment decision with respect to the securities, you must be (i) a person that is outside the United States for the purposes of Regulation S under the Securities Act; (ii) a QIB that is acquiring the securities for its own account or for the account of another QIB; (iii) a Qualified Investor; or (iv) a Relevant Person. By accepting the e-mail and accessing this Prospectus, you shall be deemed to have represented to the Company and JSC Sovereign Wealth Fund Samruk-Kazyna that you are outside the United States for the purposes of Regulation S under the Securities Act or that you are a QIB, a Qualified Investor or a Relevant Person, and that you consent to delivery of such Prospectus by electronic transmission. You are reminded that this Prospectus has been delivered to you on the basis that you are a person into whose possession the Prospectus may be lawfully delivered in accordance with the laws of the jurisdiction in which you are located and you may not, nor are you authorised to, deliver this Prospectus to any other person.

The materials relating to the offering do not constitute, and may not be used in connection with, an offer or solicitation in any place where offers or solicitations are not permitted by law. If a jurisdiction requires that the offering be made by a licensed broker or dealer and the Credit Suisse Securities (Europe) Limited, J.P. Morgan Securities plc, China International Capital Corporation Hong Kong Securities Limited, JSC Halyk Finance, Mizuho International plc and Numis Securities Limited (the “**Managers**”) or any affiliate of the Managers is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by the Managers or such affiliate on behalf of the Company in such jurisdiction.

Under no circumstances shall this Prospectus constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any jurisdiction in which such offer, solicitation or sale would be unlawful. This Prospectus may only be communicated to persons in the United Kingdom in circumstances where section 21(1) of the Financial Services and Markets Act 2000 does not apply to the Company.

Information contained herein is not an offer, or an invitation to make offers, to sell, purchase, exchange or otherwise transfer securities in Kazakhstan to or for the benefit of any Kazakhstani person or entity, except for those persons or entities that are capable to do so under the legislation of the Republic Kazakhstan and any other laws applicable to such capacity of such persons or entities. This document shall not be construed as an advertisement (i.e. information intended for an unlimited group of persons which is distributed and placed in any form and aimed to create or maintain interest in the Company and its merchandise, trademarks, works, services and/or its securities and promote their sales) in, and for the purpose of the laws of, Kazakhstan, unless such advertisement is in full compliance with Kazakhstan laws.

This Prospectus has been sent to you in an electronic form. You are reminded that documents transmitted via this medium may be altered or changed during the process of electronic transmission and consequently none of the Managers, any person who controls any of them, nor any director, officer, employee or agent of any Manager nor any affiliate of any such person accepts any liability or responsibility whatsoever in respect of any difference between the Prospectus distributed to you in electronic format and the hard copy version available to you on request from any Manager.



**Joint Stock Company “National Atomic Company “Kazatomprom”**  
*(a joint stock company organised under the laws of the Republic of Kazakhstan)*  
**Global Offering of up to 38,903,491 Ordinary Shares in the form of Global Depositary Receipts**  
**(including the Over-Allotment Option)**  
**Offer Price Range: US\$11.60 to US\$15.40 per Global Depositary Receipt**

This document (the “**Prospectus**”) relates to an offering (the “**Offering**”) by Joint-stock company “Sovereign Wealth Fund “Samruk-Kazyna”, a joint stock company organised under the laws of the Republic of Kazakhstan with registration number 829-1901-02-AO (the “**Selling Shareholder**” or “**Samruk-Kazyna**”), of up to 38,903,491 ordinary shares in the share capital of Joint stock company “National atomic company “Kazatomprom” (the “**Company**”) (the “**Shares**”), in the form of up to 38,903,491 global depositary receipts, each representing an interest in one Share, (the “**GDRs**” and, together with the Shares, the “**Securities**”). Pursuant to the applicable securities market regulations of the Republic of Kazakhstan, not less than 20% of the maximum number of Securities offered for sale by the Selling Shareholder shall also be offered for sale on the AIX Limited, the stock exchange of the Astana International Financial Centre (“**AIX**”). Therefore the number of the Shares and GDRs sold in the AIX Offering (as defined below) will reduce the number of the Shares in the form of the GDRs available for sale in the Offering.

The Offering may be extended at any time without cause. The final offer price (the “**Final Offer Price**”) of the GDRs will be within the offer price range (the “**Offer Price Range**”) and will be set out in a pricing statement (the “**Pricing Statement**”) which is expected to be published on or around the Pricing Date, see “*Plan of Distribution—Offer Price.*”

This Prospectus has been approved by the United Kingdom Financial Conduct Authority (the “**FCA**”) as a prospectus relating to the Company prepared in accordance with the prospectus rules (the “**Prospectus Rules**”) made under Section 73A of the Financial Services and Markets Act 2000 (the “**FSMA**”). This Prospectus will be made available to the public in accordance with the Prospectus Rules.

Pursuant to the Resolution of the Government of the Republic of Kazakhstan No. 661 dated 19 October 2018, the Selling Shareholder is authorised to sell up to 64,839,152 Securities, representing in aggregate approximately 25% of the total number of existing shares (the “**Authorised Limit**”). The Selling Shareholder may, subject to the exercise of the upsize option in consultation with the Joint Global Coordinators specified below, increase the maximum number of the Securities offered in the Offering and the AIX Offering by up to additional 25,935,661 Securities (the “**Upsize Option**”). The final size of the Offering will be set out in the Pricing Statement.

Neither the Shares nor the GDRs have been or will be registered under the United States Securities Act of 1933, as amended (the “**Securities Act**”), and neither the Shares nor the GDRs may be offered or sold in the United States absent registration or an exemption from registration under the Securities Act. The GDRs will be offered: (i) in the United States to qualified institutional buyers (“**QIBs**”), as defined in, and in reliance on, Rule 144A under the Securities Act (“**Rule 144A**”); and (ii) outside the United States, to institutional investors in “offshore transactions” as defined in, and in reliance on, Regulation S under the Securities Act (“**Regulation S**”).

The Offering does not constitute an offer to sell, or solicitation of an offer to buy, securities in any jurisdiction in which such offer or solicitation would be unlawful. Prospective purchasers of the GDRs in the United States are hereby notified that the sellers may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A. The GDRs are subject to selling and transfer restrictions in certain jurisdictions. Prospective purchasers should read the restrictions described under “*Selling restrictions*” and “*Plan of distribution.*”

The Selling Shareholder will grant to Credit Suisse Securities (Europe) Limited, J.P. Morgan Securities plc, China International Capital Corporation Hong Kong Securities Limited, JSC Halyk Finance, Mizuho International plc and Numis Securities Limited (collectively, the “**Managers**”), an option (the “**Over-Allotment Option**”), exercisable in the period during which stabilising transactions may take place, to purchase up to a maximum of 15% of the total number of the GDRs being sold in the Offering solely to cover over-allotments, if any, in the Offering. See “*Plan of distribution.*”

Admission of the Securities to the Official List of Securities of the AIX is expected to take place on or about the Pricing Date (as defined below). (the “**AIX Admission**”).

Separately from the Offering, the Selling Shareholder will be offering Shares and GDRs in a domestic offering in Kazakhstan through the facilities of the AIX pursuant to its regulations and settlement procedures (“**AIX Offering**”). The AIX Offering will be led by JSC Halyk Finance.

**AN INVESTMENT IN THE SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE THE SECTION HEADED “RISK FACTORS.” The GDRs are of a specialist nature and should normally only be purchased and traded by investors who are particularly knowledgeable in investment matters.**

The Company will apply to the FCA for a block listing of up to 259,356,608 GDRs (of which, assuming that 20% of the maximum number of the Securities offered by the Selling Shareholder will be sold in the AIX Offering and subject to the Upsize Option, (i) up to 27,063,298 GDRs expected to be issued on the Closing Date of the Offering, (ii) up to 4,059,495 GDRs may be issued pursuant to the Over-Allotment Option, if exercised, (iii) up to 228,233,815 GDRs may be issued from time to time against the deposit of Shares with Citibank Kazakhstan JSC, as custodian (the “**Custodian**”) acting on behalf of Citibank N.A. as depositary (the “**Depositary**”) to its official list (the “**Official List**”) and to the London Stock Exchange plc (the “**London Stock Exchange**”) to admit such GDRs for trading under the symbol KAP on its main market for listed securities (the “**Main Market**”) through its International Order Book (regulated market segment) (the “**IOB**”). The IOB is a regulated market for purposes of Markets in Financial Instruments Directive 2004/39/EC. Admission to the Official List, together with admission to the Main Market, (together, the “**LSE Admission**”) constitutes listing on a stock exchange. The Company expects that conditional trading in the GDRs on the London Stock Exchange through the IOB will commence on a “when and if issued” basis on or about 13 November 2018 (the “**Pricing Date**”) and that unconditional trading in the GDRs on the London Stock Exchange through the IOB will commence on or about 16 November 2018 (the “**Closing Date**”). **All dealings in the GDRs prior to the commencement of the unconditional dealings will be of no effect if the LSE Admission does not take place and will be at the sole risk of the parties concerned.** The GDRs offered and sold outside the United States (the “**Regulation S GDRs**”) will be evidenced by a Master Regulation S Global Depositary Receipt (the “**Master Regulation S GDR**”) registered in the name of Citivc Nominees Limited as nominee for Citibank Europe plc, as common depositary for Euroclear Bank S.A./N.V. as operator of the Euroclear System (“**Euroclear**”) and Clearstream Banking, *société anonyme* (“**Clearstream, Luxembourg**”). Euroclear and Clearstream, Luxembourg are expected to accept the GDRs for settlement in their respective book-entry settlement systems. The GDRs offered and sold to QIBs in the United States (the “**Rule 144A GDRs**”) will be evidenced by a Master Rule 144A Global Depositary Receipt (the “**Master Rule 144A GDR**”) and, together with the Master Regulation S GDR, the “**Master GDRs**”) registered in the name of Cede & Co., as nominee for The Depository Trust Company (“**DTC**”) in New York. The Company expects that delivery of the GDRs will be made through the facilities of DTC, with respect to the Rule 144A GDRs, and Euroclear and Clearstream, Luxembourg, with respect to the Regulation S GDRs, on or about the Closing Date. Except as set forth herein, investors may hold beneficial interests in and transfer the GDRs only through DTC, Euroclear or Clearstream, Luxembourg and their direct and indirect participants, as applicable. Transfers within DTC, Euroclear and Clearstream, Luxembourg will be in accordance with the usual rules and operating procedures of the relevant system.

*Joint Global Coordinators and Joint Bookrunners*

**Credit Suisse**

**J.P. Morgan**

**China International Capital Corporation**

*Joint Bookrunners*

**Halyk Finance**

**Mizuho International plc**

*Co-Manager*

**Numis**

The date of this Prospectus is 31 October 2018

## IMPORTANT INFORMATION ABOUT THIS PROSPECTUS

By accepting delivery of this Prospectus, you agree to the following. This Prospectus is being furnished by the Company solely for the purpose of enabling you to consider the purchase of the GDRs. Any reproduction or distribution of this Prospectus, in whole or in part, any disclosure of its contents or use of any information herein for any purpose other than considering an investment in the GDRs is prohibited, except to the extent that such information is otherwise publicly available.

If you are in any doubt about the contents of this Prospectus, you should consult your stockbroker, bank manager, solicitor, accountant or financial adviser. It should be remembered that the price of securities and the income from them can go down as well as up.

None of the Managers, the Depositary, the Selling Shareholder or any of their respective affiliates or advisers makes any representation, express or implied, or accepts any responsibility, with respect to the accuracy, verification or completeness of any of the information in this Prospectus, and accordingly disclaims to the fullest extent permitted by applicable law, any and all liability whether arising in tort, contract or otherwise which they might otherwise be found to have in respect of this Prospectus or any such statement. Nothing contained in this Prospectus is, or shall be relied upon, as a promise or representation in this respect, whether as to the past or the future. This Prospectus is not intended to provide the basis of any credit or other evaluation and should not be considered as a recommendation by any of the Company, the Selling Shareholder or the Managers that any recipient of this Prospectus should subscribe for or purchase the GDRs. Each potential subscriber or purchaser of the GDRs should determine for itself the relevance of the information contained in this Prospectus, and its subscription or purchase of the GDRs should be based upon such investigation as it deems necessary.

This Prospectus, including the financial information included herein, is in compliance with the Prospectus Rules of the UK Listing Authority. Such rules are compliant with the provisions of Directive 2003/71/EC (as amended, the “**Prospectus Directive**”), for the purpose of providing information related to the Company and the GDRs. This Prospectus is a prospectus for the purposes of the Prospectus Directive.

The Company accepts responsibility for the information provided in this Prospectus. Having taken all reasonable care to ensure that such is the case, the Company declares, to the best of its knowledge, that the information in this Prospectus is in accordance with the facts and contains no omission likely to affect its import.

SRK Consulting (UK) Limited (“**SRK**”) accepts responsibility for the information provided in the Competent Persons’ Report attached as Annex A to this Prospectus (the “**SRK Report**”). The SRK Report has been prepared in compliance with the Prospectus Rules and the Listing Rules published by the FCA from time to time, the Prospectus Directive, and the European Securities and Markets Authority update of the Committee of European Securities Regulators recommendations for the consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive. Having taken all reasonable care to ensure that such is the case, SRK declares that the information contained in the SRK Report is, to the best of the knowledge of SRK, in accordance with the facts and contains no omission likely to affect its import. SRK has given and has not withdrawn its written consent to the inclusion of the SRK Report in this Prospectus and references to the SRK Report and SRK in in the form and context in which they are included in this Prospectus. The scope of the SRK Report is limited to the uranium mining assets as reported therein, and specifically excludes all other assets of the Group as discussed in this Prospectus.

The Ux Consulting Company, LLC (“**UxC**”) accepts responsibility for the information prepared by UxC at the request of the Company and provided under the heading “*Uranium Industry and Market Overview*” in the “*Industry Overview*” section of this Prospectus (the “**UxC Report**”). Having taken all reasonable care to ensure that such is the case, UxC declares that the information contained in the UxC Report is, to the best of the knowledge of UxC, in accordance with the facts and contains no omission likely to affect its import. UxC has given and has not withdrawn its written consent to the inclusion of the UxC Report in this Prospectus and references to the UxC Report and UxC in the form and context in which they are included in this Prospectus.

Roskill Consulting Group Ltd. (“**Roskill**”) accepts responsibility for the information prepared by Roskill at the request of the Company and provided under the heading “*Rare Metals Industry and Market Overview*” in the “*Industry Overview*” section of this Prospectus (the “**Roskill Report**”). Having taken all reasonable care to ensure that such is the case, Roskill declares that the information contained in the Roskill Report is, to the best of the knowledge of Roskill, in accordance with the facts and contains no omission likely to affect its import. Roskill has given and has not withdrawn its written consent to the inclusion of the Roskill Report in this Prospectus and references to the Roskill Report and Roskill in the form and context in which they are included in this Prospectus.

**This Prospectus is personal to each offeree and does not constitute an offer to any other person or the public generally to purchase or otherwise acquire any Securities. In making an investment decision, you should rely on your own investigation and analysis of the Company, the Group, the terms of the Offering, including the merits and risks involved, your own determination of the suitability of any such investment, with particular reference to your own investment objectives and experience and any other factors that may be relevant to you in connection with an investment in the GDRs. Any decision to buy the GDRs should be based solely on the information contained in this Prospectus. No person has been authorised to give any information or to make any representations in connection with the Offering other than those contained in this Prospectus. If any such information is given or any such representations are made, such information or representations must not be relied upon as having been authorised by the Company, the Selling Shareholder or the Managers, any of their respective affiliates, advisers or any other person.**

No prospective investor should consider any information in this document to be investment, legal, tax or other advice. Each prospective investor should consult its own counsel, accountant and other advisers for such advice. Neither the Company, the Selling Shareholder nor any of the Managers makes any representation to any offeree or purchaser of the GDRs regarding the legality of an investment in the GDRs by such offeree or purchaser. Each of the Managers is acting exclusively for the Company and the Selling Shareholder and no one else in connection with the Offering and will not be responsible to any other person for providing the protection afforded to their clients or for providing advice in relation to the Offering.

The Company has included its own estimates, assessments, adjustments and judgments in preparing some market information, which have not been verified by an independent third-party. Market information included herein is, therefore, unless otherwise attributed exclusively to a third-party source, to a certain degree subjective. While the Company believes that its own estimates, assessments, adjustments and judgments are reasonable and that the market information prepared by the Company appropriately reflects the nuclear fuel industry and other industries in which the Group is engaged and the markets in which it operates, there is no assurance that the Company's own estimates, assessments, adjustments and judgments are the most appropriate for making determinations relating to market information or that market information prepared by other sources will not differ materially from the market information included herein.

The contents of the Group's websites do not form any part of this Prospectus.

No person is authorised to give any information or to make any representation in connection with the Offering or sale of the GDRs other than as contained in this document, and, if given or made, such information or representation must not be relied upon as having been authorised by the Company, the Selling Shareholder, the Depositary or any of the Managers, unless given or made by such person directly. This Prospectus is being furnished by the Company and the Selling Shareholder solely for the purpose of enabling a prospective investor to consider the purchase of the GDRs. No representation or warranty, express or implied, is made by any Manager or any of its affiliates or advisers as to the accuracy or completeness of any information contained in this document, and nothing contained in this document is, or shall be relied upon as, a promise or representation by any Manager as to the past or the future. Any reproduction or distribution of this document, in whole or in part, any disclosure of its contents, except to the extent that such contents are otherwise publicly available, and any use of any information herein for any purpose other than considering an investment in the GDRs in this Offering, is prohibited. Neither the delivery of this document nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the Group's affairs since the date hereof or that the information contained herein is correct at any time subsequent to such date. Each prospective investor, by accepting delivery of this document, agrees to the foregoing.

This Prospectus does not constitute an offer to sell, or a solicitation by or on behalf of the Company, the Selling Shareholder, the Depositary or any Manager to any person to subscribe for or purchase any of the GDRs in any jurisdiction where it is unlawful for such person to make such an offer or solicitation. The distribution of this document and the offering or sale of the GDRs in certain jurisdictions is restricted by law. Persons into whose possession this document may come are required by the Company, the Selling Shareholder and the Managers to inform themselves about and to observe such restrictions. No action has been taken by the Company, the Selling Shareholder or the Managers that would permit, otherwise than under the Offering, an offer of the GDRs, or possession or distribution of this document or any other offering material or application form relating to the GDRs in any jurisdiction where action for that purpose is required. This document may not be used for, or in connection with, any offer to, or solicitation by, anyone in any jurisdiction or under any circumstances in which such offer or solicitation is not authorised or is unlawful. Further information with regard to restrictions on offers and sales of the GDRs is set forth below and under "*Plan of distribution*," "*Selling restrictions*" and "*Transfer restrictions*."



The Regulation S GDRs and the Rule 144A GDRs will be delivered by the Depositary, pursuant to the Regulation S Deposit Agreement and the Rule 144A Deposit Agreement, respectively (collectively, the “**Deposit Agreements**”), each dated on or about the Pricing Date, between the Company and the Depositary. The Shares represented by the GDRs will be held by the Custodian and registered in the name of the Depositary.

**In connection with the issue of the GDRs, Credit Suisse Securities (Europe) Limited acting as the stabilising manager (the “Stabilising Manager”) (or persons acting on behalf of any Stabilising Manager) may over-allot GDRs or effect transactions with a view to supporting the market price of the GDRs at a level higher than that which might otherwise prevail. However, there is no assurance that the Stabilising Manager (or persons acting on behalf of a Stabilising Manager) will undertake stabilisation action. Any stabilisation action may begin on the date of adequate public disclosure of the final price of the GDRs and, if begun, may be ended at any time but must end no later than 30 calendar days thereafter (the “Stabilisation Period”). Any stabilisation action must be undertaken in accordance with applicable laws and regulations.**

In connection with the Offering, the Stabilising Manager or any persons acting for it, may, for stabilisation purposes, over-allot GDRs up to a maximum of 15% of the total number of GDRs comprised in the Offering. For the purposes of allowing the Stabilising Manager to cover short positions resulting from any such over-allotments and/or from sales of GDRs effected by the Stabilising Manager during the Stabilisation Period, the Selling Shareholder will grant the Managers the Over-Allotment Option pursuant to which the Stabilising Manager may require the Selling Shareholder to sell additional Shares, to be issued by the Depositary as GDRs, up to a maximum of 15% of the total number of GDRs comprised in the Offering, at the Final Offer Price. The Over-Allotment Option is exercisable in whole or in part, upon notice by the Stabilising Manager, at any time during the Stabilisation Period. Any GDRs made available pursuant to the Over-Allotment Option will be issued on the same terms and conditions as the GDRs being issued in the Offering and will form a single class for all purposes with the other GDRs.

In this document all references to “**KZT**” and “**Tenge**” are to the currency of Kazakhstan; all references to “**€**” and “**Euro**” are to the single currency of the participating member states in the Third Stage of the European Economic and Monetary Union of the Treaty Establishing the European Community, as amended from time to time; all references to “**US\$**” and “**US Dollar**” are to the currency of the United States of America.

In making an investment decision, prospective investors must rely on their own examination of the Group and the terms of this document, including the risks involved.

A copy of this Prospectus can be obtained for a limited time at the registered office of the Company. See “*General Information.*” The information set forth in this document is only accurate as at the date on the front cover of this Prospectus. The Group’s business and financial condition may have changed since that date.

## **NOTICES TO CERTAIN INVESTORS**

### **Notice to investors in the United States of America**

The GDRs have not been and will not be registered under the Securities Act and are being offered and sold in the United States only to QIBs in reliance on Rule 144A. Prospective purchasers in this Offering are hereby notified that the seller of any Securities may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A. The GDRs are not transferable except in accordance with the restrictions described under “*Selling restrictions*” and “*Transfer restrictions.*”

THE GDRS OFFERED HEREBY HAVE NOT BEEN REGISTERED WITH, OR APPROVED OR DISAPPROVED BY, THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION (THE “**SEC**”) OR ANY STATE SECURITIES COMMISSION IN THE UNITED STATES OR ANY OTHER US REGULATORY AUTHORITY. FURTHERMORE, THE FOREGOING AUTHORITIES HAVE NOT PASSED ON OR ENDORSED THE MERITS OF THIS OFFERING OR THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENCE IN THE UNITED STATES.

### **Notice to investors in the European Economic Area**

This Prospectus has been prepared on the basis that all offers of Securities other than the offers contemplated in this Prospectus in the United Kingdom once this Prospectus has been approved by the competent authority in the United Kingdom and published in accordance with the Prospectus Directive as implemented in the United Kingdom will be made pursuant to an exemption under the Prospectus Directive from the requirement to produce a prospectus for offers of the GDRs. Accordingly, any person making or intending to make any offer within the EEA of the GDRs should only do so in circumstances in which no obligation arises for the Company, the Selling Shareholder or any of

the Managers to produce a prospectus for such offer. None of the Company, the Selling Shareholder or the Managers has authorised, nor do they authorise, the making of any offer of the GDRs through any financial intermediary, other than offers made by the Managers, which constitute the final placement of the GDRs contemplated in this Prospectus.

Each person in an EEA Member State which has implemented the Prospectus Directive (each, an “**EEA Relevant Member State**”) who receives any communication in respect of the GDRs or who acquires any Security will be deemed to have represented, acknowledged and agreed that: (i) it is a “qualified investor” within the meaning of Article 2(1)(e) of the Prospectus Directive (a “**Qualified Investor**”); (ii) in the case of any GDRs acquired by it as a financial intermediary as that term is used in Article 3(2) of the Prospectus Directive, the GDRs acquired by it have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any EEA Relevant Member State other than Qualified Investors or in circumstances in which the prior consent of the Managers has been given to the offer or resale; and (iii) where the GDRs have been acquired by it on behalf of persons in any EEA Relevant Member State other than Qualified Investors, the offer of those GDRs to it is not treated under the Prospectus Directive as having been made to such persons. The Company, the Selling Shareholder, the Managers, and their respective affiliates and others will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements, and will not be responsible for any loss occasioned by such reliance. Notwithstanding the above, a person who is not a Qualified Investor and who has notified the Managers of such fact in writing may, with the consent of the Managers, be permitted to subscribe for or purchase the GDRs, *provided that* publication of a Prospectus would not be required pursuant to Article 3 of the Prospectus Directive.

For the purposes of this representation, the expression an “offer within the EEA of the GDRs” in relation to any GDRs in any EEA Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any GDRs to be offered so as to enable an investor to decide to purchase or subscribe for the GDRs.

#### **Information to Distributors**

Solely for the purposes of the product governance requirements contained within: (a) EU Directive 2014/65/EU on markets in financial instruments, as amended (“**MiFID II**”); (b) Articles 9 and 10 of Commission Delegated Directive (EU) 2017/593 supplementing MiFID II; and (c) local implementing measures (together, the “**MiFID II Product Governance Requirements**”), and disclaiming all and any liability, whether arising in tort, contract or otherwise, which any “manufacturer” (for the purposes of the MiFID II Product Governance Requirements) may otherwise have with respect thereto, the GDRs have been subject to a product approval process, which has determined that the GDRs are: (i) compatible with an end target market of retail investors and investors who meet the criteria of professional clients and eligible counterparties, each as defined in MiFID II; and (ii) eligible for distribution through all distribution channels as are permitted by MiFID II (the “**Target Market Assessment**”). Notwithstanding the Target Market Assessment, Distributors should note that: the price of the GDRs may decline and investors could lose all or part of their investment; the GDRs offer no guaranteed income and no capital protection; and an investment in the GDRs is compatible only with investors who do not need a guaranteed income or capital protection, who (either alone or in conjunction with an appropriate financial or other adviser) are capable of evaluating the merits and risks of such an investment and who have sufficient resources to be able to bear any losses that may result therefrom. The Target Market Assessment is without prejudice to the requirements of any contractual, legal or regulatory selling restrictions in relation to the Offering. Furthermore, it is noted that, notwithstanding the Target Market Assessment, the Managers will only procure investors who meet the criteria of professional clients and eligible counterparties.

For the avoidance of doubt, the Target Market Assessment does not constitute: (a) an assessment of suitability or appropriateness for the purposes of MiFID II; or (b) a recommendation to any investor or group of investors to invest in, or purchase, or take any other action whatsoever with respect to the GDRs.

Each distributor is responsible for undertaking its own target market assessment in respect of the GDRs and determining appropriate distribution channels.

#### **Notice to investors in the United Kingdom**

In the United Kingdom, this Prospectus is only being distributed to and is only directed at: (i) investment professionals falling within Article 19(5) of the FSMA (Financial Promotion) Order 2005 (the “**Order**”); or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order, or other persons to whom it may lawfully be communicated (such persons collectively being referred to as “**Relevant Persons**”). The GDRs are only available to, and any invitation, offer or agreement to subscribe for, purchase or otherwise acquire such GDRs will be engaged in only with, Relevant Persons. Any person who is not a Relevant Person should not act or rely on this Prospectus or any of its contents.

### Notice to investors in Kazakhstan

This Prospectus does not constitute an offer, or an invitation to make offers, to sell, purchase, exchange or otherwise transfer securities in Kazakhstan to or for the benefit of any Kazakhstani person or entity, except for those persons or entities that are capable to do so under the legislation of the Republic Kazakhstan and any other laws applicable to such capacity of such persons or entities. This Prospectus shall not be construed as an advertisement (i.e. information intended for an unlimited group of persons which is distributed and placed in any form and aimed to create or maintain interest in the Company and its merchandise, trademarks, works, services and/or its securities and promote their sales) in, and for the purpose of the laws of, Kazakhstan, unless such advertisement is in full compliance with Kazakhstan laws.

### Notice to investors in the Russian Federation

This Prospectus does not constitute, and should not be considered as, a public offer or advertisement of any Securities in the Russian Federation, and is not an offer, or an invitation to make offers, to purchase any Securities in the Russian Federation. Neither any Securities, nor any prospectus or other document relating to them has been registered with the Central Bank of the Russian Federation. No information on the GDRs in this Prospectus is intended for, or addressed to, persons in the Russian Federation *other than* persons who are “qualified investors” within the meaning of article 51.2 of the Russian Securities Market Law or as otherwise may be permitted by Russian law.

### Notice to investors in Japan

The GDRs have not been and will not be registered under the Financial Instruments and Exchange Act of Japan and have not been offered or sold, and will not be offered or sold, directly or indirectly, any Securities in Japan or to, or for the account or benefit of, any resident of Japan or to, or for the account or benefit of, any persons for reoffering or resale, directly or indirectly, in Japan or to, or for the account or benefit of, any resident of Japan except pursuant to an exemption from the registration requirements of, or otherwise in compliance with, the Financial Instruments and Exchange Act and other relevant laws and regulations of Japan.

### Notice to investors in Canada

No Securities have been or will be qualified by a prospectus for sale to the public in Canada under applicable Canadian securities laws and, accordingly, any offer or sale of any Securities in Canada will be made pursuant to an exemption from the applicable prospectus filing requirements, and otherwise in compliance with applicable Canadian laws. Investors in Canada should refer to “*Selling restrictions—Canada.*” **The Financial Statements of the Company and certain other information in the Prospectus are presented in Kazakh Tenge. On 28 October 2018, being the latest practicable date prior to the publication of this Prospectus, KZT280.32 was equal to CAD1.00, based on the NBK exchange rate.**

### Notice to Investors in Australia

This Prospectus has not been lodged with the Australian Securities and Investments Commission as a disclosure document under Chapter 6D of the Corporations Act 2001 (Cwth) of Australia (the “**Corporations Act**”) and is only directed to certain categories of exempt persons. Accordingly, if you receive this Prospectus in Australia:

- (a) you confirm and warrant that you are either:
  - (i) a “sophisticated investor” under section 708(8)(a) or (b) of the Corporations Act;
  - (ii) a “sophisticated investor” under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant’s certificate pursuant to the section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
  - (iii) a person associated with the Company under section 708(12) of the Corporations Act; or
  - (iv) a “professional investor” within the meaning of section 708(11)(a) or (b) of the Corporations Act, and, to the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act, any offer made to you under this document is void and incapable of acceptance; and
- (b) you warrant and agree that you will not offer any of the GDRs sold to you pursuant to this Prospectus for resale in Australia within 12 months of those GDRs being sold unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

## AVAILABLE INFORMATION

For so long as any Securities are “restricted securities” within the meaning of Rule 144(a)(3) under the Securities Act, the Company will, during any period in which the Company is neither subject to Section 13 or Section 15(d) of the United States Securities Exchange Act of 1934, as amended (the “**Exchange Act**”), nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder, provide to any holder or beneficial owner of such restricted securities or to any prospective purchaser of such restricted securities designated by such holder or beneficial owner upon the request of such holder, beneficial owner or prospective purchaser, the information required to be delivered to such person pursuant to Rule 144A(d)(4) under the Securities Act (or any successor provision thereto).

## SERVICE OF PROCESS AND ENFORCEMENT OF CIVIL LIABILITIES

The Company and Selling Shareholder are incorporated under the laws of the Republic of Kazakhstan and all of its operations are located in the Republic of Kazakhstan. A majority of the directors and executive officers of each of the Company and the Selling Shareholder reside outside the United States and the United Kingdom. The majority of the assets of each of the Company and the Selling Shareholder and substantially all of the assets of the directors and executive officers of the Company and the Selling Shareholder are located outside the United States and the United Kingdom. As a result, it may not be possible to (i) effect service of process upon the Company, the Selling Shareholder or any of their respective directors and executive officers within the United States or the United Kingdom, or (ii) enforce against any of them judgments obtained in the courts of the United States or the United Kingdom. **Kazakhstan’s courts will not enforce any judgment obtained in a court established in a country other than Kazakhstan unless (i) there is in effect a treaty between such country and Kazakhstan providing for reciprocal enforcement of judgments and then only in accordance with the terms of such treaty or (ii) there is an actual reciprocity (i.e. the particular judge is satisfied that there is an evidence that judgments obtained in Kazakhstan are enforceable (or were actually enforced) in such other country). There is no such treaty in effect between Kazakhstan and the United Kingdom or the United States; and existence of an actual reciprocity in the United Kingdom or the United States could be difficult or even impossible to prove. However, Kazakhstan is a party to the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards (the “**Convention**”) and, accordingly, an arbitral award rendered in a country which is also a party to the Convention should be recognised and enforceable in Kazakhstan provided the conditions to recognition and enforcement set out in the Convention and the laws of Kazakhstan are met.**

## PRESENTATION OF FINANCIAL AND OTHER INFORMATION

Certain figures included in this Prospectus have been subject to rounding adjustments; accordingly, figures shown for the same category presented in different tables may vary slightly and figures shown as totals in certain tables may not be an arithmetic aggregation of the figures which precede them.

### Presentation of IFRS financial information

In this document, the term “**the Group**” refers to the Company and its consolidated subsidiaries, i.e. companies that the Group controls by having (i) the power to direct their relevant activities that significantly affect their returns, (ii) exposure, or rights, to variable returns from its involvement with these entities, and (iii) the ability to use its power over these entities to affect the amount of the Group’s returns. The existence and effect of substantive rights, including substantive potential voting rights, are considered when assessing whether the Group has power over another entity.

The Company’s audited consolidated financial statements for the three years ended 31 December 2015, 2016 and 2017 (the “**Annual Financial Statements**”) included in this Prospectus have been prepared in accordance with International Financial Reporting Standards (“**IFRS**”). The Company’s unaudited condensed interim consolidated financial statements for the six months ended 30 June 2018 (the “**Interim Financial Statements**”) included in this Prospectus have been prepared in accordance with International Accounting Standard 34 “**Interim Financial Reporting**” (“**IAS 34**”) (collectively with the Annual Financial Statements, the “**Financial Statements**”). The term “**periods under review**” means the periods for which Financial Statements have been included in this Prospectus. The Tenge is the functional and presentation currency for the Group and the Financial Statements.

### Presentation of non-IFRS financial information

In this Prospectus, the Company has presented certain non-IFRS measures, including EBITDA, Adjusted EBITDA, Adjusted Attributable EBITDA and certain ratios based on the adjusted measures. Please refer to “*Selected Financial and Operating Information—Certain Non-IFRS Financial Items and Operating Items—Adjusted EBITDA and Adjusted Attributable EBITDA*” for a definition of these measures and reconciliation. The non-IFRS measures presented in this Prospectus are unaudited supplementary measures.

The Company uses non-IFRS measures because they are frequently used by investors and analysts to assess the performance of the Company’s ongoing business operations. However, these are not measures of financial performance



presented in accordance with IFRS. Accordingly, they should not be considered as alternatives to revenue, operating profit, cash flows from operating activities for the period or other financial measures of the Group's results of operation or other financial performance or condition presented in accordance with IFRS as indications of operating performance or as a measure of the Group's profitability or liquidity. In addition, these non-IFRS measures have important limitations as analytical tools and you should not consider them in isolation or as substitutes for analysis of the Group's results as reported under IFRS. For example, EBITDA, Adjusted EBITDA and Adjusted Attributable EBITDA:

- do not reflect the impact of income taxes on the Group's operating performance that may represent a reduction in cash available;
- do not reflect the impact of depreciation and amortisation on the Group's operating performance. The assets of the Group's business that are being depreciated and/or amortised will likely have to be replaced in the future and such depreciation and amortization expense may approximate the cost to replace these assets in the future. By excluding this expense from EBITDA, Adjusted EBITDA and Adjusted Attributable EBITDA, they do not reflect the Group's future cash requirements for these replacements;
- do not reflect changes in, or cash requirements for, working capital needs;
- do not reflect foreign exchange gains or losses;
- do not reflect asset impairment; and
- do not reflect the impact of financing costs, which are significant and could further increase if the Group incurs more debt, on the Group's operating performance.

Such Non-IFRS measures must be considered only in addition to, and not as a substitute for or superior to, financial information and measures prepared in accordance with IFRS. Other companies, including those in the same industry as the Group, calculate the Non-IFRS measures differently from the Group. Therefore, the Group's presentation of the Non-IFRS measures would not be comparable to other similarly titled Non-IFRS measures presented by other companies.

Investors are strongly cautioned not to place undue reliance on the Adjusted Attributable EBITDA, as it represents unaudited financial information on an accounting basis which is not in compliance with IFRS. In particular, Adjusted Attributable EBITDA presents the Group's results on a proportionate consolidation basis for (i) jointly controlled joint ventures and non-controlled associates operating in the Uranium segment (in each case equity method of accounting is required in the Group's IFRS consolidated financial statements) and (ii) for its 65% owned subsidiary Appak LLP and 60% owned subsidiary JV Inkai LLP, both of which are fully consolidated in the Group's IFRS consolidated financial statements.

### **Presentation of Industry and Market Data**

Market data used in this document under the captions "*Summary*," "*Risk factors*," "*Operating and Financial Review*," "*Industry Overview*" and "*Business*" have been extracted from official and industry sources and other sources the Company believes to be reliable. Such information, data and statistics have been accurately reproduced and, as far as the Company is aware and is able to ascertain from information published by the aforementioned sources, no facts have been omitted which would render the reproduced information, data and statistics inaccurate or misleading.

This Prospectus contains references to production capacity of the Group and also to other uranium industry participants. References to production capacities of other industry participants are extracted from industry sources and those figures may not be prepared on a basis that is comparable with that of the Group. Unless otherwise stated, tonnage or production capacity relates to (i) uranium metal content equivalent ("**UME**"), being the weight of pure uranium in a particular product, for natural uranium, triuranium octoxide ("**U<sub>3</sub>O<sub>8</sub>**") and other uranium products or (ii) weight of pure rare metal, such is beryllium, tantalum or niobium, in rare metal products.

Certain operational data in this Prospectus, such as production or reserves and resources, is presented on an attributable basis or on 100% basis:

- **attributable basis** represents such portion of production, reserves and resources or other operational parameters, as the case may be, of an entity in which the Group has an interest which corresponds to the size of such interest; it therefore excludes the remaining portion attributable to the Group's joint venture partners or other third party shareholders; and

- **100% basis** represents the entirety of production, reserves and resources or other operational parameters, as the case may be, of an entity in which the Group has an interest; it therefore disregards the fact that some portion of production, reserves and resources or other operational parameters may be attributable to the Group's joint venture partners or other third party shareholders.

References in this Prospectus to “**JVs and Associates**” include references to entities accounted for in the Financial Statements as joint ventures, joint operations, associates and financial investments. See “*Operating and Financial Review—Presentation of Financial Information and Segments—Consolidation*” for more details of such classification.

Certain statistical data and other information appearing in this Prospectus relating to the mining industry generally and the uranium industry specifically have, where indicated in this Prospectus, been extracted from the Organisation for Economic Cooperation and Development, Nuclear Energy Agency and the International Atomic Energy Agency, Uranium 2016: Resources, Production and Demand, 26th Edition (the “**Red Book**”). The Red Book is a biennial publication produced jointly by the Organisation for Economic Cooperation and Development, Nuclear Energy Agency (“**NEA**”) and the International Atomic Energy Agency (“**IAEA**”) that tracks present uranium supply and demand and assesses uranium market dynamics. The first edition was published in 1965. Twenty-six editions have since been published and, as at the date of this Prospectus, the NEA and IAEA are in the process of preparing the 27th Edition. According to the NEA and IAEA, the Red Book is the only government-sponsored publication tracking world trends and developments in uranium resources, production and demand, and the Company considers it to be an authoritative source of statistics and information. References in this Prospectus to the “Red Book” are to the 26th Edition, which includes data as at 1 January 2015.

All statistical and market information provided by UxC presented in this Prospectus under the headings “*Summary*,” “*Operating and Financial Review*,” “*Industry*” and “*Business*” has been reproduced from the UxC Report. UxC has given and not withdrawn its consent to the inclusion of information from the UxC Report in this Prospectus, in the form and content in which it is included, and has authorised the contents of those parts of this Prospectus for the purposes of Rule 5.5.4R(f) of the Prospectus Rules and Annex X item 23.1 in Appendix 3 to the Prospectus Rules. UxC accepts responsibility for the information included in this Prospectus from the UxC Report and, to the best of UxC's knowledge and belief, having taken all reasonable care to ensure such is the case, the information included in this Prospectus from the UxC Report is in accordance with the facts and does not omit anything like to affect the import of such information.

All statistical and market information provided by Roskill presented in this Prospectus under the headings “*Summary*,” “*Operating and Financial Review*,” “*Industry*” and “*Business*” has been reproduced from the Roskill Report. Roskill has given and not withdrawn its consent to the inclusion of information from the Roskill Report in this Prospectus, in the form and content in which it is included, and has authorised the contents of those parts of this Prospectus for the purposes of Rule 5.5.4R(f) of the Prospectus Rules and Annex X item 23.1 in Appendix 3 to the Prospectus Rules. Roskill accepts responsibility for the information included in this Prospectus from the Roskill Report and, to the best of Roskill's knowledge and belief, having taken all reasonable care to ensure such is the case, the information included in this Prospectus from the Roskill Report is in accordance with the facts and does not omit anything like to affect the import of such information.

Statistical data and other information appearing in this Prospectus relating to the mining industry generally and the uranium industry specifically also have, unless otherwise stated, been extracted from documents and other publications released by the National Statistical Committee of Kazakhstan; the Kazakhstan Ministry of Energy; the National Bank of Kazakhstan (the “**NBK**”) other public sources in Kazakhstan, including the NBK's Annual Report; the World Bank; the International Monetary Fund; UxC and TradeTech LLC (“**TradeTech**”), each a uranium industry consulting firm; the World Nuclear Association (“**WNA**”); edicts and resolutions of the Government of the Republic of Kazakhstan (the “**Government**”); and estimates of the Company (based on its management's knowledge and experience of the markets in which the Company operates). In the case of the presented statistical information, similar statistics may be obtainable from other sources, although the underlying assumptions and methodology, and consequently the resulting data, may vary from source to source. See also “*Risk Factors—Risks Relating to Kazakhstan and Emerging Markets Generally—Official statistics and other data published by Kazakhstan authorities may be inaccurate.*”

The information sourced from third parties appearing in this Prospectus has been accurately reproduced and, as far as the Company is aware and is able to ascertain from the information published by such third parties, no facts have been omitted which would render the reproduced information inaccurate or misleading. Where third party information has been used in this Prospectus, the source of such information has been identified.

The Company's estimates have been based on information obtained from the Company's subsidiaries, JVs and Associates, customers, suppliers, trade organizations and other contacts in the markets in which the Company operates. The Company believes these estimates to be accurate in all material respects as at the dates indicated. However, this

information may prove to be inaccurate because of the method by which the Company obtained some of the data for these estimates or because this information cannot always be verified with complete certainty due to limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other inherent limitations and uncertainties.

This Prospectus contains illustrations and charts derived from the Company's internal information and the internal information of the Company's subsidiaries, JVs and Associates, which have not been independently verified unless specifically indicated.

## PRESENTATION OF MINERAL RESOURCES AND ORE RESERVES

SRK has undertaken an independent review and technical valuation of the Group's principal uranium mining assets in the Republic of Kazakhstan, as set out in the SRK Report, and has reported audited Mineral Resource and Ore Reserve statements in accordance with the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("**JORC Code**") as published by the Joint Ore Reserves Committee of the Australian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia.

The JORC Code distinguishes between Mineral Resources and Ore Reserves, based on the nature of the technical and economic evaluation carried out.

- **A Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.
- **An Ore Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The Mineral Resource and Ore Reserve statements provided in this Prospectus comply with the terms and definitions for such set out in the JORC Code and as required by the JORC Code, the '*The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves*'. For more information regarding resource and reserve reporting of Mineral Resources and Ore Reserves, see Chapter 7 of the SRK Report.

## EXCHANGE RATE INFORMATION

The official currency of Kazakhstan, where the majority of the Company's assets is located, as well as the Group's reporting currency, is the Tenge. The Group's principal exchange rate risk involves fluctuations in the value of the Tenge relative to the US Dollar. In certain previous periods the Kazakhstan economy has been characterised by a high level of fluctuation and an unstable currency (see "*Risk Factors—Risks Relating to Kazakhstan and Emerging Markets Generally—Exchange rate fluctuations could have an adverse impact on the Group*"). Moreover, the Government may impose, in certain cases, restrictions in respect of currency operations of residents and non-residents of the Republic of Kazakhstan (see "*Risk Factors—Risks Relating to Kazakhstan and Emerging Markets Generally—Kazakhstan currency control legislation may affect the Group's foreign currency dealings*").

The table below sets forth, for the periods and dates indicated, certain information regarding the exchange rate between the Tenge and the US Dollar, based on the official exchange rate quoted by the NBK. Fluctuations in the exchange rate between the Tenge and the US Dollar in the past are not necessarily indicative of fluctuations that may occur in the future. These rates may also differ from the rates used by the Company to record the Tenge amount of transactions denominated in US Dollars in the preparation of the Financial Statements and other information presented in this Prospectus.

	<b>KZT per US\$1</b>			
	<b>High</b>	<b>Low</b>	<b>Period average<sup>(1)</sup></b>	<b>Period end</b>
<b>Year ended 31 December</b>				
2015 .....	349.12	182.35	222.25	339.47
2016 .....	383.91	327.66	341.76	333.29
2017 .....	345.00	310.40	326.08	332.33
<b>Six months ended 30 June</b>				
2017 .....	345.51	310.40	318.75	321.46
2018 .....	341.31	318.31	326.49	341.08
<b>Month or period ended</b>				
31 July 2018 .....	347.06	341.08	344.25	347.06
31 August 2018 .....	363.43	347.70	357.03	363.43
30 September 2018 .....	380.93	352.54	366.77	363.07
28 October 2018 .....	373.71	360.65	367.74	368.54

(1) The average rates are calculated as the average of the daily exchange rates on each calendar day.

On 28 October 2018, the exchange rate quoted by the NBK between the US dollar and the Tenge was KZT368.54 to US\$1.00.

The Tenge is generally not convertible outside Kazakhstan. A market exists within Kazakhstan for the conversion of Tenge into other currencies, but the limited availability of other currencies may inflate their value relative to the Tenge. No representation is made that the Tenge or US Dollar amounts referred to herein could have been or could be converted into Tenge or US Dollars, as the case may be, at these rates, at any particular rate or at all.



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## SUMMARY

Summaries are made up of disclosure requirements known as “**Elements**”. These Elements are numbered in Sections A–E (A.1–E.7). This summary contains all the Elements required to be included in a summary for this type of securities and the Company. Because some Elements are not required to be addressed, there may be gaps in the numbering sequence of the Elements. Even though an Element may be required to be inserted in the summary because of the type of securities and the Company, it is possible that no relevant information can be given regarding the Element. In this case a short description of the Element is included in the summary with the mention of “not applicable”.

<b>Section A—Introduction and Warnings</b>		
<b>A.1</b>	<b><i>Introduction and Warnings</i></b>	<p>This summary should be read as an introduction to the Prospectus.</p> <p>Any decision to invest in the Securities should be based on consideration of the Prospectus as a whole by the investor.</p> <p>Where a claim relating to the information contained in the Prospectus is brought before a court, the plaintiff investor might, under the national legislation of the Member States, have to bear the costs of translating the Prospectus before the legal proceedings are initiated.</p> <p>Civil liability attaches only to those persons who have tabled the summary including any translation thereof, but only if the summary is misleading, inaccurate or inconsistent when read together with the other parts of the Prospectus or it does not provide, when read together with the other parts of the Prospectus, key information in order to aid investors when considering whether to invest in such Securities.</p>
<b>A.2</b>	<b><i>Consent by the issuer or person responsible for drawing up the prospectus to the use of the prospectus for subsequent resale or final placement of securities by financial intermediaries</i></b>	Not applicable. The Company has not consented to the use of the Prospectus for subsequent use or final placement of the Securities by financial intermediaries.

<b>Section B—Company</b>		
<b>B.31</b>		<b><i>Information about the issuer of the underlying shares.</i></b>
<b>B.1</b>	<b><i>The legal and commercial name of the company.</i></b>	JSC National Atomic Company Kazatomprom.
<b>B.2</b>	<b><i>The domicile and legal form of the company, the legislation under which the company operates and its country of incorporation.</i></b>	The Company is a joint stock company incorporated under the laws of Kazakhstan on 14 July 1997 initially as Open Joint Stock Company Kazatomprom, with registration number 41031-1901-AO, business identification number 970240000816 and registered office at 10 D. Kunayev Street, 010000, Astana, Republic of Kazakhstan. The principal legislation under which the Company operates is the Law of the Republic of Kazakhstan No.415-II “On Joint Stock Company” dated 13 May 2003 (as amended), the Law of the Republic of Kazakhstan No. 413-IV “On State Property” dated 1 March 2011 (as amended) and the Law of the Republic of Kazakhstan No. 550-IV “On Sovereign Wealth Fund” dated 1 February 2012 (as amended).
<b>B.3</b>	<b><i>A description of, and key factors relating to, the nature of the company’s current operations and its principal activities, stating</i></b>	The Company, taken together with its subsidiaries (the “ <b>Group</b> ”), is the largest producer of natural uranium globally (in terms of production volumes) with priority access to one of the world’s largest resource bases, according to UxC data. According to UxC data, the Group’s uranium production, including the production of its jointly controlled entities and associates attributable to

## Section B—Company

*the main categories of products sold and/or services performed and identification of the principal markets in which the company competes.*

the Group, for the year ended 31 December 2017 represented approximately 20% of total global uranium primary production and approximately 40% of global in-situ leach recovery (“ISR”) uranium production

The Group operates, through its subsidiaries, JVs and Associates, 26 deposits grouped into 13 asset clusters, all of which are located in Kazakhstan. All of the Group’s uranium deposits are suitable for ISR. A combination of the cost-efficient ISR technology, which has smaller environmental impact compared to other mining methods, and a long-life mining asset base allows the Group to remain sustainably among the leading and the second lowest cost uranium producers globally, according to UxC data. The Group benefits from more than 40 years of ISR experience accumulated by the Kazakhstan uranium mining industry. In addition to being cost-efficient and being least environmentally impactful, the ISR technology offers enhanced operational flexibility as compared to conventional mining, which improves the scalability of the Group’s operations and allows it to ramp up or down its production in a quick and cost-efficient manner in response to evolving market conditions.

The Company enjoys the status as Kazakhstan’s national operator for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The respective status of a national company in Kazakhstan allows the Group to benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including the high-quality and ISR-conducive deposits of natural uranium, which are abundant in the Republic of Kazakhstan.

The Group only produces uranium from deposits in Kazakhstan. According to UxC data, for the year ending 31 December 2017, Kazakhstan accounted for 40% of the global uranium production and 65% of the world’s Measured and Indicated Mineral Resources suitable for ISR mining. According to the NEA/IAEA, as of 1 January 2015, 13% of the global identified uranium resources were located in Kazakhstan. The Group also possesses the largest uranium Ore Reserves among its competitors, according to UxC data. As at 30 June 2018, the Group’s attributable Proved and Probable Ore Reserves contained 294.8 thousand tonnes of UME and attributable Measured and Indicated Mineral Resources (inclusive of those Mineral Resources modified to produce the Ore Reserves) contained 435.1 thousand tonnes of UME, and attributable Inferred Mineral Resources contained 1.0 thousand tonnes of UME, each reported in accordance with the terms and definitions of the JORC Code.

As the national atomic company in the Republic of Kazakhstan, the Company has partnered with substantially all of the leading players in the uranium mining industry globally. The Group has built 10 successful asset-level partnerships with Cameco, CGNPC, Kansai, Marubeni, Orano (formerly Areva), RosAtom and Sumitomo, as well as the Energy Asia consortium. These partnerships demonstrate the prominence of the Group’s asset base on a global scale while having allowed the Group to gain access to the partners’ technologies and improve its technological and management know-how. For the year ended 31 December 2017 and the six months ended 30 June 2018, 60.4% and 48.4%, respectively, of the Group’s attributable mined uranium was attributable to participation in its JVs and Associates.

The Group’s primary customers are operators of nuclear generation capacity, and the principal export markets for the Group’s products are China, South and Eastern Asia, North America and Europe. The Group sells uranium and uranium products under long-term contracts, short-term contracts, as well as

## Section B—Company

		<p>in the spot market, utilising its Switzerland-based trading subsidiary. The price of uranium represents a relatively minor fraction of the overall cost of producing nuclear energy, and most of the Group’s customers tend to prefer security of supply, which the Group is well-positioned to accommodate due to its size and production volumes, to more favourable pricing terms.</p> <p>While uranium mining is the predominant focus of the Group’s operations, the Group is also present (through its subsidiaries, JVs and Associates) in most of the other stages of the “front-end” nuclear fuel cycle with the exception of conversion. These stages include uranium dioxide, or UO<sub>2</sub>, ceramic powder production, fuel pellet production, as well as enrichment. In addition, the Group is currently engaged in the construction of a fuel assembly plant, which the Company expects to put into operation by the end of 2020. Moreover, the Group is well positioned to develop a conversion facility, should conversion become economically attractive in the future and has secured access to the requisite technologies from Cameco. The Group produces uranium products, including natural uranium concentrate, uranium dioxide ceramic powder and fuel pellets, which are used in the manufacturing of nuclear fuel assemblies, the fuel used by nuclear power stations for the generation of electricity.</p> <p>In addition to uranium operations, the Group is engaged in the manufacture of selected rare metals products, primarily tantalum and beryllium.</p>
<b>B.4a</b>	<i>A description of the most significant recent trends affecting the company and the industries in which it operates.</i>	<p>The Group’s operations have recently been influenced by the following significant recent trends, which are expected to continue affecting its business and results of operations in the future:</p> <ul style="list-style-type: none"> <li>• In the past 18 months the Group has substantially changed its strategic approach to being a market-centric operator, as opposed to production-led operator. This, critically, envisages setting production targets on the basis of market and sales volumes forecasts, as well as adapting production plans to the evolving market conditions.</li> <li>• In May 2018, the Company entered into a long-term uranium supply agreement with Yellow Cake plc and in July 2018, delivered approximately 3,100 tonnes of U<sub>3</sub>O<sub>8</sub> pursuant to such agreement, which represents 25.6% of the Group’s attributable production of uranium for the year ended 31 December 2017. Furthermore, this agreement contemplates the delivery by the Company of further uranium shipments in the quantity representing the aggregate price of up to US\$100 million annually, at market related prices, for at least another nine years after the date of this Prospectus, subject to and upon completion of subsequent follow-on offerings by Yellow Cake plc and certain other conditions.</li> </ul>
<b>B.4b</b>	<i>A description of any known trends affecting the company and the industries in which it operates.</i>	<p>The Group’s operations have historically been influenced by the following significant factors, which are expected to continue affecting its business and results of operations in the future: (i) the price received for the sale of natural uranium and changes in natural uranium product prices, (ii) the volume of uranium products produced and sold, and inventory levels, (iii) disposals of non-core assets, (iv) corporate restructuring activities, (v) the impact of changes in exchange rates, (vi) taxation, including mineral extraction tax, (vii) the price and availability of sulfuric acid, (viii) impact of changes in ore reserves estimates, (ix) the volume of sales of rare metals products sold, (x) prices received for the sale of rare metals products and (xi) transactions with JVs and Associates.</p>
<b>B.5</b>	<i>If the company is part of a group, a description of the group and the company’s position within the group.</i>	<p>The Company is the parent company of the Group, which comprises the Company and its consolidated subsidiaries.</p>



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<b>B.6</b>	<i>In so far as is known to the company, the name of any person who, directly or indirectly, has an interest in the company's capital or voting rights which is notifiable under the company's national law, together with the amount of each such person's interest. Whether the company's major shareholders have different voting rights if any. To the extent known to the company, state whether the company is directly or indirectly owned or controlled and by whom and describe the nature of such control.</i>	Prior to the Offering, the Company was wholly owned by JSC Sovereign Wealth Fund Samruk-Kazyna, which is in turn wholly owned by the Government of the Republic of Kazakhstan.
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**Section B—Company**

<b>B.7</b>	<i>Selected historical key financial information regarding the company, presented for each financial year of the period covered by the historical financial information, and any subsequent interim financial period accompanied by comparative data from the same period in the prior financial year except that the requirement for comparative balance sheet information is satisfied by presenting the year-end balance sheet information. This should be accompanied by a narrative description of significant change to the company's financial condition and operating results during or subsequent to the period covered by the historical key financial information.</i>	<b>Consolidated Statements of Profit or Loss and Other Comprehensive Income</b>					
		<b>Year ended 31 December</b>			<b>Six months ended 30 June</b>		
		<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2017</b>	<b>2018</b>	
		<b>(KZT millions, except per share amounts)</b>					
		Revenue	383,960	394,315	336,517	153,188	145,029
		Cost of sales	(280,598)	(283,882)	(263,864)	(120,924)	(106,539)
		<b>Gross profit</b>	<b>103,362</b>	<b>110,433</b>	<b>72,653</b>	<b>32,264</b>	<b>38,490</b>
		Distribution expenses	(4,116)	(6,314)	(4,858)	(2,402)	(3,361)
		General and administrative expenses	(25,655)	(30,877)	(32,274)	(11,558)	(12,573)
		Reversal of impairment of assets	86	184	543	38	119
		Impairment losses	(30,716)	(22,007)	(27,958)	(4,058)	(3,605)
		Gain on disposal of subsidiary	—	290	—	—	—
		Result from business combination	—	—	—	—	96,858
		Net foreign exchange (loss) / gain	(53,446)	3,614	(768)	(1,142)	1,296
		Other income	1,352	775	115,111	6,209	110
		Other expenses	(7,535)	(6,160)	(6,768)	(1,564)	(1,187)
		Finance income	21,986	15,825	5,888	2,429	2,638
		Finance costs	(8,676)	(11,017)	(9,067)	(4,387)	(5,088)
		Share of results of associates	38,823	38,058	22,007	11,644	6,948
		Share of results of joint ventures	14,080	36,739	22,107	13,637	(1,905)
		<b>Profit before tax</b>	<b>49,545</b>	<b>129,543</b>	<b>156,616</b>	<b>41,110</b>	<b>118,740</b>
		Income tax expense	(13,044)	(17,988)	(17,462)	(13,032)	(4,823)
		Profit from discontinued operations	—	—	—	2,087	1,103
		<b>Profit for the year</b>	<b>36,501</b>	<b>111,555</b>	<b>139,154</b>	<b>30,165</b>	<b>115,020</b>
		<b>Other comprehensive income</b>					
		<i>Items that may be subsequently reclassified to profit or loss:</i>					
		Exchange differences arising on translation of foreign operations	17,271	(97)	383	9	(22,123)
		Share in other comprehensive income of equity method investments	159	(658)	—	—	—
		<i>Items that will be reclassified to profit or loss:</i>					
		Remeasurements of post-employment benefit obligations	(241)	194	113	—	—
		Share in other comprehensive income of equity method investments	—	(216)	(189)	—	—
		<b>Other comprehensive income / (loss) for the year</b>	<b>17,189</b>	<b>(777)</b>	<b>307</b>	<b>9</b>	<b>(22,123)</b>
		<b>Total comprehensive income for the year</b>	<b>53,690</b>	<b>110,778</b>	<b>139,461</b>	<b>30,174</b>	<b>92,897</b>
		<b>Profit for the year attributable to:</b>					
		Owners of the Company	38,442	108,795	138,527	29,949	114,220
		Non-controlling interest	(1,941)	2,760	627	216	800
		<b>Profit for the year</b>	<b>36,501</b>	<b>111,555</b>	<b>139,154</b>	<b>30,165</b>	<b>115,020</b>
		<b>Total comprehensive income attributable to:</b>					
		Owners of the Company	55,635	108,014	138,837	29,957	92,093
		Non-controlling interest	(1,945)	2,764	624	217	804
		<b>Total comprehensive income for the year</b>	<b>53,690</b>	<b>110,778</b>	<b>139,461</b>	<b>30,174</b>	<b>92,897</b>
		<b>Earnings per share from continuing operations, basic and diluted (rounded to Tenge)</b>					
		Owners of the Company	1,048	2,963	3,748	810	3,083

## Section B—Company

### Consolidated Statements of Financial Position

	As at 31 December			As at
	2015	2016	2017	30 June 2018
<b>Assets</b>				
<i>Non-current assets</i>				
Intangible assets . . . . .	7,173	7,117	8,009	8,736
Property, plant and equipment . . . . .	130,411	117,335	122,175	134,685
Mine development assets . . . . .	38,578	41,682	43,530	102,762
Mineral rights . . . . .	2,067	2,291	2,004	161,130
Exploration and evaluation assets . . . . .	8,538	3,471	5,608	6,610
Investments in associates . . . . .	121,938	107,773	101,746	62,231
Investments in joint ventures . . . . .	43,519	66,862	74,818	41,240
Other investments . . . . .	67,041	67,041	1,726	4,411
Accounts receivable . . . . .	36	—	140	243
Deferred tax assets . . . . .	1,829	4,299	6,836	8,948
Term deposits . . . . .	3,182	15	—	11
Loans to related parties . . . . .	32,344	19,151	20,302	13,091
Other non-current assets . . . . .	19,627	19,517	24,125	25,610
<b>Total non-current assets . . . . .</b>	<b>476,283</b>	<b>456,554</b>	<b>411,019</b>	<b>569,708</b>
<i>Current assets</i>				
Accounts receivable . . . . .	107,512	67,921	58,085	73,752
Prepaid income tax . . . . .	2,427	7,391	5,493	9,869
VAT recoverable . . . . .	28,528	22,235	24,182	21,375
Inventories . . . . .	99,692	120,095	169,675	202,918
Term deposits . . . . .	9,020	56,476	8,472	7,618
Loans to related parties . . . . .	1,224	13	—	8,119
Cash and cash equivalents . . . . .	55,869	75,052	239,936	100,542
Other current assets . . . . .	12,557	10,831	18,396	23,852
<b>Total current assets . . . . .</b>	<b>316,829</b>	<b>360,014</b>	<b>524,239</b>	<b>448,045</b>
Assets of disposal groups classified as held for sale . . . . .	164	3,463	2,774	40,162
	<b>316,993</b>	<b>363,477</b>	<b>527,013</b>	<b>488,207</b>
<b>Total assets . . . . .</b>	<b>793,276</b>	<b>820,031</b>	<b>938,032</b>	<b>1,057,915</b>
<b>Equity and Liabilities</b>				
<i>Equity</i>				
Share capital . . . . .	36,692	36,785	37,051	37,051
Additional paid-in capital . . . . .	4,785	4,785	4,785	4,785
Reserves . . . . .	18,819	18,061	(2,229)	(979)
Retained earnings . . . . .	398,991	495,732	586,998	543,620
Equity attributable to shareholders of the Company . . . . .	459,287	555,363	626,605	584,477
Non-controlling interest . . . . .	10,118	12,467	14,571	91,997
<b>Total equity . . . . .</b>	<b>469,405</b>	<b>567,830</b>	<b>641,176</b>	<b>676,474</b>
<i>Non-current liabilities</i>				
Loans and borrowings . . . . .	119,776	77,184	38,910	369
Finance lease liabilities . . . . .	—	120	294	418
Accounts payable . . . . .	585	581	582	588
Provisions . . . . .	17,183	17,320	22,688	27,581
Deferred tax liabilities . . . . .	4,509	4,743	4,443	35,581
Employee benefits . . . . .	2,045	1,346	1,247	943
Other non-current liabilities . . . . .	6,141	5,199	7,711	6,081
<b>Total non-current liabilities . . . . .</b>	<b>150,239</b>	<b>106,493</b>	<b>75,875</b>	<b>71,561</b>
<i>Current liabilities</i>				
Loans and borrowings . . . . .	52,845	50,581	82,374	90,209
Finance lease liabilities . . . . .	—	44	125	119
Provisions . . . . .	101	98	189	143
Accounts payable . . . . .	101,622	74,654	112,642	53,653
Other tax and compulsory payments liabilities . . . . .	5,027	6,198	4,168	5,659
Employee benefits . . . . .	213	244	173	126
Income tax liabilities . . . . .	1,036	134	5,618	508
Other current liabilities . . . . .	12,788	11,789	14,349	105,582
<b>Total current liabilities . . . . .</b>	<b>173,632</b>	<b>143,742</b>	<b>219,638</b>	<b>255,999</b>
Liabilities of disposal groups classified as held for sale . . . . .	—	1,966	1,343	53,881
<b>Total liabilities . . . . .</b>	<b>323,871</b>	<b>252,201</b>	<b>296,856</b>	<b>381,441</b>
<b>Total equity and liabilities . . . . .</b>	<b>793,276</b>	<b>820,031</b>	<b>938,032</b>	<b>1,057,915</b>

## Section B—Company

### Consolidated Statements of Cash Flows

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
	(KZT millions)				
<i>Operating activities</i>					
Cash receipts from customers	395,725	485,829	435,199	224,080	182,320
VAT refund	24,895	29,638	18,849	10,379	12,808
Interest received	1,416	6,830	3,025	1,288	1,006
Payments to suppliers	(320,921)	(379,103)	(373,006)	(183,290)	(207,003)
Payments to employees	(40,191)	(42,638)	(43,213)	(19,297)	(22,389)
<b>Cash flows from/(used in) operating activities (pre-tax)</b>	<b>60,924</b>	<b>100,556</b>	<b>40,854</b>	<b>33,160</b>	<b>(33,258)</b>
Income tax paid	(5,662)	(28,216)	(13,069)	(6,205)	(8,750)
Interest paid	(6,127)	(5,464)	(4,430)	(2,225)	(2,993)
<b>Cash inflow from/(outflow used in) operating activities</b>	<b>49,135</b>	<b>66,876</b>	<b>23,355</b>	<b>24,730</b>	<b>(45,001)</b>
<i>Investing activities</i>					
Acquisition of property, plant and equipment	(12,153)	(8,975)	(14,913)	(7,138)	(9,046)
Proceeds from disposal of property, plant and equipment	491	190	749	470	44
Advance paid for property, plant and equipment	(616)	(5,361)	(5,461)	—	—
Acquisition of intangible assets	(414)	(477)	(628)	(589)	(1,850)
Acquisition of mine development assets	(9,930)	(11,494)	(12,011)	(4,391)	(10,712)
Acquisition of exploration and evaluation assets	(1,618)	(3,264)	(2,775)	(986)	(1,003)
Proceeds from exercise of put option	—	—	173,719	—	—
Proceeds from sale of investments in associates and joint ventures	—	82	—	—	—
Proceeds from disposal of subsidiary	—	175	2	—	89
Placement of term deposits and restricted cash	(14,370)	(54,124)	(12,095)	(23,261)	(3,123)
Redemption of term deposits and restricted cash	5,798	9,054	55,216	53,333	4,847
Repayment of loans to related parties	1,211	12,787	8	—	—
Acquisition of control over subsidiary ventures	—	—	(91)	—	—
Cash contributions to the capital of joint ventures	(2,046)	(4,647)	(2,687)	(2,674)	(1,301)
Dividends received from associates, joint ventures and other investments	42,867	78,805	36,486	20,323	7,135
Other	(94)	(96)	56	(52)	1,762
<b>Cash inflow from/(outflow used in) investing activities</b>	<b>9,126</b>	<b>12,655</b>	<b>215,575</b>	<b>35,035</b>	<b>(13,158)</b>
<i>Financing activities</i>					
Proceeds from loans and borrowings	163,851	10,072	52,793	9,702	32,142
Repayment of loans and borrowings	(215,676)	(53,430)	(61,410)	(27,020)	(67,931)
Dividends paid to the shareholder	(2,323)	(12,031)	(65,849)	—	(45,019)
Dividends paid to non-controlling interest	(47)	(134)	(19)	(5)	(1,976)
Other	103	(673)	(396)	(344)	(96)
<b>Cash outflow used in financing activities</b>	<b>(54,092)</b>	<b>(56,196)</b>	<b>(74,881)</b>	<b>(17,667)</b>	<b>(82,880)</b>
<b>Net increase/(decrease) in cash and cash equivalent</b>	<b>4,169</b>	<b>23,335</b>	<b>164,049</b>	<b>42,098</b>	<b>(141,039)</b>
Cash and cash equivalents at the beginning of the year	29,432	55,869	75,052	75,052	239,936
Effect of exchange rate fluctuations on cash and cash equivalents	22,268	(4,152)	835	(2,517)	1,645
<b>Cash and cash equivalents at the end of the year</b>	<b>55,869</b>	<b>75,052</b>	<b>239,936</b>	<b>114,633</b>	<b>100,542</b>



## Section B—Company

The Group's total revenue in the year ended 31 December 2016 was KZT394,315 million, an increase of 2.7% from KZT383,960 million in the year ended 31 December 2015. This increase was largely due to (i) the 53.8% depreciation of the Tenge relative to the U.S. Dollar from KZT222.25 per US\$1 for the year ended 31 December 2015 to KZT341.76 per US\$1 in for the year ended 31 December 2016 and (ii) an increase in revenue from utilities due to 20% higher tariffs of electricity in the year ended 31 December 2016 compared to year ended 31 December 2015. This however was partially offset by (i) a decrease in the realised average price of uranium, which represented 68.0% of the Group's sales in the year ended 31 December 2016, by 26.5% from US\$41.52 per pound for the year ended 31 December 2015 to US\$30.52 per pound for the year ended 31 December 2016, largely due to a 28.4% decrease in the average spot price for uranium for the year ended 31 December 2016 compared to for the year ended 31 December 2015 and (ii) a 12.2% decrease in the sales volume of U<sub>3</sub>O<sub>8</sub> from 11,028 tonnes for the year ended 31 December 2015 to 9,687 tonnes for the year ended 31 December 2016. The Group's profit for the year increased by KZT75,054 million, or more than 200%, to KZT111,555 million in the year ended 31 December 2016 from KZT36,501 million in the year ended 31 December 2015.

The Group's total revenue in the year ended 31 December 2017 was KZT336,517 million, a decrease of 14.7% from KZT394,315 million in the year ended 31 December 2016. This decrease reflects primarily the impact on sales of uranium products which represented 61.8% of the Group's revenue for the year ended 31 December 2017 and was largely due to (i) a 21.8% decrease in the average realised price for the sale of uranium form US\$30.52 per pound of UME of U<sub>3</sub>O<sub>8</sub> for the year ended 31 December 2016 to US\$23.85 per pound of UME of U<sub>3</sub>O<sub>8</sub> for the year ended 31 December 2017, which was in turn driven by a 16.3% decrease in the average spot price of U<sub>3</sub>O<sub>8</sub> from US\$26.36 per pound for the year ended 31 December 2016 to US\$22.07 per pound for the year ended 31 December 2017 and (ii) the appreciation of the Tenge relative to the U.S. Dollar by 4.6% during the year ended 31 December 2017 from an average of KZT341.76 per US\$1 for the year ended 31 December 2016 to KZT326.08 per US\$1 for the year ended 31 December 2017. The Group's profit for the year increased by KZT27,599 million, or 24.7%, to KZT139,154 million in the year ended 31 December 2017 from KZT111,555 million in the year ended 31 December 2016.

The Group's total revenue in the six months ended 30 June 2018 decreased by 5.3% to KZT145,029 million from KZT153,188 million in the six months ended 30 June 2017. This decrease reflects primarily the impact on sales of uranium products which represented 77.8% of the Group's revenue for the six months ended 30 June 2018 and was largely due to a 7.2% decrease in the Group's U<sub>3</sub>O<sub>8</sub> sales volumes and a 1.9% decrease in the average realised price of U<sub>3</sub>O<sub>8</sub> from US\$24.09 per pound to US\$23.64 per pound. This decrease however was partially offset by a 2.4% depreciation of the Tenge relative to the U.S. Dollar. The Group's profit for the period increased by KZT84,855 million, or 281.3%, to KZT115,020 million in the six months ended 30 June 2018 from KZT30,165 million in the six months ended 30 June 2017.

In September 2018, the Company entered into a US\$100 million loan agreement with Mizuho Bank, Ltd. (under which no drawdowns were made as of the date of this Prospectus), to fund its working capital and for general corporate purposes. The Company intends to draw down all or substantially all of the funds available under the US\$100 million loan agreement with Mizuho Bank, Ltd. between 5 and 9 November 2018.

<b>Section B—Company</b>		
		<p>In October 2018, the Company raised KZT70,000 million by placing bonds (which are denominated in the Tenge and are linked to the official U.S. Dollar to Tenge exchange rate announced by the NBK) locally in Kazakhstan. In addition, in October 2018, the Company declared additional dividends in the amount of KZT26,649 million.</p> <p>Except as described above, from 1 January 2015 to 30 June 2018, as well as since 30 June 2018, being the end of the last financial period for which the Company’s financial information has been published, there have been no significant changes in the Group’s financial condition or operating results.</p>
<b>B.8</b>	<i>Selected key pro-forma financial information</i>	Not applicable; there is no pro-forma financial information in this Prospectus.
<b>B.9</b>	<i>Where a profit forecast or estimate is made, state the figure.</i>	Not applicable; there are no profit forecasts or estimates in this Prospectus.
<b>B.10</b>	<i>A description of the nature of any qualifications in the audit report on the historical financial information.</i>	Not applicable; there are no qualifications in the reports on the financial statements included in this Prospectus.
<b>B.32</b>	<i>Information about the issuer of the depository receipts, including the name and registered office of the issuer of the depository receipts and the legislation under which the issuer of the depository receipts operates and legal form which it has adopted under the legislation.</i>	Citibank, N.A., with its registered office at 701 East 60th Street North, Sioux Falls, South Dakota, U.S.A. and its principal executive office at 388 Greenwich Street, New York, New York 10013, U.S.A., is a national banking association organised under the National Bank Act of 1864.

<b>Section C—Securities</b>		
<b>C.13</b>	<b>Information about the underlying shares.</b>	
<b>C.1</b>	<i>A description of the type and the class of the securities being offered and/or admitted to trading, including any security identification number.</i>	The securities underlying the GDRs are the Shares, bearing the following security identification numbers: ISIN: KZ1C00001619 AIX trading symbol: KAP SEDOL: BFY25P6
<b>C.2</b>	<i>Currency of the securities issued.</i>	The currency of the Shares is the Tenge.
<b>C.3</b>	<i>The number of shares issued and fully paid and issued but not fully paid. The par value per share, or that the shares have not par value.</i>	As at the date of this Prospectus, the number of the Company’s issued and outstanding shares, all of which are ordinary shares, was 259,356,608. All issued and outstanding shares are fully paid.

**Section C—Securities**

<p><b>C.4</b></p>	<p><i>A description of the rights attached to the securities.</i></p>	<p>A holder of ordinary shares has the right:</p> <ul style="list-style-type: none"> <li>• to participate in the management of a joint stock company in the manner provided for under the Joint Stock Companies Law of the Republic of Kazakhstan and/or the charter of the joint stock company;</li> <li>• to receive dividends;</li> <li>• to familiarise him or herself with the financial statements of the joint stock company and to receive information on its activities using the procedure established at the general meeting of shareholders or in the charter of the joint stock company;</li> <li>• to receive extracts from the joint stock company’s registrar (the Central Registrar) or, if appropriate, a nominal holder confirming the shareholder’s ownership right to the securities;</li> <li>• to propose to a general meeting of shareholders candidates for election to the board of directors;</li> <li>• to contest in court the resolutions adopted by the bodies of the joint stock company;</li> <li>• to file with the joint stock company written requests for information regarding its activities and to receive a response from the joint stock company within 30 calendar days of the date of the filing of such request;</li> <li>• to receive part of the joint stock company’s property in the event of the joint stock company’s liquidation;</li> <li>• of pre-emption in relation to the purchase of shares or other securities convertible into shares of the joint stock company in the manner established under the JSC Law;</li> <li>• to participate in the adoption of resolutions by the general meeting of shareholders in respect of change of the amount or type of the shares in the manner established under the JSC Law; and</li> <li>• if such shareholder or a group of shareholders holds 5% or more of the voting shares of the joint stock company, to:             <ul style="list-style-type: none"> <li>• file a claim with a court seeking compensation in favour of the joint stock company for losses caused by the joint stock company’s officials, as well as a return to the joint stock company, by the officials and/or their affiliates, of the profit (income) received by them as a result of adopting a resolution that proposes the conclusion of major transactions and/or interested party transactions;</li> <li>• propose to the board of directors of the joint stock company to include additional matters to the agenda of the general meeting of shareholders; and</li> <li>• receive information on the amount of remuneration as the result of the year of each member of the board of directors and/or the management board, in the manner established under the JSC Law.</li> </ul> </li> </ul>
<p><b>C.5</b></p>	<p><i>A description of any restrictions on the free transferability of the securities.</i></p>	<p>A holder of fully paid Shares may freely transfer them without the consent of other shareholders of the Company or the Company’s consent. However, any transfer may be subject to selling restrictions under the relevant laws in certain jurisdictions.</p> <p>The GDRs and the Shares represented by them (together, the “<b>Securities</b>”) have not been and will not be registered under the Securities Act or under the applicable securities laws of any state of the United States and may not be offered, sold or transferred, directly or indirectly, within the United States,</p>

<b>Section C—Securities</b>		
		except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act.
<b>C.6</b>	<i>An indication as to whether the securities offered are or will be the object of an application for admission to trading on a regulated market and the identity of all the regulated markets where the securities are or are to be traded.</i>	The Shares underlying the GDRs are not and will not be admitted to trading on any regulated market in the EEA.
<b>C.7</b>	<i>A description of dividend policy.</i>	<p>Pursuant to the dividend policy which the Company adopted in October 2018 and which is expected to come into effect on 1 January 2019, the amount of dividends is determined as a percentage of the Group's free cash flow depending on the Group's Net Debt to Adjusted EBITDA ratio. The declaration of dividends requires approval of the Company's General Meeting of Shareholders and is based on the proposal of the Company's Board of Directors which is in turn prepared on the basis of a proposal developed by the Company's Management Board.</p> <p>The Company defines free cash flow as cash flows from operating activities less acquisition of property plant and equipment (including advance paid for property, plant and equipment) less acquisition of intangible assets less acquisition of mine development assets less acquisition of exploration and evaluation assets plus dividends from associates and joint ventures declared (i.e., to be distributed) in respect of results for the reporting period.</p> <p>The percentage of free cash flow applied towards dividends of the Company depends on the Group's Net Debt to Adjusted EBITDA ratio as of 31 December of the year immediately preceding the year during which the decision on dividends is made. If Net Debt to Adjusted EBITDA ratio is:</p> <ul style="list-style-type: none"> <li>• less or equal to 1, then the amount of declared dividends shall be no less than 75% of free cash flow;</li> <li>• more than 1, but less than 1.5, then the amount of declared shall be no less than 50% of free cash flow; and</li> <li>• 1.5 or more, then the amount of declared dividends shall be such percentage of free cash flow as determined by the Company's General Meeting of Shareholders.</li> </ul> <p>Any decision to declare and pay dividends is subject to (i) restrictions set out in applicable law, such as the prohibition on payment of dividends for companies with negative equity capital or which are insolvent or companies whose equity capital would become negative or which would become insolvent as a result of paying dividends and (ii) covenants set out in agreements to which the Company is a party. Furthermore, in rendering its proposal to the General Meeting of Shareholders, the Company's Board of Directors may take into account any factors it may deem relevant, such as the Company's net profit, solvency and financial condition, cash requirements, among others.</p> <p>The Company expects that, subject to applicable law and commercial considerations, dividend payments of no less than the Tenge equivalent of US\$200 million, at the time of the approval, in respect of each of the Company's 2018 and 2019 financial years will be approved in 2019 and 2020. The Company intends to accommodate such plans in its budgets for 2019 and 2020.</p>

**Section C—Securities**

<b>C.14</b>	<b>Information about the depositary receipts.</b>	
<b>C1</b>	<i>A description of the type and the class of the securities being offered and/or admitted to trading, including any security identification number.</i>	<p>This Prospectus relates to an admission to listing and to trading of the GDRs. One GDR represents an interest in one Share on deposit with the Custodian on behalf of the Depositary. The GDRs will be issued by the Depositary pursuant to the Deposit Agreements. The GDRs will be evidenced initially by Master GDRs, each to be issued by the Depositary pursuant to the Deposit Agreements. Except in the limited circumstances described herein, definitive GDR certificates will not be issued to Holders in exchange for interests in the GDRs represented by the Master GDRs.</p> <p>The security identification numbers of the GDRs offered hereby are as follows:</p> <p>Regulation S GDRs:</p> <p>ISIN: ..... US63253R2013  CUSIP Number: ..... 63253R201  SEDOL Number: ..... BGXQL36</p> <p>Rule 144A GDRs:</p> <p>ISIN: ..... US63253R1023  CUSIP Number: ..... 63253R102  SEDOL Number: ..... BGXQL25</p> <p>London Stock Exchange Regulation S GDR trading symbol: KAP  London Stock Exchange Rule 144A GDR trading symbol: KAP</p>
<b>C.2</b>	<i>Currency of the securities issue.</i>	The currency of the GDR is the U.S. Dollar.
<b>C.4</b>	<i>A description of the rights attached to the securities.</i>	<p>Pursuant to the Deposit Agreements and the Terms and Conditions of the Global Depositary Receipts, holders of GDRs (“Holder” is the person registered as the holder on the books of the Depositary maintained for such purpose) will, amongst other things, be entitled to:</p> <ul style="list-style-type: none"> <li>• the right to withdraw the Deposited Shares (as defined therein) and all rights, interests and other securities, property and cash deposited with the Custodian which are attributable to the Deposited Shares;</li> <li>• the right to receive payment (in US Dollars, if practicable) from the Depositary of an amount equal to the cash dividends or other cash distributions received by the Depositary from the Company in respect of the Deposited Shares;</li> <li>• the right to receive from the Depositary additional GDRs representing additional Shares received by the Depositary from the Company by way of dividend or free distribution (or if the issue of additional GDRs is deemed by the Depositary to be unlawful or not operationally practicable or subject to any tax or other governmental charges which the Depositary is obligated to withhold, or if the distribution of the Shares and the GDRs representing such Shares must be registered under the Securities Act or other laws, the net proceeds (in US Dollars, if practicable) of the sale of such Shares);</li> <li>• the right to receive from the Depositary any dividend or distribution in the form of property other than Shares or cash received by the Depositary from the Company (or if such distribution is deemed by the Depositary to be unlawful or not reasonably practicable, the net proceeds (in US Dollars, if practicable) of the sale of such property);</li> </ul>



## Section C—Securities

		<ul style="list-style-type: none"> <li>• the right to request the Depositary to exercise subscription or similar rights made available by the Company to holders of Shares (or if such process is deemed by the Depositary to be unlawful or not reasonably practicable, the right to receive the net proceeds (in US Dollars, if practicable) of the sale of the relevant rights or the sale of the assets resulting from the exercise of such rights);</li> <li>• the right to instruct the Depositary regarding the exercise of any voting rights notified by the Company to the Depositary, subject to conditions; and</li> <li>• the right to receive from the Depositary copies received by the Depositary of notices provided by the Company to holders of Shares,</li> </ul> <p>in each case subject to applicable law, and the detailed terms set out in the Terms and Conditions of the Global Depositary Receipts (as endorsed on each GDR certificate) and the Master GDR certificates.</p>
C.5	<p><i>A description of any restrictions on the free transferability of the securities.</i></p>	<p>The GDRs are fully transferable, subject to certain transfer restrictions under the relevant laws in certain jurisdictions, as may be applicable to the transferor or the transferee, as well as contractual lock-ups for the Selling Shareholder. The Depositary shall refuse to accept for transfer any GDRs if it reasonably believes that such transfer would result in a violation of any applicable laws.</p> <p>The Securities have not been and will not be registered under the Securities Act or under the applicable securities laws of any state of the United States and may not be offered, sold or transferred, directly or indirectly, within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act.</p>
C.14	<p><i>Information about the depositary receipts.</i></p>	<p>The Terms and Conditions of the GDRs set out the provisions relating to the exercise of and benefit from the rights attaching to the Shares. The following provides a summary of the relevant provisions of the Terms and Conditions of the GDRs relating to the exercise of and benefit from rights attaching to the underlying Shares.</p>
	<p><i>Describe the exercise of and benefit from the rights attaching to the underlying shares, in particular voting rights, the conditions on which the issuer of the depositary receipts may exercise such rights, and measures envisaged to obtain the instructions of the depositary receipt holders—and the right to share in profits and any liquidations surplus which are not passed on to the holder of the depositary receipt.</i></p>	<p>The Company will notify the Depositary of any meeting at which the holders of Shares are entitled to vote, or of solicitation of consents or proxies from holders of Shares or other Deposited Property. As soon as practicable after receipt from the Company of such notice, the Depositary shall fix the record date (which shall be as close as possible to the corresponding record date set by the Company) in respect of such meeting or solicitation of consent or proxy. The Depositary shall, if requested by the Company in writing and not prohibited by applicable law, and at the Company’s expense, distribute to Holders as at the record date: (a) such notice of meeting or solicitation of consent or proxy; (b) a statement that the Holders at the close of business in New York City on the record date will be entitled, subject to the provision of certain identity and other information as to their Beneficial Owners as required by Kazakhstan law, any applicable law, the provisions of the Deposit Agreements, the Charter and the provisions of or governing the Deposited Property (which provisions, if any, shall be summarised in pertinent part by the Company), to instruct the Depositary as to the exercise of the voting rights, if any, pertaining to the Shares or other Deposited Property represented by such Holder’s GDRs; and (c) a brief statement as to the manner in which such voting instructions and identity information may be given.</p> <p>Voting instructions may be given to the Depositary only in respect of a number of GDRs representing an integral number of Shares or other Deposited Property. Upon the timely receipt from a Holder of GDRs as at the record date of voting instructions and identity information in the manner specified by the Depositary, the Depositary shall endeavour, insofar as practicable and permitted by applicable law and practice, the provisions of the Deposit Agreements, the Charter and the provisions of the Deposited Property, to vote or cause the Custodian to vote the Shares and/or other Deposited Property (in person or by proxy) represented by such Holder’s GDRs in accordance with such instructions.</p>

<b>Section C—Securities</b>		
		A Holder of GDRs also has the right to share in profits of the Company and to receive the proceeds of any liquidation surplus. Payments of cash dividends and other amounts (including cash distributions) in relation to the GDRs will be made by the Depository through DTC or Euroclear and Clearstream, Luxembourg, as the case may be, on behalf of persons entitled thereto, upon receipt of funds therefor from the Company, net of the Depository's fees, taxes, duties and charges.
	<i>Description of the bank or other guarantee attached to the depository receipts and intended to underwrite the company's obligations.</i>	Not applicable. There is no bank or other guarantee attached to the GDRs.

<b>Section D—Risks</b>		
<b>D.2</b>	<i>Key information on the key risks that are specific to the issuer of the underlying Shares.</i>	<p>The Company is exposed to the following key risks:</p> <ul style="list-style-type: none"> <li>• the Group's profitability is directly related to the market prices of uranium. Volatility in the price of uranium could have a material adverse effect on the Group;</li> <li>• major accidents affecting the nuclear industry may result in a dramatic fall in uranium prices, which could have a material adverse effect on the Group;</li> <li>• nuclear energy competes with a number of other sources of energy, and sustained lower prices of such other energy sources may result in lower demand for nuclear energy, and consequently, in a reduction in demand for uranium and its market price which in turn could have a material adverse effect on the Group;</li> <li>• nuclear energy is subject to public opinion risks that could have a material adverse impact on the demand for nuclear power and increase the regulation of the nuclear power industry;</li> <li>• the Group faces competition from other suppliers of uranium and uranium products and a loss in end-customers could have a material adverse effect on the Group;</li> <li>• the Group is currently dependent on a small number of customers that purchase a significant portion of the Group's uranium, and any loss of a significant customer could have a material adverse effect on the Group;</li> <li>• the Group benefits from certain privileges as a result of its national operator status. It could lose such status and this could have a material adverse effect on the Group;</li> <li>• the Group's mineral reserves and resources are the foundation of its operations and fundamental to the Group's success. The Group may be unsuccessful in maintaining existing reserves or discovering new reserves, which in turn could have a material adverse effect on the Group;</li> <li>• the Group's uranium extraction and transportation activities are subject to operational risks, hazards and unexpected disruptions, which could delay the production and delivery of Group's uranium and uranium products, increase the Group's cost of extraction or result in accidents at the Group's extraction locations;</li> <li>• the availability and cost of sulfuric acid materially affects the continuity and commercial viability of the Group's operations as the Group uses substantial amounts of sulfuric acid to extract uranium;</li> </ul>

## Section D—Risks

		<ul style="list-style-type: none"> <li>• a material portion of the uranium reserves the Group expects to develop is owned by the Group’s JVs and Associates. The Group is not able to control the operations of its JVs or Associates, nor can it unilaterally make major decisions with respect to the assets of such entities. Any material deterioration of the Group’s relationship with such entities could have a negative impact on the Group;</li> <li>• a significant portion of the Group’s deliveries to China and Russia use rail transport. The Group could face difficulty using railroads connecting Kazakhstan with neighbouring countries or other transportation infrastructure which could in turn have a material adverse effect on the Group;</li> <li>• for the six months ended 30 June 2018, approximately 46% of the Group’s sales (by value) have been made to customers based in China, India and South-East Asia and the Group’s results of operations are therefore subject to economic, political and legal developments in China, India and South-East Asia;</li> <li>• the Group may face certain liabilities in connection with the operations of its former subsidiary, MAEK Kazatomprom LLP, which it sold on 3 July 2018 to Samruk-Kazyna, including, inter alia, certain liabilities relating to the decommissioning of a particular nuclear reactor, if the Group were to be found to have been grossly negligent or intentionally guilty in doing so;</li> <li>• the Group operates in a heavily regulated industry and the Group is therefore subject to evolving national and international environmental, operational health, safety and other regulations;</li> <li>• successful implementation of the Group’s strategy depends on the Group’s senior management’s experience and expertise, as well as Group’s ability to recruit and retain experienced and qualified personnel as the Group’s success depends to a significant degree upon the efforts and abilities of certain key persons, including the Group’s senior managers;</li> <li>• the Company entered into a uranium supply contract with an Iranian counterparty pursuant to the Iran nuclear deal prior to the United States’ withdrawal from such deal. The United States could take unilateral action outside of the United Nations that could impede or otherwise affect such supply contract or the Company;</li> <li>• the Group may be unable to obtain, on commercially acceptable terms or at all, the necessary financing for its operations, strategy implementation, expansion of its business and local infrastructure which could have a material adverse effect on the Group;</li> <li>• certain of the Group’s customers and business associates may be subject to U.S. and EU sanctions and if this were to occur, such an event could have a material adverse effect on the Group.</li> </ul>
<p><b>D.5/ D.3</b></p>	<p><i>Key information on the key risks that are specific to the securities.</i></p>	<ul style="list-style-type: none"> <li>• because there is currently no active trading market for the Securities, there is no guarantee that an active trading market for the GDRs or Shares will develop and continue following the LSE Admission and the AIX Admission;</li> <li>• holders of GDRs in certain jurisdictions, such as the United States, may be unable to exercise their pre-emptive rights conferred by the GDRs due to applicable local securities law requirements;</li> <li>• if the Company or the Selling Shareholder were to sell additional GDRs or Shares following the Offering, which they could generally undertake upon the expiry of 180 days following the date of the LSE Admission, this could result in a decline in the price of the GDRs; and</li> </ul>

<b>Section D—Risks</b>		
		<ul style="list-style-type: none"> <li>• as the AIX was launched in July 2018, it has very short history of operations, and thus its technological platform remains relatively untested, and there is no assurance that the AIX will attract a sufficient number of market participants to ensure acceptable trading volumes.</li> </ul>

<b>Section E—Offer</b>		
<b>E.1</b>	<i>The total net proceeds and an estimate of the total expenses of the issue/ offer, including estimated expenses charged to the investor by the company or the offeror.</i>	<p>The Selling Shareholder will receive all of the proceeds from the sale of Securities.</p> <p>The total fees and expenses payable by the Company in connection with the Offering are expected to be approximately US\$6.7 million.</p>
<b>E.2a</b>	<i>Reasons for the offer, use of proceeds, estimated net amount of the proceeds.</i>	<p>The Offering is designed to implement the Comprehensive plan of privatisation for 2016–2020 approved by the decree of the Government of the Republic of Kazakhstan No. 1141“On certain matters of privatization for 2016–2020” dated 30 December 2015.</p> <p>The Company will not receive proceeds from the Offering, as all of them will be received by the Selling Shareholder.</p>
<b>E.3</b>	<i>A description of the terms and conditions of the offer.</i>	<p>The Offering consists of an offering of up to 38,903,491 Shares in the form of the GDRs (including the Over-Allotment Option). The number of the Securities sold in the AIX Offering will reduce the number of the Shares in the form of the GDRs available for sale in the Offering.</p> <p>The GDRs will be offered (i) in the United States, to qualified institutional buyers (as defined in, and in reliance on, Rule 144A under the Securities Act (ii) outside the United States, to institutional investors in “offshore transactions” as defined in, and in reliance on, Regulation S under the Securities Act.</p> <p>Pricing Date is expected to be on or about 13 November 2018.</p> <p>Closing Date is expected to be on or about 16 November 2018.</p> <p>The timetable above may be subject to change. Certain events provided therein are beyond the control of the Company, the Selling Shareholder or the Managers. The Company and the Selling Shareholder, in agreement with the Managers, reserve the right to change the above timetable for the Offering. Information about any changes to the proposed timetable of the Offering will be subject to notification to investors and/or supplements to the Prospectus in accordance with applicable regulations.</p> <p>The Offer Price Range is US\$11.60 to US\$15.40 per GDR.</p> <p>The Final Offer Price shall be determined on the Pricing Date.</p> <p>Separately from the Offering, the Selling Shareholder is offering Shares and GDRs to institutional and retail investors through the facilities of the AIX pursuant to its regulations and settlement procedures. The AIX Offering will be led by JSC Halyk Finance.</p> <p>Pursuant to the Resolution of the Government of the Republic of Kazakhstan No. 661 dated 19 October 2018, the Selling Shareholder is authorised to sell up to 64,839,152 Securities, representing in aggregate approximately 25% of the total number of existing shares (the “<b>Authorised Limit</b>”). The Selling Shareholder may, subject to the exercise of the upsize option in consultation with the Joint Global Coordinators specified below, increase the maximum</p>

<b>Section E—Offer</b>		
		number of the Shares offered in the Offering and the AIX Offering by up to additional 25,935,661 Securities (the “ <b>Upsize Option</b> ”). The final size of the Offering will be set out in the Pricing Statement.
<b>E.4</b>	<i>A description of any interest that is material to the issue/offer including conflicting interests.</i>	Not applicable.
<b>E.5</b>	<i>Name of the person or entity offering to sell the security.</i>	Joint Stock Company “Sovereign Wealth Fund “Samruk-Kazyna”
	<i>Lock-up agreements: the parties involved; and indication of the period of the lock up.</i>	Each of the Company and the Selling Shareholder has undertaken to each of the Managers that from the date of the underwriting agreement until 180 days from the date of the LSE Admission, neither it nor any of its subsidiaries or their affiliates nor any person acting on its behalf will, subject to certain exceptions, without the prior written consent of the Joint Global Coordinators (on behalf of the Managers), (i) issue, offer, pledge, sell, contract to sell, sell or grant any option, right, warrant or contract to purchase, exercise any option to sell, purchase any option or contract to sell, or lend or otherwise transfer or dispose of any Shares, any GDRs or other shares of the Company, or any securities convertible into or exercisable or exchangeable for Shares, GDRs or other shares of the Company, or file any registration statement under the Securities Act or any similar document with any other securities regulator, stock exchange, or listing authority with respect to any of the foregoing; or (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of any Shares, any GDRs or other shares of the Company, whether any such transaction described in sub-clause (i) or (ii) above is to be settled by delivery of Shares, GDRs or other securities, in cash or otherwise; or (iii) publicly announce such an intention to effect any such transaction.
<b>E.6</b>	<i>The amount and percentage of immediate dilution resulting from the offer.</i>	Not applicable; no new Shares will be issued pursuant to the Offering.
<b>E.7</b>	<i>Estimated expenses charged to the investor by the company or the offeror.</i>	Not applicable; the investor will not be charged any expenses by the Company, the Selling Shareholder or the Managers in connection with the Offering.



## RISK FACTORS

*An investment in the GDRs involves a high degree of risk. Potential investors should carefully consider the following information about these risks together with the information contained in this document before deciding to buy any Securities. If any of the following risks actually occur, this could have a material adverse effect on the Group's business, results of operations, financial condition and prospects. In that case, the value of the GDRs could decline and potential investors could lose all or part of their investment.*

*This section describes the risks and uncertainties that the Group's management believes are material, but these risks and uncertainties may not be the only ones that the Group faces. Additional risks and uncertainties, including those that the Group currently does not know about or deems immaterial, may also result in decreased revenues, assets and cash inflows, increased expenses, liabilities or cash outflows, or other events that could result in a decline in the value of the GDRs or could have a material adverse effect on the Group's business, prospects, financial condition and results of operations. The risks below have been classified into various categories, such as "Risks Relating to the Group's Business" and "Risks Relating to Kazakhstan and Emerging Markets Generally;" however, such categorisation is provided for convenience only, and any particular category should not be assumed to contain all the risks related to that category, and risks contained in one category may be relevant to any other category.*

### **Risks Relating to the Group's Business**

#### ***Volatility in the price of uranium could have a material adverse effect on the Group.***

The Group's profitability is directly related to the market prices of uranium. For the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, 70.0%, 68.0%, 61.7% and 77.8% of the Group's revenue, respectively was attributed to sales of uranium products. Uranium sale prices under the Group's contracts with customers are driven by uranium market prices. The spot prices for U<sub>3</sub>O<sub>8</sub> have dramatically decreased from more than US\$135 per pound in 2007 to less than US\$19 in 2016. As at 25 October 2018, the average Daily Trade Tech and UxC spot price indicator per pound of uranium was US\$27.77.

The Group expects the market price of uranium to continue to be volatile due to the impact of numerous factors beyond the Group's control, including but not limited to:

- demand for nuclear power and the rate of construction of nuclear power plants;
- the forward contracting of U<sub>3</sub>O<sub>8</sub> supplies by nuclear power plants;
- accidents in any part of the world affecting the nuclear industry in a specific region or in general, such as the accident at Fukushima Dai-ichi Nuclear Power Plant of 11 March 2011 in Japan (the "**Fukushima Accident**");
- terrorist attacks on uranium mining, transport or production or on nuclear power plants;
- political and economic conditions in uranium producing and consuming countries;
- reprocessing of used nuclear reactor fuel and the re-enrichment of depleted uranium tailings;
- sales of excess civilian and military inventories of uranium (including from the dismantling of nuclear weapons) by governments and industry participants;
- uranium production levels and costs of production;
- significant uranium production interruptions or delays in expansion plans;
- actions of investment and hedge funds in the uranium market, such as Yellow Cake plc (see "*Business—Customers*");
- political or technological developments related to the storage of nuclear waste;
- transactions by speculators and producers;
- transactions by sovereign holders; and
- the prices of alternative sources to nuclear power, including oil, natural gas, coal, hydroelectric, solar and wind.

The Group cannot predict the effect of these factors on the price of uranium.

In response to the persisting oversupply prevailing in the market, the Company implemented two production cuts: in January 2017 reducing the planned uranium production by more than 2,000 tonnes, or approximately 8%, and in December 2017 reducing the planned uranium production under the Group's subsoil use contracts for the period 2018–2020 by 20% which expected to result in the deferral of more than 15,000 tonnes of uranium production over the three-year period. However, the Group may be limited in its ability to make further production cuts where necessary due to the need to obtain consent of its numerous joint venture partners and the limitations imposed by the Group's subsoil use agreements. For example, the Group intended to reduce its planned production by 10% in January 2017; however, because certain of its joint venture partners did not agree to participate in such reductions, the resulting cut amounted to only 8%.

Future declines in uranium market prices could delay or deter a decision to commence production at a mine or could cause production to become unprofitable, as well as necessitate a decision to cut production volumes further for an extended period of time. Declines in uranium market prices could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Major accidents affecting the nuclear industry may result in a dramatic fall in uranium prices, which could have a material adverse effect on the Group.***

Due to their inherent materiality, major accidents in the nuclear industry, and most notably disasters at nuclear power plants, such as the Chernobyl Nuclear Power Plant accident of 1986 in the Soviet Union and the more recent Fukushima Accident, garner significant worldwide attention and spawn global public sentiment favouring more significant regulations for nuclear power generation. For example, following the Fukushima Accident, certain countries including Germany, Switzerland and Belgium, have announced their intention to phase-out nuclear power. For example, as at the date of this Prospectus, Germany has shut down eight of its 17 nuclear reactors, and was implementing measures to close the remaining reactors by 2022.

Any new major accident at a nuclear power plant, or a similar disaster related to the nuclear industry, anywhere in the world, could, at a minimum, lead to more countries adopting increasingly stringent safety regulations in the nuclear industry, strengthen the general public sentiment for phasing-out nuclear power and intensify the trend towards non-nuclear power. It may not however be ruled out that the reaction to any such major accident would be significantly more severe, resulting in a rapid global abandonment of nuclear power generation as a whole restrained principally by the actual local ability to migrate to a non-nuclear power source. Any such event may result, inter alia, in a significant reduction in demand for uranium and a resulting decline in uranium market price, all of which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Nuclear energy competes with a number of other sources of energy.***

Nuclear energy competes with a number of other sources of energy, including oil, natural gas, coal, hydroelectric, solar and wind. These energy sources are to some extent interchangeable with nuclear energy, particularly over the long term, and sustained lower prices of such energy sources may result in lower demand for nuclear energy, and consequently, in a reduction in demand for uranium and its market price. For example, according to the Electric Power Annual 2016 publication of the U.S. Energy Information Administration published in December 2017 (and subsequently revised), the average operating cost of producing one kWh of power by major U.S.-investor owned power plants depending on the energy source was as follows for the years ended 31 December 2014, 2015 and 2016:

Energy source	Year ended 31 December		
	2014	2015	2016
	(mills <sup>(1)</sup> per 1 kWh)		
Nuclear . . . . .	12.41	11.17	10.90
Fossil steam (coal) . . . . .	4.55	5.16	5.05
Hydroelectric <sup>(2)</sup> . . . . .	7.30	8.37	6.65
Gas turbine, internal combustion, photovoltaic, and wind plants (blended cost) . . . . .	2.63	2.34	2.49

Source: Electric Power Annual 2016 publication of the U.S. Energy Information Administration.

(1) One mill is equal to 1/1000 of a U.S. Dollar (equivalent to 1/10 of a U.S. cent).

(2) Includes both conventional hydroelectric and pumped storage.

The price dynamics set out above, among other factors, led to an upswing in the natural gas electricity production in the United States which, in turn, applied significant downwards pressure on wholesale electricity selling price as a whole, making certain existing power plants uneconomical. However, markets other than the United States are not presently characterised by such price dynamics.

In addition, new or alternative nuclear power technologies may create additional competitive pressure for the traditional uranium-based nuclear generation. Examples of such technologies include the reimagining of the molten salt reactor which is capable of generating power from spent nuclear fuel, or depleted uranium tails, used at a traditional power plant (which are accumulated in nuclear stockpiles in significant quantities as radioactive waste), as well as the increasing interest in alternative nuclear reactors which use fuel processed from thorium, a natural element that is available in greater abundance than uranium.

A major shift in the power generation industry towards non-nuclear sources of energy or non-uranium based sources of nuclear energy, whether due to lower cost of power generation associated with such sources or otherwise, could impact the demand for uranium, and consequently its market price, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Nuclear energy is subject to public opinion risks.***

Growth of the nuclear power industry will depend upon continued and increased acceptance of nuclear technology as a means of generating electricity. Because of unique political, technological and environmental factors that affect the nuclear industry, including reinvigorated public attention following the Fukushima Accident, the industry is subject to public opinion risks that could have a material adverse impact on the demand for nuclear power and increase the regulation of the nuclear power industry.

A major shift in the public opinion, whether due to an accident at a nuclear reactor anywhere in the world or otherwise, could impact the continuing acceptance of nuclear energy and the future prospects for nuclear power generation, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group faces competition from other suppliers.***

The international uranium industry is highly competitive. The number of potential end-customers for the Group's uranium products, being utility companies, is relatively scarce. The Group estimates that there are approximately 70 end-customers for its uranium products globally, of which 16 were its customers as at 30 June 2018.

Moreover, the Group believes that certain suppliers of uranium and uranium products may be driven by political, rather than economic, motivations in order to satisfy public policy requirements adopted in certain countries, such as China, and consequently are able to continue producing uneconomically at current price levels. The Company believes this to be one of the effects of certain countries adopting strategies of becoming self-sufficient in the nuclear cycle.

Furthermore, enrichment facilities are able to retain certain quantities of depleted uranium as a by-product of enrichment which can be used as an additional source of feed material, which creates additional synthetically created supply and contributes to market oversupply.

The Group believes that certain of its competitors, some of which are major international corporations, may have certain advantages over the Group, including access to cheaper sources of capital and logistical advantages in certain markets, such as North and South America.

Any of the above factors could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The uranium market is highly consolidated and the Group is currently dependent on a small number of customers that purchase a significant portion of the Group's uranium, and this customer concentration may increase.***

The nuclear energy industry is highly consolidated. The Group believes that there are approximately 70 end-users of uranium in the world. As a result, the Group is dependent on a relatively small number of customers that purchase a majority of its uranium production through long-term contracts. As at 30 June 2018, the Group had 11 customers in total under long-term contracts (i.e., with the term of 3 years or more), and the aggregate shipment of uranium under such contracts for the year ended 31 December 2017 represented approximately 52% of the Group's uranium production during the same year. The Group's top 5 customers accounted for approximately 84% collectively and at least 6% individually of the Group's total sales by volume for the year ended 31 December 2017. Moreover, due to the limited number of market participants, the uranium spot market is characterised by relatively low liquidity and is susceptible to significant changes in price in the event of transactions involving quantities of uranium which are significant relative to the overall size of a market. Furthermore, due to the market consolidation, the Group may be unable to sell its uranium products in the quantities, or within the timeframes or on other terms, as may be desired.

In addition, in May 2018, the Company entered into a long-term uranium supply agreement with Yellow Cake plc and in July 2018, delivered approximately 3,100 tonnes of U<sub>3</sub>O<sub>8</sub> pursuant to such agreement, which represents 25.6% of the Group's attributable production of uranium for the year ended 31 December 2017. Furthermore, this agreement contemplates the delivery by the Company of further uranium shipments in the quantity representing the aggregate price of up to US\$100 million annually, at market related prices, for at least another nine years after the date of this Prospectus, subject to and upon completion of subsequent follow-on offerings by Yellow Cake plc and certain other conditions.

Although the Group has not experienced a loss of a material customer to date, any loss of the Group's top customer, or the reduction in purchases by any of its top customers, or adverse changes in the relationship between Kazakhstan and China, which is the Group's largest market, or other countries in which the Group's top customers are located, could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Company may elect not to pay dividends in the future.***

To the extent that the Company declares and pays dividends on its Shares, owners of the GDRs on the relevant record date will be entitled to receive dividends payable in respect of Shares underlying the GDRs, subject to the terms of the Deposit Agreements. The Company declared dividends in the amount of KZT12,031 million, KZT65,849 million and KZT161,661 million during the years ended 31 December 2016 and 2017 and the period between 1 January 2018 and the date of this Prospectus, respectively. The Company did not declare or pay any interim dividends with respect to the six months ended 30 June 2018. In October 2018, the Company adopted a dividend policy to pay no less than (i) 50% of its free cash flow, as defined in the dividend policy, if its Net Debt to Adjusted EBITDA ratio is more than 1, but less than 1.5 and (ii) 75% of its free cash flow if its Net Debt to Adjusted EBITDA ratio is less than or equal to 1. However, any future decision to declare and pay dividends will be subject to (i) restrictions set out in applicable law, such as the prohibition on payment of dividends for companies with negative equity capital or which are insolvent or companies whose equity capital would become negative or which would become insolvent as a result of paying dividends and (ii) covenants set out in agreements to which the Company is a party. Furthermore, in rendering its proposal to the Company's general shareholders' meeting, the Company's Board of Directors may take into account any factors it may deem relevant, such as the Company's net profit, solvency and financial condition and cash requirements, among others. Accordingly, the Company can give no assurance that it will pay any dividends in the future. As a result, holders of Securities may not receive any return on their investment in the Securities unless they sell their Securities for a price greater than that which they paid for them.

***The Company may continue to hold significant U<sub>3</sub>O<sub>8</sub> inventories throughout the U<sub>3</sub>O<sub>8</sub> pricing cycle.***

The Group intends to pursue a number of uranium related activities, as described in this Prospectus. However, its U<sub>3</sub>O<sub>8</sub> inventories, on a consolidated basis, have increased during each period under review, representing 3,080 tonnes, 5,650 tonnes, 9,085 tonnes, 6,849 tonnes and 11,635 tonnes of UME as at 31 December 2015, 2016 and 2017 and 30 June 2017 and 2018, respectively, the majority of which were owned by the Company. In line with its market-oriented strategy, the Company expects to continue to hold significant uranium inventories throughout the U<sub>3</sub>O<sub>8</sub> pricing cycle. Because the Company purchases U<sub>3</sub>O<sub>8</sub> from its JVs and Associates, generally at the prevailing spot price (giving effect to any discount arrangements), any subsequent reduction of spot price for U<sub>3</sub>O<sub>8</sub> during the year may require the Company to record a corresponding impairment. Any such material impairment could potentially materially adversely affect the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group could lose its national operator or national company status.***

As a national operator of the Republic of Kazakhstan for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals, and as a national company of the Republic of Kazakhstan, the Company, and consequently the Group, benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government pursuant to the Subsoil Code rather than through a tender process which would otherwise be required. If the Company were to lose its national operator or national company status as a result of a change in the Government's policy, due to the Government's loss of indirect control over the Company or for any other reason, this could result in the loss of the Group's priority access to new resources, such as uranium deposits, and otherwise have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group may be unsuccessful in maintaining existing Ore Reserves or discovering new Ore Reserves.***

The Group's Mineral Resources and Ore Reserves are the foundation of its operations and fundamental to the Group's success. Many of the deposits being operated by the Group have been in production for many years. The Group's

revenue and profit are related to its mining operations and its results and financial condition are directly related to the Group's access to sufficient Ore Reserves. Although the Group believes its reported Ore Reserves are sufficient to meet anticipated production levels for the near term, it also has an exploration programme for the period through 2028. However, the Group cannot give any assurances that its exploration efforts will result in any new economically viable mining operations or yield new Ore Reserves to replace or expand current Ore Reserves. If the Group is unable to discover new Ore Reserves, enhance existing Ore Reserves or develop new operations in sufficient quantities to meet anticipated production levels, the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities may be materially adversely affected.

***The Group's uranium extraction and transportation activities are subject to operational risks, hazards and unexpected disruptions.***

The Group's uranium extraction and transportation activities are subject to a number of operational risks and hazards, some of which are beyond the Group's control, and could delay the production and delivery of Group's uranium and uranium products, increase the Group's cost of extraction or result in accidents at the Group's extraction locations. For example, there was one fatal accident at the Group's production site in 2018 relating to the breach of safety instructions during tantalum electron beam melting operation.

These risks and hazards include unexpected maintenance or technical problems, periodic interruptions due to natural disasters such as earthquakes, industrial accidents, power, water, fuel or sulfuric acid (which is a critical component of the Group's ISR method) supply interruptions or increase in price of such supplies, critical equipment failure, malfunction and breakdowns of information management systems, fires, and unusual or unexpected variations in mineralisation, geological or mining conditions. Moreover, Kazakhstan's climate is characterised by harsh winters and hot summers. A large number of the Group's facilities and large segments of its networks are located in areas that experience severe weather conditions, particularly in winter, and extreme variability in winter and summer weather, which can accelerate wear and tear on equipment. Extremely harsh weather conditions and the remoteness of certain of the Group's facilities may make it difficult to gain access to conduct repair or maintenance quickly. Furthermore, the remoteness of such Group's facilities may result in increased costs and limited supply of materials and services necessary for the operation of such facilities. There can be no assurance that such events or other significant weather events will not negatively affect the Group's operations in the future.

In addition, extreme weather conditions affect the Group's transportation activities. For example, in 2016, a seaborne vessel transporting the Group's uranium for delivery was affected by extreme weather conditions, which resulted in the collapse and crushing of the containers holding  $U_3O_8$ , which required the Group to incur cleaning, repackaging and additional shipment costs of approximately US\$13 million. These risks and hazards may result in personal injury, damage to or destruction of properties, production facilities or means of transport, environmental damage, business interruption, possible legal liability, damage to Group's business reputation and corporate image and, in severe cases, fatalities.

Any such accidents could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Extraction of uranium from mineral deposits may not be commercially viable.***

Exploration and development of uranium deposits involve substantial risk that no commercial production will be obtained or that the production will be insufficient to recover exploration, development and production costs. Whether a uranium deposit will be commercially viable depends on a number of factors, including the particular attributes of the deposit, such as its size and grade; costs and efficiency of the recovery methods that can be employed; proximity to and condition of infrastructure; financing costs; and governmental regulations, including regulations relating to prices, taxes, infrastructure, land use, import and export of commodities and environmental protection. The effect of these factors, either alone or in combination, cannot be accurately predicted and their impact may result in the Group being unable to extract minerals economically from any identified mineral resource. The Group can provide no assurance that its properties will become or continue to be commercially viable, as the case may be. In addition, uranium mines near the end of their life cycle tend to require more substantial operating costs as compared to their peak production periods, and the Group's ability to alter its scope of extraction at such mine may be restricted by the terms of the applicable subsoil use agreements. The failure to identify commercially viable uranium deposits that may be economically extracted could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.



***The availability and cost of sulfuric acid materially affects the continuity and commercial viability of the Group's operations.***

The Group uses substantial amounts of sulfuric acid to extract uranium using the ISR method. For the year ended 31 December 2017 and the six months ended 30 June 2018, the production activities of the Group used 1,851 thousand and 731 thousand tonnes of sulfuric acid, respectively, of which 36% and 44%, respectively, was sourced collectively from SKZ-U LLP, in which the Company holds a 49% interest, and from SKZ Kazatomprom LLP, a subsidiary of the Company's sole shareholder Samruk-Kazyna and which is 9.9% owned by the Company. Even if available, sulfuric acid supplies may also be impacted by logistical constraints, including a shortage of railcars to ship the acid to and within Kazakhstan. Shortages of sulfuric acid or logistical constraints that delay the distribution of acid may result in lower production from the Group's deposits than anticipated. No assurance can be given that the Group will be able to secure necessary supplies of sulfuric acid in a timely manner in order to meet current and future production schedules. Any delay in such production schedules could have a material adverse effect on the Group's ability to comply with the terms of its supply contracts and, accordingly, its reputation, business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

In addition, the average price per tonne of sulfuric acid paid by the Group has increased over the last three years from KZT17,260 in 2015 to KZT21,529 in 2017. For the year ended 31 December 2017, sulfuric acid expenses represented 84% of the total expenses for materials used in the Group's production of uranium. The cost of sulfuric acid may continue to increase and may be materially higher than currently anticipated by the Group. Any significant increase in the price of sulfuric acid could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The reported quantities or classifications of the Group's uranium Ore Reserves may be lower than estimated because of inherent uncertainties in the estimation of Ore Reserves.***

There are numerous uncertainties inherent in estimating the quantity of Ore Reserves and in projecting future rates of production, including many factors beyond the Group's control. Estimating the quantity of Ore Reserves is a subjective process, and estimates made by different experts often vary significantly. In addition, results of drilling, testing and production subsequent to the date of an estimate may result in revisions to that estimate. Accordingly, the Group's estimates of uranium Ore Reserves may be different from the quantity of uranium that is ultimately recovered and, consequently, the revenue therefrom could be less than that currently expected. The validity of such estimates is highly dependent upon the accuracy of the assumptions on which they are based, the quality of the information available and the ability to verify such information against industry standards.

All reserves data are estimates only and should not be construed as representing exact quantities. These estimates are based on production data, prices, costs, ownership, geological and engineering data, and other information assembled by the Group's subsidiaries, JVs and Associates, and they assume, among other things, that the future development of the uranium deposits of the Group and its JVs and Associates, and the future marketability of such uranium will be similar to past development and marketability. These assumptions may prove to be incorrect. For example, fluctuations in the market price of uranium, reduced recovery rates, increased production costs due to inflation or other factors, or failure to obtain licence or subsoil use contract extensions may render Proved and Probable Ore Reserves containing relatively lower grades of uranium mineralisation uneconomical to exploit and may ultimately result in a restatement of Ore Reserves.

If the assumptions upon which the Group's estimates of Ore Reserves have been based are incorrect, the Group and its JVs and Associates may be unable to produce uranium at or above historical levels, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***A material portion of the uranium reserves the Group expects to develop is owned by the Group's JVs and Associates and subject to the risk of joint product development.***

The Group is a party to 10 uranium extraction business partnerships with various partners. These business partnerships are a significant part of its current and prospective revenue sources (see "Business—Joint Venture Projects"). A significant portion of the reserves and production from which the Group derives benefits belongs to the Group's JVs and Associates; for example, 60.4% and 48.4% of the Group's attributable uranium production was derived from its JVs and Associates for the year ended 31 December 2017 and the six months ended 30 June 2018, respectively. As at 30 June 2018, the Group's JVs and Associates had the right to produce uranium from the Ore Reserves containing approximately 293.6 thousand tonnes of UME as compared to 238.0 thousand tonnes of UME for the Group's subsidiaries, each on a 100% basis. During the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, the Group's JVs and Associates produced a total of 17,787, 18,611, 18,214 and 7,130 tonnes of

UME, respectively, as compared to 5,820 tonnes, 5,975 tonnes, 5,107 tonnes and 3,775 tonnes of UME, respectively for the Group's subsidiaries. The Group does not own the assets from which its JVs and Associates produce uranium.

The Group is not able to control the operations of its JVs or Associates, nor can it unilaterally make major decisions with respect to the assets of such entities. The Group's partners may have economic or business interests or goals that are inconsistent with or opposed to those of the Group. Such partners may also exercise veto rights so as to block actions that the Group believes to be in its or the joint venture's best interests. In addition, due to the joint venture arrangements, the Group's partners may have improved insight into the Group's future plans, which may enable them to improve their production forecasts and potentially compete with the Group more efficiently.

While the Company considers that its relationship with each of its joint venture partners is good, any material deterioration of any such relationship could result in prolonged disruptions of the relevant joint venture's operations or termination of the joint venture relationship, as well as have a negative impact on the Group corporate image.

Any of these factors could adversely affect the Group's JVs or Associates, which, in turn, could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group could face difficulty using railroads connecting Kazakhstan with neighbouring countries or other transportation infrastructure.***

The Group enjoys a logistical advantage as a country sharing a common border with China, which allows the Group to achieve cost-efficient, prompt and reliable deliveries to Chinese customers. The Group believes that its Chinese customers prefer rail deliveries to other means, such as sea shipping, due to the reliability of supply offered by railroad transportation. During the year ended 31 December 2017, 60% of the Group's uranium sales (by value) were to customers in China, all of whom received delivery by rail. In addition, the Group ships rare and rare-metal products to China by rail. However, in some instances the Group faces limitations on its ability to transport its products in China by rail, most often for administrative reasons, such as protracted customs clearances, which in certain cases require resolution with various governmental authorities, which creates additional delays. In addition, the Group faces delays due to protracted negotiations with local carriers and failures of third party service providers to perform their obligations, such as provision of railway cars or containers for transportation, in a due and timely manner. Although the Group does not believe that these delays have had a material effect on its operations or customer relationships as at the date of this Prospectus, it expects that the majority of its sales will continue to be to customers in China, and it is possible that the difficulties described above will continue in the future and will become more significant, or the Group could face other impediments relating to delivery of its products to Chinese customers.

The Group also depends on railroad transportation and port infrastructure in Russia. For the year ended 31 December 2017, approximately 18.5% of the Group's deliveries are sent to Russia by rail for onward transportation by sea from the port in Saint Petersburg in Russia. In addition, railroad tariffs are subject to fluctuations; although these fluctuations do not always result in increases in tariffs, any such increases may be material. For example, railroad tariffs and related charges for the routes used by the Group increased, on average, by approximately 23% during the year ended 31 December 2017, as compared to the previous year; the tariff and related charges for the route between Altyntau, Kazakhstan, and Tomsk, Russia, experienced the most significant change, increasing by approximately 71% during this period.

All of the Group's railroad uranium transportation in Russia is handled by JSC Atomspetstrans, a subsidiary of RosAtom focusing on logistical solutions for nuclear products. As major Russian state owned corporations, JSC Atomspetstrans and Russian Railways are susceptible to the risk of sanctions imposed by the United States and the EU. See also "*—Certain of the Group's customers and business associates may be subject to U.S. and EU sanctions.*" If JSC Atomspetstrans or Russian Railways were to be affected by the United States or the EU sanctions, this could affect the Group's ability to ship its products by sea from the port in Saint Petersburg. For example, the Group could be forced to discontinue its cooperation with JSC Atomspetstrans, or the quality and reliability of JSC Atomspetstrans' logistical services could become deteriorated either as a direct result of such sanctions or due to the effect of such sanctions on Russian Railways, which owns the railroad infrastructure in Russia. Although the Group expects to be able to shift to ports in other countries if any such developments were to occur, any limitation on the Group's ability to ship its products using the Russian railroad and port infrastructure, whether as a result of sanctions or otherwise, could result in additional logistical difficulties and an increase in the Group's shipment costs.

Any of these factors could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group's results of operations are subject to economic, political and legal developments in China, India and South-East Asia.***

For the six months ended 30 June 2018, 46% of the Group's sales (by value) have been made to customers based in China, India and South Korea, and the Group expects that a significant portion of the Group's sales will continue to be attributable to customers based in this region. Accordingly, the economic, political and social conditions, as well as government policies, of China, India and other South-East Asian countries may affect the Group's business. The economies of countries in this region differ from the economies of most developed countries in many respects, including among others: (i) structure; (ii) degree of government involvement; (iii) level of development; (iv) growth rate; (v) control of foreign exchange and investment; and (vi) allocation of resources. The Chinese economy also has been transitioning from a planned economy to a more market-oriented economy. For the past three decades, the Chinese government has implemented economic reform measures emphasizing the utilisation of market forces in the development of the Chinese economy.

The Group believes that the Chinese government has not, as at the date of this Prospectus, imposed restrictions on the import of Kazakhstan uranium or adopted any preferential policies that favour Chinese uranium producers over Kazakhstan producers. However, there can be no assurance that the Chinese government will not directly or indirectly implement any restrictions or adopt any preferential policies in the future. The Chinese government may do so for a number of reasons, including but not limited to, a policy to support domestic Chinese uranium producers.

Changes in Chinese or Indian political, economic and social conditions, laws, regulations and policies, and that of other South-East Asian countries, or the Group's inability to sell its products into China, India or other South-East Asian countries on commercially viable terms or at all, could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group may face liability in connection with the operations of its former subsidiary.***

On 3 July 2018, the Group transferred its entire participation interest in MAEK Kazatomprom LLP ("MAEK") to Samruk-Kazyna, pursuant to a participation interest sale and purchase agreement.

MAEK is primarily engaged in utilities-related operations such as the provision of water and heat for the city of Aktau, and the generation and distribution of power in the Mangistau and Atyrau regions of Kazakhstan. In addition, MAEK owns a fast-neutron BN-350 RF nuclear reactor in the city of Aktau which is in the process of being decommissioned ("BN-350"). BN-350 was operated by the state between 1973 and 1999, initially by the Soviet Union and subsequently, by the Republic of Kazakhstan. In 2003, Republican State Enterprise MAEK ("RSE MAEK"), a state-owned company, was declared bankrupt, and the Company acquired the assets of RSE MAEK, including BN-350, through a bankruptcy auction process. The terms of the agreement pursuant to which the Company acquired BN-350 and other assets of RSE MAEK in the bankruptcy process did not impose any obligations on the Company to finance any aspect of the BN-350 decommissioning, nor did the Company undertake any obligation in respect of any damage or loss caused by BN-350 to the environment or public health. Furthermore, the Company believes that no such obligations were imposed on it as a matter of Kazakhstan law as a result of this acquisition.

In 1999, while BN-350 was owned by RSE MAEK, the Kazakhstan Government issued a resolution on the decommissioning of BN-350. This resolution outlined a multi-stage process involving (i) preservation of BN-350 in preparation for its long-term safe storage, (ii) long-term safe storage of BN-350 for a period of 50 years, (iii) nuclear dismantling, and (iv) permanent disposal and site release. The decommissioning of BN-350 is currently at the preservation stage. In September 2017, MAEK agreed a programme with the Committee on Nuclear and Energy Supervision and Control of the Kazakhstan Ministry of Energy for the multi-stage decommissioning of BN-350 that includes an action plan for the preservation stage of decommissioning and sets out a list of specific measures and deadlines. According to the action plan, the preliminary cost estimate of the preservation stage will be prepared after completion of its first step, the deadline for which is December 2019 and the sources of such funding will be determined by the end of May 2020. The final costs of the preservation stage are expected to be determined by MAEK and the Samruk-Kazyna following the preparation of project design documentation; however, no relevant deadline is stipulated in the action plan. It is expected that following the transfer of participation interest in MAEK to Samruk-Kazyna, this plan will be revised to replace the Company with Samruk-Kazyna.

The only works currently performed on-site are scientific studies, general safekeeping and day-to-day maintenance and repairs of BN-350, which are part of the preservation stage. The Government-approved tariff for utilities provided by MAEK to the general public, such as electricity, heat and water supply, includes an additional portion specifically designated to fund such works, the annual cost of which is approximately KZT1 billion. The Kazakhstan Government intends to exclude the cost of such works from MAEK's tariff in the future. Accordingly, if MAEK's tariff were to be

revised to exclude the additional portion designated for the BN-350-related costs and the Government does not offer any alternative financing measures, such as direct subsidies, MAEK could be required to finance such works out of its own funds or other financing sources.

According to SRK, the complete decommissioning of BN-350 may involve estimated costs between US\$270 million and US\$370 million, on an undiscounted basis and exclusive of any contingency. Due to the limited history of comparable decommissioning activities in other countries, the actual costs could be significantly greater.

The Company intends to enter into an advisory and consulting services agreement with Samruk-Kazyna in relation to MAEK by the end of December 2018. It is expected that according to such agreement, the Company will provide consulting services with respect to all matters brought to Samruk-Kazyna's consideration in its capacity as a sole participant of MAEK, including the approval of the implementation plan for MAEK's management accounting system and formation of MAEK's supervisory board and management board. Such services agreement will be effective until MAEK is transferred by Samruk-Kazyna to the state of Kazakhstan, which the Company expects to occur by the end of 2019. Furthermore, Samruk-Kazyna as a sole participant of MAEK expects to nominate one member of the Company's management as a non-executive director of MAEK. The Company also intends to enter into a similar agreement with Samruk-Kazyna with respect to Kazakhstan Nuclear Power Plants JSC which it sold to Samruk-Kazyna in 2018, and such agreement is expected to include the same scope of the Company's services and is expected to be effective until a feasibility study of a nuclear power plant construction is completed and approved by competent state authorities of the Republic of Kazakhstan.

The Group believes that under Kazakhstan law, it was not under any obligation to fund or otherwise bear any liability for any of such costs. In addition, pursuant to the terms of the MAEK sale and purchase agreement, all financial, environmental and other liabilities directly or indirectly related to BN-350 are to be transferred to Samruk-Kazyna upon transfer of the Group's participation interest in MAEK to Samruk-Kazyna, except for such liabilities that were caused by the Group's gross negligence or intentional guilty actions. If the Group is found to be grossly negligent or intentionally guilty for the liabilities related to the decommissioning of BN-350, the Group may be forced to fund the costs related to the operation of MAEK, including the costs related to the decommissioning of BN-350 or environmental or other liabilities for which MAEK may be responsible, the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities would be materially adversely affected.

***Certain of the Group's EHSS practices do not comply with Good International Industry Practice standards.***

In June 2018, as part of the SRK Report engagement, SRK completed a review of the Environmental, Health and Safety and Social ("EHSS") management and performance across the Group's mining and non-mining assets. Although SRK's EHSS review concluded that Group's EHSS management is compliant with Kazakhstan legislation and largely conforms with good international industry practice ("GIIP", which includes the IFC Performance Standards and World Bank Group Environment, Social, Health and Safety Guidance, in addition to industry specific guidance relevant to particular assets), SRK identified a number of areas in which the Group is not fully compliant with GIIP. Such areas include the need for better understanding of environmental and social context, implementation of a proactive approach to stakeholder engagement and grievance management, improving control over low level radioactive waste management, implementing a stricter approach to ISR mine closure obligations (which were found to be below realistic figures on a number of occasions), and hiring additional EHSS personnel by the Company.

In September 2018, the Company's Board of Directors approved a set of Environmental and Social Action Plans relating to the Group's mining and non-mining assets prepared by the Company in conjunction with SRK (the "ESAP") designed to address the imperfections in the Group's EHSS practices. Although the Company expects to implement the ESAP, it may be unsuccessful in doing so in a timely and cost-efficient manner or at all. Moreover, the Group's failure to fully comply with GIIP may result in a higher likelihood of adverse developments in relation to EHSS matters involving the Group's assets. Any such adverse developments could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group is subject to evolving national and international environmental, operational health, safety and other regulations.***

All phases of the nuclear industry, including the production and processing of uranium performed by the Group and the use of the Group's products by its customers, are subject to extensive international and national environmental, health and safety regulation, as well as labour and community-related regulations. The standards and practices of international organisations such as the United Nations International Atomic Energy Agency affect the operations of the Group, and continue to evolve, reflecting public concerns. The legal framework in Kazakhstan for environmental protection and operational health and safety is becoming more comprehensive and complex. The Group expects its expenditures for compliance to be affected by standards established by such national and international organisations. Moreover, the Group could be adversely affected by future actions and fines imposed on the Group by governmental authorities.



For example, Kazakhstan has adopted environmental regulations requiring industrial companies to undertake programmes to reduce, control or eliminate various types of pollution and to protect natural resources. The Group is required to actively monitor air emission levels, ambient air quality, the quality of nearby surface water, levels of contaminants in soil and the discharge of solid waste. The Group must also submit an annual report on pollution levels to the environmental authorities in Kazakhstan. In addition, the environmental authorities conduct additional testing to validate the Group's results. If the Group were to exceed certain emissions levels in Kazakhstan, it could become subject to additional payment obligations. Environmental laws and regulations in Kazakhstan are continually changing and have recently become more restrictive. Non-compliance with those requirements could result in administrative fines or other penalties being levied. The Group is required to maintain mandatory environmental insurance. Also, violation of ecological requirements on environment protection will impose administrative penalty in amount equal to the damages caused to the environment. If changes in environmental compliance obligations were to result in the Group having to use different assumptions to estimate liabilities, or if unanticipated problems were to arise in the Group's operations as a result of changes in environmental compliance obligations, Group's expenses and provisions would need to increase to reflect these changes.

Compliance with environmental requirements makes it necessary for the Group, at costs which may be substantial, to continue undertaking measures in connection with storage, handling, transport, treatment or disposal of hazardous materials and wastes and the remediation of contamination including the contamination left from past operations during the Soviet era. The Group uses the ISR method of extracting uranium, which involves pumping a mining solution containing sulfuric acid into the ground to recover a uranium solution. The ISR method is associated with additional environmental risks, such as contamination of soil or groundwater due to the impact of uranium or other contaminants contained in the solution used in the ISR method entering an aquifer and similar occurrences, which would require the Group to incur significant decontamination expenses if this were to occur. The ISR method may become the subject of additional environmental regulations on its use, which could reduce the cost advantage of this method of uranium production.

In addition, the Group is involved in the manufacturing of products containing beryllium, which is a toxic element that requires significant safety precautions and controls. If exposed to respirable beryllium fumes, dusts, or powder, some individuals may demonstrate an allergic reaction to beryllium and may later develop acute pneumonitis, tracheobronchitis or a chronic lung disease known as chronic beryllium disease, which can lead to scarring and damage of lung tissue, causing clinical symptoms that include shortness of breath, wheezing, and coughing. Severe cases of chronic beryllium disease can cause disability or death. The Group is also involved in the manufacturing of tantalum products. Tantalum is a moderately toxic metal, and working with it requires respiratory, skin protection, and eye protection means, as well as specific ventilation conditions.

Moreover, the Group relies on third party service providers for the disposal of its hazardous waste; however, the Group is limited in its ability to verify such providers' compliance with applicable environmental regulations any breach of which could potentially result in liability for the Group or negative publicity which could affect public perception of the Group both domestically and internationally. Any of these factors could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Furthermore, the nature of the Group's business involves the ownership and use of complex industrial infrastructure objects, such as ISR mines, and uranium and rare metals processing facilities, such as the Ulba Facility. All of such objects are subject to increased environmental risks, and many of them, such as the Ulba Facility some of whose production sites have been in operation since 1949, are exposed to legacy liabilities risk. For example, if the Group were required to dismantle the Ulba Facility and remediate the site due to an accident, a change in applicable law or the Group's practices, this would involve very significant costs which are unlikely to be covered by the Group's insurance.

Although the Group is obliged to comply with all applicable environmental laws and regulations, it cannot, given the changing nature of environmental regulations, guarantee that it will be in compliance at all times. Given the significant scope of the Group's operations, it may be difficult for it to manage, coordinate and implement its health and safety measures in a timely and efficient manner. Moreover, the efficient management of environment, health and safety matters may require the Group to maintain specialist staff at its production sites, some of which are situated at remote locations. Any failure to comply with these environmental requirements could subject the Group to, among other things, civil liabilities and penalty fees. Additionally, no assurance can be made that environmental liabilities will not increase. Any increase in environmental liabilities could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.



***Successful implementation of the Group's strategy depends on the Group's senior management's experience and expertise, as well as Group's ability to recruit and retain experienced and qualified personnel.***

The Group's success depends to a significant degree upon the efforts and abilities of certain key persons, including the Group's senior managers. In addition, the Group benefits from the extensive contacts and well-established relationships of the Group's executives. See "*Directors and Management.*" No assurance can be given that the current members of Group's management team will continue to make their services available to the Group on a long-term basis. The Group does not maintain any "key person" or similar insurance. In addition, the Group's success will depend, in part, on the Group's ability to continue to retain, motivate and attract qualified and experienced management personnel. Because the uranium industry is relatively compact, competition for qualified senior personnel is intense due to the disproportionately low number of qualified and/or experienced individuals compared to the level of demand. Moreover, the Group's need for qualified staff will increase as the Group continues to grow. However, there can be no assurance that the Group will be able successfully to recruit and retain necessary qualified personnel. In addition, all of the Group's mines are located in relatively remote locations, and the Group could face difficulties attracting highly qualified specialists willing to travel to and work at such locations. The loss or diminution in the services of Group's senior managers or an inability to recruit, train and/or retain necessary personnel could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Company entered into a uranium supply contract with an Iranian counterparty pursuant to the Iran nuclear deal prior to the United States' withdrawal from such deal.***

In 2016, the Company and an Iranian counterparty entered into a U<sub>3</sub>O<sub>8</sub> supply agreement (the "**Iran Agreement**") consistent with procurement process established by the Joint Comprehensive Plan of Action (the "**JCPOA**") as endorsed by United Nations Security Council Resolution ("**UNSCR**") 2231. The JCPOA outlines the Iran nuclear deal which, among other things, provides for the elimination of Iran's medium-enriched uranium stockpile and the reduction of its low-enriched uranium by 98%. There are a number of conditions precedent that must be fulfilled before the Iran Agreement can come into force, including, in particular, approval of the contract in accordance with the procurement channel process set out in the JCPOA. As at the date of this Prospectus, the Iran Agreement has not been approved by the Joint Commission established by the JCPOA, the Joint Commission's Procurement Working Group, or by the UN Security Council.

Despite being an original signatory to the JCPOA in 2015, the United States announced in May 2018 its withdrawal from the agreement and, according to press reports, notified the permanent UN Security Council members and Germany of its intention to no longer attend meetings of the Joint Commission or the Procurement Working Group. A June 2018 report by the Security Council Facilitator for the implementation of UNSCR 2231 indicated that "[a]fter the withdrawal of the United States from the Joint Comprehensive Plan of Action, including the Procurement Working Group, the procurement channel has continued to function and the Joint Commission has continued to review proposals." The Iran Agreement may be potentially approved in accordance with the JCPOA without the involvement of the United States.

Notwithstanding the above, if the United States does not participate in the Procurement Working Group or the Joint Commission and the Iran Agreement is approved in accordance with the JCPOA and UNSCR 2231, the United States could still take unilateral action outside of the United Nations that could impede or otherwise affect the Iran Agreement or the Company. Such actions could range from negative public comment on the transaction in question to the imposition of economic sanctions pursuant to domestic U.S. authorities. Effective 7 August 2018, the United States began re-imposing certain nuclear-related sanctions on Iran that had been lifted as part of the United States' implementation of the JCPOA. More such sanctions are due to be re-imposed on 5 November 2018. Even if the Iran Agreement is approved in accordance with the JCPOA and UNSCR 2231, the Company's management does not intend to effect sales under the Iran Agreement without indication from the United States that it is supportive of the Iran Agreement. Any public criticism of the Company or Kazakhstan officials by United States officials in connection with the Iran Agreement could negatively affect public perception of the Company. Moreover, any economic sanctions imposed by the United States on the Company in relation to the Iran Agreement or otherwise could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and/or the price of the Securities.

***The Group may be unable to obtain, on commercially acceptable terms or at all, the necessary financing for its operations, strategy implementation, expansion of its business and local infrastructure.***

The on-going operation of extraction sites and processing facilities require a substantial amount of capital in connection with their production activity. The Group may also incur additional capital expenditures in connection with expansion of its uranium production and other operations in the future. Moreover, it is involved in certain capital-

intensive projects, such as the construction of a fuel assembly production jointly with the China General Nuclear Power Group (see “*Business—Uranium Operations—Fabrication of Final Products—Description of Final Products.*”). In addition, expansion and development may require the Group to incur costs for the financing and construction of additional infrastructure, including roads, power lines and power plants. Furthermore, the Group may pursue selective acquisitions (see “*Business—Strategy—Selective value-accretive expansion in the new areas of the nuclear value chain*”), which may require a substantial amount of capital, and the Company expects that any such acquisitions would be financed from external sources.

Even though the Group historically has been able to successfully raise the necessary financing and had, as of the date of this Prospectus, significant funds available for drawdown under its existing loan arrangements, there can be no assurance that the Group will be able to obtain necessary financing in a timely manner on commercially acceptable terms, if at all, in the long-term perspective, which could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group is required to comply with certain financial and other restrictive covenants.***

As at 30 June 2018, the Group’s total short- and long-term borrowings amounted to KZT90,578 million. The Group’s credit facilities contain customary requirements, including restrictions and other limitations on the ability of the Group to incur debt due to financial covenants requiring the maintenance, at predetermined levels, of debt to equity and debt to EBITDA ratios. These and other covenants and obligations reduce Group’s flexibility to conduct its operations and create a risk of default on its debt if it cannot satisfy them. If the Group breaches certain of its covenants, its lenders could potentially accelerate repayment of the debt, and, if the debt is secured, could take possession of the property securing the loan. Moreover, such breach may result in additional restrictions on the Group’s use of funds to pay dividends or make payments related to Group’s operations. In addition, any breach may result in cross-defaults under other indebtedness and limit the Group’s ability to obtain future financing. All of the foregoing could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group is subject to interest rate risk.***

As at 30 June 2018, 92% of the Group’s loans and borrowings bore interest at variable rates exposing the Group to interest rate risk. This variable rate was primarily attributable to the Group’s borrowings denominated in U.S. Dollars. If the Group is unable to adequately manage its debt structure in response to changes in the market affecting the variable rates, for example by entering into interest swap arrangements, its interest expense could increase, which would negatively affect the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group could face liquidity constraints or fail to obtain the necessary funding.***

Liquidity, or ready access to funds, is essential to the Group’s business. If the Group were to face a lack of liquidity, it would not have funds available to maintain or intensify its production operations and marketing activities, which could occur due to an increase in investment and operational expenses, decrease in revenue, insolvency or default of counterparties, including lending banks, or additional costs due to various guarantees issued by the Group’s guarantees. While the Group constantly monitors its liquidity position and adjusts its internal liquidity targets in response to changes in market conditions, these targets may not be met due to circumstances beyond the Group’s control, such as general market disruptions, sharp decreases in prices for the Group’s products or sharp increases in the prices for materials and supplies, among others. In addition, the Group has a practice of issuing guarantees to secure liabilities of its subsidiaries and related parties, which exposes the Group to credit risk of such subsidiaries and related parties. As of 30 June 2018, the Group had outstanding guarantees in the amount of approximately US\$40 million. Any default under obligations secured by such guarantees would increase the Group’s debt liability and could in turn affect its liquidity position.

Moreover, the Group’s borrowing costs and access to the debt capital markets, and thus availability of liquidity, depend significantly on its public credit ratings. These ratings are assigned by rating agencies, which may reduce or withdraw their ratings or place Group on “credit watch,” which could have negative implications. A deterioration of the Group’s credit rating could increase its borrowing costs and limit its access to capital markets, which, in turn, could affect its liquidity and revenue. The Group’s counterparties, including customers, suppliers and financial institutions, are also sensitive to the risk of a ratings downgrade and may be less likely to engage in transactions with Group, or may only engage at a substantially higher cost or on increased credit enhancement terms (for example, letters of credit, additional guarantees or other credit support) which carry increased costs, if Group’s rating were to be downgraded to below investment grade.

Any of these developments could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group's financial reporting processes are not fully automated.***

The Group does not have a fully integrated automated accounting system for the preparation of IFRS financial data, as well as for consolidation. The preparation of the Group's IFRS consolidated financial statements is partially a manual process that involves the consolidation of the Group's subsidiaries into consolidated IFRS schedules through accounting adjustments. Although the Group believes that its current systems are adequate to permit the preparation of IFRS financial reports on a timely and accurate basis, this process is complex and time-consuming, and requires significant attention from senior accounting personnel. Lack of fully developed financial reporting processes may adversely affect Group's reported business data, results of operations and financial condition. Notwithstanding the above, the Group believes that its financial systems are sufficient to ensure compliance with the requirements of the Disclosure and Transparency Rules as a listed entity with respect to the preparation of IFRS financial statements.

***The Group's development of new projects might be unsuccessful and no assurance can be given that such projects will be profitable.***

The Group continues to expand its existing operations, engage in new operations and develop new partnerships in order to develop a more competitive international presence in certain front-end phases of the nuclear fuel cycle. As a result, the Group is subject to all of the risks associated with establishing new mining operations and business enterprises, including:

- the timing and cost, which can be considerable, of constructing and operating mining and processing facilities;
- the availability and costs of skilled labour and equipment;
- the availability of adequate partners;
- the timing of receipt or availability of required consents, permits, licenses and certifications;
- the adequacy of the Group's current personnel, systems, procedures and controls in supporting the development of its new operations; and
- potential opposition from local groups or local inhabitants which may delay or prohibit development activities.

Each of these factors involves uncertainties and is subject to material changes. As a result, it is possible that the actual capital and operating costs of, and economic returns from, any proposed mining activity or business enterprise may differ from those estimated. Such differences could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities. There can also be no assurance that the Group will be able to complete timely or economically the development of any of its new operations.

***The Government, which indirectly controls the Group, may cause the Group or an entity in which the Group has equity interest to engage in business practices that may not be in the interests of the Company's other shareholders and may cause the appointment or removal of members of the Group's management team.***

The Company is the national operator of the Republic of Kazakhstan for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The Government, through Samruk-Kazyna, was the sole shareholder of the Company immediately before the Offering and the AIX Offering, and will continue to be the Company's controlling shareholder holding no less than 85% after the Offering and the AIX Offering (assuming the Upsize Option has not been exercised), including any exercise of the Over-allotment Option. In addition, Samruk-Kazyna expects to remain the Company's controlling shareholder in the foreseeable future. There can be no assurance that the Government will not, through Samruk-Kazyna, cause the Group to engage in business practices that may materially adversely affect the Group's ability to operate on a commercial basis or in a way that is inconsistent with the best interests of the Company's other shareholders. In addition, the Group may be forced by the Government, through Samruk-Kazyna, to engage in activities outside of its core businesses and/or acquire assets other than on an arm's length basis. The current Corporate Governance Code of the Company provides additional means of control over the Company by Samruk-Kazyna, whereby Samruk-Kazyna is entitled to set objectives for operations and development of the Company and request that such objectives be implemented in the Company's plans and development strategies. The Government may also impose on the Group social duties, such as construction of social and recreational infrastructure, charitable activities and implementation of community development programmes as well as significant entertainment costs, as was the case with the Group's participation in the financing of certain objects at the Expo Astana 2017 and the Moscow Exhibition of Economic Achievement.

Further, the Government is in a position to cause or influence the appointment and removal of, the members of management of the Group. All of the foregoing could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

*Certain of the Group's customers and business associates may be subject to U.S. and EU sanctions.*

The U.S. government imposes economic sanctions and trade embargoes with respect to certain countries in support of its foreign policy and national security goals. These laws and regulations are administered by the U.S. Treasury Department's Office of Foreign Assets Control ("OFAC"), and in certain instances by the U.S. Department of State. U.S. economic sanctions impose restrictions on U.S. persons and, in certain circumstances, non-U.S. persons with respect to activities or transactions with certain countries, governments, entities or individuals that are the target of the relevant U.S. economic sanctions. Under applicable U.S. economic sanctions, U.S. persons also are prohibited from facilitating such activities or transactions, and non-U.S. persons are prohibited from causing other persons to violate applicable prohibitions. More specifically, the sanctions which the United States has or may in future impose consist of (i) sectoral sanctions which place restrictions on access to capital markets and financing terms; (ii) designation as a Specially Designated National and Blocked Person ("SDN"), which prohibits substantially all transactions by any U.S. persons or entities with the SDN; and (iii) secondary sanctions, whereby non-U.S. persons can be subject to sanctions for dealing with an SDN or other existing sanctions target. The United Kingdom, the other Member States of the EU and various other countries (such as Australia, Canada, Japan and Switzerland), as well as the United Nations, have also implemented measures aimed at prohibiting or restricting engagements in financial and other dealings with sanctioned countries, entities and individuals.

In connection with the instability and unrest in the Ukraine since 2014, the United States and the EU have imposed sanctions on certain individuals and companies in Russia. U.S. Department of Treasury issued a report on Russian senior political figures and oligarchs, Russian parastatal entities and illicit financing in Russia, presumably to determine whether other parties should be sanctioned. The first report was issued on 29 January 2018 and lists 114 senior Russian political figures and 96 wealthy Russian businessmen (the "Report"). The Report includes Mr. Alexey Likhachev, the chief executive officer of RosAtom, the Russian state atomic enterprise, which is the Group's partner in five joint ventures. Although inclusion of a person in the Report does not mean that such person becomes sanctioned, it is probable that the Report may be used as a basis for future sanctions that may be imposed by OFAC or other competent authorities. In addition, Mr Yuri Ushakov, a member of RosAtom's supervisory board and aide to the Russian President, is included in the Consolidated Canadian Autonomous Sanctions List. Moreover, the outcome the investigation by the U.S. authorities into the matters relating to the acquisition of a controlling interest in Uranium One, a uranium producing company with operations in the Republic of Kazakhstan, the United States and developing projects in Tanzania, by RosAtom's subsidiary in 2010, and the related approval by the Committee on Foreign Investment in the United States (CFIUS), which investigation was on-going as at the date of this Prospectus, may increase the likelihood of the imposition of U.S. sanctions on RosAtom.

RosAtom owns 50% or more interest in four of uranium mining joint ventures with the Group, specifically JV SMCC LLP, Karatau LLP and JV Akbastau JSC, which produced, in the aggregate, 7,237 tonnes of UME in the year ended 31 December 2017, of which 3,031 tonnes of UME was attributable to the Group. In addition, RosAtom owns through its subsidiaries 50% in JSC Uranium Enrichment Centre ("UEC"), a joint venture with the Company which holds 25% plus one share in JSC Ural Electrochemical Integrated Plant ("UEIP"), world's largest uranium enrichment facility based in Russia. Furthermore, RosAtom owns less than 50% in JV Zarechnoye JSC and JV Khorassan-U LLP which produced, in the aggregate, 2,366 tonnes of UME in the year ended 2017, of which 932 tonnes of UME was attributable to the Group. Under OFAC rules, if a parent company, such as RosAtom were to be included in the SDN list, all of its direct and indirect subsidiaries in which it owns 50% or more interest would be deemed also included into the SDN list. Accordingly, the inclusion of RosAtom on the SDN list would result in JV SMCC LLP, Karatau LLP and JV Akbastau JSC becoming specially designated nationals and blocked persons, which would result in a near-complete prohibition of any transactions between them and any U.S. persons, and the operations of JV Zarechnoye JSC and JV Khorassan-U LLP could become affected as a result of one of its significant shareholders becoming an SDN. In addition, many non-U.S. parties globally are known to choose to avoid transacting with parties on the SDN list.

Furthermore, transacting with persons included in the Report may result in the deterioration of the Group's reputation and image. As of the date of this Prospectus, none of the Group's customers, counterparties or business associates were subject to the U.S. or European sanctions; however, if RosAtom, any subsidiaries of RosAtom or any other joint venture partner or customer of the Group were to be subjected to such sanctions, this could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.



***The United States or other uranium importers could impose tariffs or quotas on uranium imports.***

For the year ended 31 December 2017 and the six months ended 30 June 2018, approximately 3% and 4% of the Group's sales (by volume), respectively, were made to customers based in the United States, and the Group expects to continue to market and sell its uranium products to the United States. However, the U.S. government may increase the tariff on imports of uranium or may impose import quotas that restrict the quantity of uranium imports into the United States. Such tariffs or import quotas may have a negative effect on the Group's sales in the United States and the Group's results of operations more generally.

Under Section 232 of the U.S. Trade Expansion Act of 1962, as amended, ("**Section 232**"), the U.S. Department of Commerce (the "**Commerce Department**") has the authority to conduct investigations into the effect that imports of a particular article have on the national security of the United States. Upon initiation of a Section 232 investigation, the Commerce Department has 270 days to complete the investigation and provide its findings and recommendations to the U.S. President. Within 90 days after receiving the findings and recommendations from the Commerce Department, if the Commerce Department finds that an import threatens to impair U.S. national security, the U.S. President shall determine whether he or she concurs with the Commerce Department's finding and, if so, the nature and duration of the action that must be taken to ensure that such imports will not threaten or impair national security. Under Section 232, the U.S. President has broad power to impose trade remedies such as tariffs and quotas.

In January 2018, two U.S. uranium mining companies filed a Section 232 petition to the Commerce Department requesting the Commerce Department to initiate an investigation into the national security effects of uranium imports, arguing that such imports have been harming the United States' ability to produce nuclear materials, including the uranium needed for defence purposes. On 18 July 2018, the Commerce Department initiated a Section 232 investigation into whether the present quantity and circumstances of uranium ore and product imports into the United States threaten U.S. national security in response to the petition. Although the Group filed written comments to the Commerce Department challenging the claims made by the U.S. uranium mining companies in September 2018, it cannot predict whether the Commerce Department will make an affirmative finding and recommend that the U.S. President adjust imports of uranium ore and product imports, or whether, if recommended, the U.S. President will take action against such imports.

This Section 232 investigation follows two similar investigations that the Commerce Department completed in February 2018 addressing imports of steel and aluminium products. As a result of the findings of those investigations, the United States imposed tariffs of 25% on steel products and 10% on aluminium products. Prior to these two investigations, the last Section 232 investigation was conducted in 2001 regarding certain steel products. The petitioners who requested the investigation of uranium imports also requested that the U.S. President impose an import quota that would effectively reserve 25% of the U.S. market for domestic uranium and a "**Buy American**" policy that would require U.S. government agencies to procure uranium produced in the United States. The imposition of tariffs, import quotas or other restrictions on sales of uranium in the United States as a result of this Section 232 investigation or otherwise may affect the Group's sales in the United States, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Corporate restructuring activity, divestitures and other business combinations and reorganizations could adversely affect the Group's ability to achieve the Group's strategic goals.***

The Group has undertaken and continues to seek appropriate opportunities for restructuring the Group's organisation, engaging in divestitures of non-core assets, strategic acquisitions of interests in associates and other business combinations in order to optimise the Group's structure. The Company adopted an internal plan of asset restructuring which provides for the disposal of certain additional assets. Accordingly, the total number of the Group's subsidiaries, JVs and Associates decreased from 82 as at 31 December 2015 to 50 as at 31 December 2017 and 48 as at 30 June 2018. As at the date of this Prospectus, the Company expected to dispose of its entire interests in Kyzyltu LLP and JSC Caustic, and 75% of its interests in Astana Solar LLP, Kazakhstan Solar Silicon LLP and MK KazSilicon LLP by the end of 31 December 2018. In addition, the Company recently acquired an additional 20% interest in JV Inkai LLP, thereby becoming a 60% shareholder and attaining control of such entity. Moreover, by the end of 31 December 2018, the Company intends to increase its effective equity interests in Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and in Kyzylkum LLP and JV Khorassan-U LLP, joint ventures with Marubeni Corporation and RosAtom, from 30% to 50% and from approximately 34% to 50%, respectively. Furthermore, the Company anticipates the transfer of certain of its subsoil use agreements to its wholly owned subsidiaries. The Group faces risks arising from these activities, which could adversely affect the Group's ability to achieve its strategic goals. For example:

- the Group may be unable to realise the growth or investment opportunities, improvement of the Group's financial position and other expected benefits by these activities in the expected time period or at all;



- transactions may not be completed as scheduled or at all due to legal or regulatory requirements, market conditions or contractual and other conditions to which such transactions are subject;
- unanticipated problems could also arise in the integration or separation processes, including unanticipated restructuring or separation expenses and liabilities, as well as delays or other difficulties in transitioning, coordinating, consolidating, replacing and integrating personnel, information and management systems, and customer products and services; and
- the diversion of management and key employees' attention may detract from the Group's ability to increase revenues and minimise costs.

Moreover, the tax treatment of transactions relating to the sale of shares and participation interests is regulated by the Tax Code. According to the Tax Code, gain from sale of shares and participation interests or their contribution into the charter capital of another entity is subject to tax. Therefore, if the Company were to sell shares or participation interests of the entities referred to above at a price that exceeds their historical value, such transfer could result in taxable income, subject to tax at a 20% tax rate which would increase the amount of the Company's tax payments.

In addition, certain transactions may result in other unanticipated adverse consequences. There can also be no assurance that the Group will be able to complete the intended divestures or acquisitions in a timely and efficient manner or at all. The occurrence of any such consequences, if material, could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group's complex ownership and corporate structure may affect its decision-making process.***

The Group has a complex structure which consists of numerous entities classified as subsidiaries, joint ventures, joint operations, associates and entities classified as financial investments, each of which may be material to the Group's operations. Due to the aforementioned complicated structure and certain other factors, such as the need to build consensus with its joint venture partners and other fellow shareholders in respect of the Group the speed and reliability of implementing the Group's strategic and other important decisions may be hampered. In addition, the Group was as of the date of this Prospectus wholly owned by, and following the Offering expects to be controlled by, Samruk-Kazyna. Samruk-Kazyna is a sovereign wealth fund of the Republic of Kazakhstan, and its corporate procedures, including those relating to the Company's decision-making process, often require the involvement of senior Government officials whose availability may be limited. All of these factors may contribute to complications relating to the Group's decision-making process and may result in delays, or lack of flexibility, in respect of important decisions affecting the Group, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Unexpected catastrophic events, including acts of vandalism and terrorism, may adversely impact the Group's operations.***

The Group performs many of its operations in locations within Kazakhstan that have harsh climates and exports substantially all of its products. The Group's operations, processes and procedures are subject to risks such as port and shipping incidents, fire and explosion, loss of power supply, railroad incidents and mechanical failures. The Group's operations may also be subject to unexpected natural catastrophes such as earthquakes and floods. In addition, the Group's facilities may be the target of acts of vandalism and terrorism directed at the nuclear power industry, which may be more specifically targeted than other industries. The impact of these events could lead to disruptions in production and loss of facilities and may have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Uranium supplied by the Group or enriched at a facility in which the Group has an interest could be used for an unintended purpose.***

The focus of the Group's operations is the extraction of uranium and manufacturing of uranium products, all of which are designed to serve the nuclear power generation industry and are only fit for civilian nuclear applications. However, uranium may be potentially used for other purposes, including military use in case of weapons-grade uranium. Natural uranium contains only 0.7% of the fissile uranium-235 isotope, the content of which may be increased through the enrichment process. Weapons-grade uranium is characterised by a high concentration of the uranium-235 isotope, typically 80% or more. Most nuclear power generation applications, including all of the Group's products, only require low-enriched uranium, i.e., material containing between 3% and 5% of the uranium-235 isotope. According to the WNA, as at 30 June 2018, only 13 countries had access to enrichment technology, with 90% of global enrichment capacity attributable to China, France, Russia, United Kingdom and the United States.

Operations involving natural and enriched uranium are highly regulated, both at the international level, which includes measures adopted in furtherance of the United Nations Treaty on the Non-Proliferation of Nuclear Weapons (such as regular on-site inspections and similar control measures and other safeguards imposed by the IAEA) to which the Republic of Kazakhstan acceded in 1994, as well as national legislation of the relevant countries, which generally contains, among other measures, increased security measures and strict licensing requirements. Each of the Group's uranium supply contracts undergoes a screening process prior to execution. The Group conducts a review of the potential customer, requiring information regarding the customer's business and proposed use of the uranium products. The Group provides information on purchasers and regular delivery reports to the Committee for Atomic and Energy Supervision and Control under the Ministry of Energy of the Republic of Kazakhstan (the "CAESC") in accordance with the requirements of Kazakhstan law. The CAESC conducts additional screening and checks the purchaser against the Black List and the List of Forbidden Countries as adopted by the United Nations to confirm that the purchaser is not suspected in the development or proliferation of weapons of mass destruction. The CAESC then reports information obtained on the contracted purchase of uranium to the IAEA. Export of uranium products under each contract can only be performed after issuance of an export licence by the Committee of Industrial Development and Industrial Safety of the Ministry of Investment and Development following the approval of the Agency of the CAESC.

The Company and a subsidiary of RosAtom each hold a 50% interest in a joint venture, which, in turn, holds a 25% in UEIP, the world's largest uranium enrichment facility, based in Russia. In addition, the Company holds a 10% interest in JSC International Uranium Enrichment Centre ("IUEC"), another enrichment facility based in Russia, the objective of which is to provide non-nuclear weapon states with nuclear power generation capacities with enriched uranium to eliminate the need of such states to construct their own enriching facilities, thereby limiting the potential for production by such countries of enriched uranium for weapons purposes. Because of the size and holding structure of the Group's indirect interest in the UEIC and the size of the Group's interest in IUEC, the Group has no operational control over the operations of these entities. However, if any enriched uranium produced by UEIP or IUEC was to be used for a purpose for which it was not intended, either as a result of the relevant purchaser's wilful action, a security breach or otherwise, the operations of UEIP or IUEC could become terminated, suspended or otherwise materially affected, which would have a negative impact on the Group's investment therein. In addition, public perception of the Group could be adversely affected as a result of any such event.

The Group sells natural  $U_3O_8$ , which represented 60.8% and 77.2% of its revenue for the year ended 31 December 2017 and the six months ended 30 June 2018, respectively, and low-enriched uranium products, such as  $UO_2$  powder and fuel pellets, which represented 1.0% and 0.7% of its revenue for the year ended 31 December 2017 and the six months ended 30 June 2018, respectively. During the six months ended 30 June 2018, all of the Group's uranium sales were to authorised counterparties under the IAEA and Euratom regulations. In addition, the Group's uranium supply contracts contain restrictions on the use and re-sale of the material. Notwithstanding this, the Group can provide no assurance that uranium supplied by the Group will not be ultimately misused by the customer directly or through an on-sale or to another party, as a result of a security breach or otherwise, which could potentially involve subsequent enrichment of such supplied uranium to a weapons-grade degree at an enrichment facility. If any such event were to happen, the Group's operations could become subject to scrutiny by the Kazakhstan authorities, the IAEA or other competent parties, and public perception of the Group could be adversely affected.

Any misuse of uranium, whether produced by the Company or another producer, could, therefore, have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group's insurance coverage may not be adequate to cover losses arising from potential operational hazards and unforeseen interruptions.***

Kazakhstan law currently prohibits foreign insurance companies from directly operating in Kazakhstan. However, the domestic insurance industry is not yet well developed. In addition, the Group does not carry business interruption insurance. Furthermore, the Group's operations are principally conducted, and most of the Group's assets are located, in Kazakhstan, which may have higher political, social, economic and market risks as compared to countries in the EU or the United States. Various types of catastrophic losses, such as losses due to political risks, civil unrest, acts of warfare, terrorist activities, certain natural disasters (e.g., hurricanes), pollution, environmental matters or expropriation of assets generally are either uninsurable or not economically insurable, or may be subject to limitations, such as large deductibles or co-payments.

Although the Group maintains insurance (including against third party liability and environmental damages), the amount and scope of such insurance coverage is more limited than that which would normally be expected of similar companies in Western jurisdictions. The Group does not have full insurance coverage for its plant facilities, against business interruption, and its insurance against major environmental disasters may be relatively limited in scope, as

compared to insurance coverage usually available in Western jurisdictions. The Group may suffer material losses from uninsurable or uninsured risks or insufficient insurance coverage, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Further changes in employment laws may negatively impact the Group's profitability.***

The Government enacted a new labour code in 2015, which is seen as generally employee-friendly and has extended the employee rights and placed further obligations on employers in relation to, for example, employees' minimum holiday entitlements and the right to a safe working environment. Giving effect to the increased employee rights and employer obligations and further increases in employee protections may require the Group to incur additional expense, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Any failures of the Group's IT systems could negatively affect the results of operations.***

The Group's business and operations may be negatively affected by failures of the Group's key IT systems and equipment, unauthorised access to confidential information and a distortion of information during data transfers or a disruption of activities during the introduction of a new IT system. IT systems are vulnerable to a number of problems, such as software or hardware malfunctions, malicious hacking, physical damage to vital IT centres and computer virus infection. In addition, not all IT systems are integrated across the Group as of the date of this Prospectus. These factors may result in a lack of information or potential information inaccuracies that could cause disruptions in the Group's decision making process, as well as deterioration in the quality of the Group's operational and financial reporting and the overall manageability of the Group. The Group has invested in upgrading its technologies, centralising its information systems and controlling the operation of its hardware and software, taking into account international best practices. However, the Group cannot provide any assurance that its IT systems will continue to function in a manner that will not result in significant disruptions or temporary loss of functionality. In addition, the Group is currently implementing a number of significant IT projects, such as the continuing roll-out of the "digital mine" information system and ERP SAP-based business process automation project (see "*Business—Transformation Initiative*"), and may face difficulty fully integrating these new systems with the Group's existing IT systems in a timely and efficient manner. However, there may be no assurance that the implementation of these systems will yield the expected result due to a number of factors. Any of these factors could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

In addition, the mining industry has become increasingly dependent on digital technologies to conduct certain processing activities. For example, the Group depends on digital technologies to perform many of its operations and to process and record financial and operating data. At the same time, the magnitude of cyber incidents, including deliberate attacks, has increased. The Group's technologies, systems and networks, and those of its vendors, suppliers and other business partners, may become the target of cyberattacks or information security breaches that could result in the unauthorised release, gathering, monitoring, misuse, loss or destruction of proprietary and other information, or other disruption of business operations. In addition, certain cyber incidents may remain undetected for an extended period, and there may be no assurance that the Group's systems for protecting against cyber security risks will be sufficient. As cyber incidents continue to evolve, the Group may become required to expend additional resources to continue to modify or enhance its protective measures or to investigate and remediate any vulnerability to cyber incidents.

The Group's ability to successfully operate its business depends on its ability to protect the computer systems and databases from the intrusion of third parties who attempted in the past and may attempt in the future to gain access to the Group's computer systems, networks or databases through the Internet or otherwise. Given the potential technical and financial resources of intruders, the Group can provide no assurance that its computer systems, networks and databases will not suffer from such attacks in the future.

***The Law on Transfer Pricing may impair the Group's ability to sell products.***

The Kazakhstan Law on Transfer Pricing can potentially result in a higher tax on long-term commodity contracts that are not based on market prices, or "spot pricing." In order to monitor transfer pricing, the law applies the same method to uranium as it does to exchange-traded commodities and requires an additional tax on the difference between uranium supplies under long-term contracts and published uranium price indicators. This law disincentivises the Group's Kazakhstan entities from entering into long-term contracts with base escalation pricing or fixed pricing, which are the predominant pricing mechanisms in the uranium industry and preferred by uranium consumers. Although the Group is able to mitigate some of this law's effect by structuring some of its operations through THK which is based in Switzerland and to which this law does not apply, the Kazakhstan Law on Transfer Pricing has a negative effect on the Group's operational flexibility. See also "*Risks relating to Taxation—Transfer pricing methodological disputes could*

*result in adverse tax assessments for the Group.” Unless the law is repealed or an exemption is made for the uranium industry, the law’s application to the Group could adversely affect the Group’s ability to compete for sales with uranium producers that are able to use more customary contracts and hinder the Group’s ability to expand its sale of uranium products into new world markets, which could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.*

***The Group acquired certain subsoil use rights in the mid-1990s when the procedures for obtaining subsoil use rights were not well established.***

Some of the subsoil use agreements held by Group were entered into in the mid-1990s when Kazakhstan’s subsoil use legislation was in its nascency and the procedure for granting and transferring subsoil use agreements was not well established. In addition, the Group received some of its subsoil use agreements when those agreements were transferred to the Group from the National Joint Stock Group on Atomic Energy and Industry. At the time of transfer, the procedure and legal basis for transfers of subsoil use agreements was unclear. Although the Group is not aware of any instance where its subsoil use agreements have been challenged and is not aware of any circumstances that could lead to such a challenge, there can be no assurance that such a challenge will not occur in the future. If any of the Group’s subsoil use agreements are challenged and the Group’s rights are lost or limited, it could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The subsoil use agreements held by the Group and its JVs and Associates may be terminated in accordance with their terms or applicable legislation.***

In Kazakhstan, subsoil use rights are granted pursuant to agreements entered into with the relevant competent authorities, such as the Ministry of Energy, under which subsoil users are granted rights for the exploration and/or production of minerals. These agreements must be registered with the relevant competent authority and are subject to various terms and conditions related to, among other things, drilling obligations, confidentiality obligations, investments, employment of local workforce and services, tax and social obligations, insurance coverage, environmental monitoring and mineral production. In the past, there have been instances when the Group failed to fully comply with some of its obligations in its subsoil use agreements. For example, due to the production cuts announced by the Company in 2017, the Group was not in compliance with certain obligations for minimum expenditures imposed by the subsoil use contracts. Although the Group has not as of the date of this Prospectus faced any negative consequences as a result of its failure to comply with the minimum expenditure requirements in connection with the production cuts announced by the Company in 2017, if the Group or any of its JVs or Associates were to be found in breach of their respective subsoil use agreements, including, for example, as a result of such failure to comply, or if those agreements are not properly registered with the competent authorities, those agreements could be suspended, terminated or modified in an adverse manner.

In addition, most of the uranium deposits that are operated by the Group and its JVs and Associates pursuant to their respective subsoil use agreements are considered to be strategic deposits under Kazakhstan legislation. Subsoil use agreements in relation to strategic deposits may be unilaterally amended and, ultimately, terminated by the relevant competent authority in case the subsoil user’s actions materially affect state interests and, as a result, threaten national security. If a subsoil use agreement to which the Group or any of its JVs or Associates is a party is unilaterally amended or terminated for national security reasons or is otherwise suspended terminated or modified as discussed above, it could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group may be affected by arbitration or litigation proceedings to which it is not a party.***

In 1996, World Wide Minerals Ltd. and certain of its affiliates (collectively, “WWM”) entered into a management agreement in respect of Tselliny Gorno-Khimicheskii Kombinat (“TGK”) located at Stepnogorsk, Kazakhstan which was at the time the second-largest uranium processing facility cluster in the former Soviet Union, and which subsequently formed the basis for the Stepnogorsk mining chemical combine (plant). The terms of WWM’s arrangements with the Government included WWM’s obligation to assist in the reorganization of TGK, and WWM also agreed to lend certain funds to the Republic of Kazakhstan. WWM also had the option until the end of 1998 to purchase a 90% equity (100% voting) interest in TGK and to satisfy all or part of the purchase price with the amount of the loan advanced to the Republic of Kazakhstan.

In 1997, WWM entered into an agreement with the Company providing for the creation of a 50/50% joint venture between the parties to operate three operating uranium mines, and to develop four then-undeveloped ISR uranium deposits, namely Kharassan, Akdala, Irkol and Zhalpak.



WWM entered into a number of uranium exports contracts for uranium produced by its assets in Kazakhstan; however, such contracts could not be performed due to the lack of export licenses which were not granted. Thereafter, WWM suspended its operations, and TKG management agreement was terminated. WWM proceeded to seek recovery of the loan made to the Republic of Kazakhstan and certain related costs. After an unsuccessful attempt to reach a private settlement with the Government in 1998, it filed a lawsuit before the US Federal District Court in Washington D.C. against the Government and the Company, which was ultimately dismissed due to lack of jurisdiction, and the appeal application to the U.S. Supreme Court for certiorari was denied in February 2003.

In 2006, WWM commenced arbitration in Stockholm, Sweden, under the UNCITRAL rules in relation to the management agreement and the loan agreement against the Government. In 2007, WWM commenced another arbitration in Stockholm, Sweden under the UNCITRAL rules against the Government and the Company in relation to the arrangements relating to the creation of the 50/50% joint venture. In 2010, after accepting jurisdiction, the arbitrator dismissed WWM's claims due to the expiration of statute of limitation.

In 2013, WWM and its President and CEO jointly initiated bilateral investment treaty arbitration proceedings against the Government under the 1989 Agreement between the Government of Canada and the Government of the Union of Soviet Socialist Republics for the Promotion and Reciprocal Protection of Investments seeking to recover US\$1.7 billion of damages and lost business opportunity, alleging that the Republic of Kazakhstan breached its contractual obligations to WWM and imposed upon it bureaucratic restrictions aimed at frustrating the object and purpose of the contracts entered into by WWM in 1996 and 1997, ultimately resulting in the bankruptcy, nationalisation and forced sale of its assets in the Republic of Kazakhstan. In 2015, the investment arbitration tribunal sustaining its jurisdiction over the dispute. Based on publicly available information, WWM expects the final award by the end of 2018.

Although neither the Company nor any of the Group members are defendants to the bilateral investment treaty arbitral proceedings, given that the nature of the dispute relates to assets, some of which are currently owned by the Group, such as RU-6 LLP, that the Government of Kazakhstan may elect to shift some or all of the financial burden of an adverse ruling to the Group, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Furthermore, the Company's sole shareholder, Samruk-Kazyna, is and may continue to be subject to proceedings which can affect its assets, including the Company and the Group. For example, in January 2018, the Amsterdam District Court issued a judgment in which it upheld an earlier ex parte attachment granted by it in September 2017 to Mr Anatolie Stati and certain parties associated with him with respect to the Republic of Kazakhstan's shareholding in KMG Kashagan B.V., a Dutch entity owned by Samruk-Kazyna. This attachment was granted in connection with the attempts to enforce a US\$500 million arbitral award issued in connection with a dispute between Mr Stati and the Government of Kazakhstan in relation to the investor protection provisions of the Energy Charter Treaty. If Samruk-Kazyna's interest in the Company was to be subjected to an attachment or any similar restrictions pursuant to a claim of a third party seeking recovery from Samruk-Kazyna, this could, depending on the nature of such restrictions, affect the efficiency of the Group's management and affect perception of the Group by investors, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

### **Risks Relating to Kazakhstan and Emerging Markets Generally**

***Emerging markets, such as Kazakhstan, are generally subject to greater risks than more developed markets, and actual and perceived risks associated with investing in emerging economies could dampen foreign investment in Kazakhstan.***

Emerging markets, such as Kazakhstan, are generally subject to greater risks, including legal, regulatory, economic and political risks, than more developed markets. For example, the continued instability and unrest in the Ukraine and related events have had and may continue to have an adverse effect on the economy in Russia, which could, in turn, have a "contagion effect" on economies in the region, including, in particular, Kazakhstan, which is a close trading partner of Russia. In connection with such instability and unrest in the Ukraine, the EU, the United States and Canada have imposed sanctions on certain individuals and companies in Russia and Russia has, in turn, imposed trade sanctions on certain goods and services originating in the EU and the United States. In addition, a draft law "On Measures (Countermeasures) in Response to Hostile Acts of the United States of America and/or Other Foreign States" considered by the Russian parliament in April and May 2018 contained a specific list of measures relating to the United States and other foreign states, and one of such countermeasures was termination or suspension of international cooperation in the nuclear industry between the Russian Federation and Russian entities, on the one hand, and the United States and other foreign states and entities and entities in such jurisdictions or entities more than 25% of equity



in which is controlled by any of them, on the other hand. Although the adopted law does not contain any references to specific industries, it may not be ruled out that the tensions between the Russia and the United States or other countries may result in suspending or terminating cooperation between RosAtom (which is a significant joint venture partner of the Group) and its foreign counterparties. If the instability in the Ukraine continues, tensions between Russia and the Ukraine escalate further or new tensions between Russia and other countries emerge, or if further economic or other sanctions, such as further limitations on trade, are imposed in response to such instability and tensions, this could have a further adverse effect on the economies in the region, including the Kazakhstan economy, as well as on companies active in the region, including the Group.

In addition, emerging economies are generally subject to rapid change and the information set out in this Prospectus may become outdated relatively quickly. Accordingly, investors should exercise particular care in evaluating the risks involved and should consider whether, in light of these risks, investing in the Company is appropriate given that its principal assets and operations are located in an emerging market. Generally, such investment is suitable only for sophisticated investors who fully appreciate the significance of the risks involved. Investors are urged to consult with their own legal and financial advisors before making an investment in the Securities.

Financial problems or an increase in the perceived risks associated with investing in emerging economies could reduce foreign investment in Kazakhstan and adversely affect Kazakhstan's economy. At such times, emerging markets may face severe liquidity constraints because foreign funding resources are withdrawn. The Kazakhstan economy is affected by developments in other emerging market economies. Even if the Kazakhstan economy remains relatively stable, financial turmoil in any emerging market country, especially countries in the CIS or the Caspian Sea or Central Asian regions, which have in the past experienced significant political instability, including terrorism and internal conflicts, could negatively affect the Kazakhstan economy. Recently, Kazakhstan's economy, and particularly its banking sector, has encountered a period of instability. Inflation has increased beyond expectations and the credit ratings of a number of major banks in Kazakhstan have been downgraded. In particular, in September 2018, there were press reports regarding difficulties faced by the clients of JSC Tsesnabank with withdrawing funds from the bank. As of the date of this Prospectus, the Group's subsidiaries JSC Ulba Metallurgic Plant ("UMP") and Appak LLP held KZT3.4 billion and KZT0.8 billion, respectively, on deposits with JSC Tsesnabank. If UMP and Appak LLP are unable to withdraw their funds from JSC Tsesnabank in full in a timely fashion or at all, their operations could be adversely affected. More generally, no assurance can be given that the crisis in the Kazakhstan banking sector will not continue or worsen, or that inflation will not continue to rise. A decline in the Kazakhstan economy could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Disruptions resulting from the impact of the global financial and economic crisis in the international and domestic capital markets may lead to reduced liquidity and increased credit risk premiums for certain market participants and may result in a reduction of available financing. Companies located in emerging markets such as Kazakhstan are particularly susceptible to such disruptions, reductions in the availability of credit and increases in financing costs, which could result in them experiencing financial difficulty. In addition, the availability of credit to entities operating within the emerging markets is significantly influenced by the level of investor confidence in such markets as a whole and any factors that affect investor confidence (for example, a decrease in credit ratings or state or central bank, such as the NBK, intervention) could affect the price or availability of funding for entities within any of these markets.

Furthermore, instances of fraud, bribery and corruption may be, or may be perceived to be, more commonplace in emerging markets such as Kazakhstan, which may impact investor confidence or willingness to invest. Financial problems or an increase in the perceived risks associated with investing in emerging economies may dampen foreign investment in Kazakhstan and adversely affect Kazakhstan's economy. In addition, companies operating in emerging markets can face severe liquidity constraints if foreign funding resources are withdrawn. Thus, whether or not Kazakhstan's economy is relatively stable, financial turmoil in any emerging market country, in particular those in the CIS or Central Asian regions which have recently experienced significant political instability (including terrorism), could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group is largely dependent on the economic and political conditions prevailing in Kazakhstan.***

Most of the Group's operations are conducted, and a substantial part of its assets are located, in Kazakhstan. Kazakhstan became an independent sovereign state in 1991 as a result of the dissolution of the former Soviet Union. Since then, Kazakhstan has experienced significant change as it emerged from a centrally controlled command economy to a market oriented economy. The transition was initially marked by political uncertainty and tension, a recessionary economy marked by high inflation, instability of the local currency and rapid, but incomplete, changes in the legal environment.

Since 1992, Kazakhstan has actively pursued a programme of economic reform designed to establish a free market economy through privatisation of state-owned enterprises and deregulation and is more advanced in this respect than some other countries of the former Soviet Union. However, as with any transition economy, there can be no assurance that such reforms and other reforms described elsewhere in this Prospectus will continue or that such reforms will achieve all or any of their intended aims.

Kazakhstan depends on neighbouring states for access to world markets for a number of its major exports, including uranium (all of the Group's uranium sales are exports), oil, natural gas, steel, copper, ferro-alloys, iron ore, aluminium, coal, lead, zinc and wheat. Thus, Kazakhstan is dependent upon good relations with its neighbours to ensure its ability to export. Should access to these export routes be materially impaired, this could adversely impact the economy of Kazakhstan. Moreover, adverse economic factors in regional markets may adversely impact Kazakhstan's economy, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Since the dissolution of the Soviet Union, a number of former Soviet Republics, including the Kyrgyz Republic and more recently the Ukraine, have experienced periods of political instability, civil unrest, military action and popular changes in governments or incidents of violence. Changes to the Kazakhstan Constitution in May 2007 introduced the concept of the "first president" and established that the first president (i.e., the current president) enjoys a number of privileges and is not subject to limitation as to the number of consecutive re-elections. Under President Nazarbayev, who became the first president of Kazakhstan after independence in 1991, having previously been the chairman of the Supreme Soviet since 1990, Kazakhstan has enjoyed greater stability and prosperity than many of the other former Soviet Republics. However, there can be no assurance that such results will be maintained under the current administration or that a new administration will be able to achieve similar or better results. Further, if the current administration changes its political outlook or a future administration has a different political outlook, the business regimes in Kazakhstan could change. Changes to Kazakhstan's business regimes, including property, tax or regulatory regimes or other changes could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Samruk-Kazyna's policy is for entities that it controls (including the Group) to limit their cash and cash equivalents (including deposits) in international banks to 10% of the total amount, although there are no legal consequences to a violation of this policy. Depending on the levels of cash maintained by the Company, compliance with this policy could increase the Group's exposure to the Kazakhstan banking sector. As at 30 June 2018, the Group was in compliance with this policy. In the event that the Kazakhstan banking sector encounters difficulties, it could result in a *de facto* or *de jure* freezing of all or a portion of the Group's cash, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Factors outside Kazakhstan have also had an impact on Kazakhstan's economy, specifically the finance and banking sector. For example, pursuant to the terms of financial stability legislation adopted by the Government in February 2009 in response to the global financial downturn, two of Kazakhstan's largest banks, BTA Bank and Alliance Bank, were effectively nationalised by the government in the wake of the new fiscal stability legislation. It is not clear what impact this will have on the prospects of Kazakhstan's banks and its customers, including the Group. The housing and construction industries and small- and medium-sized enterprises have been particularly affected while larger companies, subsoil use companies and State owned companies have continued to have access to funding abroad albeit on a more limited basis and on less favourable terms. A downgrade of Kazakhstan's sovereign credit rating and liquidity problems in Kazakhstan's economy could adversely affect its economic development, which could in turn, materially adversely affect the Group's business, prospects, financial condition, cash flows or results of operations.

***Deterioration of the economic and political conditions in Kazakhstan could have a material adverse effect on the Group's business, financial condition and results of operations.***

Since the dissolution of the Soviet Union, a number of former Soviet Republics have experienced periods of political instability, civil unrest, military action and popular changes in governments or incidents of violence.

In addition, Kazakhstan could be adversely affected by political unrest in the region, such as the continuing unrest in the Ukraine. Additionally, like other countries in Central Asia, Kazakhstan could be adversely affected by terrorism or military or other action taken against sponsors of terrorism in the region. Moreover, adverse economic, political or social factors in other jurisdictions within or outside the region may also adversely impact the Kazakhstan economy.

Kazakhstan had enjoyed a greater level of stability as compared to certain other CIS countries since becoming an independent state in 1991 under the leadership of Nursultan Nazarbayev. As at the date of this Prospectus, there is no clear successor to Mr Nazarbayev. If a future president of Kazakhstan is elected with a different political outlook, the

business regime in Kazakhstan could change. Political instability in Kazakhstan or changes to its property, tax or regulatory regimes or other changes, resulting from a new administration or otherwise, could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities. See also "*—The President of Kazakhstan, Nursultan Nazarbayev, has been in office since 1991 and should he leave office without a smooth transfer to his successor, the political and macroeconomic situation in Kazakhstan could become unstable.*"

Even though there was an increase in the GDP growth rate in 2017, Kazakhstan's economy and finances generally experienced slower levels of growth after 2013. According to statistics published by the Statistics Committee of the Republic of Kazakhstan, the rate of real GDP growth was 1.2% in 2015, 1.0% in 2016 and 4.1% in 2017. The IMF forecast for real GDP growth in 2018 is 3.7%.

Weaknesses in the global financial markets since the onset of the global financial crisis also contributed to several major bank failures in Kazakhstan and subsequent restructurings. The Kazakhstan banking system overall remains under stress with persistently high levels of non-performing loans, and there can be no assurance that the reforms recently implemented with the aim of reducing non-performing loans will be successful or sufficient. There is also a high level of concentration in the banking sector, with the five largest banks holding more than half of all customer deposits. While measures have been taken to address and reduce systemic risk, such measures are on-going and there remains a risk that further reforms may be required, the impact of which is not certain. There is also a risk further financial assistance to the banking sector may be needed from the state, which it may not be willing and/or able to provide.

***The President of Kazakhstan, Nursultan Nazarbayev, has been in office since 1991 and should he leave office without a smooth transfer to his successor, the political and macroeconomic situation in Kazakhstan could become unstable.***

The President of Kazakhstan, Nursultan Nazarbayev, has been in office since Kazakhstan became an independent sovereign state in 1991. In 2016, President Nazarbayev announced planned constitutional reforms that contemplate a distribution of authority among governmental bodies. The law amending the constitution was promulgated by President Nazarbayev on 10 March 2017. The law provides for 26 amendments, pursuant to which certain powers of the President are transferred to the Parliament and the Government. In July 2018, the Law "On the Security Council of the Republic of Kazakhstan" was adopted. The law changes the status of the Security Council of Kazakhstan from a consultative and advisory body under the President of the Republic of Kazakhstan to a constitutional body, where Mr Nazarbayev as the first President of the Republic of Kazakhstan has the right to head the Security Council for the term of his life. The new law is untested, and therefore it is not clear how the Security Council will interact with the Government and other state bodies, and whether it will create any conflicting authorities, which may have a material adverse effect on socio-political situation and the economy of Kazakhstan.

Despite this, given that Kazakhstan has not had a presidential succession and that there, as at the date of this Prospectus, is no clear successor to Mr. Nazarbayev, there can be no assurance that any succession will result in a smooth transfer of office and economic policies. Thus, should he fail to complete his current term of office for any reason or should a new president be elected at the next election, Kazakhstan's political situation and economy could become unstable and the investment climate in Kazakhstan could deteriorate. As there is currently no clear successor, the issue is a potential cause of instability in Kazakhstan.

Under President Nazarbayev's leadership, the foundations of a market economy have taken hold, including the privatisation of state assets, liberalisation of capital controls, tax reforms and pension system development. President Nazarbayev was re-elected by a 98% majority for a new five-year term in elections that took place in early April 2015. In May 2007, Kazakhstan's parliament voted to amend Kazakhstan's constitution to allow President Nazarbayev to run in an unlimited number of elections. While this amendment will allow President Nazarbayev to seek re-election at the end of his current term, there is no guarantee that he will remain in office. Should President Nazarbayev fail to complete his current term of office for whatever reason or should a new President of Kazakhstan succeed him without a clear mandate, Kazakhstan's political situation and economy could become unstable and the investment climate in Kazakhstan could deteriorate, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Exchange rate fluctuations could have an adverse impact on the Group.***

Although the Tenge is convertible for current account transactions, it is not a fully convertible currency for capital account transactions outside Kazakhstan. Since the NBK adopted a floating rate exchange policy for the Tenge in April 1999, the Tenge has fluctuated significantly. The Tenge had generally appreciated in value against the U.S. Dollar over

the previous decade until its devaluation by the NBK in February 2009. Between February 2009 and February 2014, the Tenge had generally stabilised. On 11 February 2014, the NBK devalued the Tenge by 18.6% to KZT 184.50 per US\$1.00. The NBK stated that such devaluation was made in light of the situation in the global financial and commodity markets and the depreciation of the Russian Rouble over the course of 2013 and 2014. In August 2015, the NBK announced the adoption of a free-floating exchange rate, which resulted in a 35.5% depreciation against the U.S. Dollar. As at 30 June 2018, the official KZT/US\$ exchange rate reported by the NBK was KZT341.08 per US\$1.00, compared to KZT339.47, KZT333.29 and KZT332.33 per US\$1.00 as at 31 December 2015, 2016 and 2017, respectively.

Because most of the Group's revenue is denominated in U.S. Dollars, while a significant share of its costs is Tenge-denominated, the Group generally benefits from an appreciation of the U.S. Dollar against the Tenge, which consequently has a positive effect on the Group's EBITDA. However, the Group has significant outstanding U.S. Dollar denominated liabilities, including a loan advanced by a syndicate of five international banks and other loans raised from international banks and Kazakhstan subsidiaries of foreign banks. See "*Operating and Financial Review—Liquidity and Capital Resources—Indebtedness*" for more details regarding the Group's borrowings. Therefore, the Group's accounts are sensitive to currency exchange rate fluctuations, and the appreciation of the U.S. dollar against the Tenge may have an overall adverse effect on the Group resulting in foreign currency translation losses that are recognised in the Group's consolidated statement of comprehensive income. For example, following the depreciation of the Tenge in 2015, the Company recognised a net foreign exchange loss of KZT53,446 million for the year ended 31 December 2015, and for the year ended 31 December 2017, the Company recognised a net foreign exchange loss of KZT768 million.

In addition, there can be no assurance that the NBK will maintain its managed exchange rate policy. Any change in the NBK's exchange rate policy could have an adverse effect on Kazakhstan's public finances and economy, which could, in turn, have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Sanctions imposed on Russia could have an indirect adverse impact on Kazakhstan's economy.***

The U.S. has recently strengthened sanctions on certain Russian industries and projects, including international energy investments in Russia, in connection with the current conflict in the Ukraine and Syria and alleged interference in the 2016 U.S. Presidential elections. The sanctions imposed to date have had an adverse effect on the Russian economy, prompting downward revisions to the credit ratings of the Russian Federation and a number of major Russian companies that are ultimately controlled by the Russian Federation, causing extensive capital outflows from Russia and impairing the ability of Russian issuers to access the international capital markets. The Group is engaged in numerous joint ventures with RosAtom, Russia's state atomic company. See also "*Risks Relating to the Company's Business—Certain of the Group's customers and business associates are subject to U.S. and EU sanctions.*"

While Kazakhstan maintains strong independent diplomatic relationships with both Russia and the Ukraine and has confirmed its neutral position with respect to the tensions between Russia and the Ukraine, Kazakhstan has significant economic and political relations with Russia. The establishment and functioning of the Eurasian Economic Union are expected to continue to strengthen Kazakhstan's economic relations with Russia. For the year ended 31 December 2017, based on actual trade flows, Kazakhstan's imports from Russia accounted for 39.6% of Kazakhstan's total imports, and its exports to Russia accounted for approximately 9.6% of its total exports, for the year ended 31 December 2017.

As at 1 September 2018, the total assets of four subsidiaries of Russian banks operating in Kazakhstan (Sberbank, Alfa-Bank, VTB Bank (Kazakhstan) and Bank Home Credit) represented 10.6% of the total assets of Kazakhstan's banking sector. Although Kazakhstan's trade with Russia increased by 11.0% from US\$8,042 million in the first six months of 2017, to US\$8,927 million in the same period of 2018, there can be no guarantee that it will not decrease in the future, as may the activities of the Russian banks operating in Kazakhstan. For example, in October 2017, the Kazakhstan President signed an Order providing for the migration of the Kazakh alphabet from a Cyrillic-based one to Latin-based alphabet, which could be perceived by the Russian Federation, which uses a Cyrillic-based alphabet, as a sign of a weakening relationship between the countries.

Kazakhstan's close economic links with Russia, a material worsening of such links, the existing sanctions imposed on Russia or any future sanctions could have a material adverse effect on Kazakhstan's economy, which could, in turn, have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.



***Kazakhstan is heavily dependent upon export trade and commodity prices, particularly with respect to the oil and gas industry, and is susceptible to weak demand for its export products and low commodity prices.***

As Kazakhstan is negatively affected by low commodity prices, particularly in respect of the oil and gas sector, which represented 17.3% of the GDP of Kazakhstan in 2017, and economic instability elsewhere in the world, the Government has been promoting economic reform, inward foreign investment and the diversification of the economy. In 2000, the Government established the National Fund of Kazakhstan to support the financial markets and the economy of Kazakhstan in the event of any sustained drop in oil revenues, although as a result of substantial spending by the National Fund of Kazakhstan to date, the status of future funding from the National Fund of Kazakhstan is uncertain. Notwithstanding these efforts, weak demand in its export markets and low commodity prices, especially with respect to the oil and gas industry, may adversely affect Kazakhstan's economy in the future, which may in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

The decline in world prices for oil and other commodities from 2008 through early 2009 had a negative impact on the growth prospects of the Kazakhstan economy. The state budget for 2009–2014 originally projected revenue on the basis of world oil prices of US\$60 per barrel. Budget projections, which were initially revised to US\$40 per barrel in light of the then-decline in world oil prices, were further revised to US\$90 per barrel for 2013 and US\$95 per barrel for each of 2014, 2015 and 2016 as the price of oil began to recover. Following the decrease in global oil prices in 2014, and the devaluation of the Tenge against the U.S. Dollar in 2015, the state budget set projections based on US\$40 per barrel for 2016–2018; the state budget was thereafter revised in 2016 to reflect an assumed world oil price of US\$35 per barrel for 2017–2019 and further revised in 2017 to reflect price of US\$40 per barrel in 2018. There can be no assurance that further revisions of the state budget will not be required in light of continuing oil price volatility, which could adversely affect the development of Kazakhstan and, in turn, the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

An oversupply of oil or other commodities in world markets or a general downturn in the economies of any significant markets for oil or other commodities or weakening of the U.S. Dollar relative to other currencies would have a material adverse effect on the Kazakhstan economy, which, in turn, could indirectly have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group is exposed to the risk of adverse sovereign action by the Kazakhstan Government.***

The mining industry is one of the key industries of Kazakhstan's export oriented economy, and accordingly it plays a very significant role in the country's development prospects, and thus can be expected to be the focus of continuing attention and debate. In similar circumstances in other developing countries, mining companies have faced the risks of expropriation or renationalisation, breach or abrogation of project agreements, application to such companies of laws and regulations from which they were intended to be exempt, denials of required permits and approvals, increases in royalty rates and taxes that were intended to be stable, application of exchange or capital controls, and other risks. The Group may face similar risks in the future.

The Kazakhstan Government may attempt to modify or remove the stability of the tax regime that the Group currently enjoys, which could result in negative tax consequences. Moreover, the Subsoil Code came into force on 29 June 2018 and the application of this law is relatively new. Any complaints by the Kazakhstan Government or the invocation or application by the Kazakhstan Government of the Subsoil Code in relation to any of Group's deposits could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group's operations are subject to extensive government regulation and legislation, as well as political pressure.***

Mining operations in Kazakhstan are subject to significant laws and regulations concerning, among other things, the issuance and renewal of contracts and licenses. Kazakhstan regulatory authorities exercise considerable discretion in the interpretation and enforcement of local laws and regulations. At times, authorities use this discretion to enforce rights in a manner that is inconsistent with the relevant legislation, particularly with respect to license issuance, renewal and compliance. Requirements imposed by regulatory authorities may be costly and time-consuming and may result in delays in the commencement or continuation of production operations.

The licencing process is also influenced by outside commentary and political pressure. A competing applicant for a subsoil use contract or license may bring a direct claim against the issuing authority if the applicant believes that the contract or license was issued in violation of applicable law or regulation. If successful, such proceedings and claims may result in the revocation or invalidation of the contract or license, the refusal to issue or renew a contract or license or the issuance or renewal of a contract or license in an untimely fashion or with conditions that impair the Group's



ability to conduct its operations profitably. Although the Company enjoys the status of the national operator through which all of Kazakhstan uranium-related operations are carried out, if the Company were to lose such status due to a change in regulation or otherwise, this could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

Regulatory authorities may impose more onerous requirements and obligations than those currently in effect. Although the Group is unable to predict the costs it may be required to incur in order to comply with such amended laws, regulations and permits, the costs could be substantial which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Labour unrest in Kazakhstan may materially adversely affect the Group's business.***

In the recent past, several labour strikes and unrests have occurred in Kazakhstan, some of which were suppressed with the use of force. While the Group has not experienced any work stoppages, strikes or similar actions in the past and considers its relations with its employees to be good, there can be no assurance that stoppages or strikes will not occur in the future if the general labour situation in Kazakhstan begins to deteriorate. The Group can provide no assurance that any such future potential labour unrest will be satisfactorily resolved or that further disturbances will not arise. In addition, there can be no assurance that any future strike would not result in on-going reductions in production or a need to devote significant financial resources to restore production. As at 31 December 2017, approximately 64% of the Group's employees were members of the Industry Trade Union of the Nuclear Industry Employees Public Association of the Republic of Kazakhstan and approximately 98% of the Group's employees were party to the collective bargaining agreement. See "*Business—Employees and Labour Safety*" for more details. Labour unrest could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The outcome of the implementation of further market-based economic reforms in Kazakhstan is uncertain.***

The need for substantial investment in many enterprises has driven the Government's privatisation programme. The programme has excluded certain enterprises deemed strategically significant by the Government, although major privatisations in key sectors have taken place, such as full or partial sales of certain large oil and gas producers, mining companies and the national telecommunications group. However, there remains a need for substantial investment in many sectors of Kazakhstan's economy and there are areas in which economic performance in the private sector is still constrained by an inadequate business infrastructure. Furthermore, the significant size of the shadow economy (or black market) in Kazakhstan may adversely affect the implementation of reforms and hamper the efficient collection of taxes. The Government has stated that it intends to address these problems by improving the business infrastructure and tax administration and by continuing the privatisation process. However, there can be no assurance that these measures will be effective and any failure to implement them may have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Kazakhstan's physical infrastructure is in poor condition.***

Kazakhstan's physical infrastructure is in poor condition, which could disrupt normal business activity. Kazakhstan's physical infrastructure largely dates back to Soviet times and has not been adequately funded and maintained over the past nearly 30 years. Particularly affected are rail and road networks, power generation and transmission, pipelines and communication systems. The Group's assets are located in different regions of Kazakhstan. For example, as certain uranium mines operated by RU-6 LLP, Ortalyk LLP and Semizbai-U LLP do not, as at the date of this Prospectus, have their own uranium processing capacities which requires the transportation of the yellow cake produced by them to UMP or the processing facility owned by Stepnogorsk Mining Chemical Combine (plant) LLP. There can be no assurance that the Government will dedicate budget revenues to improving the country's physical infrastructure. A lack of progress in the rehabilitation of Kazakhstan's physical infrastructure may harm the national economy, disrupt the transportation of goods and supplies, add costs to doing business in Kazakhstan and may interrupt business operations, any of which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Kazakhstan's legislative, judicial, tax and regulatory framework is underdeveloped and evolving.***

Although a large volume of legislation has been enacted since early 1995 (including new tax codes in January 2002, January 2009 and January 2018, a new Code on Subsoil and Subsoil Use (the "**Subsoil Code**") in June 2018 and new or amended laws relating to foreign arbitration and foreign investment, additional regulation of the banking sector and other legislation covering such matters as securities exchanges, economic partnerships and companies, and state enterprise reform and privatisation throughout the period), the legal framework in Kazakhstan is still evolving compared to countries with more established market economies.

The judicial system, judicial officials and other Government officials in Kazakhstan may not be fully independent of external social, economic and political forces. For example, there have been instances of improper payments being made to public officials. Therefore, court decisions can be difficult to predict and administrative decisions have on occasion been inconsistent. Kazakhstan is a civil law-based jurisdiction and, as such, judicial precedents have no binding effect on subsequent decisions.

Further, the legal and tax authorities may make arbitrary judgments and assessments of tax liabilities and challenge previous judgments and tax assessments, thereby rendering it difficult for companies to ascertain whether they are liable for additional taxes, penalties and interest. As a result of these ambiguities, including, in particular, the uncertainty surrounding judgments rendered under the Tax Code introduced with effect from 1 January 2018 (as amended from time to time, the “**2018 Tax Code**”), as well as a lack of an established system of precedent or consistency in legal interpretation, the legal and tax risks involved in doing business in Kazakhstan are substantially more significant than those in jurisdictions with a more developed legal and tax system. See also “—*Risks Relating to Taxation.*”

The continuing evolution of Kazakhstan’s tax and other regulation may result in the reduced predictability of the regulatory landscape and may cause difficulties in interpretation in the absence of court precedents or guidance from the regulators, any of which could be significant and could therefore have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Kazakhstan judiciary’s lack of experience and perceived lack of independence, the difficulty of enforcing judgments and awards, and governmental discretion in enforcing claims could prevent the Group or holders of the Securities from obtaining effective redress in a court proceeding.***

The independence of the judicial system and its immunity from economic, political and nationalistic influences in Kazakhstan cannot be guaranteed. The judicial system is often understaffed and underfunded. Judges are generally inexperienced in business and corporate law matters. Not all Kazakhstan legislation and court decisions are readily available to the public or organised in a manner that facilitates understanding. The Kazakhstan judicial system can be slow and court orders are not always enforced or followed by law enforcement agencies. All of these shortcomings may affect the ability of the Group or holders of the Securities to obtain effective legal redress in Kazakhstan courts. In addition, the press has reported that court claims and government prosecutions are often used to further political aims that the courts support. The Group may be subject to such political claims and may not receive a fair hearing. Furthermore, claims relating to the Shares will be subject to consideration by the recently created court of the Astana International Financial Centre, which operates on the principles of English law; however, due to its very limited history of operation, the outcome of any proceedings subjected to it are difficult to predict.

These uncertainties make judicial decisions in Kazakhstan difficult to predict and effective redress uncertain and could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The laws and regulations of Kazakhstan relating to foreign investment, subsoil use, licensing, companies, tax, customs, currency, banking and competition are still developing and are characterised by uncertainty and frequent change.***

The laws and regulations of Kazakhstan relating to foreign investment, subsoil use, licensing, companies, tax, customs, currency, capital markets, pensions, insurance, banking and competition are still developing. Many laws provide regulators and officials with substantial discretion in their application, interpretation and enforcement. New legislation adopted in December 2017 in the form of the Subsoil Code which became effective in June 2018 continues to grant the Government the right to require amendments to or to terminate subsoil use contracts of strategic importance if it is determined that the operations thereof have a material impact on the economic position of the Republic. In addition, because the statutes on subsoil use do not restrict the course of action available to the Government by reference to the gravity of the violation, a minor violation could conceivably lead to harsh consequences, such as suspension or termination of the subsoil use rights. The Subsoil Code is relatively new and untested, and accordingly it is difficult to predict the consequences of a violation. As a condition of certain of its subsoil use licenses and contracts, the Group is obliged to maintain certain social programmes for the benefit of local communities and to invest in training the local workforce. These obligations may increase or become more burdensome in the future, upon a change in the government or political climate or otherwise, which could have a material adverse effect on the Group’s business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

The Kazakhstan Government has stated that it believes in continued reform of the corporate governance processes and will promote discipline and transparency in the corporate sector. There can be no assurance that the Kazakhstan

Government will continue this policy. Given Kazakhstan's relatively short independent legislative, judicial and administrative history, the effect of current and future legislation on the Group's business is unpredictable. The on-going rights of the Group under its subsoil use contracts, licenses and other agreements may be susceptible to revision or cancellation, and legal redress may be unavailable, which could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Kazakhstan currency control legislation may affect the Group's foreign currency dealings.***

Pursuant to the Kazakhstan's Law On Currency Regulation and Currency Control dated 13 June 2005, as amended (the "**Currency Law**"), the Government has the right to impose, under certain emergency circumstances, restrictions in respect of currency operations of residents and non-residents of Kazakhstan. Such restrictions may be imposed within the framework of the "special currency regime" introduced by the Government upon consultation with the NBK and other relevant state bodies if there is a threat to economic security of Kazakhstan and stability of its financial system. For example, the Government may require (among other things) that certain currency operations may be carried out only upon obtaining the permit from the NBK, impose restrictions on the use of foreign bank accounts and/or require that funds from currency operations be deposited with a non-interest bearing deposit account with Kazakhstan-authorized banks or the NBK. Moreover, the Government may impose other requirements and restrictions on currency transactions when the economic stability of Kazakhstan is threatened. To date, Kazakhstan has not applied the special currency regime.

The NBK establishes thresholds and conditions, under which certain currency contracts fall within a registration or notification regime. Under the registration and notification regime, information and documentation regarding currency contracts is required to be submitted to the NBK. The establishment of branches or representative offices by the foreign parent companies does not fall under the notification regime.

Further, the NBK has prepared a new Law On Currency Regulation and Currency Control, which was signed by the President of Kazakhstan on 2 July 2018 (the "**New Currency Law**") that will supersede the current Currency Law with effect from 1 July 2019. The New Currency Law, while retaining the Government's power to impose restrictions under the special currency regime, also provides for a new power of the NBK to restrict the conversion of the Tenge into foreign currency. Specifically, under the New Currency Law, the NBK would have the right to allow resident legal entities to convert Tenge into foreign currency only for certain specified purposes (to be determined by the NBK). In order for Kazakhstan to remain in compliance with its membership obligations under the Charter of the International Monetary Fund, the new currency regime cannot restrict residents from repaying foreign currency-denominated obligations. It is at present unclear how the new currency regime would ultimately impact the Group. However, significant restrictions on the Group's foreign currency dealings could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Sustained periods of high inflation could adversely affect the Group's business.***

The Group's operations are located principally in Kazakhstan and a majority of the Group's costs are incurred in Kazakhstan. Since the majority of the Group's expenses are denominated in Tenge, inflationary pressures in Kazakhstan are a significant factor affecting the Group's expenses. For example, employee and contractor wages, consumable prices and energy costs have been, and are likely to continue to be, particularly sensitive to monetary inflation in Kazakhstan. In August 2015, the NBK announced its adoption of a free-floating exchange rate and medium-term inflation targeting policy. According to the NBK, annual consumer price inflation for the years ended 31 December 2015, 2016 and 2017 was 10.4%, 8.5% and 7.1%, respectively. A sustained period of high inflation could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Kazakhstan has a less developed securities market than the United States, the United Kingdom and the rest of Western Europe, which may hinder the development of Kazakhstan's economy.***

An organised securities market was established in Kazakhstan only beginning in the mid-1990s and procedures for settlement, clearing and registration of securities transactions may, therefore, be subject to legal uncertainties, technical difficulties and delays. Although significant developments have occurred in recent years, including an initiative to develop Astana as a regional financial centre and the related launch of the AIX, the sophisticated legal and regulatory frameworks necessary for the efficient functioning of modern capital markets have yet to be fully developed in Kazakhstan. In particular, legal protections against market manipulation and insider trading are not as well developed or as strictly enforced in Kazakhstan as they are in the United States, the United Kingdom and other Western European countries, and existing laws and regulations may be applied inconsistently. In addition, less information relating to Kazakhstan entities, such as the Group's subsidiaries, JVs and Associates, is required to be made publicly available as compared to disclosure requirements for entities organised in the United States, the United Kingdom or other Western

European countries. The above-mentioned factors may impair foreign investment in Kazakhstan, which may hinder the development of Kazakhstan's economy, which could in turn have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group cannot ensure the accuracy of official statistics and other data in this Prospectus published by Kazakhstan authorities.***

Official statistics and other data published by Kazakhstan authorities may not be as complete or reliable as those of more developed countries. Official statistics and other data may also be produced on different bases from those used in more developed countries. The Group has not independently verified such official statistics and other data and any discussion of matters relating to Kazakhstan in this Prospectus is, therefore, subject to uncertainty due to questions regarding the completeness or reliability of such information. Specifically, investors should be aware that certain statistical information and other data contained in this Prospectus has been extracted from official Government sources and was not prepared in connection with the preparation of this Prospectus.

In addition, certain information contained in this Prospectus is based on the knowledge and research of the Group's management using information obtained from non-official sources. This information has not been independently verified and, therefore, is subject to uncertainties due to questions regarding the completeness or reliability of such information, which was not prepared in connection with the preparation of this Prospectus. Should any official statistics contained in this Prospectus or on which the Group otherwise relied, including in making its management decisions, prove to be materially inaccurate, this could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group provides social programmes for the benefit of local communities, the costs of which may increase.***

As a condition of certain of its subsoil use licenses and contracts and pursuant to certain agreements with governmental authorities, the Group is obliged to maintain certain social programmes. These obligations include funding various projects relating to social, economic and infrastructure development in the areas in which the Group operates. Furthermore, the Group is obliged under its subsoil use licenses and contracts to invest in training the local workforce, upgrading the qualifications of its employees and providing educational grants. In addition, at its own initiative and at the request of governmental authorities, the Group has provided and continues to provide social support in the areas where it operates and in other areas in Kazakhstan. In 2014, the Group signed a memoranda with South Kazakhstan and Kyzylorda municipalities for cooperation in the economic and social spheres pursuant to which it undertook obligations amounting, in the aggregate, to KZT6.8 billion (see also "*Operating and Financial Review—Contingencies and Commitments—Memoranda with South Kazakhstan and Kyzylorda municipalities.*") In addition, in October 2018, further to the order of the President of the Republic of Kazakhstan, the Company was tasked with providing, and provided, KZT2 billion of financial support to the Turkestan oblast. Such obligations, as well as additional social projects, may increase or become more onerous in the future and could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

## **Risks Relating to Taxation**

***Kazakhstan's taxation system is subject to frequent change.***

Kazakhstan's taxation system is continually evolving and is subject to frequent and, at times, inconsistent changes, which could have an adverse effect on the Group. Additionally, the 2018 Tax Code has been in force for a short period relative to the tax laws and regulations in more developed market economies, and therefore risks of tax liabilities within its jurisdiction are more uncertain than in nations with more developed tax systems. The Group's operations are principally conducted, and most of the Group's assets are located, in Kazakhstan and, therefore, weaknesses in the Kazakhstan tax system could adversely affect the Group.

Historically, the system of tax collection in Kazakhstan has been relatively ineffective, resulting in continual changes to the tax legislation, which sometimes have occurred on short notice and have been applied retrospectively. Such kinds of changes to the Tax Code may apply not only to the provisions that establish the rules of tax administration, but also changes in the tax base and the tax rate. Furthermore, the Tax Code is subject to amendments on an annual basis, while since 1 January 2018, the 2018 Tax Code was enacted, which is the fourth since the Republic of Kazakhstan gained independence. These changes produce tax uncertainties which may result in adverse tax implications for the Group.

Differing interpretations of tax regulations exist both among and within government bodies. Such differing interpretations increase the level of uncertainty and, therefore, tax risks, and could potentially lead to the inconsistent enforcement of these laws and regulations. Official explanations and court decisions are often unclear and contradictory, leading to tax disputes which could impose significant litigation costs on the Group. For example,



clarifications of the tax authorities on particular Tax Code clause are not legally binding on either taxpayers or the tax authorities themselves, and may not be taken into account during settlement of tax disputes. In addition, the responsibility of the tax authorities for providing misinterpretation of the articles of the Tax Code is not established by law. Thus, it is allowed to the tax authorities to change their position regarding the application of an article. Additionally, court cases, related to the resolution of tax disputes, which are considered as a separate category of cases and require a distinct category of specialised judges, do not always issue decisions that can be considered professional. Despite the fact that such judges are recognised as the most qualified in their field, an investment court creation in 2016 which served to resolve investor disputes including the tax disputes of large investors, did not lead to an improvement in the quality of tax litigation and any significant positive changes in the resolution of tax disputes.

As a consequence of the complexity of the precise legal description of the taxation mechanism, the shortcomings of legal techniques, and the gaps and contradictions that exist in the tax legislation, there are frequent different interpretations of tax legislation by taxpayers and the tax authorities. During administrative settlements of such tax disputes, the tax authorities often resolve such decisions in favour of the state. Therefore, the implementation of Kazakhstan taxes is often unclear or inconsistent, and may result in unexpected tax liabilities that could contribute to a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***References to IFRS in the 2018 Tax Code could result in adverse tax assessment for the Group.***

Significant part of the 2018 Tax Code contains direct links to the IFRS, which equates IFRS to the legislative acts for tax purposes. Therefore, because IFRS is built on principles of economic entity predominance over the legal form, application of certain principles and methods of IFRS is a matter of professional judgment which may result in tax disputes between the Group and tax authorities. During tax audits, tax authorities have rendered judgment on the IFRS interpretation that differs from professional specialists' judgment of financial services and auditors. In addition, the tax authorities issue letters where they give their own interpretation of IFRS, which does not take into account all aspects of application of standards.

Frequent issues of controversy in the tax audit practice involve the classification of subsequent costs that increases the value of long-term assets, subsequent costs recognised as expenses of the current period, and expenses included in the production cost of the finished products. These expenses, under the Tax Code, are recognised by taxpayers according to the accounting records based on IFRS. However, the tax authorities give their own assessment of the correctness of the expenses classification incurred by the taxpayer, despite the presence of an audit report.

The complicated nature involved in IFRS judicial-making and the application of IFRS in Kazakhstan's taxation system entails a risk of ambiguous interpretation and practical application of IFRS provisions by taxpayers and tax authorities, and may therefore lead to additional, and potentially material, tax liabilities on the Group that could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Transfer pricing methodology applied by the Kazakhstan tax authorities could result in adverse tax assessments for the Group.***

The Group's transactions for cross-border sale of natural uranium concentrate are subject to transfer pricing scrutiny, which could have an adverse effect on the Group's tax implications. Under Kazakhstan tax law if the price of export is not at arm's length, additional taxable income recognition on controlled transactions, including cross border transactions of goods as well as transactions of Kazakhstan residents committed outside of Kazakhstan, should be accrued. Uncertainties in Kazakhstan's methodology for determining the market price for natural uranium concentrate exposes the Group to tax liability uncertainty and the possibility of being assessed additional taxes and penalties. See also "*—Risks relating to the Group's Operations—The Law on Transfer Pricing may impair the Group's ability to sell products.*"

The Government of Kazakhstan approved a methodology for natural uranium concentrate pricing in order to determine the market price. The methodology establishes the procedure for calculating the prices for the sale of natural uranium concentrate for transactions made in accordance with long-medium-short-term and spot contracts for the purchase and sale of natural uranium concentrate. Nevertheless, there are some exceptions that includes transactions with Procurement and Materials Management of the Department of Atomic Energy of the Government of India and operator of nuclear power plants Electricite de France. The methodology is a substitution of advance pricing agreement, since it reduces the risks of additional charges for taxes, related to the market price, by fixing a consistent approach of uranium mining companies and tax authorities to the calculation of market prices for natural uranium concentrate. However, the methodology does not clearly cover transactions committed outside of Kazakhstan. Therefore, should tax authorities



apply a different approach in calculating arm's length price for such transactions of the Group, it could lead to additional taxes and penalties, which could be significant and therefore could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Ring-fence methodology applied by the Kazakhstan tax authorities could result in adverse tax assessments for the Group.***

Uncertainty over taxing calculations related to ring-fencing requirements may lead to unexpected tax assessments on the Group. Within the subsoil use contractual and non-contractual operations, the 2018 Tax Code requires a ring-fence for the corporate income tax ("CIT") calculation. Therefore, subsoil user companies which carry out subsequent processing of minerals within the boundaries of the same legal entity should ring-fence their contractual revenues and expenditures from their non-contractual revenues and expenditures revenues. Likewise, for including deductions for contractual and non-contractual operations, taxpayers should divide the cost of goods sold.

However, the 2018 Tax Code lacks a consistent methodological approach for the ring-fence of CIT at the legislative level. This may potentially lead to a significant number of disputes with tax authorities about the legitimacy of recognizing the contractual or non-contractual income and expenditure. In addition, the complexity of the calculation and the presence of more than one calculation option involves unintended errors of taxpayers and the approaches that are different from the approach of the tax authorities on tax liabilities calculation. Therefore, the Group may be subject to additional tax liabilities due to differing methodological approaches to tax calculations, which could be significant and therefore could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The budget of Kazakhstan is reliant on subsoil user companies.***

Due to the reliance of the Kazakhstan budget on subsoil user companies, the Group may be subject to routine audits and tax scrutiny until Kazakhstan achieves macroeconomic stability and, as a result, balance of the state budget.

The uncertainty of the world economy, expressed by periodic economic crises, has a significant impact on fiscal policy of Kazakhstan, which at times is not able to ensure a stable flow of funds to the state treasury from the tax revenues. As a consequence, Kazakhstan's budget may result in a deficit. While over the past two years, the budget has improved significantly due to the floating exchange rate established in 2015, as well as the subsequent rise in oil prices in the world markets, nevertheless the Kazakhstan state budget remains scarce. As a consequence, the fiscal authorities try to replenish the budget in all available ways. Since the main sources of cash flow to the budget are subsoil user companies, the tax burden on such companies remains significant.

In addition, tax authorities consider amount of additional taxes as one of the sources of the budget replenishment, as well as fines and penalties accrued on the result of the tax audits. The 2018 Tax Code establishes a five-year statute of limitation for a tax obligation as a requirement for subsoil user companies. Because the existing risk management system does not apply to subsoil users, tax liabilities of such companies are checked periodically to cover all periods before the expiration of the statute of limitation. Moreover, if a company provides additional declaration or the tax authorities indirectly identify the risks of non-payment of taxes, the audit may extend to previously audited periods within a five-year period. Therefore, according to the results of the tax audit, the risk of the outflow of additional funds for taxes remains high and the risk of scrutiny on the Group from tax authorities may lead to unexpected tax and penalty assessments, which could be significant and therefore could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***Kazakhstan's economy suffers from sham transactions which may result in penalties to the Group.***

Certain companies in Kazakhstan are believed to engage in a form of fraud resulting in the understatement of receipt of value added tax ("VAT") in Kazakhstan's budget wherein companies issue invoices for the supply of goods and services that have not actually been provided. In such sham transactions, the purchaser of such goods and services takes VAT in credit, and the company that issued such invoices does not pay VAT to the budget. Such fictitious companies avoid tax audits, resorting to various actions, such as issuance power of attorney to persons not involved in their activities, or registration as the head an individual who, in fact, has no relation to the activities of that company.

In practice, the activities for issuing invoices without actual provision of goods and services may also be carried out by business entities, who have good faith background. Despite current legislation requiring the specific fictitious transactions with counterparties be reflected in the court's verdict, in practice these requirements are not executed properly. Instead, during the investigation of the criminal cases against fictitious companies, the validity or invalidity of all companies are frequently not examined. As a result, good faith businesses, whose invalidity of transactions has not been examined and has not been proved during the criminal process, find out the acknowledgement of their

counterparty as a fictitious company only after the conviction has been pronounced and corresponding notification of additional charges of taxes and penalties has been received. Thus, the current system of punishment for fictitious entrepreneurship in Kazakhstan shifts responsibility to a conscientious entrepreneur and avoids causing damage to the state.

Therefore, good faith businesses, including the Group, even with a careful selection of suppliers, cannot avoid the risk that such suppliers in the future will be declared as invalid due to relation to sham transactions and, as a result, the Group may be charged with taxes and penalties for such transactions, which could be significant and therefore could have a material adverse effect on the Group's business, prospects, financial condition, cash flows, results of operations and or the price of the Securities.

***The Group cannot guarantee its in-house tax personnel and internal control systems will be sufficient for the Group's purposes and in particular will not produce erroneous tax calculations.***

In Kazakhstan, tax liabilities calculation is a complex process that requires involvement of highly qualified specialists which are lacking in remote areas such as South Kazakhstan where the Group primarily operates. Therefore, the market for such talent is highly competitive and there is no guarantee that the Group will be able to retain or attract the necessary tax professional staff. Although most enterprises cannot avoid mistakes related to the formation and execution of tax obligations, because these risks are associated with a high rate of dependency on the in-house tax personnel, the risk of errors associated with the additional charging of taxes and penalties accrued on the results of tax audit of the Group's companies are relatively high.

Additionally, the Group's internal control system is unable to prevent the risk of unplanned tax outflows despite the Group's corporate tax policy regulating the tax calculation and payment. Furthermore, any internal control system may not guarantee risk aversion because of interpretation complexity of the 2018 Tax Code's provisions. In addition, an absence of an automated tax accounting system for the Group's enterprises also implies risks caused by internal factors, such as unintentional errors or insufficient qualification of the in-house tax personnel. The risk of inaccurate, internal tax calculations leads to uncertainties regarding the Group's future tax liabilities.

#### **Risks Relating to the Offer, the Securities and the Trading Market**

##### ***Active trading markets for the Securities may fail to develop.***

There is currently no active trading market for the Securities. Although the GDRs are expected to be listed on the LSE and the Shares are listed on the AIX, there is no guarantee that an active trading market for the GDRs or the Shares will develop and continue following the LSE Admission and the AIX Admission, respectively. If an active trading market for the Securities does not develop, this could have a material adverse effect on the liquidity and the market price of the Securities and investors may not be able to sell the Securities they purchased in the Offering at or above the Final Offer Price or at all. As a result, investors who purchase the Securities in the Offering could lose all or part of their investment in the Securities. The Final Offer Price of the Securities may not be indicative of the market price of the Securities after the Offering.

In addition, the trading price of the Securities may also be subject to significant volatility in response to, among other things, the following factors: (i) changes in analysis and recommendations of securities analysts, (ii) announcements made by the Group or its competitors, (iii) changes in investors' perception of the Group and the investment environment, (iv) changes in the Group's pricing or of its competitors', (v) the liquidity of the market for the GDRs and (iv) general economic factors.

##### ***Holder of GDRs in certain jurisdictions may be unable to exercise their pre-emptive rights.***

Under Kazakhstan law, subject to certain exceptions, prior to the placement of any new shares or securities convertible into shares, the Company must offer all holders of existing shares pre-emptive rights to subscribe and pay for a number of shares or securities convertible into shares that would allow them to maintain their existing ownership ratio.

In order to raise funding in the future, the Company may issue additional Shares, including in the form of the GDRs. Holders of the GDRs in certain jurisdictions, including the United States, may be unable to exercise pre-emptive rights for Shares represented by the GDRs unless the applicable securities law requirements in such jurisdiction are adhered to or an exemption from such requirements is available. No assurance can be given that the Company will elect to comply with such applicable laws and regulations, or in the case of U.S. holders, that an exemption from the registration requirements of the Securities Act would be available to enable such U.S. holders to exercise such pre-emptive rights and, if such exemption were available, that the Company would take the steps necessary to enable U.S. holders of the GDRs to rely on it.

***Cash held by the Depositary and the Custodian for holders of the GDRs may not be available to such holders in the event of an insolvency of the Depositary or the Custodian.***

Any cash held by the Depositary for holders of the GDRs (“**Holders**”) is held by the Depositary as banker. Under current U.S. and English law, it is expected that any cash held for Holders by the Depositary as banker under the terms and conditions of the GDRs would constitute an unsecured obligation of the Depositary. Holders would therefore only have an unsecured claim in the event of the Depositary’s insolvency for such cash that would also be available to the general creditors of the Depositary. As a result, in the event of an insolvency of the Depositary, Holders may not receive any of the cash held by the Depositary for them or may receive only a proportion of such cash.

On an insolvency of the Custodian, it is uncertain whether any cash held by the Custodian in its capacity as Custodian would constitute assets of the Custodian and whether the Holders would have ownership rights relating to such cash. The uncertainty results from the difference in the treatment of cash as between Article 45.5 of the Kazakhstan Securities Market Law, which specifically provides that cash held by professional securities market participants (such as the Custodian) should be excluded from its bankruptcy estate, and Article 74-1.2 of the Kazakhstan Banking Law, which does not specifically provide that cash should be excluded from the bankruptcy estate. It is unclear whether a Kazakhstan liquidation commission would apply the Securities Market Law or the Banking Law on an insolvency of the Custodian and, if it were to apply the Banking Law, whether it would interpret the applicable provisions of the Banking Law to include cash held by the Custodian for the Holders in the bankruptcy estate or to exclude such cash from the bankruptcy estate. As a result, in the event of an insolvency of the Custodian, Holders may not receive any of the cash held by the Custodian for them or may receive only a proportion of such cash if the Kazakhstan liquidation commission of the Custodian applies the Banking Law and interprets it to include cash held for Holders as part of the Custodian’s bankruptcy estate.

***Sales of additional GDRs or Shares following the Offering may result in a decline in the price of the GDRs.***

Each of the Company and the Selling Shareholder has agreed, subject to certain exceptions, that, until the expiry of a period of 180 days after the date of the LSE Admission, neither it nor any of its subsidiaries or its affiliates nor any person acting on its behalf will, subject to certain exceptions, without the prior written consent of the Joint Global Coordinators (on behalf of the Managers) issue, offer, option to sell, purchase any option or contract to sell, or lend or otherwise transfer or dispose of any GDRs or Shares (the “**Lock-up**”). Upon the expiry of the Lock-up, the sale of a substantial number of Shares, GDRs or other securities representing the Shares, or any perception that such sales could occur, could materially adversely affect the market price of the Securities and could also impede the Company’s ability to raise capital through the issue of equity securities in the future. Moreover, the Company may in the future issue new Shares, any other securities convertible or exchangeable into Shares. Any such issue could result in an effective dilution for investors purchasing the Securities. Any of these events could adversely affect the price of the Securities. As a result, investors who purchase the Securities could lose all or part of their investment in such Securities.

***The AIX has very short history of operations.***

The Astana International Exchange, or AIX, was launched in July 2018 and therefore has very short history of operations. The Company is expected to be the first issuer to complete the admission procedure for their securities on the AIX. There may be no assurance that the AIX will attract a sufficient number of market participants and issuers to ensure acceptable trading volumes in the foreseeable future or at all. Moreover, as of the date of this Prospectus, the technological platform of AIX remains relatively untested given the early stages of its operations. Accordingly, market participants, issuers and other involved parties may experience technical difficulties with various aspects of AIX’s operations, such as quotation and trading information and settlement. Any of these events could adversely affect the price of the Shares and, consequentially, the price of the GDRs.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Prospectus includes statements that are, or may be deemed to be, “forward-looking statements” and which reflect the Group’s views with respect to its results of operations, financial condition, business strategy and its plans and objectives for future operations.

These forward-looking statements can be identified by the use of forward-looking terminology, including the words “targets,” “proposes,” “plans,” “believes,” “expects,” “aims,” “forecasts,” “intends,” “will,” “may,” “might,” “estimates,” “projects,” “envisages,” “anticipates,” “continues,” “would,” “could” or “should” or similar expressions or, in each case their negative or other variations or by discussion of strategies, plans, objectives, goals, future events or intentions. These forward-looking statements all include matters that are not historical facts. They appear in a number of places throughout this Prospectus and include statements regarding the intentions, beliefs or current expectations of the Group and/or its management concerning, among other things, the results of operations, financial condition, liquidity, capital expenditures, prospects, growth, strategy and dividend policy of the Group and the industry in which it operates including, without limitation, the development of the uranium industry, including the price of uranium, sensitivity of the average realised price of  $U_3O_8$  to the spot price of  $U_3O_8$ , the Group’s ability to develop its existing or planned resources, the success of the Group’s joint ventures, and the implementation of the Group’s strategy.

By their nature, such forward-looking statements are necessarily dependent on assumptions, data or methods which may be incorrect or imprecise and may be incapable of being realised. Moreover, they involve known and unknown risks, uncertainties and other important factors beyond the Group’s control that could cause the actual results, performance or achievements of the Group to be materially different from future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding the Group’s present and future business strategies and the environment in which the Group will operate in the future. Forward-looking statements are not guarantees of future performance. The important factors that could cause the Group’s actual results, performance or achievements to differ materially from those expressed in such forward-looking statements include, among others, those discussed in “*Risk factors*,” “*Operating and financial review*” and elsewhere in this Prospectus.

These forward looking statements speak only as at the date of this Prospectus. The company expressly disclaims any obligation or undertaking to disseminate any updates or revisions to any forward looking statements contained herein to reflect any change in the group’s expectations with regard thereto or any change in events, conditions or circumstances on which any such statements are based unless required to do so by applicable law, the Prospectus Rules, the Listing Rules, the Disclosure Guidance and Transparency Rules of the FCA or the Market Abuse Regulation.

PricewaterhouseCoopers LLP has not audited, reviewed, examined, compiled nor applied agreed-upon procedures with respect to forward-looking statements presented in the Prospectus and, accordingly, PricewaterhouseCoopers LLP does not express an opinion or any other form of assurance with respect thereto and therefore should not be associated with this information.

## THE OFFERING

**The Company** ..... Joint Stock Company “National Atomic Company “Kazatomprom”, a joint stock company organised under the laws of the Republic of Kazakhstan.

**The Selling Shareholder** ..... Joint Stock Company “Sovereign Wealth Fund “Samruk-Kazyna”, a joint stock company organised under the laws of the Republic of Kazakhstan.

The Selling Shareholder currently owns all of the Company’s issued share capital. Following the Offering and the AIX Offering (assuming the Upsize Option has not been exercised), the Selling Shareholder will own not less than 85% of the Company’s issued share capital. See “*Principal and Selling Shareholder*”.

**The Offering** ..... The Offering consists of an offering of up to 38,903,491 Shares in the form of the GDRs (including the Over-Allotment Option). The number of the Securities sold in the AIX Offering (as defined below) will reduce the number of the Shares in the form of the GDRs available for sale in the Offering.

Pursuant to the Resolution of the Government of the Republic of Kazakhstan No. 661 dated 19 October 2018, the Selling Shareholder is authorised to sell up to 64,839,152 Securities, representing in aggregate approximately 25% of the total number of existing shares (the “**Authorised Limit**”). The Selling Shareholder may, subject to the exercise of the upsize option in consultation with the Joint Global Coordinators specified below, increase the maximum number of the Securities offered in the Offering and the AIX Offering by up to additional 25,935,661 Securities (the “**Upsize Option**”). The final size of the Offering will be set out in the Pricing Statement.

The GDRs will be offered (i) in the United States, to qualified institutional buyers (as defined in, and in reliance on, Rule 144A under the Securities Act (“**Rule 144A**”)) (“**QIBs**”) (ii) outside the United States, to institutional investors in “offshore transactions” as defined in, and in reliance on, Regulation S under the Securities Act (“**Regulation S**”).

**The AIX Offering** ..... Separately from the Offering, the Selling Shareholder is offering Shares and GDRs to institutional and retail investors through the facilities of the AIX pursuant to its regulations and settlement procedures. The AIX Offering will be led by JSC Halyk Finance.

**Pricing Date and Closing Date** . . . . Pricing Date is expected to be on or about 13 November 2018.

Closing Date is expected to be on or about 16 November 2018.

The timetable above may be subject to change. Certain events provided therein are beyond the control of the Company, the Selling Shareholder or the Managers. The Company and the Selling Shareholder, in agreement with the Managers, reserve the right to change the above timetable for the Offering. Information about any changes to the proposed timetable of the Offering will be subject to notification to investors and/or supplements to the Prospectus in accordance with applicable regulations.

**Offer Price Range** ..... The Offer Price Range is US\$11.60 to US\$15.40 per GDR (the “**Offer Price Range**”).

**Final Offer Price** ..... The Final Offer Price shall be determined on the Pricing Date. See “*Plan of Distribution*”.

**Over-allotment Option** ..... In connection with the Offering, Credit Suisse Securities (Europe) Limited (the “**Stabilising Manager**”) or any persons acting for the Stabilising Manager, may, for stabilisation purposes, over-allot GDRs up to a maximum of 15% of the total



number of the GDRs being sold in the Offering. For the purposes of allowing the Stabilising Manager to cover short positions resulting from any such over-allotments and/or from sales of GDRs effected by the Stabilising Manager during a period of 30 days after the Pricing Date (the “**Stabilisation Period**”), the Selling Shareholder will grant the Managers the Over-Allotment Option pursuant to which the Stabilising Manager on behalf of the Managers, may require the Selling Shareholder to sell additional GDRs, up to a maximum of 15% of the total number of the GDRs being sold in the Offering at the Final Offer Price.

The Over-Allotment Option is exercisable within 30 days of the Pricing Date in whole or in part from time to time on one or more occasions only during the Stabilisation Period for the purposes of meeting over-allotments that may be made, if any, in connection with the Offering and short positions resulting from stabilisation transactions, upon written notice from the Stabilising Manager on behalf of the Managers, to the Selling Shareholder (see “*Plan of Distribution*”). Any GDRs made available pursuant to the Over-Allotment Option will be issued on the same terms.

Save as required by law or regulation, neither the Stabilising Manager nor any of its agents intends to disclose the extent of any over-allotments made and/or stabilisation transactions conducted in relation to the Offering.

<b>GDRs</b> .....	Each GDR will represent one Share. The GDRs will be issued and delivered by the Depositary pursuant to the Deposit Agreements. The Rule 144A GDRs will be evidenced by the Master Rule 144A GDR, the Regulation S GDRs will be evidenced by the Master Regulation S GDR. See “ <i>Summary of provisions relating to the GDRs while in master form.</i> ” GDRs will initially be created for the purpose of the Offering. Pursuant to the Deposit Agreements, the Shares represented by the GDRs will be held by Citibank Kazakhstan JSC, the Custodian, for the benefit of the Depositary.
<b>Depositary</b> .....	Citibank, N.A.
<b>Lock-up</b> .....	Each of the Company and the Selling Shareholder has undertaken to each of the Managers that from the date of the underwriting agreement until 180 days from the date of the LSE Admission, neither it nor any of its subsidiaries or their affiliates nor any person acting on its behalf will, subject to certain exceptions, without the prior written consent of the Joint Global Coordinators (on behalf of the Managers), (i) issue, offer, pledge, sell, contract to sell, sell or grant any option, right, warrant or contract to purchase, exercise any option to sell, purchase any option or contract to sell, or lend or otherwise transfer or dispose of any Shares, any GDRs or other shares of the Company, or any securities convertible into or exercisable or exchangeable for Shares, GDRs or other shares of the Company, or file any registration statement under the Securities Act or any similar document with any other securities regulator, stock exchange, or listing authority with respect to any of the foregoing; or (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of any Shares, any GDRs or other shares of the Company, whether any such transaction described in sub-clause (i) or (ii) above is to be settled by delivery of Shares, GDRs or other securities, in cash or otherwise; or (iii) publicly announce such an intention to effect any such transaction.
<b>Use of Proceeds</b> .....	The Company is not selling any Securities in the Offering and will not receive any of the proceeds from the sale of Securities by the Selling Shareholder in the Offering. The Selling Shareholder will receive all of the proceeds from the sale of Securities.
<b>Share capital</b> .....	At the date of this document, the Company’s authorised and issued share capital is KZT37,050,945,000, and consists of 259,356,608 Shares.

Except in the limited circumstances (see “*Summary of provisions relating to GDRs while in master form*”), definitive GDR certificates will not be issued to holders in exchange for interests in the GDRs represented by the Master GDRs. Subject to the terms of the Deposit Agreements, interests in the Master Regulation S GDR may be exchanged for interests in the corresponding number of GDRs represented by the Master Rule 144A GDR and vice versa.

**Voting** . . . . . The Deposit Agreements contain arrangements allowing holders of GDRs to instruct the Depositary how to vote the underlying shares in accordance with Kazakhstan law. See “*Description of Share Capital and Certain Requirements of Kazakhstan Law—Summary of the Charter—General meetings*” and “*Terms and Conditions of the Global Depositary Receipts—Voting Rights.*”

**Listing and trading** . . . . . Application will be made (i) to the FCA for a block listing of up to 259,356,608 GDRs, consisting of (assuming that 20% of the maximum number of Securities offered by the Selling Shareholder will be sold in the AIX Offering and subject to the Upsize Option) up to 27,063,298 GDRs expected to be issued on or about the Closing Date, up to 4,059,495 additional GDRs may be issued pursuant to the Over-allotment Option, if exercised, and of which up to 228,233,815 additional GDRs may be issued from time to time against the deposit of Shares with the Depositary, to be admitted to the Official List and (ii) to the London Stock Exchange plc for such GDRs to be admitted to trading on the London Stock Exchange’s regulated market for listed securities and in particular on the regulated market segment of the IOB. The Company expects that conditional trading through the IOB will commence on a “when and if issued” basis on or about the Pricing Date, and unconditional trading through the IOB will commence on or about the Closing Date. All dealings in the GDRs prior to the commencement of unconditional dealings will be of no effect if the LSE Admission does not take place and will be at the sole risk of the parties concerned.

Admission of the Securities to the Official List of Securities of the AIX is expected to take place on or about the Pricing Date.

Prior to the Closing Date there has not been any public market for the Shares or GDRs.

**Payment and settlement** . . . . . The GDRs are being offered by the Managers subject to receipt and acceptance by them and subject to their right to reject any order in whole or in part.

Application will be made to have the Rule 144A GDRs, evidenced by the Master Rule 144A GDR, accepted for clearance through DTC and the Regulation S GDRs, evidenced by a Master Regulation S GDR, accepted for clearance through the book-entry settlement systems of Euroclear and Clearstream, Luxembourg. The Company expects that payment and delivery of the GDRs will be made through the facilities of DTC, with respect to the Rule 144A GDRs, and Euroclear and Clearstream, Luxembourg, with respect to the Regulation S GDRs, on or about the Closing Date. Upon acceptance by DTC, a single Master Rule 144A GDR will be held in book-entry form and will be issued to DTC and registered in the name of Cede & Co., as nominee for DTC. The Master Regulation S GDR will be registered in the name of Citivic Nominees Limited, as nominee for Citibank Europe plc, as common depositary for Euroclear and Clearstream, Luxembourg. Euroclear and Clearstream, Luxembourg are expected to accept the Regulation S GDRs for settlement in their respective book-entry settlement systems. Except in limited circumstances described herein, investors may hold beneficial interests in the GDRs evidenced by the corresponding Master GDR only through DTC, Euroclear or Clearstream, Luxembourg, as applicable.

Under the terms of the underwriting agreement to be entered into by the Company, the Selling Shareholder and the Managers, with respect to the GDRs, the underwriting agreement may be terminated, in a limited number of circumstances, by the Managers at any time prior to the Closing Date. Any return of funds to investors will be determined by the relevant Manager and investor arrangements.

**GDR security numbers** . . . . . The security identification numbers for the GDRs are expected to be as follows:

Regulation S GDRs:

ISIN: US63253R2013  
CUSIP Number: 63253R201  
SEDOL Number: BGXQL36

Rule 144A GDRs:

ISIN: US63253R1023  
CUSIP Number: 63253R102  
SEDOL Number: BGXQL25

**Taxation** . . . . . For a discussion of United States, United Kingdom and Kazakhstan considerations of purchasing and holding the GDRs, see “*Taxation.*”

**Transfer restrictions** . . . . . See “*Selling restrictions*” and “*Transfer restrictions*” for a detailed description of the restrictions on transfers of the GDRs.

**Risk factors** . . . . . Prospective investors should consider carefully certain risks discussed under “*Risk factors.*”

## **USE OF PROCEEDS**

The Company is not selling any Securities in the Offering and will not receive any of the proceeds from the sale of Securities by the Selling Shareholder in the Offering.

The Selling Shareholder will receive all of the proceeds from the sale of Securities.

The total fees and expenses payable by the Company in connection with the Offering are expected to be approximately US\$6.7 million.

## INDUSTRY OVERVIEW

*The following information relating to the industry has been provided for background purposes only. The information has been extracted from a variety of sources released by public and private organisations. See “Presentation of Financial and Other Information.”*

### URANIUM INDUSTRY AND MARKET OVERVIEW

#### Overview

The primary commercial use of uranium is as fuel for nuclear power plants, which currently produce approximately 11% of the world's electricity supply. With global electricity demand expected to grow dramatically over the next 25 years, it is anticipated that nuclear power's importance as a baseload electricity source will only increase. Unlike other baseload electricity fuels, such as coal, oil, and natural gas, nuclear power emits no greenhouse gases or other harmful air emissions. Uranium is also an extremely efficient fuel: 1 kg of uranium produces approximately 50,000 kWh (kilowatt hours) of non-emitting electricity, whereas 1 kg of thermal coal will produce only 3 kWh of electricity with accompanying emissions.

Apart from its paramount use as fuel for electricity generation in nuclear power plants, uranium has several other uses, outside of military applications. Radioisotopes are produced in nuclear reactors and are used in numerous medical procedures, such as radiotherapy (treatment for cancer), brain scans, and heart and thyroid tests. Radioisotopes are also used in agriculture to increase crop yields and control pests. Uranyl hydroxide is used as a colorant for glass and for ceramic glazes. Uranium oxides have electrical and electronic properties beyond that of conventional semiconductor materials, such as Silicon, Germanium, and Gallium, and therefore might be suitable for use in a new class of high-performance semiconductors.

Uranium is the heaviest element that occurs in nature, which has been used as an abundant source of concentrated energy for 60 years. There are two main naturally occurring isotopes of uranium:  $U^{238}$  and  $U^{235}$ , of which  $U^{238}$  accounts for approximately 99.3% of the total,  $U^{235}$  approximately 0.7%.  $U^{235}$  is important because under certain conditions it can be readily split, yielding a lot of energy, making it a “fissile” isotope used in “nuclear fission.” To sustain a fission reaction in a nuclear reactor that uses light water as the moderator, the content of  $U^{235}$  must be increased from the natural level of approximately 0.7% to between 3% and 5% through a process known as enrichment.

Uranium can be found in most of the world's rock formations and even in seawater. However, the critical issue with uranium extraction is finding deposits of high enough concentrations (i.e., ore grades) to make a specific mining project economical.



## The Nuclear Fuel Cycle

The front-end of the nuclear fuel cycle is characterised by several unique dynamics. Specifically, the production of nuclear fuel for light water reactors (LWRs) requires a complex arrangement that starts with the mining of uranium ore and ends with nuclear fuel assembly fabrication. The figure to the right shows the major steps in the LWR nuclear fuel cycle (including the front-end, reactors, and back-end).

Uranium, as it is mined from the ground, is not directly usable as fuel for power generation. It must first undergo several processing steps to transform it from ore in the ground into nuclear fuel. These steps are collectively known as the front-end of the fuel cycle. Major steps in the front-end of the fuel cycle include:

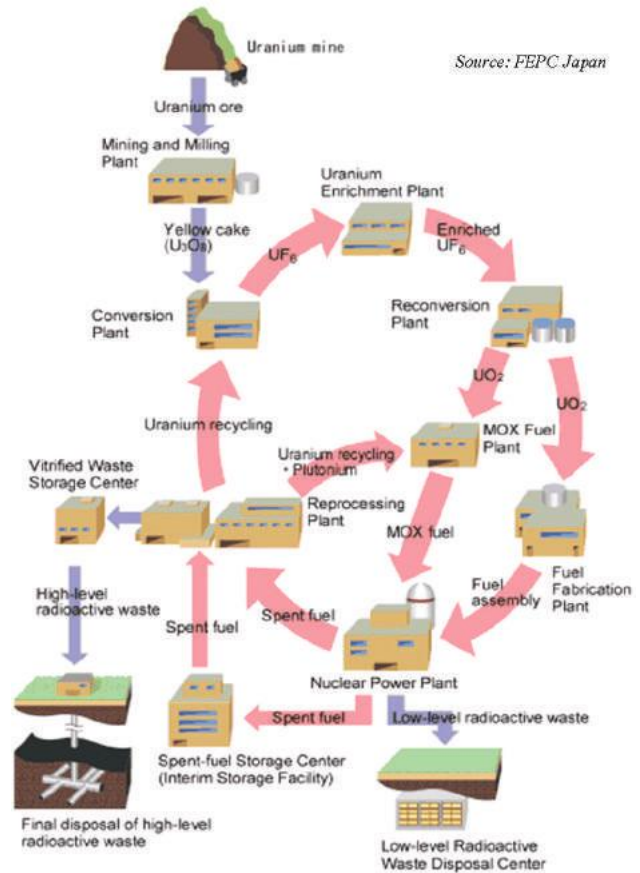
- **Exploration** for uranium.
- **Mining** (and milling) of uranium ore to produce uranium concentrate known as  $U_3O_8$ . Mining is accomplished through various mining methods—open pit, underground, and in-situ recovery (ISR).
- **Conversion**—Purification and conversion of  $U_3O_8$  into either natural  $UO_2$  powder suitable for making heavy water reactor fuel pellets or uranium hexafluoride ( $UF_6$ ) suitable for enrichment to increase the proportion of the fissile  $U^{235}$  isotope. This is known as the conversion process.
- **Enrichment**, which increases the proportion of  $U^{235}$  to 3–5%. The enriched  $UF_6$  is subsequently processed into  $UO_2$  powder suitable for making oxide fuel pellets for various reactor types.
- **Manufacture** of  $UO_2$  fuel pellets (enriched for LWRs and natural  $UO_2$  for heavy water reactors).
- **Fabrication** of fuel pins made up of stacks of  $UO_2$  fuel pellets encapsulated in cladding, which are then grouped in clusters, termed fuel assemblies.

Primary uranium mining methods are determined by the shape, depth, and grade of the uranium deposit in conjunction with the composition, hydrogeology, and geotechnical aspects of the surrounding host rock. As noted above, the two conventional mining methods are open pit and underground.

In general, open pit mining is more efficient than underground mining, since more energy is usually required to extract and remove ore from an underground mine than from an open pit mine. However, the discovery of underground mines with very high ore grades, particularly in Canada, have made underground mining more economic than open pit mining, where ore grades have declined on average.

A third method is in-situ recovery (ISR), which is a combined mining and extraction technology particularly suited to uranium ores hosted in pervious sandstone formations. In the ISR process, leaching solutions—sulfuric acid or sodium bicarbonate—are circulated through the ore bearing formation by a system of patterned boreholes. Uranium is then dissolved and recovered for further processing.

Compared to conventional methods, ISR projects have the lowest operating and capital costs, with a high recovery rate of ore. As determined by UxC based on publicly available information, Kazakhstan has 65% of the world’s measured and indicated resources suitable for ISR extraction, and the Group’s uranium deposits are all mined via the low-cost ISR method. For 2017, UxC estimates that the average full cost of ISR production was \$17.02 per pound  $U_3O_8$ , compared to \$32.19 per pound  $U_3O_8$  for underground production and \$39.19 per pound  $U_3O_8$  for open pit mining. UxC’s average full cost for each mining method is composed of the sum of the full costs (operating cost plus capital cost) on a project basis for each mining method divided by the total pounds  $U_3O_8$  produced for each mining method.



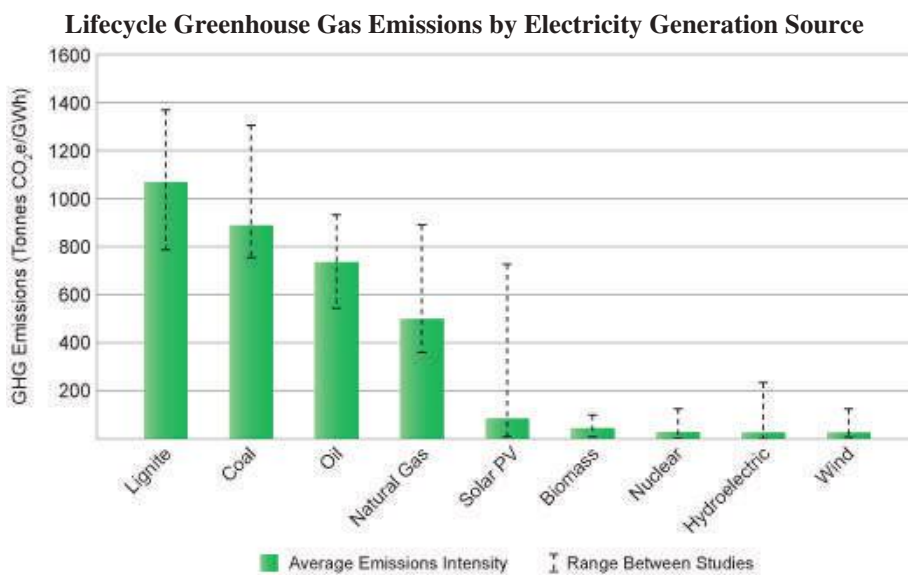
The nuclear industry is heavily regulated by relevant government agencies throughout the fuel cycle, including oversight of uranium production, transportation, handling, and storage. Natural uranium is generally stored at regulated facilities in the U.S., Canada, France, China, and Russia. Each government is responsible for specific oversight, but only licensed operators are ever able to produce, transport, or store material. The International Atomic Energy Agency (IAEA) has developed safety standards for fuel cycle facilities in member state countries, including standards for the safe transport of radioactive material. The scope of IAEA’s transport regulations includes transport package design and composition, material categorization, documentation, labelling, and container marking.

### Demand Status and Outlook

The demand for uranium is directly linked to the state of global nuclear power. Prior to the Fukushima Accident in 2011, demand for uranium was on a steady upswing as the global nuclear power market appeared likely to grow well into the future. As a result of the accident, however, several countries altered course and moved to reduce their reliance on nuclear power. In the immediate aftermath of Fukushima, political directives led to large numbers of reactor shutdowns in Japan and Germany, and a handful of other countries also decided to pursue nuclear phase-out or phase-down policies. However, many other countries (such as the U.S., France, UK, China, Russia, South Korea, etc.) remained steadfast in advancing their nuclear energy programs, implementing safety reviews to ensure their citizens that operating and under construction reactors were safe and could be relied upon to supply cost-effective, baseload electric power. It is notable that since 2011, China’s government has iterated its strong commitment to nuclear power with an official target of reaching 58 gigawatts-electric (GWe) in operation and 30 GWe under construction in the year 2020.

There are several drivers for the continued use and future expansion of nuclear power. One of the main attributes of nuclear power plants is that they produce electricity without any environmentally-damaging air emissions. According to the *Nuclear Energy Institute (NEI)*, more than 56% of all emission-free electricity in the U.S. is produced by the nation’s 99 nuclear reactors. Independent studies by various experts, such as the *Intergovernmental Panel on Climate Change (IPCC)*, have concluded that lifecycle greenhouse gas (GHG) emissions from nuclear power are on par or better than those of renewable energy sources like wind and solar. Given the carbon-free benefits of nuclear power, several countries, such as China and India, have included nuclear power as part of their commitments under the 2016 Paris Agreement. This landmark agreement was signed by 179 countries, including all the major GHG emitters, with some taking major steps like China, which has committed to reducing the CO<sub>2</sub> intensity of its economy by 60-65% compared to 2005 levels. For China to reach this goal, nuclear power expansion is seen as a critical component.

There is clear evidence that nuclear power is one of the most effective means to produce electricity without large GHG emissions. A review by the *World Nuclear Association (WNA)* of over 20 independent studies assessing lifecycle GHG emissions by different forms of electricity generation shows that nuclear power is on par or better than renewables and hydropower.

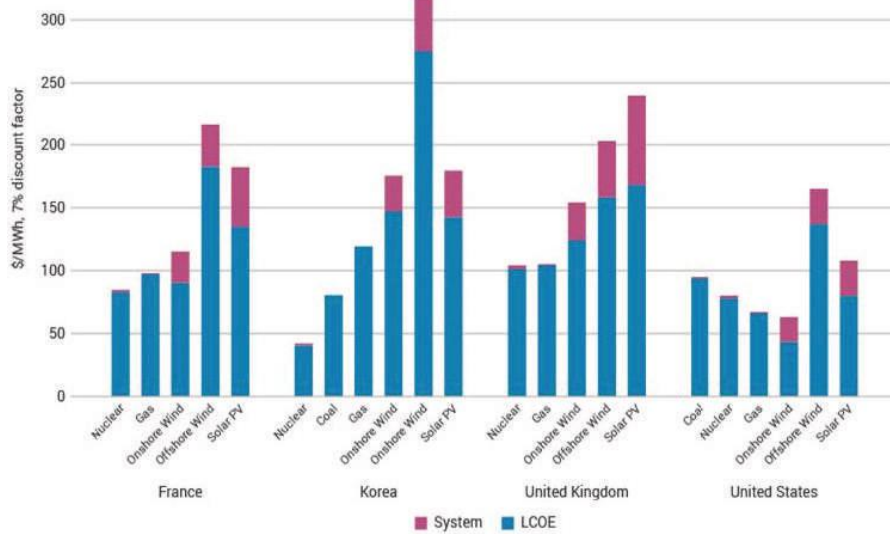


Source: WNA

In addition, nuclear power remains an important option for many countries in improving energy fuel diversity, which is critical for economic and national security reasons. Increased electricity consumption, especially in emerging markets, is also pushing many countries to expand all forms of energy supply, including nuclear power. Some experts anticipate that electric power demand will grow faster than any other form of energy as the world experiences increased electrification due to the expansion of power-intensive information technologies, electric vehicles, and greater urbanization of populations. For example, the OECD's *International Energy Agency* (IEA) projects electricity demand will rise by 60% to 2040, with over 85% of global growth occurring in developing economies. Moreover, the U.S. *Energy Information Administration* (EIA) projects that the share of electricity used in transportation will double between 2015 and 2040 as more plug-in electric vehicles enter the fleet and electricity use for rail expands.

The economics of nuclear power remain quite positive as proven by the levelised cost of electricity (LCOE) analysis by several independent agencies. Using data from the OECD's *Nuclear Energy Agency* (NEA), the WNA has compiled total LCOE and system costs (e.g., back-up power costs, balancing costs, grid connection, extension and reinforcement costs) for various electricity generation sources in four major countries (based on 7% discount rate). The results show that in all countries, nuclear power generation is either the lowest or among the lowest-cost generation sources.

**Levelised Cost of Electricity by Electricity Generation Source in Four Major Countries**

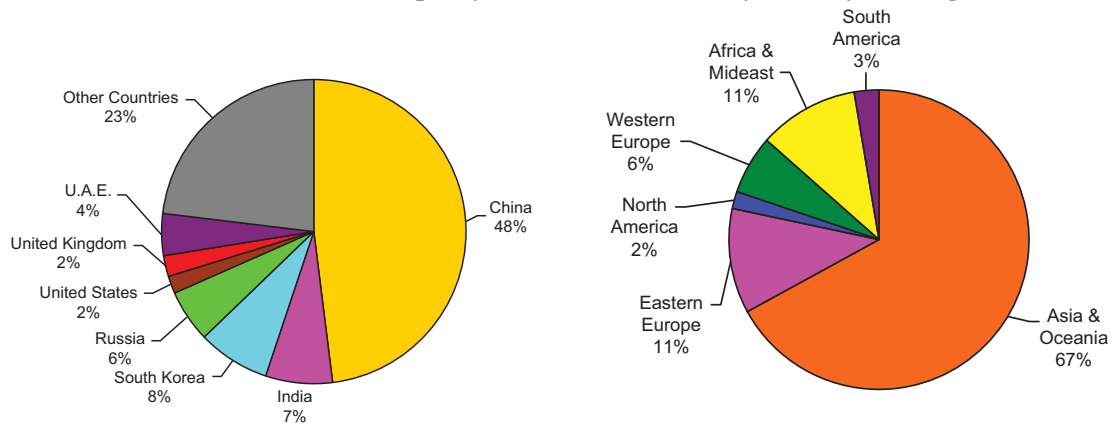


Source: WNA

At the same time, there are still challenges to nuclear power. Among these are the high upfront capital costs to build new reactors, public and policymaker concerns over nuclear plant safety and waste management, as well as competition from other energy sources, including coal, natural gas, and renewables. In the U.S., for example, several nuclear plants have closed before the end of their operating licenses due to their inability to compete with cheap natural gas and government-subsidised renewables in deregulated markets.

As of August 2018, data published by UxC shows 443 operable units with nearly 390 GWe in net generating capacity in 31 countries around the world. The average age of the current fleet of operating reactors is roughly 29 years. Many of these plants are expected to remain online for the next 15–20 years or much longer. In addition, there are 56 units with nearly 58 GWe in active construction in 17 different countries, including four countries building their first nuclear power plants. Some countries, like France and Ukraine, rely on nuclear power for very large portions of their total electricity supply, whereas others, like China and India, still only receive small percentages of their total supply from nuclear power.

### Global Nuclear Power Capacity Under Construction by Country and Region



Source: UxC

The largest current markets for nuclear power are the U.S., France, Japan, China, Russia, and South Korea. Combined, these six countries account for roughly 73% of the total world installed nuclear power capacity. Going forward, the largest growth in nuclear power will be in China, which accounts for approximately 50% of all new capacity to be built between 2018 and 2030 according to UxC estimates. Other critical countries for new reactor deployment include Russia, India, South Korea, and the United Arab Emirates. However, over the same period, these gains are expected to be partially offset by the retirement of older reactors in several key countries, such as Germany, Japan, and the U.S.

### Global Nuclear Power Capacity by Region, 2010, 2017–2022 & 2030 (in GWe net)

	2010	2017	2018	2019	2020	2021	2022	2030
North America	115.4	115.1	115.1	114.5	113.0	110.5	107.5	100.4
Western Europe	122.4	111.0	109.3	110.9	108.1	107.2	103.2	91.2
Eastern Europe	47.5	51.5	53.7	54.3	55.9	56.1	55.2	57.1
Asia & Oceania	84.6	104.4	107.5	110.3	107.4	110.1	114.1	161.6
Africa & Middle East	1.8	2.7	2.7	2.7	5.4	6.7	8.1	15.7
South America	2.8	3.5	3.5	3.5	3.5	3.6	3.6	6.4
<b>World Total</b>	<b>374.5</b>	<b>388.3</b>	<b>391.9</b>	<b>396.3</b>	<b>393.4</b>	<b>394.2</b>	<b>391.6</b>	<b>432.5</b>

### Global Nuclear Reactors by Region, 2010, 2017–2022 & 2030 (in units)

	2010	2017	2018	2019	2020	2021	2022	2030
North America	124	120	120	119	117	114	111	100
Western Europe	129	114	112	113	109	108	105	85
Eastern Europe	67	70	72	72	76	76	72	73
Asia & Oceania	113	132	134	133	132	135	137	181
Africa & Middle East	2	3	3	3	5	6	7	14
South America	4	5	5	5	5	6	6	9
<b>World Total</b>	<b>439</b>	<b>444</b>	<b>446</b>	<b>445</b>	<b>444</b>	<b>445</b>	<b>438</b>	<b>462</b>

Source: UxC

It is generally agreed that nuclear power will remain on a growth path for the coming several decades. If nuclear power is to retain its 10–11% share of global electricity supply, this will require continued expansion of nuclear capacity. For example, under its “New Policies Scenario,” the OECD’s IEA projects that global nuclear capacity will reach 516 GWe in 2040 allowing nuclear power to retain a 10% global share.

The average nuclear power plant requires 1.0–1.5 million pounds U<sub>3</sub>O<sub>8</sub> at the start of its operation for the initial fuel core. On an ongoing basis, reactors refuel periodically on a 12–24 month cycle. At each refuelling, reactors require 300,000–700,000 pounds U<sub>3</sub>O<sub>8</sub> depending on a variety of factors, including the size and type of the reactor. Global uranium fuel demand is therefore impacted by larger requirements for new reactors as well as the timing of refuelling requirements.

Uranium is typically procured 2–5 years ahead of reactor fuelling needs to allow for adequate pipeline processing and final fuel assembly production. Nuclear utilities also often procure uranium in excess of actual fuelling needs to place material into inventory for strategic and other purposes. Given the recent lower rates of nuclear power generation in key countries like Japan, actual uranium consumption in the world has only increased slightly since 2010, but overall market demand (i.e., total buying by utilities) has actually remained at higher levels given inventory building. UxC estimates that global utility inventory levels are at around 950 million pounds U<sub>3</sub>O<sub>8</sub> equivalent (in different, mostly illiquid forms). However, assuming a desired pipeline inventory level of 2–3 years of forward coverage along with a global average strategic inventory level of 1–2 years, current utility inventories are actually not all that much higher than historical averages.

Uranium consumption is projected to increase in the coming years as more reactors start up in places like China and India and more units return to service in Japan. Meanwhile, utility inventory purchases above actual reactor fuelling needs are likely to reduce in the medium term as utilities recalibrate their procurement strategies. In the longer term, reactor consumption as well as market demand are both expected to increase significantly.

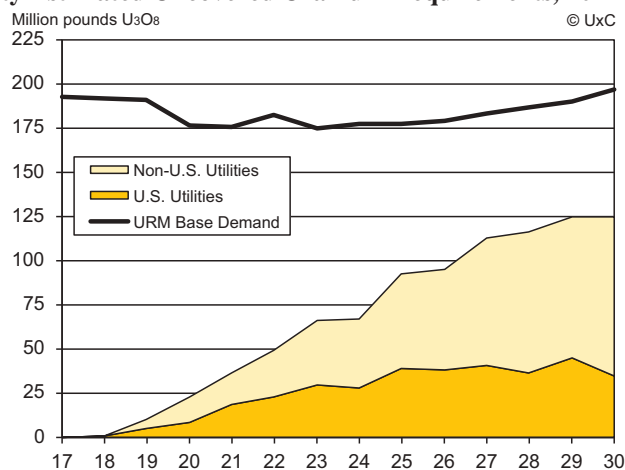
**Global Uranium Consumption and Market Demand, 2010, 2017–2022 & 2030 (in million lbs U<sub>3</sub>O<sub>8</sub>)**

	2010	2017	2018	2019	2020	2021	2022	2030
Uranium Consumption . . . . .	150.8	173.2	173.1	173.6	161.2	162.7	171.4	190.4
Uranium Market Demand . . . . .	189.8	192.8	191.1	190.6	176.2	175.7	182.4	196.4

Source: UxC

The average fuel cost for a nuclear power plant in terms of the percentage of total operating costs is approximately 25–30%. This is a rather low percentage considering that fuel costs for competing sources of power generation like coal and natural gas can run between 50% and 70% of operating costs. For most nuclear reactors, upwards of 50% of the cost of fuel is contained in the natural uranium component of the end fuel product. As such, utilities are highly focused on the procurement of U<sub>3</sub>O<sub>8</sub>. Given the high volumes of long-term contracting during the 2005–2012 period as well as heightened volumes of mid-term contracts during 2014–2017, many utilities around the world remain well-covered through the early 2020s. However, by 2021, UxC estimates that around 23% of global utility requirements remain uncovered by forward contract commitments (see chart below). The level of utility uncovered uranium needs increases to around 50% by 2025. This data indicates that many utilities are likely to return to the market in the near- to medium-term to begin covering future fuel needs.

**Utility Estimated Uncovered Uranium Requirements, 2017–2030**

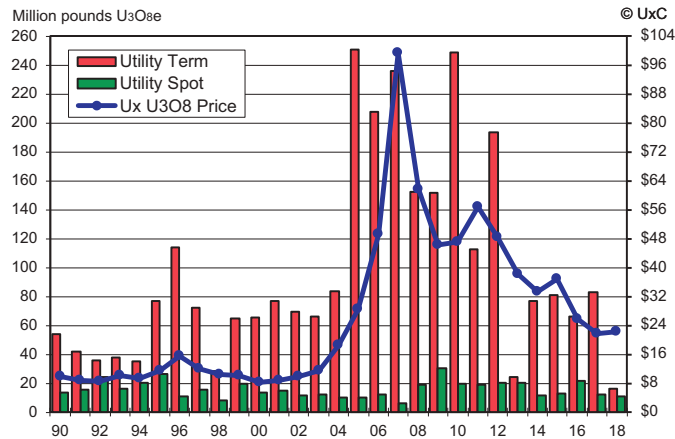


Source: UxC

Most utilities cover their fuelling needs through longer-term contracts, which tend to last from between three and ten or more years in duration. On average, no more than 10% of utility requirements are left open to spot or near-term purchasing (see chart). The period 2005–2012 realised heavy long-term contracting, and deliveries stemming from this activity are expected to begin expiring in the early 2020s. As a result of the dearth of term contracting over the past six years since Fukushima, it is expected that utilities will begin to return to the term contracting market in the near future. This expectation is based on several conclusions, including utilities’ desire to lock in prices before they rise too high and to ensure adequate long-term supply security.



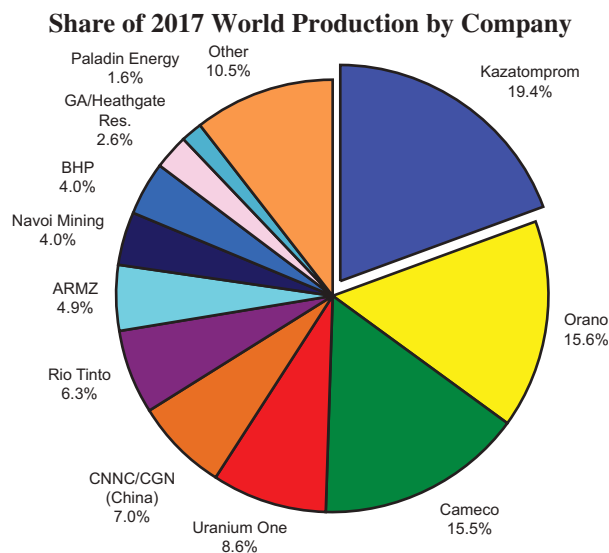
## Utility Uranium Spot and Long-Term Contracting Volumes vs. Ux U<sub>3</sub>O<sub>8</sub> Spot Price, 1990–2018



Source: UxC

### Supply Status and Outlook

The uranium market is dominated by a handful of large primary producers, with the top five uranium producers accounting for 66% of 2017 global production. As the largest uranium producer in the world, the Group accounted for nearly 20% of primary production in 2017. Notably, the next four largest uranium producers—Orano, Cameco, Uranium One, and CGN/CNNC (China)—have production activities in partnership with the Company.



Source: UxC

The growth in uranium supply (primary production plus secondary supply) has been quite pronounced since the turn of the century. Beginning in the early 2000s, uranium supply growth was propelled by bullish demand-side projections, as a revival of the nuclear power industry, deemed the *Nuclear Renaissance*, was driven by rising fossil fuel prices and growing climate change concerns. Additionally, the end of the U.S.-Russia HEU Agreement supported the development of new uranium projects to fill the then-projected supply void of ~18 million pounds U<sub>3</sub>O<sub>8</sub> per year beyond 2013. In the 2003 through 2007 period, the market was also impacted by supply side disruptions, which included water inflow events at Cameco's majority-owned McArthur River and Cigar Lake projects in Canada, tropical cyclones impacting Energy Resources of Australia's Ranger project in Australia, and multiple fires at BHP's Olympic Dam project in Australia. These supply disruptions aided in the rapid ascent of uranium prices from 2003 through 2007, as security of supply became an increasing concern for global utilities and more new uranium projects entered the development phase. By late 2010, China's ambitious nuclear power target of 80 GWe by 2020 became public and uranium suppliers remained increasingly bullish about forward production growth.

Uranium demand projections since Fukushima have been cut significantly, as Japan’s nuclear program came to a standstill amid safety concerns, and Germany vowed to end its nuclear program by 2021. Additionally, the impact of low-priced shale gas and subsidised renewable energy in the U.S. began hampering the economics of U.S. nuclear plants in deregulated electricity markets. Up until the last couple of years, global uranium supply continued to increase as many advanced-stage uranium projects commenced production supported by higher-priced contracts with utilities. In the meantime, both utility and supplier inventories have increased as global nuclear reactor requirements declined.

From 2000 to 2016, global uranium supply increased 64% from 129 million pounds U<sub>3</sub>O<sub>8</sub> equivalent (U<sub>3</sub>O<sub>8</sub>e) per year to 212 million pounds U<sub>3</sub>O<sub>8</sub>e per year. During this period, Kazakhstan accounted for 72% of the supply growth, as Kazakh uranium production increased from less than 5 million pounds U<sub>3</sub>O<sub>8</sub> in 2000 to 64 million pounds U<sub>3</sub>O<sub>8</sub> in 2016.

Multiple producer cutbacks contributed to global uranium supply declining to 204 million pounds U<sub>3</sub>O<sub>8</sub>e in 2017. In April 2016, Cameco suspended production at its Rabbit Lake mine in Canada, which had been producing at near 4 million pounds U<sub>3</sub>O<sub>8</sub> per year. Additionally, Cameco elected in April 2016 to curtail production at its U.S. ISR operations—Smith Ranch-Highland and Crow Butte—by deferring new wellfield development and gradually removing up to 3 million pounds U<sub>3</sub>O<sub>8</sub> per year from the market. In 2016, Orano (formerly AREVA) reduced SOMAIR production in Niger by 0.9 million pounds U<sub>3</sub>O<sub>8</sub>, and in 2017 announced a plan to further reduce production there by an additional 1.1 million pounds U<sub>3</sub>O<sub>8</sub> in 2018. In January 2017, the Company cut planned 2017 Kazakh production by 10%, which was followed by another announcement in December 2017 to defer 10.4 million pounds U<sub>3</sub>O<sub>8</sub> of planned 2018 Kazakh production and 9.1 million pounds U<sub>3</sub>O<sub>8</sub> per year of planned production for 2019 and 2020. Kazakhstan’s Energy Minister indicated in late May 2018 that Kazakh production would be cut to 56.2 million pounds U<sub>3</sub>O<sub>8</sub> in 2018, a reduction of 4.7 million pounds U<sub>3</sub>O<sub>8</sub> from the 2017 level. In November 2017, Cameco also announced it would suspend production at its McArthur River mine in Canada that had been producing 16-20 million pounds U<sub>3</sub>O<sub>8</sub> annually beginning in January 2018. Furthermore, in late July 2018, Cameco stated that the length of the McArthur River suspension would be extended indefinitely. Paladin Energy’s Langer Heinrich mine in Namibia was placed on care and maintenance in May 2018, removing 3.4 million pounds U<sub>3</sub>O<sub>8</sub> from the market. In July 2017, Paladin Energy entered administration (bankruptcy) unable to meet debts due to weak market conditions. Combined, the latest production cuts and project deferrals are projected to reduce global uranium supply to 184 million pounds U<sub>3</sub>O<sub>8</sub>e in 2018, thereby rebalancing supply and demand. Since 2011, 13 uranium mines have been placed on care and maintenance, accounting for cumulative maximum annual production of 39.4 million pounds U<sub>3</sub>O<sub>8</sub>.

**Mines Placed on Care and Maintenance Since 2011 (in million lbs U<sub>3</sub>O<sub>8</sub>)**

<b>Mine</b>	<b>Operator</b>	<b>Country</b>	<b>Date</b>	<b>Max. Annual Production</b>	<b>% of 2017 Production</b>
Alta Mesa	Energy Fuels	U.S.	2013	1.1	0.7%
Honeymoon	Boss	Australia	2013	0.3	0.2%
Willow Creek	Uranium One	U.S.	2013	0.9	0.6%
Kayelekera	Paladin Energy	Malawi	2014	2.9	1.9%
Azelik	CNNC	Niger	2015	0.5	0.3%
Palangana	UEC	U.S.	2015	0.3	0.2%
Cooke	Sibanye Gold	South Africa	2016	0.2	0.1%
Rabbit Lake	Cameco	Canada	2016	4.2	2.7%
Crow Butte	Cameco	U.S.	2017	0.8	0.5%
Smith Ranch-Highland	Cameco	U.S.	2017	2.1	1.4%
McArthur River	Cameco	Canada	2018	20.1	13.0%
Nichols Ranch	Energy Fuels	U.S.	2018	0.3	0.2%
Langer Heinrich	Paladin Energy	Namibia	2018	5.4	3.5%
<b>Total</b>				<b>39.4</b>	<b>25.5%</b>

Source: UxC

**Primary Production**

Primary uranium production totalled 155 million pounds U<sub>3</sub>O<sub>8</sub> in 2017, which was down nearly 5% from 162 million pounds U<sub>3</sub>O<sub>8</sub> in 2016. As a percentage of total marketable uranium supply in 2017, primary production accounted for roughly 75%, with secondary sources making up the remaining 25%. The top ten primary producers accounted for 88% of world mined production in 2017.

On a regional basis, Kazakhstan accounted for 61 million pounds U<sub>3</sub>O<sub>8</sub> from 16 ISR projects, or 40% of 2017 global production, as the world’s largest uranium-producing country. Kazakh production is projected to decline to 56 million pounds U<sub>3</sub>O<sub>8</sub> in 2018 and reside in a range of 59–60 million pounds U<sub>3</sub>O<sub>8</sub> for 2019 and 2020. Up to 63 million pounds U<sub>3</sub>O<sub>8</sub> of Kazakh production is projected in 2021 assuming market conditions improve.

**Global Primary Uranium Production, 2008–2022 (in million lbs U<sub>3</sub>O<sub>8</sub>)**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kazakhstan . . . . .	22.1	36.4	46.4	50.4	55.3	58.5	59.4	61.9	64.0	60.8	56.2	59.6	60.5	63.2	64.8
Canada . . . . .	23.4	26.4	25.4	23.8	23.4	24.3	23.6	34.6	36.5	34.1	18.2	18.0	18.0	18.0	34.0
Australia . . . . .	22.0	20.7	15.4	15.7	18.3	16.4	12.8	14.7	16.3	15.2	17.8	18.5	17.5	16.0	16.0
Namibia . . . . .	11.3	12.0	11.7	8.5	11.0	10.8	8.5	7.8	9.0	10.2	11.8	12.8	14.5	14.5	14.5
Niger . . . . .	7.9	8.4	10.9	10.8	12.1	11.5	10.5	10.8	9.0	9.0	7.6	7.6	7.6	7.6	5.2
Russia . . . . .	9.2	9.3	9.3	7.8	7.5	8.2	7.8	7.9	7.8	7.6	8.1	8.1	8.1	8.3	8.7
Uzbekistan . . . . .	6.0	6.3	6.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
China . . . . .	1.8	3.1	3.5	3.9	3.9	3.9	3.9	4.2	4.5	4.9	4.9	4.9	5.2	5.2	5.2
U.S. . . . .	3.7	3.8	4.2	4.0	4.1	4.7	5.0	3.3	2.9	2.5	0.9	0.5	0.4	0.4	0.1
Ukraine . . . . .	2.1	2.5	2.2	2.3	2.5	2.4	2.5	3.1	2.6	1.6	2.0	2.3	2.6	2.6	2.6
Other . . . . .	4.1	4.3	5.5	6.2	7.5	7.6	5.1	3.7	3.0	2.5	2.4	2.5	2.7	2.7	2.7
<b>World Total . . . . .</b>	<b>113.7</b>	<b>133.3</b>	<b>140.7</b>	<b>139.6</b>	<b>151.9</b>	<b>154.4</b>	<b>145.3</b>	<b>158.2</b>	<b>161.9</b>	<b>154.5</b>	<b>136.0</b>	<b>140.9</b>	<b>143.4</b>	<b>144.7</b>	<b>160.1</b>

Source: UxC

Canada is the second-largest uranium producing country at 34 million pounds U<sub>3</sub>O<sub>8</sub> in 2017, or 22% of 2017 global production. Canadian production is expected to decline 47% to 18 million pounds U<sub>3</sub>O<sub>8</sub> in 2018, as McArthur River production remains sidelined for an indeterminate amount of time. However, Canadian production is projected to rebound to 34 million pounds U<sub>3</sub>O<sub>8</sub> in 2022, assuming that the McArthur River project restarts on improved market conditions.

Australian production stems from three projects—Four Mile, Olympic Dam, and Ranger—that combined for 15 million pounds U<sub>3</sub>O<sub>8</sub> in 2017, or 10% of global uranium production. Australian production is forecasted to increase to nearly 19 million pounds U<sub>3</sub>O<sub>8</sub> in 2019 but decline to 16 million pounds U<sub>3</sub>O<sub>8</sub> in 2021–2022 as Energy Resources of Australia’s Ranger project ceases production.

In Africa, Namibian production totalled 10 million pounds U<sub>3</sub>O<sub>8</sub> in 2017 for a 7% share of global production, followed closely by Niger at 9 million pounds U<sub>3</sub>O<sub>8</sub> for a 6% share. Despite the shutdown of Namibia’s Langer Heinrich project in May 2018, Namibian production is projected to increase to nearly 12 million pounds U<sub>3</sub>O<sub>8</sub> in 2018 due to the ramp-up of CGN’s Husab project. By 2022, Namibian production is expected to reach nearly 15 million pounds U<sub>3</sub>O<sub>8</sub>. Niger production will trend lower to below 8 million pounds U<sub>3</sub>O<sub>8</sub> in 2018 following a late-2017 cut to Orano’s SOMAIR mine. The country’s production is expected to be maintained at this level through 2021 with a further decline to 5 million pounds U<sub>3</sub>O<sub>8</sub> in 2022 following the retirement of the COMINAK mine.

Russian production was 8 million pounds U<sub>3</sub>O<sub>8</sub> in 2017, accounting for 5% of the global total. Most of Russia’s production is used domestically or for Russian-designed reactors. The country’s current production level is expected to be maintained through 2022. Uzbekistan yielded 6.3 million pounds U<sub>3</sub>O<sub>8</sub> from three ISR mining divisions in 2017 for 4% of global production. This output level is expected to continue through 2022.

China produced an estimated 4.9 million pounds U<sub>3</sub>O<sub>8</sub> in 2017 from six major production centres. Chinese production is expected to increase to 5.2 million pounds U<sub>3</sub>O<sub>8</sub> per year in the 2018–2022 period, although a higher production level is possible if the pace of adding new ISR projects is accelerated.

Other countries, including the U.S. and Ukraine, make up 6.6 million pounds U<sub>3</sub>O<sub>8</sub> in 2017, or a 4.2% share of global production. U.S. production is expected to decline to less than 1 million pounds U<sub>3</sub>O<sub>8</sub> in 2018 before trending lower to nearly nil by 2022. However, the pending Section 232 uranium trade investigation by the U.S. Department of Commerce could revive U.S. production if a U.S. quota or tariffs are imposed as a remedy.

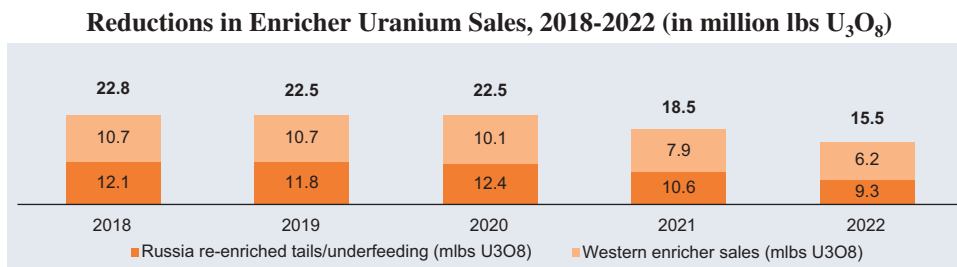
**Secondary Sources**

The uranium market is also influenced by the availability of various secondary sources of supply. These supplies differ, but they are all generally a form of inventory that is being returned to the market. As of July 2018, it is estimated that total secondary supplies in all forms account for about 48 million pounds U<sub>3</sub>O<sub>8</sub> or nearly 25% of total world supply. Going forward, these levels are expected to drop gradually.

One large source of secondary supplies is government inventories, which are primarily legacy materials from Cold War-era nuclear weapons programs. The main holders of these inventories are Russia and the U.S. Both countries’ governments continue to dispose of their readily-usable inventories, although these programs are expected to slowly diminish in the coming decade. Current volume of around 8 million pounds U<sub>3</sub>O<sub>8</sub>e in 2017 should drop by at least 50%

by 2030. The drivers for this disposition are typically politically-motivated and are not directly connected to economic factors. In most cases, there is little direct cost to the governments in pursuing these dispositions, and often the drivers are related to revenue creation for government programs.

Another source of inventory creation is the activity of uranium enrichers. Since all enrichment capacity in the world today is based on gas centrifuge technology, which is best left continuously operating without interruption, the overcapacity created by the pre-Fukushima build-out and the subsequent drop in demand has pushed enrichers to repurpose their plants. Centrifuges are repurposed either through underfeeding or tails re-enrichment, which is basically a way of squeezing more usable material out of the natural uranium product. Thus, both processes effectively result in the “production” of uranium. Estimated volumes are seen below.



Source: UxC

The nuclear fuel cycle also features a recycling mode called reprocessing. Spent nuclear fuel contains large volumes of reusable material, including uranium and plutonium. Thus, through complex and expensive chemical processing, these reusable materials can be extracted and reused in commercial reactors. Reprocessed uranium (RepU) and mixed-oxide uranium/plutonium or “MOX” fuel are both currently utilised by several major nuclear countries, including France, Russia, and Japan, and these programs are expected to continue for long into the future given that they also double as waste management programs.

One more source of secondary supplies is commercial inventory disposition. Over the past decade, utilities, producers, and intermediaries have amassed inventories as demand declined while supply remained high. These commercial inventories are either placed directly into the market as sales or they are utilised by utilities to supplant the need to procure new fuel supplies. The disposition of inventories is expected to diminish over the coming decade, and it is important to understand that the long lead-times ever present in the nuclear fuel cycle necessitate higher pipeline and strategic inventory holdings when compared to other commodities. Although exact data remains difficult to ascertain, UxC estimates that commercial inventory drawdowns, which include utilities, suppliers, and intermediaries, will average in the 8–10 million pounds U<sub>3</sub>O<sub>8</sub>e per year range for the coming decade.

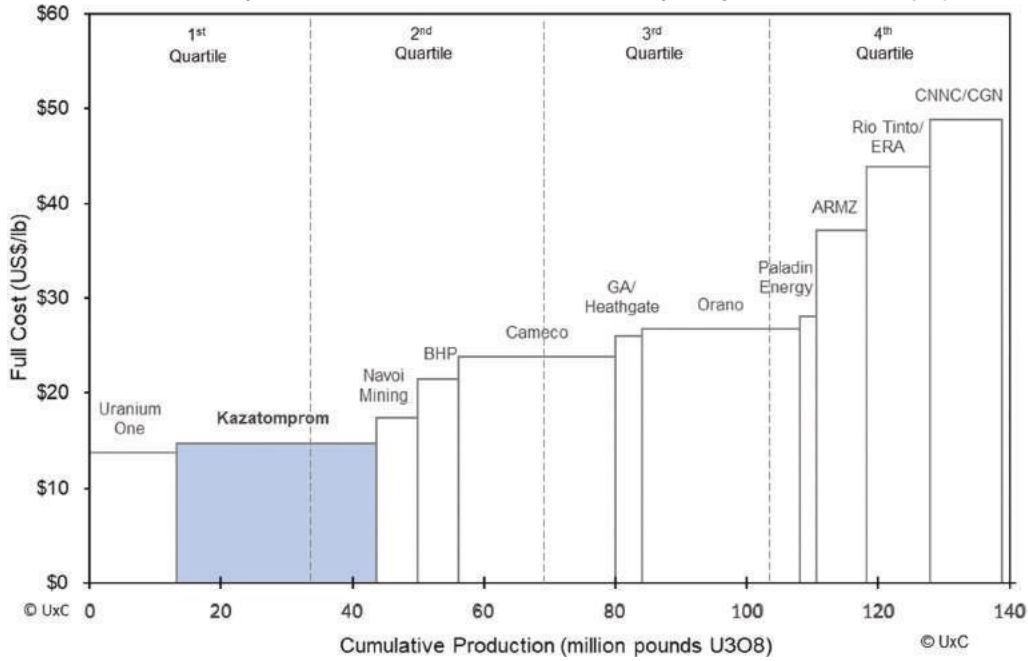
In sum, secondary supplies were estimated to provide about 50 million pounds U<sub>3</sub>O<sub>8</sub>e in 2017, but this total is expected to drop to around 23 million pounds U<sub>3</sub>O<sub>8</sub>e by 2030.

### Production Costs

Based on UxC’s 2017 Global Production Cost Curve approximately 92 million pounds U<sub>3</sub>O<sub>8</sub>, or 59% of 2017 production was in negative territory on a full cost<sup>1</sup> basis against the average spot price of \$22.06 per pound U<sub>3</sub>O<sub>8</sub> in 2017. UxC estimates that the average production cost of uranium was \$26.07 per pound U<sub>3</sub>O<sub>8</sub> in 2017. As shown below, the majority of Group-owned ISR projects operated in the first quartile among all global operating uranium projects in 2017.

<sup>1</sup> UxC’s full production cost is comprised of the project operating (cash) cost plus capital cost recovery. (Operating cost = Mining Cost + Hauling Cost + Milling Cost + Production/Property Tax + Environmental Tax + Royalty/Severance Tax. Capital cost = Acquisition/Exploration Costs + Mine Development Cost + Mill Construction Cost + Environmental/Infrastructure Cost + General & Administrative).

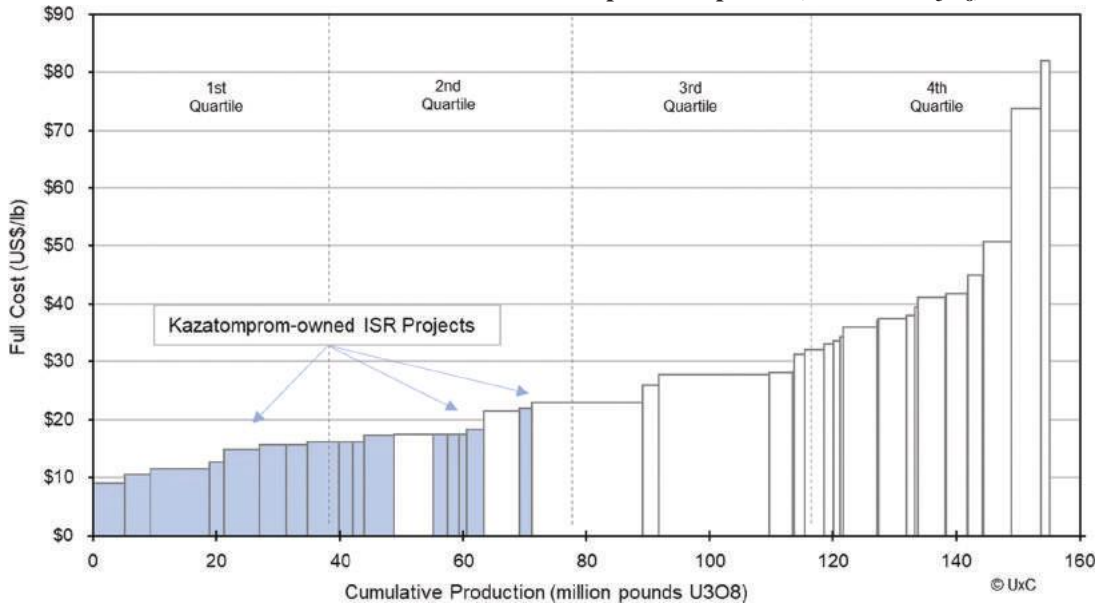
**Global Primary Uranium Production Cost Curve by Project (in US\$/lb U<sub>3</sub>O<sub>8</sub>)**



Source: UxC

Based on production costs by company, the Group ranked second lowest after its joint venture partner, Uranium One, among the top 11 uranium producers in 2017. The top three ranked producers—Uranium One, the Group, and Uzbekistan’s Navoi Mining—operated only ISR mines in 2017, illustrating this mining method’s low cost of production relative to open pit and underground mining methods.

**2017 Global Production Cost Curve for Top 11 Companies (in US\$/lb U<sub>3</sub>O<sub>8</sub>)**



Source: UxC

The cost of secondary supply cannot be directly compared to primary supply, as the motives behind the placement of secondary supply in the market are not typically driven by economic factors, especially with significant government influence in the market for the past three decades. As for uranium supplied through enrichment underfeeding and tails re-enrichment, there are other factors involved including the profitability of the overall enrichment enterprise and the ability to sell the full enriched uranium product (EUP) package instead of just enrichment services. Still, enrichers have publicly stated they will only underfeed as long as the cost to produce is below the market price for uranium. Finally, while the costs for reprocessing and MOX are much higher than fresh fuel, it must be understood that the recycled fuel from these sources is part of a larger spent nuclear fuel management system that includes the reduction of waste volumes, which in turn effects the overall economics.



## Uranium Market and Pricing Mechanisms

Uranium prices reached an all-time low in 2000, with the Ux U<sub>3</sub>O<sub>8</sub> Price (spot price) bottoming at \$7.10 per pound. However, this record low price was short-lived as global utility inventories declined to historically low levels in the early 2000s. Several production disruptions also occurred in the early to mid-2000s, which led more utilities to worry about security of supply and subsequently cover forward commitments through increased contracting levels. In 2005–2007, multiple floods at Cameco’s Cigar Lake mine and tropical cyclones at ERA’s Ranger mine limited production and created security of supply concerns for utilities. At the same time, the promise of a coming nuclear renaissance resulted in a price bubble culminating in mid-2007, largely driven by hedge fund speculation, as the Ux U<sub>3</sub>O<sub>8</sub> Price increased to a height of \$136.00 per pound. The global financial crisis ensued in 2007–2009 leading to the liquidation of uranium holdings by investment funds and auctioning of uranium inventories held by the U.S. Department of Energy (DOE), which amounted to 8–10 million pounds U<sub>3</sub>O<sub>8</sub> equivalent for the period and helped push the Ux U<sub>3</sub>O<sub>8</sub> Price to as low as \$40.00 in April 2009.

Spot Uranium Prices, 2000–2018



Source: UxC

The Ux U<sub>3</sub>O<sub>8</sub> Price rebounded in 2010, influenced by China’s ambitious nuclear generation target of 80 GWe by 2020. By February 2011, the Ux U<sub>3</sub>O<sub>8</sub> Price climbed to as high as \$73.00 per pound before the Fukushima accident occurred one month later.

Since 2011, the Ux U<sub>3</sub>O<sub>8</sub> Price trended downward, falling to a low of \$18 per pound U<sub>3</sub>O<sub>8</sub> by December 2016. The price downturn stemmed from a global decline in planned uranium demand from key countries—China, Japan, Germany, South Korea, Taiwan, and the U.S. Furthermore, the entrance of new gas centrifuge enrichment technology in the 2000s, replacing older, costlier gaseous diffusion plants, has resulted in cheaper enrichment (SWU), which has enabled the economic production of more enriched uranium from a given amount of natural uranium. This substitution mechanism subsequently lowered the demand for natural uranium amid a glut of SWU capacity.

Since December 2016, the Ux U<sub>3</sub>O<sub>8</sub> Price has wavered in a range of \$20.00-\$26.10 per pound, with the recent uptick in uranium prices spurred by multiple rounds of supply-side cuts from major producers Cameco, the Group and Orano. Additionally, investor and hedge funds have acquired physical uranium positions over the last few months, which has also contributed to the Ux U<sub>3</sub>O<sub>8</sub> Price increasing to its current level of \$26.10 on 20 August 2018 up from \$20.50 in April 2018.

Long-term contracts are an integral part of uranium market transactions and many uranium producers rely on base-escalated prices or at least have base-escalated floors if they are indexed to spot prices. While supplies in the spot market are largely driven by available inventories (including secondary supplies of uranium from enrichers and government agencies), long-term contracts are mainly offered by uranium producers that are able to commit supplies for multiple years in the distant future. In this regard, the long-term base price provides an indicator of future supply availability. In some ways, it is counterintuitive to use a spot price to determine future supply because it is an expression of today’s inventory spot market dynamics.

The *Ux U<sub>3</sub>O<sub>8</sub> Price* (Spot Price) represents the most competitive offer for uranium, with conditions specifying a delivery timeframe of less than or equal to three months and a quantity greater than or equal to 100,000 pounds U<sub>3</sub>O<sub>8</sub>, as well as origin considerations. The *Ux LT U<sub>3</sub>O<sub>8</sub> Price* (Long-Term Price) includes conditions for escalation (from current quarter), a delivery timeframe greater than or equal to 36 months, and quantity flexibility (up to ±10%) considerations. The Long-Term Price is not intended to reflect the current market price but rather reflects the price at which a utility can secure future supplies. Therefore, the Long Term Price typically occurs at a premium to the Spot Price.

There are two general approaches to pricing uranium in long-term contracts: Floating (or market) pricing, and base-escalated (or fixed) pricing. Floating pricing typically references the prevailing market price (such as the Ux U<sub>3</sub>O<sub>8</sub> Price) as the delivery price at the time of delivery in the future. For fixed pricing, the base price is typically set at a premium of the then-prevailing spot price when the contract is signed, and thus is subject to escalation or indexing for inflation such as the U.S. Gross Domestic Product Implicit Price Deflator (GDP-IPD) at the future time of delivery. In common practice, utilities often use a combination of these two pricing options to achieve cost minimization and price stability.

Floor prices in long-term contracts tend to have a very close relationship with the production cost of uranium. In theory, production costs should stay below the floor price, which provides a protection mechanism of cost recovery (including a reasonable rate of return) for a producer.

Historically, there was more distinction between the spot and term markets. However, over the last several years and especially as the gap between the spot and term indicators grew, there has been an increase in mid-term contracts that employ fixed pricing, which ultimately follows a forward price curve that reflects an extension of spot market pricing taking into consideration other parameters such as cost of money. Essentially, intermediaries could come into the market purchasing at cheaper spot prices and hold (carry) the material in inventory selling it for future delivery with pricing that would be slightly above their cost of money. With the rise of bank activity as well as traders and now enrichers selling into the mid-term market at carry trade pricing, this market segment has represented a higher portion of market activity over the past several years. It is highly unlikely in today's market that pricing for mid-term contracts would reflect the Long Term indicator.

Uranium for commercial use is only stored at centralised licensed nuclear facilities in various locations around the world with proper oversight of that country's nuclear regulatory body. Transportation of nuclear fuel between fuel cycle facilities is monitored and highly regulated and can only be performed by licensed and insured vendors. Uranium oxide concentrate, sometimes called yellowcake, is transported from the producer to conversion plants, where it is converted to natural UF<sub>6</sub> (uranium hexafluoride). The natural UF<sub>6</sub> is then shipped to enrichment plants to be upgraded to the desired enrichment level of the end-user. Enriched uranium is then forwarded to the fuel fabricator, where the enriched UO<sub>2</sub> is fabricated into fuel assemblies and readied for entry into the customer's reactor.

## **Market Outlook**

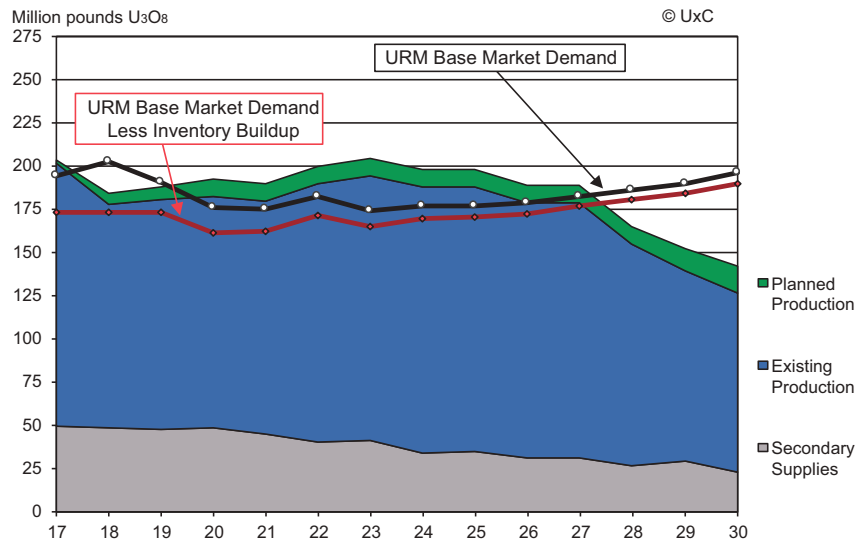
Over the next 12 months, slight upward pressure on the spot uranium price is expected, led by investor interest and purchasing from primary producers, which have opted to reduce production given current low-price levels. Utility demand is projected to remain moderate over the next year given their elevated inventory levels and low near-term unfilled needs. The U.S. Department of Commerce (DOC) investigation into whether uranium imports into the U.S. threaten to impair national security is likely to limit the amount of procurement by U.S. utilities in the next 12 months until an outcome is reached. The degree of spot price improvement will largely depend on the extent of additional production cuts, investor and supplier purchases, and inventory drawdown by utilities and suppliers.

Despite production cuts in Canada, Kazakhstan, Africa, and the U.S. over the past two years, UxC's Base Case Supply (below) is projected to exceed URM (Uranium Requirements Model) Base Case Demand for the 2020 through 2027 period unless more production cuts are announced. UxC's Base Case Demand, with a certainty level of 50%, shows flat demand through 2023, as growth in China and India is offset by reactor shutdowns in Germany, Belgium, South Korea, and Taiwan. Meanwhile, UxC projects continued purchasing above global reactor fueling requirements (i.e., inventory build) in the forward period due to countries that have growing nuclear power programs (e.g., China, India, and the UAE). As those countries' nuclear programs expand, they purchase additional uranium that goes into pipeline and strategic stockpiles. However, inventory drawdowns are expected in the U.S., EU, and Japanese markets going forward.

Under UxC's Base Case Supply, only one new uranium project—CGN's Husab project—ramps up in the forecast period, along with a production gain from the planned expansion of BHP's Olympic Dam project in Australia. UxC assumes Cameco's McArthur River mine in Canada will restart in 2022 and that there will be a production increase to

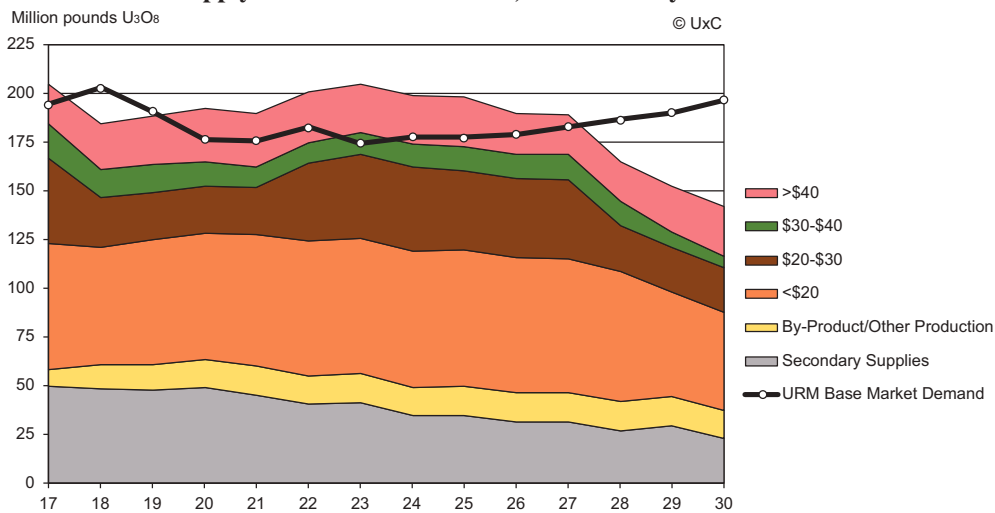
existing Kazakh ISR projects, creating a slight oversupply situation through 2027, but the decisions behind these increases will be dependent on future market conditions.

### World Uranium Base Case Supply vs. Base Case Demand, 2017–2030 By Supply Source



Source: UxC

### World Uranium Base Case Supply vs. Base Case Demand, 2017–2030 by Full Cost of Production



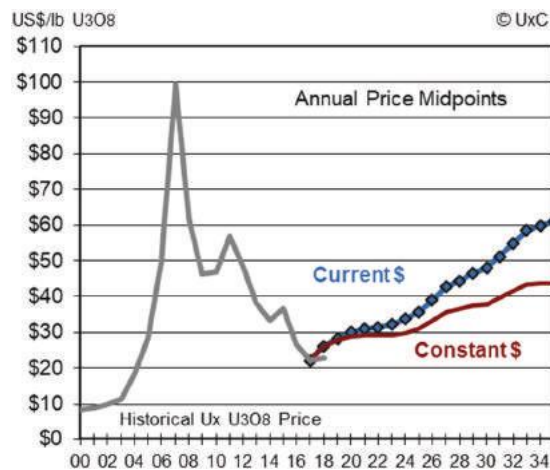
Source: UxC

As shown in the chart above, World Uranium Base Case Supply is broken down by full production cost categories against Base Case Demand for 2017 through 2030. Secondary Supplies and By-Product/Other Production occupy the bottom portion of the supply curve as their availability to the market is less a function of market economics and driven more by government policies and the markets of other by-product commodities, such as copper and gold. Kazakh and Uzbek uranium projects account for all projected production in the <\$20 cost category, and the \$20–\$30 cost category is dominated primarily by Canadian and Australian production. While demand is met primarily by production from the \$30–\$40 and >\$40 cost categories for 2019 through 2027, it is important to highlight that a significant amount of this higher-cost production is price insensitive, driven more by socioeconomic and domestic-driven policies for countries such as China, Namibia, Niger, Russia, and Ukraine. As an example, higher-cost production (or non-economic production) from China, Russia, and Ukraine will continue to meet domestic reactor requirements for these countries regardless of economics, although this could potentially change in the future.

Secondary supplies are expected to continue placing downward pressure on spot prices through 2021, meeting over 25% of annual global utility demand. However, unfilled needs increase significantly from 22 million pounds  $U_3O_8$  in 2020 to 49 million pounds  $U_3O_8$  in 2022. While excess supply is projected from 2020 through 2027, additional production cuts could tighten the supply/demand balance in this period as utility inventory levels on a global scale continue to be worked down even while some individual countries continue to expand their inventory holdings.

UxC's Mid-Spot Price Forecast is based off its U-PRICE™ econometric model to account for key factors influencing the uranium market, which include URM Base Case Demand, Market Outlook & Perception, Primary Production (Base Case), Secondary Supplies, SWU Market Developments and Exchange Rates. The U-PRICE™ model is a recursive system of eleven regression equations and three identities that quantify the casual relationships and interdependencies among key variables of the uranium industry. The model also includes a set of exogenous variables that help to explain uncertainties in the uranium market due to unpredictable policy changes or events such as the Fukushima incident or speculative demand from financial players. During periods of oversupply, the spot price has a history of trending lower as available inventories are offered at a discount to the market. Likewise, in periods of projected undersupply, the spot price has a history of strengthening to incentivise bringing more primary production online to meet higher demand levels.

### Mid Spot Price Projection, Current \$ (Nominal) vs. Constant \$ (Real)



Source: UxC

UxC Base Case Demand growth is relatively flat through 2025, but cuts to existing production and depletion of some existing mines, along with the drawdown of secondary supplies in the period, contribute to higher prices. Further, many long-term legacy contracts will end in the early 2020s, forcing some utilities to purchase greater quantities of uranium to meet forward reactor requirements.

For the 2025 through 2027 period, the spot price increases more sharply due to stronger demand growth from China combined with declining primary production as two major uranium projects—Rössing and Cigar Lake—are expected to end production. Secondary supplies are expected to meet only 17–19% of annual demand in the period. The spot price continues to trend higher beyond 2027, albeit at a slower rate, as new primary production is expected to fill the widening gap between supply and demand, especially as secondary supplies drop to only 11% of annual demand by 2030.

### Other Nuclear Fuel Cycle Markets

Beyond natural uranium, there are three downstream segments of the LWR nuclear fuel cycle that play an important role in the industry.

#### Conversion

Uranium conversion is the processing of natural uranium concentrates ( $U_3O_8$ ) into uranium hexafluoride ( $UF_6$ ), which is the form of uranium that is needed to feed all the enrichment plants in the world. There are only a handful of conversion plants in the world, including major facilities in the U.S., Canada, France, Russia, and China. The cost of the conversion component is typically the smallest of the entire nuclear fuel supply for a utility and typically represents about 4–8% of the cost of a finished fuel assembly.

Like other parts of the nuclear fuel supply chain, the conversion market has been defined by oversupplies and inventory disposition, although this part of the fuel cycle has seen the most dramatic producer rationalization of all the market sectors. As such, conversion prices have recently increased by more than half, and inventories are being used up more quickly than any other fuel component. This is primarily a result of the decision in late 2017 by Honeywell to halt operations at its Metropolis conversion plant in the U.S. indefinitely due to uneconomic operations when compared with the price of material available for purchase from inventories. As such, ConverDyn, which is the marketing agent for the output from the Metropolis plant, has turned to procuring conversion from the spot and mid-term market to

supply into its utility customer commitments, and this in turn has helped to dramatically reduce the oversupply in the market with resulting positive impacts on the spot conversion price. Although new capacity is unlikely to be required outside of China for long into the future, the conversion market is forecast to experience a tight supply/demand balance in the coming decade.

### ***Enrichment***

Uranium enrichment is the second largest cost component of LWR fuel accounting for around 30–35%. Given its close association to the production of nuclear weapons material, enrichment technology is closely guarded by only a small number of countries. Four companies control the vast majority of the world's enrichment capacity: RosAtom (Russia), URENCO (Germany, Netherlands, and UK), Orano (France), and China National Nuclear Corporation. All of these companies operate gas centrifuge enrichment plants based on gas centrifuge technology, which uses mechanical force to separate the  $U^{235}$  and  $U^{238}$  isotopes in natural uranium. The measure of enrichment is the separative work unit (SWU).

The enrichment market has been oversupplied and was experiencing a drop in prices even prior to Fukushima due to the technological shift to centrifuges. The current market is characterised as an oligopoly, but due to the technical constraints that limit the ability to cut back production, suppliers have been forced to continuously lower their prices in order to win new business. Moreover, enrichers have repurposed large portions of their excess capacity to underfeeding and tails re-enrichment as a way of supplementing their primary SWU sales.

### ***Fabrication***

The final step in the nuclear fuel cycle is fuel assembly fabrication. Fuel types vary greatly depending on the type of reactor. As such, fuel fabrication is a highly engineered product, and is not considered a commodity-type market like the other three front-end nuclear fuel cycle sectors. There are only three major global fuel vendors in the world: Framatome, Global Nuclear Fuel (GNF), and Westinghouse; however, there are also numerous domestic and regional vendors, including Russia's TVEL, South Korea's KEPCO Nuclear Fuel, and Spain's ENUSA. The fabrication step can represent a significant portion of the total fuel cost for a utility—somewhere in the 15–20% range. Many utilities prefer to have the option of procuring fuel from multiple suppliers, but given technical and geographic constraints, the options for multiple suppliers can be limited.

## **RARE METALS INDUSTRY AND MARKET OVERVIEW**

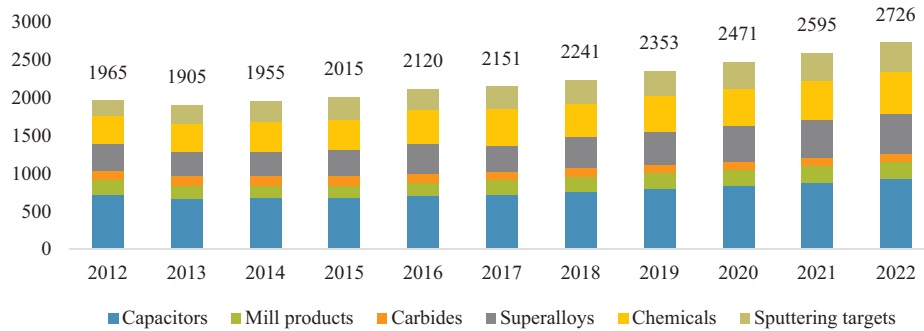
### **Tantalum**

Tantalum is a rare metal, having a crustal abundance of 1–2ppm. It is a hard, blue-grey, lustrous transition metal, part of the refractory metals group, but also displays high conductivity of electricity and is highly corrosion-resistant, properties which all define its main uses. Tantalum does not exist in its native state, instead being found alongside niobium in the minerals tantalite and columbite, or as coltan (a mix of columbite and tantalite minerals).

The market for tantalum was around 2,150t Ta in 2017. The electronics industry makes up the largest part of the market for tantalum, typically accounting for 50–60% of total consumption. This segment comprises capacitors (consuming tantalum powder, wire and furnace parts) and sputtering targets (mainly used in semiconductors and inkjet printers). Major end-uses for tantalum capacitors include portable telephones, personal computers and automotive electronics. Increasing miniaturisation of capacitors in recent years has resulted in less tantalum being required for each capacitor being manufactured, but increasing capacitor use has offset this, meaning the market has grown to around 1,000–1,050t Ta over the last decade. When alloyed with other metals, tantalum can be used to make carbide tools for metalworking equipment and to produce superalloys. Superalloys used in aero engines and land-based industrial gas turbines (IGT) are the next largest part of the market, and have shown growth of around 6% per year over the last decade to reach around 350–400t Ta in 2017. The balance (700–800t Ta) is split between carbides, mill products—sheet and plate, welded tubing, and rod and wire products—(mostly for chemical processing applications) and chemicals (mainly oxides for electronics and optical applications). The tantalum market is expected to show growth of around 5.0% per year in the future, with sputtering targets, superalloys and mill products the main demand drivers.



**Figure 1: Demand for tantalum, 2012-2022 (t Ta)**

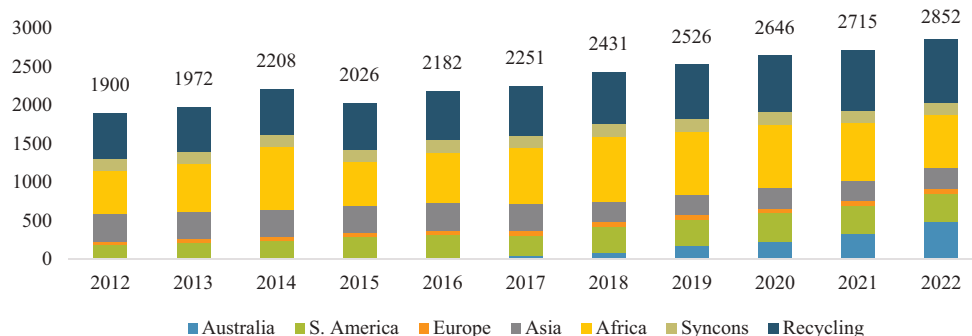


Source: Roskill

Primary tantalum supply can be split between conventional mining, artisanal mining, synthetic concentrates from tin processing (syncons) and recycling. Artisanal mining in central Africa—concentrated in the Great Lakes region, Nigeria and Sierra Leone—supplied coltan and accounted for around half of all tantalum processed into the refined products consumed above in 2017. Conventional mining is concentrated in Brazil and China. Although Kazakhstan has deposits of tantalum, they are not currently developed due to estimated low profitability. Efforts to legitimise supply from the “conflict” areas in the Great Lakes region of Africa have increased certified conflict-free tantalum supply to processors. Australia, previously the largest mine supplier, is set to increase market share with tantalum now the by-product of lithium (spodumene) mining. Secondary tantalum is also recovered from fabricated components and superalloys, and contributed around 650t Ta to total supply in 2017. Tantalum minerals are typically processed using hydrofluoric acid and sulphuric acid, forming intermediate potassium tantalum fluoride (K-salt) or tantalum oxide. K-salt is reduced to tantalum metal and then fabricated into final products.

The Ulba Facility produces tantalum ingot, mill—sheet and rod—products, powders (incl. for capacitors), as well as various alloys. With output of 127t Ta in 2017, the Ulba Facility accounted for around 6% of refined tantalum supply, and it was the second largest producer of ingot and joint third largest producer of powder globally, although few companies report output. The Group is one of around 40 companies with the capability to refine tantalum feedstocks (concentrate, intermediates and scrap) to marketable products. The Ulba facility is one of the largest plants in the world and the sole facility in the Commonwealth of Independent States (CIS) with tantalum production capabilities. The Group also has long-term tolling contracts. The Ulba Facility provides the fully integrated production cycle, having the capability to process tantalum ore through to the production of finished products. As the Group does not have its own tantalum raw materials supply, it instead relies on long-term contracts for the supply of tantalum-bearing concentrates, hydroxide and scrap. Its main competitive advantages are: a large capacity for ingot and mill product output; and, expertise in processing scrap. The Group’s tantalum, tantalum compounds and tantalum products are certified conflict free in accordance with the Responsible Minerals Initiative (formerly the Conflict Free Smelter Initiative), part of the Electronic Industries Citizenship Coalition.

**Figure 2: Supply of tantalum feedstock, 2012-2022 (t Ta)**

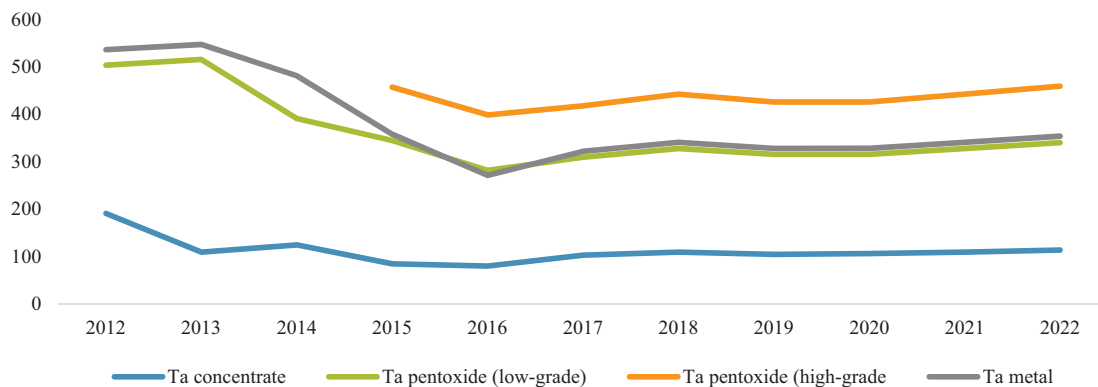


Source: Roskill

Prices for tantalum concentrate, intermediates and refined products are reported by a number of companies, and generally reflect the underlying marginal cost of concentrate production and supply/demand balance. Prices had been declining since 2012/13 on weaker demand and de-stocking but increased in H2 2016 and continued rising through to H1 2018 as demand increased and refiners/consumers returned to the market to re-stock. The re-stocking cycle is expected to be complete in 2018 and with greater supply coming to the market from Africa following higher prices and

increased by-product from lithium production reflecting increased lithium mining; excess supply versus demand is expected to exert slight down-side pressure followed by a period of stability.

**Figure 3: Prices of tantalum concentrate, oxide and metal, 2012-2022 (US\$/lb Ta)**



Source: Asian Metal (historical); Roskill (forecast)

### Niobium

Niobium is consumed in four main forms: High-strength, low-alloy (HSLA)-grade ferroniobium (FeNb); vacuum-grade (VG) FeNb and nickel-niobium (NiNb); niobium metal and alloys (e.g. TiNb); and, chemicals. The steel industry is by far the main consumer, accounting for about 90% of all niobium (as HSLA-grade FeNb) used in 2017; high-performance alloys (HPA) are the largest user of VG niobium products, superconductors for metal/alloys and ceramics and catalysts for chemicals. Over the period 2008-2017, niobium consumption grew only marginally, falling sharply in 2009 and then recovering, but this masks higher growth for FeNb in HSLA, and VG FeNb and NiNb in HPA; the market is expected to see GDP-level growth going forward, although niobium metal and alloy requirements change frequently. FeNb and ferrovanadium (FeV) are used in some common steel applications and the possibility of substitution exists, with rising FeV prices helping FeNb demand rise in 2017.

The majority (95%) of world mine production of niobium is of the mineral pyrochlore, which is currently extracted from large deposits in Brazil by CBMM and CMOC, and in Canada by Magris, and used mainly in FeNb for steelmaking. The balance is in minerals such as tantalite-columbite and columbite, which are mined in a number of countries primarily for their tantalum content (see section above), mostly in Africa and South America. Much of that supply is used in applications other than steel, including niobium metal and alloys. Non-ferrous niobium production is a very small part of the overall niobium market, and Roskill estimates metal and alloys amounted to only 1.5% of total niobium shipments in 2017, or 770t Nb. Ulba is a large producer of niobium metal and alloys, with output in 2017 of 97t Nb representing 13% of total supply and making it one of the top-3 producers. Ulba's main competitive advantages are: a large capacity for ingot and mill product output; and, alloying capability. Prices for niobium metal and alloys are opaque, reflecting the small size of the market compared to ferrous grades, but average values derived from trade data suggests a similar trend to tantalum: a peak in 2012 and subsequent; and, a recovery from H2 2016. Prices appear to be linked to tantalum feedstocks (such as tantalite-columbite), although columbite concentrate may trade separately to tantalite.

### Beryllium

The majority of world beryllium ore production takes place in the USA where bertrandite ore is the raw material; beryl is another source of refined product. Ulba's production is from stockpiled concentrates originally sourced from Russia. There is also some limited production in China and Japan, but more processing. Beryllium metal and alloys (aluminium-beryllium and copper-beryllium) are fabricated into products, cast or sold as powder. Copper-beryllium alloys with <2% Be, which account for around 75% of beryllium consumption, are used for the manufacture of high performance electrically conductive terminals (circuit connectors) and mechanical components (such as bearings and moulds). Aluminium and magnesium alloys containing beryllium have improved physical and fabrication properties. Nickel-beryllium is used as a high-temperature spring. Beryllium oxide enables components with extremely high thermal conductivity while providing electrical insulation. The market is much smaller, at an estimated 300t Be in 2017, than tantalum and niobium, and its growth prospects appear more limited with consumption declining in the USA between 2014 and 2016 with a small up-tick in 2017. UMP's output at 94.5t Be in 2017 makes it the third largest producer globally, and its competitive advantage is a significant volume of stockpiled ore for processing, and a full production cycle from ore concentrate processing to finished products including an extensive suite of alloys. Beryllium sells for around US\$200/kg.

## BUSINESS

### Overview

The Group is the largest producer of natural uranium globally (in terms of production volumes) with priority access to one of the world's largest resource bases, according to UxC data. According to UxC data, the Group's uranium production, including the production of its jointly controlled entities and associates attributable to the Group, for the year ended 31 December 2017 represented approximately 20% of total global uranium primary production and approximately 40% of global in-situ leach recovery ("ISR") uranium production

The Group operates, through its subsidiaries, JVs and Associates, 26 deposits grouped into 13 asset clusters, all of which are located in Kazakhstan. All of the Group's uranium deposits are suitable for ISR. A combination of the cost-efficient ISR technology, which has smaller environmental impact compared to other mining methods, and a long-life mining asset base allows the Group to remain sustainably among the leading and the second lowest cost uranium producers globally, according to UxC data. The Group benefits from more than 40 years of ISR experience accumulated by the Kazakhstan uranium mining industry. In addition to being cost-efficient and being least environmentally impactful, the ISR technology offers enhanced operational flexibility as compared to conventional mining, which improves the scalability of the Group's operations and allows it to ramp up or down its production in a quick and cost-efficient manner in response to evolving market conditions.

The Company enjoys the status as Kazakhstan's national operator for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The respective status of a national company in Kazakhstan allows the Group to benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including the high-quality and ISR-conducive deposits of natural uranium, which are abundant in the Republic of Kazakhstan.

The Group only produces uranium from deposits in Kazakhstan. According to UxC data, for the year ending 31 December 2017, Kazakhstan accounted for 40% of the global uranium production and 65% of the world's Measured and Indicated Mineral Resources suitable for ISR mining. According to the NEA/IAEA, as of 1 January 2015, 13% of the global identified uranium resources were located in Kazakhstan. The Group also possesses the largest uranium Ore Reserves among its competitors, according to UxC data. As at 30 June 2018, the Group's attributable Proved and Probable Ore Reserves contained 294.8 thousand tonnes of UME and attributable Measured and Indicated Mineral Resources (inclusive of those Mineral Resources modified to produce the Ore Reserves) contained 435.1 thousand tonnes of UME, and attributable Inferred Mineral Resources contained 1.0 thousand tonnes of UME, each reported in accordance with the terms and definitions of the JORC Code.

As the national atomic company in the Republic of Kazakhstan, the Company has partnered with substantially all of the leading players in the uranium mining industry globally. The Group has built 10 successful asset-level partnerships with Cameco, CGNPC, Kansai, Marubeni, Orano (formerly Areva), RosAtom and Sumitomo, as well as the Energy Asia consortium. These partnerships demonstrate the prominence of the Group's asset base on a global scale while having allowed the Group to gain access to the partners' technologies and improve its technological and management know-how. For the year ended 31 December 2017 and the six months ended 30 June 2018, 60.4% and 48.4%, respectively, of the Group's attributable mined uranium was attributable to participation in its JVs and Associates.

The Group's primary customers are operators of nuclear generation capacity, and the principal export markets for the Group's products are China, South and Eastern Asia, North America and Europe. The Group sells uranium and uranium products under long-term contracts, short-term contracts, as well as in the spot market, utilising its Switzerland-based trading subsidiary. The price of uranium represents a relatively minor fraction of the overall cost of producing nuclear energy, and most of the Group's customers tend to prefer security of supply, which the Group is well-positioned to accommodate due to its size and production volumes, to more favourable pricing terms.

While uranium mining is the predominant focus of the Group's operations, the Group is also present (through its subsidiaries, JVs and Associates) in most of the other stages of the "front-end" nuclear fuel cycle with the exception of conversion. These stages include uranium dioxide, or UO<sub>2</sub>, ceramic powder production, fuel pellet production, as well as enrichment. In addition, the Group is currently engaged in the construction of a fuel assembly plant, which the Company expects to put into operation by the end of 2020. Moreover, the Group is well positioned to develop a conversion facility, should conversion become economically attractive in the future and has secured access to the requisite technologies from Cameco. The Group produces uranium products, including natural uranium concentrate, uranium dioxide ceramic powder and fuel pellets, which are used in the manufacturing of nuclear fuel assemblies, the fuel used by nuclear power stations for the generation of electricity.

In addition to uranium operations, the Group is engaged in the manufacture of selected rare metals products, primarily tantalum and beryllium.

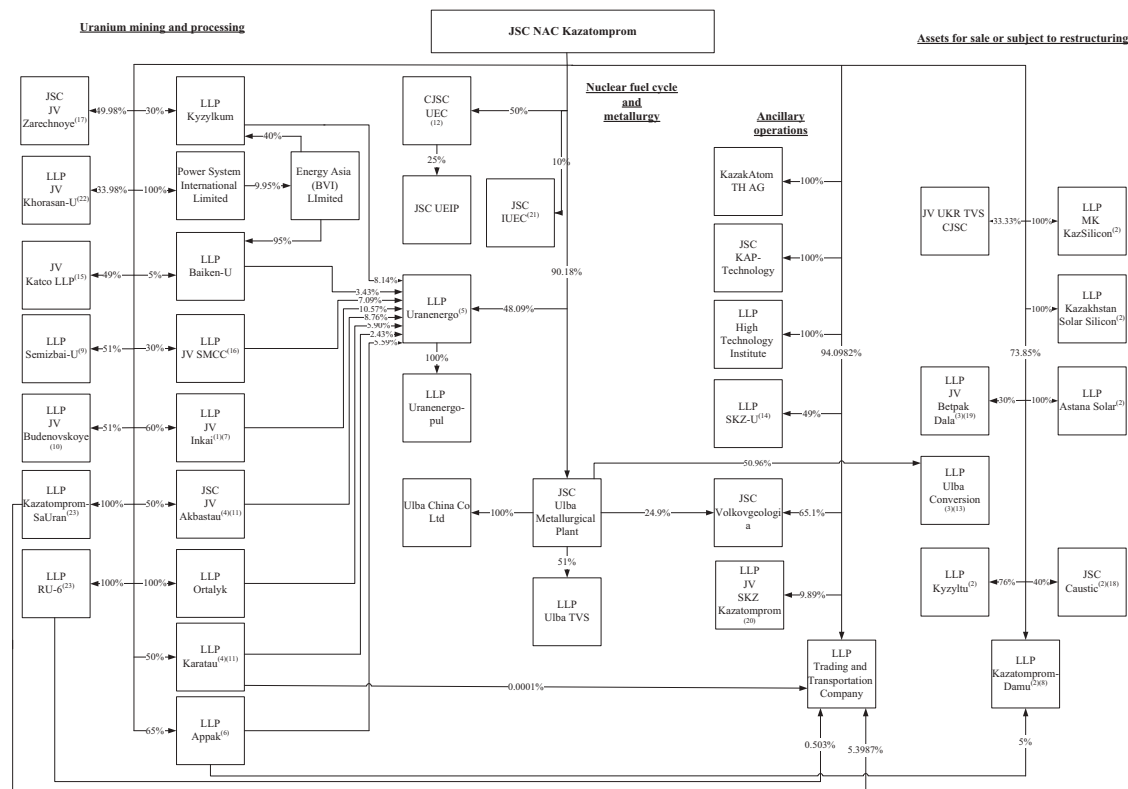
For the year ended 31 December 2017 and the six months ended 30 June 2018, the Group's consolidated revenue was KZT336,517 million and KZT145,029 million, respectively, and profit was KZT139,154 million and KZT115,020 million, respectively.

### **Principal Assets and Corporate Structure**

The Group's principal assets are:

- subsoil use agreements granting the Group's subsidiaries extraction rights with respect to 11 uranium deposits located in the Chu-Sarysu and Syrdarya uranium mining provinces, which had, on an aggregate basis, Proved and Probable Ore Reserves containing 238.0 thousand tonnes of UME and Measured and Indicated Mineral Resources containing 253.2 thousand tonnes of UME as at 30 June 2018;
- subsoil use agreements granting the Group's JVs and Associates extraction rights with respect to nine uranium deposits located in the Chu-Sarysu and Syrdarya uranium mining provinces, which had, on an aggregate 100% basis, Proved and Probable Ore Reserves containing 293.6 thousand tonnes of UME and total Mineral Resources (including Measured, Indicated and Inferred Mineral Resources) containing 420.8 thousand tonnes of UME as at 30 June 2018;
- 13 ISR uranium mine clusters, of which 5 and 8 are operated by the Group's subsidiaries, JVs and Associates, respectively;
- a uranium and rare metals processing facility, Ulba Metallurgic Plant JSC with annual UME capacity of 3,728 tonnes of  $U_3O_8$ , 317 tonnes of  $UO_2$  powder manufactured from  $UF_6$ , 155 tonnes of  $UO_2$  powder manufactured from scrap and 108 tonnes of fuel pellets, and 626.9 tonnes, 141.9 tonnes and 25.2 tonnes of beryllium, tantalum and niobium rare metal products, respectively;
- a uranium trading subsidiary, Trade House KazakAtom AG ("THK"), based in Zug, Switzerland; and
- complementary ancillary businesses, including:
  - two sulfuric acid plants with combined annual production capacity of 680 thousand tonnes of sulfuric acid;
  - a geology and geotechnology company, Volkovgeologia, which is engaged in exploration and drilling; and
  - a transportation and logistics company servicing the Group's mining assets.

The diagram on the following page sets forth the Group's corporate structure, showing the Company and its key subsidiaries and JVs and Associates:



Notes to the chart in the previous page:

- (1) The Company increased its interest in JV Inkai LLP from 40% to 60%, and accordingly started consolidating it in its financial statements, with effect from 1 January 2018; the remaining 40% in share capital is owned by Cameco Corporation;
- (2) The Company intends to dispose of 75% of its interest in Astana Solar LLP, MK KazSilicon LLP Kazakhstan Solar Silicon LLP and its entire interest in each of Caustic JSC, JV UKR TVS CJSC, Kazatomprom-Damu LLP, Kyzylty LLP, prior to 31 December 2018;
- (3) JV Bepak Dala, Ulba Conversion LLP and Kazatomprom-Damu LLP are in the process of liquidation which the Company expects to complete prior to 30 June 2019;
- (4) JV Akbastau JSC and Karatau LLP are consolidated into the Company's financial statements on a proportionate basis with effect from 1 January 2018 as joint operations;
- (5) Following a reassessment of the nature of control, the Company reclassified its investment in Uranenergo LLP into a joint venture from an associate, with effect from 1 April 2016;
- (6) 25% of share capital is owned by Sumitomo Corporation and another 10% of share capital is owned by Kansai Electric Power Co Inc.;
- (7) 40% of share capital is owned by Cameco Corporation;
- (8) 21.15% of share capital is owned by Uranium One Holding N.V., a subsidiary company of Uranium One Inc.;
- (9) 49% of share capital is owned by Beijing Sino-Kaz Uranium Resources Investment Company Limited, a subsidiary of China National Nuclear Corporation;
- (10) 49% is owned by LLP Steppe Mining and Chemical Combined Works;
- (11) 50% is owned by Effective Energy N.V., a subsidiary of Uranium One Inc.;
- (12) 50% is owned by JSC TVEL, a subsidiary of RosAtom;
- (13) 49.04% is owned by Cameco Luxembourg S.A.;
- (14) 32% is owned by SAP Japan Corporation and 19% of share capital is owned by Uranium One Inc.;
- (15) 51% is owned by Orano S.A.;
- (16) 70% is owned by Uranium One Rotterdam B.V., a subsidiary of Uranium One Inc.;
- (17) 49.98% is owned by Uranium One Holland B.V., a subsidiary company of Uranium One Inc.;
- (18) 60% is owned by JSC Central Asian Petroleum Energy Company;
- (19) 70% is owned by LLP Kazakhstan Invest Group Astana, a subsidiary of Uranium One Inc.;
- (20) 90.11% is owned by LLP United Chemical Corporation;
- (21) 50%+1 share is owned by State Corporation RosAtom (Russia), 10% is owned by Stat Concern Nuclear Fuel (Ukraine), 10% is owned by CJSC AAEK (Armenia), the rest is owned by various shareholders;



- (22) 36.02% is owned by Energy Asia Holdings Ltd, 30% is owned by Uranium One Utrecht B.V. Further to the execution of the agreement between the Company and Energy Asia Holdings Ltd. it is expected that by 31 December 2018 the Company will own 50% and Energy Asia Holdings Ltd. will own 20%;
- (23) Will receive uranium mining licenses from the Company by 31 December 2018.

### Competitive Strengths

The Group occupies a distinctly leading position in an industry that it believes to be at the inflection point and which has attractive long-term fundamentals and significant barriers to entry. The Group's strong competitive edge underpinned by the structural cost advantage, production flexibility intrinsic to its mining method, sales structure, fiscal regime, as well as geographic proximity to highest-growing nuclear markets makes it very strongly-positioned to realise benefits from the potential recovery in uranium prices and shifts in demand and supply balance, while being highly resilient to any adverse market movements.

The Group believes the following key factors have contributed to its success and make it well positioned to benefit from the anticipated growth in the industry:

- **Exposure to attractive uranium market fundamentals.** Demand for uranium products is overwhelmingly driven by the nuclear power generation which is expected to remain robust in the coming decades. According to UxC data, the global nuclear generation capacity is expected to increase by 11% to 432 GWe in 2030 from 388 GWe in the year ended 31 December 2017. According to UxC data, 56 reactors were under active construction in 17 countries as at 30 June 2018. According to UxC data, China—where the majority of the Group's customers are located—is expected to be the major growth driver and its share in global power generation is expected to increase more than two-fold from 12% for the year ended 31 December 2017 to 28% in 2035.

Nuclear generation has some key intrinsic advantages over other sources of electricity. In particular, it is able to provide baseload capacity, compared to most of other renewable sources of energy, and is associated with minimal environmentally-damaging air emissions, such as greenhouse gas emissions, compared to fossil fuel-based generation. In particular, the Paris Agreement, which was signed by 179 countries and came into force in November 2016, strengthens the global response to the threat of climate change by seeking to limit the overall increase in global temperatures. As part of the Paris Agreement, China, for example, has committed to reducing the CO<sub>2</sub> intensity of its economy by 60–65% compared to 2005 levels, with reliance on and expansion of the nuclear generation included in the respective commitments and being viewed as critical to achieving this objective. Therefore as a carbon-free baseload source of electricity, nuclear generation is particularly well-suited to meet growing electricity demand coming from the continuing urbanisation in emerging markets, development of the electric automotive industry, expansion of public electric transportation means and broader electrification trends, such as robotic automation and the proliferation of handheld and other personal devices.

While the demand for uranium remains relatively stable with steady long-term growth trend, the Group believes that the uranium supply is currently undergoing a significant structural shift.

Based on UxC's 2017 global production cost curve, approximately 92 million pounds U<sub>3</sub>O<sub>8</sub>, or 59% of 2017 primary production, was in negative territory on a full cost<sup>2</sup> basis against the average spot price of \$22.06 per pound U<sub>3</sub>O<sub>8</sub> in 2017. The situation is to a large extent sustained by the prevalence of legacy long-term uranium supply contracts with pricing terms reflecting the higher prices which prevailed in the market at the time of their conclusion—which for the majority of such contract is the period between years 2005 and 2012. According to UxC data, a significant portion of such contracts are set to expire in early 2020s, increasing the suppliers' exposure to the current, lower, market prices for uranium. By 2021, UxC estimates that around 23% of global utility requirements remain uncovered by forward contract commitments. The level of utility uncovered uranium needs increases to around 50% by 2025. Given the relatively insignificant share of uranium in the total nuclear generation costs, utilities tend to prioritise security of supply over price minimization—on average, no more than 10% of utility requirements are left open to spot or near-term purchasing). Accordingly, many utilities are likely to return to the market in the near- to medium-term to begin covering their future fuel needs through entering into medium- and long-term contracts.

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<sup>2</sup> UxC's full production cost is comprised of the project operating (cash) cost plus capital cost recovery. (Operating cost = Mining Cost + Hauling Cost + Milling Cost + Production/Property Tax + Environmental Tax + Royalty/Severance Tax. Capital cost = Acquisition/Exploration Costs + Mine Development Cost + Mill Construction Cost + Environmental/Infrastructure Cost + General & Administrative).

In addition, following 10 years of uranium price decline, the industry started in 2017 to curtail supply in order to address the surplus uranium production in the market, including by suspending operations at certain uranium mines, such as, for example, most notably at McArthur River mine by Cameco in February 2018 for an indefinite period, and the Company announcing in January to cut Kazakhstan production by 10% in 2017, which was followed in December 2017 by a reduction of production by 20% from the levels set out in the subsoil use agreements in the following three years, as well as Orano (formerly Areva) to reduce SOMAIR production in Niger by 1.1 million pounds  $U_3O_8$  in 2018. Paladin Energy's Langer Heinrich mine in Namibia was placed on care and maintenance in May 2018, removing 3.4 million pounds  $U_3O_8$  from the market. In July 2017, Paladin Energy entered administration (bankruptcy) unable to meet debts due to weak market conditions. In addition, between the years ended 31 December 2013 and 2017, the Group, Cameco, Orano and Uranium One, which, according to UxC data, are the top four producers of natural uranium in terms of volume globally, reduced their capital expenditure by approximately two-thirds in the aggregate.

Finally, secondary supplies, coming primarily from enrichment facilities and government inventories, which currently account for approximately 25% of the total global uranium supply, are expected to gradually decline by approximately 32% between 2018 and 2022, according to UxC data.

The Company expects these factors to result in a significant shift in the uranium demand and supply balance, which in turn is expected to lead to a rebound in the uranium prices as well as to a continuously growing number of opportunities for the Group as the largest producer globally to enter into medium- and long-term contracts at attractive terms.

- ***World's largest uranium producer with priority access to high-quality ISR-conducive resource base.*** Kazakhstan is the largest uranium producing country in the world by a significant margin, accounting for 40% of the global uranium supply in the year ended 31 December 2017, according to UxC data. In addition, due to their geological characteristics, the majority of uranium deposits in Kazakhstan are ISR conducive, as such Kazakhstan accounts for approximately two-thirds of the total global reserves suitable for ISR extraction, according to UxC data.

In 2017, the Group was the largest uranium producing company globally, with its attributable production accounting for 20% of the total global uranium production, according to UxC data. The Group has maintained its share in the global uranium production at the level of at least 20% during each year since 2011, according to UxC data. The Group operates an extensive asset portfolio comprising 26 deposits operated by 13 uranium mines across Kazakhstan (which the Group is able to achieve due to the physical proximity of certain deposits and the nature of the ISR technology), and therefore the Group is not materially dependent on any single uranium mine.

The Group runs the majority of its mining operations in Kazakhstan in the form of partnerships or joint ventures with leading international players in the uranium industry. The Group currently has such partnerships with 10 leading international industry players from Canada, Japan, China, France and Russia, including such companies as Cameco, CGNPC, Kansai, Marubeni, Orano (formerly Areva), RosAtom and Sumitomo, as well as the Energy Asia consortium. The Group believes that this further illustrates the attractiveness of its asset base in Kazakhstan on a global scale, while Group's cooperative and partnership-driven approach allows it to benefit from the know-how and information exchange, apply state-of-the-art technologies and business practices, thus remaining at the forefront of global uranium mining industry development. The Company believes that the Group has highly productive and mutually beneficial relationships with each of its partners.

As the national atomic company in Kazakhstan, the Company is uniquely positioned to access and further capitalise on the country's ample uranium resource base. The Company enjoys statutory pre-emptive rights over any uranium-holding deposits in Kazakhstan, and is able to grow its resource base with relatively limited investment. For example, the Group has recently significantly expanded its resource base through adding new areas at the Inkai 2-3 (which will not be subject to the business partnership with Cameco), Budenovskoye and Zhalpak deposits.

The market leading position further enables the Group to have a strong insight into the global uranium market: on the demand side as the largest producer and seller of natural uranium and on both the demand and supply sides given its market exposure through its trading operations at THK. The Company believes that because of this enhanced market visibility, the Group benefits from an informational and analytical competitive advantage.

- ***Low-cost production on the back of ISR technology.*** The Company believes, based on information provided by UxC, that its average costs are consistently in the first quartile of the global uranium production cost curve.

According to UxC data, the Group ranks the second lowest of all global uranium producers (second only to its joint venture partner Uranium One) in terms of cash costs. According to the SRK Report, the Group's average attributable C1 cash costs were US\$17.5, US\$12.2, and US\$12.0 and US\$12.2 per one pound of U<sub>3</sub>O<sub>8</sub> and all-in sustaining costs were US\$22.2, US\$15.7, US\$16.1 and US\$16.3 per one pound of U<sub>3</sub>O<sub>8</sub> for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018.

The Group's low production costs are primarily driven by the geological structure of its deposits, which enables cost-efficient ISR extraction technology, which has smaller environmental impact compared to other mining methods. The ISR method involves leaving the ore in the ground, and recovering the minerals or elements from it by dissolving them in a sulfuric acid solution pumped down drill holes (injection wells) drilled from the surface and then pumping the pregnant solution back to the surface through additional drill holes (extraction wells) where uranium can be recovered. As a result, there is little to no surface disturbance and no tailings or waste rock generated, making it in most cases a more economical, as well as less environmentally intrusive mining method compared to conventional underground or open pit mining production.

Uranium deposits suitable for ISR are relatively scarce, as they are required to be in permeable sand or sandstones, confined above and below by impermeable strata. Kazakhstan's geological endowment results in it having the largest ISR conducive uranium resource base, with approximately 65% of the global uranium Measured and Indicated Mineral Resources suitable for ISR, according to UxC data. According to UxC data, the Group accounted for approximately 40% of the global ISR uranium mining in 2017. Furthermore, the Group, together with its partners, operate eight out of 10 largest ISR mines in the world, based on 2017 production volumes. Being the largest ISR producer, the Group has accumulated extensive experience and knowledge, which allows it to constantly increase the efficiency of its mining operations, including through continuous optimisation of operations, employing innovative methods of repair and remedial works and using low-cost and durable materials in its operations. In addition, the geological nature of the Group's reserves, which are located below water table, reduces the risk of water cross-contamination which could potentially result from ISR operations.

The Group's structural cost advantage is further underpinned by a generally relatively lower cost base (such as costs of services, personnel, utilities) in Kazakhstan compared to developed markets such as Canada and Australia, which are the other major uranium producing countries.

- ***Global high-quality customer base and robust sales structure.*** The uranium mining industry, as well as the broader nuclear value chain, is characterised by the particularly long-term nature of supplier-customer relationships, compared to the majority of other commodity industries. The Group has proven to be a reliable supplier to the industry for the past 20 years since the Company's foundation in its current form, and has created a global sales and distribution footprint, including THK in Switzerland and a representative office in the United States. As the largest uranium producer globally, the Group has established relationships with major global consumers of civil uranium and developed a high quality blue chip customer base. As at 30 June 2018, the Group had 16 customers from eight countries.

The Group supplies uranium to eight out of the 10 largest operators of nuclear generation capacity globally. Chinese customers accounted for approximately 62% of the Group's uranium sales volumes in 2017, while European customers, other customers from the Asia-Pacific region, and the United States accounted for approximately 16%, 16% and 3%, respectively, of the Group's uranium sales volumes in 2017.

Finally, the Group benefits from Kazakhstan's physical proximity to China, the fastest growing nuclear fuel market in the world, according to UxC data. This allows the Group to ship uranium to Chinese customers by rail, which the Group believes to be the safest, fastest and least expensive means of transporting uranium. According to UxC data, China is expected to be the fastest growing nuclear power market globally accounting for approximately 50% of all the new capacity to be built between 2018 and 2030.

In addition to the utility power generation buyers, i.e. operators of nuclear power plants, in 2018 the Company also entered into a long-term supply agreement with Yellow Cake Plc, AIM-listed long-term corporate holder of physical uranium, at market-related prices for at least 9 years after the date of this Prospectus, which provides potential additional diversification to the Group's sales portfolio.

- ***Robust Health, Safety and Environment (HSE) track record.*** The Group is fully cognisant of the inherent elevated public sensitivity and scrutiny associated with mining and related operations, and believes that it has established and implemented advanced health and safety, as well as environmental policies and controls at its operations. Specifically, the Group has adopted an ISO-14001-based environment management system and

OHSAS-18001-compliant health and safety management systems, and continues to promote HSE compliance awareness, as well as an open and transparent approach to all aspects of HSE matters, across its employees and managers at all levels.

ISR technology is considered by the IAEA to have environmental and safety advantages as compared to conventional mining and milling, and the Group believes its ISR extraction method to be the least environmentally impactful technology. This, among other things, is demonstrated by the absence of any major environmental accidents in the Group's operations since inception. Uranium mines operated by the Group have robust monitoring systems over radiation protection.

The Group has continuously focussed, and intends to continue to focus, on reducing workplace accidents in its operations. For 2015–2017, the Group successfully managed to lower the amount of workplace accidents from 10 to 7. With the continuously increasing consolidated occupational health and safety expenses, the Group employs various practices designed to improve workplace safety, such as regular medical examinations, behavioural audit and lock out tag out (LoTo) physical restraint of hazardous energy sources. Supporting the International Social Security Association (ISSA)'s initiative of improving industrial safety, health and well-being, the Company joined the Vision Zero international program thereby confirming its intention to reach zero injuries through adherence to the seven "golden rules" promulgated by the program. The personnel average radiation exposure is of the level of 0.80 mSV, one of the lowest reported by companies of the uranium sector. The Group believes that its focus on workplace safety, combined with the inherently safer nature of ISR mining technology, allow it to benefit from an overall lost time injury frequency rate ("**LTIFR**"), the key HSE-efficiency metric in the mining industry, that is significantly lower than major mining companies globally. The Group's LTIFR amounted to 0.15 and 0.45 for the year ended 31 December 2017 and the six months ended 30 June 2018, respectively.

In addition, the Company has recently adopted an environmental and social action plan (ESAP), based on the recommendations from an environmental, social, health and safety review by SRK, aimed at further enhancing its HSE practices and bringing them in line with Good International Industrial Practices (GIIP) and focused on proactive risk management approach. See "*Business—Environmental and Social Action Plans.*"

- **Resilient financial performance through the cycle, strong cash flow generation.** The Company believes that its leading market position in the global uranium market, low-cost operations, ability to adjust production volumes and prudent financial policy collectively allow the Group to achieve a robust and sustainably strong financial performance under varying market conditions, as well as to demonstrate strong resilience to a low uranium price environment such as the one prevailing during 2016–2018. The resilience of the Group's performance is further supported by the fact that a significant portion of the Group's revenue is U.S. dollar-denominated, in particular 64% and 79% of the Group's consolidated revenue for the year ended 31 December 2017 and the six months ended 30 June 2018, respectively, was denominated in U.S. dollars. Furthermore, the Group pursues what it believes to be a conservative capital structure.
- **Firm commitment to shareholder returns.** The Group and its shareholder, Samruk-Kazyna, are committed to sustainable dividend policy aimed at ensuring predictable and equitable distribution of the generated cash flow to the Company's shareholders, while preserving financial stability and prudent leverage levels of the Group. The new dividend policy adopted by the Company in October 2018 stipulates specific pay-out ratios depending on the financial leverage. See "*Dividend Policy.*" In addition, the Company expects that, subject to applicable law and commercial considerations, dividend payments of no less than US\$200 million in respect of each of the Company's 2018 and 2019 financial years will be approved in 2019 and 2020.
- **Strong and experienced management team and sound governance practices.** The Group's experienced management team has a proven track record of delivering on the Group's focused strategy and achieving robust performance amid a volatile industry and macroeconomic environment, as evidenced by its operating and financial results. The Group believes that its management team has a proven ability to run its production operations in a highly efficient manner as well as to implement complex asset development and optimization initiatives, in particular, the comprehensive modernization initiative under the umbrella name "Transformation" (the "**Transformation Initiative**") launched in 2015. See "*—Transformation Initiative*" as well as the transition to the Group's market-centric strategy. For example, the Group's management team has significantly revamped its sales platform and introduced trading capabilities by launching THK in Switzerland in 2017, resulting in a significant upswing in the Group's sales during the six months ended 30 June 2018.

The Group benefits from the Company's experienced and balanced Board of Directors, which includes three highly regarded independent directors with extensive international experience in the mining uranium and



broader nuclear industry. See also “*Directors and Management—Composition of the Board of Directors.*” The Board of Directors, as well as each of its committees, are chaired by independent directors. The Group further benefits from the strong support of its largest shareholder, Samruk-Kazyna, the national wealth fund of the Republic of Kazakhstan.

- ***Well positioned to capture potential industry growth by expanding capabilities across multiple stages of the front-end nuclear fuel cycle.*** Although the Group’s primary focus is on its core business of uranium mining, it also produces fuel pellets at UMP which has a track record of more than 60 years. Moreover, the Group is well positioned to capture any potential opportunities in other segments of the front-end nuclear value chain that may occur following a shift in the nuclear fuel market. In particular, the Group has access to enrichment capacity at the major uranium enrichment plant in Russia through an equity stake in JSC Uranium Enrichment Centre, a joint venture with China’s CGNPC for the construction and operation of a fuel assembly plant at UMP, and has entered into an agreement with Cameco pursuant to which Cameco committed to make available its conversion technology enabling the Group to launch its own conversion facility, should shift in the conversion market fundamentals would make such operations profitable. Finally, the Group is also engaged in the production of rare metals products, primarily beryllium and tantalum, and has the capacity to scale its operations in response to any upswing in those markets.

## Strategy

The Group’s mission is to sustainably develop its uranium deposits and their value chain components in order to create long-term value for all of its stakeholders become partner of choice for the global nuclear fuel industry. To that end, the Group seeks to achieve continued growth and strengthen its position as the leading company in the uranium industry by employing the following strategies:

- ***Focus on mining operations as a core business.*** The Group primarily focuses on the mining of uranium. The Company believes that mining, in particular ISR extraction method, is currently the most attractive segment of the nuclear fuel value chain in terms of sustainable profitability and returns on capital, and is expected to remain such for as long as current market fundamentals persist. The Group’s access to ISR-conducive uranium deposits in Kazakhstan gives it a natural competitive advantage in ISR uranium mining. Accordingly, the Group intends to maintain its primary focus on its uranium mining operations, while retaining the optionality to expand presence in other segments of the front-end cycle, such as conversion, as well as in the rare metals operations.

In order to streamline its operations, the Group, among other things, has disposed of a significant number of non-core assets—over 30 subsidiaries in the past 5 years, including most recently the utilities company MAEK, which accounted for a material portion of the Group’s revenue in the periods under review. The Group is in process of completing its non-core asset disposal programme by 2019. Furthermore, the Group has selectively increased its share in mining joint ventures. In particular, with effect from 1 January 2018, the Company increased its equity interest in its joint venture with Cameco, JV Inkai LLP, from 40% to 60%, and, by the end of 31 December 2018, the Company intends to increase its equity interest in Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and its equity interest in JV Khorassan-U LLP, a joint venture with RosAtom and Marubeni Corporation, from approximately 34% to 50%.

- ***Continue following market-centric approach to uranium production.*** In the past 18 months the Group has substantially changed its strategic approach to being a market-centric operator, as opposed to production-led operator. This, critically, envisages setting production targets on the basis of market and sales volumes forecasts, as well as adapting production plans to the evolving market conditions.

The Group’s use of ISR technology allows it to respond to changes in uranium market conditions by ramping up or reducing its uranium production, far more rapidly and cost-effectively than most of its peers in the market who rely on conventional mining methods and develop non-ISR amenable deposits. The Group’s uranium deposits can be developed using exclusively the ISR technology, which grants the Group the flexibility to ramp its uranium production up or down relatively quickly without a considerable impact on the per unit cost of production. Accordingly, the Group is able to react rapidly to uranium market prices and adjust its production accordingly. For example, for the year ended 31 December 2017, the Group cut its uranium production by 8% as compared to the previous year. In November 2017, the Company announced its intention to reduce its planned production volumes by 20% for the period 2018–2020. While the Company’s production plans beyond 2020 currently envisage return to “pre-production cuts” levels, the Company enjoys full technical and legal flexibility, subject to agreeing amendments to its subsoil use agreements with the Government where necessary, to retain the production at reduced levels and will be making respective decisions depending on the market situation at the time.



- **Maintain global leadership in the uranium mining industry through operational excellence.** The Group prides itself on being the leading uranium producer in the world and seeks to build on this status in the future both in terms of scale as well as the operating efficiency and innovation. The Group intends to continue investing in the exploration and development of its reserve base to ensure sustainable low-cost production from its mines in the long term, while its current reserve base allows it to maintain the current production levels for approximately 15 years.

The Group views its low production costs as a key competitive advantage and plans to continuously work on sustaining its attractive position on the global uranium mining cost curve. The Group intends to achieve this through a combination of on-going optimisation of its mining development plans and stringent cost control. The Group pursues a disciplined approach to its production plans, overwhelmingly focusing on value and economic returns as opposed to maximizing production volumes.

The Group remains focused on the on-going optimization and digitalisation of its business processes and further strengthening of its sales and marketing function. Specifically, the Group has been undergoing the Transformation Initiative covering the period between 2016 and 2025 and aimed at increasing transparency, efficiency and harmonization of processes across the Group. As part of the Transformation Initiative, the Group has, for example, completed a comprehensive corporate restructuring including ongoing disposal of non-core assets in the portfolio, enhanced automation, and is currently working on the implementation of SAP ERP system. See “—Transformation Initiative.”

- **Continue enhancing sales and marketing capabilities and optimise contracts portfolio.** The Group has strengthened a number of areas in its sales and marketing function in the past two years. In particular, the Group successfully created a new sales channel through THK in Switzerland, which has allowed the Group to engage with new categories of customers, such as U.S.-based utility companies which prefer to purchase uranium in the spot market, enhanced the Group’s analytical capabilities, allowed for arbitrage operations and allowed the Group’s efficient expansion into the short-term/spot market, which requires significant operational flexibility. Moreover, the Group has expanded the physical presence of its sales representatives in each of its core target customer geographies and will continue strengthening this sales network.

In addition, with the launch of THK’s operations in 2017, the Group has become able to offer complex sales formulae pricing terms to its customers. The Group plans to further build on these capabilities and offer customers a wider range of pricing options than it previously was able to due to certain limitations of the Kazakh legislation.

The Group stopped its sales to uranium traders in 2016. This reflects the Group’s strategy of circumventing intermediaries in order to build direct relationship with smaller customers.

Going forward the Group seeks to optimise its portfolio of contracts and spot sales through advanced market monitoring practices, selective re-negotiation of existing contracts, and packaged offerings. Because the price of uranium represents a relatively minor fraction of the overall cost of producing nuclear energy, some customers may prefer security of supply to more favourable pricing terms, and the Group will seek to realise respective opportunities to enter into attractive long-term contracts at attractive prices, while retaining a balanced exposure to anticipated recovery in spot prices.

**Retain vigilant focus on HSE.** The Group is committed to best HSE practices and will continue making this a matter of paramount focus for the management team going forward. The Group strives to be an employer of choice in Kazakhstan, and ensure that its mines are a completely safe working environment and are further not inflicting damage to the Kazakh ecosystem. Furthermore, the Group joined the international Vision Zero movement to promote the zero-injury concept and aims to maintain a low level of LTIFR and occupational accidents. The Group has stepped up its investments in health and safety in 2016 and 2017, from KZT5,102 million in 2015 to more than KZT7,137 million in 2017 and plans to continue increasing such investments further in the following years.

In an effort to continuously enhance its HSE standards, the Company has approved an environmental and social action plan (ESAP) designed to address the findings and recommendations of SRK who performed an environmental, social, health and safety review of the Group’s assets in June 2018. This series of action plans is aimed at fully aligning the Company’s practices with Good International Industrial Practices (GIIP), IFC Performance Standards as well as Environmental Health & Safety Guidelines and includes a wide range of measures for implementation in the areas of air, water and land protection, waste management, stakeholder engagement, habitats review, mine closure planning etc., see also “—Environmental and Social Action Plans.”

In addition, the Group has developed a set of key environmental KPIs which it will seek to achieve, including waste generation volumes, emissions and waste dumping.

- ***Balance shareholder returns and optimal capital structure.*** The Group runs high-margin and cash generative operations with a relatively limited expansion capital expenditure profile and low leverage. The Group therefore will seek to return substantial cash flows to its shareholders, while preserving a conservative balance sheet structure allowing it to sustain a comfortable leverage level in case of adverse changes in commodity prices. The Group's dividend policy is to distribute no less than 75% of its free cash flows if the Group's leverage is below or equal to 1.0x Net Debt to Adjusted EBITDA and no less than 50% of its free cash flow if the leverage ratio is above 1.0x and below 1.5x Net Debt to Adjusted EBITDA. See also "*Dividend Policy*."
- ***Selective value-accretive expansion in the new areas of the nuclear value chain.*** Although the Group views itself as a predominantly uranium mining company, it is continuously evaluating the commercial attractiveness of opportunities to expand its footprint in the segments of the nuclear value chain in which it is already present, exploring the possibility of increasing its access to the uranium enrichment market, or in new areas, such as fuel assembly production thus becoming a broader player in the initial stage of the nuclear fuel cycle or in new areas of its industry. In addition, the Group is currently engaged in the construction of a fuel assembly plant jointly with China's CGNPC. Expansion into new segments of the nuclear value chain could allow the Group to offer a broader range of products to its customers, and capture additional margins. In addition, the Group may consider the further strengthening of its market position by selectively acquiring or investing in high-quality assets in the nuclear fuel chain.

## **Vision and Mission**

- ***The Group's Vision*** is to be the Partner of Choice for the global nuclear fuel industry. This vision aligns the Group's activities with its customers and partners in the global nuclear fuel industry. It strives to be the first choice in the provision of uranium and related front end services, which in turn focuses the Group's activities on the factors that matter to its partners such as reliability, technical excellence, outstanding HSE, fair dealings and customer centricity.
- ***The Group's Mission*** is to sustainably develop its uranium deposits and their value chain components in order to create long-term value for all of its stakeholders. The Group's Mission clearly identifies the following key highlights:
  - ***Sustainability.*** With the purpose of maintaining its position as a sustainable and responsible producer, the Group is committed to the best HSE practices and will continue making this the focus for the management team going forward.
  - ***Uranium deposits and their value chain components.*** With its national operator status, and recognizing the competitive advantage that the Group has in the field of uranium mining, it is natural that this should constitute the focus of the Group's commercial activities. Beyond mining uranium, the Group maintains a presence in most of the value chain components that make up the front end of the nuclear fuel cycle. As such, it will continuously evaluate the commercial attractiveness of opportunities to expand its footprint in the segments of the nuclear value chain in which it is already present; conversion services, through its access to conversion technology from its partner Cameco, exploring the possibility of increasing its access to the uranium enrichment market, or in new areas, such as fuel assembly where it is currently developing a manufacturing facility at UMP jointly with its partner China's CGNPC.
  - ***Long-term value creation.*** The Group runs high-margin and cash generative operations with relatively limited requirements for further expansion capital and conservative debt policy. The Group therefore will seek to return substantial cash flows to its shareholders, while preserving a conservative balance sheet structure allowing it to sustain a comfortable leverage. For more details on the Group's new dividend policy. See "*Dividend Policy*".

## **History and Development**

Kazakhstan has been a key supplier of nuclear fuel raw materials for more than 60 years. The original facilities, which are now owned by UMP, commenced operations in 1949, and have been involved in manufacturing of uranium products since 1954. In 1996, JV Katco LLP and JV Inkai LLP, (which were subsequently transferred to the Company), were launched as joint ventures with Areva (now Orano) and Cameco, respectively.

The Company was formed in 1997 by order of the President of Kazakhstan as the National Operator of Kazakhstan’s nuclear fuel industry. Since its incorporation, the Company has not engaged in the mining of uranium, or production of any uranium products, for the military purposes of any country. Set forth below is a brief history of the Company since its establishment:

- 1997 The Company is established, and the Group believes it ranked 13<sup>th</sup> in the global uranium production industry in terms of uranium extraction volume. The Company acquires its interest in JV Inkai LLP, the joint venture between the Group and Cameco.
- 2000 The Group became the sixth largest uranium producer globally in terms of uranium extraction volume, according to the NEA, the IAEA and the Red Book, and launched tantalum and non-military grade beryllium production.
- 2002 The Group expands its uranium export geography by adding U.S. and European destinations, and enters the Chinese and South Korean markets.
- 2003 The Group believes it became the second largest beryllium producer globally (with 29% of global output) and fourth largest tantalum producer, both in terms of extraction volume.
- 2007 The Company’s credit rating are assigned for the first time.
- 2010 The Group becomes number one uranium producer globally, according to according to the NEA and IAEA, the Red Book.
- 2012 The Group commissions a sulfuric acid plant with an annual capacity of 500 thousand tonnes.
- 2013 The Group gains access to uranium enrichment facilities of UEIP and the IUEC with an annual capacity of 2.5 million and 60 thousand separative work units, respectively, through equity participation.
- 2015 The Group enters into a strategic agreement with CGNPC on commercial terms for the design and construction of a fuel assembly plant and the joint development of uranium deposits in Kazakhstan. The Group’s subsidiary UMP becomes the operator of the low-grade uranium bank created under the auspices of the International Atomic Energy Agency (“IAEA”).
- 2016 The Group’s asset restructuring program is adopted.
- 2017 The Group’s Switzerland-based trading house, THK, launches its operations.
- 2018 The Company’s Board of Directors adopted a new strategy, focusing on five key considerations: (i) refocus on core business, (ii) optimise mining, processing and sales volumes based on market conditions, (iii) create value through enhanced sales and marketing capabilities and channels, (iv) implement best-practice business processes and (vi) develop industry leader corporate culture.

## Uranium Operations

The production of nuclear energy is a complex process involving a number of activities, from extraction of uranium from underground deposits to generation of electricity at a nuclear power plant to disposal of radioactive wastes. These steps are collectively referred to in this Prospectus as the “nuclear fuel cycle” and all such activities up to and including the fuel assembly production as the “front-end” of the nuclear fuel cycle. The following table provides a brief description of the front-end phases of the nuclear fuel cycle, which occur in sequence:

Phase	Brief description	Group’s presence
Production and processing . . .	Uranium is mined from an ore body and processed into U <sub>3</sub> O <sub>8</sub> at the production site or off-site. Uranium can be extracted from the ground using open pit mining, underground mining or the ISR method. See “— <i>Uranium Mining</i> .”	The Group is present in this phase, using exclusively the ISR method, mining a total of 12.1 thousand tonnes and 5.8 thousand tonnes of UME, respectively, in 2017 and the first six months of 2018 on an attributable basis.
Conversion . . . . .	U <sub>3</sub> O <sub>8</sub> is converted into uranium hexafluoride, or UF <sub>6</sub> , which is suitable for follow-up enrichment. See “— <i>Conversion</i> .”	The Group is not present in this phase. The Group’s plans to expand into conversion are on hold given the currently low pricing environment.
Enrichment . . . . .	UF <sub>6</sub> is enriched to increase the concentration of fissile isotope uranium-235 from 0.7% to 3–5% needed to undergo fission. See “— <i>Enrichment</i> .”	Two of the Group’s associates have access to enrichment services, allowing the Group guaranteed access to 2.56 million of separative work units annually, which the Group has not used to date.
Fabrication of fuel assemblies . . . . .	Enriched UF <sub>6</sub> is converted into uranium dioxide, or UO <sub>2</sub> . UO <sub>2</sub> powder is formed into small cylindrical pellets (fuel pellets), which are packed into zirconium alloy pipes (fuel rods) and bundled together into fuel assemblies (which are essentially fuel for nuclear power plant reactors). See “— <i>Fabrication of Final Products</i> .”	The Group produced 25.2 and 8.3 tonnes of UME, respectively, in UO <sub>2</sub> powder and 75.2 and 31.3 tonnes of UME in fuel pellets in 2017 and the first six months of 2018, respectively. The Group is gearing towards production of fuel assemblies in partnership with CGNPC.

At the nuclear power plant, fuel assemblies in the nuclear reactor core release energy through uranium fission, and such energy is used to heat or boil water to produce steam. The steam spins large turbines connected to generators that produce electricity. The Group is not engaged in nuclear power generation.

### *The Group's Uranium Deposits*

The Group's Mineral Resource and Ore Reserve estimates given below have been reported using the terminology and guidelines proposed in the JORC Code. Both the Mineral Resources and Ore Reserves reflect the quantity of in-situ uranium planned to be extracted and do not take account of metallurgical recovery both as part of the in-situ recovery process and within the surface processing plants themselves, which typically varies between 80 and 90%. The Ore Reserves are a subset of the Mineral Resources and not in addition to them. Both the Mineral Resources and the Ore Reserves are the total available at each entity, and not the portion attributable to the Group.

The following table presents the Mineral Resources and Ore Reserves for the Group's subsidiaries, JVs and Associates engaged in uranium extraction (both available at the relevant entity and attributable to the Group), the Group's equity interest in such entities, the ore province in which the deposit is located, and the year when the relevant subsoil use agreement is set to expire.

Entity /Deposit(s)	Group's equity interest	Mineral Resources and Ore Reserves as at 30 June 2018											
		Total Available						Attributable to the Group					
		Proved + Probable Ore Reserve			Measured + Indicated Mineral Resource <sup>(10)</sup>			Proved + Probable Ore Reserve			Measured + Indicated Mineral Resource <sup>(10)</sup>		
		Content		Uranium mining province	Content		Uranium %	Content		Uranium %	Content		Uranium %
Tonnes (millions)	UME (tonnes thousands)	Tonnes (millions)	UME (tonnes thousands)		Tonnes (millions)	UME (tonnes thousands)		Tonnes (millions)	UME (tonnes thousands)				
<b>Kazatomprom-SaUran LLP<sup>(1)</sup></b>	100.00%												
Uvanas		—	—	—	—	—	—	—	—	—	—	—	2022
Eastern Mynkuduk		22.6	6.8	0.030	22.6	6.8	0.030	22.6	6.8	0.030	22.6	6.8	2022
Kanzhugan		31.1	12.0	0.038	31.1	12.0	0.038	31.1	12.0	0.038	31.1	12.0	2022
South Moinkum (Southern part)		0.1	0.04	0.047	1.8	0.8	0.047	0.1	0.04	0.047	1.8	0.8	2019
Central Moinkum		20.5	11.9	0.058	20.5	11.9	0.058	20.5	11.9	0.058	20.5	11.9	2039
<i>Total</i>		<i>74.3</i>	<i>30.6</i>	<i>0.041</i>	<i>75.9</i>	<i>31.4</i>	<i>0.041</i>	<i>74.3</i>	<i>30.6</i>	<i>0.041</i>	<i>75.9</i>	<i>31.4</i>	
<b>Ortalyk LLP</b>	100.00%												
Zhalpak		0.4	0.2	0.045	44.9	14.5	0.032	0.4	0.2	0.045	44.9	14.5	2022
Central Mynkuduk		64.1	28.8	0.045	64.1	28.8	0.045	64.1	28.8	0.045	64.1	28.8	2033
<i>Total</i>		<i>64.5</i>	<i>29.0</i>	<i>0.045</i>	<i>109.1</i>	<i>43.3</i>	<i>0.040</i>	<i>64.5</i>	<i>29.0</i>	<i>0.045</i>	<i>109.1</i>	<i>43.3</i>	
<b>RU-6 LLP<sup>(1)</sup></b>	100.00%												
Northern Karamurun		8.6	5.5	0.064	8.6	5.5	0.064	8.6	5.5	0.064	8.6	5.5	2022
Southern Karamurun		12.4	10.4	0.084	12.4	10.4	0.084	12.4	10.4	0.084	12.4	10.4	2022
<i>Total</i>		<i>20.9</i>	<i>15.9</i>	<i>0.076</i>	<i>20.9</i>	<i>15.9</i>	<i>0.076</i>	<i>20.9</i>	<i>15.9</i>	<i>0.076</i>	<i>20.9</i>	<i>15.9</i>	
<b>Appak LLP</b>	65.00% <sup>(2)</sup>												
Western Mynkuduk		54.8	19.2	0.035	54.8	19.2	0.035	35.6	12.5	0.035	35.6	12.5	2035
<b>JV Inkai LLP</b>	60.00% <sup>(3)</sup>												
Blocks 1, Inkai		264.8	143.3	0.054	264.9	143.4	0.054	158.9	86.0	0.054	159.0	86.0	2045
<b>Semizbai-U LLP</b>	51.00% <sup>(4)</sup>												
Semizbai		19.8	11.2	0.056	19.8	11.2	0.056	10.1	5.7	0.056	10.1	5.7	2031
Irkol		40.2	16.7	0.041	40.2	16.7	0.041	20.5	8.5	0.041	20.5	8.5	2030
<i>Total</i>		<i>60.1</i>	<i>27.9</i>	<i>0.046</i>	<i>60.1</i>	<i>27.9</i>	<i>0.046</i>	<i>30.6</i>	<i>14.2</i>	<i>0.046</i>	<i>30.6</i>	<i>14.2</i>	
<b>JV Akbastau JSC</b>	50.00% <sup>(5)</sup>												
Block 1,3 and 4, Budenovskoye		49.6	43.9	0.089	49.6	43.9	0.089	24.8	21.9	0.089	24.8	21.9	2037-2038
<b>Karatay LLP</b>	50.00% <sup>(5)</sup>												
Block 2, Budenovskoye		59.3	48.1	0.081	59.3	48.1	0.081	29.6	24.1	0.081	29.6	24.1	2032
<b>JV Zarechnoye JSC</b>	49.98% <sup>(5)</sup>												
Zarechnoye <sup>(9)</sup>		8.0	4.8	0.060	8.0	4.8	0.060	4.0	2.4	0.060	4.0	2.4	2028



Mineral Resources and Ore Reserves as at 30 June 2018

Entity /Deposit(s)	Group's equity interest	Uranium mining province	Total Available						Attributable to the Group						
			Proved + Probable Ore Reserve			Measured + Indicated Mineral Resource <sup>(10)</sup>			Proved + Probable Ore Reserve			Measured + Indicated Mineral Resource <sup>(10)</sup>			
			Tonnes (millions)	Uranium %	UME (tonnes thousands)	Tonnes (millions)	Uranium %	UME (tonnes thousands)	Tonnes (millions)	Uranium %	UME (tonnes thousands)	Tonnes (millions)	Uranium %	UME (tonnes thousands)	
<b>JV Katco LLP</b>	49.00% <sup>(6)</sup>	Chu-Sarysu	15.5	0.061	9.4	15.5	0.061	9.4	7.6	0.061	4.6	7.6	0.061	4.6	2039
Southern Moinkum (Northern part)		Chu-Sarysu	42.1	0.120	50.5	42.1	0.120	50.5	20.6	0.120	24.7	20.6	0.120	24.7	2039
Tortkuduk			57.6	0.104	59.9	57.6	0.104	59.9	28.2	0.104	29.4	28.2	0.104	29.4	
<b>Total</b>															
<b>JV Khorassan-U LLP</b>	33.98% <sup>(7)</sup>														
Block Kharassan 1, North		Syrdarya	40.0	0.107	42.6	40.0	0.107	42.6	13.6	0.107	14.5	13.6	0.107	14.5	2058
Kharassan															
<b>JV SMCC LLP</b>	30.00% <sup>(5)</sup>														
Akdala		Chu-Sarysu	10.2	0.057	5.8	10.2	0.057	5.8	3.1	0.057	1.7	3.1	0.057	1.7	2026
Block 4, Inkai		Chu-Sarysu	100.6	0.038	38.2	100.6	0.038	38.2	30.2	0.038	11.4	30.2	0.038	11.4	2029
<b>Total</b>			110.8	0.040	44.0	110.8	0.040	44.0	33.2	0.040	13.2	33.2	0.040	13.2	
<b>Baiken-U LLP</b>	5.00% <sup>(8)</sup>														
Block Kharassan 2, North		Syrdarya	20.0	0.112	22.4	20.0	0.112	22.4	1.0	0.112	1.1	1.0	0.112	1.1	2055
Kharassan															
<b>The Company</b>	100.00%														
Block 2 and 3, Inkai		Chu-Sarysu	—	—	—	306.1	0.041	125.1	—	—	—	306.1	0.041	125.1	2022
<b>Grand Total</b>			<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>	<b>519.4</b>	<b>0.057</b>	<b>294.8</b>	<b>871.8</b>	<b>0.050</b>	<b>435.1</b>	

Source: SRK

- (1) As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.
- (2) The remaining interest is owned by Sumitomo Corporation (25%) and Kansai Electric Power Company (10%).
- (3) The remaining interest is owned by Cameco. Prior to 1 January 2018, Cameco held a 60% interest and the Group held a 40% interest.
- (4) The remaining interest is owned by China General Nuclear Power Group.
- (5) The remaining interest is owned by RosAtom's affiliates.
- (6) The remaining interest is owned by Orano or its affiliates.
- (7) The remaining interest is owned by RosAtom and Marubeni Corporation or their respective affiliates. Company's interest expected to increase to 50% on or before 31 December 2018 in accordance with the agreement between Energy Asia Holding Ltd. and the Company.
- (8) The remaining interest is owned by Energy Asia Limited. Company's interest expected to increase to 52.5% on or before 31 December 2018 as a result of the agreement between Energy Asia Holding Ltd. and the Company.
- (9) In addition to the reported Measured and Indicated Mineral Resources, JV Zarechnoye JSC reports an aggregated Inferred Mineral Resource of 4.2 million tonnes grading 0.049% uranium and containing 2,000 tonnes of UME. On an attributable basis the Inferred Mineral Resources are 2.1 million tonnes grading 0.049% uranium and containing 1,000 of UME.
- (10) Mineral Resources are inclusive of Ore Reserves.

### Exploration Projects

The Group is engaged in exploration activities in varying stages of advancement at a number of deposits, as set out below. All exploration works are undertaken by the Group's subsidiary Volkovgeologia:

- exploration of Inkai 2 and 3 with Measured and Indicated Mineral Resources containing 125.1 thousand tonnes of UME, Zhalspak and Block 6 Budenovskoye and Block 7 Budenovskoye deposits, all of which are located in the Chu-Sarysu Basin, was in an advanced stage as at the date of this Prospectus, and the Company expects to complete further exploration works by the end of 2022;
- exploration of Togusken, East Zhalspak located in the Chu-Sarysu Basin and Akkum located in the Syrdarya Depression was in the early stage as at the date of this Prospectus; and
- six additional search areas, such as Prishymkentskaya and Vostochno-Kyzylkumskaya, have been identified.

### Uranium Mining

#### Results Overview

The following table presents the total UME produced in Kazakhstan for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Producer	Year ended 31 December			Six months ended
	2015	2016	2017	30 June 2018
				(Tonnes UME)
Group's subsidiaries <sup>(1)</sup>	5,820	5,975	5,107	3,775
Group's JVs and Associates <sup>(2)</sup>				
100% basis	17,787	18,611	18,214	7,130
attributable basis	7,254	7,472	7,302	2,795
Group's total attributable production	12,766	13,095	12,093	5,771
<b>Total production in Kazakhstan</b>	<b>23,607</b>	<b>24,586</b>	<b>23,321</b>	<b>10,905</b>

Source: Company information

- (1) Includes consolidated subsidiaries Kazatomprom-SaUran LLP, Ortalyk LLP, RU-6 LLP, Appak LLP. Also includes JV Inkai LLP for the six months ended 30 June 2018 only.
- (2) Includes JV Katco LLP, JV SMCC LLP, JV Zarechnoye JSC, Karatau LLP, JV Akbastau, JSC Baiken-U LLP, LLP Semizbai-U and JV Khorassan-U LLP. Also includes JV Inkai LLP for the years ended 31 December 2015, 2016 and 2017 only.

The following table presents the total U<sub>3</sub>O<sub>8</sub> produced by the Group's subsidiaries, JVs and Associates (on a 100% basis) at the respective deposits for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Producer / Deposit (s)	Group's equity interest	Year ended 31 December			Six months ended
		2015	2016	2017	30 June 2018
		(tonnes of UME)			
<b>Kazatomprom-SaUran LLP<sup>(1)</sup></b>	100.0%				
Uvanas		288	197	78	28
Eastern Mynkuduk		1,053	1,025	896	419
Kanzhugan		537	543	470	194
South Moinkum (Southern part)		268	188	79	11
Central Moinkum		68	50	67	106
<i>Total</i>		<u>2,214</u>	<u>2,003</u>	<u>1,590</u>	<u>759</u>
<b>Ortalyk LLP</b>	100.0%				
Central Mynkuduk		1,770	1,953	1,898	810
Zhalpak		—	—	—	28
<i>Total</i>		<u>1,770</u>	<u>1,953</u>	<u>1,898</u>	<u>837</u>
<b>RU-6 LLP<sup>(1)</sup></b>	100.0%				
Northern Karamurun		438	531	340	211
Southern Karamurun		517	484	378	214
<i>Total</i>		<u>956</u>	<u>1,015</u>	<u>718</u>	<u>426</u>
<b>Appak LLP</b>	65.00% <sup>(2)</sup>				
Western Mynkuduk		880	1,004	901	439
<b>JV Inkai LLP</b>	60.00% <sup>(3)</sup>				
Blocks 1 and 2, Inkai		2,231	2,267	2,122	1,274
Block 3, Inkai		187	146	80	40
<i>Total</i>		<u>2,418</u>	<u>2,413</u>	<u>2,202</u>	<u>1,315</u>
<b>Semizbai-U LLP</b>	51.00% <sup>(4)</sup>				
Semizbai		440	542	450	177
Irkol		781	700	678	280
<i>Total</i>		<u>1,221</u>	<u>1,242</u>	<u>1,128</u>	<u>457</u>
<b>JV Akbastau JSC</b>	50.00% <sup>(5)</sup>				
Block 1, Budenovskoye		739	750	722	327
Block 3, Budenovskoye		480	626	875	332
Block 4, Budenovskoye		411	401	343	130
<i>Total</i>		<u>1,630</u>	<u>1,778</u>	<u>1,941</u>	<u>789</u>
<b>Karatau LLP</b>	50.00% <sup>(5)</sup>				
Block 2, Budenovskoye		2,064	2,108	2,359	937
<b>JV Zarechnoye JSC</b>	49.98% <sup>(5)</sup>				
Zarechnoye		800	817	802	398
<b>JV Katco LLP</b>	49.00% <sup>(6)</sup>				
Southern Moinkum (Northern part)		1,682	1,518	1,473	728
Tortkuduk		2,325	2,485	2,046	945
<i>Total</i>		<u>4,007</u>	<u>4,003</u>	<u>3,519</u>	<u>1,673</u>
<b>JV Khorassan-U LLP</b>	33.98% <sup>(7)</sup>				
Block Kharassan 1, North Kharassan		1,095	1,354	1,564	757
<b>JV SMCC LLP</b>	30.00% <sup>(5)</sup>				
Akdala		1,042	1,000	900	435
Block 4, Inkai		2,007	2,058	2,037	836
<i>Total</i>		<u>3,049</u>	<u>3,058</u>	<u>2,937</u>	<u>1,271</u>
<b>Baiken-U LLP</b>	5.00% <sup>(8)</sup>				
Block Kharassan 2, North Kharassan		1,503	1,838	1,762	849
<b>Grand Total</b>		<u>23,607</u>	<u>24,586</u>	<u>23,321</u>	<u>10,905</u>

- (1) As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.
- (2) The remaining interest is owned by Sumitomo Corporation (25%) and Kansai Electric Power Company (10%).
- (3) The remaining interest is owned by Cameco. Prior to 1 January 2018, Cameco held a 60% interest and the Group held a 40% interest.
- (4) The remaining interest is owned by China General Nuclear Power Group.
- (5) The remaining interest is owned by RosAtom's affiliates.
- (6) The remaining interest is owned by Orano or its affiliates.
- (7) The remaining interest is owned by RosAtom and Marubeni Corporation or their respective affiliates. Company's interest expected to be increased to 50% on or before 31 December 2018 in accordance with the agreement between Energy Asia Holding Ltd. and the Company.
- (8) The remaining interest is owned by Energy Asia Limited. Company's effective interest expected to be increased to 52.5% a result of agreement between Energy Asia Holding Ltd. and the Company, on or before 31 December 2018.

### *General*

Uranium ore is removed from the ground using one of three extraction methods: open pit mining, underground mining or ISR. The geology of the deposits and safety and economic considerations determine the extraction method utilised at a particular mine. Both open pit and underground mining require the ore to be removed from the ground in order to extract the uranium. Open pit mining is generally used for deposits that are close to the surface. Open pit mines require an excavation area larger than the size of the deposit in order to slope the walls of the mining pit to prevent collapse. As a result, it is necessary to remove a large amount of material in order to access the ore body. Underground mines are used for deep deposits, typically those that extend for more than 100 metres below surface. Underground mines have relatively small surface disturbance and the quantity of the material removed is considerably less than in open pit mining.

All of the Group's subsidiaries and JVs and Associates engaged in uranium extraction are working deep mines but rather than being underground mines instead employ exclusively the ISR method of extraction. The Group's first extraction site to use the ISR method was Uvanas, which started full-scale application of the method in 1978 (and has been operated by the Group since its incorporation in 1997).

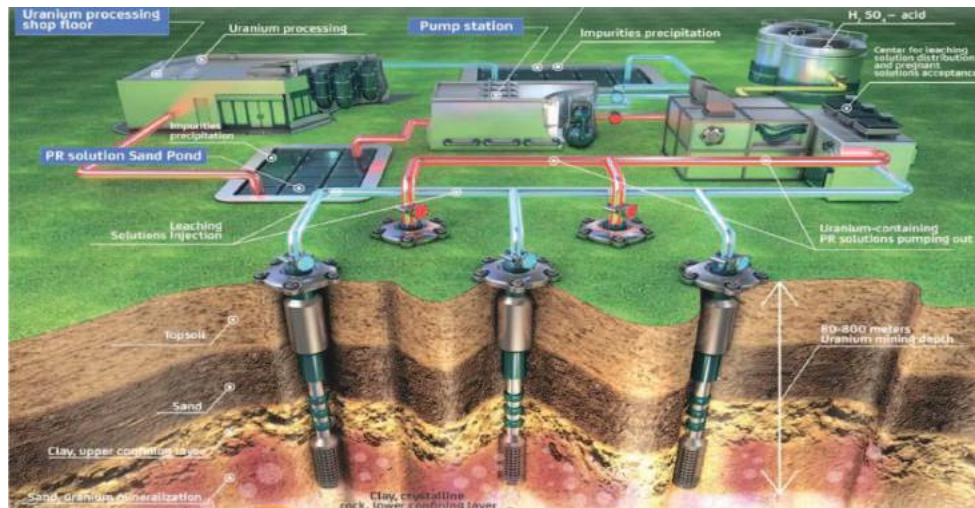
The Group is an undisputable leader in ISR uranium extraction significantly outperforming its main competitors with the production of 12.1 thousand tonnes, which represents the 100% of the Group's attributable uranium production. 8 out of 10 world largest ISR mines are operated by the Group and Group holds an interest in all ISR mines in Kazakhstan.

### *The In-Situ Recovery Method*

Global use of ISR uranium extraction has been growing since 2000 and according to the UxC data, in 2017 reached 50% of global uranium production. According to the WNA, approximately 48% of global uranium production in 2016 was achieved using the ISR method, as compared to 36% in 2010 and 16% in 2000. Moreover, substantially all production in Kazakhstan occurs using the ISR method, and Kazakhstan accounts for the majority of the world's ISR production. According to the WNA, ISR is seen in the U.S. as the most cost effective and environmentally acceptable method of mining, and other experience supports this.

The ISR method can be used at deposits that consist of uranium oxides and are permeable. In accordance with this method, uranium ore from ore deposit is not itself elevated to the surface; instead, the uranium is dissolved in sulfuric acid solution. Low-sulfuric acid solution is pumped through the injection well into the ore body. As a result of acidification, the uranium is dissolved into the solution commonly known as the "pregnant solution". The pregnant solution is then pumped out of the extraction well and into intermediate sand ponds where it is later transferred for processing. See "*—Processing of Uranium.*" Once the uranium is recovered, the remaining solution is re-fortified and injected back into the ground. Any solid drilling waste with low radioactivity is collected in sludge reservoirs, and liquid waste is included in the production cycle as a base for the acidic pumping solution. The ISR method requires a significant amount of sulfuric acid, which is provided by the Group's subsidiaries SKZ-U and SKZ-Kazatomprom as well as certain third parties. See "*—Infrastructure and Procurement.*"

The following image provides an overview of the ISR method:



The ISR method offers several advantages over conventional mining methods such as open pit and underground mining. ISR production requires considerably lower capital costs to construct the mines, lower annual operating expenses, fewer staffing requirements, minimises human exposure to uranium radiation at mining stage and lower personnel costs. Environmental consequences of ISR extraction are mitigated primarily because ISR causes relatively minor surface disturbance. ISR does not bring waste rock and ore to the surface, and create waste rock dumps and tailings dams, so there is no dust dispersion from mine waste facilities. The ISR process mobilises less than 5% of the radioactive elements, the balance of which remain in the ground, as compared to 100% mobilisation when conventional mining ore methods are used.

The main impact associated with the ISR method is contamination of groundwater through the introduction of acidic fluid (lixiviant) as part of the mining process. The movement of contaminated groundwater within the host aquifer is controlled by the flow conditions in the mining wellfield block, with groundwater flow from injection wells to extraction wells. Under design conditions the spatial extent, or “sweep,” of the leaching fluid is contained within the extraction zone and should remain constant over the operational life of the block. On mine closure, groundwater is gradually restored to pre-production conditions with significant reduction of contamination observed, typically in a ten to 20-year timeframe, due to natural attenuation processes.

Numerous measures are in place to prevent surface and near surface contamination during mining, but spillage incidents do occur. Appropriate remedial measures are implemented to deal with such incidents. These measures include excavation of contaminated soils and placement of these soils in controlled, licenced low level radioactive waste facilities.

The Company believes that the Group was the world’s first uranium producer to develop and put into commercial operation an ISR mine with a 1,000 tonne of UME annual production capacity, which was achieved at the Company in 1998. The Group’s experience in ISR technology and technical innovation has enabled it to achieve commercial production at ISR mines within approximately 18 months of the commencement of the construction stage, whereas the Company believes that the average construction period for an ISR mine globally is approximately three years. All of the processes for uranium mining are automated and continuously monitored by the Group, and technical equipment at the Group’s mines meets applicable safety and environmental standards, such as OHSAS 18001 and ISO 14001.

### ***Infrastructure and Procurement***

As at the date of this Prospectus, the Group operated 13 production units at the production phase. In addition, the Group’s Zhalpak mine is in the testing phase.

To facilitate the Group’s operations, including the construction of production units and putting them into operation, the Company has constructed or significantly refurbished a number of infrastructure objects since 2002 more than 1,100 kilometres of power transmission lines, 19 power substations.

The Group’s entity Uranenergo LLP is engaged in the construction and operation of power generation structures and equipment and power distribution network. Specifically, as of the date of this Prospectus, Uranenergo LLP was



engaged in the implementation of a project aimed at ensuring independent power supply for the uranium producing facilities in the Western and Northern parts of the Turkestan oblast and the Southern part of the Kyzylorda region of Kazakhstan.

#### *Power*

The Group's and its JVs' and Associates' primary suppliers of power are Alem-Pavlodar LLP, Shieli Zharygy LLP, AB Energo LLP, AlmatyEnergosbyt LLP, EnergoSnab XII LLP, Altayenergo Trade LLP, Kazphosphat LLP, Ontustik Zharyk LLP and Uranenergo-Pul LLP. The Group and its JVs' and Associates' power expenses for the years ended 31 December 2015, 2016 and 2017 and the six-months ended 30 June 2018 amounted to KZT9,720 million, KZT9,883 million, KZT11,464 million and KZT5,254 million, respectively.

#### *Sulfuric Acid*

The Group and its JVs and Associates use substantial amounts of sulfuric acid to extract uranium using the ISR method. Sulfuric acid represented more than 50% of the Group's and its JVs' and Associates' expenses for mining supplies during each of the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018. For the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, the Group and its JVs and Associates sourced 14.0%, 17.7%, 30.0% and 32.5%, respectively, of its sulfuric acid collectively from SKZ-U LLP in which the Company holds a 49% interest and SKZ Kazatomprom LLP, a subsidiary of the Company's sole shareholder Samruk-Kazyna and in which the Company has a 9.9% interest. The remaining sulfuric acid is sourced from third parties. The Group's and its JVs' and Associates' sulfuric acid expenses for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018 amounted to KZT30,130 million, KZT35,697 million, KZT34,851 million and KZT15,659 million, respectively.

#### *Uranium Extraction and Related Operations*

The activities performed by the Group's subsidiaries, JVs and Associates include:

- mining and processing uranium and other minerals;
- transporting nuclear materials;
- conducting geological exploration;
- providing engineering services; and
- developing cooperation agreements between its nuclear fuel companies and various foreign nuclear power companies.

The following table presents the year in which the relevant subsoil use agreement which grants to the relevant producer the exclusive right to carry on exploration, extraction, mining and sales of uranium from the deposit, is set to expire with respect to the deposits developed by the Group's subsidiaries:

Producer / Deposit	Year of		
	Discovery	Operations <sup>(2)</sup> commencement	Subsoil use <sup>(3)</sup> agreement expiry
<b>Production Contracts</b>			
<b>Kazatomprom-SaUran LLP<sup>(1)</sup></b>			
Uvanas	1963	1997	2022
Eastern Mynkuduk	1973	1997	2022
Kanzhugan	1972	1997	2022
South Moinkum (Southern part)	1976	2001	2019
Central Moinkum	1974	2014	2039
<b>Ortalyk LLP</b>			
Central Mynkuduk	1976	2007	2033
Zhalpak	1964	2018	2022
<b>RU-6 LLP<sup>(1)</sup></b>			
Northern Karamurun	1979	1997	2022
Southern Karamurun	1979	1997	2022
<b>JV Katco LLP</b>			
Southern Moinkum (Northern part)	1976	2001	2039
Tortkuduk	1976	2007	2039
<b>JV SMCC LLP</b>			
Akdala	1982	2004	2026
Block 4, Inkai	1976	2007	2029
<b>JV Inkai LLP</b>			
Block 1, Inkai	1976	2008	2045
<b>Karatau LLP</b>			
Block 2, Budenovskoye	1979	2007	2032
<b>Baiken-U LLP</b>			
Block Kharassan 2, North Kharassan	1972	2009	2055
<b>JV Akbastau JSC</b>			
Block 1, Budenovskoye	1976	2009	2037
Block 3, Budenovskoye	1976	2009	2038
Block 4, Budenovskoye	1976	2009	2038
<b>JV Khorassan-U LLP</b>			
Block Kharassan 1, North Kharassan	1972	2008	2058
<b>Semizbai-U LLP</b>			
Semizbai	1973	2009	2031
Irkol	1976	2008	2030
<b>Appak LLP</b>			
Western Mynkuduk	1976	2008	2035
<b>JV Zarechnoye JSC</b>			
Zarechnoye	1977	2007	2028
<b>Exploration Contracts</b>			
<b>JV Budenovskoye</b>			
Blocks 6 and 7, Budenovskoye	1976	2017	2022
<b>The Company</b>			
Block 2, Inkai	1976	2008	2022
Block 3, Inkai	1976	2015	2022

(1) As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

(2) Denotes exploration works commencement for Exploration Contracts.

(3) Denotes exploration works completion for Exploration Contracts.

The Group's uranium subsoil use agreements permit the Group to vary the amount of production thereunder within the limits of increase or decrease by 20% against the production plan without any further approval from the authorities. See also "Regulatory Matters—Regulation of Mineral Rights in Kazakhstan—Subsoil Use Agreements" for details of the regulatory framework relating to these agreements.

### Exploration and Drilling

The Group conducts its own exploration and drilling activities through its wholly owned subsidiary, Volkovgeologia. Volkovgeologia performs the following activities:

- prospecting, exploring and analysing uranium deposits;
- drilling and constructing exploratory and production wells;
- maintaining drilling works for environmental protection purposes, including analysis of radioactive elements in rocks and ground waters;
- preparing projects for exploration, feasibility studies and exploration reports;
- conducting radioecological surveys and environmental impact assessments of the ISR method; and
- digitising and maintaining historical exploration data.

Volkovgeologia is also a primary supervisor and assessor of radioecology analyses performed in Kazakhstan, providing services on behalf of the Ministry of Environment and Water Resources of Kazakhstan (“MEWR”). Volkovgeologia has a total of 8 licences and 20 permits issued by various state authorities in connection with the activities it performs, the principal terms of which are summarised in the following table:

Licensed activity	No.	Issuing Authority	Date of	
			Issuance	Expiration
Emission permit in the environment (discharges) . . . . .	Series X No. 0004133	Department of Natural Resources and Environmental Management of Turkestan Oblast	11/08/2014	31 December 2018
Emission permit in the environment (emissions) . . . . .	KZ45VDD00019259	Department of Natural Resources and Environmental Management of Turkestan Oblast	13/05/2015	31 December 2019
Emission permit in the environment (placements and emissions) . . . . .	KZ23VDD00045166; KZ05VDD00049564	Department of Natural Resources and Environmental Management of Turkestan Oblast	27/11/2015 01/02/2016	31 December 2025; 31 December 2026
Emission permit in the environment (discharges) . . . . .	KZ69VDD00056754	Committee for Environmental Regulation and Control	27/09/2016	14 December 2025
Emission permit in the environment (emissions from stationary sources) . . . . .	Series X No. 0004161	Department of Natural Resources and Environmental Management of Turkestan Oblast	27/08/2014	31 December 2018
Emission permit in the environment (emissions from petrol stations and fuel) . . . . .	KZ55VDD00052641	Department of Natural Resources and Environmental Management of Turkestan Oblast	12/04/2016	31 December 2023
Evaluation of the state of measurements in the laboratory. Implementation of quality control of soils. . . . .	No. 77	JSC “National Center for Expertise and Certification”	16/11/2016	16 November 2019
Management of radioactive waste . . . . .	16006448	Committee of Atomic and Energy Supervision and Control	18 April 2016	18 April 2021
Sampling and (or) use of surface waters with the use of structures or technical devices . . . . .	KZ46VTE00000625	Shu-Talas Basin Inspection for Regulation of Water Resources Use and Protection	6 January 2016	6 January 2021

Licensed activity	No.	Issuing Authority	Date of	
			Issuance	Expiration
Certificate for the right to work in the field of industrial safety; training, retraining of specialists, workers in the field of industrial safety; Examination of industrial safety. . . .	KZ66VEK00005946	Committee for Industrial Development and Industrial Safety	16 September 2016	24 February 2020
Designing, manufacturing, installation and repair of drilling, geological exploration, power equipment, installation and repair of lifting structures, vessels and pipelines operating under pressure . . . . .	004062	Ministry of Energy	13 December 2010	Indefinite
Providing services in the field of the use of nuclear energy . . .	0001755	Committee of Atomic and Energy Supervision and Control	15 January 2015	15 January 2020
Handling of radioactive substances, devices and facilities containing radioactive substances . . . . .	12016979	Committee of Atomic and Energy Supervision and Control	15 January 2015	15 January 2020
Handling devices and installations generating ionising radiation . . . . .	14005104	Committee of Atomic and Energy Supervision and Control	15 January 2015	15 January 2020
Activities in the territories of former nuclear test sites and other territories contaminated as a result of nuclear explosions . . . . .	GLA No. 0001723	Committee of Atomic and Energy Supervision and Control	22 November 2007	Indefinite
Performance of works and rendering of services in the field of environmental protection . . . . .	01173P	Committee for Environmental Regulation and Control	9 January 2008	Indefinite
Activities related to the transportation of precursors . . . . .	13020231	Ministry of Internal Affairs of the Republic of Kazakhstan	26 December 2013	26 December 2018
Activities for the production of geodetic and cartographic works . . . . .	12003798	Committee for Construction and Housing and Communal Services	24 May 2012	Indefinite

Licensed activity	No.	Issuing Authority	Date of	
			Issuance	Expiration
Design and operation of mining, petrochemical, chemical, oil and gas processing industries, operation of gas storage facilities, oil and oil products, gas mains, oil pipelines, oil products pipelines . . . . .	0004048	Committee of Geology and Subsoil Use	13 December 2010	General
Individual dosimetric control of personnel . . . . .	15000701	Committee of Atomic and Energy Supervision and Control	15 January 2015	15 January 2020

Volkovgeologia explores for new deposits by detecting surface or subterranean mineral indicators using aerial or ground geophysics (e.g., gravimetry, electromagnetics and radiometry) as well as surface geological surveys. This is followed by test drilling to develop an initial estimate of the deposit's resources. Once the potential for commercial viability of the deposit has been confirmed, the drilling grid is defined to produce confirmation of the deposit's viability, both from technical and economic analyses. Location wells drilled as part of the exploration procedure are based on a linear placement methodology representing alternating rows of injection wells and extraction wells. The typical distance between the rows of wells is between 25 metres and 50 metres. Volkovgeologia has discovered more than 40 uranium deposits in various regions of Kazakhstan, of which 19 deposits are suitable for development using the ISR method. In 2006, the Company approved a programme for exploration of new deposits through the year 2030; however, drilling activities for the development of existing deposits far exceed exploration activities of Volkovgeologia.

As of the date of this Prospectus, Volkovgeologia was engaged in a significant portion of the production activities of the Group and its JVs and Associates. For the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, revenue from performance of drilling services represented 79.9%, 79.0%, 76.8% and 77.3%, respectively, of the total revenue of Volkovgeologia. The majority of Volkovgeologia's clients are Group subsidiaries. For the year ended 31 December 2017, 1.0% of Volkovgeologia's revenue was attributable to entities unrelated to the Group. The following table summarises the total depth of wells and the number of wells drilled by Volkovgeologia during the years ended 31 December 2015, 2016 and 2017 and the six months ended 2018:

Activities performed by Volkovgeologia	Year ended 31 December			Six months ended
	2015	2016	2017	30 June 2018
<b>Exploration drilling</b>				
Total depth of wells drilled, metres . . . . .	886,615	716,143	655,385	347,336
Total number of wells drilled, units . . . . .	1,769	1,447	1,341	782
<b>Technological drilling</b>				
Total depth of wells drilled, metres . . . . .	2,220,698	1,971,068	1,870,599	873,251
Total number of wells drilled, units . . . . .	4,619	4,465	4,325	2,402

### Processing of Uranium

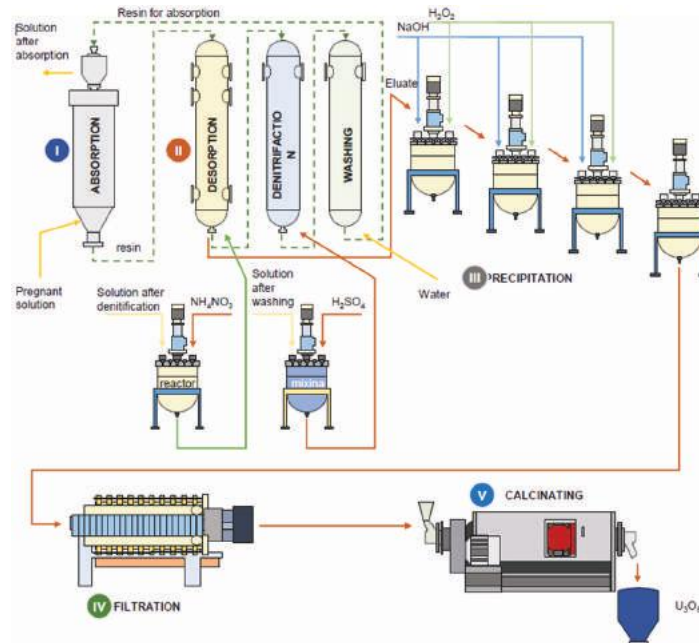
The pregnant solution, mined by the ISR method, undergoes further processing once it reaches the surface. The pregnant solution from the well field is pumped through trunk lines to sand trap facilities and is then forwarded to the pregnant solution processing shop. In the processing shop, the solution is first passed through a column filled with ion-exchange resin. When a solution penetrates through the sorbent layer, sorbent uranium saturation occurs.

Once sorbent is saturated with uranium, it is passed on for desorption. Desorption is a process opposite to sorption, and involves the treatment of saturated sorbent with chemical solutions and the conversion of uranium ions into a solution known as rich eluate. In its turn, the uranium-depleted ion-exchange resin is passed over for regeneration and cleaning for subsequent use in sorption processes. The rich eluate received from desorption columns is then accumulated in a reservoir and forwarded for further processing either through a settlement process which results in a chemical concentrate of natural uranium (commonly known as "yellow cake" because of its yellow colouring) for subsequent production of U<sub>3</sub>O<sub>8</sub> on-site or to a third party refinery if the relevant mine does not have the required processing facilities.



Uranium settlement, i.e., the process of solidifying a uranium solution, is performed through feeding specific chemical reagents (such as caustic sodium, ammonia solution, hydrogen peroxide and ammonium carbonate) at specific reactors where it is forwarded from reservoirs. The resulting settled pulp, essentially uraniferous crystals, is collected in a reservoir and forwarded for filtration. Filtration is aimed at removing all liquid from the settled pulp at filtration pumps, where the pulp is periodically fed from reservoirs, through cascading, cleansing and air blowing. The resulting chemical concentrate of natural uranium, or yellow cake, which contains up to 45–60% of uranium is forwarded to pipe calcining furnaces where the residual moisture is eliminated from yellow cake, resulting in the production of  $U_3O_8$ .

The chart on the following page sets out the principal steps required for the processing of pregnant solution into  $U_3O_8$ .



In addition to on-site facilities, the Group owns two of the three dedicated processing facilities in Kazakhstan. The dedicated processing facilities are the facility owned and operated by UMP (the “**Ulba Facility**”), a processing facility owned and operated by the Group’s subsidiary Kazatomprom-SaUran LLP and a third party processing facility owned by Stepnogorsk Mining Chemical Combine (plant) LLP. In addition, seven of 26 production sites operated by the Group’s subsidiaries and JVs and Associates have on-site processing facilities.

The following table summarises the distribution of uranium extracted by the Group’s subsidiaries and JVs and Associates among various processing parties for the year ended 31 December 2017:

	Processed by							
	On-site facilities		Ulba Facility		Taukent <sup>(1)</sup>		Stepnogorsk <sup>(2)</sup>	
	Tonnes UME	%	Tonnes UME	%	Tonnes UME	%	Tonnes UME	%
$U_3O_8$ .....	16,610	71.08%	3,343	14.9%	1,401	6.1%	1,967	7.8%

- (1) processing facility owned and operated by Kazatomprom-SaUran LLP, a subsidiary of the Group.
- (2) a third-party processing facility owned by Stepnogorsk Mining Chemical Combine (plant) LLP.

Yellow cake is transported to the processing facilities by railway. Kazatomprom-SaUran LLP accepts only rich eluate solution for its  $U_3O_8$  production and the Stepnogorsk Mining Chemical Combine (plant) LLP accepts both rich eluate solution and yellow cake for its  $U_3O_8$  production. The Ulba Facility accepts only yellow cake for its  $U_3O_8$  production.

The following table sets out the details of the on-site processing facilities located on the production sites of the Group's subsidiaries and the Group's JVs and Associates, as well as brief descriptions of the technological process at such facilities:

<b>Entity</b>	<b>Acceptable input</b>	<b>Technological process</b>	<b>Output</b>
Appak LLP, JV SMCC LLP and Karatau LLP	Pregnant solution, rich eluate	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Neutralization of rich eluate with caustic sodium solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining	U <sub>3</sub> O <sub>8</sub>
Baiken-U LLP	Pregnant solution, rich eluate	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Neutralization of rich eluate with ammonia solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining	U <sub>3</sub> O <sub>8</sub>
JV Inkai LLP	Pregnant solution, rich eluate	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. At the primary processing facility, neutralization of rich eluate with ammonia, uranium settlement with hydrogen peroxide, pulp filtration, drying Satellites 1 and 2 process pregnant solution and produce rich eluate which is transported to the main processing facility for further processing	UO <sub>4</sub>
JV Katco LLP	Pregnant solution, rich eluate	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Neutralization of rich eluate with ammonia solution, uranium settlement with ammonia solution, pulp filtration, calcining	U <sub>3</sub> O <sub>8</sub>
Kazatomprom- SaUran LLP	Pregnant solution, rich eluate	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Liquid-phase extraction employing di-2-ethylhexyl phosphonic acid with trialkylamine and hydrocarbon feed, solid-state re-extraction with 25% ammonium carbon and ammonia liquid, cleansing, filtration, calcining	U <sub>3</sub> O <sub>8</sub>
UMP	Yellow cake	Dissolution of yellow cake with nitric acid, extraction with tributyl phosphate, liquid-phase re-extraction with sulfuric acid solution, neutralization and uranium settlement with ammonia liquid, filtration, calcining	U <sub>3</sub> O <sub>8</sub>
Stepnogorsk Mining Chemical Combine (plant) LLP	Rich eluate and yellow cake	Dissolution of yellow cake with sulfuric acid, extraction with di-2 trialkyl amin, solid-phase re-extraction with ammonium bicarbonate solution, filtration, calcining	U <sub>3</sub> O <sub>8</sub>
JV Akbastau LLP	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Rich eluate
RU-6 LLP	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Yellow cake
JV Khorassan-U LLP	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Rich eluate/ Yellow cake
JV Zarechnoye JSC	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Yellow cake
Ortalyk LLP	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Yellow cake
Semizbai-U LLP	Pregnant solution	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution	Rich eluate/ Yellow cake

These technologies are sufficient to ensure consistent product quality. The Company believes that due to its specialised technological methods, the Ulba Facility is capable of manufacturing products meeting world standards. For example, the Ulba Facility employs nitric-oxide vatting of yellow cake and centrifugal extracting equipment for the extraction/re-extraction process which allows it to produce U<sub>3</sub>O<sub>8</sub> of nuclear purity. If required by a particular client, the Ulba Facility is capable of producing both standard commercial uranium oxide (which requires additional preparation for further fluoridation during processing at conversion facilities) as well as U<sub>3</sub>O<sub>8</sub>, which is suitable for fluoridation at converters.

### **Conversion Services**

U<sub>3</sub>O<sub>8</sub> cannot be used as fuel for nuclear reactors without undergoing further processing. U<sub>3</sub>O<sub>8</sub> must first be converted into UF<sub>6</sub> before the next step, uranium enrichment, can take place.

As at the date of this Prospectus, the Group does not provide conversion services. The Company expects that the investment decision regarding the implementation of a conversion project in Kazakhstan will be taken if market conditions improve.

### ***Enrichment Services***

Natural uranium primarily consists of a mixture of two isotopes: uranium 235 and uranium 238. Uranium 235 (“U-235”)—which is “fissile” and is therefore capable of undergoing a fission chain reaction, i.e., the process by which energy is produced in a nuclear reactor—represents only 0.7% of natural uranium isotopes. Fission releases energy in the form of heat, which is then used to produce steam for electricity generation. The remaining 99.3% of natural uranium isotopes are uranium 238 (“U-238”). In the most common types of nuclear reactors, a higher-than-natural concentration of U-235 is required. The enrichment process produces this higher concentration, typically between 3% and 5% U-235. Until recently, two enrichment processes were available for large-scale commercial use, gaseous diffusion and gas centrifuge. Currently uranium enrichment for large-scale commercial use is achieved employing the gas centrifuge method, and very few countries possess such technologies. Kazakhstan does not possess these technologies. Gas centrifuge technologies utilise the 1% mass difference between U-235 and U-238 to separate the isotopes. This produces enriched UF<sub>6</sub>, which is subsequently reconverted into powdered form or solid state to produce enriched UO<sub>2</sub> that can be made into nuclear fuel.

Although the Group does not have any subsidiaries engaged in uranium enrichment, it holds direct and indirect interests in two facilities located in the Russian Federation, which have access to uranium enrichment services.

- **UEC.** In September 2013, Russian-Kazakh joint venture JSC Uranium Enrichment Centre, or UEC, in which the Company currently holds a 50% interest, acquired 25% plus one share in the world’s largest uranium enrichment facility, UEIP, located in the Sverdlovsk region of the Russian Federation. Through its participation in UEC, the Group has secured annual capacity of 2.5 million separative work units of enrichment services until 2043, which the Company believes to be sufficient for any of its projects which may involve highly processed uranium. See “—*Joint Venture Projects—Projects With RosAtom—Uranium Enrichment Centre.*” In addition to facilitating the needs of the UEC projects, UEIP provides enrichment services to customers located in Belgium, China, Germany, UAE, United States, France, Sweden, Japan, South Korea, as well as certain other countries. The Company believes, based on publicly available information, that UEIP ceased production of military-grade enriched uranium in 1989.
- **IUEC.** In 2007, the Company participated in the establishment of JSC International Uranium Enrichment Centre, or IUEC, in the Irkutsk region of the Russian Federation, acquiring a 10% interest therein as a founding shareholder. The other shareholders of IUEC are RosAtom (70%), a Ukrainian national atomic company (10%) and an Armenian national atomic company (10%). IUEC was created under IAEA’s auspices and its main objective is to provide non-nuclear weapon states with enriched uranium to eliminate such states’ need to construct their own enrichment facilities. Through its participation in the IUEC, the Group has secured annual capacity of 60 thousand separative work units, if necessary for the purposes of the nuclear power of the Republic of Kazakhstan. See “—*Joint Venture Projects—Projects With RosAtom—International Uranium Enrichment Centre.*”

As at the date of this Prospectus, the Group has not used any of the UEC’s or IUEC’s separative work units capacity available to it. Pursuant to the UEC arrangement, Techsnabexport JSC, a subsidiary of RosAtom, may sell UEC products representing any unused capacity allocated to the Company to third parties, subject to a number of restrictions agreed by the UEC partners.

Russian Federation is a party to the United Nations Treaty on the Non-Proliferation of Nuclear Weapons and, as one of the five nuclear states recognised in accordance therewith, has undertaken obligations on nuclear weapons non-proliferation and safety of radioactive substances. In addition, IUEP and Techsnabexport JSC and their operations are recognised by the Government of the Russian Federation as objects which are subject to protection by the National Guard of the Russian Federation.

### ***Fabrication of Final Products***

#### ***Description of Final Products***

The Group has pursued the production and sale of higher value-added uranium products, such as UO<sub>2</sub> powder, fuel pellets. In addition, the Group is gearing towards the production of fuel rods and fuel assemblies. The following products are currently manufactured at the Ulba Facility:

- **UO<sub>2</sub> powder.** Following enrichment, UF<sub>6</sub> is processed into powdered UO<sub>2</sub> form using the ammonium diuranate process of de-conversion of UF<sub>6</sub> into ceramic UO<sub>2</sub> through preliminary precipitation of ammonium polyuranate

by addition of ammonium hydroxide. This precipitate is then filtered, dried and sintered in a reducing atmosphere to pure  $\text{UO}_2$ .  $\text{UO}_2$  then milled into particles of less than several micrometres in size and is homogenised in a specialised blender.

UMP's advanced technology and vast experience allow it to produce  $\text{UO}_2$  powders with wide range of chemical and physical properties that can satisfy various and strict customers' demands. The Group's  $\text{UO}_2$  powders are currently certified for use by a number of major customers, such as General Electric, WSE (Switzerland), NFI (Japan) and TVEL (Russia).

UMP's technology allows it to produce  $\text{UO}_2$  powder not only from enriched  $\text{UF}_6$ , but also from uraniferous scrap, cinder or undissolved residue, including those containing burnable absorber (such as gadolinium and erbium), and other uraniferous materials.  $\text{UO}_2$  powders produced from these materials are normally used as final products and not formed into fuel pellets. Scraps are milled and dissolved into nitric-acid solution, which is suitable for refinement. Because certain uraniferous scraps contain burnable absorbers, the addition of hydrochloric acid to the nitric-acid solution could be required to initiate a precipitation of burnable absorber alloys. The resulting solution is then cleared from hydrochloric acid by addition of aluminium nitrate, following which it is mixed with other solutions to achieve the required level of U-235.

- *Fuel pellets.* The stage of the nuclear fuel cycle following enrichment is the production of fuel pellets from  $\text{UO}_2$ . Fuel pellets are one of the main compounds of nuclear fuel for nuclear power plants. Fuel pellets are made by pressing powdered  $\text{UO}_2$  into small cylindrical pellets and baking them at high temperatures (more than  $1,400^\circ\text{C}$ ). Pellets are used in nuclear reactors to transfer heat (as a result of fission of U-235 isotopes) in large quantities to create steam. This steam turns turbines, which produces electricity. The operational capabilities and efficiencies of the nuclear power unit depend on the quality of the fuel pellets. Fuel pellet quality is determined not only by judging conformity with specifications, but also by their consistency. The more uniform the pellets are in their geometrical dimension, chemical and mechanical characteristics and ability to bear the high temperatures in the course of the reactor's operational process, the more cost-effective and safe the work of the nuclear reactor.

The production of fuel pellets is difficult and requires a technologically advanced process. Fuel pellets for Russian-designed nuclear reactors differ from fuel pellets for Western-designed nuclear reactors with respect to the pellet's parameters, required production technology, production costs and efficiency. Fuel pellets for Russian nuclear reactors and fuel pellets for Western nuclear reactors are not interchangeable and are suitable only for use in matching reactors.

Fuel pellets are produced by mixing  $\text{UO}_2$ ,  $\text{U}_3\text{O}_8$  and zinc stearate powders. Produced powder is then suitable for pellet production and is cellulated to achieve the required density, pressed and granulated. The resulting substance is then formed to produce pellets of the desired geometric form and sintered by heating in a furnace to facilitate consolidation. The pellets are then grinded to exact dimensions.

The Group's fuel pellets are currently certified for the following types of nuclear reactors: the Russia-designed water-water energetic reactor, or WWER, and high power channel-type reactor, or RMBK, which the Group estimates were operated by 18 and 3 nuclear power plants in 2017, respectively, and the French-designed AFA 3G reactor which the Group estimates was operated by 80 nuclear plants in 2017. Certification of the Group's pellets enables it to compete with other suppliers to provide fuel pellets to the nuclear plant; however, certification does not guarantee sales for the Group. UMP has entered into contract with CGNPC Uranium Resources Co. Ltd. for the production of Framatome AFA 3G design fuel pellets for Chinese nuclear plants.

In addition, the Group is pursuing the project of gearing towards the manufacturing of fuel rods and assemblies. Fuel assembly manufacturing is the final stage in nuclear fuel production. Fuel pellets are inserted into zirconium alloy tubes to produce fuel rods. Approximately 250 fuel rods are then grouped together to create completed fuel assemblies for use in the core of a nuclear reactor. The Group does not currently engage in production of fuel rods or assemblies. In 2014, the Group entered into an agreement with CGNPC for the creation of a fuel assembly plant on the basis of the Ulba Facility. The Company expects it to be launched by the end of 2020 with a nameplate capacity of 200 tonnes of UME in fuel assemblies per year, which can be increased by a further 200 tonnes of UME per year. As of the date of this Prospectus, the total capital expenditures relating to such project were US\$135 million, of which approximately US\$40 million has been invested. After a technical and economic evaluation of a number of fuel assembly manufacturers and their production technology, the Group and CGNPC selected Areva NP (now Framatome) as the main supplier of the fuel assembly technology for the joint venture and entered into a corresponding technology license agreement. The Company and CGNPC agreed that subject to Ulba-FA LLP receiving an order from CGNPC Uranium Resources Co. Ltd under the long-term contract for supply of fuel assemblies, the Company will sell to CGNPC, on market terms, a 49% interest in its wholly owned subsidiary Ortalyk LLP.

The following table summarises the volumes of the UO<sub>2</sub> powder and fuel pellets produced by the Group during the years ended 31 December 2015, 2016 and 2017 and the six months ended 2018:

Product type	Year ended 31 December			Six months ended
	2015	2016	2017	30 June 2018
	(tonnes of UME)			
UO <sub>2</sub> powder .....	56.9	47.9	25.2	8.3
Fuel pellets .....	—	24.0	75.2	31.3

### *The Ulba Facility*

The Ulba Facility, one of the world’s largest facilities for fuel pellet production, is capable of producing fuel pellets for reactors and nuclear power plants not only from enriched UF<sub>6</sub>, but also from uranium oxides, uranates, uranium fluoride, uranium ore concentrates, metallic uranium, uranium-containing scraps, ashes and insoluble residues, including those which contain burnable absorbers (e.g., gadolinium and erbium) that are difficult to process by conventional methods. The Ulba Facility is certified under ISO 14001:2004 environmental management system and consists of the following production facilities:

- *Triuranium octoxide production shop.* UMP utilises the ammonium technology of U<sub>3</sub>O<sub>8</sub> production using natural uranium extracted in Kazakhstan or uranium provided by third parties. UMP standard technology allows the production of U<sub>3</sub>O<sub>8</sub> by dissolution of yellow cake in nitric acid to produce uranyl nitrate, which is then separated from insoluble residue using filter presses, refined (re-extracted) to remove any impurities using tributylphosphate, precipitated as ammonium polyuranate, and then sintered to achieve thermal cracking into U<sub>3</sub>O<sub>8</sub>, following which it can be backed and dispatched to the customers. The production shop has a total area of approximately 101,600 sq. m. and is capable of producing 3,728 tonnes of UME of U<sub>3</sub>O<sub>8</sub>.
- *Ceramic grade UO<sub>2</sub> production shop.* The production shop has a total area of 389,300 sq. m. and is capable of producing 316.6 tonnes of UME of UO<sub>2</sub> powder using UF<sub>6</sub> and own raw materials. See “*Description of Final Products—UO<sub>2</sub> powder*” for a description of the production process.
- *Fuel pellet production shop.* The production shop is located in the same area as the ceramic grade UO<sub>2</sub> production shop and is capable of producing 107.8 tonnes of UME of fuel pellets. See “*Description of Final Products—Fuel pellets*” for a description of the production process.
- *Scrap processing facility.* Since 2000, there has been a scrap processing workshop operating at the Ulba Facility with a current capacity of 110 tonnes of uranium per year. “*Description of Final Products—UO<sub>2</sub> powder*” for a description of the production process.

In addition, the Ulba Facility is engaged in the manufacturing of rare materials, see “*—Other Operations,*” and the Company is pursuing a joint project on the production of fuel assemblies with CGNPC, see “*—Description of Final Products.*”

In 2017, the IAEA opened a low-enriched uranium fuel bank at the UMP’s premises. The fuel bank represents a physical reserve of up to 90 tons of low enriched uranium suitable for production of nuclear fuel and is seen by the IAEA as a source of supply of last resort for its member states in case the supply of low-enriched uranium to a nuclear power plant is disrupted due to exceptional circumstances.

### **Transportation and Sales of Raw Uranium and Refined Uranium Products**

#### ***Transportation***

The transportation of radioactive materials, whether exported from or imported into Kazakhstan, is subject to various agreements between the Russian Federation and the Government concerning the safety of such materials while in transport, including Order of the Minister of Energy of the Republic of Kazakhstan of 22 February 2016 No. 75 On the Approval of the Rules for the Transport of Radioactive Substances and Radioactive Waste, and Order of the Minister for Investments and Development of the Republic of Kazakhstan dated 30 April 2015 No. 548 On the Approval of the Rules for the Transport of Dangerous Goods, as well as international requirements, such as the IAEA Safety Standards No. SSR-6 “Regulations for the Safe Transport of Radioactive Materials” and the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

U<sub>3</sub>O<sub>8</sub> is transported in special 20-foot leak-proof containers and escorted until the containers reach their destination. The Company also maintains insurance for risks associated with the transportation of uranium.



The Group delivers U<sub>3</sub>O<sub>8</sub> and finished products to the following destinations for conversion or end customers:

- *Western destinations.* The Group transports U<sub>3</sub>O<sub>8</sub> to Western destinations, such as ConverDyn (United States), Cameco (Canada) and Comurhex (France) by rail to the port of St. Petersburg in Russia, then by marine transport to various ports within the United States, Canada or Europe, and finally by rail or vehicle to the Western conversion facilities. In certain cases, the Group enters into swap (exchange) agreements to reduce transportation costs, which involves the exchange of U<sub>3</sub>O<sub>8</sub> with the Group's partners at a conversion facility. See “—Sales and Marketing—Delivery Process and Transfer of Title”;
- *Chinese destinations.* For deliveries to China, delivery is made by the Company to the Alashankou railway station near the Kazakhstan-China border;
- *Russian destinations.* For deliveries to Russia, such as to the Federal State Unitary Enterprise Angarsk Electrolysis Chemical Complex (“**AECC**”), JSC Siberian Group of Chemical Enterprises (“**SGChE**”) and JSC Chepetsk Mechanical Plant (RosAtom), the Group makes deliveries to the Sukhovskaya railway station for delivery to AECC in Angarsk, to the Tomsk-2 railway station for delivery to the SGChE in Seversk, and to the Glazov railway station for delivery to JSC Chepetsk Mechanical Plant (RosAtom) in Glazov; and
- *Indian destinations.* The Company transports U<sub>3</sub>O<sub>8</sub> to Indian destinations by rail to the port of St. Petersburg, Russia and then by marine transport to the port of Mumbai, India. From the port of Mumbai, the relevant customer transports the product to its destination by itself.

Average transportation costs to these destinations range from US\$0.5 to US\$3.0 per kilogram of U<sub>3</sub>O<sub>8</sub>.

The Group seeks to enter into swap (exchange) agreements where possible to minimise delivery times (physical deliveries take an average of 100 days whereas swap (exchange) deliveries take an average of 25 days), transportation costs and the risks associated with transportation of uranium products. See “—Sales and Marketing—Delivery Process and Transfer of Title.”

## Sales and Marketing

### Customers

The Group sells its products to more than 15 customers in eight countries. For the year ended 31 December 2017, the Group's top three and top five uranium products customers accounted for 43% and 51% of the Group's revenue, respectively. All of the Group's customers are public companies or subsidiaries of prominent government-owned or private participants in the nuclear power industry.

In May 2018, the Company entered into a supply agreement with Yellow Cake plc, an AIM-listed long-term corporate holder of physical uranium. The agreement provides for the supply of up to 8.1 million pounds (or approximately 3,674 tonnes) of U<sub>3</sub>O<sub>8</sub> for up to US\$170 million, and the right of Yellow Cake plc to purchase up to an additional US\$100 million of U<sub>3</sub>O<sub>8</sub> annually in 2019–2026. See “Material Agreements—Uranium Supply Agreement with Yellow Cake plc” for additional details regarding this agreement.

See “Risk Factors—Risks Relating to the Company's Business—The Company is dependent on a small number of customers that purchase a significant portion of the Company's U<sub>3</sub>O<sub>8</sub>.” The Group believes that there are approximately 70 end-users of uranium in the world. Although no assurance can be given that the Company will be successful, the Company endeavours to expand its customer base in the future and is in negotiations with potential customers in Europe, Americas and the Middle East.

The following table summarises the geographical split of the Group's uranium customers by revenue for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Region	Year ended 31 December			Six months ended 30 June 2018
	2015	2016	2017	
China	44%	47%	60%	31%
Europe	19%	16%	18%	23%
India	—	11%	8%	25%
South Korea	3%	6%	4%	—
United States	20%	12%	4%	9%
Other <sup>(1)</sup>	14%	8%	6%	12%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

(1) Represents sales to traders for the years ended 31 December 2015 and 2016. The Group significantly reduced sales to traders by the end of 2016, in anticipation of the launch of THK, Group's trading house based in Zug, Switzerland.

## Product Sales

The following table summarises the split of the Group's uranium sales by product type for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Products	Year ended 31 December						Six months ended 30 June 2018	
	2015		2016		2017		(UME Tonnes)	(%)
	(UME Tonnes)	(%)	(UME Tonnes)	(%)	(UME Tonnes)	(%)		
U <sub>3</sub> O <sub>8</sub> .....	11,028	99.49%	9,687	99.26%	10,111	99.02%	5,579	99.31%
UO <sub>2</sub> powder .....	57	0.51%	48	0.49%	25	0.24%	8	0.15%
Fuel pellets .....	—	—	24	0.25%	75	0.73%	31	0.59%
<b>Total .....</b>	<b>11,085</b>	<b>100.00%</b>	<b>9,759</b>	<b>100.00%</b>	<b>10,211</b>	<b>100.00%</b>	<b>5,618</b>	<b>100.00%</b>

## Marketing

In 2017, the Group launched THK, its wholly owned trading house subsidiary based in Switzerland, in order to improve the Group's marketing function, strengthen its cooperation with partners, promote sales of uranium and uranium products originating in Kazakhstan and, more generally, increase the Group's global footprint. THK's key operations include:

- sales and purchases of uranium in the spot market in order to capture additional profits, which THK is capable of due to its quick decision-making procedures;
- assistance with creating additional liquidity in the uranium spot market and improvement of KAP's uranium contract portfolio robustness; and
- improving the Group's global footprint in the uranium market by offering a wider selection of pricing and contractual structures and providing additional market tools, such as bundled offers and more flexible pricing structures, to KAP's customers.

Since its launch THK has helped the Group to capture certain tangible advantage in the uranium market, in particular THK achieved more than US\$37 million of additional sales on the spot market during the year ended 31 December 2017 and the six months ended 30 June 2018. THK has also acquired four new clients for the Group over this period and entered into a number of long-term contracts for uranium delivery (with some of the agreements entered for a term until 2029).

The Group believes that THK allows it the benefit of superior insight on both sides of the global uranium market: the demand side as the leading producer and seller of natural uranium and the supply side due to the exposure allowed by THK's operations. As a result, the Group has greater visibility of the market, which improves its analytical capabilities and allows its management to make better informed decisions.

## Sales Arrangements with Joint Ventures

Uranium produced by the Group's subsidiaries is sold through contracts between the Company and its customers or between THK and its customers, with THK purchasing uranium from the Company.

The following chart sets forth the arrangements between the Company and its JVs and Associates, as well as subsidiaries with significant non-controlling interest, regarding allocation of uranium produced by the joint venture; the Company purchases uranium at discounts to spot price specific for each mining asset; as of the date of this Prospectus, the weighted average discount (by actual uranium sales volumes attributable to KAP from each subsidiary) and giving effect to the increase by the Company of its effective interests in Baiken-U LLP and JV Khorassan-U LLP to 52.5% and 50%, respectively, as more fully described in "—Joint Venture Projects—Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP," was 3.2% in the year ended 31 December 2017:

Group's venture partner <sup>(1)</sup> and joint venture names	Group's interest	Allocation of Uranium Produced
<b>Orano</b>		
JV Katco LLP .....	49.00%	Until 31 December 2018: Company: 31%, Orano: 69%. From 1 January 2019: proportionate to equity interest

Group's venture partner <sup>(1)</sup> and joint venture names	Group's interest	Allocation of Uranium Produced	
<b>Cameco</b>			
JV Inkai LLP .....	60.00% <sup>(2)</sup>	Company's share in offtake and profit distribution depends on annual production	
		<i>Production (tonnes)</i>	<i>Company's share (applies to each band)</i>
		0–1,500	40.0%;
		1,501–2,000	50.0%
		2,001–4,000	77.5%
		4,001 or more	proportionate to equity
<b>RosAtom</b>			
JV Akbastau JSC .....	50.00%	Proportionate to equity interest.	
JV Zarechnoye JSC .....	49.98%	Company: 50% of production; RosAtom: 50% of production.	
JV SMCC LLP .....	30.00%	Proportionate to equity interest.	
Karatau LLP .....	50.00%	Proportionate to equity interest.	
JV Khorassan-U LLP <sup>(4)</sup> .....	33.98%	Proportionate to equity interest.	
<b>Japanese utilities</b>			
Baiken-U LLP <sup>(5)</sup> .....	5.00%	The majority of production may be purchased by the Japanese energy companies directly from Baiken-U LLP at their option. All production unsold is currently purchased by the Company at its option.	
Appak LLP .....	65.00%	All production purchased by Japanese energy companies from Appak LLP via Sumitomo Corporation acting as an agent. All production unsold by Sumitomo Corporation is purchased by the Company at its option	
<b>CGNPC<sup>(6)</sup></b>			
Semizbai-U LLP .....	51.00%	Proportionate to equity interest.	

- (1) In some cases the venture partner's interest is owned through an affiliate of such venture partner.
- (2) The Company increased its interest in JV Inkai LLP from 40% to 60%, and accordingly started fully consolidating it in its financial statements, with effect from 1 January 2018.
- (3) Since 1 January 2018, JV Akbastau JSC and Karatau LLP have been reclassified into joint operations consolidated by share of assets, liabilities, revenues and expenses.
- (4) The remaining interest is owned by RosAtom and Marubeni Corporation or their respective affiliates. Company's interest expected to increase to 50% on or before 31 December 2018 in accordance with the agreement between Energy Asia Holding Ltd. and the Company.
- (5) The remaining interest is owned by Energy Asia Limited. Company's effective interest expected to increase to 52.5% on or before 31 December 2018 as a result of agreement between Energy Asia Holding Ltd. and the Company.
- (6) China General Nuclear Power Corporation.

#### *Key Provisions of U<sub>3</sub>O<sub>8</sub> Export Contracts*

All of the Group's wholly owned subsidiaries' uranium production is exported, with the majority of such exports being U<sub>3</sub>O<sub>8</sub>. The Group uses export contract terms and conditions that are standard for the industry. Standard terms and conditions include the following:

- *Representations and Warranties.* Each contract has representations and warranties of the purchaser regarding the peaceful use of uranium. If uranium is sold to nuclear-free states or companies operating in such states, the Atomic Energy Committee of Kazakhstan ("AEC") also requires representations and warranties from the government of the purchasing state regarding the peaceful use of uranium.
- *Quantity.* Scope of obligations under the contract is generally stipulated as a basic quantity of uranium per year, plus or minus an assumption (deviation).
- *Delivery.* Uranium is delivered to a conversion facility on DDU terms, Incoterms 2000 or 2010, with such transfer recorded as a book transfer in the records of the conversion facility from the Company's account to the customer's account. See "*—Delivery Process and Transfer of Title.*" Designation of the conversion facility (destination point) and volume of uranium to be delivered is determined at least one year prior to delivery.
- *Payment.* Payment is usually made within 30 calendar days following the book transfer date, in U.S. Dollars or, in one case, in Euro linked to U.S. Dollars.
- *Termination.* Termination occurs upon failure of the parties to meet their contractual obligations, other than in circumstances of force majeure.

Each contract undergoes a screening process prior to execution. The Group conducts a review of the potential customer, requiring information regarding the customer's business and proposed use of the uranium products. The

Group provides information on purchasers and regular delivery reports to the AEC in accordance with the requirements of Kazakhstan law. The AEC conducts additional screening and checks the purchaser against the Black List and the List of Forbidden Countries as adopted by the United Nations to confirm that the purchaser is not suspected in the development or proliferation of weapons of mass destruction. The AEC then reports information obtained on the contracted purchase of uranium to the IAEA. Moreover, the Company runs further checks against additional criteria, such as lists of end users composed by US authorities and lists of persons that were rejected by the US Department of Commerce.

Export of uranium products under each contract can only be performed after issuance of an export licence by the Committee of Industrial Development and Industrial Safety of the Ministry of Investment and Development following the approval of the Agency of Atomic Energy of the Republic of Kazakhstan.

#### *Pricing Mechanism*

There is no uranium commodity exchange or common trading platform where international market prices for uranium can be determined. Monthly and weekly price indicators for uranium products are generally used in spot transaction pricing. Published prices are reported by TradeTech (Denver, Colorado, U.S.) and UxC Consulting (Roswell, Georgia, U.S.), which gather market information from current transactions. Published prices exclude expenses relating to transportation, acceptance or weighing at the converter. According to UxC data, for the year ended 31 December 2017 and the six months ended 30 June 2018, approximately 48.1 million pounds (approximately 18.5 thousand tonnes) and 34.8 million pounds (approximately 13.4 thousand tonnes), respectively, of  $U_3O_8$  were purchased through the spot market. There are no such market price indicators for  $UO_2$ , fuel pellets and fuel assemblies.

According to UxC data, the majority of natural uranium is sold under long-term (36 months and longer-term duration) contracts. The Group believes long-term supply contracts to be usual market practice in the uranium industry. The Group's approach to reducing the impact of spot price volatility is hybrid pricing where a portion of the price is fixed in the contract and the other portion is determined by an index which refers to spot price as at the shipment date. The relative proportion between fixed and index components are negotiated on a case by case basis and are driven, among other things, by the Group's expectation of the prevailing spot prices for the relevant term. In certain cases, the Group also enters into contracts in which the price is entirely fixed (and is set individually for each year of the contract's life) or entirely depends on the spot price at the relevant date, subject to certain "floor" and "ceiling" limitations.

Pricing mechanisms are used in order to allow the contracting parties to have stable deliveries and predictable pricing. Generally, long-term contract prices are higher than spot prices. This is mainly because the base price used is often greater than or equal to spot price indicators at the time the contract is executed. However, because of the volatile nature of spot prices, spot prices may exceed long-term prices at any given time. The predominant pricing mechanism is through a base-escalation method, according to which the contract price is equal to the sum of (i) a percentage of the base price (determined at the time of contracting, as adjusted for an escalation) and (ii) a percentage of the spot price published the month preceding the month of delivery. An alternative to the base-escalation method is to determine the contract price using a market mechanism, namely, the spot price for uranium at the end of the month prior to the delivery month. In the cases where the market mechanism is applied, minimum and maximum price limits are set.

The Group's predominant use of the market method is mainly due to the application of the Law on Transfer Pricing. See "*Regulation in Kazakhstan—Price Regulation.*" The Group's strategy is currently to seek to enter into long-term arrangements with a significant fixed price component if the Group's expectation is that uranium market prices will decline, and to seek long-term arrangements with a stronger correlation to market price if the Group expects an upswing in market prices. The Company's management believes that the uranium market has shown signs of a significant shift in the 12-month period preceding the date of this Prospectus.

The Group enters into long-term, medium-term and spot contracts for its U<sub>3</sub>O<sub>8</sub>. The following table sets out the key aspects of such contracts:

<b>Contract type</b>	<b>Duration (months)</b>	<b>Key pricing terms</b>
Long-term	More than 36	<ul style="list-style-type: none"> <li>Hybrid pricing mechanisms with a fixed price component (calculated in accordance with an agreed price formula)</li> <li>Combination of separate spot, mid-term and long-term prices</li> </ul>
Medium-term	12–36	<ul style="list-style-type: none"> <li>Fixed price</li> <li>Linked to spot price as of the date of contract or delivery</li> <li>Hybrid pricing mechanisms with a fixed price component (calculated in accordance with an agreed price formula)</li> </ul>
Spot	Less than 12	<ul style="list-style-type: none"> <li>Spot prices</li> </ul>

During the six months ended 30 June 2018, 56% of the U<sub>3</sub>O<sub>8</sub> sold by the Group was sold under long-term contracts.

#### *Delivery Process and Transfer of Title*

The Group has signed agreements for accepting, weighing, sampling, examining and storing its U<sub>3</sub>O<sub>8</sub> with conversion facilities owned by each of Orano, ConverDyn (United States), Cameco and CGChE (Russia). Each converter holds an account for the Group for the purposes of carrying out swap (exchange) transfers. Upon the arrival at a converter's premises, the converter samples, examines and weighs the uranium to determine its quantity in accordance with the weight measurements of the plant. The converter then sends to the Group a weighing certificate that indicates the final uranium quantity listed in the Group's account. After receiving instructions from the Group for the distribution of such uranium, the converter enters the amount of uranium into the account of the purchaser. The date of transfer of title from the Group to the purchaser is the same date that the swap (exchange) transfer is consummated. See "*—Transportation.*"

#### **Joint Venture Projects**

The following table sets forth the Group's principal uranium production joint venture projects, the Group's ownership interest therein and the venture's principal operations and arrangements:

<b>Names of partner<sup>(1)</sup> and joint venture</b>	<b>Group's equity</b>	<b>Principal operations</b>	<b>Offtake</b>	<b>Profit Distribution</b>	<b>Accounting method</b>
<b>Orano</b>					
JV Katco LLP	49.00%	Uranium production at the Tortkuduk site and the Southern Moinkum (Northern part) deposit	Until 31 December 2018: Company: 31%, Orano: 69%. From 1 January 2019: proportionate to equity interest	Proportionate to equity interest until 2022. For the year 2022, subject to achieving 4,000 tonnes of U <sub>3</sub> O <sub>8</sub> annual production, the Company will be entitled to 60% of profits	Equity method
<b>Cameco</b>					
JV Inkai LLP	60.00%	Uranium production at the block 1 of Inkai deposit	Company's share in offtake and profit distribution depends on annual production <i>Production (tonnes)</i>	<i>Company's share (applies to each band)</i> 0—1,500 ..... 40.0% 1,501—2,000 ..... 50.0% 2,001—4,000 ..... 77.5% 4,001 or more ..... proportionate to equity	Consolidation since 1 January 2018 (previously, equity method)



<b>Names of partner<sup>(1)</sup> and joint venture</b>	<b>Group's equity</b>	<b>Principal operations</b>	<b>Offtake</b>	<b>Profit Distribution</b>	<b>Accounting method</b>
<b>RosAtom</b>					
JV Akbastau JSC . . . . .	50.00%	Uranium production at the blocks 1, 3 and 4 of the Budenovskoye deposit	Proportionate to equity interest	Proportionate to equity interest	Proportionate consolidation since 1 January 2018 (previously, equity method)
Karatau LLP . . . . .	50.00%	Uranium production at the block 2 of the Budenovskoye deposit	Proportionate to equity interest	Proportionate to equity interest	Proportionate consolidation since 1 January 2018 (previously, equity method)
JV Zarechnoye JSC . . .	49.98%	Uranium production at the Zarechnoye deposit	Company: 50% of production; RosAtom: 50% of production.	Proportionate to equity interest	Equity method
JV SMCC LLP . . . . .	30.00%	Uranium production at the Akdala deposit and block 4 of the Inkai deposit	Proportionate to equity interest	Proportionate to equity interest	Equity method
JV Khorassan-U LLP <sup>(2)</sup> . . . . .	33.98%	Uranium production at the block Kharassan 1 of the North Kharassan deposit	Proportionate to equity interest	Proportionate to equity interest	Equity method
<b>Japanese utility companies</b>					
Baiken-U LLP <sup>(2)</sup> . . . . .	5%	Uranium production at the block Kharassan 2 of the North Kharassan deposit	The majority of production may be purchased by the Japanese energy companies directly from Baiken-U LLP at their option. All production unsold is currently purchased by the Company at its option.	Proportionate to equity interest	Other investment
Appak LLP <sup>(3)</sup> . . . . .	65%	Uranium production at the Western Mynkuduk deposit	All production purchased by Japanese energy companies from Appak LLP via Sumitomo Corporation acting as an agent. All production unsold by Sumitomo Corporation is purchased by the Company at its option	100% consolidation in the Financial Statements	Consolidation
<b>China General Nuclear Power Group</b>					
Semizbai-U LLP . . . . .	51%	Uranium production at the Semizbai and Irkol deposits	Proportionate to equity interest	Proportionate to equity interest	Equity method

(1) In some cases the venture partner's interest is owned through an affiliate of such venture partner.

(2) The remaining interest is owned by RosAtom affiliates and Energy Asia Limited. Company's effective interest in Baiken-U LLP and JV Khorassan-U LLP are expected to increase to 52.5% and 50%, respectively, on or before 31 December 2018 in accordance with the agreement between Energy Asia Holding Ltd. and the Company.

(3) The remaining interest is owned by Sumitomo Corporation (25%) and Kansai Electric Power Company (10%).

#### **Projects With Orano: JV Katco LLP**

JV Katco LLP ("Katco") was established in 1996. Katco is controlled by Orano (formerly Areva), which owns 51% of equity, and the Company, which owns the remaining 49% of equity. The Company accounts for Katco using the equity method. Katco is primarily engaged in geological exploration, mining and construction of processing capabilities at the Tortkuduk site and the Southern Moinkum (Northern part) deposit. In April 2017, the Company and Orano entered in

agreement pursuant to which the Company will be entitled to 60% of the profits distributable by JV Katco LLP with effect from 2022, see also “*Operating and Financial Review—Contingencies and Commitments—Significant Transactions—Agreement with Orano.*”

The Moinkum deposit was discovered in 1974 and put into operation in 2001.

Katco’s subsoil use agreement for the Tortkuduk site of the Moinkum deposit was entered into on 3 March 2000. Pursuant to this agreement, Katco enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Tortkuduk site of the Moinkum deposit until 4 March 2039 unless terminated prematurely. Katco’s subsoil use agreement with respect to the Southern Moinkum (Northern part) deposit was entered into on 3 March 2000. Pursuant to this agreement, Katco enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Southern Moinkum (Northern part) deposit until 4 March 2039 unless earlier terminated. See “*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*” for information regarding uranium production allocation between the joint venture participants.

As at 30 June 2018, the aggregate Proved and Probable Ore Reserves (the “**Ore Reserves**”) at Tortkuduk site and the Southern Moinkum (Northern part) deposit contained 59.9 thousand tonnes of UME. The projected life-of-mine for Tortkuduk site and the Southern Moinkum (Northern part) deposit as at the date of this Prospectus were 15.5 years and 7.5 years, respectively.

Uranium is extracted from the Tortkuduk site and the Southern Moinkum (Northern part) deposit using the ISR method using acidic ion-exchange resin. The following table summarises the production by JV Katco LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group which has a 49% equity interest in JV Katco LLP:

	For the year ended 31 December 2017		For the six months ended 30 June 2018	
	Total	Attributable to the Group	Total	Attributable to the Group
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> production .....	3,519	1,724	1,673	820

**Projects With Cameco**

*JV Inkai LLP*

The Company acquired its stake in JV Inkai LLP in 1997. JV Inkai LLP is owned 60% by the Company and 40% by Cameco and has been consolidated by the Company since 1 January 2018, prior to which it was accounted for by the Company using the equity method. With effect from 1 January 2018, the Company’s interest in JV Inkai LLP increased from 40% to 60%. JV Inkai LLP is engaged in uranium production at the Inkai deposit. The Company has agreed to reimburse JV Inkai LLP for the exploration expenses incurred in connection with the Inkai deposit in the amount of KZT15 billion to be paid in 12 monthly instalments starting from the fourth quarter of 2018.

The Inkai deposit comprises one production areas (block 1). Licence Series AY 1370D, dated 20 April 1999 and valid until 20 April 2024, grants the rights for extraction of uranium at site 1.

Block 1 of the Inkai deposit was discovered in 1976 and test mining commenced in 2002.

JV Inkai LLP’s subsoil use agreement for site 1 of the Inkai deposit was entered into on 13 July 2000 and subsequently amended, with the most recent amendment occurring in November 2017. Pursuant to this agreement, JV Inkai LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from site 1 of the Inkai deposit until 13 July 2045 unless the agreement is terminated prior to such date.

In July 2017, a mining allotment was issued to JV Inkai LLP by the Geology Committee of the Republic of Kazakhstan, which document defines the area in which JV Inkai LLP has the right to mine. This mining allotment, by the November 2017 amendment, is part of the JV Inkai LLP’s subsoil use agreement for the Inkai deposit.

As at 30 June 2018, the Ore Reserves at Inkai block 1 deposit contained 143.3 thousand tonnes of UME. The projected life-of-mine of Inkai block 1 deposit as at the date of this Prospectus was 34.5 years.

Uranium is extracted from site 1 of the Inkai deposit by the ISR method using an acid solution. The following table summarises the production by JV Inkai LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group, which had a 40% equity interest in JV Inkai LLP before 1 January 2018, and increased its interest to 60% with effect from 1 January 2018:

	For the year ended 31 December 2017		For the six months ended 30 June 2018	
	Total	Attributable to the Group <sup>(1)</sup>	Total	Attributable to the Group <sup>(1)</sup>
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> production . . . . .	2,202	951	1,315	669

(1) Represents the Group's 43.2% and 50.9% effective interests in JV Inkai LLP's production for the 31 December 2017 and 30 June 2018, respectively, pursuant to the production sharing formula.

#### *Ulba Conversion*

JV Ulba Conversion LLP is currently in the process of liquidation, which the Company expects to complete by the end of 2019, following the Company's and Cameco's decision to suspend the project in early 2018.

In 2008, UMP and Cameco established JV Ulba Conversion, a joint venture with the goal of implementing the construction of a conversion plant with a capacity of 12,000 tonnes of UF<sub>6</sub> per year. However, the project was suspended for various reasons, including (i) the absence of an agreement between the Government of Canada and the Government of Kazakhstan for cooperation in the peaceful uses of nuclear energy, which hindered the exchange of technical and confidential information relating to the project and relevant technologies and (ii) poor economics of the project driven by high costs and, consequently, a prolonged period of cost recovery demonstrated by the preliminary feasibility study.

In late 2013, the governments of Kazakhstan and Canada entered into an agreement for cooperation in the peaceful uses of nuclear energy, following which, in 2016, the Company and Cameco entered into an implementation agreement with respect to the restructuring of the JV Inkai and the construction of the refinery as a part of the conversion plant. The parties started to assess the economic viability of the project for the construction of the refinery with a capacity of 6,000 tonnes of UO<sub>3</sub> per year and the processing of its products at the conversion plant in Canada into production UF<sub>6</sub>. In 2017, the results of the evaluation indicated the economic inefficiency of using Cameco's conversion services to process Kazakh UO<sub>3</sub> into UF<sub>6</sub>. As a result, in January 2018, the Company resolved to terminate the joint refinery project with Cameco, and currently the corporate procedures for the liquidation of the JV Ulba Conversion are underway.

Notwithstanding the planned liquidation of JV Ulba Conversion, pursuant to the implementation agreement entered into between the Company and Cameco in 2016, Cameco will make available by the end of January 2020 its uranium conversion technology to the Company on a perpetual basis free of charge. The Company intends to revisit this project in the future, should conversion operations become commercially attractive. See "*Uranium Operations—Conversion Services*."

#### ***Projects With RosAtom***

##### *JV Akbastau JSC*

Akbastau JSC, which was established in 2006, is owned 50% by the Company and 50% by Uranium One Amsterdam B.V., a subsidiary of RosAtom, and operates blocks 1, 3 and 4 of the Budenovskoye deposit. Since 1 January 2018, JV Akbastau JSC has been consolidated into the Company's financial statements as a joint operation by recognising the Group's share in assets, liabilities, income and expenses.

The Budenovskoye deposit was discovered in 1976 and put into operation in 2009.

The subsoil use agreements for sites 1, 3 and 4 of the Budenovskoye deposit were entered into on 20 November 2007. Pursuant to these agreements, Akbastau enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from sites 3 and 4 of the Budenovskoye deposit until 20 November 2038 and from block 1 of the Budenovskoye deposit until 20 November 2037, in each case unless terminated prior to such date. See "*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*" for information regarding uranium production allocation between the joint venture participants.

As at 30 June 2018, the aggregate Ore Reserves at blocks 1, 3 and 4 of the Budenovskoye deposit contained 43.9 thousand tonnes of UME. The projected life-of-mine of blocks 1, 3 and 4 of the Budenovskoye deposit as at the date of this Prospectus was 19.5 years, 21.5 years and 21.5 years, respectively.

Uranium is extracted from blocks 1, 3 and 4 of the Budenovskoye deposit with the ISR method using acidic ion-exchange resin. The following table summarises the production by Akbastau JSC for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	For the year ended 31 December 2017		For the six months ended 30 June 2018	
	Total	Attributable to the Group	Total	Attributable to the Group
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> production .....	1,941	970	789	394

#### *Karatau LLP*

The Karatau LLP joint venture was established in 2005 as a wholly owned subsidiary of the Company in order to produce uranium at block 2 of the Budenovskoye deposit. In April 2007, Effective Energy N.V., owned by Atomredmetzoloto, a Russian state-owned mining subsidiary of RosAtom acquired a 50% interest in Karatau LLP from the Company. In July 2009, Uranium One Netherlands B.V., a wholly owned subsidiary of Uranium One, acquired the 50% interest in Karatau LLP from Effective Energy N.V. Currently, Karatau LLP is owned 50% by the Company and 50% by Uranium One Netherlands, B.V., a subsidiary of RosAtom. Since 1 January 2018, Karatau LLP has been consolidated into the Company's financial statements as a joint operation by recognising the Group's share in assets, liabilities, income and expenses.

The Budenovskoye deposit was discovered in 1979 and put into operation in 2007.

Karatau LLP's subsoil use agreement for block 2 of the Budenovskoye deposit was entered into on 8 July 2005, as amended, and gives Karatau LLP the exclusive right to carry on exploration, extraction, mining and sales of uranium from block 2 of the Budenovskoye deposit until 8 July 2035, unless terminated prior to such date. See "*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*" for information regarding uranium production allocation between the joint venture participants.

As at 30 June 2018, the Ore Reserves at block 2 of the Budenovskoye deposit contained 48.1 thousand tonnes of UME. The projected life-of-mine of block 2 of the Budenovskoye deposit as at the date of this Prospectus was 15.5 years.

Uranium is extracted from block 2 of the Budenovskoye deposit using the ISR method. The following table summarises the production by Karatau LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	For the year ended 31 December 2017		For the six months ended 30 June 2018	
	Total	Attributable to the Group	Total	Attributable to the Group
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> production .....	2,359	1,180	937	468

#### *JV Zarechnoye JSC*

JV Zarechnoye JSC was established by the Company (which initially held 49.67%), affiliates of RosAtom (which initially collectively held 49.67%) and JSC Kara Balta Ore Mining Combine (which initially held 0.66%) in 2001 and operates the Zarechnoye deposit. Currently, the Company and Uranium One Holland B.V. each own a 49.98% interest in JV Zarechnoye JSC, with the remaining 0.04% held by JSC Kara Balta Ore Mining Combine. JV Zarechnoye JSC is accounted for by the Company using the equity method.

The Zarechnoye deposit was discovered in 1977 and put into operation in 2001.

The subsoil use agreement for the Zarechnoye deposit was entered into on 23 September 2002. Pursuant to this agreement, JV Zarechnoye JSC enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Zarechnoye deposit until 23 September 2028 unless terminated prematurely. The subsoil use agreement for the South Zarechnoye deposit was entered into on 20 November 2007. Pursuant to this agreement, JV Zarechnoye JSC enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Western site of the South Zarechnoye deposit until 20 November 2037, unless terminated prior to such date. See "*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*" for information regarding uranium production allocation between the joint venture participants.

As at 30 June 2018, the Ore Reserves at the Zarechnoye deposit contained 4.8 thousand tonnes of UME. The projected life-of-mine of the Zarechnoye deposits as at the date of this Prospectus was 5.5 years.

Uranium is extracted from the Zarechnoye deposit using the ISR method. The following table summarises the production by JV Zarechnoye JSC for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	<b>For the year ended 31 December 2017</b>		<b>For the six months ended 30 June 2018</b>	
	<b>Total</b>	<b>Attributable to the Group</b>	<b>Total</b>	<b>Attributable to the Group</b>
	<b>(tonnes of UME)</b>			
U <sub>3</sub> O <sub>8</sub> production .....	802	401	398	199

#### *JV SMCC LLP*

JV South Mining Chemical Company LLP, or JV SMCC LLP, was established in 2014 by the Company (holding 30% of equity) and Uranium One, a subsidiary of RosAtom (holding 70% of equity). JV SMCC LLP is engaged in the development of the Akdala deposit and block 4 of the Inkai deposit. JV SMCC LLP is accounted for by the Company using the equity method.

The Akdala deposit was discovered in 1982 and put into operation in 2004. The Inkai deposit was discovered in 1976 and put into operation in 2007.

The subsoil use agreement for the Akdala deposit was entered into on 28 March 2001. Pursuant to this agreement, JV SMCC LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Akdala deposit until 28 March 2025, unless terminated prematurely. JV SMCC LLP's subsoil use agreement for block 4 of the Inkai deposit was entered into on 8 July 2005. Pursuant to this agreement, JV SMCC LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from block 4 of the Inkai deposit until 8 July 2038, unless terminated prematurely. See "*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*" for information regarding uranium production allocation between the joint venture participants.

As at 30 June 2018, the aggregate Ore Reserves at the Akdala deposit and block 4 (Southern) of the Inkai deposit contained 44.0 thousand tonnes of UME. The projected life-of-mine of the Akdala deposit and block 4 of the Inkai deposit as at the date of this Prospectus was 7.5 years and 18.5 years, respectively.

Uranium is extracted from the Akdala deposit and block 4 of the Inkai deposit using the ISR method. The following table summarises the production by JV SMCC LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	<b>For the year ended 31 December 2017</b>		<b>For the six months ended 30 June 2018</b>	
	<b>Total</b>	<b>Attributable to the Group</b>	<b>Total</b>	<b>Attributable to the Group</b>
	<b>(tonnes of UME)</b>			
U <sub>3</sub> O <sub>8</sub> production .....	2,937	881	1,271	381

#### *JV Khorassan-U LLP*

Khorassan-U LLP was formed in 2014 by the Company (holding 33.98%), RosAtom's subsidiary Uranium One Utrecht B.V. (holding 30.00%), and Energy Asia Holdings Ltd. (holding 36.02%) for the purpose of uranium production at block Kharassan-1 of the North Kharassan deposit. JV Khorassan-U LLP is accounted for by the Company using the equity method.

The North Kharassan deposit was discovered in 1972 and put into operation in 2009.

JV Khorassan-U LLP's subsoil use agreement for the North Kharassan deposit was entered into on 8 July 2005. Pursuant to the agreement, JV Khorassan-U LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the North Kharassan deposit until 8 July 2058, unless terminated. See "*Transportation and Sales of Raw Uranium and Refined Uranium Products—Sales and Marketing—Sales Arrangements with Joint Ventures*" for information regarding uranium production allocation between the joint venture participants.



As at 30 June 2018, the Ore Reserves of the North Kharassan deposit contained 42.6 thousand tonnes of UME. The projected life-of-mine of the North Kharassan deposit as at the date of this Prospectus was 18.5 years.

Uranium is extracted from block Kharassan 1 of the North Kharassan deposit using the ISR method. The production assets are owned by Kyzylkum LLP, an entity in which the Group holds a 30% interest. The following table summarises the production by JV Khorassan-U LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	<u>For the year ended 31 December 2017</u>		<u>For the six months ended 30 June 2018</u>	
	<u>Total</u>	<u>Attributable to the Group</u>	<u>Total</u>	<u>Attributable to the Group</u>
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> production .....	1,564	531	757	257

In September 2018, the Company entered into an agreement to increase its effective interest in each of JV Khorassan-U LLP and Kyzylkum LLP to 50%, which it expects to complete before 31 December 2018. See “—*Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP.*”

#### *International Uranium Enrichment Centre*

In 2007, the Company and Techsnabexport JSC, a subsidiary of RosAtom, established the IUEC, the main objective of which is to provide non-nuclear weapon states with enriched uranium so that such states do not need to construct their own enriching facilities thereby limiting the potential for production by such countries of enriched uranium for weapons purposes. The formation of the IUEC was approved by the IAEA. The IUEC enters into annual agreements with JSC TVEL, which in turn coordinates activities of all conversion and enrichment plants in the Russian Federation. The following countries are, as at the date of this Prospectus, participants of the IUEC channelling their participation through respective companies: Russia through RosAtom (holding 70% of shares, 20% of which are reserved for potential future members), Kazakhstan through the Company (holding 10%), Ukraine through the Nuclear Fuel State Concern (holding 10%) and Armenia through CJSC Armenian Nuclear Power Plant (holding 10%).

Through the IUEC, the Company, as one of its shareholders, has potential access to uranium enrichment services in amount up to 60,000 separative work units per year to satisfy the needs of nuclear power industry of Republic of Kazakhstan.

#### *Uranium Enrichment Centre*

In 2013, the Company gained access to additional uranium enrichment capacities existing enrichment facilities in the Russian Federation through UEC, a joint venture between the Company and RosAtom’s subsidiary TVEL (each, a 50% shareholder). UEC was established in 2006 with the initial aim of the creation of an enrichment plant with an annual capacity of 5 million separative work units per year. However, subsequently the shareholders decided to forego the construction of a new plant, and resolved instead to acquire an interest in an existing enrichment facility, UEIP. As a result, UEC’s principal asset is a 25% interest in UEIP, the world’s largest uranium enrichment plant. As a shareholder of UEC, the Company secured annual capacity of 2.5 million separative work units of enrichment services until 2043. This capacity allows for the covering of the entirety of the Group’s requirements for enriched uranium for its fuel projects; however, as of the date of this Prospectus, the Group has not used any of its allocated enrichment capacities.

#### ***Projects With Other Parties***

##### *Appak LLP*

Appak LLP was established by the Company (65%), Sumitomo Corporation (25%) and The Kansai Electric Power Co., Inc. (10%) in 2005 and operates the Western Mynkuduk deposit. Appak LLP is fully consolidated by the Company for accounting purposes.

The Mynkuduk deposit was discovered in 1976 and put into operation in 2008.

The subsoil use agreement for the Western Mynkuduk deposit was entered into on 8 July 2005. Pursuant to this agreement, Appak LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Western Mynkuduk deposit until 8 July 2035, unless earlier terminated.

As at 30 June 2018, the Ore Reserves at the Western Mynkuduk deposit contained 19.2 thousand tonnes of UME. The projected life-of-mine of the Mynkuduk deposit as at the date of this Prospectus was 18.5 years.

Uranium is extracted from the Western Mynkuduk deposit using the ISR method. The following table summarises the production by Appak LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	<u>For the year ended 31 December 2017</u>		<u>For the six months ended 30 June 2018</u>	
	<u>Total</u>	<u>Attributable to the Group</u>	<u>Total</u>	<u>Attributable to the Group</u>
	(tonnes of UME)			
Uranium production .....	901	585	439	285

#### *Semizbai-U LLP*

Semizbai-U LLP was established in December 2006 as a wholly-owned subsidiary of the Company and operates the Irkol and Semizbai deposits. In October 2008, the Company sold a 49% interest in Semizbai-U LLP to China General Nuclear Power Group. See “—Cooperation Agreements—China.” The Company owns a 51% in Semizbai-U LLP, which is fully consolidated by the Company for accounting purposes.

The Irkol deposit was discovered in 1976 and put into operation in 2008. The Semizbai deposit was discovered in 1973 and put into operation in 2009.

As at 30 June 2018, the aggregate Ore Reserves at the Irkol deposit and Semizbai deposit contained 27.9 thousand tonnes of UME. The projected life-of-mine of the Irkol and Semizbai deposits as at the date of this Prospectus was 23.5 years and 22.5 years, respectively.

The subsoil use agreement for the Irkol deposit was entered into on 14 July 2005. Pursuant to this agreement, Semizbai-U LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Irkol deposit until 4 March 2023 or 2030, unless terminated prior to such date. The subsoil use agreement with respect to the Semizbai deposit was entered into on 2 June 2006. Pursuant to this agreement, Semizbai-U LLP enjoys the exclusive right to carry on exploration, extraction, mining and sales of uranium from the Semizbai deposit until 2 June 2030, unless terminated prior to such date.

Uranium is extracted from the Irkol and Semizbai deposits using the ISR method. The following table summarises the production by Semizbai-U LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	<u>For the year ended 31 December 2017</u>		<u>For the six months ended 30 June 2018</u>	
	<u>Total</u>	<u>Attributable to the Group</u>	<u>Total</u>	<u>Attributable to the Group</u>
	(tonnes of UME)			
Uranium production .....	1,128	575	457	233

#### *Baiken-U LLP*

Baiken-U LLP was established in 2006 by the Company and Energy Asia Limited, which is a consortium consisting of several Japanese utility companies. Baiken-U LLP operates block Kharassan 2 of the North Kharassan deposit. Baiken-U LLP is owned 5% by the Company and 95% by Energy Asia Limited and is reflected in the Financial Statements as a financial investment. In September 2018, the Company entered into an agreement to increase its effective interest in Baiken-U LLP to 52.5%, which it expects to complete before 31 December 2018. See “—Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP.”

The North Kharassan deposit was discovered in 1972 and put into operation in 2009.

The subsoil use agreement for block Kharassan 2 of the North Kharassan deposit was entered into on 1 March 2006, as amended, and gives Baiken-U LLP the exclusive right to carry on exploration, extraction, mining and sales of uranium from block Kharassan 2 of the North Kharassan deposit until 1 March 2058, unless terminated prior to such date.

As at 30 June 2018, the Ore Reserves at block Kharassan 2 of the North Kharassan deposit contained 22.4 thousand tonnes of UME. The projected life-of-mine of the North Kharassan deposit as at the date of this Prospectus was 14.5 years.

Uranium is extracted from block Kharassan 2 of the North Kharassan deposit with the ISR method using acidic ion-exchange resin. The following table summarises the production by Baiken-U LLP for the year ended 31 December 2017 and the six months ended 30 June 2018, both in total and attributable to the Group:

	For the year ended 31 December 2017		For the six months ended 30 June 2018	
	Total	Attributable to the Group	Total	Attributable to the Group
	(tonnes of UME)			
Uranium production .....	1,762	88	849	42

#### ***Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP***

In 2006, the Company sold 95% and 40% of its interest in uranium mining companies Baiken-U LLP and Kyzylkum LLP, respectively, to parties controlled by Swinton Investment and Finance S.A. (“Swinton”) and as a result, the Group lost control over these entities, holding only 5% and 30% interests in Baiken-U LLP and Kyzylkum LLP, respectively.

In 2014, the Company initiated a claim in the British Virgin Islands against Power System International Limited (“PSIL”), Swinton and certain individuals, for recognition of its rights to shares in Energy Asia (BVI) Limited (“EAL”), a company which owned certain interests in Baiken-U LLP and Kyzylkum LLP. In September 2017, the parties signed a settlement agreement, pursuant to which the defendants transferred to the Company 99.91% of the shares in PSIL, which in its turn held an indirect interest in Baiken-U LLP and Kyzylkum LLP. The remaining 0.09% of the shares in PSIL were subsequently transferred to the Company pursuant the order of the High Court of Justice of England and Wales. Accordingly, since October 2017 the Group has been the sole shareholder of PSIL.

The acquisition of PSIL was accounted for as an acquisition of asset on the balance of PSIL in the form of an investment representing 9.95% interest in EAL, which in turn held interests in Baiken-U LLP and Kyzylkum LLP. The investment in EAL was recognised at cost in the amount of KZT91 million.

After the entry into of the settlement agreement and the transfer of shares in PSIL to the Company, the legal proceedings in the British Virgin Islands were terminated.

In parallel, the Company initiated a process aimed at restoring its original interests in Baiken-U LLP, Kyzylkum LLP and JV Khorassan-U LLP. Separately, and further to the aforementioned settlement, the Company entered into an agreement in September 2018 with Energy Asia Holdings Ltd (“EAHL”), the majority shareholder of EAL, pursuant to which EAHL agreed to transfer to the Company 40.05% of the shares in EAL and a 16.02% interest in JV Khorassan-U LLP. As a result of this transaction, which the Company expects to complete on or before 31 December 2018, the Company’s effective interest in Baiken-U LLP and Kyzylkum LLP will increase to 52.5% and 50%, respectively, and its direct interest in JV Khorassan-U LLP will increase to 50%.

#### **Cooperation Agreements**

In accordance with its nuclear fuel cycle strategy, the Company has entered into several cooperation agreements and initiatives with a view to increasing its presence in all front-end phases of the nuclear fuel cycle. The following summarises, by country, international cooperation agreements and investments with the Company.

##### ***Russian Federation***

In 2006, the Presidents of the Russian Federation and Kazakhstan issued a joint statement on strategic cooperation in the peaceful use of nuclear power, intended to promote nuclear fuel manufacture and construction. As at the date of this Prospectus, the Company participated in several joint ventures with RosAtom. See “—Joint Venture Projects—Projects With RosAtom.”

Cooperation between the Company and RosAtom is carried out under the auspices of the Comprehensive programme for cooperation between Russia and Kazakhstan in the field of nuclear energy for peaceful purposes signed by the Ministry of Energy and Mineral Resources of the Republic of Kazakhstan and RosAtom in December 2006, which was subsequently revised in March 2011 and May 2014.

In October 2016, pursuant to the Memorandum on extension of strategic cooperation in the area of nuclear fuel cycle between RosAtom, Ministry of Energy of Republic of Kazakhstan and the Company, the Company entered into a Karatau development agreement with the aim to increase the Karatau annual production capacity up to 3,200 tonnes of uranium before 2019 in exchange for monetary consideration from Uranium One, sourced from Karatau’s dividends.

The agreement contains an offtake arrangement pursuant to which each partner undertakes to purchase the uranium produced by Karatau pro rata its share in the joint venture. Agreement shall be in force until 31 December 2031. Uranium One is entitled to unilaterally terminate the agreement if Karatau's production falls below a certain level as a result of the Company or its representatives' actions.

### **China**

Since 2006 and 2007, respectively, CGNPC and CNNC have entered into several strategic cooperation agreements with the Company. In 2007, framework agreements were signed among CGNPC, CNNC and the Company, which define a strategic partnership in the field of uranium mining and investment in Chinese nuclear power.

In October 2008, agreements were signed with CGNPC on the joint development of uranium deposits in Kazakhstan and the supply of nuclear fuel for Chinese nuclear power plants. These agreements provide for the sale by the Company of 49% of shares in the capital of Semizbai-U LLP, which operates in the fields of Irkol and Semizbai. See "*—Joint venture projects—Projects with Other Parties—Semizbai-U LLP.*" These agreements also provide that the Company will become one of the main suppliers of uranium and nuclear fuel to CGNPC facilities. If UMP's technology is certified, uranium mined by Semizbai-U LLP (in proportion to the participation of the Company) will be exported for processing into UF<sub>6</sub> and subsequent enrichment in China, and returned to Kazakhstan for further processing into fuel pellets on the basis of the UMP, to meet the needs of nuclear power plants of CGNPC. In November 2010, the fuel pellets production technology was certified by Areva NP (now Framatome). Several re-certifications were conducted to maintain the issued certificate. In accordance with the cooperation agreement, the Company has been supplying fuel pellets to China since 2012.

In 2014, CGNPC and the Company signed a cooperation agreement in the field of nuclear power. This agreement contemplates the creation of a joint venture for the production of fuel assemblies in Kazakhstan to satisfy the needs of Chinese nuclear power plants (the fuel project). The agreement provides for CGNPC's undertaking to ensure the sale of 200 tonnes of UME in the form of fuel assemblies per year for 20 years in China. In exchange for this, the agreement also provides for the establishment of a joint venture to develop a uranium deposit in Kazakhstan with reserves of 40,000 tonnes of UME (the mining project), which was expected to be implemented on the basis of Ortalyk LLP.

In 2015, CGNPC, CGNPC Uranium Resources Co. Ltd., CGN Mining Co.Ltd. UMP and the Company signed an agreement on commercial terms for the design and construction of a fuel assemblies production plant in Kazakhstan and for the joint development of uranium deposits in Kazakhstan.

This agreement was further detailed in 2016 by a subsequent fuel principles agreements among the Company, UMP, CGNPC Uranium Resources Co.Ltd., CGN Mining Co. Ltd. and Ulba-FA LLP and a mining principles agreement between the Company and CGN Mining Co. Pursuant to the agreements, the Company undertook to sell a 49% interest in Ortalyk LLP to CGN Mining Co. on market terms for the joint development of the Central site of the Mynkuduk deposit and the Zhalspak deposit, subject to Ulba-FA LLP receiving an order from CGNPC Uranium Resources Co. Ltd under the long-term contract for supply of fuel assemblies.

### **Japan**

In 2006, the Company expanded its cooperation with Japanese companies in various fields of the nuclear fuel cycle. Most notably, the Company supplied uranium to the Japanese market for the first time and established a joint venture, Appak LLP, among the Company, Sumitomo Corporation and The Kansai Electric Power Co., Inc.

In 2007, the Company and Japan entered into agreements regarding the supply of uranium to Japan and technical assistance with respect to nuclear reactor construction. In 2010 uranium powder production has been certified by Nuclear Fuel Industries, Ltd.

However, the nuclear fuel cooperation projects were suspended after the Fukushima Accident in 2011.

### **France**

In 2008, Areva (now Orano) signed a strategic agreement with the Company on implementation of two interrelated projects: (i) the upscaling of JV Katco's uranium mining operations 2,000 to 4,000 tonnes of UME per year and (ii) the construction of a fuel assemblies plant on the basis of UMP with the planned output of 400 tonnes of UME in uranium fuel assemblies per year for the French-designed reactors and the marketing of such fuel assemblies through another joint venture. See "*Joint Venture Projects—Projects With Orano—JV Katco LLP.*" In 2010, Areva certified the UMP fuel pellets production line for use in Areva-designed reactors.

However, the absence of a guaranteed market for the fuel assemblies led to a delay in the construction of the fuel assemblies plant, which led Areva and the Company to suspend all work on the plant and the related marketing joint venture in 2014. In 2014, the Company decided to initiate work on the Kazakhstan-Chinese project on the fuel assembly production with CGNPC (see “—Cooperation Agreements—China”) which committed to provide certain sales volumes of fuel assembly produced for its nuclear power plants. After a technical and economic evaluation of a number of fuel assembly manufacturers and their production technology, the Group and CGNPC selected Areva NP (now Framatome) as the main supplier of fuel assembly technology for the joint venture and concluded a corresponding license agreement, which provides for the transfer of rights to use fuel assembly production technology.

In 2017, the Group has entered into agreement on further development of JV Katco LLP.

The Company continued its aim of establishing its fuel manufacturing capabilities in cooperation with CGNPC, which guaranteed the sales of Kazakhstan manufactured fuel assemblies in the amount of 200 tonnes per year in exchange for the joint development of deposits in Kazakhstan. Consequently, in 2016 the Company and CGNPC through their joint venture entered into licence agreement with Areva NP (now Framatome, a subsidiary of Electricite de France) as the main supplier of nuclear fuel production technology, which provides for the transfer of rights for usage of fuel assemblies production technology.

### Rare Metals and Other Operations

In addition to its core uranium operations, the Group is also involved in the processing and manufacturing products from rare metals, specifically beryllium, tantalum and niobium, as well as the provision of certain social services. Until 3 July 2018, the Group was also involved in the sales of utilities to the general public, such as electric power and water, through its former subsidiary MAEK (see also “Risk Factors—Risks Relating to the Group’s Business—The Group may face liability in connection with the operations of its former subsidiary”).

The following table summarises the Group’s production volumes of beryllium, tantalum and niobium products as well as electric power, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Products / services	Year ended 31 December			Six months ended
	2015	2016	2017	30 June 2018
	(Tonnes of metal content, except Utilities)			
Beryllium	1,687.5	1,747.3	1,585.2	793.6
Tantalum	141.2	121.8	140.0	73.3
Niobium	96.9	46.8	27.7	9.9
Electric power (discontinued in 2018) <sup>(1)</sup>	4,809.8	4,916.9	4,607.9	2,347.4

(1) In millions of kWh.

The following table summarises the Group’s revenue from the sales of beryllium, tantalum and niobium products as well as utilities, and their respective shares in the Group’s total revenue, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Products / services	Year ended 31 December						Six months ended	
	2015		2016		2017		30 June 2018	
	KZT millions	%	KZT millions	%	KZT millions	%	KZT millions	%
Beryllium	9,312	2.43	13,359	3.39	13,224	3.93	7,414	5.11
Tantalum	12,051	3.14	11,749	2.98	12,871	3.82	7,353	5.07
Niobium	963	0.25	754	0.19	471	0.14	202	0.14
Utilities (discontinued in 2018)	47,809	12.45	57,555	14.60	57,922	17.21	—	—

### Beryllium

Beryllium, one of the lightest metals, is stronger than steel and has a melting point higher than that of aluminium. Beryllium is primarily used in the aerospace industry as one of the principal components in airplane structures. It is also used in aerospace rocket fuel nozzles, as well as in the medical, nuclear and electronic industries.

In addition, certain products with 50% or more beryllium content may have certain military applications and are considered dual-use products. While the Company sells ingots produced by UMP containing 99% beryllium, it believes that none of those ingots are used for any military applications due to the heavily regulated nature of such products, including the requirement to obtain an export licence in Kazakhstan for each particular export operation, which is conditional upon the buyer having obtained the requisite certificate issued by the competent authority in its country



confirming the non-military use of the product. In addition, the supply channels and utilisation of beryllium products are regulated by international treaties that provide for a framework for holding compliance audits. Moreover, the reselling of beryllium is prohibited by international treaties, as well as under the respective supply agreements.

The Group's beryllium production commenced in 1951 at the Ulba Facility. The Ulba Facility is one of three facilities in the world that has a fully integrated cycle of beryllium production from concentrate processing to production of beryllium alloys. UMP owns a large quantity of beryllium concentrate inherited from the former Soviet Union, which is sufficient to supply its needs for more than 7–8 years at the current rate of production. The Group does not mine beryllium. The technology developed at the Ulba Facility permits processing of any form of beryllium raw material into a wide range of beryllium and beryllium alloy products, including those with isotropic characteristics. Production of various copper-beryllium alloys, with beryllium content varying from 2.5% to 10%, represents the majority of the Ulba Facility's beryllium production. The facility uses cost-effective technology to produce copper-beryllium alloys through direct carbothermic reduction of beryllium oxide. The Group's beryllium and beryllium alloy production is certified in accordance with ISO 9001:2015 and EN ISO 14001:2004. The main reagent for beryllium production at the Ulba Facility is copper, accounting for almost 70% of all reagents used. Copper is supplied to the Ulba Facility by KAZ Minerals PLC. The Company also has alternative suppliers of copper from Russia.

Beryllium dust is an extremely hazardous substance and has tumorigenic and generally toxic effect on living organisms. The Group uses a number of safety measures, including protective clothing and respiratory protection for personnel, maximum automation of processes, remote control of equipment, specialised ventilation equipment and the use of sealed perimeters for dangerous operations.

As at 30 June 2018, the Company believes it was the second largest global producer of beryllium products, including pure beryllium and beryllium alloys, representing between 25% and 28% of the total world supply. As at the date of this Prospectus, the Group's aggregate annual beryllium capacity was 90 tonnes. As of the date of this Prospectus, the Group has been carrying out the project on re-melting of furnace and ladle residues of whiting furnace.

The following table summarises the Group's sales of beryllium products, including pure beryllium and beryllium alloys, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Sales of beryllium products	Year ended 31 December			Six months ended 30 June 2018
	2015	2016	2017	
In tonnes of metal content	1,740.2	1,766.2	1,599.6	736.8
In KZT millions	9,312.0	13,359.0	13,224	7,414
As percentage of the Company's total revenue	2.43	3.39	3.93	5.11

The Group sells its beryllium products on CIP or FCA delivery terms under U.S. Dollar-denominated supply agreements. The Group's principal customers include, among others:

- Ulba-China Co., UMP's wholly owned subsidiary which is engaged in the marketing, and on-sales of the Group's beryllium products in the markets of China and the countries of South-Eastern Asia. Ulba-China Co. Ltd operates in a free trade zone and sells the Group's products to customers in China, Korea, Japan and Malaysia. In addition, Ulba-China Co., Ltd. regularly conducts marketing studies, which assist UMP in determining its most in-demand products in the Chinese and South-Eastern Asian markets. In the year ended 31 December 2017, Ulba-China Co. accounted for 63% of the Group's sales of beryllium products by volume;
- Tropag Oscar H. Ritter Nachf, a third party trading company based in Germany which has been the exclusive distributor of UMP beryllium alloys in the European market since 1979. In the year ended 31 December 2017, Tropag Oscar H. Ritter Nachf accounted for 18% of the Group's sales of beryllium products by volume;
- NGK Insulators, a major producer of beryllium copper products based in Japan. The Group effects sales through an intermediary, ACTS Trading Corporation, which is also based in Japan. In the year ended 31 December 2017, NGK Insulators accounted for 10% of the Group's sales of beryllium products by volume;
- IBC US Holdings Inc., a major U.S.-based producer of specialised beryllium and copper alloys for various industry applications, including aerospace, automotive, telecommunications, etc. In the year ended 31 December 2017, IBS UC Holdings accounted for 5% of the Group's sales of beryllium products by volume.

### **Tantalum**

Tantalum is malleable, easily fabricated, highly resistant to corrosion by acids and a good conductor of heat and electricity. The primary use for tantalum powder is for production of electronic components, such as tantalum

capacitors. Major end-uses for tantalum capacitors include portable telephones, personal computers and automotive electronics. When alloyed with other metals, tantalum can be used to make carbide tools for metalworking equipment and to produce superalloys for jet engine components.

The Ulba Facility is one of the largest plants in the world and the sole facility in the Commonwealth of Independent States with tantalum production capabilities. The Ulba Facility provides the fully integrated production cycle, from processing the tantalum ore to the production of finished products. The Group's tantalum, tantalum compounds and tantalum final products are certified in accordance with ISO 9001:2000. As at 30 June 2018, the Group believes that it was the fourth largest tantalum producer in the world, producing approximately 10% of the global tantalum supply. As at the date of this Prospectus, annual tantalum production capacity at the Ulba Facility was approximately 300 tonnes.

Although Kazakhstan has deposits of tantalum, they are not currently being developed due to estimated low profitability. Consequently, the Group does not have its own tantalum raw minerals base. The Group has entered into long-term contracts with Solikamsk Magnesium Plant JSC (Russia) for the supply of tantalum hydroxide and VostokMashComplect LLC (Russia) for the supply of tantalum scraps. The Group also has long-term tolling contracts with H.C.Starck Inc (United States) and H.C.Starck GmbH (Germany). Following extraction of the metal, tantalum is processed, first into powders and ingots and thereafter into final products.

The Ulba Facility's flexible processing technology accepts any kind of tantalum ore, including refractory ore, and is able to convert it to a tantalum product of the quality prescribed by its customers up to 99.99% purity. Raw materials are processed at the Ulba Facility where tantalum is extracted through use of special chemical reagents, such as hydrofluoric acid and sulfuric acid.

The following table summarises the Group's sales of tantalum products, including pure tantalum and tantalum alloys, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

Sales of tantalum products	Year ended 31 December			Six months ended 30 June 2018
	2015	2016	2017	
In tonnes	146.0	122.7	135.0	72.7
In KZT millions	12,051	11,749	12,871	7,353
As percentage of the Company's total revenue	3.14	2.98	3.82	5.07

The Group sells its tantalum products on CIP, DAP, DDU or FCA delivery terms under U.S. Dollar-denominated supply agreements. The Group's principal customers include:

- A&R Merchants, UMP's agent in the U.S. market, which accounted for 60% of the Group's sales of tantalum products by volume in the year ended 31 December 2017;
- AMJC, UMP's agent in the Japanese market, which accounted for 7% of the Group's sales of tantalum products by volume in the year ended 31 December 2017;
- AVX Corporation, a U.S. based subsidiary of Kyocera and manufacturer and supplier of advanced electronic components, which accounted for 2% of the Group's sales of tantalum products by volume in the year ended 31 December 2017; and
- Plansee, an Austria based producer of Tungsten, tantalum and niobium products, which accounted for 5% of the Group's sales of tantalum products by volume in the year ended 31 December 2017.

## TRANSFORMATION INITIATIVE

In 2015, the Company and 12 of its subsidiaries commenced initiative known as the transformation with the aim of implementing the principles set forth by its sole shareholder, Samruk-Kazyna. The principal aims of the Transformation Initiative are improving transparency and operational efficiency, as well as standardising and harmonising business processes based on Samruk-Kazyna's reference model. As part of this initiative, in 2016 the Company developed a portfolio of 24 projects concerning various aspects of the Group's operations, including production, procurement, resource management, and business planning and modelling efficiency, among others. In 2017, the Company completed implementation of seven such projects, including:

- *Category-based procurement management strategy*, which allows the Group to optimise the approach to procurement and achieve short- and long-term benefits employing the approved category-based strategies. The Group has implemented such strategy for the fuel and lubricants category and the power category.

- **Information security model**, designed to improve information security and incident management processes based on SIEM-class control and analysis system, which allows the Group to take advantage of unified systems and services and risk-oriented approach offered by the system.
- **Targeted risk management model**, which allows the Group to automate risk management processes, such as risks registry, reporting monitoring, visualisation and prediction. These capabilities improve the Group's risk analysis capabilities and the Group's ability to keep its senior management apprised of the pertinent risks, which allows it to timely react to any risks.
- **Sales and marketing model**, designed to improve the Group's margins by improving the Group's perception in the market, strengthening sales and marketing capabilities, developing a better understanding of the Group's and its' competitors strengths and weaknesses, and improving the Group's understanding of the needs of its customers and potential customers.

In the first half year of 2018, the Company completed the following Transformation projects:

- **New HR model**, aimed at ensuring the Group's compliance with best practices in the field of human resources management, increasing staff engagement, accumulating and keeping the knowledge inside the Group, and raising the role of corporate culture within the Group;
- **New HSE model, aimed at decreasing the number of** production accidents down through implementing timely controls over potentially dangerous occurrences, by conducting on-site behavioral safety audits and by implementing safety control checks over the Group's contractors.

Based on the results of the implementation of the Transformation Initiative projects, the Company plans to obtain economic benefits through increased operating excellence.

The Company expects to implement the following key Transformation Initiative projects in 2018–2019:

- **ERP SAP-based business processes automation**, which is designed to improve the Group's transparency and efficiency in such key aspects of its operations as accounting, tax reporting, management reporting, human resource management, project management, corporate finance and treasury matters, production management, technical service and maintenance, procurement, logistics and sales.
- **Integrated planning system**, the aim of which is the implementation of scenario analysis and modelling toolset allowing the Group's management to choose the optimal production and investment scenarios. The system is designed to provide calculation and identification capabilities for determining the optimal set of economic, financial, production and technological parameters with the aim of achieving the Group's strategic aims, while also giving regard to external factors.

In addition, as part of the Transformation initiative, the Group is implementing the Digital Mine project. Digital Mine information system is a platform designed for automation and digitalisation of key and auxiliary production processes of the Group's uranium producing subsidiaries. The Digital Mine system's principal aims are (i) improving the efficiency of the Group's uranium producing subsidiaries' production business processes while ensuring their adherence to the same standards, (ii) implementing a mechanism for analysis and control of production expenditures of uranium producing subsidiaries, (iii) improving the transparency and efficiency of managing the Group's uranium mining subsidiaries and (iv) improving the automation level of the Group's subsidiaries and associates' primary, ancillary and management activities. As of the date of this Prospectus, the Digital Mine project was in pilot operation, and the Group was determining the function package and roll-out perimeter for the project.

## LITIGATION

In the ordinary course of its business activities, the Group is regularly involved in legal proceedings, both as a claimant and as a defendant. These proceedings are routine matters of labour and other laws, and do not have a significant impact on the Group's business.

During the 12 months preceding the date of this Prospectus, there have been no governmental, legal or arbitration proceedings (nor any such proceedings which are pending or threatened of which the Company is aware), which may have, or have had in the recent past significant effects on the Company's and/or the Group's financial position or profitability.

## ENVIRONMENTAL AND SOCIAL ACTION PLANS

### *EHSS Review*

A review of the Environmental, Health and Safety and Social (“EHSS”) management and performance across the Group’s business was completed in June 2018 by SRK through the SRK Report which covered the Group’s mining assets and a separate EHSS review of the Group’s non-mining assets. SRK’s EHSS review concluded that Group’s EHSS management largely conforms with good international industry practice (“GIIP”, which includes the IFC Performance Standards and World Bank Group Environment, Social, Health and Safety Guidance, in addition to industry specific guidance relevant to particular assets) and is compliant with Kazakhstan legislation. Notwithstanding the Group’s compliance with Kazakhstan legislation, SRK has identified a number of areas for improvement to ensure that the Group’s EHSS performance and associated systems are substantially aligned with GIIP.

SRK’s EHSS review of non-mining assets covered enterprises engaged in the Group’s core uranium business, in non-uranium mining, in the solar energy industry, in research and development businesses and in ancillary operations. SRK’s EHSS reviews included preliminary assessments of potential risks and liabilities, focusing on material risks and potential clean-up and closure liabilities.

The overall findings of the SRK’s non-mining assets review were similar to those of the mining assets contained in the SRK Report. Due to the specialised nature of some of the Group’s non-mining asset operations, SRK made certain additional recommendations that apply to specific assets.

According to SRK’s EHSS reviews, potential improvements principally relate to:

- appropriate understanding and characterisation of environmental and social setting in which the assets operate, and using this to proactively manage the associated EHSS risks;
- proactive community stakeholder engagement;
- stewardship of waste; and
- consistency of approach to closure planning and costing aligned with GIIP.

Please refer to Section 12.8 (Conclusions, Risks and Recommendations) of the SRK Report (Annex A to this Prospectus) for the findings on the Group’s mining assets.

### *Environmental and Social Action Plans*

Following the EHSS reviews, the Company and SRK developed a comprehensive set of Environmental and Social Action Plans relating to the Group’s mining and non-mining assets (the “ESAP”). The overall aim of the ESAP is for the Group to move beyond its existing regulatory compliance focus and employ a risk-based approach to proactive management of EHSS issues in line with GIIP in all aspects of the Group’s business within a five-year term.

In September 2018, the Company’s Board of Directors approved the ESAP, thus recognising its importance for the Group and its operations. The ESAP is based on the following key principles:

- *Adoption of a risk-based and proactive management approach.* The Group will move its focus from maintaining regulatory compliance to a risk-based approach beyond compliance in order to achieve an even higher level of EHSS performance.
- *Increases in headcount to support the timely implementation of the ESAP.* The Company’s Board of Directors acknowledged the need for additional resources.
- *Performance reporting and management review.* The Company’s HSE team will coordinate, analyse and report to the Company’s senior management and Board of Directors on the implementation of the ESAP. In addition, the Company’s senior management will review and control the ESAP’s progress on an at least semi-annual basis.

The Board of Directors acknowledges the need for a paradigm shift and will consider the use of external expertise to help guide the process. Trainings and workshops for the Company’s and subsidiaries’ management will be used to facilitate the process.

The following table sets out the principal steps envisaged by the ESAPs:

ESAP Goal	Summary of actions	Outcome
Improved impact prediction and monitoring	<p>EHSS review identified that the operations require further understanding of environmental and social context, while the impact assessment and monitoring undertaken is currently focused on regulatory compliance, rather than geared to a receptor-based approach. To address these gaps, the following actions are required:</p> <p>Further study of water resources, habitats and land use in the vicinity of the mines to identify impact receptors.</p> <p>Refinements to impact predictions.</p> <p>Definition of cumulative impacts.</p> <p>Improvements to the monitoring and reporting on impacts.</p>	Improved ability of the operations to prove and ensure that they are not having impacts on receptors.
Improved community stakeholder engagement	<p>EHSS review identified that the community stakeholder engagement and grievance management processes are currently not formally integrated into management systems and otherwise not fully aligned with GIIP. To address these gaps the following actions are required:</p> <p>Undertake social scans that define how persons are using land and water around the mines.</p> <p>Community stakeholders to be identified by means of a formal stakeholder identification and analysis exercise.</p> <p>Stakeholder engagement plans geared to more active engagement.</p> <p>Grievance procedures framed in the context of good international practice and documented.</p> <p>Documentation of stakeholder engagement.</p>	Active engagement with communities enhancing risk management and constructive relationships with surrounding communities.
Improved control over low level radioactive waste service providers	<p>EHSS review identified a need to pay more attention to low level radioactive waste services, particularly services for decontamination of metal low level radioactive waste, as well as better understand their capacity to handle large quantities of radioactive waste at closure, including the process through which LLRW is disposed of. To address these gaps the following actions are required:</p>	<p>Group enterprises will be able to prove the radioactive waste services used are responsible.</p> <p>Improvement of closure plans by a better understanding of the capacity of radioactive waste facilities and metal decontamination services.</p>



ESAP Goal	Summary of actions	Outcome
Improved closure planning	<p>Where waste is sent to third party waste facilities, enterprises to ensure appropriate service agreements are in place (incorporating liability transfer) and that they have evidence that the EHSS performance of these facilities is acceptable.</p> <p>Group companies to also precisely estimate the quantities of radioactive waste that will be generated at closure and confirm the available licensed waste facilities have capacity to receive such waste.</p> <p>The estimated closure costs for the mines were found to be low during the EHSS review and were further reviewed and revised for the SRK Report. SRK's EHSS review of non-mining assets have also included evaluation of the estimated closure liabilities in line with GIIP (while under Kazakhstan law the estimation of closure costs is only required for nuclear installations, which has a specific definition in the applicable regulation and does not apply to any of the Group's facilities, and subsoil use obligations). The EHSS review identified the need for the below improvements in closure planning:</p> <p>Establishment of an internal closure planning group to regularly review the liquidation programs and cost estimates.</p> <p>Update of closure plans and cost estimates on a regular basis.</p> <p>Closure criteria to be agreed with regulatory authorities and other stakeholders and addressed in the closure plans.</p>	<p>The Group will regularly update its estimates with respect to both statutory closure liabilities (required as per Kazakhstan legislation) and closure liabilities in line with GIIP. The Group will subsequently ensure sufficient funds are in place to cover closure and rehabilitation costs at the end of each respective asset's life.</p>
Improved closure planning	<p>The estimated closure costs for the mines were found to be low during the EHSS review and were further reviewed and revised for the SRK Report. SRK's EHSS review of non-mining assets have also included evaluation of the estimated closure liabilities in line with GIIP (while under Kazakhstan law the estimation of closure costs is only required for nuclear installations, which has a specific definition in the applicable regulation and does not apply to any of the Group's facilities, and subsoil use obligations). The EHSS review identified the need for the below improvements in closure planning:</p>	<p>The Group will regularly update its estimates with respect to both statutory closure liabilities (required as per Kazakhstan legislation) and closure liabilities in line with GIIP. The Group will subsequently ensure sufficient funds are in place to cover closure and rehabilitation costs at the end of each respective asset's life.</p>

ESAP Goal	Summary of actions	Outcome
Health and safety and radiation safety	<p>Establishment of an internal closure planning group to regularly review the liquidation programs and cost estimates.</p> <p>Update of closure plans and cost estimates on a regular basis.</p> <p>Closure criteria to be agreed with regulatory authorities and other stakeholders and addressed in the closure plans.</p> <p>EHSS review identified that use of personal protective equipment (“PPE”) was rigorous at most operations, but not all, while improvement to radiation protection practices are required. To address these gaps the following actions are required:</p> <p>Further promote adherence to requirements to use PPE at all operations.</p> <p>Establish capacity to monitor urine samples of personnel where relevant.</p> <p>Incorporate requirements of the IAEA Safety Guide No. SSG-27 not already covered in radiation management plans.</p>	Further enhancement of safety performance.
Increase the capacity of the corporate Industrial Safety Department (“ISD”)	<p>Increase of the ISD’s headcount is required to meet the Group’s current EHSS aspirations, handle the increasing volume of EHSS data being collected from the operations and implement the ESAP.</p> <p>Increase capacity of the Company’s ISD team.</p> <p>Bring in external expertise to assist with impact identification and training and mentoring to staff.</p>	The Company’s ISD team will be in a position to guide, monitor, audit and report on implementation of the action plan.

See also “*Risk Factors—Risks relating to the Group’s business—Certain of the Group’s EHSS practices do not comply with Good International Industry Practice standards.*”

## INSURANCE

The Group maintains the types of insurance and the amounts of coverage required by Kazakhstan law, such as motor transportation owner insurance and insurance of passenger carrier liability. The Group maintains insurance to cover its liability to third parties related to transportation of radioactive substances, cover certain assets from fire, lightning, explosion and earthquake, as well as certain other types of voluntary insurance, but the Group does not insure against sabotage or terrorist attacks or business interruption generally, other than for production interruption due to equipment failure. The Group also maintains medical insurance for its employees and insurance to cover accidents that occur while the Group’s products are in transit. See “*Risk Factors—Risks Relating to the Group’s Business—The Group’s insurance coverage may not be adequate to cover losses arising from potential operational hazards and unforeseen interruptions.*”

## INFORMATION TECHNOLOGY

The information and technology systems management of the Group is supervised by the Company's department for information technology, which is responsible for developing the IT strategy, setting strategic priorities, and implementation of the information technology programme, as well as for ensuring consistency of the IT platform across the Group by setting out the requirements for the Company and its subsidiaries. KAP-Technology, a wholly-owned subsidiary of the Company, is responsible for the day-to-day roll-out and support of the Group's information and telecommunication systems and ensuring their continuous uninterrupted operation. See also "*—Transformation Initiative.*"

In June, 2018 the Group completed the inaugural introduction of the SAP system at its corporate centre and one of the Company's wholly-owned subsidiaries. As a result of such introduction, the following functions have become significantly automated: accounting, management accounting, HR management, projects management, corporate finance and treasury, production control, maintenance, procurement, logistics and sales. The system's support is performed by KAP-Technology which uses its own resources and utilises the specialised support toolset of the SAP Solution Manager.

As a part of its internal back-up, the Company performs a system databases back-up on a regular basis.

## EMPLOYEES AND LABOUR SAFETY

The Group and its JVs and Associates had approximately 23,284 employees as of 30 September 2018. Although the majority of the employees are located in Kazakhstan, 10, 2 and 2 employees are located outside Kazakhstan—in UMP's subsidiary Ulba China Co., Ltd. based in Shanghai, in THK based in Switzerland and in the Company's representative office in Bethesda, United States, respectively. To date, the Group has not experienced any strikes, work stoppages.

Approximately 64% of the Group's employees are members of the Industry Trade Union of the Nuclear Industry Employees Public Association of the Republic of Kazakhstan, which had 15,377 members as at 31 December 2017, all of which were employees of the Group. As at 31 December 2017, approximately 98% of the Group's employees were party to a collective bargaining agreement. The collective bargaining agreement provides for certain additional social benefits, such as entitlement to certain compensation payments for certain categories of employees using their right to prolonged social security vacations, such as mothers of three or more children under the age of 12 or single parents. The collective bargaining agreement also allows benefits to retired former employees of certain Group companies and offers them certain social benefits. The current collective agreements of the Group have a medium-term validity period (three years) with the condition of its regular renewal.

The following table sets forth the average number of the Group's employees and employees of the JVs and Associates, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, distributed by the functions indicated:

Number of employees	Year ended 31 December			Six months ended 30 June 2018
	2015	2016	2017	
Top management .....	105	100	104	101
Middle management .....	426	386	470	452
Administration personnel .....	1,892	1,868	1,693	1,704
Workers .....	22,636	21,785	21,721	21,224
<b>Total</b> .....	<b>25,059</b>	<b>24,139</b>	<b>23,988</b>	<b>23,481</b>

### Labour Safety

The Company incurred expenses of KZT5,102 million, KZT6,230 million and KZT7,137 million during the years ended 31 December 2015, 2016 and 2017, respectively in connection with occupational safety and health matters. For the years ended 31 December 2015, 2016 and 2017, the Group had only 9, 9 and 7 workplace accidents, of which only 2 were fatal in the year ended 31 December 2015. The Group had one fatal workplace accident in the six months ended 30 June 2018. The Group's average radiation exposure of personnel for the year ended 31 December 2017 was 0.80 mSv, as compared with 0.63 mSv and 1.29 mSv for Cameco and Atomredmetzoloto, respectively. For the year ended 31 December 2016, Orano's average radiation exposure of personnel was 2.53 mSv.

## WELLFIELD DEVELOPMENT DEPRECIATION

The tables starting on the following page set out the details of the Group's wellfield development depreciation, commonly known as PGR, property, plant and equipment and depreciation and amortisation for the mining assets, in each case on a 100% basis, as at 31 December 2015, 2016 and 2017.

As at 31 December 2017														
	Units	Appak	Inkai	SMCC	Zarechnoye	Katco	Akbastau	Karatau	Baiken-U	Khorassan-U	Semizbay-U	Ortalyk	RU-6	SaUran
<b>PGR, PP&amp;E and D&amp;A</b>														
PGR volume—EOP	tU	2,637	4,524	5,265	2,403	5,388	2,234	2,135	3,401	4,193	2,872	4,146	2,976	4,790
PGR in monetary terms—EOP	KZTm	6,685	15,940	8,560	10,815	26,212	12,293	7,410	8,806	17,312	4,484	11,218	11,274	10,739
Exploration value in monetary—EOP	KZTm	1,878	49,312	9,070	1,118	11,986	443	4,978	9,459	2,620	2,512	6,042	—	4,963
PPE (ex. wellstock) net values—EOP	KZTm	4,281	59,822	14,014	3,306	17,844	7,040	12,506	12,351	10,214	6,887	9,317	2,706	6,205
PPE (ex. wellstock) gross values—EOP	KZTm	8,153	93,323	19,083	8,415	47,535	10,254	22,264	19,718	14,165	15,599	13,702	4,974	15,036
D&A (ex. wellstock)	KZTm	379	4,524	2,279	533	6,221	463	1,431	1,404	687	1,112	909	393	1,142
<b>PGR, PP&amp;E and D&amp;A</b>														
PGR volume—EOP	tU	2,626	3,119	5,829	2,242	5,381	2,095	2,666	3,555	3,682	2,788	5,184	3,047	4,458
PGR in monetary terms—EOP	KZTm	6,809	21,608	8,833	9,729	21,959	11,958	5,958	8,276	15,417	5,273	11,929	9,388	13,962
Exploration value in monetary—EOP	KZTm	1,952	42,399	10,822	873	13,060	827	4,778	8,550	2,558	2,620	—	—	5,412
PPE (ex. wellstock) net values—EOP	KZTm	4,420	67,465	14,071	3,387	25,430	5,018	12,158	13,027	8,786	11,312	8,175	2,152	5,783
PPE (ex. wellstock) gross values—EOP	KZTm	7,957	97,832	16,968	8,118	58,189	7,803	20,659	19,007	12,068	17,225	10,830	4,235	13,923
D&A (ex. wellstock)	KZTm	540	5,167	2,328	605	6,927	458	1,466	1,413	620	1,001	810	343	1,291
<b>PGR, PP&amp;E and D&amp;A</b>														
PGR volume—EOP	tU	2,832	4,359	5,609	2,066	7,020	2,023	2,288	3,483	2,684	2,900	5,340	3,236	4,791
PGR in monetary terms—EOP	KZTm	6,475	22,821	9,003	8,576	19,424	12,268	8,850	7,067	14,699	5,428	11,400	9,059	12,346
Exploration value in monetary—EOP	KZTm	1,714	37,937	9,958	1,027	13,877	959	1,317	8,600	1,963	2,741	—	—	8,481
PPE (ex. wellstock) net values—EOP	KZTm	4,808	73,165	14,455	3,620	32,910	5,486	13,753	13,374	8,979	11,665	8,175	2,288	6,118
PPE (ex. wellstock) gross values—EOP	KZTm	8,072	99,438	15,026	7,770	53,605	7,570	20,762	17,971	11,683	16,777	10,830	4,168	13,288
D&A (ex. wellstock)	KZTm	484	3,444	571	600	5,779	489	1,375	1,127	492	1,017	810	392	1,379

## DIVIDEND POLICY

Pursuant to the dividend policy which the Company adopted in October 2018 and which is expected to come into effect on 1 January 2019, the amount of dividends is determined as a percentage of the Group's free cash flow depending on the Group's Net Debt to Adjusted EBITDA ratio. The declaration of dividends requires approval of the Company's General Meeting of Shareholders and is based on the proposal of the Company's Board of Directors which is in turn prepared on the basis of a proposal developed by the Company's Management Board.

The Company defines free cash flow as cash flows from operating activities *less* acquisition of property plant and equipment (including advance paid for property, plant and equipment) *less* acquisition of intangible assets *less* acquisition of mine development assets *less* acquisition of exploration and evaluation assets *plus* dividends from associates and joint ventures declared (i.e., to be distributed) in respect of results for the reporting period. The Company defines Net Debt for the purposes of its dividend policy as total debt (consisting of bank loans, finance lease and guarantees) *less* cash and cash equivalents and short-term deposits.

The percentage of free cash flow applied towards dividends of the Company depends on the Group's Net Debt to Adjusted EBITDA ratio as of 31 December of the year immediately preceding the year during which the decision on dividends is made. If Net Debt to Adjusted EBITDA ratio is:

- less or equal to 1, then the amount of declared dividends shall be no less than 75% of free cash flow;
- more than 1, but less than 1.5, then the amount of declared shall be no less than 50% of free cash flow; and
- 1.5 or more, then the amount of declared dividends shall be such percentage of free cash flow as determined by the Company's General Meeting of Shareholders.

Any decision to declare and pay dividends is subject to (i) restrictions set out in applicable law, such as the prohibition on payment of dividends for companies with negative equity capital or which are insolvent or companies whose equity capital would become negative or which would become insolvent as a result of paying dividends and (ii) covenants set out in agreements to which the Company is a party. Furthermore, in rendering its proposal to the General Meeting of Shareholders, the Company's Board of Directors may take into account any factors it may deem relevant, such as the Company's net profit, solvency and financial condition, cash requirements, among others.

The Company expects that, subject to applicable law and commercial considerations, dividend payments of no less than the Tenge equivalent of US\$200 million, at the time of the approval, in respect of each of the Company's 2018 and 2019 financial years will be approved in 2019 and 2020. The Company intends to accommodate such plans in its budgets for 2019 and 2020.

The Company declared dividends in the amount of KZT12,031 million, KZT65,849 million and KZT135,012 million in respect of the years ended 31 December 2015, 2016 and 2017, respectively. The dividends in respect of the financial results of the year ended 31 December 2017 were declared pursuant to two resolutions of Samruk-Kazyna taken on 11 June 2018 in respect of an amount of KZT45,019 million and on 25 June 2018 in respect of an amount of KZT89,993 million. The Company did not declare or pay any interim dividends with respect to the six months ended 30 June 2018, but on 15 October 2018 declared KZT26,649 million of dividends sourced from the Company's retained earnings for prior periods. As of the date of this Prospectus, all of the declared dividends were paid.

The following table summarises the dividends declared since 1 January 2016 in respect of the financial results of the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, as well as in respect of the retained earnings of prior periods:

	Prior periods <sup>(1)</sup>	Year ended 31 December			Six months ended 30 June 2018
		2015	2016	2017	
Aggregate amount in respect of the period (in KZT millions) .....	26,649	12,031	65,849	135,012	—

(1) The dividend of KZT26,649 million was declared on 15 October 2018 and was sourced from the Company's retained earnings for prior periods as of 31 December 2017. Such retained earnings comprise earnings since the Company's inception on 14 July 1997 until 31 December 2017.

See also "Risk Factors—Risks relating to the Company's Business—The Company may elect not to pay dividends in the future."

The Company strives to use its voting power to maximise its dividend flow from subsidiaries, JVs and Associates. Dividends received by the Company from investees domiciled in the Republic of Kazakhstan are exempt from dividends tax.



## CAPITALISATION

The following table sets forth the Group’s consolidated capitalisation as at 30 June 2018, derived from the unaudited Interim Financial Statements included in this Prospectus. This information should be read in conjunction with “*Selected Financial and Operating Information*,” “*Operating and Financial Review*” and the Financial Statements (including the notes thereto) included in this Prospectus and beginning on page F-1.

	<b>As at 30 June 2018</b>
	<b>(KZT millions)</b>
Non-current borrowings .....	369
Non-current finance lease liabilities .....	418
Current borrowings .....	90,209
Current finance lease liabilities .....	119
<b>Total borrowings and finance lease liabilities .....</b>	<b>91,115</b>
<b>Equity</b>	
Share capital .....	37,051
Additional paid in capital .....	4,785
Reserves .....	(979)
Retained earnings .....	543,620
Non-controlling interest .....	91,997
<b>Total Equity .....</b>	<b>676,474</b>
<b>Total capitalisation .....</b>	<b>767,589</b>

As described in “*Operating and Financial Review—Current Trading and Recent Developments*”, since 30 June 2018, the Company raised KZT70,000 million, and entered into a US\$100 million loan agreement with Mizuho Bank, Ltd. (under which no drawdowns were made as of the date of this Prospectus), to fund its working capital and for general corporate purposes. The Company intends to draw down all or substantially all of the funds available under the US\$100 million loan agreement with Mizuho Bank, Ltd. between 5 and 9 November 2018.

Save for any changes in the Group’s capitalisation as a result of the foregoing, there have been no significant changes in the Group’s capitalisation since 30 June 2018.

## SELECTED FINANCIAL AND OPERATING INFORMATION

The following tables set out certain financial and operational information as at and for the years ended 31 December 2015, 2016 and 2017 and six months ended 30 June 2017 and 2018 for the Group and must be read in conjunction with “Operating and Financial Review” and the Financial Statements (including the notes thereto) included in this Prospectus and beginning on page F-1. For a description of the Financial Statements, see “Presentation of financial and other information—Presentation of IFRS financial information.”

### FINANCIAL STATEMENTS INFORMATION

#### Consolidated Statements of Profit or Loss and Other Comprehensive Income

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
	(KZT millions, except per share amounts)				
Revenue	383,960	394,315	336,517	153,188	145,029
Cost of sales	(280,598)	(283,882)	(263,864)	(120,924)	(106,539)
<b>Gross profit</b>	<b>103,362</b>	<b>110,433</b>	<b>72,653</b>	<b>32,264</b>	<b>38,490</b>
Distribution expenses	(4,116)	(6,314)	(4,858)	(2,402)	(3,361)
General and administrative expenses	(25,655)	(30,877)	(32,274)	(11,558)	(12,573)
Reversal of impairment of assets	86	184	543	38	119
Impairment losses	(30,716)	(22,007)	(27,958)	(4,058)	(3,605)
Gain on disposal of subsidiary	—	290	—	—	—
Net foreign exchange (loss) / gain	(53,446)	3,614	(768)	(1,142)	1,296
Net result from business combinations	—	—	—	—	96,858
Other income	1,352	775	115,111	6,209	110
Other expenses	(7,535)	(6,160)	(6,768)	(1,564)	(1,187)
Finance income	21,986	15,825	5,888	2,429	2,638
Finance costs	(8,676)	(11,017)	(9,067)	(4,387)	(5,088)
Share of results of associates	38,823	38,058	22,007	11,644	6,948
Share of results of joint ventures	14,080	36,739	22,107	13,637	(1,905)
<b>Profit before tax</b>	<b>49,545</b>	<b>129,543</b>	<b>156,616</b>	<b>41,110</b>	<b>118,740</b>
Income tax expense	(13,044)	(17,988)	(17,462)	(13,032)	(4,823)
Profit from discontinued operations	—	—	—	2,087	1,103
<b>Profit for the period</b>	<b>36,501</b>	<b>111,555</b>	<b>139,154</b>	<b>30,165</b>	<b>115,020</b>
<b>Other comprehensive income</b>					
<i>Items that may be subsequently reclassified to profit or loss:</i>					
Exchange differences arising on translation of foreign operations	17,271	(97)	383	9	(22,123)
Share in other comprehensive income of equity method investments	159	(658)	—	—	—
<i>Items that will be reclassified to profit or loss:</i>					
Remeasurements of post-employment benefit obligations	(241)	194	113	—	—
Share in other comprehensive income of equity method investments	—	(216)	(189)	—	—
<b>Other comprehensive income / (loss) for the period</b>	<b>17,189</b>	<b>(777)</b>	<b>307</b>	<b>9</b>	<b>(22,123)</b>
<b>Total comprehensive income for the period</b>	<b>53,690</b>	<b>110,778</b>	<b>139,461</b>	<b>30,174</b>	<b>92,897</b>
<b>Profit for the year attributable to:</b>					
Owners of the Company	38,442	108,795	138,527	29,949	114,220
Non-controlling interest	(1,941)	2,760	627	216	800
<b>Profit for the period</b>	<b>36,501</b>	<b>111,555</b>	<b>139,154</b>	<b>30,165</b>	<b>115,020</b>
<b>Total comprehensive income attributable to:</b>					
Owners of the Company	55,635	108,014	138,837	29,957	92,093
Non-controlling interest	(1,945)	2,764	624	217	804
<b>Total comprehensive income for the year</b>	<b>53,690</b>	<b>110,778</b>	<b>139,461</b>	<b>30,174</b>	<b>92,897</b>
Earnings per share from continuing operations, basic and diluted (rounded to Tenge)	1,048	2,963	3,748	810	3,083

## Consolidated Statements of Financial Position

	As at 31 December			As at 30 June
	2015	2016	2017	2018
	(KZT millions)			
<b>Assets</b>				
<i>Non-current assets</i>				
Intangible assets	7,173	7,117	8,009	8,736
Property, plant and equipment	130,411	117,335	122,175	134,685
Mine development assets	38,578	41,682	43,530	102,762
Mineral rights	2,067	2,291	2,004	161,130
Exploration and evaluation assets	8,538	3,471	5,608	6,610
Investments in associates	121,938	107,773	101,746	62,231
Investments in joint ventures	43,519	66,862	74,818	41,240
Other investments	67,041	67,041	1,726	4,411
Accounts receivable	36	—	140	243
Deferred tax assets	1,829	4,299	6,836	8,948
Term deposits	3,182	15	—	11
Loans to related parties	32,344	19,151	20,302	13,091
Other non-current assets	19,627	19,517	24,125	25,610
<b>Total non-current assets</b>	<b>476,283</b>	<b>456,554</b>	<b>411,019</b>	<b>569,708</b>
<i>Current assets</i>				
Accounts receivable	107,512	67,921	58,085	73,752
Prepaid income tax	2,427	7,391	5,493	9,869
VAT recoverable	28,528	22,235	24,182	21,375
Inventories	99,692	120,095	169,675	202,918
Term deposits	9,020	56,476	8,472	7,618
Loans to related parties	1,224	13	—	8,119
Cash and cash equivalents	55,869	75,052	239,936	100,542
Other current assets	12,557	10,831	18,396	23,852
<b>Total current assets</b>	<b>316,829</b>	<b>360,014</b>	<b>524,239</b>	<b>448,045</b>
Assets of disposal groups classified as held for sale	164	3,463	2,774	40,162
	<b>316,993</b>	<b>363,477</b>	<b>527,013</b>	<b>488,207</b>
<b>Total assets</b>	<b>793,276</b>	<b>820,031</b>	<b>938,032</b>	<b>1,057,915</b>
<b>Equity and Liabilities</b>				
<i>Equity</i>				
Share capital	36,692	36,785	37,051	37,051
Additional paid-in capital	4,785	4,785	4,785	4,785
Reserves	18,819	18,061	(2,229)	(979)
Retained earnings	398,991	495,732	586,998	543,620
Equity attributable to shareholders of the Company	459,287	555,363	626,605	584,477
Non-controlling interest	10,118	12,467	14,571	91,997
<b>Total equity</b>	<b>469,405</b>	<b>567,830</b>	<b>641,176</b>	<b>676,474</b>
<i>Non-current liabilities</i>				
Loans and borrowings	119,776	77,184	38,910	369
Finance lease liabilities	—	120	294	418
Accounts payable	585	581	582	588
Provisions	17,183	17,320	22,688	27,581
Deferred tax liabilities	4,509	4,743	4,443	35,581
Employee benefits	2,045	1,346	1,247	943
Other non-current liabilities	6,141	5,199	7,711	6,081
<b>Total non-current liabilities</b>	<b>150,239</b>	<b>106,493</b>	<b>75,875</b>	<b>71,561</b>
<i>Current liabilities</i>				
Loans and borrowings	52,845	50,581	82,374	90,209
Finance lease liabilities	—	44	125	119
Provisions	101	98	189	143
Accounts payable	101,622	74,654	112,642	53,653
Other tax and compulsory payments liabilities	5,027	6,198	4,168	5,659
Employee benefits	213	244	173	126
Income tax liabilities	1,036	134	5,618	508
Other current liabilities	12,788	11,789	14,349	105,582
<b>Total current liabilities</b>	<b>173,632</b>	<b>143,742</b>	<b>219,638</b>	<b>255,999</b>
Liabilities of disposal groups classified as held for sale	—	1,966	1,343	53,881
<b>Total liabilities</b>	<b>323,871</b>	<b>252,201</b>	<b>296,856</b>	<b>381,441</b>
<b>Total equity and liabilities</b>	<b>793,276</b>	<b>820,031</b>	<b>938,032</b>	<b>1,057,915</b>

## Consolidated Statements of Cash Flows

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
	(KZT millions)				
<i>Operating activities</i>					
Cash receipts from customers	395,725	485,829	435,199	224,080	182,320
VAT refund	24,895	29,638	18,849	10,379	12,808
Interest received	1,416	6,830	3,025	1,288	1,006
Payments to suppliers	(320,921)	(379,103)	(373,006)	(183,290)	(207,003)
Payments to employees	(40,191)	(42,638)	(43,213)	(19,297)	(22,389)
<b>Cash flows from/(used in) operating activities (pre-tax)</b>	<b>60,924</b>	<b>100,556</b>	<b>40,854</b>	<b>33,160</b>	<b>(33,258)</b>
Income tax paid	(5,662)	(28,216)	(13,069)	(6,205)	(8,750)
Interest paid	(6,127)	(5,464)	(4,430)	(2,225)	(2,993)
<b>Cash inflows from/(outflow used in) operating activities</b>	<b>49,135</b>	<b>66,876</b>	<b>23,355</b>	<b>24,730</b>	<b>(45,001)</b>
<i>Investing activities</i>					
Acquisition of property, plant and equipment	(12,153)	(8,975)	(14,913)	(7,138)	(9,046)
Proceeds from disposal of property, plant and equipment	491	190	749	470	44
Advance paid for property, plant and equipment	(616)	(5,361)	(5,461)	—	—
Acquisition of intangible assets	(414)	(477)	(628)	(589)	(1,850)
Acquisition of mine development assets	(9,930)	(11,494)	(12,011)	(4,391)	(10,712)
Acquisition of exploration and evaluation assets	(1,618)	(3,264)	(2,775)	(986)	(1,003)
Proceeds from exercise of put option	—	—	173,719	—	—
Proceeds from sale of investments in associates and joint ventures	—	82	—	—	—
Proceeds from disposal of subsidiary	—	175	2	—	89
Placement of term deposits and restricted cash	(14,370)	(54,124)	(12,095)	(23,261)	(3,123)
Redemption of term deposits and restricted cash	5,798	9,054	55,216	53,333	4,847
Repayment of loans to related parties	1,211	12,787	8	—	—
Acquisition of control over subsidiary ventures	—	—	(91)	—	—
Acquisition of investments in associates and joint ventures	(2,046)	(4,647)	(2,687)	(2,674)	(1,301)
Dividends received from associates, joint ventures and other investments	42,867	78,805	36,486	20,323	7,135
Other	(94)	(96)	56	(52)	1,762
<b>Cash inflow from/(outflow used in) investing activities</b>	<b>9,126</b>	<b>12,655</b>	<b>215,575</b>	<b>35,035</b>	<b>(13,158)</b>
<i>Financing activities</i>					
Proceeds from loans and borrowings	163,851	10,072	52,793	9,702	32,142
Repayment of loans and borrowings	(215,676)	(53,430)	(61,410)	(27,020)	(67,931)
Dividends paid to the shareholder	(2,323)	(12,031)	(65,849)	—	(45,019)
Dividends paid to non-controlling interest	(47)	(134)	(19)	(5)	(1,976)
Other	103	(673)	(396)	(344)	(96)
<b>Cash outflow used in financing activities</b>	<b>(54,092)</b>	<b>(56,196)</b>	<b>(74,881)</b>	<b>(17,667)</b>	<b>(82,880)</b>
<b>Net increase/(decrease) in cash and cash equivalent</b>	<b>4,169</b>	<b>23,335</b>	<b>164,049</b>	<b>42,098</b>	<b>(141,039)</b>
Cash and cash equivalents at the beginning of the year	29,432	55,869	75,052	75,052	239,936
Effect of exchange rate fluctuations on cash and cash equivalents	22,268	(4,152)	835	(2,517)	1,645
<b>Cash and cash equivalents at the end of the year</b>	<b>55,869</b>	<b>75,052</b>	<b>239,936</b>	<b>114,633</b>	<b>100,542</b>

## CERTAIN NON-IFRS FINANCIAL ITEMS AND OPERATING ITEMS

The following discussion provides a description of the composition of the key non-IFRS financial and operating items used by the Company for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2017 and 2018.

### Cash Costs

The Group's attributable C1 cash costs comprise all direct cash expenditures required to secure the sales volumes and sales revenues as determined and include mining, processing, general and administration, MET, reimbursable services, distribution, toll refining and retrenchment costs. The Group's attributable all-in sustaining costs comprise C1 cash costs plus well construction costs and sustaining costs. Cash costs amounts in this Prospectus are not presented on consolidated IFRS basis or any other comprehensive basis of accounting, and prospective investors are therefore cautioned not to place undue reliance on cash costs or related amounts. The following table presents the Group's C1 cash costs and all-in sustaining costs on attributable basis for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018:

	Year ended 31 December			Six months ended 30 June
	2015	2016	2017	2018
	(US\$ per 1 lb of U <sub>3</sub> O <sub>8</sub> )			
Attributable C1 cash costs . . . . .	17.5	12.2	12.0	12.2
Attributable all-in sustaining costs . . . . .	22.2	15.7	16.1	16.3

Source: SRK.

### Adjusted EBITDA and Adjusted Attributable EBITDA

The Company considers Adjusted EBITDA and Adjusted Attributable EBITDA to be important supplemental measures of the Group's operating performance and believes they may be used by securities analysts, investors and other interested parties in the evaluation of companies with complex group structures involving material joint ventures, associates and subsidiaries with significant non-controlling interests. Adjusted EBITDA and Adjusted Attributable EBITDA should not be considered as an alternative to performance or cash flow measures derived in accordance with IFRS. See "*Presentation of Financial and Other Information—Presentation of Non-IFRS Financial Information.*"

The Group defines EBITDA, or earnings before interest, taxes, depreciation and amortisation, as profit before tax *less* finance income, *plus* finance expense, *plus* depreciation and amortisation and *plus or less* net foreign exchange loss or gain, as the case may be.

The Group defines Adjusted EBITDA as EBITDA *less* gain on exercise of put option (which is only applicable for the year ended 31 December 2017 and relates to the exercise by the Company of its put option to sell certain of shares held by it to Toshiba Corporation for a consideration of US\$522.2 million, see "*Operating and Financial Review—Significant Factors Affecting the Group's Results of Operations—Disposals of Non-Core Assets.*") *less* result from business combination, which is only applicable for the six months ended 30 June 2018 and relates primarily to the increase by the Group of its interest in JV Inkai LLP from 40% to 60% with effect from 1 January 2018, *plus* impairment losses *less* reversal of impairment of assets. Going forward, the Company intends to exclude the effect of any similar one-off items incurred in future periods from its calculations of Adjusted EBITDA.

The Group has a complex legal structure with a number of joint ventures and associates accounted for under the equity method in the Group's IFRS financial statements. Historically, this resulted in nearly 50% of the Group's consolidated profit before tax being represented by net results of associates and joint ventures. The Group's most significant joint ventures and associates operate in the Uranium segment. In addition, the Group owns controlling stakes, but less than 100% of interest, in Appak LLP and JV Inkai LLP, which are fully consolidated subsidiaries engaged in the Uranium segment. To supplement the assessment of performance of the Group, the Company uses an alternative unaudited non-IFRS metric—Adjusted Attributable EBITDA—to show the results of operations as if the joint ventures and associates engaged in the Uranium segment, as well as Appak LLP and JV Inkai LLP were proportionally consolidated.

Adjusted Attributable EBITDA is calculated as Adjusted EBITDA, *less* share of results of joint ventures and associates, *plus* share of Adjusted EBITDA of joint ventures and associates operating in the Uranium segment (excluding in each reporting period Adjusted EBITDA of JV Budenovskoye LLP due to the insignificance of its impact during each reporting period) *less* non-controlling share of Adjusted EBITDA of consolidated subsidiaries operating in uranium segment.



The Company believes that proportionate adjustments may be helpful in enabling a consistent evaluation of the financial performance and returns available to the Group, irrespective of the differing accounting treatments required to account for its minority and joint ownership interests of its relevant investments in the Uranium segment. However, investors are strongly cautioned not to place undue reliance on the Adjusted Attributable EBITDA, as it represents unaudited financial information on an accounting basis, which is not in compliance with IFRS. In particular, the Adjusted Attributable EBITDA presents the Group results on a proportionate consolidation basis for: (i) jointly-controlled joint ventures and non-controlled associates operating in the Uranium segment, for each of which the equity method of accounting is required in the Group's IFRS consolidated financial statements and (ii) Appak LLP, which is a 65% owned subsidiary, and JV Inkai LLP, which is a 60% owned subsidiary, each of which is fully consolidated in the Group's IFRS consolidated financial statements. The following table sets out the Group's EBITDA, Adjusted EBITDA and Adjusted Attributable EBITDA for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2017 and 2018, as well as reconciliation to profit before tax for the same periods:

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
	(KZT millions)				
Profit before tax	49,545	129,543	156,616	41,110	118,740
Finance income	(21,986)	(15,825)	(5,888)	(2,429)	(2,638)
Finance costs	8,676	11,017	9,067	4,387	5,088
Net foreign exchange (gain) / loss	53,446	(3,614)	768	1,142	(1,296)
Depreciation and amortization	18,191	16,259	16,469	7,536	12,289
<b>EBITDA</b>	<b>107,872</b>	<b>137,380</b>	<b>177,032</b>	<b>51,746</b>	<b>132,183</b>
Gain on exercise of put option	—	—	(107,714)	—	—
Net result from business combinations	—	—	—	—	(96,858)
Impairment losses	30,716	22,007	27,958	4,058	3,605
Reversal of impairment of assets	(86)	(184)	(543)	(38)	(119)
<b>Adjusted EBITDA</b>	<b>138,502</b>	<b>159,203</b>	<b>96,733</b>	<b>55,766</b>	<b>38,811</b>
Share of results of joint ventures	(14,080)	(36,739)	(22,107)	(13,637)	1,905
Share of results of associates	(38,823)	(38,058)	(22,007)	(11,644)	(6,948)
Share of Adjusted EBITDA of joint ventures and associates in the Uranium segment	99,709	103,991	77,822	36,762	15,180
Non-controlling share of Adjusted EBITDA of consolidated subsidiaries in the Uranium segment	(3,262)	(4,007)	(2,212)	(1,553)	(3,272)
<b>Adjusted Attributable EBITDA</b>	<b>182,046</b>	<b>184,390</b>	<b>128,229</b>	<b>65,694</b>	<b>45,676</b>

#### Historical EBITDA Metrics

For a description of limitations of non-IFRS measures, please see “Presentation of non-IFRS Financial Information,” and for a reconciliation please see “—Adjusted EBITDA and Adjusted Attributable EBITDA.”

The following table sets forth the Group's Adjusted EBITDA and Adjusted Attributable EBITDA for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change	
	2017	2018	Volume	Percentage
	(KZT millions)			
Adjusted EBITDA	55,766	38,811	(16,955)	(30.40)
Adjusted Attributable EBITDA	65,694	45,676	(20,018)	(30.47)

The following table sets forth the Group's Adjusted EBITDA and Adjusted Attributable EBITDA for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change	
	2016	2017	Volume	Percentage
	(KZT millions)			
Adjusted EBITDA	159,203	96,733	(62,470)	(39.24)
Adjusted Attributable EBITDA	184,390	128,229	(56,161)	(30.46)

The following table sets forth the Group's Adjusted EBITDA and Adjusted Attributable EBITDA for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change	
	2015	2016	Volume	Percentage
	(KZT millions)			(%)
Adjusted EBITDA	138,502	159,203	20,701	14.95
Adjusted Attributable EBITDA	182,046	184,390	2,344	1.29

### Net Debt

The Company defines net debt as total debt (consisting of bank loans, non-bank loans and finance lease liabilities) less cash and cash equivalents and short-term deposits.

	As at 31 December			As at 30 June
	2015	2016	2017	2018
Total bank loans	172,326	127,442	120,931	54,007
Total non-bank loans	295	323	353	36,571
Total finance lease liabilities	—	164	419	537
<b>Total debt</b>	<b>172,621</b>	<b>127,929</b>	<b>121,703</b>	<b>91,115</b>
Cash and cash equivalents	(55,869)	(75,052)	(239,936)	(100,542)
Current term deposits	(9,020)	(56,476)	(8,472)	(7,618)
<b>Net Debt</b>	<b>107,732</b>	<b>(3,599)</b>	<b>(126,705)</b>	<b>(17,045)</b>

### Key Financial Ratios

	As at 31 December			As at 30 June
	2015	2016	2017	2018 <sup>(1)</sup>
Total Debt to Adjusted EBITDA	1.2	0.8	1.3	1.1
Net Debt to Adjusted EBITDA	0.8	(0.0)	(1.3)	(0.2)

(1) Adjusted EBITDA is calculated for the last 12 months as Adjusted EBITDA for the year ended 31 December 2017 minus Adjusted EBITDA for the six months ended 30 June 2017 plus Adjusted EBITDA for the six months ended 30 June 2018.

### Key Operating and Market Items

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
Group's attributable U <sub>3</sub> O <sub>8</sub> production (in tonnes of UME)	12,766	13,095	12,093	5,949	5,771
Group's sales of U <sub>3</sub> O <sub>8</sub> (in tonnes of UME)	11,028	9,687	10,111 <sup>(2)</sup>	6,014	5,579
Sales of uranium products (in KZT millions)	268,832	268,101	207,788	120,819	112,889
Average market spot price of U <sub>3</sub> O <sub>8</sub> (US\$ per lb) <sup>(1)</sup>	36.80	26.36	22.07	22.71	22.14

Source: UxC.

(1) Includes 77 tonnes of UME of U<sub>3</sub>O<sub>8</sub> transferred by Appak LLP to third parties which was not reflected in the Group's consolidated revenue. This transfer represented a return of uranium borrowed by Appak LLP from a third party in 2012.

## OPERATING AND FINANCIAL REVIEW

*The following overview of the Group's financial condition and results of operations as at and for the years ended 31 December 2015, 2016 and 2017 and as at and for the six months ended 30 June 2018 should be read in conjunction with the Financial Statements and related notes included elsewhere in this Prospectus. Investors should not rely solely on the information contained in this section.*

*The following discussion and analysis of financial condition and results of operations includes forward-looking statements that reflect the current views of the Group's management and involve inherent risks and uncertainties. The actual results of the Group's operations could differ materially from those contained in such forward-looking statements due to the factors discussed below and elsewhere in this Prospectus, particularly in the section entitled "Risk Factors."*

*The selected consolidated financial information in this section has been extracted, or recalculated based on the information derived, from the Financial Statements, in each case without material adjustment, unless otherwise stated, as well as from internal data concerning the Group contained in the Company's management financial reports. The Financial Statements have been prepared in accordance with IFRS.*

### OVERVIEW

The Group is the largest producer of natural uranium globally (in terms of production volumes) with priority access to one of the world's largest resource bases, according to UxC data. According to UxC data, the Group's uranium production, including the production of its jointly controlled entities and associates attributable to the Group, for the year ended 31 December 2017 represented approximately 20% of total global uranium primary production and approximately 40% of global ISR uranium production.

The Group operates, through its subsidiaries, JVs and Associates, 26 deposits grouped into 13 asset clusters, all of which are located in Kazakhstan. All of the Group's uranium deposits are suitable for ISR. A combination of the cost-efficient ISR technology, which has smaller environmental impact compared to other mining methods, and a long-life mining asset base allows the Group to remain sustainably among the leading and the second lowest cost uranium producers globally, according to UxC data. The Group benefits from more than 40 years of ISR experience accumulated by the Kazakhstan uranium mining industry. In addition to being cost-efficient and being least environmentally impactful, the ISR technology offers enhanced operational flexibility as compared to conventional mining, which improves the scalability of the Group's operations and allows it to ramp up or down its production in a quick and cost-efficient manner in response to evolving market conditions.

The Company enjoys the status as Kazakhstan's national operator for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The respective status of a national company in Kazakhstan allows the Group to benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including the high-quality and ISR-conducive deposits of natural uranium, which are abundant in the Republic of Kazakhstan.

The Group only produces uranium from deposits in Kazakhstan. According to UxC data, for the year ending 31 December 2017, Kazakhstan accounted for 40% of the global uranium production and 65% of the world's measured and indicated resources suitable for ISR mining. According to the NEA/IAEA, as of 1 January 2015, 13% of the global identified uranium resources were located in Kazakhstan. The Group also possesses the largest uranium Ore Reserves among its competitors, according to UxC data. As at 30 June 2018, the Group's attributable Proved and Probable Ore Reserves contained 294.8 thousand tonnes of UME and attributable Measured and Indicated Mineral Resources (inclusive of those Mineral Resources modified to produce the Ore Reserves) contained 435.1 thousand tonnes of UME, and attributable Inferred Mineral Resources contained 1.0 thousand tonnes of UME, each reported in accordance with the terms and definitions of the JORC Code.

As the national atomic company in the Republic of Kazakhstan, the Company has partnered with substantially all of the leading players in the uranium mining industry globally. The Group has built 10 successful asset-level partnerships with Cameco, CGNPC, Kansai, Marubeni, Orano (formerly Areva), RosAtom and Sumitomo, as well as the Energy Asia consortium. These partnerships demonstrate the prominence of the Group's asset base on a global scale while having allowed the Group to gain access to the partners' technologies and improve its technological and management know-how. For the year ended 31 December 2017 and the six months ended 30 June 2018, 60.4% and 48.4%, respectively, of the Group's attributable mined uranium was attributable to participation in its JVs and Associates.

The Group's primary customers are operators of nuclear generation capacity, and the principal export markets for the Group's products are China, South and Eastern Asia, North America and Europe. The Group sells uranium and uranium products under long-term contracts, short-term contracts, as well as in the spot market, utilising its Switzerland-based trading subsidiary. The price of uranium represents a relatively minor fraction of the overall cost of producing nuclear energy, and most of the Group's customers tend to prefer security of supply, which the Group is well-positioned to accommodate due to its size and production volumes, to more favourable pricing terms.

While uranium mining is the predominant focus of the Group's operations, the Group is also present (through its subsidiaries, JVs and Associates) in most of the other stages of the "front-end" nuclear fuel cycle with the exception of conversion. These stages include uranium dioxide, or UO<sub>2</sub>, ceramic powder production, fuel pellet production, as well as enrichment. In addition, the Group is currently engaged in the construction of a fuel assembly plant, which the Company expects to put into operation by the end of 2020. Moreover, the Group is well positioned to develop a conversion facility, should conversion become economically attractive in the future and has secured access to the requisite technologies from Cameco. The Group produces uranium products, including natural uranium concentrate, uranium dioxide ceramic powder and fuel pellets, which are used in the manufacturing of nuclear fuel assemblies, the fuel used by nuclear power stations for the generation of electricity.

In addition to uranium operations, the Group is engaged in the manufacture of selected rare metals products, primarily tantalum and beryllium.

For the year ended 31 December 2017 and the six months ended 30 June 2018, the Group's consolidated revenue was KZT336,517 million and KZT145,029 million, respectively, and profit was KZT139,154 million and KZT115,020 million, respectively.

## PRESENTATION OF FINANCIAL INFORMATION AND SEGMENTS

During the periods under review, the Group operated through the following three principal business segments, one of which has been discontinued since 3 July 2018:

- **Uranium** segment includes uranium mining and processing operations from the Group's mines, the Group's purchases of uranium from the Group's joint ventures and associates engaged in uranium production, and external sales and marketing of uranium products, in each case other than production and sales of UO<sub>2</sub> powder and fuel pellets. The Uranium segment includes the Group's share in net results of its joint ventures and associates engaged in uranium production, as well as results of the Company as the head office of the Group.

The Group's revenue attributable to sales of uranium products, as detailed in Note 9 to the Annual Financial Statements and Note 40 to the Interim Financial Statements, exceeds the revenue of the Uranium segment due to the former including revenue from manufacturing uranium products at UMP, such as UO<sub>2</sub> powder and fuel pellets, whereas the Uranium segment does not include UMP's operations.

- **UMP** segment includes production and sales of products containing beryllium, tantalum and niobium, hydrofluoric acid and by-products. This segment is also engaged in processing of uranium raw materials under tolling arrangements and production of UO<sub>2</sub> powder and fuel pellets.
- **Energy** segment included the production and sales of electricity, heat, industrial, drinking and hot water, distillate in the Mangistau region. All of the sales of the Energy segment during the periods under review were to third parties. Following the divestment by the Group of its primary subsidiary engaged in the Energy segment operations, MAEK, the Group's Energy segment operations have been discontinued with effect from 3 July 2018. The remaining entity which was part of this segment until 3 July 2018, Uranenergo LLP, was reclassified into the "Other" segment. See also "*Risk Factors—Risks relating to the Group's business—The Group may face liability in connection with the operations of its former subsidiary.*"

In addition, the "Other" segment includes revenue and expenses of the Group's subsidiaries that are primarily engaged in providing supporting services to the Uranium segment, such as drilling, transportation and security services, among others. These Group's businesses are not included within reportable operating segments as their financial results do not meet the quantitative threshold.

For further details of the Company's approach to segment reporting, see Note 7 to the Annual Financial Statements and Note 40 to the Interim Financial Statements.

## Consolidation

In addition to the operations of the Company and its consolidated subsidiaries, the Group relies on a number of JVs and Associates.

- **Subsidiaries** are entities that the Group controls by having (i) the power to direct their relevant activities that significantly affect their returns, (ii) exposure, or rights, to variable returns from its involvement with these entities, and (iii) the ability to use its power over these entities to affect the amount of the Group's returns. The existence and effect of substantive rights, including substantive potential voting rights, are considered when assessing whether the Group has power over another entity.
- **Joint ventures** are entities that are under the joint control of the Group acting collectively with other parties, and decisions over the relevant activities of such entity require unanimous consent of all parties sharing control. The Group's interests in joint ventures are accounted for using the equity method.
- **Joint operations** are entities in respect of which the Group has joint control and has rights to their assets, and revenues and has obligations relating to their expenses as well as financial obligations in proportion to the Group's holding share therein. The Group's joint operations, being JV Akbastau JSC and Karatau LLP, are consolidated as joint operations since 1 January 2018.
- **Associates** are entities over which the Group has, directly or indirectly, significant influence, but not sole or joint control, which is typical for a shareholding of between 20% and 50% of the voting rights. The Group's investments in associates are accounted for using the equity method of accounting.
- **Equity investments** are entities in which the Group has less than 20% of the voting rights. Equity investments are recognised at fair value as other investments in the Company's consolidated IFRS financial statements.

For further details of the Company's approach to consolidation, see Note 3 to the Annual Financial Statements and Note 3 to the Interim Financial Statements.

All of the Group's joint ventures and associates have been accounted for using the equity method during the periods under review. The Group's joint operations, being JV Akbastau JSC and Karatau LLP, have since 1 January 2018 been consolidated into the Company's financial statements in proportion to the Company's shareholding therein. In addition, due to the increase by the Company of its interest in JV Inkai LLP from 40% to 60% and obtaining control with effect from 1 January 2018, its accounting treatment changed from equity method to full consolidation accordingly. As a result of these changes, comparability of the Group's results for the six-months ended 30 June 2017 and 2018 has been significantly limited.



The following table sets out the Group's principal subsidiaries, JVs and Associates by category of operations, as well as the Group's ownership interest therein (which is in all cases equal to the Group's voting rights, with the exception of Ulba Metallurgical Plant JSC and Volkovgeologia JSC in each of which the Group has 100% voting rights) as at 30 June 2018:

Subsidiaries		Joint Ventures		Joint Operations		Associates		Equity Investments	
Name	Group's interest	Name	Group's interest	Name	Group's interest	Name	Group's interest	Name	Group's interest
<b>Key assets</b>									
<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>	
Ortalyk LLP . . . . .	100.00%	JV Budenovskoye LLP . . . . .	51.00%	JV Akbastau JSC . . . . .	50.00%	JV Katco LLP . . . . .	49.00%	Baiken-U LLP . . . . .	5.00%
Kazatomprom-SaUran LLP <sup>(1)</sup> . . . . .	100.00%	Semizbai-U LLP . . . . .	51.00%	Karatau LLP . . . . .	50.00%	JV Khorassan-U LLP . . . . .	33.98%	JSC IUEC . . . . .	10.00%
RU-6 LLP <sup>(1)</sup> . . . . .	100.00%					JV SMCC LLP . . . . .	30.00%	Energy Asia (BVI) Limited . . . . .	9.95%
<b>Nuclear fuel cycle</b>									
Appak LLP . . . . .	65.00%	UEC CJSC . . . . .	50.00%			JV Zarechnoye JSC . . . . .	49.98%		
JV Inkai LLP <sup>(2)</sup> . . . . .	60.00%	JSC UEIP <sup>(3)</sup> . . . . .	25.00%			Kyzylkum LLP . . . . .	30.00%		
<i>Nuclear fuel cycle and metallurgy</i>		Uranenergo LLP <sup>(4)</sup> . . . . .	75.44%						
Ulba Metallurgical Plant JSC . . . . .	90.18%					<b>Ancillary operations</b>			
<i>Ancillary operations</i>		<i>Ancillary operations</i>				JV SKZ Kazatomprom LLP . . . . .	9.89%		
High Technology Institute LLP . . . . .	100.00%	SKZ-U LLP . . . . .	49.00%						
		Ulba FA LLP . . . . .	51.00%						
KazakAtom TH AG . . . . .	100.00%								
KAP-Technology JSC . . . . .	100.00%								
Trading and Transportation Company LLP . . . . .	99.99%								
Volkovgeologia JSC . . . . .	90.00%								
<b>Assets for sale or subject to restructuring</b>									
<i>Nuclear and Alternative Energy</i>		<i>Nuclear fuel cycle</i>		<i>Ancillary operations</i>					
Kazakhstan Solar Silicon LLP <sup>(5)</sup> . . . . .	100.00%	Ulba Conversion LLP <sup>(8)</sup> . . . . .	50.96%	Caustic JSC <sup>(5)</sup> . . . . .	40.00%				
MK KazSilicon LLP <sup>(5)</sup> . . . . .	100.00%	JV UKR TVS CJSC <sup>(5)</sup> . . . . .	33.33%	JV Betpak Dala LLP <sup>(8)</sup> . . . . .	30.00%				
Astana Solar LLP <sup>(5)</sup> . . . . .	100.00%								
MAEK LLP <sup>(6)</sup> . . . . .	100.00%								
<b>Rare and rare earth metals</b>									
SARECO LLP <sup>(7)</sup> . . . . .	100.00%								
Kyzyltu LLP <sup>(5)</sup> . . . . .	76.00%								
<b>Ancillary operations</b>									
Kazatomprom-Damu LLP <sup>(8)</sup> . . . . .	78.85%								

- (1) The Company expects to transfer its rights and obligations under the subsoil use agreements relating to Kanzhugan, Central Moinkum, Southern Moinkum, Eastern Mynkuduk and Uvanas deposits, along with the associated production assets to Kazatomprom-SaUran LLP and its rights and obligations under the subsoil use agreements relating to the Southern and Northern Karamurun deposits, to RU-6 LLP, prior to 31 December 2018.
- (2) The Company increased its interest in JV Inkai LLP from 40% to 60%, and accordingly started fully consolidating it in its financial statements, with effect from 1 January 2018.
- (3) UEC JSC, in which the Company holds a 50% interest, holds 25% plus one share in JSC Urals Electrochemical Integrated Plant, world's largest uranium enrichment facility based in Russia.
- (4) Following a reassessment of the nature of control, the Company reclassified its investment in Uranenergo LLP into a joint venture from an associate, with effect from 1 April 2016.
- (5) The Company intends to dispose of 75% of its interest in Astana Solar LLP, MK KazSilicon LLP, Kazakhstan Solar Silicon LLP and its entire interests in each of Caustic JSC, JV UKR TVS CJSC, and Kyzyltu LLP, prior to 31 December 2018.

- (6) The Company disposed of its entire interest in MAEK on 3 July 2018. MAEK was the primary subsidiary engaged in the Energy segment, which has been discontinued since 3 July 2018.
- (7) The Company disposed of its entire interest in SARECO LLP on 18 October 2018.
- (8) Ulba Conversion LLP, and JV Betpak Dala LLP and Kazatomprom-Damu LLP are in the process of liquidation which the Company expects to complete prior to 30 June 2019.

For further details of the Group's joint ventures and associates, see Notes 25 and 26 to the Annual Financial Statements and Notes 21 and 22 to the Interim Financial Statements.

## **CURRENT TRADING AND RECENT DEVELOPMENTS**

During the period since 30 June 2018 until the date of this Prospectus, the Group has been performing in line with the Company management's expectations. The Group's uranium production, on an attributable basis, is expected to be lower for the year ending 31 December 2018, as compared to the year ended 31 December 2017 due to the cuts from planned production announced in December 2017, as well as the Company's market-centric approach, which resulted in the Company's management setting production targets as a function of market forecasts. The Company's management expects that the Group's sales volume for the year ended 31 December 2018 will exceed 16,000 tonnes of UME. In addition, the Company's management targets to reduce its physical U<sub>3</sub>O<sub>8</sub> inventory to approximately 6,000–7,000 tonnes of UME (at the Company and THK level) by the end of 2018.

Since 30 June 2018, the Company has entered into the following transactions in order to fund its working capital and for general corporate purposes:

- in September 2018, the Company entered into a US\$100 million loan agreement with Mizuho Bank, Ltd. under which no drawdowns were made as of the date of this Prospectus. See also "*—Indebtedness—Key Loan Facility Agreements.*"
- in October 2018, the Company placed with JSC ForteBank its KZT70,000 million bonds (which are denominated in the Tenge and are linked to the official U.S. Dollar to Tenge exchange rate announced by the NBK) bearing 4.6% interest per annum, with 13-month maturity and traded over-the-counter. The Company intends, prior to the maturity date of these bonds, to refinance them by issuing new Tenge-denominated bonds with a 5-year maturity listed on a local stock exchange in Kazakhstan.

### ***Financing Plans***

The Company intends to draw down all or substantially all of the funds available under the US\$100 million loan agreement with Mizuho Bank, Ltd. between 5 and 9 November 2018. See also "*—Indebtedness—Key Loan Facility Agreements.*"

### ***Expected Cash Outflows***

The Company expects the following major cash outflow events before the end of 2018:

- payment of approximately US\$108 million in connection with the acquisition of additional interests in mining enterprises; and
- payment of approximately KZT10 billion in connection with an acquisition of a new head office building.

In addition, the Company agreed to make reimbursement payments to JV Inkai LLP for the exploration expenses incurred in connection with Inkai deposit in the amount of KZT15 billion to be paid in 12 instalments starting from the fourth quarter of 2018.

## **SIGNIFICANT FACTORS AFFECTING THE GROUP'S RESULTS OF OPERATIONS**

The significant factors that have affected the Group's results of operations during the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2017 and 2018, and which the Company expects to continue affecting the Group's results of operations in the future, include (i) the price received for the sale of natural uranium and changes in natural uranium product prices, (ii) the volume of uranium products produced and sold, and inventory levels, (iii) disposals of non-core assets, (iv) corporate restructuring activities, (v) the impact of changes in exchange rates, (vi) taxation, including mineral extraction tax, (vii) the price and availability of sulfuric acid, (viii) impact of changes in ore reserves estimates, (ix) the volume of sales of rare metals products sold, (x) prices received for the sale of rare metals products and (xi) transactions with JVs and Associates.

### **Price Received for the Sale of Natural Uranium and Changes in Natural Uranium Prices**

Spot market prices for U<sub>3</sub>O<sub>8</sub>, or uranium oxide, which is the main marketable product of the Group, have the most significant effect on the Group's revenue. The majority of the Group's revenue is derived from sales of U<sub>3</sub>O<sub>8</sub> in the spot

market and contracts with price formulas containing a spot price component and the prominence of such component. In addition to spot prices, the Group's effective realised price for any particular period is further dependent on the share of contracts with a fixed price component, and the prominence of such component, in the Group's uranium sales contract portfolio for such period. Accordingly, the average realised price for each particular period deviates from the spot market price. As in most cases during the periods under review the fixed price component referred to a price higher than the prevailing spot market prices, the Group's average realised price for the sold volumes of U<sub>3</sub>O<sub>8</sub> was slightly higher compared to spot prices. See "Industry—Uranium Industry and Market Overview" for a description of the key drivers of uranium prices.

The following table sets forth the average market spot price and average realised price per pound of U<sub>3</sub>O<sub>8</sub> for the periods indicated:

	Year ended 31 December						Six months ended 30 June			
	2015		2016		2017		2017		2018	
	KZT	US\$	KZT	US\$	KZT	US\$	KZT	US\$	KZT	US\$
Average U <sub>3</sub> O <sub>8</sub> market spot price <i>per lb</i> . . . . .	8,178	36.80	9,009	26.36	7,196	22.07	7,238	22.71	7,227	22.14
Average U <sub>3</sub> O <sub>8</sub> realised price by the Group <i>per lb</i> . . . . .	9,228	41.52	10,429	30.52	7,778	23.85	7,678	24.09	7,717	23.64
Average U <sub>3</sub> O <sub>8</sub> realised price by the Company <i>per lb</i> . . . . .	9,264	41.68	10,610	31.04	7,874	24.15	7,843	24.61	7,756	23.76
Implied average U <sub>3</sub> O <sub>8</sub> realised price by the Group <i>per tonne of UME</i> . . . . .	23,990,402	107,943	27,114,396	79,338	20,222,465	62,017	19,961,633	62,625	20,063,129	61,451

Source: Company data, except market spot prices the source of which is UxC.

The following table sets out the sensitivity of average realised price of U<sub>3</sub>O<sub>8</sub> to spot price. This table is based on a number of key estimates and assumptions that are subject to risks and uncertainties beyond the Group's control. These estimates are also based on assumptions with respect to future business opportunities, which are subject to change. Future events cannot be predicted with certainty and as a result, deviations from the figures forecast in this Prospectus are to be expected. This sensitivity analysis is to be used as a guide only and actual variations may be beyond the values set out in the table below.

Nominal spot price	Average realised price								
	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	
	(US\$ per 1 lb of U <sub>3</sub> O <sub>8</sub> )								
20.0 . . . . .	22.4	22.2	22.0	22.1	21.8	21.7	21.7	22.0	
30.0 . . . . .	27.8	30.9	31.0	31.1	31.1	31.0	31.0	31.1	
40.0 . . . . .	33.4	39.6	40.1	40.1	40.3	40.3	40.3	40.3	
50.0 . . . . .	39.0	48.4	49.4	49.2	49.5	49.6	49.5	49.4	
60.0 . . . . .	44.7	57.3	58.6	58.2	58.8	58.9	58.8	58.5	

This sensitivity analysis is based on the following key assumptions:

- U.S. annual inflation of 2%;
- the Group's contracted sales volume of U<sub>3</sub>O<sub>8</sub> for the year ending 31 December 2018 as of 30 September 2018 are approximately 16 thousand tonnes of UME, which is used in the above sensitivity table for the analysis of average realised prices for the year ending 31 December 2018 (contracted sales volumes for the year ending 31 December 2018 include volumes sold year to date as of 30 September 2018. Sensitivity table of average realised price for the year ending 31 December 2018 is based on sensitivity spot scenarios and does not use realised historical spot price for the year ending 31 December 2018); the Company may consider contracting additional sales volumes for the year ending 31 December 2018;
- sensitivity analysis for the years ending 31 December 2019–2025 is prepared on the basis of minimum annual sales of approximately 13 thousand tonnes of UME of U<sub>3</sub>O<sub>8</sub>, of which the volumes which are contracted as of 30 September 2018 will be sold per existing contract terms (i.e., contracts with hybrid pricing mechanisms with a fixed price component (calculated in accordance with an agreed price formula) and / or combination of separate spot, mid-term and long-term prices) and the rest of the sales will be effected predominantly based on spot prices;

- U<sub>3</sub>O<sub>8</sub> will be sold under short-term contracts negotiated directly with the customers and based on spot prices and will not result in direct downward pressure on spot prices; and
- the Group will maintain approximately 6,000–7,000 tonnes of UME of U<sub>3</sub>O<sub>8</sub> physical inventory at the level of the Company and THK.

### Volume of Uranium Products Produced and Sold; Inventory Levels

The following table sets forth the amount of the Group's attributable U<sub>3</sub>O<sub>8</sub> production and the Group's respective sales volumes for the periods indicated:

U <sub>3</sub> O <sub>8</sub>	Year ended 31 December			Six months ended 30 June
	2015	2016	2017	2018 <sup>(1)(2)</sup>
	(tonnes of UME)			
Total production from the uranium mining enterprises in Kazakhstan, <i>including</i> . . . . .	23,607	24,586	23,321	10,905
at the Group's consolidated subsidiaries . . . . .	5,820	5,975	5,107	3,775
at the Group's joint ventures, joint operations and associates . . . . .	16,284	16,773	16,452	6,281
at entities accounted as financial investments of the Group . . . . .	1,503	1,838	1,762	849
The Group's attributable total production, <i>including</i> . . . . .	12,766	13,095	12,093	5,771
at the Group's consolidated subsidiaries . . . . .	5,512	5,623	4,791	2,976
at the Group's joint ventures, joint operations and associates . . . . .	7,179	7,380	7,214	2,753
at entities accounted as financial investments of the Group . . . . .	75	92	88	42
Total sales by JVs and Associates (on a 100% basis), <i>including</i> . . . . .	17,439	19,383	18,465	5,765
to the Company and THK . . . . .	5,682	6,254	8,759	2,274
to non-Group shareholders of JVs and Associates . . . . .	9,381	10,112	9,556	3,491
to third parties . . . . .	2,376	3,017	150	—
Volumes purchased by the Company . . . . .	6,085	6,254	8,759	3,289
from joint ventures, associates and joint operations . . . . .	5,622	6,254	6,877	1,605
from non-controlling investments . . . . .	60	—	1,882	669
from third parties . . . . .	403	—	—	1,015
Total external sales volume by the Company and its consolidated subsidiaries <sup>(3)(4)</sup> , <i>including</i> . . . . .	11,028	9,687	10,111	5,579
sold by the Company . . . . .	10,189	8,767	9,300	5,167 <sup>(5)</sup>
sold by the Group's consolidated subsidiaries (on a 100% basis) . . . . .	839	920	811 <sup>(6)</sup>	412
Opening balance inventories at the Company and THK, its consolidated subsidiaries and joint operations (for joint operations, pro rata ownership), <i>including</i> . . . . .	2,165	3,080	5,650	9,085
inventories at the Company and THK . . . . .	2,165	3,001	5,498	8,999
Increase in inventories at the Company and THK, its consolidated subsidiaries and joint operations (for joint operations, pro rata ownership), <i>including</i> . . . . .	915	2,570	3,435	2,550
increase in inventories at the Company and THK . . . . .	836	2,497	3,501	1,096
Closing balance inventories at the Company and THK, its consolidated subsidiaries and joint operations (for joint operations, pro rata ownership), <i>including</i> . . . . .	3,080	5,650	9,085	11,635
inventories at the Company and THK . . . . .	3,001	5,498	8,999	10,095

Source: Company data.

- (1) Reflects the partial effect of a 20% planned reduction of contracted uranium production for the period 2018–2020 announced by the Company on 4 December 2017.
- (2) Reflects full consolidation of JV Inkai LLP and proportionate consolidation of JV Akbastau JSC and Karatau LLP with effect from 1 January 2018.
- (3) Reflects the effect of a production cut of approximately 8% of annual production, or more than 2,000 tonnes of UME, for the year 2017 announced by the Company on 10 January 2017.
- (4) Excludes the effect of swap transactions, in line with sales reported in accordance with IFRS which also exclude such transactions.
- (5) Includes THK's sales of U<sub>3</sub>O<sub>8</sub> to third parties, but excludes sales of U<sub>3</sub>O<sub>8</sub> by the Company to THK.
- (6) Includes 77 tonnes of UME of U<sub>3</sub>O<sub>8</sub> transferred by Appak LLP to third parties which was not reflected in the Group's consolidated revenue. This transfer represented a return of uranium borrowed by Appak LLP from a third party in 2012.

The following table sets out the flow of the Group's production and sales volumes during the year ended 31 December 2017, with all figures presented on a 100% basis:

Purchases by joint venture partners		Entity	Group's ownership	Production	Sales	Purchases by the Company and THK
Partner	Purchased volume (Tonnes of UME)					
—	—	Ortalyk LLP <sup>(1)</sup>	100%	1,898	1,898	1,898
—	—	Kazatomprom-SaUran LLP <sup>(1)</sup>	100%	1,590	1,590	1,590
—	—	RU-6 LLP <sup>(1)</sup>	100%	718	718	718
Cameco	1,095	JV Inkai LLP	40% <sup>(2)</sup>	2,202	2,282	1,187
CGN	588	Semizbai-U LLP	51%	1,128	1,130	542
Uranium One	1,176	Karatau LLP	50%	2,359	2,378	1,203
Uranium One	957	JV Akbastau LLP	50%	1,941	1,946	989
Uranium One	424	JV Zarechnoye JSC	50%	802	849	425
Orano	2,578	JV Katco LLP	49%	3,519	3,581	1,003
Uranium One	2,088	JV SMCC LLP	30%	2,937	2,896	807
Uranium One	651	JV Khorassan-U LLP <sup>(3)</sup>	34%	1,564	1,522	722
Sumitomo / Kansai	196	Appak LLP <sup>(4)</sup>	65%	901	967	156
Energy Asia	—	Baiken-U LLP	5%	1,762	1,882	1,882
<b>Total</b>	<b>9,752</b>			<b>23,321</b>	<b>23,639</b>	<b>13,122<sup>(5)</sup></b>

Source: Company data.

- (1) Sales volumes in 2017 for Ortalyk LLP (before October 2017), Kazatomprom-SaUran LLP and RU-6 LLP represent production volumes as respective subsidiaries operate under service contracts, with KAP holding the production license and entitled to the ownership over produced volumes. KAP transferred certain of its rights and obligations under the subsoil use agreements to Ortalyk in October 2017.
- (2) The Group's interest in JV Inkai LLP increased to 60% with effect from 1 January 2018.
- (3) In addition to the sale of 651 tonnes to Uranium One, JV Khorassan-U LLP also sold 150 tonnes of UME to third party purchasers directly.
- (4) In addition to selling 196 tonnes to Sumitomo/Kansai (which was accounted for as Group's sale to third party), Appak LLP sold 615 tonnes of UME to third party purchasers directly.
- (5) KAP sold a total of 9,300 tonnes of UME to third party purchasers.

The Group's production and sales volumes are driven by the evolving demand-supply dynamics in the uranium industry, in response to which the Company has adopted the strategy of pursuing a market-centric approach which resulted, in particular, to imposing production cuts announced by the Company in January 2017 and December 2017. See also "*Business—Strategy—Continue following market-centric approach to uranium production.*"

For the periods indicated, the Group's attributable production exceeded the volumes sold to third party customers which has resulted in a significant increase in inventory levels of U<sub>3</sub>O<sub>8</sub>. The increase during the six months ended 30 June 2018, is attributable to overall decrease in U<sub>3</sub>O<sub>8</sub> sales volumes, as well as to obtaining control over JV Inkai LLP and classification of JV Akbastau JSC and Karatau LLP as joint operations resulting in a change in accounting treatment of these investment in the Financial Statements with effect from 1 January 2018. JV Inkai LLP has been consolidated as subsidiary, and JV Akbastau JSC and Karatau LLP have become consolidated by recognising the Group's share in their assets, liabilities, revenues and expenses. The Company announced two production cuts: in January 2017 reducing the production by more than 2,000 tonnes of UME, or approximately 8%, and in December 2017 reducing the planned uranium production under the Group's subsoil use contracts for the period 2018–2020 by 20% which expected to result in the deferral of more than 15,000 tonnes of UME of uranium production over the three-year period. Going forward, following the implementation of these production cuts, the Company expects to increase the share of sales from inventories, which is expected to result in a reduction of inventory held. The Company expects, based on its preliminary estimates, that its inventory levels as at 31 December 2018 will decrease as compared to the inventory levels as at 31 December 2017. The Company targets to maintain approximately 6,000–7,000 of UME of U<sub>3</sub>O<sub>8</sub> inventories at the Company and THK.



The following table sets out the Group's U<sub>3</sub>O<sub>8</sub> inventories on a consolidated basis and U<sub>3</sub>O<sub>8</sub> inventories held by the Company and THK as at the dates indicated:

	As at 31 December			As at 30 June	
	2015	2016	2017	2017	2018 <sup>(1)</sup>
	(tonnes of UME)				
Group's U <sub>3</sub> O <sub>8</sub> inventories (consolidation basis), including	3,080	5,650	9,085	6,849	11,635
Company's and THK's U <sub>3</sub> O <sub>8</sub> inventories	3,001	5,498	8,999	6,638	10,095

Source: Company data.

(1) Includes 50% of inventories of JV Akbastau JSC and Karatau LLP and 100% of inventories of JV Inkai LLP.

### Disposals of Non-Core Assets

Asset disposals have a significant effect on the Group's results of operations. During the periods under review, the Group completed 41 disposals.

On 25 December 2017, the Company transferred to Toshiba Corporation its 10% of Class C ordinary shares in each of Toshiba Nuclear Energy Holdings US, Inc. and Toshiba Nuclear Energy Holdings UK Ltd. (collectively, the "**Toshiba HoldCos**"), which in turn held 100% in Westinghouse Electric Company LLC (a major player in the nuclear industry which initiated bankruptcy procedures in March 2017) ("**Westinghouse**"), by exercising a put option granted to it by Toshiba Corporation concurrently with the Company's acquisition of such shares in October 2007 and entering into a corresponding share transfer agreement, for a consideration of US\$522.2 million, which was accounted for as proceeds from the exercise of put option. During the 10-year period of holding shares in the Toshiba HoldCos, the Company received approximately US\$101 million in dividends.

On 3 July 2018, the Company transferred its entire participation interest in MAEK to its sole shareholder Samruk-Kazyna for a consideration of KZT17,853 million as a result of which the Group's Energy segment has been discontinued. This transaction was cash neutral, as such proceeds were paid to Samruk-Kazyna as dividends in 2018. See also "*Risk Factors—Risks relating to the Group's Business—The Group may face liability in connection with the operations of its former subsidiary.*" On 18 October 2018, the Company transferred its entire participation interest in Sareco LLP, a company engaged in the manufacturing of rare earth metal products which had insignificant production volumes in the years ended 31 December 2015 and 2017 and zero production in the year ended 31 December 2016, to JSC Tau-Ken Samruk National Mining Company.

In accordance with the Decree No. 1141 of the Government of the Republic of Kazakhstan dated 30 December 2015, the Company disposed, and is continuing a disposal of its interests in certain non-core assets. In addition, the Company adopted an internal plan of asset restructuring which provides for the disposal of certain additional assets. Accordingly, the total number of the Group's subsidiaries, JVs and Associates decreased from 82 as at 31 December 2015 to 50 as at 31 December 2017 and 48 as at 30 June 2018. As at the date of this Prospectus, the Company expected to dispose of its entire interests in Kyzyltu LLP and Caustic JSC, and 75% of its interests in Astana Solar LLP, Kazakhstan Solar Silicon LLP and MK KazSilicon LLP by the end of 31 December 2018. Please see below details on key entities which the Company intends to dispose of:

- **Kyzyltu LLP** is an entity engaged in the exploration, extraction and processing of molybdenum-copper ores with uranium content in which the Company holds a 76% interest;
- **Caustic JSC** is a chemical plant engaged in the production of caustic soda, hydrochloric acid, liquid chlorine and other auxiliary chemical products, in which the Company hold 40% shares; and
- **Astana Solar LLP, Kazakhstan Solar Silicon LLP and MK KazSilicon LLP** are entities engaged in the production and sale of photovoltaic modules, metallurgical and polycrystalline silicon, silicon of solar quality, silicon slices and photovoltaic slices and recycling of silicon production waste, each of which are wholly owned by the Company.

### Corporate Restructuring Activity

Consistent with the strategy outlined in "*—Disposals of Non-Core Assets*" above, in 2018, the Group completed three projects aimed at increase of its ownership interest in certain production subsidiaries, including the increase of its interest in JV Inkai LLP from 40% to 60% with effect from 1 January 2018 for a consideration of KZT11 million, which resulted in the change of JV Inkai LLP's accounting treatment to full consolidation with effect from the same date and as a result had an effect on the Group's financial performance in the six months ended 30 June 2018. Before 31 December 2018, the Company expects to complete increases of its interests in Kyzylkum LLP and JV Khorassan-U LLP from 30% and approximately 34% to 50% and its effective interest in Baiken-U LLP from 5% to 52.5%, following which they became fully consolidated subsidiaries of the Company. See also "*Business—Joint Venture Projects—Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP*" The Company expects

such increases and the consequent consolidation of these entities into its financial statements to have an impact on its financial performance for the full year ended 31 December 2018.

In 2018, the Company and Uranium One Inc. signed a number of agreements which formalised their obligation to purchase all production of JV Akbastau JSC and Karatau LLP at equitable terms, as well as to provide financing to the joint arrangements in proportion to their shareholdings. As a result of these agreements, the investments into JV Akbastau JSC and Karatau LLP were reclassified as joint operations in the Group's IFRS consolidated financial statements and accounted by recognising the Group's direct right in joint assets, liabilities, income and expenses in proportion to its ownership with effect from 1 January 2018. In accordance with IFRS 11 and IFRS 3, the Company will recognise the assets and liabilities of joint operations at fair value in the Group's consolidated IFRS consolidated financial statements for the year ended 31 December 2018. The expected fair value adjustment will give rise to the Group's mineral rights in the Group's consolidated IFRS statement of financial position and net result from business combinations in the Group's consolidated statement of profit or loss.

As at the date of this Prospectus, the Company was directly engaged in uranium production pursuant to subsoil use contracts relating to Uvanas, Eastern Mynkuduk, Kanzhugan, South Moinkum (Southern part), Central Moinkum, Northern Karamurun and Southern Karamurun deposits. The Company intends to transfer all of these subsoil use contracts and associated producing assets to its wholly owned subsidiaries, RU-6 LLP and Kazatomprom-SaUran LLP, by 31 December 2018. As a result, following such transfer, the Company will cease all of its production activity and will only sell uranium products acquired from its subsidiaries, JVs and Associates. This change is expected to have an effect on its cash flows, as following such change the Company will require cash to acquire the uranium produced pursuant to the subsoil use contracts referred to above, whereas currently it receives such uranium directly as the subsoil user.

### **Impact of Changes in Exchange Rates**

Fluctuations in the Tenge/U.S. Dollar exchange rate may significantly affect the Group's consolidated results of operations. The Tenge/U.S. Dollar exchange rate in Kazakhstan affects the Group's results of operations principally because:

- the majority of the Group's consolidated revenue is denominated in U.S. Dollars because most sales contracts for its products are denominated in U.S. Dollars as that is the currency used for most uranium spot prices: for the year ended 31 December 2017 and the six months ended 30 June 2018, 64% (the basis for calculation includes revenue generated by MAEK) and 79%, respectively, of the Group's revenue were denominated in U.S. Dollars; the share of the Group's U.S. Dollar-denominated revenues increased following the divestment of MAEK which occurred on 3 July 2018 all of whose revenue was denominated in Tenge;
- a substantial portion of the Group's expenses, and in particular all of its operating expenses and more than two-thirds of its capital expenditures, are denominated in Tenge; the principal expenses of the Group which are not denominated in Tenge relate to the purchase of industrial pumps used in the ISR operations and resin used in processing of uranium; and
- most of the Group's borrowings are denominated in foreign currencies: as at 30 June 2018, 99% of the Group's borrowings were denominated in U.S. Dollars.

Because most of the Group's revenue is denominated in U.S. Dollars, while a significant share of its costs is Tenge-denominated, the Group generally benefits from an appreciation of the U.S. Dollar against the Tenge, which has a positive effect on the Group's financial performance. However, because the Group has significant outstanding U.S. Dollar denominated liabilities (see "*Liquidity and Capital Resources—Indebtedness*"), the positive effect of appreciation of the U.S. Dollar on the Group's financial performance may be fully or partially offset. In addition, although the Company purchases uranium and uranium products from its JVs and Associates pursuant to Tenge-denominated contracts, the prices are determined by reference to prevailing spot market price of  $U_3O_8$ , which is in turn denominated in U.S. Dollars; accordingly, a significant appreciation of the U.S. Dollar would result in a corresponding increase in the Tenge-denominated price of such contracts.

The Group attempts to mitigate the risk of negative impact of change in exchange rate, where possible, by matching the currency denomination of its interest payments and financial liabilities with the currency denomination of its cash flows. Through this matching, the Group achieves economic hedging without the use of derivatives. In respect of other monetary assets and liabilities denominated in currencies other than the Tenge, the Group attempts to keep its net exposure to an acceptable level by buying or selling such currencies at spot rates when necessary to address short-term imbalances.

The following table sets forth the period average and year end Tenge/U.S. Dollar exchange rates reported by the NBK for the years ended and as at 31 December 2015, 2016 and 2017 and the six months ended 30 June 2017 and 2018:

Period	Period Average <sup>(1)</sup>	Period End
	(KZT per US\$1.00)	
Year ended 31 December 2015	222.25	339.47
Year ended 31 December 2016	341.76	333.29
Year ended 31 December 2017	326.08	332.33
Six months ended 30 June 2017	318.75	321.46
Six months ended 30 June 2018	326.49	341.08

(1) The average rates are calculated as the average of the daily exchange rates on each calendar day.

### Taxation, Including Mineral Extraction Tax

Mineral extraction tax (“MET”) is determined by application of a 29% tax charge to the taxable expenditures. The taxable expenditures comprise all direct expenditures associated with the mining operations and specifically exclude MET, processing and general and administrative expenses, but include the period wellfield development depreciation charge and any other depreciation charges attributable to direct mining activities. The MET is calculated separately for each subsoil use contract.

Because the resulting amount of MET is significantly dependent on the cost of the taxpayer’s mining operations, the Company believes that the use by the Group of its low-cost ISR method results in lower MET payable amounts as compared to MET relating to other production methods.

The following table sets forth the accrual of certain taxes of the Group, based on the tax reporting accounts, for the periods indicated:

Period	Total tax accrued	Corporate income tax <sup>(1)</sup>	Mineral extraction tax <sup>(2)</sup>	Excess profit tax <sup>(3)</sup>	Other taxes and off-budgetary payments <sup>(4)</sup>
	(KZT millions)				
Year ended 31 December 2015	58,826	13,538	12,020	—	33,268
Year ended 31 December 2016	73,147	20,171	13,796	—	39,180
Year ended 31 December 2017	72,035	14,675	13,280	5,609	38,470
Six months ended 30 June 2017	38,163	8,766	6,260	5,609	17,528
Six months ended 30 June 2018	38,404	7,263	8,374	—	22,767

Source: Company’s tax reporting accounts.

- (1) Applicable rate: 20%; calculation: taxable income (based on tax reporting accounts) multiplied by corporate income tax rate.
- (2) Applicable rate: 18.5% for uranium in pregnant solution; calculation: the tax charge is a cost of mining and is based on a deemed 20% profit margin on certain expenditures and an MET rate of 18.5% and where the tax charge of 29% is determined by the following formula:  $(1 + 20\%) \times 18.5\% \div (1 - (1 + 20\%) \times 18.5\%)$ .
- (3) Applicable rate: 10–60%. Abolished since 1 January 2018 for subsoil use contracts relating to solid mineral deposits, including uranium.
- (4) Includes property tax, land tax, transport tax, social tax, off-budgetary payments, VAT and PIT.

### Price and Availability of Sulfuric Acid

The Group uses substantial amounts of sulfuric acid to extract uranium using the ISR method. The weighted average price per tonne paid by the Group for sulfuric acid has increased by 24.7% over the last three years from KZT17,260 for the year ended 31 December 2015 to KZT21,529 for the year ended 31 December 2017. For the year ended 31 December 2017, the price of sulfuric acid represented between 14% and 30% of the uranium production cost of the Group’s various uranium production entities. Unavailability of sulfuric acid may impair the Group’s production schedule and increasing prices of sulfuric acid may erode the Group’s gross profit. See also “Risk Factors—Risks Relating to the Group’s Business—The availability and cost of sulfuric acid materially affects the continuity and commercial viability of the Group’s operations.”

### Impact of Changes in Ore Reserves Estimates

The Group from time to time reviews its estimates of Ore Reserves and Mineral Resources, as a result of which it may reclassify certain of its Ore Reserves and Mineral Resources in accordance with applicable standards. Such reclassifications may have an impact on the Group’s financial statements. For example, if a reclassification results in a change to the Group’s life of mine plans, there may be a corresponding impact on depreciation and amortisation

expense, impairment charges, as well as mine closure charges, which are typically incurred after the life of mine has expired. Moreover, if estimated reserves decline and/or the market price declines, this may lead to an impairment charge. In addition, those capital expenditures that are amortised by reference to the reserve base may also be affected by such reclassification of such base.

In the year ended 31 December 2017, the Group's Mineral Resource and Ore Reserve reporting format was changed from GKZ methodology to be aligned with the terms and definitions of the JORC Code, as a result of which the Group's impairment and amortisation and depreciation charges have increased.

### Volume of Sales of Rare Metals Products

The following table sets forth the Group's sales volume of rare metal products for the periods indicated:

	Year ended 31 December			Six months ended 30 June	
	2015	2016	2017	2017	2018
	(tonnes of metal content, including UME for uranium products)				
Beryllium products	1,740.3	1,766.2	1,599.6	791.0	736.8
Tantalum products	146.0	122.7	135.0	62.1	72.7
Niobium products	121.9	52.1	23.7	8.1	7.8

### Prices Received for Rare Metals Products

The following table sets forth the average weighted price for rare metal products sold by the Group for the periods indicated:

	Year ended 31 December						Six months ended 30 June			
	2015		2016		2017		2017		2018	
	KZT	US\$	KZT	US\$	KZT	US\$	KZT	US\$	KZT	US\$
Beryllium products, per kg	5,351	24.08	7,564	22.13	8,267	25.35	7,662	24.04	10,063	30.82
Tantalum products, per kg	82,569	371.51	95,749	280.16	95,369	292.47	89,797	281.72	101,169	309.87
Niobium products, per kg	7,899	35.54	14,470	42.34	19,906	61.05	22,051	69.18	26,041	79.76

See "Industry—Rare Metals Industry and Market Overview" for a description of the key drivers of rare metals products prices.

### Transactions with JVs and Associates

The Company purchases a significant amount of U<sub>3</sub>O<sub>8</sub> from its JVs and Associates, principally at spot price, giving effect to any applicable discounts, with volumes in most cases corresponding to the Company's shareholding in the respective selling entities. Discounts vary by specific JVs and Associates; as of the date of this Prospectus and giving effect to the increase by the Company of its effective interests in Baiken-U LLP and JV Khorassan-U LLP to 52.5% and 50%, respectively, as more fully described in "Business—Joint Venture Projects—Arrangements Regarding Baiken-U LLP, JV Khorassan-U LLP and Kyzylkum LLP," the weighted average discount was 3.2% of spot price in the year ended 31 December 2017. The following table sets out the volumes purchased by the Company and THK for the periods indicated:

	Year ended 31 December			Six months ended 30 June
	2015	2016	2017	2018
	(tonnes of UME)			
U <sub>3</sub> O <sub>8</sub> purchased from joint ventures, associates and joint operations	5,622	6,254	6,877	1,605

Sale of purchased U<sub>3</sub>O<sub>8</sub> forms one of the two principal components of the Group's Uranium segment revenue stream, with the other component being sales of U<sub>3</sub>O<sub>8</sub> produced by the Company itself or its consolidated subsidiaries. These revenue stream components have diverging underlying profitability structure. With respect to sales of uranium produced by the Company itself or its consolidated subsidiaries, the cost of sales represents predominantly the cost of production of the Company and the respective mining subsidiaries, as a result of which the full mining margin is captured in the consolidated results of the Group. Cost of sales of uranium produced by the Group's joint ventures and associates represents the purchase price from joint ventures and associates, which is in most cases the prevailing spot market price, with certain applicable discounts, and as a result, the corresponding mining margin is reflected in the results of respective joint ventures and associates and Company's share therein. Accordingly, the share of results of joint ventures and associates represents a significant part of the Group's profits in each of the periods under review, and should be considered accordingly in the assessment of the Group's financial results. The Group expects the

prominence of share of results of joint ventures and associates to reduce starting from 1 January 2018 in light of the changes in the Group structure due to the increase of share in JV Inkai LLP and the consolidation thereof as a subsidiary and the consolidation of JV Akbastau JSC and Karatau LLP as joint operations with effect from 1 January 2018.

## RESULTS OF OPERATIONS

### Six months Ended 30 June 2018 Compared to Six months Ended 30 June 2017

The table below sets forth the sales volumes of the Group's key uranium and rare metals products for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change	
	2017	2018	Volume	Percentage
	(Tonnes of UME or other metal content)			(%)
<i>Uranium products</i>				
U <sub>3</sub> O <sub>8</sub> .....	6,014	5,579	(435)	(7.23)
<i>Rare metals products</i>				
Beryllium products .....	791.0	736.8	(54.2)	(6.85)
Tantalum products .....	62.1	72.7	10.6	17.07
Niobium products .....	8.1	7.8	(0.3)	(3.70)

The table below sets forth certain financial information regarding the Group's consolidated results of operations for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Share in the revenue for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
<b>Revenue</b> .....	<b>153,188</b>	<b>145,029</b>	<b>(8,159)</b>	<b>(5.33)</b>	<b>100.00</b>	<b>100.00</b>
Cost of sales .....	(120,924)	(106,539)	14,385	(11.90)	78.94	73.46
<b>Gross profit</b> .....	<b>32,264</b>	<b>38,490</b>	<b>6,226</b>	<b>19.30</b>	<b>21.06</b>	<b>26.54</b>
Distribution expenses .....	(2,402)	(3,361)	(959)	39.93	1.57	2.32
General and administrative expenses .....	(11,558)	(12,573)	(1,015)	8.78	7.54	8.67
Impairment losses .....	(4,020)	(3,486)	534	(13.28)	2.62	2.40
Net result from business combinations .....	—	96,858	96,858	100.00	—	66.79
Net foreign exchange gain/(loss) .....	(1,142)	1,296	2,438	(213.49)	0.75	0.89
Other income .....	6,209	110	(6,099)	(98.23)	4.05	0.08
Other expenses .....	(1,564)	(1,187)	377	(24.10)	1.02	0.82
Finance income .....	2,429	2,638	209	8.60	1.59	1.82
Finance costs .....	(4,387)	(5,088)	(701)	15.98	2.86	3.51
Share of results of associates .....	11,644	6,948	(4,696)	(40.33)	7.60	4.79
Share of results of joint ventures .....	13,637	(1,905)	(15,542)	(113.97)	8.90	1.31
<b>Profit before tax</b> .....	<b>41,110</b>	<b>118,740</b>	<b>77,630</b>	<b>188.83</b>	<b>26.84</b>	<b>81.87</b>
Income tax expense .....	(13,032)	(4,823)	8,209	(63.0)	8.51	3.33
Profit from discontinued operations .....	2,087	1,103	(984)	(47.15)	1.36	0.76
<b>Profit for the year</b> .....	<b>30,165</b>	<b>115,020</b>	<b>84,855</b>	<b>281.30</b>	<b>19.69</b>	<b>79.31</b>

The Group's results of operations during the six months ended 30 June 2018 were significantly affected by the Company's transactions relating to certain entities in which it has equity interest, such as the acquisition of additional interest in, and obtaining control over, JV Inkai LLP and the giving of binding undertakings to purchase all production of Karatau LLP and JV Akbastau JSC on equitable terms, as well as to provide financing to Karatau LLP and JV Akbastau JSC proportionately to the partners' interests. Such transactions resulted in the change of accounting treatment of these entities, all of which are engaged in the production of uranium. More specifically, with effect from 1 January 2018, the following accounting treatment changes occurred:

- JV Inkai LLP has become a fully consolidated subsidiary of the Group due to the increase by the Company of its interest in this entity from 40% to 60% and obtaining control therein; and
- each of JV Akbastau JSC and Karatau LLP have become joint operations consolidated by share of assets, liabilities, revenues and expenses.



Prior to 1 January 2018, the results of JV Inkai LLP, JV Akbastau JSC and Karatau LLP were reflected in the Group's financial statements using the equity accounting method. As a result of these changes, comparability of the Group's results for the six-months ended 30 June 2017 and 2018 has been significantly limited.

The Group recorded KZT96,858 million gain as a result of acquisition of JV Inkai LLP, as a result of which it became the Group's consolidated subsidiary, and the entry into of contractual arrangements with respect to JV Akbastau JSC and Karatau LLP which resulted in their joint operations accounting treatment.

In addition, on 3 July 2018, the Company transferred its entire participation interest in MAEK to its sole shareholder Samruk-Kazyna for a consideration of KZT17,853 million, as a result of which the Group's Energy segment has been discontinued. This transaction is expected to be cash neutral, as such proceeds are expected to be paid to Samruk-Kazyna as dividends by the end of December 2018. See also "*Risk Factors—Risks relating to the Group's Business—The Group may face liability in connection with the operations of its former subsidiary.*"

## Revenue

The Group's total revenue in the six months ended 30 June 2018 decreased by 5.3% to KZT145,029 million from KZT153,188 million in the six months ended 30 June 2017. This decrease reflects primarily the impact on sales of uranium products which represented 77.8% of the Group's revenue for the six months ended 30 June 2018 and was largely due to a 7.2% decrease in the Group's U<sub>3</sub>O<sub>8</sub> sales volumes and a 1.9% decrease in the average realised price of U<sub>3</sub>O<sub>8</sub> from US\$24.09 per pound to US\$23.64 per pound. This decrease however was partially offset by a 2.4% depreciation of the Tenge relative to the U.S. Dollar.

The table below shows a breakdown of the Group's revenue by source for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Share in revenue for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
Sales of uranium products . . . . .	120,819	112,889	(7,930)	(6.56)	78.87	77.84
Sales of purchased goods <sup>(1)</sup> . . . . .	10,177	8,258	(1,919)	(18.86)	6.64	5.69
Sales of beryllium products . . . . .	6,061	7,414	1,353	22.32	3.96	5.11
Sales of tantalum products . . . . .	5,573	7,353	1,780	31.94	3.64	5.07
Drilling services <sup>(2)</sup> . . . . .	4,550	3,630	(920)	(20.22)	2.97	2.50
Sales of other services <sup>(3)</sup> . . . . .	3,750	3,640	(110)	(2.93)	2.45	2.51
Transportation services <sup>(4)</sup> . . . . .	1,989	1,391	(598)	(30.07)	1.30	0.96
Sales of photovoltaic cells . . . . .	49	238	189	385.71	0.03	0.16
Other <sup>(5)</sup> . . . . .	220	216	(4)	(1.82)	0.14	0.15
<b>Total revenue . . . . .</b>	<b>153,188</b>	<b>145,029</b>	<b>(8,159)</b>	<b>(5.33)</b>	<b>100.0</b>	<b>100.0</b>

(1) Primarily includes sulfuric acid, ammonium nitrate, ammonia water and other chemical materials sold by Trading and Transportation Company LLP, a subsidiary of the Company, to the Group's joint ventures and associates. Also included are copper concentrates, quartz chips, niobium products and products containing fluoride sold by the Group to third parties.

(2) Represents primarily drilling services provided by Volkovgeologia JSC to the Group's JVs and Associates.

(3) Includes consulting, security, processing, IT maintenance services and production of spare parts related to drilling services rendered by the Group to its joint ventures and associates.

(4) These services were rendered by Trading and Transportation Company LLP to the Group's joint ventures and associates.

(5) Includes research and development and sales of water.

Revenue from sales of uranium products decreased by KZT7,930 million, or 6.6%, to KZT112,889 million in the six months ended 30 June 2018 from KZT120,819 million in the six months ended 30 June 2017. This decrease was largely due to the lower revenue generated from sales of U<sub>3</sub>O<sub>8</sub>, which was primarily due to the 7.2% decrease in sales volume and a 1.9% decrease in the average realised price during the six months ended 30 June 2018, as described above.

Revenue from sales of purchased goods decreased by KZT1,919 million, or 18.9%, to KZT8,258 million in the six months ended 30 June 2018 from KZT10,177 million in the six months ended 30 June 2017. This decrease was largely due to lower sulphuric acid sales and sales of other materials by Trading and Transportation Company LLP during the six months ended 30 June 2018 driven by the effect of consolidation of JV Inkai LLP, JV Akbastau JSC and Karatau

LLP since 1 January 2018 as a result of which transactions with them in the six months ended 30 June 2018 were eliminated on consolidation, whereas they were classified as related party sales during the six months ended 30 June 2017.

Revenue from beryllium sales increased by KZT1,353 million, or 22.3%, to KZT7,414 million in the six months ended 30 June 2018 from KZT6,061 million in the six months ended 30 June 2017. This increase was largely due to a 28.2% increase in the average sales price and 2.4% depreciation of the Tenge relative to the U.S. Dollar during the six months ended 30 June 2018. This however was partially offset by the decrease in the sales volumes by 6.9% during the six months ended 30 June 2018.

Revenue from tantalum sales increased by KZT1,780 million, or 31.9%, to KZT7,353 million in the six months ended 30 June 2018 from KZT5,573 million in the six months ended 30 June 2017. The increase in tantalum sales was largely due to the 17.1% increase in sales volumes, a 10.0% increase in the sales price and 2.4% depreciation of the Tenge relative to the U.S. Dollar during the six months ended 30 June 2018.

Revenue from drilling services decreased by KZT920 million, or 20.2%, to KZT3,630 million in the six months ended 30 June 2018 from KZT4,550 million in the six months ended 30 June 2017. The decrease in revenue from drilling services was largely due to the decrease in the volume of drilling services rendered to joint ventures and associates during the six months ended 30 June 2018, resulting principally from the consolidation of JV Inkai LLP with effect from 1 January 2018.

Revenue from sales of other services remained stable, decreasing by KZT110 million, or 2.9%, to KZT3,640 million in the six months ended 30 June 2018 from KZT3,750 million in the six months ended 30 June 2017.

Revenue from transportation services decreased by KZT598 million, or 30.1%, to KZT1,391 million in the six months ended 30 June 2018 from KZT1,989 million in the six months ended 30 June 2017. The decrease in transportation services revenue was largely due to a reduction in the volume of sulfuric acid transportation services and transportation services relating to other materials rendered by the Trading and Transportation Company LLP to third parties during the six months ended 30 June 2018.

Revenue from photovoltaic cells sales increased by KZT189 million, or 385.7%, to KZT238 million in the six months ended 30 June 2018 from KZT49 million in the six months ended 30 June 2017. The increase in photovoltaic cells sales was largely due to a more than six-fold increase in sales volume; this however was partially offset by a 38% decrease in the sale price during the six months ended 30 June 2018.

Revenue from other sales remained stable, decreasing by KZT4 million, or 1.82%, to KZT216 million in the six months ended 30 June 2018 from KZT220 million in the six months ended 30 June 2017. The decrease in other sales was largely due to a decrease in revenue from research and development services rendered to joint ventures and associates during the six months ended 30 June 2018.

#### Segment Information

The following table sets forth the Group's revenue by segment for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Share in revenue for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
Uranium <sup>(1)</sup> , including	120,503	112,268	(8,235)	(6.83)	78.66	77.41
external revenue	120,240	112,084	(8,156)	(6.78)	78.49	77.28
revenue from other Group segments	263	184	(79)	(30.04)	0.17	0.13
UMP <sup>(2)</sup> , including	15,866	19,126	3,260	20.55	10.36	13.19
external revenue	13,909	17,331	3,422	24.60	9.08	11.95
revenue from other Group segments	1,957	1,795	(162)	(8.28)	1.28	1.24
Other, including	38,854	37,036	(1,818)	(4.68)	25.36	25.54
external revenue	19,039	15,614	(3,425)	(17.99)	12.43	10.77
revenue from other Group segments	19,815	21,422	1,607	8.11	12.94	14.77
Eliminations (intra-Group only)	(22,035)	(23,401)	(1,366)	6.20	(14.38)	(16.14)
<b>Total</b>	<b>153,188</b>	<b>145,029</b>	<b>(8,159)</b>	<b>(5.33)</b>	<b>100.0</b>	<b>100.0</b>

- (1) Does not include revenue from sales of UO<sub>2</sub> powder and fuel pellets, which are produced at UMP. In addition, the results of the Uranium segment for the six months ended 30 June 2017 and 30 June 2018 are not directly comparable due to the change of consolidation perimeter which occurred with effect from 1 January 2018 (see “—*Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity*”).
- (2) Includes revenue from sales of UO<sub>2</sub> powder and fuel pellets produced at UMP.

### Cost of sales

Cost of sales decreased by KZT14,385 million, or 11.9%, to KZT106,539 million for the six months ended 30 June 2018 from KZT120,924 million for the six months ended 30 June 2017. The decrease in cost of sales was primarily due to a 7.2% decrease in the volume of U<sub>3</sub>O<sub>8</sub> sales from 6,014 tonnes of UME in the six months ended 30 June 2017 to 5,579 tonnes of UME in the six months ended 30 June 2018. Cost of sales structure has changed in the six months ended 30 June 2018 compared to six months ended 30 June 2017 reflecting the change in the accounting treatment of JV Inkai which became a consolidated subsidiary and JV Akbastau JSC and Karatau LLP which became joint operations consolidated by share of assets, liabilities, revenues and expenses with effect from 1 January 2018, resulting from changes in the Group structure (see “—*Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity*”). Before 1 January 2018, JV Inkai LLP, JV Akbastau JSC and Karatau LLP were accounted using equity method of accounting by recognising the share in their net assets in the Group’s statement of financial position and share of net profits of joint ventures and associates in the statement of profit or loss, reflecting all sales to and purchases from them as transactions with related parties in the Group’s IFRS consolidated financial statements. Therefore, inventory purchased from JV Inkai LLP, JV Akbastau JSC and Karatau LLP and sold to third parties in the year ended 31 December 2017 was reflected in the Group’s consolidated cost of sales as uranium purchased from a related party valued at the purchase price within materials and supplies. However, from 1st January 2018:

- JV Inkai LLP became a fully consolidated subsidiary, and its revenues from third parties and related costs of sales has been reflected in the Group’s external revenues and cost of sales elements in the consolidated statement of profit or loss; and
- JV Akbastau and Karatau LLP were consolidated as joint operations, and their share of cost of sales attributable to the Group is reflected in the consolidated cost of sales in the consolidated statement of profit or loss as soon as the uranium produced by JV Akbastau JSC and Karatau LLP and attributable to the Group is sold by the Group to third parties. There were no such sales in the six months ended 30 June 2018.

The table below shows a breakdown of the Group’s cost of sales by component for the six months ended 30 June 2017 and 2018:

	Six months ended June 30		Change		Share in cost of sales for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
Materials and supplies	88,801	63,713	(25,088)	(28.25)	73.44	59.80
Wages and salaries	9,682	11,072	1,390	14.36	8.01	10.39
Processing and other services	6,132	5,698	(434)	(7.07)	5.07	5.35
Depreciation and amortisation	7,100	11,755	4,655	65.56	5.87	11.03
Taxes other than income tax	5,938	9,362	3,424	57.66	4.91	8.79
Other <sup>(1)</sup>	3,271	4,939	1,668	50.99	2.71	4.64
<b>Total cost of sales</b>	<b>120,924</b>	<b>106,539</b>	<b>(14,385)</b>	<b>(11.90)</b>	<b>100.0</b>	<b>100.0</b>

- (1) Includes, among others, expenses relating to transportation, maintenance and repair, utilities, rent and research and development.

Materials and supplies costs decreased by KZT25,088 million, or 28.3%, to KZT63,713 million for the six months ended 30 June 2018 from KZT88,801 million for the six months ended 30 June 2017. This decrease was largely due to the 7.2% decrease in the U<sub>3</sub>O<sub>8</sub> sales volumes from 6,014 tonnes in the six months ended 30 June 2017 to 5,579 tonnes in six months ended 30 June 2018, as well as due a change in the structure of cost of sales resulting from the changes in the Group structure (see “—*Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity*”).

Wages and salaries increased by KZT1,390 million, or 14.4%, to KZT11,072 million for the six months ended 30 June 2018 from KZT9,682 million for the six months ended 30 June 2017. This increase was primarily due to the

consolidation of wages and salaries of JV Inkai LLP (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”).

Processing and other services costs decreased by KZT434 million, or 7.1%, to KZT5,698 million for the six months ended 30 June 2018 from KZT6,132 million for the six months ended 30 June 2017. This decrease was primarily due to a decrease in expenses related to third party services resulting from a decrease in volume of drilling and blasting, mining and processing services purchased from third parties in the six months ended 30 June 2018.

Depreciation and amortisation increased by KZT4,655 million, or 65.6%, to KZT11,755 million for the six months ended 30 June 2018 from KZT7,100 million for the six months ended 30 June 2017. This increase was primarily due to the consolidation of depreciation attributable to JV Inkai LLP (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”) and an increase in sales of uranium products produced by the Group as compared to products purchased from joint ventures and associates during the six months ended 30 June 2018.

Taxes other than income tax increased by KZT3,424 million, or 57.7%, to KZT9,362 million for the six months ended 30 June 2018 from KZT5,938 million for the six months ended 30 June 2017. This increase was primarily due to consolidation of taxes attributable to JV Inkai LLP (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”) and an increase in sales of uranium products produced by the Group as compared to products purchased from joint ventures and associates during the six months ended 30 June 2018.

Other expenses increased by KZT1,668 million, or 51.0%, to KZT4,939 million for the six months ended 30 June 2018 from KZT3,271 million for the six months ended 30 June 2017. This increase was primarily due to an increase in the maintenance, repair expenses, transportation expenses and utilities resulting from the consolidation of JV Inkai LLP (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”).

#### Segment Information

The following table sets forth the Group’s cost of sales by segment for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Share in cost of sales for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				%	
Uranium <sup>(1)</sup> .....	96,284	79,469	(16,815)	(17.46)	79.62	74.59
UMP .....	13,073	14,410	1,337	10.23	10.81	13.53
Other .....	36,031	35,207	(824)	(2.29)	29.80	33.05
Eliminations .....	(24,464)	(22,547)	1,917	(7.84)	(20.23)	(21.16)
<b>Total</b> .....	<b>120,924</b>	<b>106,539</b>	<b>(14,385)</b>	<b>(11.90)</b>	<b>100.0</b>	<b>100.0</b>

(1) The results of the Uranium segment for the six months ended 30 June 2017 and 30 June 2018 are not directly comparable due to the change of consolidation perimeter which occurred with effect from 1 January 2018 (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”).

#### Gross Profit

Gross profit increased by KZT6,226 million, or 19.3%, to KZT38,490 million for the six months ended 30 June 2018 from KZT32,264 million for the six months ended 30 June 2017. This increase was principally due to the decrease in revenues (which decreased by 5.3% during the six months ended 30 June 2018) being relatively lower than the decrease in cost of sales (which decreased by 11.9% during the six months ended 30 June 2018).

## Segment Information

The following table sets forth the Group's gross profit by segment for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Share in gross profit for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
Uranium <sup>(1)</sup>	24,219	32,799	8,580	35.43	75.07	85.21
UMP	2,793	4,716	1,923	68.85	8.66	12.25
Other	2,823	1,829	(994)	(35.21)	8.75	4.75
Eliminations	2,429	(854)	(3,283)	(135.16)	7.53	(2.22)
<b>Total</b>	<b>32,264</b>	<b>38,490</b>	<b>6,226</b>	<b>19.30</b>	<b>100.0</b>	<b>100.0</b>

(1) The results of the Uranium segment for the six months ended 30 June 2017 and 30 June 2018 are not directly comparable due to the change of consolidation perimeter which occurred with effect from 1 January 2018 (see “—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity”).

## Distribution expenses

Distribution expenses increased by KZT959 million, or 39.9%, to KZT3,361 million for the six months ended 30 June 2018 from KZT2,402 million for the six months ended 30 June 2017. The increase was primarily due to a KZT609 million, or 33.2%, increase in shipping, transportation and storing expenses, which in turn related to consolidation of distribution expenses attributable to JV Inkai LLP, JV Akbastau JSC and Karatau LLP (see “—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity”).

The table below sets out the Group's distribution expenses by category for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Proportion of distribution expenses for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(in KZT millions)				(%)	
Shipping, transportation and storing	1,837	2,446	609	33.15	76.48	72.78
Wages and salaries	215	241	26	12.09	8.95	7.17
Rent	37	130	93	251.35	1.54	3.88
Materials and supplies	75	84	9	12	3.12	2.50
Depreciation and amortisation	37	30	(7)	(18.92)	1.54	0.89
Other	201	430	229	113.93	8.37	12.79
<b>Total distribution expenses</b>	<b>2,402</b>	<b>3,361</b>	<b>959</b>	<b>39.93</b>	<b>100.0</b>	<b>100.0</b>

## General and administrative expenses

The table below sets out the Group's general and administrative expenses by category for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Proportion of general and administrative expenses for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(%)	
Wages and salaries	6,238	6,792	554	8.88	53.97	54.02
Consulting and information services	2,052	1,172	(880)	(42.88)	17.75	9.32
Impairment of receivables and prepaid expenses	(39)	1,289	1,328	3,405.13	(0.34)	10.25
Rent	523	631	108	20.65	4.53	5.02
Depreciation and amortisation	323	425	102	31.58	2.79	3.38
Other <sup>(1)</sup>	2,461	2,264	(197)	(8.00)	21.29	18.01
<b>Total general and administrative expenses</b>	<b>11,558</b>	<b>12,573</b>	<b>1,015</b>	<b>8.78</b>	<b>100.0</b>	<b>100.0</b>



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- (1) Includes, among others, maintenance and repair, business trip expenses, communication expenses, materials and supplies expenses, taxes other than income tax, utilities expenses, corporate events, penalties and fines and certain other expenses.

General and administrative expenses increased by KZT1,015 million, or 8.8%, to KZT12,573 million for the six months ended 30 June 2018 from KZT11,558 million for the six months ended 30 June 2017. The increase was primarily due to consolidation of JV Inkai LLP as subsidiary and consolidation of JV Akbastau JSC and Karatau LLP as joint operations in the six months ended 30 June 2018 as a result of the change the Group's structure (see "*—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity*"). In addition, the impairment loss recognised in respect of prepaid expenses related to write-off of uranium repackaging costs due to an incident with delivery of uranium in adverse weather conditions in the six months 2018 and the creation of provisions in accordance with IFRS 9 contributed to the increase in general and administrative expenses. These increases were partially offset by the decreases in penalties and fines, consulting and information services in the six months ended 30 June 2018 compared to the six months ended 30 June 2017.

Wages and salaries increased by KZT554 million, or 8.9%, to KZT6,792 million in the six months ended 30 June 2018 from KZT6,238 million in the six months ended 30 June 2017, largely due to consolidation of wages and salaries attributable to JV Inkai LLP, JV Akbastau JSC and Karatau LLP (see "*—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity*").

Consulting and information services expenses decreased by KZT880 million, or 42.9%, to KZT1,172 million in the six months ended 30 June 2018 from KZT2,052 million in the six months ended 30 June 2017. This decrease was largely due to the decrease in the amount of consulting and information services purchased by the Company in the six months ended 30 June 2018.

The impairment of receivables and prepaid expenses increased by KZT1,328 million, or 3,405.1%, in the six months ended 30 June 2018 from reversal of impairment of KZT39 million in the six months ended 30 June 2017. The increase was due to impairment of prepaid expenses related to a write-off of uranium repackaging costs due to an incident relating to delivery of uranium in adverse weather conditions, which occurred during the year ended 31 December 2017. The write-off was recognised by the Group as the London Almaty Insurance Company rejected the Group's claim for reimbursement for the amount of these costs. The Group is currently considering commencing litigation on this matter.

Rent costs increased by KZT108 million, or 20.7%, to KZT631 million in the six months ended 30 June 2018 as compared to KZT523 million in the six months ended 30 June 2017.

Depreciation and amortisation increased by KZT102 million, or 31.6%, to KZT425 million in the six months ended 30 June 2018 from KZT323 million in the six months ended 30 June 2017. This increase was largely due to amortisation of intangible assets by the Company in the six months ended 30 June 2018 in connection with consolidation of JV Inkai LLP as subsidiary and consolidation of JV Akbastau JSC and Karatau LLP as joint operations in the six months ended 30 June 2018.

Other costs decreased by KZT197 million, or 8.0%, to KZT2,264 million in the six months ended 30 June 2018 from KZT2,461 million in the six months ended 30 June 2017. This decrease was largely due to a 80.9% decrease in penalties and fines and a 61.7% decrease in taxes; however, it was partially offset by a more than 500% increase in maintenance and repair costs which was driven primarily by the launch of certain IT services, principally the general service centre initiative, within the Transformation program.

### ***Impairment***

Impairment charges decreased by KZT534 million, or 13.3%, to KZT3,486 million for the six months ended 30 June 2018 from KZT4,020 million for the six months ended 30 June 2017. This decrease was primarily due to the fact that different cash generating units were impaired in the six months ended 30 June 2017 and 2018.

### ***Net foreign exchange gain / (loss)***

The Group had a net foreign exchange gain of KZT1,296 million in the six months ended 30 June 2018, as compared to a foreign exchange loss of KZT1,142 million in the six months ended 30 June 2017. The gain in the six months ended 30 June 2018 was primarily attributable to the net positive effect of translation of assets and liabilities denominated in U.S. Dollars from the 2.6% depreciation of the Tenge against the U.S. Dollar in six months ended 30 June 2018 as opposed to the net negative effect from the 3.5% appreciation of the Tenge against the U.S. Dollar during the six months ended 30 June 2017.

### Other income

Other income decreased significantly by KZT6,099 million, to KZT110 million for the six months ended 30 June 2018, from KZT6,209 million for the six months ended 30 June 2017, primarily due to a gain on transfer of subsoil use rights to charter capital of Budenovskoye LLP in the six months ended 30 June 2017, with no comparable gain occurring in the six months ended 30 June 2018.

### Other expenses

Other expenses decreased by KZT377 million, or 24.1%, to KZT1,187 million for the six months ended 30 June 2018, from KZT1,564 million for the six months ended 30 June 2017, primarily due to the expenses related to the EXPO international exhibition incurred during the six months ended 30 June 2017, with no comparable expenses incurred during the six months ended 30 June 2018.

### Finance income

The following table sets out the components of finance income for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Proportion of finance income for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(in KZT millions)				(% )	
Interest income	2,081	1,634	(447)	(21.48)	85.67	61.94
Gain from remeasurement of financial assets	281	961	680	241.99	11.57	36.43
Gain from remeasurement of financial liabilities	27	10	(17)	(62.96)	1.11	0.38
Unwinding of discount on financial assets	40	33	(7)	(17.50)	1.65	1.25
<b>Total finance income</b>	<b>2,429</b>	<b>2,638</b>	<b>209</b>	<b>8.60</b>	<b>100.00</b>	<b>100.00</b>

Finance income increased by KZT209 million, or 8.6%, to KZT2,638 million for the six months ended 30 June 2018 from KZT2,429 million for the six months ended 30 June 2017. This was largely due to a KZT680 million increase in gain from remeasurement of financial assets, which related to a loan advanced by the Company to Kyzylkum LLP which was denominated in the Tenge and was linked to the official U.S. Dollar to Tenge exchange rate announced by the NBK, and was however partially offset by a KZT447 million decrease in interest income.

### Finance Costs

The following table sets out the components of finance costs for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June		Change		Proportion of finance cost for the six months ended 30 June	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(% )	
Interest expense on loans and borrowings	2,667	3,138	471	17.66	60.79	61.67
Unwinding of discount on provisions	598	1,065	467	78.09	13.63	20.93
Loss from remeasurement of financial assets	781	592	(189)	(24.20)	17.80	11.64
Unwinding of discount on other financial liabilities	130	120	(10)	(7.69)	2.96	2.36
Loss from remeasurement of financial liabilities	129	—	(129)	(100)	2.94	—
Other	82	173	91	110.98	1.87	3.40
<b>Total finance costs</b>	<b>4,387</b>	<b>5,088</b>	<b>701</b>	<b>15.98</b>	<b>100.00</b>	<b>100.00</b>

Finance costs increased by KZT701 million, or 16.0%, to KZT5,088 million for the six months ended 30 June 2018 from KZT4,387 million for the six months ended 30 June 2017. The increase was due to an increase by KZT471 million, or 17.7%, of interest expenses on loans and borrowings from KZT2,667 million in the six months ended 30 June 2017 to KZT3,138 million in the six months ended 30 June 2018 and due to an increase by KZT467 million, or 78.1%, of unwinding of discount on provisions from KZT598 million in the six months ended 30 June 2017 to KZT1,065 million in six months ended 30 June 2018 resulted from consolidation of JV Inkai LLP (interest expenses and subsoil contract holder) as subsidiary and JV Akbastau JSC and Karatau LLP as joint operations (as subsoil contract holders) (see “—Significant Factors Affecting the Group’s Results of Operations—Corporate Restructuring Activity”).

### *Share of results of associates*

Share of results of associates decreased by KZT4,696 million, or 40.3%, to KZT6,948 million in the six months ended 30 June 2018 from KZT11,644 million in the six months ended 30 June 2017. All of such results relate to the associates' uranium operations. This decrease was driven primarily by the decrease in net profits from associates' uranium operations due to the acquisition of additional interest in JV Inkai LLP and obtaining control with effect from 1 January 2018 which resulted in the change in its accounting treatment from associate into consolidated subsidiary.

### *Share of results of joint ventures*

Share of results of joint ventures decreased by KZT15,542 million, or 113.9%, to a loss of KZT1,905 million in the six months ended 30 June 2018 from a gain of KZT13,637 million in the six months ended 30 June 2017. This decrease was driven primarily by the giving by the Company of undertakings to purchase all production of Karatau LLP and JV Akbastau JSC on equitable terms, as well as to provide financing proportionately to its shareholding therein, which resulted in the change of accounting treatment of these entities, with effect from 1 January 2018, to joint operations consolidated by share of assets, liabilities, revenues and expenses whereas prior to such date they were classified as joint ventures. In addition, the devaluation of the Russian rouble against the U.S. Dollar during the six months ended 30 June 2018 resulted in a decrease in the net income of UEC.

### *Profit before tax*

For the reasons described above, and principally due to the KZT96,858 million gain recognised as a result of the business combination relating primarily to the increase of interest in JV Inkai LLP from 40% to 60% and obtaining control with effect from 1 January 2018, the Group's profit before tax increased by KZT77,630 million, or 188.8%, to KZT118,740 million in the six months ended 30 June 2018 from KZT41,110 million in the six months ended 30 June 2017.

### *Income tax expense*

The table below sets out information related to the Group's income tax expense for the six months ended 30 June 2017 and 2018:

	Six months ended 30 June	
	2017	2018
	(KZT millions)	
Current income tax .....	14,352	7,003
Deferred income tax .....	(1,320)	(2,180)
<b>Income tax expense .....</b>	<b>13,032</b>	<b>4,823</b>

The income tax rate applicable to the majority of the Group's profits is 20%. The effective tax rate of the Group was 32% and 4% for the six months ended 30 June 2017 and 2018, respectively. Effective tax rate is different from corporate income due to certain income and expenses elements which are not recognised in tax accounting, such as income from business combination in the six months ended 30 June 2018.

Income tax expense decreased by KZT8,209 million, or 63.0%, to KZT4,823 million in the six months ended 30 June 2018 from KZT13,032 million in the six months ended 30 June 2017, notwithstanding the KZT77,630 million increase in profit before tax. However, exclusive of net result from business combinations of KZT96,858 million which related primarily to the acquisition of a 20% interest in JV Inkai LLP which brought the Group's aggregate interest therein to 60% and was not subject to tax, Group's profit before tax decreased by KZT19,228 million, or 46.8%. In addition, during the six months ended 30 June 2017 there was a KZT5,609 million tax on excess profit from Budenovskoye LLP, with no comparable tax charged in the six months ended 30 June 2018. In addition, in the six months ended 30 June 2018, the Group increased its deferred income tax by KZT860 million.

### *Profit for the period*

For the reasons described above, the Group's profit for the period increased by KZT84,855 million, or 281.3%, to KZT115,020 million in the six months ended 30 June 2018 from KZT30,165 million in the six months ended 30 June 2017.

## Segment Information

The following table sets forth the Group's profit from continuing operations for the period by segment for the six months ended 30 June 2017 and 2018:

	Six month ended 30 June		Change		Share in recurring profit for the six month ended 31 December	
	2017	2018	Tenge	Percentage	2017	2018
	(KZT millions)				(% )	
Uranium <sup>(1)</sup>	24,883	118,331	93,448	375.55	88.62	103.87
UMP	377	1,826	1,449	384.35	1.34	1.60
Other	405	(4,481)	(4,886)	(1,206.42)	1.44	(3.93)
Eliminations	2,413	(1,759)	(4,172)	172.90	8.59	(1.54)
<b>Total</b>	<b>28,078</b>	<b>113,917</b>	<b>85,839</b>	<b>305.72</b>	<b>100.00</b>	<b>100.00</b>

(1) The results of the Uranium segment for the six months ended 30 June 2017 and 30 June 2018 are not directly comparable due to the change of consolidation perimeter which occurred with effect from 1 January 2018 (see “—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity”).

## Year Ended 31 December 2017 Compared to Year Ended 31 December 2016

The table below sets forth the sales volumes of the Group's key uranium and rare metals products for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change	
	2016	2017	Volume	Percentage
	(Tonnes of UME)		(% )	
<b>Uranium products</b>				
U <sub>3</sub> O <sub>8</sub>	9,687	10,111	424	4.38%
<b>Rare metals products</b>				
Beryllium products	1,766.2	1,599.6	(166.6)	(9.43)%
Tantalum products	122.7	135.0	12.3	10.02%
Niobium products	52.1	23.7	(28.4)	(54.51)%

The table below sets forth certain financial information regarding the Group's consolidated results of operations for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Proportion of revenue for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
<b>Revenue</b>	<b>394,315</b>	<b>336,517</b>	<b>(57,798)</b>	<b>(14.66)</b>	<b>100.0</b>	<b>100.0</b>
Cost of sales	(283,882)	(263,864)	20,018	(7.05)	71.99	78.41
<b>Gross profit</b>	<b>110,433</b>	<b>72,653</b>	<b>(37,780)</b>	<b>(34.21)</b>	<b>28.01</b>	<b>21.59</b>
Distribution expenses	(6,314)	(4,858)	1,456	(23.06)	1.60	1.44
General and administrative expenses	(30,877)	(32,274)	(1,397)	4.52	7.83	9.60
Reversal of impairment of assets	184	543	359	195.11	0.05	0.16
Impairment	(22,007)	(27,958)	(5,951)	27.04	5.58	8.31
Gain on disposal of subsidiary	290	—	(290)	—	0.07	—
Net foreign exchange gain/(loss)	3,614	(768)	(4,382)	(121.25)	0.92	0.23
Other income	775	115,111	114,336	14,753.03	0.20	34.21
Other expenses	(6,160)	(6,768)	(608)	9.87	1.56	2.01
Finance income	15,825	5,888	(9,937)	(62.79)	4.01	1.75
Finance costs	(11,017)	(9,067)	1,950	(17.70)	2.79	2.69
Share of results of associates	38,058	22,007	(16,051)	(42.18)	9.65	6.54
Share of results of joint ventures	36,739	22,107	(14,632)	(39.83)	9.32	6.57
<b>Profit before tax</b>	<b>129,543</b>	<b>156,616</b>	<b>27,073</b>	<b>20.90</b>	<b>32.85</b>	<b>46.54</b>
Income tax expense	(17,988)	(17,462)	526	(2.92)	4.56	5.19
<b>Profit for the year</b>	<b>111,555</b>	<b>139,154</b>	<b>27,599</b>	<b>24.74</b>	<b>28.29</b>	<b>41.35</b>

## Revenue

The Group's total revenue in the year ended 31 December 2017 was KZT336,517 million, a decrease of 14.7% from KZT394,315 million in the year ended 31 December 2016. This decrease reflects primarily the impact on sales of uranium products which represented 61.8% of the Group's revenue for the year ended 31 December 2017 and was largely due to (i) a 21.8% decrease in the average realised price for the sale of uranium from US\$30.52 per pound of UME of U<sub>3</sub>O<sub>8</sub> for the year ended 31 December 2016 to US\$23.85 per pound of UME of U<sub>3</sub>O<sub>8</sub> for the year ended 31 December 2017, which was in turn driven by a 16.3% decrease in the average spot price of U<sub>3</sub>O<sub>8</sub> from US\$26.36 per pound for the year ended 31 December 2016 to US\$22.07 per pound for the year ended 31 December 2017 and (ii) the appreciation of the Tenge relative to the U.S. Dollar by 4.6% during the year ended 31 December 2017 from an average of KZT341.76 per US\$1 for the year ended 31 December 2016 to KZT326.08 per US\$1 for the year ended 31 December 2017.

The table below shows a breakdown of the Group's revenue by source for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Share in revenue for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
Sales of uranium products	268,101	207,788	(60,313)	(22.50)	67.99	61.75
Sales of utilities	57,555	57,922	367	0.64	14.60	17.21
Sales of beryllium products	13,359	13,224	(135)	(1.01)	3.39	3.93
Sales of tantalum products	11,749	12,871	1,122	9.55	2.98	3.82
Sales of purchased goods <sup>(1)</sup>	10,461	11,655	1,194	11.41	2.65	3.46
Drilling services <sup>(2)</sup>	10,532	9,950	(582)	(5.53)	2.67	2.96
Sales of other services <sup>(3)</sup>	8,159	8,119	(40)	(0.49)	2.07	2.41
Sales of materials and other goods <sup>(4)</sup>	6,521	7,199	678	10.40	1.65	2.14
Transportation services <sup>(5)</sup>	5,148	5,555	407	7.91	1.31	1.65
Other <sup>(6)</sup>	2,730	2,234	(496)	(18.17)	0.69	0.66
<b>Total revenue</b>	<b>394,315</b>	<b>336,517</b>	<b>(57,798)</b>	<b>(14.66)</b>	<b>100.0</b>	<b>100.0</b>

(1) Primarily includes sulfuric acid, ammonium nitrate, ammonia water and other chemical materials sold by Trading and Transportation Company LLP, a subsidiary of the Company, to the Group's JVs and Associates.

(2) Represents primarily drilling services provided by Volkovgeologia JSC to the Group's JVs and Associates.

(3) Includes primarily consulting, security, maintenance and IT services rendered, and production of spare parts related to drilling services, by the Group to its JVs and Associates.

(4) Includes, among others, copper concentrate produced by the Company's subsidiary Kyzyltu LLP, as well as sales of quartz chips and surplus custom-made equipment.

(5) These services were rendered by Trading and Transportation Company LLP to the Group's JVs and Associates.

(6) Includes, among others, research and development, sales of photovoltaic cells and sales of metallurgical silicon, sales of niobium products and products containing fluoride.

Revenue from sales of uranium products decreased by KZT60,313 million, or 22.5%, to KZT207,788 million in the year ended 31 December 2017 from KZT268,101 million in the year ended 31 December 2016. This decrease was largely due to the 21.8% decrease in the Group's average realised price of uranium resulting from (i) the expiry of a number of the Group's uranium supply contracts with relatively higher fixed prices during the year ended 31 December 2017 and (ii) a 16.3% decrease in the average spot price for uranium during the year ended 31 December 2017. In addition, the 4.6% appreciation of the Tenge against the U.S. Dollar during the year ended 31 December 2017 also had a negative effect on the Company's revenue as the majority of the Company's uranium sales contracts are U.S. Dollar-denominated. These factors were however partially offset by a 4.0% increase in the sales volume of uranium products from 9,687 tonnes for the year ended 31 December 2016 to 10,111 tonnes in the year ended 31 December 2017.

Revenue from beryllium sales remained stable, decreasing by KZT135 million, or 1.0%, to KZT13,224 million in the year ended 31 December 2017 from KZT13,359 million in the year ended 31 December 2016. This was primarily driven by a 9.4% decrease in the volume of sales of beryllium products for the year ended 31 December 2017, which was however partially offset by a 14.6% increase in the U.S. Dollar-denominated weighted average realised price during the same year and the 4.6% appreciation of the Tenge against the U.S. Dollar during the year ended 31 December 2017.

Revenue from tantalum sales increased by KZT1,122 million, or 9.6%, to KZT12,871 million in the year ended 31 December 2017 from KZT11,749 million in the year ended 31 December 2016. The increase in tantalum sales was



largely due to a 10.0% increase in the sales volume during the year ended 31 December 2017. The increase in sales volume is attributable to both the attraction of new customers and an increase in demand from existing customers.

Revenue from sales of other services remained stable, decreasing by KZT40 million, or 0.5%, to KZT8,119 million in the year ended 31 December 2017 from KZT8,159 million in the year ended 31 December 2016.

Revenue from sales of materials and other goods increased by KZT678 million, or 10.4%, to KZT7,199 million in the year ended 31 December 2017 from KZT6,521 million in the year ended 31 December 2016. The increase in revenue from sales of materials and other goods was largely due to the increase in the sales volume of spare parts and flowmeters by the Group to its JVs and Associates, as well as to third parties.

Revenue from other sales decreased by KZT496 million, or 18.2%, to KZT2,234 million in the year ended 31 December 2017 from KZT2,730 million in the year ended 31 December 2016. The decrease in other sales was largely due to a decrease in revenue generated from the sale of niobium products and fluoride-containing products. This was mainly due to 54.5% and 50.3% decreases in sales volumes of niobium products and products containing fluoride, respectively, as well as the 4.6% appreciation of the Tenge relative to the U.S. dollar during the year ended 31 December 2017. Such decrease was however partially offset by a KZT355 million, or more than 1,300%, increase in sales of photovoltaic cells and a KZT305 million, or 68.9%, increase in sales of research and development services (driven by an increase in the number of agreements entered between the Group's subsidiary High Technology Institute and the Group's JVs and Associates for the provision of various R&D services) in the year ended 31 December 2017.

Revenue from sales of purchased goods increased by KZT1,194 million, or 11.4%, to KZT11,655 million in the year ended 31 December 2017 from KZT10,461 million in the year ended 31 December 2016. The increase in purchased good sales was largely due to an increase in the sales volume of sulfuric acid to the Group's JVs and Associates, in line with the increase of uranium production volumes of such JVs and Associates.

Revenue from drilling services decreased by KZT582 million, or 5.5%, to KZT9,950 million in the year ended 31 December 2017 from KZT10,532 million in the year ended 31 December 2016. The decrease in revenue from drilling services was largely due to a 6% decrease in the volumes of drilling services rendered to JVs and associates in the year ended 31 December 2017 compared to the previous year.

Revenue from transportation services increased by KZT407 million, or 7.9%, to KZT5,555 million in the year ended 31 December 2017 from KZT5,148 million in the year ended 31 December 2016. The increase in transportation services revenue was largely due to the increase of tariffs by up to 3% and volume of transportation services rendered.

Revenue from sales of utilities remained stable, increasing by KZT367 million, or 0.6%, to KZT57,922 million in the year ended 31 December 2017 from KZT57,555 million in the year ended 31 December 2016.

### Segment Information

The following table sets forth the Group's revenue by segment for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Share in revenue for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
Uranium <sup>(1)</sup> , including	263,533	205,603	(57,930)	(21.98)	66.83	61.10
external revenue	263,246	205,187	(58,059)	(22.06)	66.76	60.97
revenue from other Group segments	287	416	129	44.95	0.07	0.12
UMP <sup>(2)</sup> , including	38,977	37,484	(1,493)	(3.83)	9.88	11.14
external revenue	34,903	32,793	(2,110)	(6.05)	8.85	9.74
revenue from other Group segments	4,074	4,691	617	15.14	1.03	1.39
Other, including	77,169	80,297	3,128	4.05	19.57	23.86
external revenue	37,096	39,065	1,969	5.31	9.41	11.61
revenue from other Group segments	40,073	41,232	1,159	2.89	10.16	12.25
Energy (external only) <sup>(3)</sup>	59,070	59,472	402	0.68	14.98	17.67
Eliminations (intra-Group only)	(44,434)	(46,339)	(1,905)	4.29	(11.28)	(13.77)
<b>Total</b>	<b>394,315</b>	<b>336,517</b>	<b>(57,798)</b>	<b>(14.66)</b>	<b>100.0</b>	<b>100.0</b>

(1) Does not include revenue from sales of UO<sub>2</sub> powder and fuel pellets, which are produced at UMP.

(2) Includes revenue from sales of UO<sub>2</sub> powder and fuel pellets produced at UMP.

(3) Segment discontinued since 3 July 2018.

### Cost of sales

Cost of sales decreased by KZT20,018 million, or 7.1%, to KZT263,864 million for the year ended 31 December 2017 from KZT283,882 million for the year ended 31 December 2016. The decrease in cost of sales was primarily due to a corresponding decrease in the costs attributable to materials and supplies, predominantly purchases of uranium from the Group's joint ventures and associates, which was slightly offset by increases in the costs relating to wages and salaries due to a change in the Group's remuneration policy as well as wage inflation and an increase in taxes, other than income tax.

The table below shows a breakdown of the Group's cost of sales by component for the years ended 31 December 2016 and 2017:

	31 December		Change		Share in cost of sales for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
Materials and supplies	204,881	182,950	(21,931)	(10.70)	72.17	69.33
Wages and salaries	30,620	31,889	1,269	4.14	10.79	12.09
Processing and other services	15,845	14,796	(1,049)	(6.62)	5.58	5.61
Depreciation and amortisation	15,113	15,558	445	2.94	5.32	5.90
Taxes other than income tax	9,511	10,552	1,041	10.95	3.35	4.00
Other <sup>(1)</sup>	7,912	8,119	207	2.62	2.79	3.08
<b>Total cost of sales</b>	<b>283,882</b>	<b>263,864</b>	<b>(20,018)</b>	<b>(7.05)</b>	<b>100.00</b>	<b>100.00</b>

(1) Includes, among others, expenses relating to transportation, maintenance and repair, utilities, rent and research and development.

Materials and supplies costs decreased by KZT21,931 million, or 10.7%, to KZT182,950 million for the year ended 31 December 2017 from KZT204,881 million for the year ended 31 December 2016. The majority of materials and supplies costs relate to the cost of purchase of U<sub>3</sub>O<sub>8</sub> from the Group's joint ventures and associates which decreased due to the decrease in the spot prices and the appreciation of the Tenge relative to the U.S. Dollar in the year ended 31 December 2017. Costs of materials and supplies also include the purchase of raw materials (including, among others, sulfuric acid, ammonium nitrate, ammonia water) as well as the cost of natural gas, electricity and fuel.

Wages and salaries increased by KZT1,269 million, or 4.1%, to KZT31,889 million for the year ended 31 December 2017 from KZT30,620 million for the year ended 31 December 2016. This increase was primarily due to a change in KAP's approach to labour remuneration which manifested in the introduction of a grade-based remuneration system in the year ended 31 December 2017.

Processing and other services costs decreased by KZT1,049 million, or 6.6%, to KZT14,796 million for the year ended 31 December 2017 from KZT15,845 million for the year ended 31 December 2016. This decrease was primarily due to a decrease in the volume of drilling, processing and other services purchased by the Group's subsidiaries from third parties.

Depreciation and amortisation remained stable, increasing by KZT445 million, or 2.9%, to KZT15,558 million for the year ended 31 December 2017 from KZT15,113 million for the year ended 31 December 2016. This increase was primarily due to the increase in the amortisation of mine development services resulting from the decrease in the Group's reserves following the reclassification into JORC during the year ended 31 December 2017.

Taxes other than income tax increased by KZT1,041 million, or 11.0%, to KZT10,552 million for the year ended 31 December 2017 from KZT9,511 million for the year ended 31 December 2016. This increase was primarily due to an increase in the Mineral Extraction Tax.

Other expenses remained stable, increasing by KZT207 million, or 2.6%, to KZT8,119 million for the year ended 31 December 2017 from KZT7,912 million for the year ended 31 December 2016. This increase was primarily due to increases in expenses relating to communications, business trips and employee benefits, which was however partially offset by a KZT68 million, or 22.2%, decrease in rental expenses and KZT64 million, or 4.2%, decrease in utilities-related expenses.

### Segment Information

The following table sets forth the Group's cost of sales by segment for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Share in cost of sales for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(%)	
Uranium	176,029	151,318	(24,711)	(14.04)	62.01	57.35
UMP	25,740	28,946	3,206	12.46	9.07	10.97
Other	71,227	75,293	4,066	5.71	25.09	28.53
Energy <sup>(1)</sup>	53,957	53,930	(27)	(0.05)	19.01	20.44
Eliminations	(43,071)	(45,623)	(2,552)	5.93	(15.17)	(17.29)
<b>Total</b>	<b>283,882</b>	<b>263,864</b>	<b>(20,018)</b>	<b>(7.05)</b>	<b>100.0</b>	<b>100.0</b>

(1) Discontinued since 3 July 2018.

### Gross Profit

For the reasons described above, gross profit decreased by KZT37,780 million, or 34.2%, to KZT72,653 million for the year ended 31 December 2017 from KZT110,433 million for the year ended 31 December 2016.

### Segment Information

The following table sets forth the Group's gross profit by segment for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Share in gross profit for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(%)	
Uranium	87,504	54,285	(33,219)	(37.96)	79.24	74.72
UMP	13,237	8,538	(4,699)	(35.50)	11.99	11.75
Other	5,942	5,004	(938)	(15.79)	5.38	6.89
Energy <sup>(1)</sup>	5,113	5,542	429	8.39	4.63	7.63
Eliminations	(1,363)	(716)	647	(47.47)	(1.23)	(0.99)
<b>Total</b>	<b>110,433</b>	<b>72,653</b>	<b>(37,780)</b>	<b>(34.21)</b>	<b>100.00</b>	<b>100.00</b>

(1) Discontinued since 3 July 2018.

### Distribution expenses

Distribution expenses decreased by KZT1,456 million, or 23.1%, to KZT4,858 million for the year ended 31 December 2017 from KZT6,314 million for the year ended 31 December 2016. The decrease was primarily due to a 33.3% decrease in shipping, transportation and storing costs.

The table below sets out the Group's distribution expenses by category for the years ended 31 December 2017 and 2016:

	Year ended 31 December		Change		Proportion of distribution expenses for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(in KZT millions)				(%)	
Shipping, transportation and storing	4,301	2,868	(1,433)	(33.32)	68.12	59.04
Wages and salaries	624	693	69	11.06	9.88	14.27
Commissions	314	242	(72)	(22.93)	4.97	4.98
Materials and supplies	235	173	(62)	(26.38)	3.72	3.56
Rent	132	89	(43)	(32.58)	2.09	1.83
Other	708	793	85	12.01	11.21	16.32
<b>Total distribution expenses</b>	<b>6,314</b>	<b>4,858</b>	<b>(1,456)</b>	<b>(23.06)</b>	<b>100.0</b>	<b>100.0</b>

### General and administrative expenses

General and administrative expenses increased by KZT1,397 million, or 4.5%, to KZT32,274 million for the year ended 31 December 2017 from KZT30,877 million for the year ended 31 December 2016. The increase was primarily due to increases in wages and salaries and impairment of prepaid expenses, which occurred in connection with an incident relating to the delivery of uranium in adverse weather conditions. These increases were partially offset by decreases in tax fines and penalties (which resulted from the Group's liability to pay a KZT996 million fine during the year ended 31 December 2016 as a result of a tax audit relating to transfer pricing for the year ended 31 December 2008, without any comparable expense in the year ended 31 December 2017) and consulting and information services for the year ended 31 December 2017 as compared to the year ended 31 December 2016.

The table below sets out the Group's general and administrative expenses by category for the years ended 31 December 2017 and 2016:

	Year ended 31 December		Change		Proportion of general and administrative expenses for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
Wages and salaries	16,718	17,870	1,152	6.89	54.14	55.37
Consulting and information services	4,147	3,164	(983)	(23.70)	13.43	9.80
Impairment of prepaid expenses	—	2,990	2,990	100.0	—	9.26
Rent	1,083	1,099	16	1.48	3.51	3.41
Taxes other than income tax	877	1,089	212	24.17	2.84	3.37
Depreciation and amortisation	827	771	(56)	(6.77)	2.68	2.39
Corporate events	176	640	464	263.64	0.57	1.98
Business trip expenses	647	599	(48)	(7.42)	2.10	1.86
Maintenance and repair	511	504	(7)	(1.37)	1.65	1.56
Training expenses	349	372	23	6.59	1.13	1.15
Tax fines and penalties	1,443	184	(1,259)	87.25	4.67	0.57
Other <sup>(1)</sup>	4,099	2,992	(1,107)	(27.01)	13.28	9.27
<b>Total general and administrative expenses</b>	<b>30,877</b>	<b>32,274</b>	<b>1,397</b>	<b>4.52</b>	<b>100.0</b>	<b>100.0</b>

(1) Includes, among others, expenses relating to materials and supplies, communications, tax fines and penalties, security, utilities, impairment of accounts receivable, bank charges, research expenses, stationary, insurance, entertainment expenses and certain employee benefits.

Wages and salaries increased by KZT1,152 million, or 6.9%, to KZT17,870 million in the year ended 31 December 2017 from KZT16,718 million in the year ended 31 December 2016, largely due to a change in KAP's approach to labour remuneration which manifested in the introduction of a grade-based remuneration system in the year ended 31 December 2017.

Consulting and information services expenses decreased by KZT983 million, or 23.7%, to KZT3,164 million in the year ended 31 December 2017 from KZT4,147 million in the year ended 31 December 2016. This decrease was largely due to the decrease in the amount of consulting and legal services purchased by the Company in the year ended 31 December 2017.

During the year ended 31 December 2017, the Group recorded an impairment of prepaid expenses in the amount of KZT2,990 million as a result of an incident relating to the delivery of uranium in adverse weather conditions. This impairment related to write-off of uranium repackaging costs due to an incident relating to the delivery of uranium in adverse weather conditions. The write-off was recognised by the Group as the London Almaty Insurance Company rejected to satisfy the Company's application to reimburse the relevant costs. As of the date of this Prospectus, the Company was considering commencement of litigation proceedings with respect to this matter.

Rent costs remained stable, increasing marginally by KZT16 million, or 1.5%, to KZT1,099 million in the year ended 31 December 2017 as compared to KZT1,083 million in the year ended 31 December 2016.

Depreciation and amortisation decreased by KZT56 million, or 6.8%, to KZT771 million in the year ended 31 December 2017 from KZT827 million in the year ended 31 December 2016. This decrease was largely due to complete depreciation of the fixed assets of certain of the Group's subsidiaries in the year ended 31 December 2016 due to the suspension of their core activities.

Corporate events costs increased by KZT464 million, or more than 250%, to KZT640 million in the year ended 31 December 2017 from KZT176 million in the year ended 31 December 2016. This increase was largely due to (i) an upswing in the Group's corporate activities in the year ended 31 December 2017 driven to a significant extent by the holding of the EXPO-2017 international exposition in Astana focused on the future of energy and power generation ("EXPO") and (ii) the expenses relating to the opening ceremony for the IAEA's Low-Enriched Uranium Bank.

#### ***Reversal of impairment of assets***

Reversal of impairment of assets increased by KZT359 million, or 195.1%, to KZT543 million for the year ended 31 December 2017 from KZT184 million for the year ended 31 December 2016. This increase was primarily due to the Group recognising reversal of previously recognised impairments of inventories in the amount of KZT424 million in the year ended 31 December 2017, as compared to a corresponding recognition in the amount of KZT85 million in the year ended 31 December 2016, which was largely related to the reversal of previously recognised impairments of photovoltaic modules and uranium.

#### ***Impairment***

Impairment charges increased by KZT5,951 million, or 27.0%, to KZT27,958 million for the year ended 31 December 2017 from KZT22,007 million for the year ended 31 December 2016. This increase was primarily caused by impairment recognised in the respect of the following cash generating units: South and Central Moinkum, Uvanas, Kanshugan, Karamurun, Zarechnoye in the amount of KZT1,316 million, KZT557 million, KZT4,246 million, KZT698 million and KZT6,556 million, respectively, as a result of a decrease in reserves under JORC together with other indicators of impairment. This effect was partially offset by a decrease in impairment loss recognised in respect of cash generating unit related to production of silicon of solar quality, silicon slices and photovoltaic slices by KZT7,623 million, or 81.1%, from KZT9,410 million in the year ended 31 December 2016 to KZT1,787 million in the year ended 31 December 2017 due to the majority of the impairment being recognised in the year ended 31 December 2016.

#### ***Gain on disposal of subsidiary***

In the year ended 31 December 2016, the Group recorded a KZT290 million gain on disposal of a subsidiary, in connection with the disposal of two subsidiaries of UMP, Ulba-Transport LLP and Legmash LLP. There were no comparable gains or losses in the year ended 31 December 2017.

#### ***Net foreign exchange gain / (loss)***

The Group's net foreign exchange gain of KZT3,614 million for the year ended 31 December 2016 changed to a net foreign exchange loss of KZT768 million for the year ended 31 December 2017. This decrease was caused by the appreciation of the Tenge against the U.S. Dollar by 4.6% during the year ended 31 December 2017, compared to depreciation of the Tenge against the U.S. Dollar by 53.8% during the year ended 31 December 2016.

#### ***Other income***

Other income increased significantly by KZT114,336 million, to KZT115,111 million for the year ended 31 December 2017, from KZT775 million for the year ended 31 December 2016, primarily due to the exercise by the Company of its put option to sell its shares in the Toshiba HoldCos to Toshiba Corporation for a consideration of US\$522.2 million resulting in the recognition of a KZT107,714 million gain. See "*—Significant Factors Affecting the Group's Results of Operations—Disposals of Non-Core Assets.*"

#### ***Other expenses***

Other expenses increased by KZT608 million, or 9.9%, to KZT6,768 million for the year ended 31 December 2017, from KZT6,160 million for the year ended 31 December 2016, due primarily to a KZT1,096 million, or 205.6%, increase in non-recoverable VAT due to the transfer of subsoil use contracts from the Company to its subsidiary Ortalyk LLP as well as the occurrence of a KZT791 million loss on disposal of non-current assets largely due to the non-confirmation of the reserves on the Uvanas mine and the corresponding negative effect on the assets. This increase was partially offset by a KZT577 million, or 16.1%, decrease in social expenses due to the decrease in the expenses incurred by the Group in accordance with the memoranda signed between the Group and local government authorities, where the Group makes payment for the benefit of the local population, in the year ended 31 December 2017.

#### ***Finance income***

Finance income decreased significantly by KZT9,937 million, or 62.8%, to KZT5,888 million in the year ended 31 December 2017 from KZT15,825 million for the year ended 31 December 2016. Although each component of finance income decreased in the year ended 31 December 2017, the overall decrease was largely due to (i) an absence



in the year ended 31 December 2017 of dividend income from the Toshiba HoldCos due to the exercise of its put option in relation to its shares in the Toshiba HoldCos, whereas in the year ended 31 December 2016, the Group received dividends of KZT7,308 million from the Toshiba HoldCos and (ii) a 93.9% decrease in gain from remeasurement of financial liabilities, which was significantly higher in the year ended 31 December 2016 mostly due to the change in fair value of the commodity loan of Appak LLP for the year ended 31 December 2016, which was fully repaid during the year ended 31 December 2017.

The following table sets out the components of finance income for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Proportion of finance income for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(in KZT millions)				(% )	
Interest income	5,290	4,553	(737)	(13.93)	33.43	77.33
Gain from remeasurement of financial assets	1,640	1,115	(525)	(32.01)	10.36	18.94
Gain from remeasurement of financial liabilities	1,314	80	(1,234)	(93.91)	8.30	1.36
Dividend income	7,308	—	(7,308)	(100.0)	46.18	—
Other	273	140	(133)	(48.72)	1.73	2.38
<b>Total finance income</b>	<b>15,825</b>	<b>5,888</b>	<b>(9,937)</b>	<b>(62.79)</b>	<b>100.0</b>	<b>100.0</b>

### Finance Costs

Finance costs decreased by KZT1,950 million, or 17.7%, to KZT9,067 million in the year ended 31 December 2017 from KZT11,017 million for the year ended 31 December 2016. The decrease was largely due to a KZT1,450 million, or 54.2%, decrease in loss from adjustment of financial assets due to a decrease in the loans issued by the Group to its joint ventures and associates and adjusted in line with foreign exchange rate movement, and a KZT764 million, or 12.2%, decrease of interest expense on loan and borrowings largely due to the repayment of a portion of debt owed by the Company under the syndicated loan agreement (see “—Liquidity and Capital Resources—Indebtedness—Key Loan Facility Agreements—Syndicated Loan”), in the year ended 31 December 2017.

The following table sets out the components of finance costs for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Proportion of finance costs for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(% )	
Interest expense on loan and borrowings	6,278	5,514	(764)	(12.17)	56.98	60.81
Unwinding of discount on provisions	1,100	1,267	167	15.18	9.98	13.97
Loss from remeasurement of financial assets	2,673	1,223	(1,450)	(54.25)	24.26	13.49
Loss on conversion of foreign currency	349	294	(55)	(15.76)	3.17	3.24
Unwinding of discount on other financial liabilities	288	285	(3)	(1.04)	2.61	3.14
Dividend expense on preference shares	53	53	—	—	0.48	0.58
Other	276	431	155	56.16	2.51	4.75
<b>Total finance costs</b>	<b>11,017</b>	<b>9,067</b>	<b>(1,950)</b>	<b>(17.7)</b>	<b>100.0</b>	<b>100.0</b>

### Share of results of associates

Share of results of associates decreased by KZT16,051 million, or 42.2%, to KZT22,007 million in the year ended 31 December 2017 from KZT38,058 million in the year ended 31 December 2016. All of such results relate to the associates’ uranium operations. This decrease was driven primarily by the substantial decrease in U<sub>3</sub>O<sub>8</sub> spot prices and accordingly decreased net profits of the respective associates.

### Share of results of joint ventures

Share of results of joint ventures decreased by KZT14,632 million, or 39.8%, to KZT22,107 million in the year ended 31 December 2017 from KZT36,739 million in the year ended 31 December 2016. All of such results relate to the joint ventures’ uranium operations. This decrease was driven primarily by the substantial decrease in U<sub>3</sub>O<sub>8</sub> spot prices and accordingly decreased net profits of the respective joint ventures.

### Profit before tax

For the reasons described above, and principally to KZT114,336 million increase in other income, relating primarily to the exercise by the Company of its put option to sell its shares in the Toshiba HoldCos to Toshiba Corporation for a

consideration of US\$522.2 million in December 2017, the Group's profit before tax increased by KZT27,073 million, or 20.9%, to KZT156,616 million in the year ended 31 December 2017 from KZT129,543 million in the year ended 31 December 2016.

### **Income tax expense**

The table below sets out information related to the Group's income tax expense for the years ended 31 December 2016 and 2017:

	Year ended 31 December	
	2016	2017
	(KZT millions)	
Current income tax .....	20,224	20,299
Deferred income tax .....	(2,236)	(2,837)
<b>Income tax expense</b> .....	<b>17,988</b>	<b>17,462</b>

The income tax rate applicable to the majority of the Group's profits is 20%. The effective tax rate of the Group was 13.9% and 11.2% for the years ended 31 December 2016 and 2017, respectively.

Income tax expense decreased by KZT526 million, or 2.9%, to KZT17,462 million in the year ended 31 December 2017 from KZT17,988 million in the year ended 31 December 2016, as a result of the increase in the amount of expenses on deferred tax assets from KZT2,236 million in the year ended 31 December 2016 to KZT2,837 million in the year ended 31 December 2017. The principal reasons for the increase in the tax asset during the year ended 31 December 2017 included depreciation of fixed assets and intangible assets, as well as carried forward tax losses.

### **Profit for the year**

For the reasons described above, the Group's profit for the year increased by KZT27,599 million, or 24.7%, to KZT139,154 million in the year ended 31 December 2017 from KZT111,555 million in the year ended 31 December 2016.

### **Segment Information**

The following table sets forth the Group's profit for the year by segment for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change		Share in profit for the year ended 31 December	
	2016	2017	Tenge	Percentage	2016	2017
	(KZT millions)				(%)	
Uranium .....	112,502	146,700	34,198	30.40	100.85	105.42
UMP .....	6,505	1,424	(5,081)	(78.11)	5.83	1.02
Other .....	(3,865)	(7,753)	(3,888)	100.60	(3.46)	(5.57)
Energy <sup>(1)</sup> .....	1,539	340	(1,199)	(77.91)	1.38	0.24
Eliminations .....	(5,126)	(1,557)	3,569	(69.63)	(4.60)	(1.12)
<b>Total</b> .....	<b>111,555</b>	<b>139,154</b>	<b>27,599</b>	<b>24.74</b>	<b>100.0</b>	<b>100.0</b>

(1) Discontinued since 3 July 2018.

### **Year Ended 31 December 2016 Compared to Year Ended 31 December 2015**

The table below sets forth the sales volumes of the Group's key uranium and rare metals products for the years ended 31 December 2016 and 2017:

	Year ended 31 December		Change	
	2015	2016	Volume	Percentage
			(Tonnes of UME or metal content)	
			(%)	
<b>Uranium products</b>				
U <sub>3</sub> O <sub>8</sub> .....	11,028	9,687	(1,341)	(12.16)
<b>Rare metals products</b>				
Beryllium products .....	1,740.3	1,766.2	25.9	1.49
Tantalum products .....	146.0	122.7	(23.3)	(15.96)
Niobium products .....	121.9	52.1	(69.8)	(57.26)

The table below sets forth certain financial information regarding the Group's consolidated results of operations for the years ended 31 December 2016 and 2015:

	Year ended 31 December		Change		Proportion of revenue for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(% )	
<b>Revenue</b> .....	<b>383,960</b>	<b>394,315</b>	<b>10,355</b>	<b>2.7</b>	<b>100.0</b>	<b>100.0</b>
Cost of sales .....	(280,598)	(283,882)	(3,284)	1.17	(73.08)	(71.99)
<b>Gross profit</b> .....	<b>103,362</b>	<b>110,433</b>	<b>7,071</b>	<b>6.84</b>	<b>26.92</b>	<b>28.01</b>
Distribution expenses .....	(4,116)	(6,314)	(2,198)	53.40	(1.07)	(1.60)
General and administrative expenses .....	(25,655)	(30,877)	(5,222)	20.35	(6.68)	(7.83)
Reversal of impairment of assets .....	86	184	98	113.95	0.02	0.05
Impairment losses .....	(30,716)	(22,007)	8,709	(28.35)	(8.00)	(5.58)
Gain on disposal of subsidiary .....	—	290	290	100.0	—	0.07
Net foreign exchange gain/(loss) .....	(53,446)	3,614	57,060	(106.76)	(13.92)	0.92
Other income .....	1,352	775	(577)	(42.68)	0.35	0.20
Other expenses .....	(7,535)	(6,160)	1,375	(18.25)	(1.96)	(1.56)
Finance income .....	21,986	15,825	(6,161)	(28.02)	5.73	4.01
Finance costs .....	(8,676)	(11,017)	(2,341)	26.98	(2.26)	(2.79)
Share of results of associates .....	38,823	38,058	(765)	(1.97)	10.11	9.65
Share of results of joint ventures .....	14,080	36,739	22,659	160.93	3.67	9.32
<b>Profit before tax</b> .....	<b>49,545</b>	<b>129,543</b>	<b>79,998</b>	<b>161.47</b>	<b>12.90</b>	<b>32.85</b>
Income tax expense .....	(13,044)	(17,988)	(4,944)	37.90	(3.40)	(4.56)
<b>Profit for the year</b> .....	<b>36,501</b>	<b>111,555</b>	<b>75,054</b>	<b>205.61</b>	<b>9.51</b>	<b>28.29</b>

### Revenue

The Group's total revenue in the year ended 31 December 2016 was KZT394,315 million, an increase of 2.7% from KZT383,960 million in the year ended 31 December 2015. This increase was largely due to (i) the 53.8% depreciation of the Tenge relative to the U.S. Dollar from KZT222.25 per US\$1 for the year ended 31 December 2015 to KZT341.76 per US\$1 in for the year ended 31 December 2016 and (ii) an increase in revenue from utilities due to 20% higher tariffs of electricity in the year ended 31 December 2016 compared to year ended 31 December 2015. This however was partially offset by (i) a decrease in the realised average price of uranium, which represented 68.0% of the Group's sales in the year ended 31 December 2016, by 26.5% from US\$41.52 per pound for the year ended 31 December 2015 to US\$30.52 per pound for the year ended 31 December 2016, largely due to a 28.4% decrease in the average spot price for uranium for the year ended 31 December 2016 compared to for the year ended 31 December 2015 and (ii) a 12.2% decrease in the sales volume of U<sub>3</sub>O<sub>8</sub> from 11,028 tonnes for the year ended 31 December 2015 to 9,687 tonnes for the year ended 31 December 2016.

The table below shows a breakdown of the Group's revenue by source for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Proportion of revenue for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(in KZT millions)				(% ) of total revenue	
Sales of uranium products .....	268,832	268,101	(731)	(0.27)	70.02	67.99
Sales of utilities .....	47,809	57,555	9,746	20.39	12.45	14.60
Sales of beryllium products .....	9,312	13,359	4,047	43.46	2.43	3.39
Sales of tantalum products .....	12,051	11,749	(302)	(2.51)	3.14	2.98
Sales of purchased goods .....	10,886	10,461	(425)	(3.9)	2.84	2.65
Drilling services .....	12,841	10,532	(2,309)	(17.98)	3.34	2.67
Sales of other services .....	9,059	8,159	(900)	(9.93)	2.36	2.07
Sales of materials and other goods .....	3,071	6,521	3,450	112.34	0.80	1.65
Transportation services .....	5,092	5,148	56	1.10	1.33	1.31
Research and development .....	135	443	308	228.15	0.04	0.11
Sales of photovoltaic cells .....	1,909	26	(1,883)	(98.64)	0.50	0.01
Sales of metallurgical silicon .....	552	17	(535)	(96.92)	0.14	0.00
Other .....	2,411	2,244	(167)	(6.93)	0.63	0.57
<b>Total revenue</b> .....	<b>383,960</b>	<b>394,315</b>	<b>10,355</b>	<b>2.7</b>	<b>100.0</b>	<b>100.0</b>

Revenue from sales of uranium products slightly decreased by KZT731 million, or 0.27%, to KZT268,101 million in the year ended 31 December 2016 from KZT268,832 million in the year ended 31 December 2015. This decrease was largely due to the 26.5% decrease in the average realised price and 12.2% decrease in the sales volume of uranium during the year ended 31 December 2016 described above. This was however offset by the 53.8% depreciation of the Tenge relative to the U.S. Dollar during the year ended 31 December 2016.

Revenue from utilities sales increased by KZT9,746 million, or 20.4%, to KZT57,555 million in the year ended 31 December 2016 from KZT47,809 million in the year ended 31 December 2015. This increase was largely due to a 20% increase of the tariffs on electricity from KZT10.6 per kWh for the year ended 31 December 2015 to KZT12.7 per kWh for the year ended 31 December 2015.

Revenue from beryllium sales increased by KZT4,047 million, or 43.5%, to KZT13,359 million in the year ended 31 December 2016 from KZT9,312 million in the year ended 31 December 2015. This increase was largely due to the 53.8% depreciation of the Tenge relative to the U.S. Dollar described above.

Revenue from tantalum sales decreased by KZT302 million, or 2.5%, to KZT11,749 million in the year ended 31 December 2016 from KZT12,051 million in the year ended 31 December 2015. The decrease in tantalum sales was largely due to (i) the 15.8% decrease in the sales volume from 146 tonnes in the year ended 31 December 2015 to 123 tonnes in the year ended 31 December 2016 and (ii) a 24.7% decrease in the sales price from US\$372 per kg to US\$280 per kg. This negative effect was however slightly offset by the 54.3% depreciation of the Tenge relative to the U.S. Dollar described above.

Revenue from sales of purchased goods decreased by KZT425 million, or 3.9%, to KZT10,461 million in the year ended 31 December 2016 from KZT10,886 million in the year ended 31 December 2015. The decrease in purchased good sales was largely due to a decrease in the sales volume of sulfuric acid to the Group's JVs and Associates. In addition to sulfuric acid, such purchased goods also include ammonium nitrate, ammonia water and other chemical materials sold by Trading and Transportation Company LLP, a subsidiary of the Company, to the Group's JVs and Associates.

Revenue from drilling services decreased by KZT2,309 million, or 18.0%, to KZT10,532 million in the year ended 31 December 2016 from KZT12,841 million in the year ended 31 December 2015. The decrease in revenue from drilling services was largely due to the 22.7% decrease in the drilling volumes from 2,243 to 1,734 thousand long metres. All of the revenue from drilling services were generated by the Group's wholly owned subsidiary Volkovgeologia, which provided services exclusively to other members of the Group and to the Group's JVs and Associates.

Revenue from sales of other services decreased by KZT900 million, or 10.0%, to KZT8,159 million in the year ended 31 December 2016 from KZT9,059 million in the year ended 31 December 2015. The decrease in sales of other services was largely due to the decrease in the production of drilling equipment, tool and repair parts for drilling pumps, various machinery for third parties, decrease in processing services offered by UMP.

#### Segment Information

The following table sets forth the Group's revenue by segment for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Share in revenue for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(%)	
Uranium <sup>(1)</sup> , including	265,074	263,533	(1,541)	(0.58)	69.04	66.83
external revenue	264,956	263,246	(1,710)	(0.65)	69.01	66.76
revenue from other Group segments	118	287	169	143.22	0.03	0.07
UMP <sup>(2)</sup> , including	33,817	38,977	5,160	15.26	8.81	9.88
external revenue	30,403	34,903	4,500	14.00	7.92	8.85
revenue from other Group segments	3,414	4,074	660	19.33	0.89	1.03
Other, including	76,411	77,169	758	0.99	19.90	19.57
external revenue	39,781	37,096	(2,685)	(6.75)	10.36	9.41
revenue from other Group segments	36,630	40,073	3,443	9.4	9.54	10.16
Energy (external only) <sup>(3)</sup>	48,820	59,070	10,250	20.99	12.71	14.98
Eliminations (intra-Group only)	(40,162)	(44,434)	(4,272)	10.64	(10.46)	(11.27)
<b>Total</b>	<b>383,960</b>	<b>394,315</b>	<b>10,355</b>	<b>2.70</b>	<b>100.0</b>	<b>100.0</b>

- (1) Does not include revenue from sales of UO<sub>2</sub> powder and fuel pellets, which are produced at UMP.  
(2) Includes revenue from sales of UO<sub>2</sub> powder and fuel pellets produced at UMP.  
(3) Segment discontinued since 3 July 2018.

### Cost of sales

Cost of sales increased by KZT3,284 million, or 1.2%, to KZT283,882 million for the year ended 31 December 2016 from KZT280,598 million for the year ended 31 December 2015. The increase in cost of sales was primarily due to a corresponding increase in the costs attributable to materials and supplies, predominantly purchases of uranium from the Group's joint ventures and associates as well as costs attributable to the purchase of sulfuric acid, an increase in wages and salaries, which was offset by decreases in the costs relating to taxes, other than income tax, processing and other services, depreciation and amortisation primarily resulting from a 12.2% decrease in sales volumes of U<sub>3</sub>O<sub>8</sub> in the year ended 31 December 2016.

The table below shows a breakdown of the Group's cost of sales by component for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Share in cost of sales for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(% )	
Materials and supplies	197,112	204,881	7,769	3.94	70.25	72.17
Wages and salaries	29,512	30,620	1,108	3.75	10.52	10.79
Processing and other services	17,290	15,845	(1,445)	(8.36)	6.16	5.58
Depreciation and amortisation	16,779	15,113	(1,666)	(9.93)	5.98	5.32
Taxes other than income tax	12,469	9,511	(2,958)	(23.72)	4.44	3.35
Transportation expenses	1,850	2,558	708	38.27	0.66	0.90
Maintenance and repair	1,805	2,358	553	30.64	0.64	0.83
Utilities	1,808	1,541	(267)	(14.77)	0.64	0.54
Rent expenses	335	306	(29)	(8.66)	0.12	0.11
Research and development	90	54	(36)	(40)	0.03	0.02
Other	1,548	1,095	(453)	(29.26)	0.55	0.39
<b>Total cost of sales</b>	<b>280,598</b>	<b>283,882</b>	<b>3,284</b>	<b>1.17</b>	<b>100.00</b>	<b>100.00</b>

Materials and supplies costs increased by KZT7,769 million, or 3.9%, to KZT204,881 million for the year ended 31 December 2016 from KZT197,112 million for the year ended 31 December 2015. This increase was primarily due to an increase in the purchase price of sulfuric acid from third parties in the year ended 31 December 2016 and an increase in the cost of purchased uranium as a result of the depreciation of the Tenge against the U.S. Dollar.

Wages and salaries increased by KZT1,108 million, or 3.8%, to KZT30,620 million for the year ended 31 December 2016 from KZT29,512 million for the year ended 31 December 2015. This increase was primarily due to wage inflation in Kazakhstan.

Processing and other services costs decreased by KZT1,445 million, or 8.4%, to KZT15,845 million for the year ended 31 December 2016 from KZT17,290 million for the year ended 31 December 2015. This decrease was primarily due to a decrease in drilling and processing services.

Depreciation and amortisation decreased by KZT1,666 million, or 9.9%, to KZT15,113 million for the year ended 31 December 2016 from KZT16,779 million for the year ended 31 December 2015. This decrease was primarily due to a change in the structure of uranium sales between own uranium and uranium purchased from joint ventures and associates.

Taxes other than income tax decreased by KZT2,958 million, or 23.7%, to KZT9,511 million for the year ended 31 December 2016 from KZT12,469 million for the year ended 31 December 2015. This decrease was primarily due to a decrease in the amount of MET expenses incurred as a result of a decrease in production of U<sub>3</sub>O<sub>8</sub> for the year ended 31 December 2016.



### Segment Information

The following table sets forth the Group's cost of sales by segment for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Share in cost of sales for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(%)	
Uranium	180,235	176,029	(4,206)	(2.33)	64.23	62.01
UMP	24,482	25,740	1,258	5.14	8.72	9.07
Other	68,100	71,227	3,127	4.59	24.27	25.09
Energy <sup>(1)</sup>	46,184	53,957	7,773	16.83	16.46	19.01
Eliminations	(38,403)	(43,071)	(4,668)	12.16	(13.69)	(15.17)
<b>Total</b>	<b>280,598</b>	<b>283,882</b>	<b>3,284</b>	<b>1.17</b>	<b>100.00</b>	<b>100.00</b>

(1) Discontinued since 3 July 2018.

### Gross profit

Gross profit increased by KZT7,071 million, or 6.8%, to KZT110,433 million for the year ended 31 December 2016 from KZT103,362 million for the year ended 31 December 2015.

### Segment Information

The following table sets forth the Group's gross profit by segment for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Share in gross profit for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(%)	
Uranium	84,839	87,504	2,665	3.14	82.08	79.24
UMP	9,335	13,237	3,902	41.80	9.03	11.99
Other	8,311	5,942	(2,369)	(28.50)	8.04	5.38
Energy <sup>(1)</sup>	2,651	5,113	2,462	92.87	2.56	4.63
Eliminations	(1,774)	(1,363)	411	(23.17)	(1.72)	(1.23)
<b>Total</b>	<b>103,362</b>	<b>110,433</b>	<b>7,071</b>	<b>6.84</b>	<b>100.0</b>	<b>100.0</b>

(1) Discontinued since 3 July 2018.

### Distribution expenses

Distribution expenses increased by KZT2,198 million, or 53.4%, to KZT6,314 million for the year ended 31 December 2016 from KZT4,116 million for the year ended 31 December 2015. The increase was primarily due to 91.3% increase in shipping, transportation and storing cost, which in turn increased due to a change in the mix of destinations at which the Group's customers were located in the year ended 31 December 2016.

The table below sets out the Group's distribution expenses by category for the years ended 31 December 2016 and 2015:

	Year ended 31 December		Change		Proportion of distribution expenses for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(in KZT millions)				(%)	
Shipping, transportation and storing	2,248	4,301	2,053	91.33	54.62	68.12
Wages and salaries	715	624	(91)	(12.73)	17.37	9.88
Commissions	418	314	(104)	(24.88)	10.16	4.97
Materials and supplies	76	235	159	209.21	1.85	3.72
Rent	161	132	(29)	(18.01)	3.91	2.09
Other	498	708	210	42.17	12.10	11.2
<b>Total distribution expenses</b>	<b>4,116</b>	<b>6,314</b>	<b>2,198</b>	<b>53.40</b>	<b>100.0</b>	<b>100.0</b>

### General and administrative expenses

General and administrative expenses increased by KZT5,222 million, or 20.4%, to KZT30,877 million for the year ended 31 December 2016 from KZT25,655 million for the year ended 31 December 2015. The increase was primarily due to increase in wages and salaries and consulting and information services, which occurred in connection with the Transformation Initiative conducted at the Group and expenses for the services rendered by financial advisors in connection to equity transactions relating primarily to JV Inkai LLP. In addition, during the year ended 31 December 2016 the Group incurred tax-related fines, as a result of regular tax audits conducted by the tax authorities of the Republic of Kazakhstan.

The table below sets out the Group's general and administrative expenses by type for the years ended 31 December 2016 and 2015:

	Year ended 31 December		Change		Proportion of general and administrative expenses for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(in KZT millions)				(% )	
Wages and salaries	15,089	16,718	1,629	10.80	58.82	54.14
Consulting and information services	2,370	4,147	1,777	74.98	9.24	13.43
Rent	934	1,083	149	15.95	3.64	3.50
Taxes other than income tax	754	877	123	16.31	2.94	2.84
Depreciation and amortisation	924	827	(97)	(10.50)	3.60	2.68
Corporate events	153	176	23	15.03	0.6	0.57
Business trip expenses	485	647	162	33.40	1.89	2.10
Maintenance and repair	327	511	184	56.27	1.27	1.65
Training expenses	264	349	85	32.20	1.03	1.13
Tax fines and penalties	666	1,443	777	116.67	2.60	4.67
Other <sup>(1)</sup>	3,689	4,099	410	11.11	14.37	13.29
<b>Total general and administrative expenses</b>	<b>25,655</b>	<b>30,877</b>	<b>5,222</b>	<b>20.35</b>	<b>100.0</b>	<b>100.0</b>

(1) Includes materials and supplies, communications, security, utilities, impairment of accounts receivable, bank charges, research expenses, stationery, insurance, and other expenses.

Wages and salaries costs increased by KZT1,629 million, or 10.8%, to KZT16,718 million in the year ended 31 December 2016 from KZT15,089 million in the year ended 31 December 2015. This increase was largely due to a change in the Company's organisational structure, which occurred in the year ended 31 December 2016.

Consulting and information services expenses increased by KZT1,777 million, or 75.0%, to KZT4,147 million in the year ended 31 December 2016 from KZT2,370 million the year ended 31 December 2015. This increase was largely due to the implementation of the Transformation Initiative by the Group as well as expenses relating to services rendered by financial advisors in connection with equity transactions relating primarily to JV Inkai LLP.

Rent costs increased by KZT149 million, or 16.0%, to KZT1,083 million in the year ended 31 December 2016 from KZT934 million in the year ended 31 December 2015. This increase was largely due to the increase in the area rented by the Company primarily in connection with the Transformation program.

Taxes other than income tax increased by KZT123 million, or 16.31%, to KZT877 million in the year ended 31 December 2016 from KZT754 million in the year ended 31 December 2015. This increase was largely due to the additional value-added tax incurred by UMP.

Depreciation and amortisation decreased by KZT97 million, or 10.5%, to KZT827 million in the year ended 31 December 2016 from KZT924 million in the year ended 31 December 2015. This decrease was largely due to the optimisation by the Company of its expenses related to fixed and intangible assets.

Business trip expenses increased by KZT162 million, or 33.4%, to KZT647 million in the year ended 31 December 2016 from KZT485 million in the year ended 31 December 2015. This increase was largely due to the increase of the 7.0% increase in the monthly calculation index, a mandatory metric imposed by the state authorities in Kazakhstan for calculation of business trip expenses, as well as the 53.8% depreciation of the Tenge relative to the U.S. Dollar described above.

Maintenance and repair costs increased by KZT184 million, or 56.3%, to KZT511 million in the year ended 31 December 2016 from KZT327 million in the year ended 31 December 2015. This increase was largely due to the increase in the expenses related to maintenance of office equipment at the Company.

Training increased by KZT85 million, or 32.2% to KZT349 million in the year ended 31 December 2016 from KZT264 million in the year ended 31 December 2015. This increase was largely due to a 13.6% increase due to a change in the Company's training schedule in accordance with the requirements set out in the subsoil use contracts.

Tax fines and penalties increased by KZT777 million, or 116.7%, to KZT1,443 million for the year ended 31 December 2016 from KZT666 million for the year ended 31 December 2015. This increase was largely due to additional VAT and corporate income tax incurred by the Company and Appak LLP, following a complex tax audit conducted by the tax authorities of the Republic of Kazakhstan in the year ended 31 December 2016.

Other expenses increased by KZT410 million, or 11.1%, to KZT4,099 million in the year ended 31 December 2016 from KZT3,689 million in the year ended 31 December 2015.

### ***Reversal of impairment of assets***

Reversal of impairment of assets increased by KZT98 million, or 113.9%, to KZT184 million for the year ended 31 December 2016 from KZT86 million for the year ended 31 December 2015. This increase was primarily due to the Group recognising reversal of previously recognised impairments of inventories in the amount of KZT85 million and property, plant and equipment in amount of KZT51 million in the year ended 31 December 2016, as compared to a corresponding recognition of a reversal of impairment loss in the amount of KZT84 million in the year ended 31 December 2015. This reversal primarily occurred due to the putting of UMP's equipment into operation.

### ***Impairment losses***

Impairment losses decreased by KZT8,709 million or 28.4% to KZT22,007 million for the year ended 31 December 2016 from KZT30,716 million for the year ended 31 December 2015. This decrease was primarily due to

- KZT12,331 million decrease in impairment of the cash generating unit related to production of silicon of solar quality, silicon slices and photovoltaic slices from KZT21,741 million in the year ended 31 December 2015 to KZT9,410 million due to the majority of the impairment being recognised in 2015; and
- no additional impairment charge recognised in the year ended 31 December 2016 in respect of cash generated unit related to ore enrichment, hydrometallurgical production of rare metals concentrates and chemical production of rare metals compared to KZT4,425 million impairment loss recognised in the year ended 31 December 2015 as a result of higher than budgeted costs and overall decrease in market prices.

This effect was partially offset by:

- impairment recognised in the year ended 31 December 2016 in respect of Baiterek SRT in the amount of KZT3,884 million in the result of extension of the construction and low probability of obtaining economic benefits from its further development and use; and
- impairment recognised in the year ended 31 December 2016 in the respect of South Moinkum and Uvanas in the amount of KZT2,060 million in the result of decrease of uranium prices.

### ***Gain on disposal of subsidiary***

In the year ended 31 December 2016, the Group recorded KZT290 million gain on disposal of a subsidiary, in connection with the disposal of certain subsidiaries of UMP, being Ulba-Transport LLP and Legmash LLP. There were no comparable gains or losses in the year ended 31 December 2015.

### ***Net foreign exchange gain / (loss)***

The Group's net foreign exchange loss of KZT53,446 million in the year ended 31 December 2015 changed to net foreign exchange gain of KZT3,614 million in the year ended 31 December 2016. This change occurred as a result of the 53.8% depreciation of the Tenge against the U.S. Dollar in the year ended 31 December 2016.

### ***Other income***

Other income decreased by KZT577 million, or 42.7%, to KZT775 million for the year ended 31 December 2016, from KZT1,352 million for the year ended 31 December 2015, primarily due to receipt of income from penalties and fees in the year ended 31 December 2015 by the Company and UMP, with no comparable income generated in the year ended 31 December 2016.

### Other expenses

Other expenses decreased by KZT1,375 million, or 18.3%, to KZT6,160 million for the year ended 31 December 2016, from KZT7,535 million for the year ended 31 December 2015, due primarily to the emergence of a KZT2,710 million loss on disposal of non-current assets in the year ended 31 December 2015, without comparable loss in the year ended 31 December 2016, due to the change in the operating activities of Kazatomprom-Damu LLP, a subsidiary of the Company, which was engaged in social service activities until 2015 and during the year ended 31 December 2015 disposed of its social service assets, such as a kindergarten and certain other assets, in favour of the local administration.

The table below sets out the Group's other expenses by category for the years ended 31 December 2016 and 2015:

	Year ended 31 December		Change		Proportion of other expenses for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(in KZT millions)				(%)	
Social expenses	2,970	3,573	603	20.30	39.42	58.00
Loss on suspension of production	627	846	219	34.93	8.32	13.73
Non-recoverable VAT	392	533	141	35.97	5.20	8.65
Loss on disposal of property, plant and equipment	—	268	268	100.0	—	4.35
Depreciation	398	231	(167)	(41.96)	5.28	3.75
Other fines and penalties	65	84	19	29.23	0.86	1.36
Loss on disposal of non-current assets	2,710	—	(2,710)	(100.0)	35.97	—
Other	373	625	252	67.56	4.95	10.15
<b>Total other expenses</b>	<b>7,535</b>	<b>6,160</b>	<b>(1,375)</b>	<b>(18.25)</b>	<b>100.0</b>	<b>100.0</b>

### Finance income

Finance income decreased by KZT6,161 million, or 28.0% to KZT15,825 million in the year ended 31 December 2016 from KZT21,986 million for the year ended 31 December 2015. This was largely due to a significant decrease by KZT9,869 million, or 85.8%, in the gain from remeasurement of financial assets, from KZT11,509 million in the year ended 31 December 2015 to KZT1,640 million in the year ended 31 December 2016, which related to loans advanced by the Company to Kyzylkum LLP and Baiken-U LLP which were denominated in the Tenge and were linked to the official U.S. Dollar to Tenge exchange rate announced by the NBK, and was however partially offset by a KZT 2,391 million increase in interest income.

The following table sets out the components of finance income for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Proportion of finance income in the year ended 31 December	
	2015	2016	Tenge	%	2015	2016
	(in KZT millions)				(%)	
Interest income	2,899	5,290	2,391	82.48	13.19	33.43
Gain from remeasurement of financial assets	11,509	1,640	(9,869)	(85.75)	52.35	10.36
Gain from remeasurement of financial liabilities	113	1,314	1,201	1,062.83	0.51	8.30
Dividend income	7,050	7,308	258	3.66	32.07	46.18
Other	415	273	(142)	(34.22)	1.89	1.73
<b>Total</b>	<b>21,986</b>	<b>15,825</b>	<b>(6,161)</b>	<b>(28.02)</b>	<b>100.0</b>	<b>100.0</b>

### Finance Costs

Finance costs increased by KZT2,341 million, or 27.0%, to KZT11,017 million in the year ended 31 December 2016 from KZT8,676 million for the year ended 31 December 2015. The increase was largely due to a KZT2,113 million, or 377.3%, increase in loss from remeasurement of financial assets, in the year ended 31 December 2016, which resulted from the remeasurement of the commodity loans due by a subsidiary to the Company.

The following table sets out the components of finance costs for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Proportion of finance cost in the year ended 31 December	
	2015	2016	Tenge	%	2015	2016
	(in KZT millions)				(% )	
Interest expense on loan and borrowings	6,136	6,278	142	2.31	70.72	56.98
Unwinding of discount on provisions	1,075	1,100	25	2.33	12.39	9.98
Loss from remeasurement of financial assets	560	2,673	2,113	377.32	6.45	24.26
Loss on conversion of foreign currency	187	349	162	86.63	2.16	3.17
Unwinding of discount on other financial liabilities	261	288	27	10.34	3.01	2.61
Dividend expense on preference shares	53	53	0	0	0.61	0.48
Other	404	276	(128)	(31.68)	4.66	2.51
<b>Total</b>	<b>8,676</b>	<b>11,017</b>	<b>2,341</b>	<b>26.98</b>	<b>100.0</b>	<b>100.0</b>

#### *Share of results of associates*

Share of results of associates decreased by KZT765 million, or 2.0%, to KZT38,058 million in the year ended 31 December 2016 from KZT38,823 million in the year ended 31 December 2015.

#### *Share of results of joint ventures*

Share of results of joint ventures increased significantly by KZT22,659 million, or more than 160%, to KZT36,739 million in the year ended 31 December 2016 from KZT14,080 million in the year ended 31 December 2015. This increase was partially attributable to the depreciation of the Tenge against the U.S. Dollar by 53.8%.

#### *Profit before tax*

For the reasons described above, the Group's profit before tax increased by KZT79,998 million, or 161.5%, to KZT129,543 million in the year ended 31 December 2016 from KZT49,545 million in the year ended 31 December 2015.

#### *Income tax expense*

	Year ended 31 December		Proportion of income tax expense for the year ended 31 December		Proportion of revenue for the year ended 31 December	
	2015	2016	2015	2016	2015	2016
	(KZT millions)				(% )	
Current income tax	14,133	20,224	108.35	112.43	3.68	5.13
Deferred income tax	(1,089)	(2,236)	(8.35)	(12.43)	(0.28)	(0.57)
<b>Income tax expense</b>	<b>13,044</b>	<b>17,988</b>	<b>100.0</b>	<b>100.0</b>	<b>3.28</b>	<b>4.56</b>

The income tax rate applicable to the majority of the Group's profits is 20%. The effective tax rate of the Group was 26.3% and 13.9% for the years ended 31 December 2015 and 2016, respectively. The effective tax rate for the year ended 31 December 2015 was driven to a significant extent by a loss generated by Astana Solar LLP in the amount of KZT29,799 million as well as impairment losses of KZT30,420 million, which contributed to the reduction of the Group's profit before tax. The Group's effective tax rate for the year ended 31 December 2016 was driven by the increase in profit before tax by KZT79,998 million, or 161.5%, to KZT129,543 million due to reductions of the loss generated by Astana Solar LLP and depreciation charge, as well as an increase in share of results of joint ventures by KZT22,659 million, or more than 160%, for the year ended 31 December 2016.

Income tax expense increased by KZT4,944 million, or 37.9%, to KZT17,988 million in the year ended 31 December 2016 from KZT13,044 million in the year ended 31 December 2015, due to the increase in profit before tax by more than 160%.

#### *Profit for the year*

For the reasons described above, the Group's profit for the year increased by KZT75,054 million, or more than 200%, to KZT111,555 million in the year ended 31 December 2016 from KZT36,501 million in the year ended 31 December 2015.



## Segment Information

The following table sets forth the Group's profit for the year by segment for the years ended 31 December 2015 and 2016:

	Year ended 31 December		Change		Share in profit for the year ended 31 December	
	2015	2016	Tenge	Percentage	2015	2016
	(KZT millions)				(%)	
Uranium .....	79,247	112,502	33,255	41.96	217.11	100.85
UMP .....	10,386	6,505	(3,881)	(37.37)	28.45	5.83
Other .....	(59,022)	(3,865)	55,157	(93.45)	(161.70)	(3.46)
Energy <sup>(1)</sup> .....	(4,409)	1,539	5,948	(134.91)	(12.08)	1.38
Eliminations .....	10,299	(5,126)	(15,425)	(149.77)	28.22	(4.60)
<b>Total</b> .....	<b>36,501</b>	<b>111,555</b>	<b>75,054</b>	<b>205.62</b>	<b>100.0</b>	<b>100.0</b>

(1) Discontinued since 3 July 2018.

## LIQUIDITY AND CAPITAL RESOURCES

### Capital Resources

The Group's liquidity requirements primarily relate to funding working capital, capital expenditures and service of debt. The Group historically relied primarily on cash flow from operating activities, as well as, to a smaller degree, external sources of financing, such as secured and unsecured bank loans predominantly denominated in U.S. Dollars and, to a lesser extent, in Euro and in Tenge to fund its working capital and long-term capital requirements. The Company expects that in the future the Group will continue to rely primarily on cash flow from operating activities and, to a lesser degree, on bank loans as a source of funding for its working capital needs and capital expenditure requirements. In addition, the Company may consider entering into project financing arrangements to fund certain investment projects. The Group also obtains capital for its operations through the formation of joint ventures with industry partners, and in the past, has raised financing in the international debt capital markets.

As an indirect wholly owned subsidiary of the Republic of Kazakhstan, the Company has not engaged in equity capital markets financings; however, it issued new shares in favour of its sole shareholder in the years ended 31 December 2007, 2016 and 2017, raising KZT26,686 million in cash, KZT93 million in assets and KZT266 million in assets, respectively, which were contributed into the Company's capital by the sole shareholder.

### Dividends

The Company is the parent company for the Group, and in addition to revenue from its business operations, it receives dividends and other payments from its subsidiaries, JVs and Associates and other investments. In the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, the Group received dividends of KZT42,867 million, KZT78,805 million, KZT36,486 million and KZT7,135 million, respectively, from its JVs and Associates and other investments. The Company strives to use its voting power to maximise its dividend flow from subsidiaries, JVs and Associates. Dividends received by the Company from investees domiciled in the Republic of Kazakhstan are exempt from dividends tax.

The Company paid dividends in the amount of KZT2,323 million, KZT12,031 million and KZT65,849 million for the years ended 31 December 2015, 2016 and 2017, respectively. The Company did not declare or pay any interim dividends with respect to the six months ended 30 June 2018; however during the six months ended 30 June 2018, the Company paid an amount of KZT45,019 million as a portion of dividends in respect of the year ended 31 December 2017. See also "Dividend Policy."

## Working Capital

The table below sets forth the Group's working capital as at 31 December 2015, 2016 and 2017 and 30 June 2018:

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
	(KZT millions)			
Inventories	99,692	120,095	169,675	202,918
Current accounts receivable	107,512	67,921	58,085	73,752
VAT recoverable	28,528	22,235	24,182	21,375
Other current assets	12,557	10,831	18,396	23,852
Prepaid income tax	2,427	7,391	5,493	9,869
Current accounts payable	(101,622)	(74,654)	(112,642)	(53,653)
Employee benefits	(213)	(244)	(173)	(126)
Income tax liabilities	(1,036)	(134)	(5,618)	(508)
Other tax and compulsory payments liabilities	(5,027)	(6,198)	(4,168)	(5,659)
Other current liabilities	(12,788)	(11,789)	(14,349)	(105,582)
<b>Net working capital</b>	<b>130,030</b>	<b>135,454</b>	<b>138,881</b>	<b>166,238</b>

The Group's net working capital remained positive during all periods under review.

The Company regularly monitors the cash position of its subsidiaries and focuses on effectively collecting excess cash from such subsidiaries, and seeks to ensure that any service fees for services rendered to such subsidiaries by intra-group service companies are paid without delay.

The following table summarises the Group's turnover of inventories, receivables and payables, as well as sets out the details of the Group's cash conversion cycle, in each case in days, as at 31 December 2015, 2016 and 2017:

	As at 31 December		
	2015	2016	2017
	(Days)		
Inventories turnover	130	154	235
Receivables turnover	102	63	63
Payables turnover	132	96	156
Cash conversion cycle	100	121	142

The Group constantly monitors the uranium market situation and may pursue the strategy of increasing its inventories in unfavourable market conditions. The following table sets forth the components of the Group's inventories as at 31 December 2015, 2016 and 2017 and 30 June 2018:

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
	(KZT millions)			
Finished goods and goods for resale	70,636	88,595	140,533	174,525
Work-in-process	12,922	15,908	17,563	15,999
Raw materials	13,354	14,476	14,520	12,695
Spare parts	826	730	819	778
Materials in processing	1,907	1,440	762	1,573
Fuel	506	656	889	1,170
Other materials	2,188	2,522	2,842	5,559
Provision for obsolesce and write-down to net realisable value	(2,647)	(4,232)	(8,253)	(9,381)
<b>Total inventories</b>	<b>99,692</b>	<b>120,095</b>	<b>169,675</b>	<b>202,918</b>

The Group's largest inventory item is finished goods and goods for resale, which primarily consist of  $U_3O_8$ . In line with its market-oriented strategy, its inventory levels have been increasing due to the prevailing market conditions. See also "Risk Factors—Risks relating to the Group's Business—The Company may continue to hold significant  $U_3O_8$  inventories throughout the  $U_3O_8$  pricing cycle."

The Company expects, based on its preliminary estimates, that its inventory levels as at 31 December 2018 will decrease as compared to the inventory levels as at 31 December 2017. The Company targets to maintain approximately 6,000–7,000 of UME of  $U_3O_8$  inventories at the Company and THK.

## Capital Expenditures

The Group primarily incurs capital expenditures in relation to its subsidiaries engaged in the mining of natural uranium, as well as expenditures of a similar nature relating to its JVs and Associates engaged in the mining of natural uranium. Such expenditures are comprised of the following key components:

- well construction costs, which are assumed to cease two years prior to planned cessation of production on depletion of uranium ore;
- expansion costs, which typically include expansion of processing facilities, extension of services and transport routes to new wellfield areas, implementation of new systems and processes;
- sustaining capital—largely reflecting recurring, infrastructure, maintenance and equipment replacement related costs which are assumed to cease three years prior to cessation of production;
- liquidation fund contributions and mine closure costs.

The following table sets out such expenditures of the Group's subsidiaries and JVs and Associates engaged in uranium mining for the periods indicated. Capital expenditure amounts set out below were derived from stand-alone management information of certain entities within the Group on an unconsolidated basis and therefore are not comparable with or reconciled to the amounts of additions to property plant and equipment presented in the Financial Statements. Investors are strongly cautioned not to place undue reliance on capital expenditure information as it represents unaudited unconsolidated financial information on an accounting basis which is not in compliance with IFRS:

Capital expenditures	Ownership	Year ended 31 December												Six months ended 30 June			
		2015				2016				2017				2018			
		WC <sup>(1)</sup>	S <sup>(2)</sup>	LF/C <sup>(3)</sup>	Total	WC <sup>(1)</sup>	S <sup>(2)</sup>	LF/C <sup>(3)</sup>	Total	WC <sup>(1)</sup>	S <sup>(2)</sup>	LF/C <sup>(3)</sup>	Total	WC <sup>(1)</sup>	S <sup>(2)</sup>	LF/C <sup>(3)</sup>	Total
Ortalyk LLP	100%	2,364	559	141	<b>3,064</b>	2,944	491	109	<b>3,544</b>	2,555	543	169	<b>3,267</b>	796	2,013	27	<b>2,835</b>
Kazatamprom-SaUran LLP	100%	3,455	430	1,212	<b>5,098</b>	3,943	603	410	<b>4,957</b>	5,197	1,185	639	<b>7,020</b>	3,324	230	(693)	<b>2,861</b>
RU-6 LLP	100%	2,806	528	156	<b>3,489</b>	3,250	439	136	<b>3,825</b>	2,453	541	282	<b>3,276</b>	921	141	(243)	<b>819</b>
Appak LLP	65%	2,200	313	99	<b>2,612</b>	2,375	166	114	<b>2,655</b>	2,046	209	87	<b>2,341</b>	224	136	(0)	<b>360</b>
JV Inkai LLP	60%	4,221	4,276	—	<b>8,497</b>	4,009	6,529	—	<b>10,538</b>	5,258	8,077	—	<b>13,335</b>	2,809	1,582	5	<b>4,396</b>
Semizbay-U LLP	51%	2,475	690	106	<b>3,271</b>	2,609	986	134	<b>3,729</b>	2,364	470	137	<b>2,971</b>	1,158	39	37	<b>1,234</b>
Karatau LLP	50%	3,108	742	91	<b>3,942</b>	3,098	459	95	<b>3,652</b>	4,369	2,558	99	<b>7,026</b>	892	601	0	<b>1,493</b>
JV Akbastau JSC	50%	2,687	86	90	<b>2,863</b>	2,641	262	137	<b>3,040</b>	3,103	2,486	144	<b>5,733</b>	922	393	1	<b>1,316</b>
JV Zarechnoye JSC	50%	3,553	291	10	<b>3,853</b>	2,885	517	10	<b>3,412</b>	3,386	535	11	<b>3,931</b>	2,019	178	3	<b>2,199</b>
JV Katco LLP	49%	10,708	3,248	693	<b>14,649</b>	10,538	2,779	761	<b>14,078</b>	10,252	2,866	768	<b>13,886</b>	3,578	1,865	788	<b>6,231</b>
JV Khorassan-U LLP	34%	2,824	—	67	<b>2,891</b>	4,217	680	272	<b>5,170</b>	6,582	254	182	<b>7,018</b>	2,454	76	4	<b>2,534</b>
JV SMCC LLP	30%	3,999	3,920	138	<b>8,057</b>	3,967	3,103	88	<b>7,158</b>	3,962	2,761	858	<b>7,582</b>	1,549	210	108	<b>1,866</b>
Baiken-U LLP	5%	2,613	1,378	123	<b>4,114</b>	4,303	2,674	225	<b>7,202</b>	4,389	3,051	233	<b>7,674</b>	1,589	757	9	<b>2,356</b>
<b>Total mining assets</b>		<b>47,014</b>	<b>16,461</b>	<b>2,923</b>	<b>66,399</b>	<b>50,778</b>	<b>19,688</b>	<b>2,492</b>	<b>72,958</b>	<b>55,918</b>	<b>25,535</b>	<b>3,609</b>	<b>85,061</b>	<b>22,233</b>	<b>8,222</b>	<b>45</b>	<b>30,500</b>

(1) Well construction.

(2) Sustaining.

(3) Liquidation fund / closure.

The Group's subsoil use agreements contain requirements for minimum working programmes in relation to which the Group had capital commitments of KZT5,978 million, KZT5,622 million and KZT4,927 million as at 31 December 2015, 2016 and 2017, respectively. In addition, the Group has committed to pay approximately KZT10,000 million in connection with an acquisition of a new head office building and approximately US\$108 million in connection with the acquisition of additional interests in mining enterprises, in each case by the end of 2018.

As part of its ongoing operations, the Group maintains a certain level of consolidated sustaining capital consisting of wellfield development costs in the amount of KZT12,944 million, KZT15,823 million, KZT16,938 million and KZT11,485 million for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, respectively.

## Cash Flows

The following discussion is based on, and should be read in conjunction with, the Financial Statements and related notes included elsewhere in this Prospectus.

The following table sets out the Group's consolidated cash flows for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2017 and 2018:

	<u>Year ended 31 December</u>			<u>Six months ended 30 June</u>	
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2017</u>	<u>2018</u>
	(KZT millions)				
Cash flows from / (used in) operating activities <sup>(1)</sup> . . . . .	49,135	66,876	23,355	24,730	(45,001)
Cash flows from / (used in) investing activities . . . . .	9,126	12,655	215,575	35,035	(13,158)
Cash flows used in financing activities . . . . .	(54,092)	(56,196)	(74,881)	(17,667)	(82,880)
<b>Net increase / (decrease) in cash and cash equivalents . . . . .</b>	<b><u>4,169</u></b>	<b><u>23,335</u></b>	<b><u>164,049</u></b>	<b><u>42,098</u></b>	<b><u>(141,039)</u></b>

(1) Includes income tax and interest paid.

### **Cash Flows from Operating Activities**

#### *Six Months Ended 30 June 2018 Compared to Six Months Ended 30 June 2017*

Cash flows used in operating activities decreased by KZT69,731 million, or more than 280%, to KZT45,001 million for the six months ended 30 June 2018 from generated KZT24,730 million for the six months ended 30 June 2017. This change was primarily due to:

- a KZT41,760 million decrease in cash receipts from the customers for the six months ended 30 June 2018. This decrease was largely due to a decrease in the Group's sales volumes.
- a KZT23,713 million increase in payments to suppliers for the six months ended 30 June 2018. This decrease was largely due to (i) repayments of accounts payable for the uranium purchased by the Company in the year ended 31 December 2017 which were greater than repayments of accounts payable for uranium purchased by the Company during the year ended 31 December 2016 and (ii) payments by THK for the uranium purchased by it from third parties during the six months ended 30 June 2018, whereas it commenced its active operations in the second half of 2017.

#### *Year Ended 31 December 2017 Compared to Year Ended 31 December 2016*

Cash flows from operating activities decreased by KZT43,521 million, or 65.1%, to KZT23,355 million for the year ended 31 December 2017 from KZT66,876 million for the year ended 31 December 2016. This change was primarily due to:

- KZT50,630 million, or 10.4%, decrease in cash receipts from customers for the year ended 31 December 2017, to KZT435,199 million. This decrease reflects a 21.8% decrease in the average realised price of uranium from US\$30.52 per pound in the year ended 31 December 2016 to US\$23.85 per pound in the year ended 31 December 2017.
- KZT10,789 million, or 36.4% decrease in VAT refund for the year ended 31 December 2017, to KZT18,849 million. This decrease was attributable to the VAT refund which was actually received during the year ended 31 December 2016, but was receivable in the year ended 31 December 2015.

#### *Year Ended 31 December 2016 Compared to Year Ended 31 December 2015*

Cash flows from operating activities increased by KZT17,741 million, or 36.1%, to KZT66,876 million for the year ended 31 December 2016 from KZT49,135 million for the year ended 31 December 2015. This change was primarily due to a KZT90,104 million, or 22.8%, increase in cash receipts from customers for the year ended 31 December 2016, which was largely attributable to the depreciation of the Tenge relative to the U.S. Dollar from KZT222.25 per US\$1 in the year ended 31 December 2015 to KZT341.76 per US\$1 in the year ended 31 December 2016 and was partially offset by a KZT58,182 million, or 18.1%, increase in payments to suppliers for the year ended 31 December 2016, which largely occurred due to the higher cost of uranium purchased from joint ventures and associates as a result of depreciation.

### **Cash Flows from Investing Activities**

#### *Six Months Ended 30 June 2018 Compared to Six Months Ended 30 June 2017*

Cash flows used in investing activities decreased by KZT48,193 million, or more than 135%, to a cash outflow of KZT13,158 million for the six months ended 30 June 2018 from generated cash of KZT35,035 million for the six

months ended 30 June 2017. This change was primarily due to: a KZT13,188 million, or 64.9%, decrease in dividends received from associates, joint ventures and other investments to KZT7,135 million in for six months ended 30 June 2018. This was largely due to consolidation of JV Inkai LLP as subsidiary and consolidation of JV Akbastau JSC and Karatau LLP as joint operations in the six months ended 30 June 2018 as a result of the change the Group's structure (see "*—Significant Factors Affecting the Group's Results of Operations—Corporate Restructuring Activity*").

#### *Year Ended 31 December 2017 Compared to Year Ended 31 December 2016*

Cash flows from investing activities increased substantially by KZT202,920 million, or more than 1,600%, to KZT215,575 million for the year ended 31 December 2017 from KZT12,655 million for the year ended 31 December 2016. This change was primarily due to:

- the Group's receipt of proceeds of KZT173,719 million from exercise of a put option in the year ended 31 December 2017, whereas the Group did not receive any comparable proceeds in the year ended 31 December 2016. These proceeds are attributable to the disposition by the Company of its shares in the Toshiba HoldCos to Toshiba Corporation pursuant to the exercise of a put option for a consideration of US\$522.2 million. See "*—Significant Factors Affecting the Group's Results of Operations—Disposals of Non-Core Assets.*"
- a KZT42,029 million, or 77.7%, decrease in cash flows used in placement of term deposits and restricted cash in the year ended 31 December 2017 to KZT12,095 million, primarily attributable to the transfer of funds to bank accounts for the payment of dividends to the Company's sole shareholder and to maintain the Group's positive working capital.
- a KZT46,162 million, or 509.8%, increase in cash flows from redemption of term deposits and restricted cash in the year ended 31 December 2017 to KZT55,216 million, which was attributable to withdrawal from deposits of cash necessary to finance the payment of dividends.

These factors were partially offset by:

- a KZT42,319 million, or 53.7%, decrease in dividends received from associates, joint ventures and other investments in the year ended 31 December 2017 to KZT36,486 million, which was attributable to a 16.3% decrease in the market spot price of uranium from US\$26.36 per pound in the year ended 31 December 2016 to US\$22.07 per pound in the year ended 31 December 2017, since the majority of the Group's JVs and Associates are engaged in the production and sales of uranium products.
- a KZT12,779 million, or 99.9%, decrease in cash flows from repayment of loans to related parties, which is attributable to the complete repayment of the loans of Baiken-U LLP to the Company in the year ended December 2016, with no repayments due or being made in the year ended 31 December 2017.

#### *Year Ended 31 December 2016 Compared to Year Ended 31 December 2015*

Cash flows from investing activities increased by KZT3,529 million, or 38.7%, to KZT12,655 million for the year ended 31 December 2016 from KZT9,126 million for the year ended 31 December 2015. This change was primarily due to:

- a KZT35,938 million, or 83.8%, increase in dividends received from associates, joint ventures and other investments in the year ended 31 December 2016 to KZT78,805 million, which was largely attributable to an increase in the profitability of the joint ventures and associates as a result of the 53.8% depreciation of the Tenge relative to the U.S. Dollar from KZT222.25 per US\$1 in the year ended 31 December 2015 to KZT341.76 per US\$1 in the year ended 31 December 2016.
- a KZT11,576 million, or 955.9%, increase in proceeds from repayment of loans to related parties in the year ended 31 December 2016 to KZT12,787 million in accordance with the repayment schedules for such loans.

These factors were partially offset by a KZT39,754 million, or 276.6%, increase in placement of term deposits and restricted cash in the year ended 31 December 2016 to KZT54,124 million, which was attributable to the depositing of cash received from operational activities by the Company with banks as term deposits.



### Cash Flows used in Financing activities

#### Six Months Ended 30 June 2018 Compared to Six Months Ended 30 June 2017

Cash flows used in financing activities increased by KZT65,213 million, or 369.1%, to KZT82,880 million for the six months ended 30 June 2018 from KZT17,667 million for the six months ended 30 June 2017. This change was primarily due to:

- a KZT45,019 million increase in cash used in dividends paid to the shareholder in the six months ended 30 June 2018 with no corresponding payment in the six months ended 30 June 2017.
- a KZT40,911 million, or 151.4%, increase in cash used in repayment of loan and borrowings in the six months ended 30 June 2018 to KZT67,931 million.

#### Year Ended 31 December 2017 Compared to Year Ended 31 December 2016

Cash flows used in financing activities increased by KZT18,685 million, or 33.3%, to KZT74,881 million for the year ended 31 December 2017 from KZT56,196 million for the year ended 31 December 2016. This change was primarily due to:

- a KZT53,818 million, or 447.3%, increase in cash used in dividends paid to the shareholder in the year ended 31 December 2017 to KZT65,849 million.
- a KZT7,980 million, or 14.9%, increase in cash used in repayment of loans and borrowings in the year ended 31 December 2017, which was largely attributable to the repayment of bank loans by the Group's subsidiaries engaged in the solar power industry.

These factors were partially offset by a KZT42,721, or 424.2%, increase from proceeds from loans and borrowings in the year ended 31 December 2017 to KZT52,793 million, which was primarily attributable to short-term borrowings by the Group raised to finance its working capital requirements.

#### Year Ended 31 December 2016 Compared to Year Ended 31 December 2015

Cash flows used in financing activities increased by KZT2,104 million, or 3.9%, to KZT56,196 million for the year ended 31 December 2016 from KZT54,092 million for the year ended 31 December 2015. This change was primarily due to:

- a KZT153,779 million, or 93.9%, decrease in proceeds from loans and borrowings in the year ended 31 December 2016 to KZT10,072 million, which was primarily attributable to the fact that in the year ended 31 December 2016, the Company raised no financing comparable to the syndicated loan which was raised during the year ended 31 December 2015 with the aim of refinancing its Eurobonds.
- a KZT9,708 million, or 417.9%, increase in cash used in dividends paid to the shareholder in the year ended 31 December 2016 to KZT12,031 million.

These factors were partially offset by a KZT162,246 million, or 75.2%, decrease in cash used in repayment of loans and borrowings in the year ended 31 December 2016, which was attributable to the fact that the Company repaid its US\$500 million Eurobonds which were due in the year ended 31 December 2015, with no comparable repayments in the year ended 31 December 2016.

### Indebtedness

The Group's indebtedness primarily consists of bank loans from international banks and Kazakhstan banks.

The following table summarises the Group's indebtedness as at 31 December 2015, 2016, 2017 and as at 30 June 2018:

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
	(KZT millions)			
Non-current debt, <i>including</i> .....	119,776	77,304	39,204	787
Bank loans .....	119,481	76,861	38,557	—
Non-bank loans .....	295	323	353	369
Finance lease liabilities .....	—	120	294	418
Current debt, <i>including</i> .....	52,845	50,625	82,499	90,328
Bank loans .....	52,845	50,581	82,374	54,007
Non-bank loans .....	—	—	—	36,202
Finance lease liabilities .....	—	44	125	119
<b>Total debt</b> .....	<b>172,621</b>	<b>127,929</b>	<b>121,703</b>	<b>91,115</b>

The following table summarises the Group's weighted average interest rate on bank loans as at 31 December 2015, 2016, 2017 and as at 30 June 2018:

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
			(%)	
Fixed interest rates	4.97	5.39	6.29	4.25
Floating interest rates	2.44	2.81	3.47	4.04

The Group's credit facilities contain certain affirmative and negative covenants described in Note 35 to the Annual Financial Statements, Note 30 to the Interim Financial Statements and below in "*—Key Loan Facility Agreements.*"

### Net Debt

The following table summarises the Company's net debt (cash) as at 31 December 2015, 2016 and 2017 and as at 30 June 2018:

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
Total debt, <i>including</i>	172,621	127,929	121,703	91,115
Total bank loans	172,326	127,442	120,931	54,007
Total non-bank loans	295	323	353	36,571
Total finance lease liabilities	—	164	419	537
Cash and cash equivalents	(55,869)	(75,052)	(239,936)	(100,542)
Current term deposits	(9,020)	(56,476)	(8,472)	(7,618)
<b>Net Debt</b>	<b>107,732</b>	<b>(3,599)</b>	<b>(126,705)</b>	<b>(17,045)</b>

The Group's cash and cash equivalents as at 31 December 2015, 2016 and 2017 and as at 30 June 2018 were KZT55,869 million, KZT75,052 million, KZT239,936 million and KZT100,542 million, respectively. The substantial increase as at 31 December 2017 is due principally to the disposition by the Company of its shares in the Toshiba HoldCos to Toshiba Corporation pursuant to the exercise of a put option for a consideration of US\$522.2 million. See "*—Significant Factors Affecting the Group's Results of Operations—Disposals of Non-Core Assets.*"

### Debt Leverage Ratios

The following table summarises the key ratios used by the Company's management to measure the Group's financial stability as at 31 December 2015, 2016 and 2017 and as at 30 June 2018:

	As at 31 December			As at 30 June 2018 <sup>(1)</sup>
	2015	2016	2017	
Total Debt to Adjusted EBITDA	1.2	0.8	1.3	1.1
Net Debt to Adjusted EBITDA	0.8	(0.0)	(1.3)	(0.2)

(1) Adjusted EBITDA is calculated for the last 12 months as Adjusted EBITDA for the year ended 31 December 2017 minus Adjusted EBITDA for the six months ended 30 June 2017 plus Adjusted EBITDA for the six months ended 30 June 2018.

The Company aims for the Net Debt to Adjusted EBITDA ratio for the year ended 31 December 2018 not to exceed 1.0.

### Key Loan Facility Agreements

The Group's indebtedness consists exclusively of bank and non-bank loans. The outstanding debt related to the Group's principal loan facility agreements, which are summarised below, represent substantially all of the Group's total indebtedness as at 30 June 2018.

- **Syndicated Loan.** In January 2015, the Company entered into a loan facility agreement with The Bank of Tokyo Mitsubishi UFJ, LTD., Citibank N.A. London Branch, Deutsche bank A.G. London Branch, Mizuho Bank, LTD., and Sumitomo Mitsui Banking Corporation for the total amount of US\$450 million to finance the redemption of the Company's Eurobonds. As at 30 June 2018, the outstanding loan amount was US\$112.5 million. The loan is repayable until 28 June 2019 in equal instalments quarterly, and bears an interest rate of LIBOR plus margin per annum.

The loan facility agreement contains certain covenants which restrict the Group's ability to dispose of property, create security over assets of the Group and acquire equity in entities. In addition, the loan facility agreement requires the Company to maintain total debt to EBITDA and total debt to shareholder equity. In addition, the loan facility agreement require the Government to maintain ownership of no less than 75% in the Company.

- ***Loan agreement between the Company, THK and Société Generale.*** In July 2013, the Company entered into an unsecured loan facility agreement with Société Generale. In November 2017, the total amount of the credit line was increased from US\$60 million to US\$125 million. In January 2018, THK acceded to the loan agreement as a borrower. As at 30 June 2018, the outstanding loan amount was US\$26.5 million, and US\$98.5 million was available for drawdown. As at 30 September 2018, the outstanding debt was US\$15 million, repayment of which is due on 31 January 2019.

Any drawdowns under the loan facility agreement are to be repaid within 30–360 days from drawdown date depending on conditions stated in each specification, and bear an interest rate of LIBOR + margin per annum. The credit line has no term, although is subject to re-approvals every two years. Société Generale at any time at its sole discretion is entitled to terminate the agreement upon 30 days' prior written notice. Any outstanding drawdowns at the time of such termination shall continue to be repayable in accordance with the original terms of the loan facility agreement until such repayment.

The loan facility agreement contains certain covenants which restrict the Group's ability to create encumbrances, disposing of certain assets, undertake corporate reorganisation, as well as to act in breach of international sanctions. In addition, the Company is required to maintain its 100% ownership in THK, and the Government is required to maintain ownership of no less than 50% plus one share in the Company.

- ***Loan agreement between the Company, JSC UMF, JSC Volkovgeologia, Kazatomprom-Damu LLP, LLC High Technology Institute, LLC Trading and Transportation Company and JSC Citibank Kazakhstan and Citibank N.A., Jersey branch.*** In December 2014, the Company, JSC UMF, JSC Volkovgeologia, LLC High Technology Institute and LLC Trading and Transportation Company entered into a loan facility agreement with JSC Citibank Kazakhstan. The total amount of the opened credit line was initially US\$40 million. On 28 September 2018, the total amount of the credit line was increased to US\$100 million, as an additional US\$60 million was made available exclusively to the Company by Citibank N.A. Jersey branch. As at 30 June 2018, the outstanding loan amount was US\$1 million, and US\$39 million was available for drawdown. The outstanding debt is repayable on 29 January 2019.

Any drawdowns under the loan facility agreement are to be repaid during the period of up to 360 days from the drawdown date and may be subject to further conditions as may be set out in particular specifications. The loan bears an interest rate of LIBOR plus margin, determined individually for each drawdown, per annum.

The loan facility agreement contains certain covenants which restricts the borrower's ability to dispose of property, create security and to undertake corporate reorganisation. In addition, the loan facility agreement requires the borrowers to not permit any change in their shareholding structure with respect to any shareholders owning 10% or more shares in them.

- ***Loan agreement between JV Inkai LLP and Netherlands International Uranium B.V., a subsidiary of Cameco Corporation.*** The agreement was entered into in September 2006. Pursuant to the loan agreement, 100% of the amount potentially distributable to the shareholders of JV Inkai LLP (including the Company which holds a 60% interest and Cameco which holds a 40% interest) is required to be directed towards repayment of the principal loan amount. There is no definite repayment date for this loan pursuant to the terms of this loan agreement, although pursuant to JV Inkai LLP's current business plan, it intends to repay the loan by the end of 2020; however, the Company is considering setting a shorter term for repayment of this loan in the revised business plan of JV Inkai LLP.

As of 30 June 2018, JV Inkai LLP's indebtedness was US\$106.1 million. The loan bears an interest rate of LIBOR + margin per annum.

In addition, in September 2018, the Company entered into an unsecured loan facility agreement with Mizuho Bank, Ltd. for the total amount of US\$100 million to finance the Company's general corporate needs. The Company intends to draw down all or substantially all of the funds available under the US\$100 million loan agreement with Mizuho Bank, Ltd. between 5 and 9 November 2018. The loan is repayable until 28 September 2020 in accordance with a payment schedule, and bears an interest rate of LIBOR plus margin, per annum. The loan facility agreement contains

certain covenants which restrict the Group's ability to create encumbrances, disposing of certain assets, undertake corporate operation, as well as to act in breach of international sanctions. In addition, the loan facility agreement requires the Company to maintain total debt to EBITDA and total debt to shareholder equity. In addition, the loan facility agreement require the Government to maintain ownership of no less than 51% in the Company.

### **Off-Balance Sheet Arrangements**

As at 30 June 2018, the Company had an outstanding guarantee in the amount of US\$40.3 million as security for loan raised by its related party. The underlying liability is denominated in U.S. Dollars and is repayable until March 2023 in equal semi-annual instalments.

The Group does not have other off-balance sheet arrangements that have, or are reasonably likely to have, a current or future material effect on the Group's financial condition, sales, expenses, results of operations, liquidity, capital expenditures, or capital resources.

### **Contingencies and Commitments**

The summary of the Group's principal commitments and contingencies is set out below. For a detailed discussion of the Group's commitments and contingencies, see Note 39 to the Annual Financial Statements and Note 34 to the Interim Financial Statements.

### ***Transfer Pricing***

Under the transfer pricing law, international transactions are subject to state control. This law prescribes Kazakhstani companies to maintain and, if required, to provide economic rationale and method of the determination of prices used in international transactions, including existence of the documentation supporting the prices and differentials. Additionally, differentials could not be applied to the international transactions with companies registered in off-shore countries. In case of deviation of transaction price from market price the tax authorities have the right to adjust taxable items and to impose additional taxes, fines and interest penalties.

Regardless of the inherent risks that the tax authorities may question transfer pricing policy of the Group related to the new law on transfer pricing, the management of the Group believes that it will be able to sustain its position in case if transfer pricing policy of the Group will be challenged by the tax authorities. From 1 January 2009, the Group self-assesses additional income tax to reflect market prices. The amount of income tax liability so recognised was KZT542 million, KZT693 million, KZT509 million and KZT47 million, respectively, for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, respectively.

In July 2015, the tax authorities completed an examination of the Group's compliance with transfer pricing rules in the year ended 31 December 2008. As a result of the examination, the Group received report and notice of payment of additional corporate income tax and penalties for the total amount of KZT3,302 million, including corporate income tax of KZT2,512 million and a penalty of KZT790 million. The Group did not agree with the notice and filed an appeal, which was ultimately unsuccessful. Accordingly, as at 31 December 2016 the Group recognised the whole amount of assessments of KZT2,512 million within income tax expense and a penalty of KZT996 million within general and administrative expenses. The amount of taxes and penalties was paid in full.

### ***Environmental Obligations***

As at 30 June 2018, management concluded that the Group has no legal or constructive obligation to finance decommissioning, maintaining and dismantling of reactor BN-350 owned by MAEK. However, there is high uncertainty in terms of how the matter will be developed in the future and impact of decommissioning of BN-350 (including UPN unit). Future events or changes in legislation may lead to reconsideration of this matter. Depending on future developments management will reassess presence of obligation based on available facts and circumstances. Should obligations to finance activities for decommissioning of reactor BN-350 be transferred to the Group, this would require the recognition of the appropriate provision for full amount. See also "*Risk Factors—Risks relating to the Group's business—The Group may face liability in connection with the operations of its former subsidiary.*"

### ***Guarantees***

Guarantees are irrevocable assurances that the Group will make payments in the event that another party cannot meet its obligations. The maximum exposure to credit risk under financial guarantees, provided to secure financing of certain related parties, was KZT67,479 million, KZT21,649 million, KZT14,732 million and KZT13,746 million, respectively, as at 31 December 2015, 2016 and 2017 and as at 30 June 2018, respectively.

### ***Compliance with Covenants***

The Group is subject to certain covenants related primarily to its loans and borrowings. Non-compliance with covenants may result in negative consequences for the Group including increase in cost of borrowing. The Group was in compliance with covenants at 31 December 2015, 2016 and 2017 and as at 30 June 2018.

### ***Subsoil Use Commitments***

The Group had capital commitments under subsoil use contracts which set out minimum working programs for each year in the amount of KZT5,978 million, KZT5,622 million and KZT4,927 million, respectively, for the years ended 31 December 2015, 2016 and 2017.

### ***Memoranda with South Kazakhstan and Kyzylorda Municipalities***

In December 2014, the Group signed memoranda with South Kazakhstan and Kyzylorda municipalities for cooperation under social and economic development of the region for 2015–2016. In accordance with these memoranda, the Group undertook to transfer social facilities owned by the Group to public ownership and to provide financing of approximately KZT3.6 billion in 2015–2016 to such municipalities. The memoranda also envisaged the financing of construction of three social facilities for the total amount of approximately KZT3.2 billion and a business centre in Shymkent in 2015–2016. As at 31 December 2016, the Group has fully fulfilled the terms of the memoranda.

### ***Significant Transactions***

#### ***Agreement with Cameco***

In 2016, the Company and Cameco which owned at that time a 60% interest in JV Inkai LLP entered into a restructuring agreement. The agreement provided for further development of joint projects at JV Inkai LLP for next 30 years, including prolongation of subsoil use contract term and increase of the Group's interest in JV Inkai LLP from 40% to 60%. The agreement also sets out the terms by which the Company may license Cameco's uranium conversion technology.

In December 2017, the Company and Cameco completed restructuring of JV Inkai LLP. Under the terms of the restructuring agreement, effective 1 January 2018 the Group increased its interest in JV Inkai LLP from 40% to 60% and obtained control over the company. In addition, according to the restructuring agreement and the addendum to the subsoil use contract signed on 30 November 2017, the competent authority approved extension of the subsoil use contract until 2045 and an increase in annual production to 4,000 tonnes of uranium.

#### ***Agreement with Uranium One***

In October 2016, RosAtom, the Ministry of Energy of the Republic of Kazakhstan and the Company signed a memorandum of understanding and enhanced strategic cooperation in the area of nuclear fuel cycle. Under the memorandum, the Company and Uranium One Inc., a subsidiary of RosAtom, signed an agreement on further development of Karatau LLP. In accordance with the Agreement, Uranium One Inc. made an advance payment to the Group in the amount of US\$10 million.

The Group and Uranium One Inc each hold 50% interest in Karatau LLP and JV Akbastau JSC. Prior to 2018, these investments were accounted for in the Financial Statements using equity method. The Group and Uranium One Inc entered into a number of agreements formalising their respective obligations to purchase all products in proportion to their shares, to apply equal selling price and to provide financing proportional to their shares. These changes have resulted in treatment of Karatau LLP and JV Akbastau JSC as joint operations under IFRS 11. As a result, assets, liabilities, revenues and expenses of Karatau LLP and JV Akbastau JSC are consolidated in proportion to the Group's their share of participation, provided that the criteria for classification as joint operations are met.

#### ***Agreement with Orano***

In April 2017, the Company and Orano (then Areva) signed an agreement on further development of JV Katco LLP on the basis of South Tortkuduk mine. The agreement envisaged an increase in annual production volume from 1,500 tonnes to 4,000 tonnes of uranium starting from 2022 and the entitlement of the Group to an additional 11% compensation from distributable profit of JV Katco LLP. As a result, the Group will be entitled to 60% of total dividends payable by JV Katco LLP starting from 2022.

### **Qualitative and Quantitative disclosures about market risk**

The risk management function within the Group is carried out in respect of financial risks, operational risks and legal risks. Financial risk includes market risk (such currency risk, interest rate risk and price risk), credit risk and liquidity risk. The Group's financial risk management's function's primary objectives are to establish risk limits, and then to



ensure that risk exposure stays within these limits. Risk management policies and systems are regularly analysed for the need of revision due to changes in market conditions and the Group's operations. The Group sets standards and implements training and management procedures to create a streamlined and effective system of controls to achieve an environment in which all employees understand their roles and responsibilities. The operational and legal risk management functions are intended to ensure the proper functioning of internal policies and procedures, in order to minimise operational and legal risks. For additional details of the Group's financial risk management, see Note 42 to the Annual Financial Statements.

### ***Credit risk***

The Group takes on exposure to credit risk, which is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. Exposure to credit risk arises as a result of the Group's sales of products on credit terms and other transactions with counterparties giving rise to financial assets. Financial assets, which potentially expose the Group to credit risk, consist mainly of trade and other receivables, cash and cash equivalents, term deposits and loans to employees and related parties.

The Group's maximum exposure to credit risk by class of assets is reflected in the carrying amounts of financial assets in the statements of financial position. The credit risk on cash and cash equivalents and term deposits is limited because the counterparties are banks with high credit ratings assigned by international credit rating agencies.

The table below shows credit ratings of banks where the Group had accounts as at 31 December 2017:

	<b>Standard &amp; Poor's Rating</b>			<b>Total</b>
	<b>B</b>	<b>C</b>	<b>Other</b>	
	<b>(KZT millions)</b>			
Restricted cash .....	3,451	3	1,165	4,619
Term deposits .....	8,472	—	—	8,472
Current bank accounts .....	230,035	2,793	2,017	234,845
Demand deposits .....	5,008	45	—	5,053
<b>Total</b> .....	<b>246,966</b>	<b>2,841</b>	<b>3,181</b>	<b>252,989</b>

The Group's exposure to credit risk in respect of trade accounts receivable is influenced mainly by the individual characteristics of each customer. The demographics of the Group's customer base, including the default risk of the industry and country, in which customers operate, has less of an influence on credit risk. The Group is exposed to concentrations of credit risk. 54% of the Group's revenue for 2017 (and approximately 29% of trade receivables as of 31 December 2017) were attributable to sale transactions with its seven largest customers.

### ***Liquidity risk***

Liquidity risk is the risk that an entity will encounter difficulty in meeting obligations associated with financial liabilities. The Group is exposed to daily calls on its available cash resources. Liquidity risk is managed by the corporate finance and treasury department of the Group. The Company's management monitors monthly rolling forecasts of the Group's cash flows.

The Group seeks to maintain a stable funding base primarily consisting of borrowing, trade and other payables and debt securities. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities as they fall due, under both normal and stressful conditions, without incurring unacceptable losses or risking damage to the Group's reputation. The Group invests the funds in diversified portfolios of liquid assets, in order to be able to respond quickly and smoothly to unforeseen liquidity requirements.

Typically the Group ensures that it has sufficient cash on demand to meet expected operational expense of financial obligations which excludes the potential impact of extreme circumstances that cannot reasonably be predicted, such as natural disasters.

### ***Market risk***

The Group takes on exposure to market risks. Market risk is the risk that changes in market prices will have a negative impact on the Group's income or the value of its financial instrument holdings. Market risks arise from open positions in foreign currencies, interest bearing assets and liabilities and equity products, all of which are exposed to general and specific market movements. The objective of market risk management is to monitor and control market risk exposures within acceptable limits, while optimising the return on investments. The Company's management sets limits on the value of risk that may be accepted, which is monitored on a daily basis. However, the use of this approach does not prevent losses outside of these limits in the event of more significant market movements.

Sensitivities to market risks included below are based on a change in a factor while holding all other factors constant. In practice this is unlikely to occur and changes in some of the factors may be correlated—for example, changes in interest rate and changes in foreign currency rates.

### ***Currency risk***

The Group is exposed to currency risk on sales, purchases and borrowings denominated in currencies other than the functional currency. Borrowings are denominated in currencies that match the cash flows generated by operating entities in the Group. Therefore, in most cases, economic hedging is achieved without derivatives. In respect of other monetary assets and liabilities denominated in foreign currencies, the Group ensures that its net exposure is kept to an acceptable level by planning future expenses taking into consideration the currency of payment. The Group is mainly exposed to the risk of US Dollar currency fluctuations. The Group's exposure to currency risk as at 31 December 2015, 2016 and 2017 was as follows:

	<b>As at 31 December</b>		
	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>(in KZT millions)</b>		
<b><i>Denominated in US Dollars</i></b>			
Trade accounts receivable .....	96,261	58,376	46,474
Other account receivables .....	216	—	—
Loans to related parties .....	31,133	19,151	20,302
Current bank accounts .....	44,621	43,577	212,119
Demand deposits .....	1,020	11,978	1,937
Term deposits .....	11,432	54,304	7,586
<b>Total assets</b> .....	<b>184,683</b>	<b>187,386</b>	<b>288,418</b>
Bank loans .....	(139,730)	(106,031)	(95,016)
Trade accounts payable .....	(11,937)	(11,487)	(14,410)
Historical costs liabilities .....	(4,133)	(2,813)	(1,125)
<b>Total liabilities</b> .....	<b>(155,800)</b>	<b>(120,331)</b>	<b>(110,551)</b>
<b>Net exposure to currency risk</b> .....	<b>28,883</b>	<b>67,055</b>	<b>177,867</b>

## REGULATORY MATTERS

### Regulation of Mineral Rights in Kazakhstan

#### *General*

In Kazakhstan, all subsoil resources belong to the State. There are two Governmental bodies regulating and competent in the field of subsoil use (the “**Competent Authority**”): the Ministry of Energy, which is a competent authority in respect of uranium and hydrocarbons, and the Ministry of Investments and Development, which is a competent authority in respect of solid minerals. The Competent Authority represents the interests of the Republic of Kazakhstan and implements the state policy in the field of subsoil use for solid minerals and hydrocarbons. The Competent Authority grants exploration and production rights on behalf of the State. Subsoil use rights are granted for a determinable period subject to possible extension before the expiration of the applicable subsoil use agreement and licence (if applicable and permitted). Subsoil use rights may be terminated by the Competent Authority if, *inter alia*, subsoil users do not satisfy their contractual obligations, which may include periodic payment of taxes to the Government and the satisfaction of mining, environmental, and health and safety requirements.

Prior to August 1999, subsoil use rights for mining operations were established by the grant of a licence and the execution of a subsoil use agreement. In August 1999, the Government, in an attempt to simplify the procedure, abolished this two tier process. Subsoil use rights are now established only by means of a subsoil use agreement, and no licence is required. However, previously issued licences remain in full force until their date of expiry.

#### *Subsoil Use Agreements*

The Company is the national atomic company of Kazakhstan, as well as the national operator, which is responsible for mining in Kazakhstan and importing and exporting uranium, uranium compounds, fuel for nuclear power stations, special equipment and technologies and dual-use materials. As such, the Company is granted a preferential right by the Republic of Kazakhstan to obtain subsoil use rights through direct negotiations, as opposed to through a tender process.

In order to initiate direct negotiations, the Company files an application indicating, among other things, the characteristics of the deposits in question. The Competent Authority then must inform the Company of a date for negotiations or its refusal to negotiate within two months of receiving the application. If negotiations are held and are successful, the subsoil use right is granted and a contract is executed between the Company and the Competent Authority.

Subsoil use agreements may be entered into for up to 25 years (or 45 years for deposits with large and unique reserves), depending on the amount of reserves present at the deposit site. Under a subsoil use agreement, the contractor is allowed to perform exploration and/or production on the contract territory. The contractor can export all of the materials it produces in accordance with Kazakhstan law and international treaties. However, export of such materials must be done through the Company. See “—*Regulatory Function of the Company*”. The contractor is obligated to use the most efficient means of exploration and mining and must comply with set technological parameters of exploration and mining, including ecological and radiation safety parameters. The contractor must also primarily engage Kazakhstan labour resources, recultivate land plots and finance the organisation, and develop and maintain the social infrastructure in the region where mining operations are performed. A certain percentage or amount of production expenses, usually specified in subsoil use agreements, is also required to be used for professional training of Kazakhstan specialists.

With effect from 29 June 2018, the Subsoil Code dated 27 December 2017 replaced the Law “On Subsoil and Subsoil Use” dated 24 June 2010 (the “**Subsoil Law**”). The Subsoil Code’s main aims include the attraction of investment into the mining sector and expansion of exploration activities. The Subsoil Code has for the first time introduced a rule under which licences for exploration of solid subsoil resources can be granted to the first applicant (provided no one else has applied for the same deposit), while retaining the pre-existing procedure under which subsoil use rights are granted on the basis of a tender. The Subsoil Code has also significantly simplified the application process for the obtainment of subsoil use rights. Under the Subsoil Code, subsoil use agreements and licences may be granted to local or foreign legal entities or individuals. Transfers of subsoil use rights are only permitted after consent of the Competent Authority has been obtained. The transfer of a subsoil use right (a share in the subsoil use right) is prohibited (i) under the contract for the exploration of solid minerals in the first year of its operation; (ii) under the contract for geological study of subsoil resources; and (iii) under the contract for gold mining.

Subsoil Code provides for new obligations and a set of mandatory provisions to be established in the subsoil use agreement. The Subsoil Code contains mandatory provisions to be set out in a subsoil use agreement. In general, the content of subsoil use agreements under the Subsoil Code is practically the same as that under previous Subsoil Law.

In respect of the subsoil use agreements concluded before the Subsoil Code entered into force, the latter outlines the general rules:

- (i) Subsoil use permits, licences and subsoil use agreements concluded before the Subsoil Code entered into force, as well as the legal acts of executive state bodies of Kazakhstan connected to them, shall remain in effect;
- (ii) Subsoil use agreements concluded before the Subsoil Code entered into force, can be amended by agreement between the parties (i.e. the subsoil user and the Competent Authority), or in cases prescribed in the contracts or in the laws;
- (iii) Amendments and supplements to the laws of Kazakhstan, which worsen the results of the entrepreneurial activity of a subsoil user under its subsoil use agreements, do not apply to the contracts concluded before the introduction of such amendments.

The Subsoil Code also sets forth a limited list of grounds based on which the contract may be amended by way of executing a supplementary (amendment) agreement. Such amendments relate to the information on the subsoil user, extension of exploration and/or production periods, transfer of the rights under the contract, or changes in the contract area. In case of changing (extending) the subsoil use agreement's term, the subsoil user shall enter into a new contract according to the terms and conditions of the model contract, if the original contract was entered into prior to the Subsoil Code enactment and does not conform to the model contract.

As at the date of this Prospectus, there has not been a unilateral termination of a subsoil contract with any subsidiary or joint venture of the Company.

#### ***Local Content Requirements***

The Subsoil Code generally requires subsoil users to comply with certain local content requirements, including the use of Kazakhstan suppliers and Kazakhstan personnel. These general requirements are usually detailed in the subsoil use agreements to which the Company's subsidiaries and joint venture companies are parties.

Since 2002, the Government has introduced a policy aimed at replacing imports and using greater involvement, support and further stimulation of local producers. This policy was further developed in 2009 when the Governmental authorities elaborated on the amendments to the subsoil legislation that are also reflected in the Subsoil Code and other related laws (the "**Local Content Requirements**") to increase local content in the purchase of goods, work and services by state bodies, national companies and subsoil users. The Local Content Requirements introduce new criterion, such as using a percentage of local employee salaries in payroll funds for the calculation of local content. In addition, a centralised electronic system for the purchase of goods, works and services used in subsoil use operations is required to be established and maintained.

#### ***State Pre-emption and Regulation of Subsoil Use Rights***

The Subsoil Code contains Article 43, which provides the Republic of Kazakhstan with a priority right before any persons and organizations, including individuals and organizations that have pre-emptive rights based on the laws of the Republic of Kazakhstan or the contract, for the acquisition of the alienated subsoil use right (a share in the subsoil use right) over the strategic sites of subsoil resources.

#### **The Competent Authority and Other Regulatory Authorities, including IAEA**

##### ***General***

The Government plays a major role in three areas of subsoil management. The Government is responsible for organising and managing state owned reserves, outlining subsoil allotments, defining the list of commonly occurring minerals, defining the procedures for the conclusion of subsoil use agreements, approving model contracts and appointing the Competent Authority, and imposing bans and restrictions on the use of subsoil for the purpose of national security, safety of life and health of the population and environmental protection. The Government, through the Competent Authority, has the power to execute and implement subsoil use agreements. Local executive authorities have responsibility for, among other things, allotment of land plots to subsoil users, the organization and conduct of state geological study of subsoil resources for groundwater for domestic and potable water supply. However, local authorities do not have a leading role in subsoil use management.

### ***The Competent Authority***

The Competent Authority is designated by the Government to enter into subsoil use agreements. In addition, the Subsoil Code provides that the Competent Authority is responsible for:

- (i) organising tenders for the granting of subsoil use rights for exploration and/or production of minerals;
- (ii) executing and registering subsoil use agreements;
- (iii) monitoring compliance with the terms of subsoil use agreements;
- (iv) issuing permits for the transfer of subsoil use rights (under article 44 of the Subsoil Code) and registration of transactions involving pledges of subsoil use rights;
- (v) monitoring compliance with the requirement that goods and services to be procured through the tender process and from Kazakhstan producers, if such goods and services meet Kazakhstan and international standards; and
- (vi) suspending and terminating subsoil use agreements in accordance with the procedures set forth in the Subsoil Code.

### ***Other Regulatory Authorities***

Other governmental ministries and authorities which regulate aspects of mineral extraction in Kazakhstan include:

- (i) the Committee of Emergency Situations, which, among other things, supervises safety in mining operations;
- (ii) the Committee on Geology and Subsoil Use (under The Ministry of Investment and Development), which, among other things, approves annual work programmes and supervises mining operations;
- (iii) the Committee of Construction and Housing Matters, which exercises State control over the quality of construction and construction materials;
- (iv) various governmental authorities responsible for the approval of construction projects and the use of water and land resources;
- (v) the Committee for Public Health Protection (under the Ministry of Healthcare), which is responsible for monitoring compliance with health standards;
- (vi) the Ministry of Labour and Social Protection of the Population, which is responsible for investigating labour disputes and complaints from individual employees and which monitors compliance with the obligations of subsoil users to give preference in hiring, including employing a certain minimum percentage of Kazakhstan nationals;
- (vii) the Committee of Technical Regulation and Metrology (under the Ministry of Investments and Development), which is responsible for testing used equipment;
- (viii) regional and municipal regulatory authorities, which are responsible for registering properties, pledges and mortgages; and
- (ix) republican and regional tax authorities.

### ***The IAEA***

In 1969, Kazakhstan ratified the Treaty on the Non-Proliferation of Nuclear Weapons of 1968 (“**NPT Treaty**”). In 1994, in order to comply with the requirements set out in the Article III of the NPT Treaty, Kazakhstan and the IAEA signed an agreement on acceptance of safeguards in connection with the NPT Treaty, which was ratified in 1995 (“**Safeguards Agreement**”).

In accordance with the Safeguards Agreement, Kazakhstan accepts the application of IAEA safeguards on all “source or special fissionable material” in all peaceful nuclear activities within its territory, under its jurisdiction or carried out under its control for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear devices.



Pursuant to the Safeguards Agreement, Kazakhstan provides the IAEA with accounting, reports, special reports and amplification and clarification reports in respect of nuclear material subject to safeguards. Under the Safeguards Agreement, the IAEA performs *ad hoc* and routine inspections in connection with nuclear material subject to safeguards during which it may examine the records on nuclear materials, make independent measurements of nuclear material, verify the functioning and calibration of instruments and other measuring and control equipment, and apply and make use of surveillance and containment measures. In cases of facilities or “material balance areas” with annual production of nuclear material not exceeding five “effective kilograms,” routine inspections are performed annually.

The Company’s facilities subject to IAEA inspections are MAEK (due to the presence of the BN-350 Reactor) and the Ulba Facility (due to its manufacturing involving enriched uranium, such as fuel pellets and UO<sub>2</sub> powder).

In 2004, Kazakhstan and the IAEA signed a protocol in addition to the Safeguards Agreement, which was ratified by Kazakhstan in 2007 (“**Additional Protocol**”), in order to strengthen the effectiveness and improve the efficiency of the IAEA’s safeguards systems. In accordance with the Additional Protocol, Kazakhstan must provide the IAEA with a declaration containing certain information on all of its nuclear facilities and materials, not just its source or special fissionable materials.

Under the Additional Protocol, the Company must file the following declaration in connection with all of its nuclear materials by 15 May of each year:

- (i) Information regarding the location of nuclear fuel cycle-related research and development activities that do not involve nuclear material that are funded, specifically authorised or controlled by, or carried out on behalf of, Kazakhstan.
- (ii) A general description of each building on each site, including its use and, if not apparent from the description, its contents, including a map of the site.
- (iii) Information specifying the location, operational status, estimated annual production capacity and current annual production of uranium mines, concentration plants and uranium product inventories.
- (iv) General plans for the successive ten-year period relevant to the development of the nuclear fuel cycle (including planned nuclear fuel cycle-related research and development activities) when approved by the appropriate authorities in Kazakhstan.

Also in accordance with the Additional Protocol, all nuclear facilities of the Company are subject to inspection by the IAEA, which can be performed any time with 24-hours’ advance notice.

Additionally, in 2003, the IAEA undertook a programme to upgrade the nuclear accountancy and control systems within Kazakhstan. The current IAEA programme is focused on upgrading hardware and software systems and training personnel in Kazakhstan. Due to the complexity of nuclear facilities in Kazakhstan, special emphasis is placed on training personnel and upgrading systems at such facilities. In February 2015, Kazakhstan adopted a set of hygienic rules “Sanitary and Epidemiological Requirements for Ensuring Radiation Safety” (the “**SERERS**”), approved by order of the Minister of National Economy of Kazakhstan No. 155. It is the basic document regulating the requirements of the Law of Kazakhstan “On Radiation Safety of the Population” and sets out the basic dose limits, permissible levels of exposure to ionizing radiation and other requirements designed to limit the exposure of population to radioactive elements.

### **Recordkeeping**

Under the Subsoil Code and Rules for submitting subsoil users reports in the conduct of operations for the exploration and production of solid minerals and the extraction of common mineral resources (“**Rules**”) a subsoil user should provide to Competent Authority and local authorities reports on:

- (i) the performance of licence obligations for the exploration of solid minerals and common mineral resources;
- (ii) the purchased goods, works and services and the share of local content in them for the exploration or extraction of solid minerals and common mineral resources; and
- (iii) uranium mining operations.

The Competent Authority forms reports in the electronic system.

### ***Social Contributions and Commitments***

Subsoil use agreements are required to identify the subsoil user's obligation to ensure equal conditions and fair pay for Kazakhstan personnel in comparison to foreign personnel, including personnel employed at the subcontractor level. A subsoil user is also obligated to give priority to Kazakhstan citizens to work and be trained.

In addition, subsoil use agreements may also contain other social commitments and contributions of subsoil users. See "*Regulation in Kazakhstan—Regulation of Mineral Rights in Kazakhstan—Subsoil Use Agreements.*"

### ***2018 Tax Code***

Kazakhstan's tax system is still in a transitional phase and it is expected that tax legislation in Kazakhstan will continue to evolve. On 1 January 2018, the new Tax Code has come into force. It contains a number of novelties, such as presumption of innocence concept pursuant to which any ambiguities arising out of the application of law in the process of tax audit must be interpreted in favour of the taxpayer. The new Tax Code further provides for a higher degree of predictability of tax regulation by setting forth that all amendments to the Tax Code in any given year must be adopted no later than 1 December of a year and become effective no earlier than 1 January of the following year.

In tax laws, a beneficial tax treatment of exploration activities and the decrease in the administrative and tax burdens on taxpayers is included, it is provided for subsoil users who have the right to use subsoil resources for exploration and (or) extraction of solid minerals will pay an annual lease payment in the form of payment for the use of land plots. The size of the payment for exploration sites is set depending on the duration of exploration on a progressive scale (from 15 to 60 MCI per block). Under production licences, such payment was established for a fixed amount fee—450 MCI per 1 sq. km.

The new Tax Code cancelled the commercial discovery bonus and revised the procedure for calculating and paying the excess profit tax. From the number of the payer of this type of tax, subsoil users are excluded from activities carried out on the basis of contact for subsoil use for exploration and (or) extraction of solid minerals, groundwater and (or) therapeutic mud, provided that these contracts do not provide for the extraction of other groups of minerals.

### ***Environmental, Health and Safety Compliance***

The activities of the Company's subsidiaries and joint venture companies are subject to extensive laws and regulations governing environmental protection and employees' health and safety, including radiation protection. In addition, the uranium industry is subject not only to the worker health and safety and environmental risks associated with all mining businesses, but also to additional risks uniquely associated with uranium mining and works with radioactive substances and materials. Failure to comply with applicable environmental, health and safety—as well as radiation protection—laws may result in damages, suspension or revocation of subsoil use agreements and the imposition of penalties and in criminal investigations against employees of the Company.

### ***Supervising Authorities in Kazakhstan***

In addition to IAEA supervision, there are several Kazakhstan agencies that supervise the operations of the Company's facilities with respect to environmental, health and safety matters:

- (i) Kazakhstan's sanitation and epidemiological supervision bodies are in charge of monitoring radiation levels, the impact on personnel and the harmful chemical substances released into the environment;
- (ii) the Committee of Atomic and Energy supervision and control, under the Ministry of Energy of the Republic of Kazakhstan, controls the nuclear and radiation environment and the transport and storage of radioactive products; and
- (iii) the Committee on Ecological Regulation and Control, under the Ministry of Energy of the Republic of Kazakhstan, controls compliance with environmental regulation on enterprises.

In addition, general labour safety in Kazakhstan is regulated by the Ministry of Labour and Social Protection of the Population, on a national level, and by the Committee on Labour, Social Protection and Migration of the Ministry of Labour and Social Protection of the Population, at the regional level.

### ***Licensing of Operations with Atomic Energy and Extraction, Processing and Exportation of Uranium and Uranium Products***

In Kazakhstan, activities relating to extraction, processing and exportation of uranium and uranium products, construction related activities, transportation and handling of radioactive materials and radioactive wastes are subject to licensing.

Generally, a licence is granted to any entity that satisfies the requirements for that particular licence. A licensee may generally not transfer its licence to another party. The licence is granted by the relevant licensing authority and can be suspended or terminated if the licensee fails to comply with the qualification requirements.

The Company believes that it and its major operating subsidiaries have all major operational licences, and such licences are in full force, have not been suspended or terminated and are in full compliance with law.

### ***Public Dose***

Unlike other uranium mining methods, uranium production through the ISR method, which is the predominate production method used by the Company, does not produce public dose exposures in excess of natural background radiation.

Kazakhstan has adopted the International Basic Standards of Radiation Protection, which was issued by the IAEA in 1996. The standards came into force in Kazakhstan in 2000. Under the standards, the limit on dose from occupational exposure is 20 mSv per year (average over a given period of 5 years), with no single year exceeding 50 mSv. As at the date of this Prospectus, at the operations controlled or managed by the Company, the work dose for approximately 6,780 employees does not exceed 5 mSv per year. The remaining approximately 20 employees have a work dose ranging between 5 and 8 mSv. In accordance with the results of radioecology monitoring, there has not been an increase in the maximum work dose between 2015 and 2017.

Some of the affiliates of the Company have adopted internal rules of radiation protection. According to these rules, the maximum work dose is 20 mSv per year.

Radioecology control is conducted by radiation monitoring services equipped with necessary dosimeter and radiometric instruments. Ecologic monitoring is carried out in accordance with the programme approved by Kazakhstan supervisory authorities.

### ***Solid Radioactive waste***

Solid radioactive waste formed in the process of production occurs in:

- (i) radioactive contaminated soil at the sites where the pregnant solutions delivered through pipes are used;
- (ii) waste consisting of used ion-exchange resins removed from the production cycle;
- (iii) radioactive contaminated slurry from collecting tanks; and
- (iv) fragments of equipment and metal constructions removed from production.

These types of solid radioactive waste are characterised as low active and scaled as 4th and 5th grade, an indication that they are the least hazardous solid radioactive waste. The Company's mining facilities dispose of solid radioactive waste in special disposal facilities certified by state ecological experts in accordance with the regulations of Kazakhstan.

### ***Contamination of Ground Water***

The monitoring of ground water is the most important environmental activity in uranium mining by the ISR method. In order to monitor ground water contamination, samples are taken from wells to make necessary measurements. In order to protect the groundwater, the mining area is enclosed by a sanitary area that extends 500 meters from the ore zone. Further, radionuclide contamination in water samples taken from monitoring wells may not exceed the standard set by SERERS.

Except for the Ulba Facility, all uranium mining operations of the Company are located in desert areas of Kazakhstan and are far removed from densely inhabited localities.

### ***Atmospheric emissions***

Experts from both the Company and the Environmental Regulation and Control Committee under the Ministry of Energy of the Republic of Kazakhstan conduct continuous monitoring of atmospheric emissions at the Company's uranium production facilities.

During the years ended 31 December 2015, 2016 and 2017, the Group emitted 4,521 tonnes, 4,110 tonnes and 3,696 tonnes of air pollutants, respectively. The Company believes that the Group's share of total environmental emissions in the Republic of Kazakhstan for the year ended 31 December 2017 was 0.18% for atmospheric emissions,

0.38% for discharge of pollutants and 0.11% for waste generation. The average radionuclide release at the Company's production sites for the year ended 31 December 2017 was lower than the standards set by Kazakhstan's environmental laws. Moreover, the actual state of radionuclide emissions into the atmosphere from the Company's units remains stable and does not exceed applicable standards.

## **State Procurement, Subsoil Procurement and Transfers of Subsoil Use Rights**

### ***Procurement Regulations***

Pursuant to the a Law of the Republic of Kazakhstan "On National Welfare Fund" No. 550-IV, dated 1 February 2012, the Company is not subject to the general procurement rule (established by the Law of the Republic of Kazakhstan on State Procurement No. 434-V dated 4 December 2015) and conducts its procurements in accordance with the special procurement rules adopted by Samruk-Kazyna (the "**Unified Rules**").

These Unified Rules are generally similar to the procurement rules and provide for mandatory procedures for the procurement of goods and services by Samruk-Kazyna and companies in which Samruk-Kazyna has a 50% or more direct or indirect ownership, including through trust management arrangements. The Unified Rules set out a number of means for procurement, including public tenders and direct trades without involving the tendering procedures. Samruk-Kazyna exercises overall supervision over compliance with the Unified Rules.

### ***Transfer of the Subsoil Use Rights***

Apart from the Government's pre-emption right (under article 43 of the Subsoil Code), the transfer of subsoil use rights from the subsoil user to a third party or the disposal of any interest of the subsoil users rights may only be effectuated by obtaining permission from the Competent Authority and cases where this permission is not required (in accordance with article 44 and 45 of the Subsoil Code). The Competent Authority's determination to grant or withhold consent must generally be made within 30 (for large deposits and strategic site of subsoil resources—90) days after filing an application.

### ***Regulatory Function of the Company***

The Company is the national atomic company of Kazakhstan and, among other things, is responsible for, and has a preferential right to perform and coordinate, mining uranium in Kazakhstan and exporting uranium and its compounds from Kazakhstan pursuant to the Decree of the President of Republic of Kazakhstan No. 3593 dated 14 July 1997.

Additionally, the Company, as national operator, has certain functions including the following:

- (i) controlling Kazakhstan's performance of the Agreement Suspending the Antidumping Investigation of Uranium from Kazakhstan, signed 16 October 1992 between the Government and the U.S. Ministry of Trade, as amended, and usage of quotes for supply of Kazakhstan uranium to the U.S. market;
- (ii) assisting in implementing Kazakhstan's policy on preventing of dumping processes on the uranium market within and outside of Kazakhstan;
- (iii) securing strict observance of quotas on export and import of uranium-bearing materials and equipment for producers operating within Kazakhstan;
- (iv) securing export, import and manufacturing of special equipment and technologies and materials of dual application pursuant to IAEA rules;
- (v) maintaining records on sales of atomic energy industry products;
- (vi) determining transportation routes and supply schedules of uranium-bearing raw materials to reprocessing facilities within Kazakhstan; and
- (vii) participating in the resolution of issues related to transit of foreign export production through Kazakhstan.

## DIRECTORS AND MANAGEMENT

### Composition of the Board of Directors

The Company's Board of Directors was elected on 14 August 2018 for a three-year term, and the powers of the current members of the Company's Board of Directors expire on 14 August 2021. The Company's Board of Directors consists of the following members:

Name	Year of Birth	Title	Member of the Board Since
Jon Dudas	1959	Chairman of the Board of Directors (independent)	2015
Neil Longfellow	1958	Board Member (independent)	2017
Russell Banham	1954	Board Member (independent)	2018
Alik Aidarbayev	1963	Board Member	2018
Beybit Karymsakov	1962	Board Member	2018
Kanat Kudaibergen	1979	Board Member	2018
Galymzhan Pirmatov	1972	Board Member, Chief Executive Officer	2017

The business address of the directors is 10, D. Kunayev Street, Yessil district, Astana, 010000, Kazakhstan.

**Jon Dudas, Chairman, Independent Director.** Mr. Dudas was born in 1959 and is a citizen of the United Kingdom of Great Britain and Northern Ireland. Mr. Dudas is a registered professional mining engineer who graduated from the University of the Witwatersrand (Republic of South Africa) with a Bachelor's degree in mining engineering and a Master's degree in mineral economics in 1984. Mr. Dudas also holds an MBA from Heriot-Watt University (United Kingdom). Mr. Dudas began his working career in 1984 at Rand Mines Ltd and has held a variety of senior managerial positions across a number of commodities and functions at companies such as Gencor Ltd. and BHP Billiton, where he was CEO of the Aluminium division. Since 2012, Mr. Dudas has been working as an independent corporate adviser to multinational mining and professional service companies. Being an independent member of the Company's Board of Directors since 2015, in August 2018, Mr. Dudas was elected as a Chairman of the Board of Directors.

**Neil Longfellow, Independent Director.** Mr. Longfellow was born in 1958 and is a citizen of the United Kingdom of Great Britain and Northern Ireland. Mr. Longfellow is a chartered electrical engineer and a Fellow of the Institute of Measurement and Control. Mr. Longfellow started his career in electrical engineering in the United Kingdom. In 1991, he joined British Nuclear Fuels Limited, working at the Sellafield nuclear reprocessing plant in West Cumbria where he was Head of Reprocessing, before becoming Deputy Managing Director in 2007. In 2009, Mr. Longfellow joined Westinghouse Electric Company as the Managing Director of Springfields Fuels Limited and Vice President of the European Fuel Business. In 2013, Mr. Longfellow joined Costain PLC as Director of Major Projects for the nuclear, oil and gas sectors in the UK. Since 2015, Mr. Longfellow has been an independent consultant to the international nuclear sector.

**Russell Banham, Independent Director.** Mr. Banham was born in 1954 and is a citizen of Australia. Mr. Banham has a Bachelor of Commerce from University of New South Wales. He is a fellow of the Institute of Chartered Accountants Australia and New Zealand and a graduate of the Australian Institute of Company Directors. He began his career as an auditor in 1974 in the Australian operations of Andersen, where he worked until 2002, and his last position was as an Audit partner. In 2002–2007, he was the Advisory Services practice leader of Ernst & Young in Brisbane, Australia. In 2007, he was appointed as the Audit function leader and an Executive Committee member of Deloitte CIS based in Almaty, Kazakhstan. In 2011–2014, Mr. Banham was Energy and Resources Industry group leader of Deloitte CIS based in Moscow, Russia. Since 2014, he has worked as an independent director on the Boards of a number of international companies.

**Alik Aidarbayev, Member.** Mr. Aidarbayev was born in 1963 and is a citizen of the Republic of Kazakhstan. Mr. Aidarbayev has a PhD in Engineering Science, and is an honorary professor of Kanysh Satpayev National Technical University. He holds an MBA from the Academy of National Economy under the Government of the Russian Federation in Moscow. Throughout his career, Mr. Aidarbayev has held various management positions at Yuzhkazneftegaz, Kumkol-Lukoil (subsequently known as "Turgai Petroleum" CJSC), Mangistaumunaigaz JSC, NC KazMunaiGas JSC. He was also General Director at KazMunaiGas Exploration & Production JSC in 2011–2013, Governor of Mangistau region in 2013–2017, and First Vice-Minister for Investments and Development of the Republic of Kazakhstan in 2017–2018. Since 2018, Mr. Aidarbayev has served as Deputy Chairman of the Management Board of Samruk-Kazyna JSC.

**Beybit Karymsakov, Member.** Mr. Karymsakov was born in 1962 and is a citizen of the Republic of Kazakhstan. Mr. Karymsakov graduated from the Almaty Institute of National Economy with a degree in the "organization of



mechanised processing of economic information” and from Taraz State University with a law degree. Mr. Karymsakov has worked in the Tien-Shan cooperative as an accountant and head of the Kordai district finance department. In 2003–2015, Mr. Karymsakov held a senior position with the Almaty City tax authority. In August 2015, Mr. Karymsakov was appointed as Managing Director of National Company Astana EXPO-2017 JSC. Currently, Mr. Karymsakov is the Managing Director for Economics and Finance for Samruk-Kazyna JSC. Mr. Karymsakov was elected as a member of the Board of Directors of the Company in April 2018.

**Kanat Kudaibergen, Member.** Mr. Kudaibergen was born in 1979 and is a citizen of the Republic of Kazakhstan. Mr. Kudaibergen holds an MBA in International Management from the Geneva Business School and an MBA in Mining Management from the NUST Moscow Institute of Steel and Alloys. Mr. Kudaibergen started his career in 2001 as a senior prosecutor’s assistant at the Semirechenskaya transport prosecutor’s office. In 2007–2016, Mr. Kudaibergen worked at Trading and Transportation Company LLP, in various senior positions including Lead Specialist of the Legal Department, Chief Manager – Head of the Legal Department, Deputy General Director, First Deputy General Director and Chief Executive Officer. In 2016–2018, he served as the General Director of Karatau LLP. Since 2018, he has served as the Managing Director of the Company’s uranium mining division and the Chief Executive Officer of NMC “Tau-Ken Samruk” JSC.

**Galymzhan Pirmatov, Member.** For information regarding Mr. Pirmatov, see “—Management Board”.

### **Committees of the Board of Directors**

#### *Audit Committee*

The Audit Committee was formed as a consulting and advisory body of the Board of Directors and provides recommendations on the efficiency of the Company’s financial controls, internal controls and risk management. The Audit Committee also monitors the Company’s compliance with the provisions of its internal corporate governance documents. The Audit Committee operates for the benefit of the shareholders of the Company and works to assist the Board of Directors by means of providing recommendations on:

- (i) establishment of the efficient control system over financial and economic activities of the Company (including completeness and authenticity of financial statements);
- (ii) monitoring the reliability and efficiency of internal control and risk management, as well as the execution of corporate governance documents;
- (iii) control over independence of internal and external audit, as well as procedure for compliance with the Law of the Republic of Kazakhstan;
- (iv) other matters in accordance with the requirements of the Regulations on Audit Committee.

The Audit Committee is accountable to the Board of Directors of the Company, according to the authority granted to it by the Board of Directors and the Company’s Regulation on the Audit Committee of the Board of Directors. The Company’s Audit Committee includes the following members:

<b>Name</b>	<b>Year of Birth</b>	<b>Other positions</b>	<b>Member of the Committee Since</b>
Russell Banham	1954	Chairman of Committee, Independent Director	2018
Jon Dudas	1959	Member of the Committee, Chairman of the Board of Directors, Independent Director	2016
Neil Longfellow	1958	Member of Committee, Independent Director	2017

#### *Nominations and Remunerations Committee*

The Nominations and Remunerations Committee was formed as a consulting and advisory body of the Board of Directors and provides recommendations on the efficiency of the Company’s personnel policy, evaluation of the goals and results of activities of the Management Board and other employees appointed by the Board of Directors. The Nominations and Remunerations Committee operates for the benefit of the shareholders of the Company and it works to assist the Board of Directors by means of providing recommendations on:

- (i) attracting qualified specialists to the Board of Directors, the Management Board of the Company, the Corporate Secretary of the Company and other employees appointed or coordinated by the Board of Directors in accordance with the list approved by the Board of Directors;

- (ii) formation of proposals for the Board of Directors on the matter of determining the remuneration of independent directors, members of the Management Board, the Corporate Secretary, in accordance with the goals, objectives, current status of the Company and the level of remuneration in similar companies, by type and scale of activities;
- (iii) providing recommendations on the Company's personnel policy, the procedure for nominating members of the Board of Directors and the Management Board, policies on evaluating the activities of the members of the Board of Directors and the Management Board, the Corporate Secretary, improving the qualifications of the members of the Board of Directors, and other matters as decided by the Board of Directors.

The Nominations and Remunerations Committee is accountable to the Board of Directors of the Company, according to the authority granted to it by the Board of Directors and the Company's Regulation on the Nominations and Remunerations of the Board of Directors. The Company's Nominations and Remunerations Committee includes the following members:

<u>Name</u>	<u>Year of Birth</u>	<u>Other positions</u>	<u>Member of the Committee Since</u>
Jon Dudas	1959	Chairman of Committee, Chairman of the Board of Directors, Independent Director	2016
Russell Banham	1954	Member of Committee Independent Director	2018
Neil Longfellow	1958	Member of Committee, Independent Director	2017
Nurlan Utenov	1972	Committee expert (no voting power)	2018

#### *Strategic Planning and Investments Committee*

The Strategic Planning and Investments Committee was formed as a consulting and advisory body of the Board of Directors and provides recommendations on forming priority directions of activities of the Company, drafting development strategy, investing activity and determining innovative strategy of the Company. The Strategic Planning and Investments Committee operates for the benefit of the shareholders of the Company and assists the Board of Directors by means of providing recommendations on:

- (i) development of the strategy of the Company, evaluation of efficiency of measures aimed on implementation of the strategy, means for achieving the aims of the strategy, internal documents of the Company related to the drafting of the strategy of the Company, strategic decisions related to increase of efficiency in short-term and long-term perspective, strategic decisions on M&A activities and reorganization procedures;
- (ii) internal documents regulating investment activity of the Company, investment projects of the Company in the frame of the strategy of the Company, accounting changes in the market and legislation which can affect the development of the Company, approval of the master plan of development;
- (iii) review and evaluation of investment and innovative projects of the Company on all stages of its development.

The Strategic Planning and Investments Committee is accountable to the Board of Directors of the Company, according to the authority granted to it by the Board of Directors and the Company's Regulation on the Strategic Planning and Investments Committee of the Board of Directors. The Company's Strategic Planning and Investments Committee includes the following members:

<u>Name</u>	<u>Year of Birth</u>	<u>Other positions</u>	<u>Member of the Committee Since</u>
Jon Dudas	1959	Chairman of Committee, Chairman of the Board of Directors, Independent Director	2016
Russell Banham	1954	Member of Committee Independent Director	2018
Neil Longfellow	1958	Member of Committee, Independent Director	2017

#### *Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development*

The Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development was formed as a consulting and advisory body of the Board of Directors and provides recommendations on improvement of the management system in the field of industrial, ecological and radiation safety, efficiency of communication with subsidiaries of the Company for coordination of implementation of the policy related to labour and environmental safety, approval of the programs on sustainable development including labour and environmental safety. The Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development operates for the benefit of the shareholders of the Company and works to assist the Board of Directors by providing

recommendations on development of integrated policy of the Company related to the labour, environmental safety and provision of radiation safety as a part of sustainable development oriented at minimization of chemical and radiation impact, environmental and personnel safety, improvement of production safety and automatization of technological processes, as well as preliminary review of social issues.

The Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development is accountable to the Board of Directors of the Company, according to the authority granted to it by the Board of Directors and the Company's Regulation on the Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development of the Board of Directors. The Company's Committee on Industrial, Environmental, Radiation Safety, Labour Protection and Sustainable Development includes the following members:

<u>Name</u>	<u>Year of Birth</u>	<u>Other positions</u>	<u>Member of the Committee Since</u>
Neil Longfellow . . . . .	1958	Chairman of Committee, Independent Director . . . . .	2017
Jon Dudas . . . . .	1959	Chairman of the Board of Directors, Independent Director . . . . .	2016
Talgat Yerzhanov . . . . .	1984	Committee expert (no voting power) . . . . .	2016

### Senior Management

<u>Name</u>	<u>Year of Birth</u>	<u>Title</u>	<u>Year when joined the Group</u>
Galymzhan Pirmatov <sup>(1)</sup> . . .	1972	Chairman of the Management Board . . . . .	2017
Marat Niyetbayev <sup>(1)</sup> . . . . .	1956	Chief Director for Operations . . . . .	2018
Baurzhan Ibrayev <sup>(1)</sup> . . . . .	1958	Chief Director on Nuclear Fuel Cycle and Atomic Energy . . . . .	2001
Meirzhan Yussupov <sup>(1)</sup> . . . . .	1979	Chief Director for Economics and Finance . . . . .	2010
Riaz Rizvi <sup>(1)</sup> . . . . .	1972	Chief Strategy and Marketing Officer (Chief Commercial Officer) . . . . .	2017
Birzhan Duisembekov <sup>(1)</sup> . . .	1971	Chief Business Support Director . . . . .	2017
Beksultan Bekmuratov . . .	1986	Chief Transformation and IT Officer . . . . .	2018

(1) Management Board member.

**Galymzhan Pirmatov, Chairman of the Management Board.** Mr. Pirmatov was born in 1972 and is a citizen of the Republic of Kazakhstan. Mr. Pirmatov graduated from the Novosibirsk State University, Kazakhstan Institute of Management of Economics and Strategic Research (University of KIMEP), Atkinson Graduate School of Management, Willamette University and INSEAD. Previous roles include Financial Director of JV Altyntas and Director for Investment at AIG Silk Road Capital Management. In 2005–2007, Mr. Pirmatov was a director in the investment banking department at Halyk Bank JSC, in 2007–2009, he was Vice-Minister of Economy and Budget Planning of the Republic of Kazakhstan, in 2009–2011, he was Vice-President for Economics and Finance of the Company. In 2011–2015, he was President of Cameco Kazakhstan. Since December 2015, Mr. Pirmatov has been Deputy Chairman of the NBK. Mr. Pirmatov has served as the Chairman of the Management Board of the Company since August 2017.

**Marat Niyetbayev, Chief Director for Operations.** Mr. Niyetbayev was born in 1956 and is a citizen of the Republic of Kazakhstan. Mr. Niyetbayev graduated from the Kazakh Polytechnic Institute with a bachelor's degree in automation of metallurgical production. He is a Candidate of Technical Sciences. Mr. Niyetbayev began his career at Shymkent Lead Factory, starting with a position of a 5th-grade smelter, where he rose to the position of its General Director. Further, Mr. Niyetbayev held managerial positions in various major organizations. Mr. Niyetbayev has been working for 12 years at the national atomic company. Mr. Niyetbayev held the positions of Mining Director of Kazatomprom, and General Director of both Mining Company LLP and Ken Dala.KZ JSC. Mr. Niyetbayev worked as the leader of Kazakhstan Branch of Eurasia Energy Holdings LTD and the Vice President for Operations at Uranium One Inc.

**Baurzhan Ibrayev, Chief Director on Nuclear Fuel Cycle and Atomic Energy.** Mr. Ibraev was born in 1958 and is a citizen of the Republic of Kazakhstan. Mr. Ibraev graduated from the Kazakh State University, named after S.M. Kirov. Mr. Ibraev is a Doctor of Physical and Mathematical Sciences and Academician of the National Academy of Natural Sciences of the Republic of Kazakhstan. Mr. Ibraev started his career in 1983 as a junior researcher at the Institute of Nuclear Physics at the Academy of Sciences of the Kazakh SSR. Mr. Ibraev worked as a senior lecturer, associate professor, head of the Department of Optics and Plasma-Physics and was Deputy Dean of the Physics Department of the Kazakh State University, named after Al-Farabi. In 1996, Mr. Ibraev passed IAEA training at the Berlin Centre for Neutron Research (operation in the reactor BER-2), and in 1999, Mr. Ibraev worked as a Director of the Scientific Research Institute of Experimental Theoretical Physics (SRI ETF). Since 2001, Mr. Ibraev has headed the branch of Company Mining Group No. 6, as well as the subsidiaries of MAEK-Kazatomprom LLP, Mining Company LLP, Ken Dala.KZ LLP and Ortalyk LLP.

**Meirzhan Yussupov, Chief Director for Economics and Finance.** Mr. Yussupov was born in 1979 and is a citizen of the Republic of Kazakhstan. Mr. Yussupov graduated from the Middle East Technical University with a degree in economics and management, the London School of Economics with a Master of Science in Development Management (Department of Economics) and from Harvard University with a Master in Public Administration. Mr. Yussupov started his career as the deputy director of Marketing and Internal Audit Department at Turkuaz Group. In 2003–2006, Mr. Yussupov worked at Demir Kazakhstan Bank JSC and held various positions at Samruk-Kazyna in 2007–2009. In 2009–2010, Mr. Yussupov also worked in the public service as a Deputy Director of the Investment Policy Department of the Ministry of Economy and Budget Planning of the Republic of Kazakhstan. In 2010, Mr. Yussupov took up the position of Director of the Department of Corporate Finance and Treasury in the Company. In 2015, Mr. Yussupov was appointed Chief Director for Economics and Finance of the Company.

**Riaz El Hasan Sayed Rizvi, Chief Strategy and Marketing Officer (Chief Commercial Officer).** Mr. Rizvi was born in 1972 and is a citizen of the Netherlands. Mr. Rizvi graduated with a BSc in business administration from Kings College, and an MBA and Doctorandus in Business Administration from Nijenrode University. Mr. Rizvi started his career as Country Director—Uzbekistan in Multi-Family Office. Mr. Rizvi worked as Country Director of Republic of Georgia, Project Officer—Bosnia and Herzegovina in Independent Bureau for Humanitarian Issues, in 1999–2001 Head of Coal Origination in Enron Europe Limited, in 2001–2004 Head of Origination in American Electric Power, and in 2004–2009 Co-Head of Constellation Energy Commodities Group. In 2009–2016, Mr. Rizvi served as CEO and Founder of NuCap Limited. Since March 2017, Mr. Rizvi has been the Chief Strategy and Marketing Director in the Company.

**Birzhan Duisembekov, Chief Business Support Director.** Mr. Duisembekov was born in 1971 and is a citizen of the Republic of Kazakhstan. In 1993, Mr. Duisembekov graduated from the Lenin Kazakh Polytechnic Institute in Almaty with a bachelor's degree in technology and overall mechanization of underground development of mineral deposits, where he was conferred the qualification of mining engineer. In 2006, Mr. Duisembekov graduated from the Atyrau Oil and Gas Institute with a degree in economics. Mr. Duisembekov began his career as a Level 3 Miner on the mine area of Almatymetrostroy Trust. Mr. Duisembekov held executive positions in Uzenmunaigaz JSC, Embamunaigaz LLP, KazMunaiGas EP JSC, Kazyna Capital Management JSC, JV Kazgermunai LLP, AktauNefteService LLP, Offshore Oil Company KazMunaiTeniz JSC, and in other companies of the Group of Samruk-Kazyna JSC and Kazakhstan second-tier banks. Since October 2017, Mr. Duisembekov has been working for the Company.

**Beksultan Bekmuratov, Chief Transformation and IT Officer.** Mr. Bekmuratov was born in 1986 and is a citizen of the Republic of Kazakhstan. In 2009, Mr. Bekmuratov graduated from the Russian State University of Oil and Gas, where he was conferred the qualification of engineer. In 2011–2013, Mr. Bekmuratov held the position of HSE Adviser at Shell. Further, in 2014–2018, Mr. Bekmuratov worked as Transformation project manager at Samruk-Kazyna. Since February 2018, Mr. Bekmuratov has been working for the Company as its Chief Transformation and IT Officer.

## **Governance structure**

### **Overview**

The Company is systematically assessing its corporate governance system identifying opportunities for improvement in the following key areas:

- (i) Sustainable development;
- (ii) Shareholders' rights;
- (iii) Efficiency of the Board of Directors and the Management Body;
- (iv) Risk management, internal control and audit;
- (v) Transparency.

The corporate governance system of the Company is aimed at improving the business transparency, creating and maintaining reliable and effective relationships with its shareholders, and is based on the following principles:

- (i) Protecting the rights and interests of the shareholders;
- (ii) Effective management of the Company/effective functioning of the Board of Directors and the Management Board;

- (iii) Transparency and objectivity of the Company's activity;
- (iv) Legitimacy and ethics;
- (v) Effective dividend policy;
- (vi) Effective human resource policy;
- (vii) Occupational health and safety;
- (viii) Environmental protection;
- (ix) Settlement of corporate disputes and conflicts of interest;
- (x) Responsibility.

The Company's corporate governance body system includes:

- (i) Supreme body—the General Meeting of Shareholders;
- (ii) Management body—the Board of Directors;
- (iii) Executive body—the Management Board;

The body that monitors financial and economic activities of the Company, evaluates the internal control, manages the risks and consults in order to improve the Company's operations is the Internal Audit Service.

#### ***Corporate Governance Code***

The Company is the national operator of the Republic of Kazakhstan for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. Samruk-Kazyna, a sovereign-wealth fund wholly owned by the Government of the Republic of Kazakhstan, is the sole shareholder of the Company, and intends to continue to be the Company's controlling shareholder holding no less than 75% of the shares of the Company for the foreseeable future.

The AIX has established the high-level corporate governance principles for companies listed on the AIX. The Company's Corporate Governance Code, which was adopted in 2015 on the basis of the Corporate Governance Code of Samruk-Kazyna Group, is largely consistent with such principles. In addition, the Company's Corporate Governance Code contains certain provisions ensuring compliance with Samruk-Kazyna's goals and projections. Any engagements of the Group in activities outside of its core business are subject for consideration and vetting by the Company's Board of Directors that is chaired by an independent non-executive director and includes two more independent non-executive members. Before the end of December 2019, Samruk-Kazyna intends to update the Company's Corporate Governance Code based on international best practice.

#### ***General Meeting of Shareholders***

The General Meeting of Shareholders of the Company performs its activities under its authority stipulated by the JSC Law and the Company's Charter. Key decisions to be taken by the General Meeting of Shareholders include the following:

- (i) election and early termination of the powers of any member of the Board of Directors of Company, including its Chairman;
- (ii) selection of an auditor to perform the audit of consolidated and individual financial statements of the Company;
- (iii) approval of annual financial statements of the Company (consolidated and individual);
- (iv) approval of the dividend policy of the Company, net income distribution procedure and determination of the size of dividends per one share;
- (v) approval of the Charter, the Corporate Governance Code and the Regulations on the Board of Directors of the Company and amendments thereto;



- (vi) approval of the Company's major transactions resulting in the acquisition or alienation of assets with the value of 50% or more of the total book value of the Company's assets;
- (vii) decision on delisting of the Company's securities from the stock exchange;
- (viii) approval or amendment of the valuation methodology for determining the price for the repurchase of shares by the Company on the OTC market; and
- (ix) approval of the Company's participation in the establishment or activities of other legal entities or withdrawal therefrom by way of transfer (receipt) of assets the effective value of which is 25% or more of the total book value of the Company's assets.

### ***Board of Directors***

The Board of Directors is responsible for the general management of the Company's activities, directs the Company's strategy and policy and has the authority to make decisions on all aspects of the Company's activities, except for those matters expressly reserved to the General Meeting of Shareholders according to the JSC Law, the Law on National Welfare Fund, other applicable laws and the Company's charter. The Board of Directors of the Company operates in accordance with the principles specified in the Charter, the Corporate Governance Code and the Regulations on the Board of Directors. In particular, the powers of the Board of Directors include, among others, the following:

- (i) setting the Company's priority business objectives and approving the Company's strategy;
- (ii) approving the Company's development strategy and development plans and its budget;
- (iii) appointing the members of the Management Board, Internal Audit Service, Compliance Service and Corporate Secretary;
- (iv) approving the terms for issuance of bonds and derivatives by the Company, and buy-back of securities;
- (v) making decisions on participation in incorporation of other legal entities or ceasing participation in other legal entities by way of transfer (or receipt) of some or all assets (other than where such action requires approval pursuant to item (viii) of "*—General Meeting of Shareholders*");
- (vi) approving transactions or series of inter-related transactions resulting in the acquisition or alienation of assets with the value of more than 10% of the total book value of the Company's assets
- (vii) making decisions on conclusion of major transactions and related party transactions (other than transactions which fall into the competence of the General Meeting of Shareholders);
- (viii) approving purchases (alienation) by the Company of 10% or more of the shares in other legal entities;
- (ix) increase of liabilities by the Company for the amount equal to 10% or more of the equity capital of the Company;
- (x) resolving any issues within the competence of the general meeting of shareholders/participants concerning 10% or more shares/ownership interests which are owned by the Company;
- (xi) preliminary approval of the Charter in new edition or any amendments to the Charter; and
- (xii) approving transactions with state authorities, government bodies, state-owned enterprises (i.e., legal entities 50% or more voting power in which is owned by the state) or legal entities affiliated with any of them, excluding (a) transactions with dependent legal entities and subsidiaries of the Company and (b) transactions documented using template agreements the forms of which are established by applicable law. Approval of such transactions requires the approval of the majority of the independent directors.

Members of the Board of Directors are appointed by a resolution of the General Meeting of Shareholders. Members of the Board of Directors are elected for a term of up to 3 (three) years. Members may be re-elected for a further period of up to three years in cases with satisfactory performance results. Any term for election to the Board of Directors for a period longer than 6 (six) consecutive years is subject to special consideration. An independent director cannot be elected to the Board of Directors for more than 9 (nine) consecutive years. In exceptional cases, election for a term of more than 9 (nine) years is allowed. The election should take place annually with a detailed explanation of the need to elect this candidate of the Board of Directors.

An individual who is proposed (recommended) to be elected to the Board of Directors as a representative of the shareholder or an individual who is neither a shareholder nor appointed (recommended) as a representative of interests of the shareholder is eligible for election as a member of the Board of Directors. The Board of Directors must have not less than 6 (six) members of whom at least 30% of the Board of Directors must be independent directors.

### **Management Board**

The Management Board is responsible for the day-to-day management and administration of the Company and is controlled by the Board of Directors and the General Meeting of Shareholders. Activity of the Management Board of Company is determined by the principles described in the Charter, the Corporate Governance Code and the Regulations on the Management Board. The Management Board's responsibilities include, among others, the following:

- (i) approving the internal operational guidelines of the Company;
- (ii) appointing heads of branches and representative offices;
- (iii) developing and implementing the business strategy and budget of the Company;
- (iv) making executive business decisions; and
- (v) implementing resolutions adopted by the Board of Directors and the General Meeting of Shareholders.

Members of the Management Board may be representatives of the shareholder and employees of the Company who are not representatives of the shareholder, appointed and dismissed by the Board of Directors. The quantitative composition and term of office of the Management Board is determined by the Board of Directors. The Management Board should consist of not less than 5 (five) persons.

### **Internal Audit Service**

The Internal Audit Service is a permanent collective body of the Company that performs internal audits of the Company, monitors its operations, its compliance with Kazakhstan law, and its internal procedures and policies. The Internal Audit Service reports to the Audit Committee of the Board of Directors. The members of the Internal Audit Service are appointed and removed by the Board of Directors for a term determined by the Board of Directors. The Internal Audit Service has the right to convene an extraordinary meeting of the Board of Directors of the Company. The Company's Internal Audit Service includes the following members:

<b>Name</b>	<b>Year of Birth</b>	<b>Title</b>	<b>Year when joined the Group</b>
Madina Korganbayeva . . .	1970	Head . . . . .	2016
Yerzhan Amanchin . . . . .	1967	Chief manager . . . . .	2014
Aliya Nugumanova . . . . .	1982	Chief manager . . . . .	2012
Faizulla Rshymanov . . . . .	1969	Chief manager . . . . .	2017
Arman Oramalov . . . . .	1980	Chief manager . . . . .	2018
Aizhan Beissenova . . . . .	1981	Chief manager . . . . .	2011
Yerbolat Ismagulov . . . . .	1964	Manager . . . . .	2012
Zhannat Toleubekova . . . . .	1987	Manager . . . . .	2017

The business address of each of the members of the Internal Audit Service is the registered address of the Company.

### **Management Remuneration**

In accordance with the Company's Charter, the remuneration of the members of the Board of Directors is determined by the General Meeting of Shareholders, while the remuneration of the Chairman of the Management Board and the members of Management Board of Directors is determined by the Board of Directors.

In accordance with the Law of the Republic of Kazakhstan on Joint Stock Companies, by the decision of the Company's General Meeting of Shareholders, independent members of the Company's Board of Directors shall be paid remuneration and reimbursement of costs related to the execution of their functions.

The Company approved Rules of remuneration, bonuses and providing social support to the Company's Senior Management dated 28 June 2017, which describes the procedure and terms of payment.

The Group's aggregate remuneration of the key management personnel was KZT198 million, KZT503 million, KZT660 million and KZT254 million for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018.

No member of the Board of Directors or of the Management Board of Directors is a party to any service contract with the Group where such contract provides for benefits upon termination of employment.

The Company's Board of Directors will, in November 2018, consider adopting an incentive and retention plan for its senior management team, executive officers and other key employees (the "**Incentive Plan**"). If adopted, the Incentive Plan is expected to provide for the benefits for its participants that would be linked to the Company's share price performance following the Offering over a certain period of time after the implementation of the Incentive Plan.

### **Management Confirmations**

At the date of this Prospectus, none of the members of the Board of Directors or of the Management Board of Directors in the previous five years:

- has had any convictions in relation to fraudulent offences;
- has been a member of the administrative, management or supervisory bodies of any company, or been a partner in any partnership, at the time of or preceding any bankruptcy, receivership or liquidation; or
- has been subject to official public incrimination or sanction by a statutory or regulatory authority (including a professional body) nor has ever been disqualified by a court from acting as a member of the administrative, management or supervisory bodies of a company or from acting in the management or conduct of the affairs of a company.

### **Employment Contracts with Senior Executive Officers**

The Company enters into employment contracts for a fixed term with its senior executive officers. Under these contracts, the senior executive officers of the Company receive bonuses or other forms of compensation in addition to their regular salary.

Each senior employee signs an employment contract, the terms and conditions of which must be in full compliance with relevant Kazakhstan legislation, including the Labour Code. Such terms usually include five-day, 40-hour work weeks, eight hour work days, annual vacations of 30 calendar days, Company insurance against life and health hazards to the employee arising from the performance of their duties and medical insurance.

### **Conflicts of Interest**

The Company's Code on Corporate Ethics including settlement of corporate conflicts and conflicts of interest of the Company, as approved by the decision of the Board of Directors, which determines the grounds for corporate conflicts, conflicts of interest, procedures for its prevention, and regulates the activities of the Company's bodies within the framework of conflict resolution activities. Also the Company maintains the Regulation on Resolution of Corporate Conflicts and Conflict of Interests, approved by the Board of Directors of the Company on 10 March 2011. There are no actual or potential conflicts of interest between the duties that any member of the Board of Directors or the Management Board owes to the Company and such member's private interests or other duties.

## PRINCIPAL AND SELLING SHAREHOLDER

### Principal Shareholder

The table below sets forth certain information regarding the ownership of the Company's share capital prior to the Offering and the AIX Offering, as adjusted to give effect to the sale of the Shares and GDRs by Samruk-Kazyna in the Offering and the AIX Offering (assuming all GDRs and Securities are sold in the Offering and the AIX Offering, respectively, the Upsize Option has not been exercised and the Over-Allotment Option is exercised in full).

Shareholder	Shares owned before the Offering and the AIX Offering		Shares owned after the Offering and the AIX Offering		Notifiable shareholdings <sup>(2)</sup>
	Number	% <sup>(1)</sup>	Number	% <sup>(1)</sup>	Yes/No
Samruk-Kazyna	259,356,608	100	220,453,117	85	Yes
Citibank Kazakhstan JSC (including GDRs sold in the AIX Offering)	—	—	38,903,491 <sup>(3)</sup>	15 <sup>(3)</sup>	No
Holder of Shares sold in the AIX Offering (including Shares deposited with Kazakhstan Central Depository <sup>(4)</sup> )	—	—	— <sup>(3)</sup>	— <sup>(3)</sup>	No
<b>Total</b>	<b>259,356,608</b>	<b>100</b>	<b>259,356,608</b>	<b>100</b>	No

(1) Percentage shareholding of ordinary shares.

(2) Based on the JSC Law and the Charter of the Company.

(3) For illustrative purposes only, assuming that the maximum number of Shares was sold in the form of GDRs in the Offering and the AIX Offering. Pursuant to the applicable securities market regulations of the Republic of Kazakhstan not less than 20% of the maximum number of Shares in the form of GDRs offered in the Offering shall also be offered for sale on the AIX. Therefore, the number of the Shares and GDRs sold in the AIX Offering will reduce the number of the GDRs available for sale in the Offering.

(4) Kazakhstan Central Securities Depository, JSC.

Prior to the Offering and the AIX Offering, Samruk-Kazyna owned 100% of the Company's share capital. Under the JSC Law and the Charter, the disclosure obligations applicable to the shareholders of the Company appear in the last column of the table set out above. Following the Offering and the AIX Offering, Samruk-Kazyna will have an interest above the 10% threshold (representing a percentage of the total number of voting shares in the Company), which is notifiable to the Company together with information about the shareholder's affiliates.

Following the Offering and the AIX Offering (assuming that the Upsize Option has not been exercised), Samruk-Kazyna will own not less than 85% of the Company's share capital and, as a result, will continue to control the Company, for example in relation to electing members of the Board of Directors of the Company, declaring dividends (if any), amending the Charter and having control over almost all of the decisions reserved to the competence of a general meeting of shareholders of the Company. Other than the protections afforded to minority shareholders outlined below, no additional measures have been put in place at the Company to prevent an abuse of the rights of minority shareholders resulting from the exercise of control over the Company. See *"Risk Factors—Risks Relating to the Group's Business—The Government, which indirectly controls the Group, may cause the Group or an entity in which the Group has equity interest to engage in business practices that may not be in the interests of the Company's other shareholders and may cause the appointment or removal of members of the Group's management team."*

Certain protections are afforded to minority shareholders of a joint stock company under the JSC Law, albeit indirectly. In particular, the JSC Law:

- requires all interested party transactions to be approved by disinterested directors and all major transactions to be approved by the board of directors of the joint stock company;
- empowers shareholders to request certain information from the joint stock company;
- empowers shareholders holding, either independently or collectively, 10% or more of the voting shares of the joint stock company to request its board of directors to call general meetings of shareholders and request audits;
- provides for cumulative voting when members of the board of directors of the joint stock company are being elected;
- empowers shareholders to request the joint stock company to buy-back (repurchase) their shares in certain circumstances;

- empowers shareholders holding, either independently or collectively, 5% or more of the voting shares to:
  - file a claim with a court seeking compensation in favour of the joint stock company for losses caused by the joint stock company's officials and return to the joint stock company, by the officials and/or their affiliates, of the profit (income) received by them as a result of adopting a resolution approving the conclusion of major transactions and/or interested party transactions in instances provided by the JSC Law;
  - propose to the board of directors of the joint stock company to include additional matters to the agenda of the general meeting of shareholders; and
  - receive information on the amount of remuneration as the result of the year of each member of the board of directors and/or the management board, in the manner established under the JSC Law; and
- empowers minority shareholders to apply to the registrar of securities of the company in order to enable them to combine their votes at general meetings of shareholders for the purposes of voting.

For a detailed description of rights attached to ordinary shares of the Company, see “*Description of Share Capital and Certain Requirements of Kazakhstan Law—Summary of the Charter— Rights attaching to shares and variation of rights.*” So far as the Company is aware, no controlling shareholder, member of the Board of Directors or member of the Management Board, intends to purchase Securities in the Offering. So far as the Company is aware, no person intends to purchase more than 5% of the GDRs in the Offering.

### ***Samruk-Kazyna***

Samruk-Kazyna is wholly owned by the Kazakhstan Government and is the national managing holding company for substantially all state enterprises. Samruk-Kazyna was created in 2008 pursuant to Presidential Edict No. 669, dated 13 October 2008, and Resolution of the Government No. 962, dated 17 October 2008, by way of the merger of JSC “Kazakhstan Holding for Management of State Assets,” “Samruk” and JSC “Sustainable Development Fund” “Kazyna”. Samruk-Kazyna is a joint stock company whose shares are held by the Ministry of Finance’s Committee of State Property and Privatisation on behalf of the Government of the Kazakhstan.

Samruk-Kazyna’s primary objective is to manage shares (participatory interests) of legal entities it owns with a goal of maximising long term value and increasing competitiveness of such legal entities in world markets.

The governance of Samruk-Kazyna’s activities is subject to general corporate governance applicable to all joint stock companies in Kazakhstan. Accordingly, the corporate governance structure of Samruk-Kazyna is as follows: the Government as the sole shareholder constitutes the supreme governing body, the board of directors constitutes the managing body, and the management board constitutes the executive body.

Members of Samruk-Kazyna’s board of directors are appointed by the Government, and its members are, among others, the Minister of National Economy, the Minister of Finance, Assistant of the President of Kazakhstan, independent directors and the chairman of the management board of Samruk-Kazyna. In addition, the board of directors is chaired by the Prime-Minister of Kazakhstan.

The registered office of Samruk-Kazyna is at 17/10, E10 Str., 010000 Astana, Kazakhstan and the telephone number is: +7 7172 55 40 01.

### ***Related Party Transactions***

The Company enters into transactions with related parties. See Notes 8 and 32 to the Annual Financial Statements. Related party transactions are made on terms agreed to between the parties that may not necessarily be at market rates and are generally based on the cost plus an agreed percentage above cost.



## MATERIAL CONTRACTS

### **Underwriting Agreement**

The Company, the Selling Shareholder and the Managers intend to enter into an underwriting agreement on the Pricing Date (the “**Underwriting Agreement**”) with respect to the Offering. See “*Plan of Distribution—Underwriting Arrangements*”.

### **Deposit Agreements**

On or about the Pricing Date, the Company and the Depositary will enter into the Deposit Agreements for the establishment and maintenance of: (i) the Regulation S GDR programme and the Regulation S GDRs issued pursuant thereto; and (ii) the Rule 144A GDR programme and the Rule 144A GDRs issued pursuant thereto, pursuant to which the Company also executed Deed Polls in favour of the holders of the GDRs in the form attached to each of the Deposit Agreements (see “*Terms and Conditions of the Global Depositary Receipts*”).

### **Financing Agreements**

The Group is a party to a number of material financing agreements, for a description of which please see “*Operation and Financial Review—Liquidity and Capital Resources—Indebtedness—Key Loan Facility Agreements*.”

### **Uranium Supply Agreement with Yellow Cake plc**

In May 2018, the Company entered into a long-term uranium supply agreement with Yellow Cake plc and in July 2018, delivered approximately 3,100 tonnes of U<sub>3</sub>O<sub>8</sub> pursuant to such agreement, which represents 25.6% of the Group’s attributable production of uranium for the year ended 31 December 2017. Furthermore, this agreement contemplates the delivery by the Company of further uranium shipments in the quantity representing the aggregate price of up to US\$100 million annually, at market related prices, for at least another nine years after the date of this Prospectus, subject to and upon completion of subsequent follow-on offerings by Yellow Cake plc and certain other conditions.

## RELATED PARTY TRANSACTIONS

### Balances and Transactions with Related Parties

Parties are generally considered to be related if the parties are under common control or if one party has the ability to control the other party or can exercise significant influence or joint control over the other party in making financial and operational decisions. In considering each possible related party relationship, attention of management is directed to the substance of the relationship, not merely the legal form.

Entities under common control include companies under control of Samruk-Kazyna JSC. Transactions with other government owned entities are not disclosed when they are entered into in the ordinary course of business with terms consistently applied to all public and private entities:

- when they are not individually significant;
- if the Group's services are provided on the standard terms available for all customers; or
- where there is no choice of supplier of such services as electricity transmission services, telecommunications and etc.

As at 30 June 2018, the Group's outstanding balances with related parties were as follows:

	<u>Accounts receivable and other assets</u>	<u>Dividends receivable</u>	<u>Loans given</u>	<u>Accounts payable and other liabilities</u>
	(KZT millions)			
Associates .....	3,020	—	21,210	24,907
Joint ventures .....	1,553	—	—	1,169
Entities under common control .....	663	—	—	560
Shareholder .....	—	—	—	89,993
Associates of the Parent .....	28	14,155	—	1
Other .....	115	—	—	11,360
<b>Total .....</b>	<b>5,379</b>	<b>14,155</b>	<b>21,210</b>	<b>127,990</b>

The income and expense items with related parties for the year ended 30 June 2018 were as follows:

	<u>Sale of goods and services</u>	<u>Dividends received</u>	<u>Purchase of goods and services</u>	<u>Dividends to the Parent</u>	<u>Finance income</u>
	(KZT millions)				
Associates .....	6,613	5,816	26,115	—	595
Joint ventures .....	4,186	—	6,221	—	—
Entities under common control .....	8,578	—	23,670	—	—
Associates of the Parent .....	49	—	116	—	—
Parent .....	89	—	—	135,012	—
Other .....	490	—	10,862	—	—
<b>Total .....</b>	<b>20,005</b>	<b>5,816</b>	<b>66,984</b>	<b>135,012</b>	<b>595</b>

As at 31 December 2017, the Group's outstanding balances with related parties were as follows:

	<u>Accounts receivable and other assets</u>	<u>Dividends receivable</u>	<u>Loans given</u>	<u>Accounts payable and other liabilities</u>
	(KZT millions)			
Associates .....	3,189	13,707	20,302	39,196
Joint ventures .....	2,981	—	—	21,989
Entities under common control .....	186	—	—	8,778
Associates of the Parent .....	49	—	—	1,607
Other .....	340	—	—	16,246
<b>Total .....</b>	<b>6,745</b>	<b>13,707</b>	<b>20,302</b>	<b>87,816</b>

The income and expense items with related parties for the year ended 31 December 2017 were as follows:

	<b>Sale of goods and services</b>	<b>Dividends received</b>	<b>Purchase of goods and services</b>	<b>Dividends to the Parent</b>	<b>Finance income</b>	<b>Finance costs</b>
	(KZT millions)					
Associates .....	16,243	21,244	66,026	—	2,621	1,254
Joint ventures .....	13,233	22,942	49,169	—	517	11
Entities under common control .....	17,630	—	44,694	—	—	—
Parent .....	—	—	—	65,849	—	—
Associates of the Parent .....	108	—	193	—	—	—
Other .....	2,428	—	31,449	—	2	—
<b>Total .....</b>	<b>49,642</b>	<b>44,186</b>	<b>191,531</b>	<b>65,849</b>	<b>3,140</b>	<b>1,265</b>

At 31 December 2016, the outstanding balances with related parties were as follows:

	<b>Accounts receivable and other assets</b>	<b>Dividends receivable</b>	<b>Loans given</b>	<b>Accounts payable and other liabilities</b>
	(KZT millions)			
Associates .....	3,308	5,916	19,151	31,991
Joint ventures .....	2,036	—	13	16,704
Entities under common control .....	278	—	—	8,312
Associates of the Parent .....	14	—	—	624
Other .....	274	—	—	64
<b>Total .....</b>	<b>5,910</b>	<b>5,916</b>	<b>19,164</b>	<b>57,695</b>

The income and expense items with related parties for the year ended 31 December 2016 were as follows:

	<b>Sale of goods and services</b>	<b>Dividends received</b>	<b>Purchase of goods and services</b>	<b>Dividends to the Parent</b>	<b>Finance income</b>	<b>Finance costs</b>
	(KZT millions)					
Associates .....	15,829	48,286	80,508	—	1,868	1,683
Joint ventures .....	13,694	21,066	51,878	—	291	—
Entities under common control .....	18,611	—	45,749	—	—	—
Parent .....	—	—	—	12,031	—	—
Associates of the Parent .....	98	—	5,837	—	—	—
Other .....	1,987	—	10	—	844	173
<b>Total .....</b>	<b>50,219</b>	<b>69,352</b>	<b>183,982</b>	<b>12,031</b>	<b>3,003</b>	<b>1,856</b>

As at 31 December 2015, the outstanding balances with related parties were as follows:

	<b>Accounts receivable and other assets</b>	<b>Dividends receivable</b>	<b>Loans given</b>	<b>Accounts payable and other liabilities</b>
	(KZT millions)			
Associates .....	4,428	6,257	18,033	38,868
Joint ventures .....	1,251	2,512	2,435	26,516
Entities under common control .....	602	—	—	8,487
Associates of the Parent .....	—	—	—	—
Other .....	186	—	13,100	2,100
<b>Total .....</b>	<b>6,467</b>	<b>8,769</b>	<b>33,568</b>	<b>75,971</b>

The income and expense items with related parties for the year ended 31 December 2015 were as follows:

	Sale of goods and services	Dividends received	Purchase of goods and services	Dividends to the Parent	Finance income	Finance costs
	(KZT millions)					
Associates .....	23,368	33,825	87,856	—	7,622	103
Joint ventures .....	12,570	7,267	51,574	—	550	—
Entities under common control .....	16,353	—	36,857	—	—	—
Parent .....	—	—	—	2,323	—	—
Associates of the Parent .....	—	—	—	—	—	—
Other .....	1,386	—	1,880	—	5,478	—
<b>Total .....</b>	<b>53,677</b>	<b>41,092</b>	<b>178,167</b>	<b>2,323</b>	<b>13,650</b>	<b>103</b>

In 2016, the Group and SGHK LLP established a joint venture JV Budenovskoye LLP with 51% and 49% share, respectively. In 2017, the Group made an additional contribution to the charter capital of JV Budenovskoye LLP in the form of an asset, the right to subsoil use. At the contribution date, the asset was valued at KZT11,686 million, accordingly, the Group's additional contribution amounted to KZT11,686 million, in proportion to its share. In the Financial Statements the Group recognised other income at 49% (i.e. non-Group's interest) of the estimated value of the subsoil use right in the amount of KZT5,726 million. The Group does not have unpaid contributions to the charter capital of JV Budenovskoye LLP.

Other related parties include Baiken-U LLP. Relationship with Baiken-U LLP cannot be considered as a related party of the Group in accordance with IAS 24 'Related parties', but management believes that the disclosure of balances and transactions with Baiken-U LLP is useful for understanding of the Financial Statements.

The terms and conditions of outstanding balances with related parties are not significantly different from those with non-related parties.

Key management compensation is presented below:

Region	Year ended 31 December						Six months ended 30 June 2018	
	2015		2016		2017		Expenses	Accrued liability
	Expenses	Accrued liability	Expenses	Accrued liability	Expenses	Accrued liability		
	(KZT millions)							
Salaries and bonuses .....	198	13	503	29	660	43	254	49

#### Loans to Related Parties

	As at 31 December			As at 30 June 2018
	2015	2016	2017	
	(KZT millions)			
<i>Non-current</i>				
Kyzylkum LLP .....	18,033	19,151	20,302	13,091
Baiken-U LLP .....	13,100	—	—	—
Semizbai-U LLP .....	1,211	—	—	—
<b>Total non-current loans to related parties .....</b>	<b>32,344</b>	<b>19,151</b>	<b>20,302</b>	<b>13,091</b>
<i>Current</i>				
Kyzylkum LLP .....	—	—	—	8,119
JV KRKAS JSC .....	13	13	—	—
Semizbai-U LLP .....	1,211	—	—	—
<b>Total current loans to related parties .....</b>	<b>1,224</b>	<b>13</b>	<b>—</b>	<b>8,119</b>

The weighted average annual interest rate on loans to related parties was 8.43%, 8.47%, 8.50% and 8.50% during the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018, respectively.

In 2010, the Group provided an interest-bearing long-term loan to Kyzylkum LLP with maturity in 2024. The loan is collateralised by the property of Kyzylkum LLP. JV Khorassan-U LLP is a co-lender of the loan to Kyzylkum LLP.

In September and December 2010, the Group provided an interest-bearing long-term loan to Baiken-U LLP. In 2012 the repayment schedule was revised to extend the term of the loan to 2022. However, in September 2016, Baiken-U LLP made an early repayment of the loan in full amount.

In September 2012, the Group provided a five-year loan to Semizbai-U LLP. This loan was secured by property of Semizbai-U LLP, The loan was being paid starting from 2014, and in 2016, Semizbai-U LLP made an early repayment of the loan in full amount.

## DESCRIPTION OF SHARE CAPITAL AND CERTAIN REQUIREMENTS OF KAZAKHSTAN LEGISLATION

*Set out below is a summary of material information concerning the share capital of the Company, including a description of certain rights of the holders of common shares and related provisions of the Charter in effect on the date of this Prospectus and of relevant laws of Kazakhstan. GDR holders will be able to exercise their rights with respect to the Shares underlying the GDRs only in accordance with the provisions of the Deposit Agreements and the relevant requirements of the laws of Kazakhstan. See “Terms and Conditions of the Global Depositary Receipts” for more information.*

### Share capital

The Company was formed in July 1997 as a Kazakhstan joint stock company which can exist for an unlimited duration. The share capital of the Company has been paid in full. All of the shares of the Company are owned by the Government, originally represented by the State Property and Privatisation Committee under the Ministry of Finance of the Republic of Kazakhstan. In May 1999, the State’s interest in the Company was transferred to the Ministry of Energy and Natural Resources of the Republic of Kazakhstan. In January 2009, the Ministry’s shares of the Company were transferred to Samruk-Kazyna. As at the date of this Prospectus, Samruk-Kazyna was the sole shareholder of the Company.

The Company’s registered office is at building 10, D.Kunayev Str, Yessil district, Astana, 010000, Kazakhstan. The Company’s headquarters are located and its principal place of business is located at the same address. The telephone number of the Company’s principal place of business is +7 7172 458101. As of the date of this Prospectus, the authorised share capital of the Company is KZT37,050,944,000, divided into 259,356,608 issued and outstanding ordinary shares. As at the date of this Prospectus, all issued and outstanding ordinary shares were fully paid. The Company does not have any authorised or issued preference shares or any convertible securities, exchangeable securities or securities with warrants in issue.

All shares are in registered form in the shareholders register of the Company, which is maintained by the JSC “The Integrated Securities Registrar” (the “**Central Registrar**”). Ownership of the Company’s shares is evidenced by an extract from the shareholders register of the Company. The Central Registrar is the only authorised entity to maintain shareholder registers of private companies incorporated in Kazakhstan and is majority-owned by the NBK. On 18 August 2018 it was resolved that the Central Registrar will be reorganised by way of accession to JSC “Central Securities Depository”. It is expected that reorganisation will be completed by the end of 2018. The address of the Central Registrar is building 30/8, Satpayeva Str., Almaty, 050000, Kazakhstan.

### Summary of the Charter

The Charter of the Company was adopted by the sole shareholder of the Company on 15 October 2018 and will enter into effect on 1 November 2018. The Charter provides that the Company’s purpose, among others, is to engage in the exploration, production and processing of uranium, rare and rare-earth metals, and other activities related to or connected with the foregoing, as well as any activities not prohibited by the laws of Kazakhstan and required for the Company. The Company’s main objects and activities are set out in full in Section 3 of the Charter.

### Share rights

Subject to the provisions of the JSC Law and without prejudice to any rights attaching to any existing shares or class of shares, the Company may issue shares and other securities. Subject to the Charter and the provisions of the JSC Law, the authorised but unissued shares of the Company are at the disposal of the Board of Directors of the Company.

### Rights attaching to shares and variation of rights

The JSC Law provides for two types of shares: ordinary and preference. Each type has attached to it the rights set out in the JSC Law. These rights may be extended by a company’s charter (although the Company’s Charter does not purport to extend such rights), but these rights cannot be restricted.

A holder of ordinary shares has the right:

- to participate in the management of a joint stock company in the manner provided for under the JSC Law and/or the charter of the joint stock company;
- to receive dividends;



- to familiarise him or herself with the financial statements of the joint stock company and to receive information on its activities using the procedure established at the general meeting of shareholders or in the charter of the joint stock company;
- to receive extracts from the joint stock company's registrar (the Central Registrar) or, if appropriate, a nominal holder confirming the shareholder's ownership right to the securities;
- to propose to a general meeting of shareholders candidates for election to the board of directors;
- to contest in court the resolutions adopted by the bodies of the joint stock company;
- to file with the joint stock company written requests for information regarding its activities and to receive a response from the joint stock company within 30 calendar days of the date of the filing of such request;
- to receive part of the joint stock company's property in the event of the joint stock company's liquidation;
- of pre-emption in relation to the purchase of shares or other securities convertible into shares of the joint stock company in the manner established under the JSC Law;
- to participate in adoption of resolution by the general meeting of shareholders in respect of change of the amount or type of the shares in the manner established under the JSC Law; and
- if such shareholder or a group of shareholders holds 5% or more of the voting shares of the joint stock company to:
  - file a claim with a court seeking compensation in favour of the joint stock company for losses caused by the joint stock company's officials, as well as a return to the joint stock company, by the officials and/or their affiliates, of the profit (income) received by them as a result of adopting a resolution that proposes the conclusion of major transactions and/or interested party transactions;
  - propose to the board of directors of the joint stock company to include additional matters to the agenda of the general meeting of shareholders; and
  - receive information on the amount of remuneration as the result of the year of each member of the board of directors and/or the management board, in the manner established under the JSC Law.

In addition to the above, a major shareholder, being any shareholder or group of shareholders representing not less than 10% of the voting shares (individually or collectively, as applicable) (a "**Major Shareholder**") has the right:

- to request the convening of an extraordinary general meeting of shareholders, or to file a claim with the court seeking the same where the board of directors refuse to convene a general meeting of shareholders;
- to request to call a meeting of the board of directors of the joint stock company; and
- to request that an audit of the joint stock company be performed at the expense of the relevant Major Shareholder.

### **Voting rights**

Subject to any rights or restrictions attached to any class of shares by or in accordance with the Charter or the JSC Law, each holder of voting shares present at the meeting of shareholders, whether in person or by proxy, shall have:

- one vote on all procedural issues decided by the meeting of shareholders; and
- one vote per each fully paid share of which he is the holder, on all substantive issues decided by the meeting of shareholders (except in the case of electing the directors, where the number of votes such holder has shall be equal to the number of fully paid shares of which he is the holder multiplied by the number of directors being elected at such a meeting) (see "*—Board of Directors*").

A resolution of shareholders in writing shall not be effective without a quorum, which requires the attendance of persons holding 50% or more of the voting share capital of the Company or, for a repeated meeting called due to the absence of the 50% quorum, persons holding 40% or more of the voting share capital of the Company.

## **Dividends and Other Distributions**

The JSC Law and the Charter set out the general procedure for determining the dividends that the Company distributes to its shareholders. The net income of the Company shall be distributed in accordance with the procedure provided for by the laws of the Republic of Kazakhstan, the Charter and the Corporate Governance Code. The Company's dividend policy was approved by its sole shareholder on 15 October 2018 (see "*Dividend Policy*").

Subject to the provisions of the JSC Law, the Company may, by a resolution passed by a simple majority of shareholders present and voting at a general meeting of shareholders, declare dividends on the shares. The Charter establishes that the dividends on the shares may be paid either annually, semi-annually or quarterly in accordance with the decision of the general meeting of shareholders. Under the JSC Law, the general meeting of shareholders may declare an annual, semi-annual or quarterly dividend on the shares only after the audit of the financial statements of the Company for the relevant period has been carried out. Under the JSC Law, the Company may distribute dividends on the shares only if the Company has net income.

The JSC Law prohibits payment of dividends on shares if:

- the balance of the Company's own capital is negative or would become negative as a result of such payment; or
- the Company demonstrates, or the payment of dividends would cause the Company to demonstrate, characteristics of insolvency.

The list of shareholders entitled to receive dividends is drawn up on a date preceding the date of payment of dividends. If a dividend payable in respect of a share is delayed by the Company, then additional interest is payable by the Company to the shareholder. The amount of such interest is based on the official refinancing rate set by the NBK as at the date of payment of the relevant outstanding amount. The JSC Law provides that a shareholder's right to dividends does not lapse.

If the Company receives written consent from a shareholder, the Company may pay dividends in respect of such shares in the form of issued shares or bonds issued by the Company (but not in the form of any other type of securities). The JSC Law permits a holder of shares with an unpaid dividend to receive such unpaid dividend after such holder sells or otherwise transfers the shares to a third party if the agreement for the transfer of shares explicitly provides for this. See also "*Dividend Policy*".

## **Distributions to Shareholders on Liquidation**

In the event of liquidation, the property of a joint stock company which is left after the satisfaction of the creditors' claims is distributed among the shareholders in the following order of priority:

- *first*—payments for shares which must be repurchased pursuant to the JSC Law;
- *second*—payments of accrued and outstanding dividends on preference shares; and
- *third*—payments of accrued and outstanding dividends on ordinary shares.

If the property of the liquidated joint stock company is insufficient to pay the accrued and outstanding dividends on preference shares, such property is distributed among the holders of preference shares in proportion to the number of shares held by them. The remaining property of the joint stock company is distributed among the holders of shares in proportion to the number of shares held by them subject to the JSC Law's requirement that holders of preference shares have a priority right to receive dividends and a share in the joint stock company's property in the event of its liquidation.

## **Convertible securities**

The JSC Law and the Charter permit the Company to issue preference shares and other securities convertible into shares. The procedure for the conversion of such securities must be approved by a general meeting of shareholders and included in a prospectus that is filed with the NBK upon their issue. Ordinary shares are not convertible into any other security or instrument.

## **Unpaid shares and repurchased shares**

The JSC Law states that, until a share is paid in full, a share cannot be placed and a company must not instruct that the share be credited to the personal account of the would-be acquirer. Instead, the share is credited to the personal account of the company itself with the Central Registrar. Shares which have been repurchased by a company are credited to

another special account of the company with the Central Registrar. No dividends accrue or are payable on unplaced shares or shares repurchased by the Company, and such shares are not counted for the purposes of determining a quorum and do not carry the right to vote.

### **Transfer of shares**

To transfer a share, the shareholder (or its representative) must sign a written order and submit it to the Central Registrar or nominee for execution or, in the alternative, give suitable electronic instructions as permitted by law. The Central Registrar or nominee will execute a sell order by pairing it with a buy order signed by the buyer (or its representative), and vice versa. All dealings with the shares must be registered by making entries in the relevant personal accounts in the registry system or the nominee's books. Legal title to a share passes at the moment when the transaction is so registered (unless each party to the transaction has a different nominee, in which case legal title passes at the moment when the transaction is registered in the personal accounts of each nominee with the Kazakhstan Central Securities Depository, JSC (the "**Kazakhstan Central Depository**")). An extract from the personal account of a shareholder in the registry system or a nominee's books is evidence of that holder's legal right to a share. The Central Registrar or a nominee can refuse to register a transaction if the documents submitted do not conform to legislative requirements. Additionally, the NBK has the right (by notifying the relevant issuer, the Central Registrar and the Kazakhstan Central Depository) to suspend trading in securities by blocking all or certain personal accounts in the registry or nominee systems if legal requirements establishing the following have been violated: (i) the rights and interests of investors when acquiring securities; or (ii) the terms and procedures for trading securities.

A fee will ordinarily be payable to the Central Registrar or nominee for registering the transfer, under contractual terms.

### **Alteration of Share Capital**

The Company may from time to time, by a three-quarters majority of the total number of voting shares in the Company (but by no other method), increase its authorised share capital. The Board of Directors of the Company may place the shares within the permitted authorised number of shares. Any decision to place shares must state the number, the price and the manner of placement of the shares.

### **Buy-back (Repurchase) of own Shares**

Subject to the JSC Law and the Securities Market Law, and without prejudice to any relevant special rights attached to any class of shares, the Company may purchase any of its own shares of any class in any way and at any price (whether at par or otherwise). Such shares will be credited to the Company's account with the Central Registrar.

The Company cannot purchase any of its shares which are being placed in a primary offering. Any purchase by the Company must be effected with the consent of the relevant shareholder using a valuation method that has been approved in advance by a foundation meeting or amended by a general meeting of shareholders (save for any purchase which is effected through a stock exchange by way of an open trade). In certain circumstances provided for by the JSC Law, and subject to certain conditions set out in the JSC Law, the Company must repurchase shares belonging to a shareholder within 30 days of receiving a duly formalised request from such shareholder.

In both cases, shares being repurchased by the Company cannot exceed 25% of the total number of placed shares of the Company, and the purchase price for such shares cannot exceed 10% of the size of the Company's own capital. There is no guarantee that the NBK will take the position that this limit shall apply in a case of buy-back of GDRs by the Company.

### **Pre-Emptive Rights**

Under the JSC Law, a shareholder of the Company has a pre-emptive right to acquire newly placed shares of the Company (including newly issued shares or shares previously repurchased by the Company). Holders of shares have pre-emptive rights for shares or for securities convertible into shares and holders of preference shares have pre-emptive rights for preference shares.

Within 10 calendar days of the date upon which the Company takes a decision to place a specified number of shares, it must make an offer to each existing shareholder (either by written notification or by way of publication in the mass media) for the shareholder to acquire the shares pro rata to its shareholding at the placement price established by the Company. Each shareholder then has 30 calendar days from the date of such notification or publication to submit an application to acquire shares (i.e. to exercise its pre-emptive right). Upon the expiry of such period, the right to submit an application will lapse. Where a shareholder submits an application to acquire shares, the shareholder then has 30 calendar days from the date of the application to pay for the shares being acquired, unless provided otherwise in the Charter. If no payment is made upon the expiry of such period, the application is deemed to be void.

The NBK has in the past taken the position that persons not disclosed on the register of shareholders of the Company as holders of GDRs may not exercise the pre-emptive rights attaching to the underlying shares. Although the NBK currently takes the position that holders of GDRs may exercise such rights (and although there is no explicit provision in the current legislation that would prevent GDR holders from exercising them), there is no guarantee that the NBK will not reverse this position.

### **General Meetings**

The board of directors of the Company must convene and the Company must hold general meetings (including annual and extraordinary general meetings) in accordance with the requirements of the JSC Law. The board of directors of the Company may call general meetings at such times as it determines. In addition, an extraordinary general meeting may be convened on the written request of a Major Shareholder.

The board of directors of the Company cannot of its own initiative introduce any changes to the agenda or propose a procedure for the conduct of a general meeting pursuant to a request of the Major Shareholder. However, the board of directors of the Company may include additional items onto the agenda at its own discretion. Shareholders are entitled to receive not less than 30 (or, in the event of a meeting in absence and in mixed voting cases, 45) days' notice of the holding of any general meeting.

The general meeting of shareholders shall have exclusive competence to determine certain matters, including, among others, the following:

- the introduction of amendments and supplements to, or the approval of new version of the Corporate Governance Code;
- the voluntary reorganisation (including in relation to the Company's status as a joint stock company) or liquidation of the Company;
- any increase in the amount of authorised shares of the Company or any change in the type of any authorised shares of the Company which have not been placed;
- the approval or amendment of the valuation methodology for determining the price for the repurchase of shares by the Company in the OTC market;
- the introduction of amendments and supplements to, or the approval of a new version of the Charter;
- the appointment of auditors to undertake the audit of the Company;
- the determination of the scope and the expiry dates of the powers of the board of directors of the Company, the selection of members of the board of directors of the Company and early termination of their powers, as well as the determination of the amount and payment terms of remuneration to members of the board of directors of the Company;
- approval of annual financial statements and the amount of dividends paid on shares, if any; and
- if such decision may not be taken by the board of directors of the Company, decisions for the Company to conclude any related party transaction.

Matters referred to in the first four of the bullet points above require the approval by a qualified majority (i.e. three-quarters) of the total number of voting shares.

On issues related to the internal organisation of the Company, a general meeting of shareholders has the right to cancel any decision made by any other management body of the Company.

### **Board of Directors**

The Charter of the Company provides that the board of directors of the Company must be comprised of at least six (6) persons. The exact number of members of the board of directors of the Company shall be established by the decision of the general meeting of shareholders of the Company. Under the JSC Law, not less than 30% of members of the board of directors of the Company must be independent directors. The "independent director" criteria are set out in the JSC Law.

Directors are elected by the general meeting of shareholders by way of cumulative voting (whereby the number of votes a shareholder has is equal to the number of fully paid shares of which he is the holder multiplied by the number of directors being elected at a meeting of shareholders) and a shareholder has a right to give all such votes fully for one candidate or to distribute votes among several candidates for membership of the board of directors of the Company. Candidates who receive a majority of votes are considered to be elected to the board of directors of the Company. If two or more candidates gain an equal number of votes then additional cumulative voting is carried out with regard to such candidates.

The quorum required for a duly convened meeting of the board of directors of the Company shall comprise not less than 50% of the total number of the members of the board of directors of the Company.

Each member of the board of directors of the Company has one vote. The decisions of the board of directors of the Company are made by a simple majority of those members present at the meeting of the board of directors of the Company.

The general meeting of shareholders of the Company has a right to terminate early the powers of any or all members of the board of directors of the Company and to remove any member of the board of directors of the Company from office.

The board of directors of the Company shall have exclusive competence to determine certain matters, including the following:

- preliminary approval of the amendments to the Charter of the Company;
- adoption of decision on entering into transactions with state bodies, governmental entities, state enterprises, with legal entities, where 50% or more voting shares (interest) is owned by the state, and with legal entities affiliated with them, except for transactions with dependent and subsidiary entities of the Company, and agreements, under template form established by the laws of the Republic of Kazakhstan;
- the placement of shares, including the price, number and the manner of placement of such shares;
- in relation to the chief executive officer, the appointment, the term of appointment and the dismissal ahead of the expiry of the term of appointment of such chief executive officer;
- the remuneration and incentive plan for the members of the management board and other officers;
- the increase of the Company's liabilities by an amount equal to or exceeding 10% of the Company's own capital;
- the conclusion by the Company of any major transaction (being, inter alia, a transaction or combination of interrelated transactions which result or may result in the purchase or disposal by the Company of assets representing 25% or more of the total balance sheet value of the Company's assets) and any related party transaction;
- the establishment of the general terms and conditions of the Company's operations and approval of certain internal regulations; and
- the establishment of the Company's development strategy and development plans.

Matters referred to in the first two of the bullet points above require the approval by a simple majority votes of the directors, provided that the majority of the Company's independent directors vote to approve these matters.

#### **The Management Board and Chief Executive Officer**

The members of the Management Board and its chairman (chief executive officer) are appointed by the board of directors of the Company for a term established by the board of directors of the Company. The Management Board runs the day-to-day operations of the Company. The Management Board is entitled to make decisions on any matters relating to the activity of the Company that are not, under the JSC Law, other legislative acts of Kazakhstan or the Charter, within the competence of other bodies or officers of the Company.



According to the Decree of the Government of the Republic of Kazakhstan No. 784 dated 16 July 2002, the Company is included in the list of companies whose chief executive officers may only be appointed or dismissed subject to the recommendation of the Prime Minister of the Republic of Kazakhstan or otherwise in agreement with the Prime Minister.

The Management Board is entitled to enter on behalf of the Company into any contract or other document which increases the liabilities of the Company by an amount not exceeding 10% of the amount of the Company's own capital. Any contract or other document which increases the liabilities of the Company by an amount equal to or exceeding 10% of the amount of the Company's own capital must be approved by the board of directors of the Company before the chief executive officer can enter into such contract or document on behalf of the Company. The Management Board is entitled to enter on behalf of the Company into any transaction or interconnected transactions, where the Company disposes or acquires the property with value less than 10% of the amount of the Company's assets. In addition, the Management Board is entitled to enter on behalf of the Company into related party transactions with legal entities in which more than 50% of voting shares or participatory interest is directly or indirectly held by the Company, whether owned or by way of trust management.

The chief executive officer is entitled to, amongst other things, hire personnel and represent the Company before third parties and arrange for the performance of actions contemplated by decisions of the general meeting of shareholders and the board of directors of the Company. The chief executive officer is entitled to enter on behalf of the Company into any transaction or interconnected transactions, where the Company disposes or acquires the property with value less than 1% of the amount of the Company's assets.

### **Remuneration of Directors**

The remuneration of members of the board of directors of the Company is determined at a general meeting of shareholders.

### **Permitted Interests of Directors**

A director of the Company cannot participate in voting on any related party transaction proposed to be entered into by the Company if:

- such director is a party to the transaction or he participates in the transaction as a representative or intermediary; or
- such director is an affiliate of a legal entity that is a party to the transaction or such legal entity participates in the transaction as a representative or intermediary.

### **Disclosure of Interests in Shares**

A list of shareholders that have the right to participate in a meeting of shareholders and vote at the meeting will be prepared by the Central Registrar on the basis of information recorded in the register of shareholders of the Company. However, any shareholder holding shares through a nominee and any Holder of GDRs whose identity is not disclosed to the Kazakhstan Central Depository shall not be entitled to vote at a meeting of shareholders. Holders of GDRs will be able to exercise their voting rights in accordance with and subject to their limitations (see "*Terms and Conditions of the Global Depositary Receipts*").

In addition, any person acquiring 10% or more of the voting shares of the Company, or otherwise falling within the definition of an affiliate as provided for in article 64 of the JSC Law, is considered an affiliate of the Company and must disclose to the Company its identity and information about its affiliated persons. Information about the identity of such person and its affiliates is not confidential.

### **Mandatory Offers**

Under the JSC Law, a person who, acting either alone or jointly with its affiliated persons, is acquiring:

- 30% or more of the voting shares of the Company; or
- any other number of voting shares of the Company where such acquisition would result in such person alone or jointly with its affiliated persons holding 30% or more of the voting shares of the Company,

is required to make an offer to the remaining shareholders to buy out their shares at the market price which shall be determined by the acquirer on the basis of the guidelines provided for in the JSC Law. Any failure by the acquirer to make such an offer would result in the acquirer being obliged to reduce its shareholding to not more than 29%. Under the Entrepreneurship Code, any person, acting either alone or jointly with its affiliates, wishing to acquire more than 50% of the voting shares of the Company, must obtain prior consent from the Competition Committee.

### **Squeeze-out rules**

Squeeze-out rules were introduced into the JSC Law in July 2018, and will become effective from 1 January 2019. However, squeeze-out rules do not apply to the Company as JSC Law provides carve out for squeeze-out rules in respect of legal entities which are members of Samruk-Kazyna's group.

Under the JSC Law, a person who, acting either solely or jointly with its affiliated persons, is acquiring:

- 95% or more of the voting shares of the company; or
- other number of voting shares in aggregate constituting not less than 10% of the voting shares of the company, as a result of which this person acquired, independently or jointly with its affiliates, 95% or more of the voting shares of the company,

have the right to demand from the other shareholders of the company to sell their voting shares. The offer price shall be the market value of voting shares at the stock exchange (if such shares are traded at the stock exchange) or determined by the independent appraisal. The remaining shareholders are obliged to sell their voting shares within sixty calendar days after the date of publication of the request on the Internet resource of the depository of financial statements. It is prohibited for such remaining shareholders to enter into any other transactions with the company's voting shares within such 60-day period.

### **Related party transactions**

Under the JSC Law, a related party transaction means a transaction in which (a) an affiliate of the company either (i) is a party to such transaction or (ii) participates in the transaction as a representative or an intermediary or (b) an affiliate of the company is an affiliate of the legal entity which either (i) is a party to such transaction or (ii) participates in the transaction as a representative or an intermediary. The JSC Law excludes certain types of transactions from the definition of a related party transaction (such as, for instance, an acquisition of the company's shares or other securities by its shareholder or a repurchase by the company of the placed shares of the company). Under the JSC Law, related party transactions should be approved by the majority of disinterested members of the board of directors of the Company or, if all directors of the Company are interested, by the decision of a meeting of shareholders made by: (a) the majority of disinterested shareholders; or (b) a simple majority of the total number of voting shares of the Company if all shareholders are interested. The JSC Law permits the Company to establish in its Charter a different procedure for entry into certain types of related party transactions.

## TERMS AND CONDITIONS OF THE GLOBAL DEPOSITARY RECEIPTS

*The following terms and conditions (the “Conditions”), subject to completion and amendment and excepting sentences in italics, will apply to the global depositary receipts (the “GDRs”) and will be endorsed on each global depositary receipt certificate (the “GDR Certificates”).*

The GDRs are issued in respect of the registered ordinary shares (the “Shares”), of JSC National Atomic Company Kazatomprom (the “Company”), pursuant to and subject to (i) in the case of the Regulation S GDRs, the Regulation S Deposit Agreement dated on or about 13 November 2018 by and between the Company and Citibank, N.A., as depositary (the “Depositary”) (the “Regulation S Deposit Agreement”) and, (ii) in the case of the Rule 144A GDRs, the Rule 144A Deposit Agreement dated on or about 13 November 2018 by and between the Company and the Depositary (the “Rule 144A Deposit Agreement”). References in the Conditions to the “Deposit Agreement” shall mean, in the case of Regulation S GDRs, the Regulation S Deposit Agreement and, in the case of Rule 144A GDRs, the Rule 144A Deposit Agreement. Each GDR represents the right to receive, subject to the terms of the Deposit Agreement and the Conditions, one Share on deposit under the terms of the Deposit Agreement.

Pursuant to the provisions of the Deposit Agreement, the Depositary has appointed Citibank Kazakhstan JSC as custodian to receive and hold on its behalf the Shares from time to time deposited under the Deposit Agreement (the “Deposited Shares”), and all rights, securities, property and cash deposited with the Custodian which are attributable to the Deposited Shares (such rights, securities, property and cash together with the Deposited Shares, the “Deposited Property”). The Depositary shall hold Deposited Property for the benefit of the Holders (as defined below) as bare trustee in proportion to the number of Shares in respect of which the GDRs held by them are issued. In these Conditions references to the “Depositary” are to Citibank, N.A. and/or any other depositary which may from time to time be appointed under the Deposit Agreement, references to the “Custodian” are to Citibank Kazakhstan JSC or any other custodian which may from time to time be appointed under the Deposit Agreement and references to the “Office” mean, in relation to the Custodian, the principal office of the Custodian in the Republic of Kazakhstan (currently at Park Place, Building A, 41 Kazybek Bi Street, Almaty, 050010, Republic of Kazakhstan).

References in the Conditions to the GDRs shall include the GDRs issued pursuant to the terms of the Regulation S Deposit Agreement (the “Regulation S GDRs”) and the GDRs issued pursuant to the terms of the Rule 144A Deposit Agreement (the “Rule 144A GDRs”).

References in these Conditions to the “Holder” of any GDR shall mean the person registered as the holder of any GDR on the books of the Depositary maintained for such purpose. References in these Conditions to “Beneficial Owner” of any GDR shall mean any person who is the beneficial owner of GDRs as determined in accordance with Rule 13d-3 and Rule 13d-5 under the Exchange Act. These Conditions include summaries of, and are subject to, the detailed provisions of the Deposit Agreement, which includes the forms of the GDR Certificate in respect of the GDRs. Copies of the Deposit Agreement are available for inspection at the principal office of the Depositary. Holders and Beneficial Owners are deemed, by virtue of being a Holder or Beneficial Owner, to have notice of, and be subject to, all of the applicable provisions of the Deposit Agreement and the Conditions. Terms used in the Conditions and not defined herein but which are defined in the Deposit Agreement have the meanings ascribed to them in the Deposit Agreement.

The Depositary shall hold Deposited Property for the benefit of the Holders as bare trustee in proportion to the number of Shares in respect of which the GDRs held by them are issued and the Holders will accordingly be tenants in common of such Deposited Property to the extent of the Deposited Property corresponding to the GDRs in respect of which they are the Holders. For the avoidance of doubt, in acting hereunder the Depositary shall have only those duties, obligations and responsibilities expressly specified in the Deposit Agreement and these Conditions and, other than holding the Deposited Property as bare trustee as aforesaid, does not assume any relationship of trust for or with the Holders or the Beneficial Owners or any other person. Any right or power of the Depositary in respect of Deposited Property is reserved by the Depositary under its declaration of trust contained in this paragraph and is not given by way of grant by any Holder or Beneficial Owner.

**Holders and Beneficial Owners of GDRs are not parties to the Deposit Agreement and thus, under English Law, have no contractual rights against, or obligations to, the Company or Depositary. However, the Deed Poll executed by the Company in favour of the Holders provides that, if the Company fails to perform the obligations imposed on it by certain specified provisions of the Deposit Agreement, any Holder may enforce certain specified provisions of the Deposit Agreement as if it were a party to the Deposit Agreement and was the “Depositary” in respect of that number of Deposited Shares to which the GDRs of which it is the Holder relate.**

**Holders and Beneficial Owners are deemed, by virtue of being a Holder or Beneficial Owner and owning, acquiring or holding, as the case may be, a GDR, to have notice of and be subject to all applicable provisions of**

**the Deposit Agreement and the Conditions. The Depository is under no duty to enforce any of the provisions of the Deposit Agreement or the Conditions on behalf of any Holder or Beneficial Owner of a GDR or any other person.**

*GDRs will initially take the form of global GDRs evidenced by one or more Master GDR Certificates (each a “**Master GDR Certificate**”) registered (i) in the case of Regulation S GDRs, in the name of Citivic Nominees Limited as nominee for Citibank Europe plc, as Common Depository (the “**Common Depository**”), and will initially be held by the Common Depository for Euroclear Bank SA/NV, as operator of the Euroclear System (“**Euroclear**”) and Clearstream Banking, société anonyme (“**Clearstream**”) and for the account of accountholders in Euroclear or Clearstream (“**Euroclear Participants**” and “**Clearstream Participants**”, respectively), as the case may be, and (ii) in the case of Rule 144A GDRs, in the name of Cede & Co., as nominee for The Depository Trust Company (“**DTC**”) for the account of accountholders in DTC (“**DTC Participants**”). The Master GDR Certificates will be exchangeable for a GDR Certificate in definitive registered form in the limited circumstances as described below.*

*If at any time DTC, Euroclear or Clearstream, as the case may be, ceases to make its respective book-entry settlement systems available for the GDRs, the Company and the Depository will attempt to make other arrangements for book-entry settlement. If alternative book-entry settlement arrangements cannot be made, the Depository will make available GDR Certificates in definitive registered form.*

Under the terms of the GDRs, each purchaser of GDRs is deemed to have represented and agreed, among other things, that the GDRs have not been and will not be registered under the Securities Act and may be offered, sold, pledged or otherwise transferred only in a transaction exempt from, or not subject to, the registration requirements of the Securities Act. Each GDR will contain a legend to the foregoing effect.

*For a description of the restrictions on the transfer of the GDRs see “Transfer Restrictions” and “Selling Restrictions.”*

## **1. Deposit of Shares**

- A. The Depository may, in accordance with the terms of the Deposit Agreement, but subject to the Conditions, and upon delivery of (x) a duly executed or electronically submitted order (in a form approved by the Depository) and (y) a duly executed or electronically submitted deposit certification substantially in the form attached to the Deposit Agreement by or on behalf of any investor who is to become the Beneficial Owner of the GDRs (other than in the case of a deposit of Shares by the Company or an Affiliate of the Company which shall be subject to Clause 7.1.4 of the Deposit Agreement), from time to time issue and deliver further GDRs having the same terms and conditions as the GDRs which are then outstanding in all respects and, subject to the terms of the Deposit Agreement, the Conditions and applicable law, the Depository shall accept for deposit any further Shares in connection therewith, so that such further GDRs shall form a single series with the already outstanding GDRs. References in these Conditions to the GDRs include (unless the context requires otherwise) any further GDRs issued pursuant to this Condition and forming a single series with the already outstanding GDRs.

*The deposit certificate to be provided pursuant to the Regulation S Deposit Agreement certifies, among other things, that the person providing such certificate is not an “affiliate” of the Company, has acquired, or has agreed to acquire and will have acquired, the Shares to be deposited in an “offshore transaction” (as defined in Regulation S) and will comply with the restrictions on transfer applicable to Regulation S GDRs set forth under “Transfer Restrictions.”*

*The deposit certificate to be provided pursuant to the Rule 144A Deposit Agreement certifies, among other things, that the person providing such certificate is not an “affiliate” of the Company, is a “Qualified Institutional Buyer” (as defined in Rule 144A), and will comply with the restrictions on transfer applicable to Rule 144A GDRs set forth under “Transfer Restrictions.”*

- B. Subject to the terms and conditions of the Deposit Agreement and applicable law, upon (i) book-entry transfer of Shares to an account of the Custodian for the Depository (on behalf of Holders) at the Kazakhstan Central Securities Depository, JSC (the “**Kazakhstan Central Depository**”), (ii) physical or electronic delivery to the Depository of the applicable deposit certification unless the deposit of Shares is made by the Company or an Affiliate of the Company in which case such deposit will be subject to Section 7.1.4 of the Deposit Agreement, and (iii) payment of necessary taxes, governmental charges (including transfer taxes) and other charges as set forth in the Deposit

Agreement and fees of the Depositary as set forth in Clause 10.1 of the Deposit Agreement and Condition 19, the Depositary will (i) adjust its records for the number of GDRs issued in respect of the Shares so deposited, (ii) notify DTC or the Common Depositary, as the case may be, to increase the number of GDRs evidenced by a Master GDR Certificate, and (iii) make delivery of the GDRs so issued to the applicable DTC Participant, Euroclear Participant or Clearstream Participant specified in applicable order received for such purpose.

- C. Subject to the limitations set forth in the Deposit Agreement and applicable law, the Depositary may (but is not required to) issue GDRs prior to the delivery to it of Shares in respect of which such GDRs are to be issued against evidence to receive rights from the Company (or any agent of the Company involved for the Company in the maintenance or ownership or transactions records for the Shares) in the form of a written blanket or specific guarantee of ownership furnished by the Company (or any agent of the Company involved for the Company in the maintenance or ownership or transactions records for the Shares).
- D. Any further GDRs issued pursuant to Condition 1(A) which (i) represent Shares which have rights (whether dividend rights or otherwise) which are different from the rights attaching to the Shares represented by the outstanding GDRs, or (ii) are otherwise not fungible (or are to be treated as not fungible) with the outstanding GDRs, will, subject to Clause 3.15 of the Deposit Agreement be represented by a separate master partial entitlement GDR certificate (each a “**Master Partial Entitlement GDR Certificate**”). Upon becoming fungible with outstanding GDRs, such further GDRs shall be evidenced by a Master GDR Certificate (by increasing the total number of GDRs evidenced by the relevant Master GDR Certificate or by the number of such further GDRs, as applicable).
- E. Subject to the further terms and provisions of the Deposit Agreement, Citibank, N.A., its agents and affiliates, on their own behalf, may own and deal in any class of securities of the Company and its affiliates and in GDRs. In its capacity as Depositary, the Depositary shall not lend Shares or GDRs.
- F. Any person delivering Shares for deposit under the Deposit Agreement and Condition 1 and any Holder or Beneficial Owner may be required and will be deemed to accept, by virtue of being a Holder or a Beneficial Owner, that, from time to time, it will be required to furnish the Depositary or the Custodian with such proof, certificates and representations and warranties as to matters of fact, including without limitation the citizenship and residence of the depositor, taxpayer status, payment of all applicable taxes or governmental charges, exchange control approvals, legal or beneficial ownership of GDRs and Deposited Property, compliance with all applicable laws, the terms of the Deposit Agreement, the Conditions and the provisions of, or governing, the Deposited Property and the identity and genuineness of any signature on any of the supporting instruments or other documents, and with such further documents and information as the Depositary may deem necessary or appropriate for the administration or implementation of the Deposit Agreement and the Conditions. The Depositary, the Registrar or the Custodian may withhold acceptance of Shares for deposit, withhold delivery or registration of issuance or transfer of all or part of any GDR Certificate, withhold adjustment of the Master GDR Certificate to reflect increases in Shares represented thereby or withhold the distribution or sale of any dividend or distribution of rights or of the net proceeds of the sale thereof or the delivery of any Deposited Property, until such proof or other information is filed or such certifications are executed, or such representations are made or such other documentation or information is provided in each case to the satisfaction of the Depositary, the Registrar or the Custodian.
- G. Notwithstanding anything else contained in the Deposit Agreement or the Conditions, the Depositary shall not be required to accept for deposit or maintain on deposit with the Custodian (a) any fractional Shares or fractional Deposited Property, or (b) any number of Shares or Deposited Property which, upon application of the ratio of GDRs to Shares or Deposited Property, as the case may be, would give rise to fractional GDRs. No Share shall be accepted for deposit unless accompanied by evidence, if any is required by the Depositary or the Custodian, that is reasonably satisfactory to the Depositary or the Custodian that all conditions for such deposit have been satisfied by the person depositing such Shares under the laws and regulations of Kazakhstan and any necessary approval has been granted by any applicable governmental body in Kazakhstan (if any), including, without limitation, if applicable, any regulator of currency exchange.



- H. Each person depositing Shares under the Deposit Agreement and the Conditions shall be deemed thereby to represent and warrant that (i) such Shares (and the certificates therefor) are duly authorised, validly issued, fully paid and registered, nonassessable and legally obtained by such person, (ii) all pre-emptive (and similar) rights with respect to such Shares have been validly waived or exercised, (iii) the person making such deposit is duly authorised so to do, (iv) the Shares presented for deposit are free and clear of any lien, encumbrance, security interest, charge, mortgage or adverse claim, (v) the Shares presented for deposit have not been stripped of any rights or entitlements, and (vi) in the case of the Regulation S Deposit Agreement, that the Shares are not, and the Regulation S GDRs will not be, “restricted securities” (as defined in Rule 144(a)(3) under the Securities Act). Such representations and warranties shall survive the deposit and withdrawal of Shares and the issuance and cancellation of GDRs in respect thereof and the transfer of such GDRs. If any such representations or warranties are false in any way, the Company and the Depositary shall be authorised, at the cost and expense of the person depositing Shares, to take any and all actions necessary to correct the consequences thereof.

Each person depositing Shares, taking delivery of or transferring GDRs or any beneficial interest therein, or surrendering GDRs or any beneficial interest therein and withdrawing Shares under the Deposit Agreement and the Conditions shall be deemed thereby to acknowledge that the GDRs and the Shares represented thereby have not been and will not be registered under the Securities Act, and may not be offered, sold, pledged or otherwise transferred except in accordance with the restrictions on transfer set forth in the applicable Securities Act Legend, and such person shall be deemed thereby to represent and warrant that such deposit, transfer or surrender or withdrawal complies with the foregoing restrictions. Such representations and warranties shall survive any such deposit, taking delivery of, transfer, surrender or withdrawal of the Shares or the GDRs or any beneficial interest therein.

## 2. **Withdrawal of Deposited Property**

- A. Subject to the terms and provisions of the Deposit Agreement, the Conditions the procedures of the Kazakhstan Central Depository and applicable law, any Holder may request withdrawal of the Deposited Property attributable to any GDR upon production of such evidence that such person is the Holder of, and entitled to, the relative GDR as the Depositary may reasonably require at the principal office of the Depositary accompanied by:
- (i) a duly executed order (in a form approved by the Depositary) requesting the Depositary to cause the Deposited Property being withdrawn or evidence of the electronic transfer thereof to be delivered to or upon the order in writing of, the person or persons designated in such order;
  - (ii) the payment of such fees, taxes, duties, charges and expenses as may be required under the Conditions or the Deposit Agreement including, but not limited to the fees of the Depositary set forth in Clause 10.1 of the Deposit Agreement and Condition 19;
  - (iii) (x) surrender of a GDR Certificate at the Principal New York Office or Principal London Office, if DTC, Euroclear or Clearstream book-entry settlement system is not then available for GDRs, or (y) receipt by the Depositary at the Principal New York Office of instructions from DTC, Euroclear or Clearstream, or a DTC Participant, Euroclear Participant or Clearstream Participant or their respective nominees, on behalf of any Beneficial Owner together with a corresponding credit to the Depositary’s account at DTC, Euroclear or Clearstream for the GDRs so surrendered, if the book-entry settlement system is then available for GDRs, in either case for the purpose of withdrawal of the Deposited Property represented thereby; and
  - (iv) the delivery to the Depositary of, in the case of Rule 144A GDRs, a duly completed withdrawal certificate in the form of Schedule 3, Part B to the Rule 144A Deposit Agreement.
- B. Withdrawals of Deposited Shares may be subject to such transfer restrictions or certifications, as the Company or the Depositary may from time to time determine to be necessary for compliance with applicable laws.

- C. Upon production of such documentation and the making of such payment as aforesaid in accordance with paragraph (A) of this Condition 2, the Depositary will direct the Custodian, within a reasonable time after receiving such direction from such Holder, to deliver at its office, to, or to the order in writing of, the person(s) designated in the accompanying order:
- (i) a certificate for, or other appropriate instrument of title to, or evidence of book-entry transfer of, the relevant Deposited Shares, registered in the name of the Depositary or its nominee and accompanied by such instruments of transfer in blank or to the person or persons specified in the order for withdrawal and such other documents, if any, as are required by law for the transfer thereof; and
  - (ii) all other property forming part of the Deposited Property attributable to such GDR, accompanied, if required by law, by one or more duly executed endorsements or instruments of transfer in respect thereof as aforesaid or evidence of the electronic transfer of such other Deposited Property;

provided that the Depositary:

- (x) may make delivery of (a) any cash dividends or cash distributions or (b) any proceeds from the sale of any distributions of Shares or rights which are held by the Depositary in respect of the Deposited Property represented by the GDRs surrendered for cancellation and withdrawal; and
- (y) at the request, risk and expense of any Holder surrendering a GDR for cancellation and withdrawal, will direct the Custodian to forward any cash or other property (other than securities) held by the Custodian in respect of the Deposited Property represented by such GDRs to the Depositary,

in each case at the Principal New York Office or the Principal London Office (if permitted by applicable law from time to time).

- D. Delivery by the Depositary and the Custodian of all certificates, instruments, dividends or other property forming part of the Deposited Property as specified in this Condition will be made subject to any laws or regulations applicable thereto.
- E. If any GDR surrendered and cancelled represents fractional entitlements in Deposited Shares, the Depositary shall cause the appropriate whole number of Deposited Shares to be withdrawn and delivered in accordance with the terms of the Deposit Agreement and this Condition 2 and shall, at the discretion of the Depositary, either (i) issue and deliver to the person surrendering such GDR a new GDR representing any remaining fractional Share, or (ii) sell or cause to be sold the fractional Share represented by the GDR surrendered and remit proceeds of such sale (net of (a) fees and charges of, and expenses incurred by, the Depositary, and (b) taxes withheld) to the person surrendering the GDR.
- F. Notwithstanding anything to the contrary in the Deposit Agreement or the Conditions, the Depositary shall not knowingly accept any Rule 144A GDRs for cancellation and withdrawal of the Deposited Property represented thereby if the recipient thereof has instructed the deposit of such Deposited Property into any unrestricted depositary receipt facility, unless the Depositary shall have received an opinion of counsel reasonably satisfactory to it stating that the Deposited Property so withdrawn are not at such time “restricted securities” within the meaning of Rule 144(a)(3) under the Securities Act.

### **3. Suspension of Issue of GDRs and of Withdrawal of Deposited Property**

The issuance and delivery of GDRs against deposits of Shares generally or deposits of particular Shares may be suspended or withheld, or the registration of transfer of GDR Certificates in particular instances may be refused, or the registration of transfers generally may be suspended or refused, during any period when the transfer books of the Depositary, the Company, a registrar of GDRs or any registrar of Shares are closed, or if any such action is deemed necessary or advisable by the Company or the Depositary in good faith, at any time or from time to time because of any requirement of law, any government or governmental body or commission or any securities exchange on which the GDRs or Shares are listed, an applicable court order, or

under any provision of the Deposit Agreement, the Conditions, or the provisions of or governing the Deposited Property, or any meeting of shareholders of the Company or for any other reason (determined reasonably and in good faith). The Depositary may restrict the transfer of Deposited Shares where the Company notifies the Depositary in writing that such transfer would result in ownership of Shares exceeding any limit under any applicable law, government resolution or the Company's Charter (the "**Charter**") or would otherwise violate any applicable laws.

The Depositary will refuse to accept Shares for deposit under the Rule 144A Deposit Agreement, if it has been notified by the Company in writing that the Deposited Shares or any depositary receipts corresponding to Shares are listed on a U.S. national securities exchange or quoted on a U.S. automated inter-dealer quotation system unless accompanied by evidence satisfactory to the Depositary that any such Shares are eligible for resale pursuant to Rule 144A under the Securities Act.

Notwithstanding any provision of the Deposit Agreement, the Conditions or any GDR Certificate to the contrary, Holders and Beneficial Owners are entitled to surrender outstanding GDRs to withdraw the Deposited Shares at any time subject only to (i) temporary delays caused by closing the transfer books of the Depositary or the Company or the deposit of Shares in connection with voting at a shareholders' meeting or the payment of dividends, (ii) the payment of fees, taxes and similar charges, (iii) compliance with any laws or governmental regulations or an applicable court order relating to the GDRs or to the withdrawal of the Deposited Shares.

#### **4. Transfer and Ownership**

A. GDRs are to be issued in registered form. Title to the GDRs passes upon registration in the records of the Depositary. The Depositary will refuse to accept for transfer any GDRs if it reasonably believes that such transfer would result in a violation of applicable laws. The Holder of any GDR will (except as otherwise required by law) be treated as its absolute owner for all purposes (whether or not any payment or other distribution in respect of such GDR is overdue and regardless of any notice of ownership, trust or any interest in it or any writing on, or the theft or loss of, any certificate issued in respect of it) and no person will be liable for so treating the Holder.

The Depositary will maintain Holder records, including a register of Holders, at its principal office in New York and shall ensure that no register of Holders is maintained in the United Kingdom.

Any interest in GDRs represented by one of the Master GDR Certificates that is transferred to a person whose interest in such GDRs is subsequently represented by the other Master GDR Certificate, will, upon transfer, cease to be an interest in the GDRs represented by such first Master GDR Certificate and, accordingly, will be subject to all transfer restrictions and other procedures applicable to interests in GDRs represented by such other Master GDR Certificate for so long as it remains such an interest.

For a description of the restrictions on the transfer of the GDRs see "*Transfer Restrictions.*"

B. Notwithstanding any other provision of the Deposit Agreement or the Conditions, each Holder and Beneficial Owner, by virtue of their ownership of any GDR or any Deposited Property, shall be deemed thereby to agree to comply with requests from the Company or the Depositary pursuant to Kazakhstan law and any stock exchange on which the Shares are, or may be registered, traded or listed, or the Charter, which are made to provide information, *inter alia*, as to the capacity in which such Holder or former Holder, Beneficial Owner or former Beneficial Owner holds or held, owns or owned a beneficial ownership interest in GDRs (and Deposited Property, as the case may be) and regarding the identity (including the passport and corporate registration details) of the Holder, Beneficial Owner or any other person interested in such GDRs (and Deposited Property), the nature of such interest and various related matters, whether or not they are Holders and/or Beneficial Owners at the time of such request.

C. Applicable laws and regulations may require holders and beneficial owners of Shares, including the Holders and Beneficial Owners of GDRs, to satisfy reporting requirements or obtain regulatory approvals in certain circumstances. Holders and Beneficial Owners of GDRs are solely responsible for complying with such reporting requirements and obtaining such approvals. By virtue of their ownership of any GDR or any Deposited Property, each Holder and Beneficial Owner shall be

deemed thereby to agree to file such reports and obtain such approvals to the extent and in the form required by applicable laws and regulations as in effect from time to time. None of the Depositary, the Custodian, the Company or any of their respective agents or affiliates shall be required to take any actions whatsoever on behalf of Holders or Beneficial Owners to satisfy such reporting requirements or obtain such regulatory approvals under applicable laws and regulations.

## **5. Cash Distributions**

Whenever the Depositary receives, or receives confirmation from the Custodian of the receipt from the Company of, any cash dividend or other cash distribution on or in respect of the Deposited Shares or receipt of proceeds from the sale of any Shares, rights, securities or other entitlements under the terms of the Deposit Agreement or the Conditions, the Depositary shall, if at the time of receipt thereof any amounts received in Foreign Currency can in the judgment of the Depositary (pursuant to Condition 11) be converted on a practicable basis into Dollars transferable to the U.S., promptly convert, or cause to be converted, such dividends, distribution or proceeds into Dollars in the terms described in Condition 11 and will promptly distribute the amount thus received (net of (a) applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes withheld) to the Holders entitled thereto. The Depositary shall distribute only such amount, however, as can be distributed without attributing to any Holder a fraction of one cent, and any balance not so distributable shall be held by the Depositary (without liability for interest thereon) and shall be added to and become part of the next sum received by the Depositary for distribution to Holders of GDRs then outstanding at the time of the next distribution. If the Company, the Custodian or the Depositary is required to withhold and does withhold from any cash dividend or other cash distribution in respect of any Deposited Property an amount on account of taxes, duties or other governmental charges, the amount distributed to Holders in respect of the GDRs representing such Deposited Property shall be reduced accordingly. Such withheld amounts shall be forwarded by the Company, the Custodian or the Depositary to the relevant governmental authority. Evidence of payment thereof by the Company shall be forwarded by the Company to the Depositary upon request.

## **6. Distributions of Shares**

If any distribution upon any Deposited Property consists of a dividend in, or free distribution of, Shares, the Company shall cause such Shares to be deposited with the Custodian and, if applicable, registered in the name of the Depositary, the Custodian or any of their nominees, as the case may be. Upon receipt of confirmation of such deposit from the Custodian, the Depositary shall establish the GDR Record Date upon the terms described in Condition 10 and shall, subject to the terms of the Deposit Agreement and the Conditions, either (i) distribute to the Holders as of the GDR Record Date in proportion to the number of GDRs held as of the GDR Record Date, additional GDRs, which represent the aggregate number of Shares received as such dividend or free distribution, subject to the other terms of the Deposit Agreement and Conditions and net of (a) the applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes, by either (x) if GDRs are not available in book-entry form, issuing additional GDR Certificates for an aggregate number of GDRs representing the number of Shares received as such dividend or free distribution, or (y) if GDRs are available in book-entry form, reflecting on the records of the Depositary such increase in the aggregate number of GDRs representing such Shares and give notice to the Common Depositary of the related increase in the number of GDRs evidenced by the Master GDR Certificate, or (ii) if additional GDRs are not so distributed, each GDR issued and outstanding after the GDR Record Date shall, to the extent permissible by law, thenceforth also represent rights and interests in the additional Shares distributed upon the Deposited Property represented thereby, net of (a) the applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes. In lieu of delivering fractional GDRs, the Depositary shall sell the number of Shares represented by the aggregate of such fractions and distribute the net proceeds of such sale upon the terms described in Condition 5. In the event that the Depositary determines that any distribution in Shares would violate applicable law, is not operationally practicable, is subject to any tax or other governmental charges which the Depositary is obligated to withhold, or if the Company, in the fulfillment of its obligations under Clause 7.1.4 of the Deposit Agreement, has furnished an opinion of U.S. counsel determining that the distribution to Holders of the Shares and the GDRs representing such Shares must be registered under the Securities Act or other laws in order to be distributed to Holders (and no such registration statement has been declared effective), the Depositary may dispose of all or a portion of such Shares in such amounts and in such manner, including by public or private sale, as the Depositary deems necessary and practicable, and the Depositary shall distribute the net proceeds of any such sale, after deduction of (a) fees and charges of, and expenses incurred by, the Depositary and (b) taxes, to Holders entitled thereto upon the terms described in Condition 5. The Depositary shall hold and/or distribute any unsold balance of such property in accordance with the provisions of the Deposit Agreement and the Conditions.

## 7. Distributions Other than Cash or Shares

Whenever the Depositary receives from the Company property other than cash, Shares or rights to purchase additional Shares and receives a notice from the Company indicating that the Company wishes such distribution to be made available to Holders of GDRs, upon receipt of satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement and after making the requisite determinations set forth in Clause 5.1 of the Deposit Agreement, the Depositary shall distribute the property so received to the Holders of record as of the GDR Record Date set in accordance with Condition 10, in proportion to the number of GDRs held by them respectively and in such manner as the Depositary may deem practicable for accomplishing such distribution (i) upon receipt of payment or net of the applicable fees and charges of, and expenses incurred by, the Depositary, and (ii) net of any taxes withheld. The Depositary may dispose of all or a portion of the property so distributed and deposited, in such amounts and in such manner (including public or private sale) as the Depositary may deem practicable or necessary to satisfy any taxes (including applicable interest and penalties) or other governmental charges applicable to the distribution. If (i) the Company does not request the Depositary to make such distribution to Holders or requests not to make such distribution to Holders, (ii) the Depositary does not receive documentation within the terms of Clause 7.1.4 of the Deposit Agreement, or (iii) the Depositary determines (in accordance with Clause 5.1 of the Deposit Agreement) that all or a portion of such distribution is not lawful or is not reasonably practicable, the Depositary shall sell or cause such property to be sold in a public or private sale, at such place or places and upon such terms as it may deem practicable and shall (x) cause the proceeds of such sale, if any, to be converted into Dollars in accordance with Condition 11, and (y) distribute the proceeds of such conversion received by the Depositary (net of (a) applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes) to the Holders as of the GDR Record Date upon the terms of Condition 5. If the Depositary is unable to sell such property, the Depositary may dispose of such property in any way it deems reasonably practicable under the circumstances.

## 8. Rights Issues

A. Whenever the Company intends to distribute to the holders of the Deposited Property rights to subscribe for additional Shares, and provides a notice to the Depositary indicating that the Company wishes such rights to be made available to Holders of GDRs, upon receipt of satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement and after making the requisite determinations set forth in Clause 5.1 of the Deposit Agreement, the Depositary shall (x) establish a GDR Record Date (upon the terms described in Condition 10), (y) establish procedures to distribute such rights (by means of warrants or otherwise) and/or to enable the Holders to exercise the rights (upon payment of (a) the applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes), and (z) issue and deliver GDRs upon the valid exercise of such rights. The Company shall assist the Depositary to the extent necessary in establishing such procedures.

Nothing herein shall obligate the Depositary to make available to the Holders a method to exercise such rights to subscribe for Shares (rather than for GDRs).

B. In the event that (i) the Depositary fails to receive satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement or determines that it is not lawful or not reasonably practicable to make the rights available to Holders or (ii) the Company requests that the rights not be made available to Holders of GDRs or (iii) any rights made available are not exercised and appear to be about to lapse, the Depositary shall determine whether it is lawful and reasonably practicable to sell such rights, in a riskless principal capacity, at such place and upon such terms (including public and private sale) as it may deem practicable. The Company shall assist the Depositary to the extent necessary to determine such legality and practicability. If the Depositary sells such rights, the Depositary shall, upon such sale, (x) cause the proceeds of such sale, if any, to be converted into Dollars upon the terms described in Condition 11, and (y) distribute the proceeds of such sale (net of (a) applicable fees and charges of, and expenses incurred by, the Depositary and (b) taxes) upon the terms set forth in Condition 5.

If the Depositary is unable to make any rights available to Holders upon the terms described in the Deposit Agreement or to arrange for the sale of the rights upon the terms described above, the Depositary shall allow such rights to lapse.

The Depositary shall not be responsible for (i) any failure to determine that it may be lawful or practicable to make such rights available to Holders in general or any Holder in particular, (ii) any foreign exchange exposure or loss incurred in connection with any sale or exercise, or (iii) the



content of any materials forwarded to the Holders on behalf of the Company in connection with the rights distribution.

- C. Notwithstanding anything to the contrary in the Deposit Agreement or this Condition 8, if registration (under the Securities Act or any other applicable law) of the rights or the securities to which any rights relate may be required in order for the Company to offer such rights or such securities to Holders and to sell the securities represented by such rights, the Depositary will not distribute such rights to the Holders unless and until a registration statement under the Securities Act covering such offering is in effect. In the event that the Company, the Depositary or the Custodian shall be required to withhold and does withhold from any distribution of rights an amount on account of taxes or other governmental charges, the amount distributed to the Holders of GDRs representing such Deposited Property shall be reduced accordingly. In the event that the Depositary determines that any distribution of Deposited Property or rights to subscribe therefor is subject to any tax or other governmental charges which the Depositary is obligated to withhold, the Depositary may dispose of all or a portion of such Deposited Property or rights to subscribe therefor in such amounts and in such manner, including by public or private sale, as the Depositary deems necessary and practicable to pay any such taxes or charges. There can be no assurance that Holders generally, or any Holder in particular, will be given the opportunity to exercise such rights on the same terms and conditions as the holders of Deposited Property or to exercise such rights. Nothing in the Deposit Agreement or this Condition 8 shall obligate the Company to file any registration statement in respect of any rights or Deposited Property or other securities to be acquired upon the exercise of such rights.

## **9. Redemption**

If the Company intends to exercise any right of redemption in respect of any of the Deposited Property, upon receipt of satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement and after making the requisite determinations set forth in Clause 5.2 of the Deposit Agreement, the Depositary shall send to each Holder a notice in accordance with Condition 25 setting forth the intended exercise by the Company of the redemption rights and any other particulars set forth in the Company's notice to the Depositary. The Depositary shall instruct the Custodian to present to the Company the Deposited Property in respect of which redemption rights are being exercised against payment of the applicable redemption price. Upon receipt of confirmation from the Custodian that the redemption has taken place and that funds representing the redemption price have been received, the Depositary shall convert, transfer, and distribute the proceeds (net of applicable (a) fees and charges of, and the expenses incurred by, the Depositary, and (b) taxes), retire GDRs and cancel GDRs upon delivery of such GDRs by Holders thereof and on the terms set forth in the applicable Conditions. If less than all outstanding Deposited Property is redeemed, the GDRs to be retired will be selected by lot or on a pro rata basis, as may be determined by the Depositary. The redemption price per GDR shall be the per share amount received by the Depositary upon the redemption of the Deposited Shares represented by GDRs (subject to the terms of the Deposit Agreement and the applicable fees and charges of, and expenses incurred by, the Depositary, and taxes) multiplied by the number of Deposited Shares represented by each GDR redeemed.

## **10. GDR Record Dates**

Whenever the Depositary shall receive notice of the fixing of a record date by the Company for the determination of holders of Deposited Property entitled to receive any distribution (whether in cash, Shares, rights or other distribution), or whenever, for any reason, the Depositary causes a change in the number of Deposited Shares that are represented by each GDR, or whenever the Depositary shall receive notice of any meeting of, or solicitation of consents or proxies of, holders of Shares or other Deposited Property, or whenever the Depositary finds it necessary or convenient in connection with the giving of any notice, solicitation of any consent or any other matter, the Depositary shall (after giving notice to the Company) fix a record date (the "**GDR Record Date**") for the determination of the Holders of GDRs who shall be entitled to receive such dividend or distribution, to give instructions for the exercise of voting rights at any such meeting, or to give or withhold such consent, or to receive such notice or solicitation or to otherwise take action, or to exercise the rights of Holders with respect to such changed number of Deposited Shares represented by each GDR. The Depositary shall make reasonable efforts to establish the GDR Record Date as closely as practicable to the applicable record date for the Deposited Property (if any) set by the Company in Kazakhstan. Subject to applicable law and the provisions of the Deposit Agreement and Conditions, only the Holders of GDRs at the close of business in New York on such GDR Record Date shall be entitled to receive such distribution, to give such voting instructions, to receive such notice or solicitation, or otherwise take action.

## **11. Conversion of Foreign Currency**

Whenever the Depositary or the Custodian shall receive any Foreign Currency by way of dividend or other distribution or as the net proceeds from the sale of securities, other property or rights, and if at the time of the receipt thereof the Foreign Currency so received can in the judgement of the Depositary be converted on a practicable basis into Dollars transferable to the U.S. and distributed to the Holders entitled thereto, the Depositary shall convert or cause to be converted by sale or in any other manner that it may determine, the Foreign Currency so received into Dollars and shall distribute such Dollars (net of applicable fees, any reasonable and customary expenses incurred on behalf of Holders in complying with currency exchange control or other governmental requirements) in accordance with the terms of the applicable Conditions. If the Depositary shall have distributed warrants or other instruments that entitle the holders thereof to such Dollars, the Depositary shall distribute such Dollars to the holders of such warrants and/or instruments upon surrender thereof for cancellation, in either case without liability for interest thereon. Such distribution shall be made upon an averaged or other practicable basis without regard to any distinctions among Holders on account of any application of exchange restrictions or otherwise. If such conversion or distribution generally or with regard to a particular Holder can be effected only with the approval or licence of any government or agency thereof, the Depositary shall have the authority, with the assistance of the Company, to file such application, for such approval or licence, if any, as it may consider desirable. In no event, however, shall the Depositary be obligated to make such a filing. If at any time the Depositary shall determine that in its judgement the conversion of any currency other than Dollars and the transfer and distribution of proceeds of such conversion received by the Depositary is not practicable or lawful, or if any approval or licence of any government or agency thereof which is required for such conversion, transfer or distribution is denied or, in the opinion of the Depositary, is not obtainable at a reasonable cost, or if any such approval or licence is not obtained within a reasonable period as determined by the Depositary, the Depositary may in its discretion (i) make such conversion and distribution in Dollars to the Holders for whom such conversion, transfer and distribution is lawful and practicable, (ii) distribute the Foreign Currency (or an appropriate document evidencing the right to receive such Foreign Currency) to Holders for whom this is lawful and practicable, and (iii) hold (or cause the Custodian to hold) such Foreign Currency (without liability for interest thereon) for the respective accounts of the Holders entitled to receive the same.

## **12. Distribution of any Payments**

Any distribution of cash under Condition 5, 6, 7, 8, 9, 13 or 14 will be made by the Depositary to those Holders who are Holders of record on the GDR Record Date established by the Depositary in accordance with Condition 10 for that purpose and, distributions will be made in Dollars subject to Condition 11 by cheque drawn upon a bank in New York City, electronic transfer or, in the case of the relevant Master GDR Certificate, according to usual practice between the Depositary and DTC, Euroclear and Clearstream, as the case may be. The Depositary may deduct and retain from all moneys due in respect of such GDR in accordance with the Deposit Agreement all fees, taxes, duties, charges, costs and expenses which may become or have become payable under the Deposit Agreement or under applicable law in respect of such GDR or the related Deposited Property.

## **13. Capital Reorganisation**

Upon any split-up, cancellation, consolidation or any other reclassification of Deposited Property, or upon any recapitalisation, reorganisation, merger or consolidation or sale of assets affecting the Company or to which it is a party, any securities which shall be received by the Depositary or the Custodian in exchange for, or in conversion, replacement or otherwise in respect of, such Deposited Property shall, to the extent permitted by law, be treated as new Deposited Property under the Deposit Agreement and the Conditions, and the GDRs shall, subject to the terms of the Deposit Agreement, the Conditions and applicable law, evidence GDRs representing the right to receive such replacement securities. The Depositary may, with the Company's approval, and shall, if the Company shall so request, subject to the terms of the Deposit Agreement (including, without limitation, with respect to (a) the applicable fees and charges of, and expenses incurred by, the Depositary, and (b) taxes) and the Conditions, and subject to the receipt by the Depositary of an opinion of counsel satisfactory to the Depositary (obtained at the expense of the Company) that such distributions are not in violation of any applicable laws or regulations, execute and deliver additional GDRs or make appropriate adjustments in its records, as in the case of a stock dividend on the Shares, or call for the surrender of outstanding GDRs to be exchanged for new GDRs, in either case, as well as in the event of newly deposited Shares, with necessary modifications to the form of GDR attached to the Deposit Agreement specifically describing such new Deposited Property or corporate change. Notwithstanding the foregoing, in the event that any security so received may not be lawfully distributed to some or all Holders, the Depositary may, with the Company's approval, and shall if the Company requests, subject to the receipt by the Depositary of an opinion

of counsel satisfactory to the Depositary (obtained at the expense of the Company) that such action is not in violation of any applicable laws or regulations, sell such securities at public or private sale, at such place or places and upon such terms as it may deem proper, and may allocate the net proceeds of such sales (net of (a) applicable fees and charges of, and expenses incurred by, the Depositary, and (b) taxes) for the account of the Holders otherwise entitled to such securities upon an averaged or other practicable basis without regard to any distinctions among such Holders and distribute the net proceeds so allocated to the extent practicable as in the case of a distribution received in cash pursuant to Condition 5. The Depositary shall not be responsible for (i) any failure to determine that it is lawful or practicable to make such securities available to Holders in general or to any Holder in particular, (ii) any foreign exchange exposure or loss incurred in connection with such sale, or (iii) any liability to the purchaser of such securities.

#### **14. Elective Distributions**

Wherever the Company intends to distribute a dividend payable at the election of the holders of Shares in cash or in additional Shares and provides a notice to the Depositary indicating that the Company wishes such elective distribution to be made available to Holders of GDRs, upon receipt of satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement and after making the requisite determinations set forth in Clause 5.1 of the Deposit Agreement, the Depositary shall make such elective distribution available to Holders. If the Depositary fails to receive satisfactory documentation within the terms of Clause 7.1.4 of the Deposit Agreement or determines that it is not lawful or not reasonably practicable to make the elective distribution available to Holders of GDRs, or if the Company requests that such elective distribution not be made available to Holders of GDRs, the Depositary shall, to the extent permitted by law, distribute to the Holders, on the basis of the same determination as is made in Kazakhstan in respect of the Shares for which no election is made, either (x) cash upon the terms described in Condition 5, or (y) additional GDRs representing such additional Shares upon the terms described in Condition 6. If the above conditions are satisfied, the Depositary shall establish a GDR Record Date in accordance with Condition 10 and establish procedures to enable Holders to elect the receipt of the proposed dividend in cash or in additional GDRs. The Company shall assist the Depositary in establishing such procedures to the extent necessary. If a Holder elects to receive the proposed dividend (x) in cash, the dividend shall be distributed upon the terms described in Condition 5, or (y) in GDRs, the dividend shall be distributed upon the terms described in Condition 6. Nothing in the Deposit Agreement or this Condition 14 shall obligate the Depositary to make available to Holders a method to receive the elective dividend in Shares (rather than GDRs). There can be no assurance that Holders and Beneficial Owners generally, or any Holder or Beneficial Owner in particular, will be given the opportunity to receive elective distributions on the same terms and conditions as the holders of the Deposited Property.

#### **15. Taxation and Applicable Laws**

A. Payments to Holders of dividends or other distributions made to Holders on or in respect of the Deposited Property will be subject to deduction of Kazakhstan and other withholding taxes, if any, at the applicable rates, and notwithstanding any other provision of the Deposit Agreement or the Conditions, the Depositary and the Custodian will be entitled, subject to applicable law, to deduct from any cash dividend or other cash distribution which either of them receives from the Company such amount as is necessary in order to provide for any tax, charge, fee or other amount that is, or could become, payable by or on behalf of the Depositary to fiscal or other governmental authority on account of receiving such cash dividend or other cash distribution.

The Holder or Beneficial Owner of any GDR or any Deposited Property shall be deemed thereby to accept (by virtue of his ownership or deposit, as the case may be) that, in the event that any tax or other governmental charge shall become payable with respect to any GDR, Deposited Property or GDR Certificate, such tax or other governmental charge shall be payable by the Holder and Beneficial Owner to the Depositary. The Custodian may refuse the deposit of Shares and the Depositary may refuse to issue or deliver GDRs, to register the transfer, split-up or combination of GDR Certificates and the withdrawal of Deposited Property until payment in full of such tax, charge, penalty or interest is received. The Depositary may, for the account of the Holder or Beneficial Owner, discharge the same out of the proceeds of sale, subject to Kazakhstan law and regulations, of an appropriate number of Deposited Shares or other Deposited Property with the Holder and Beneficial Owner remaining liable for any deficiency and being entitled to distribution of any surplus. Any such request shall be made by giving notice pursuant to Condition 25.

By virtue of its ownership of any GDR or Deposited Property, each Holder and Beneficial Owner shall be deemed to agree to indemnify the Depositary, the Company, the Custodian, and any of their

agents, officers, employees and Affiliates for, and to hold each of them harmless from, any claims with respect to taxes (including applicable interest and penalties thereon) arising from any tax benefit obtained for such Holder or Beneficial Owner. The obligations of Holders and Beneficial Owners under this Condition 15A shall survive any transfer of GDRs, any cancellation of GDRs and withdrawal of Deposited Securities, and the termination of the Deposit Agreements.

- B. If any governmental or administrative authorisation, consent, registration or permit or any report to any governmental or administrative authority is required under any applicable law in Kazakhstan in order for the Depository to receive from the Company Shares to be deposited under the Conditions or in order for Shares, other securities or other property to be distributed under Condition 5, 6, 7, 13 or 14 or to be subscribed under Condition 8, the Depository shall request that the Company apply for such authorisation, consent, registration or permit or file such report on behalf of the Holders within the time required under such law, unless such application is required to be made by a third party. In this connection, the Company has undertaken in the Deposit Agreement, to the extent it is legally able to do so, to take or procure the taking of such action as may be required in obtaining or filing the same. The Depository shall not distribute GDRs, Shares, other securities or other property with respect to which it has been informed in writing by the Company that such authorisation, consent or permit or such report has not been obtained or filed, as the case may be, and shall have no duties to obtain any such authorisation, consent or permit or to file any such report. Without prejudice to the foregoing, where assistance is reasonably requested by the Company and such assistance does not require the Depository to take any action in a capacity other than its capacity as Depository, or in conflict with market practice or applicable law, the Depository shall use reasonable endeavours to assist the Company to obtain any such authorisation, consent, registration, permit or report or, where required, shall directly apply for or request such authorisation, consent, registration, permit or report and shall take such steps and perform such actions as may be required.

## 16. Voting Rights

- A. Holders of GDRs will have voting rights on behalf of their Beneficial Owners with respect to the Deposited Shares, subject to providing the identity and other information required under applicable Kazakhstan law as to their Beneficial Owners to Kazakhstan Central Depository via the Depository (the “**Identity Information**”). The Company has agreed to notify the Depository of any meeting of holders of Shares of the Company at which holders of Shares or other Deposited Property are entitled to vote, or of solicitation of consents or proxies from holders of Shares or other Deposited Property and the Depository will vote or cause to be voted the Deposited Shares in the manner set out in this Condition 16.

As soon as practicable after receipt from the Company of any such notice, the Depository will fix the GDR Record Date in respect of such meeting or solicitation of consent or proxy in accordance with Condition 10. The Depository shall, if requested by the Company in writing in a timely manner in accordance with Clause 5.3 of the Deposit Agreement and at the Company’s expense and provided no U.S., English or Kazakhstan legal prohibitions exist, distribute to Holders as of the GDR Record Date: (a) such notice of meeting or solicitation of consent or proxy, (b) a statement that the Holders at the close of business in New York on the GDR Record Date will be entitled, subject to the provision of the Identity Information, any applicable law, the provisions of the Deposit Agreement, the Conditions, the Charter and the provisions of or governing the Deposited Property (which provisions, if any, shall be summarised in pertinent part by the Company), to instruct the Depository as to the exercise of the voting rights, if any, pertaining to the Shares or other Deposited Property represented by such Holder’s GDRs, and (c) a brief statement as to the manner in which such voting instructions and Identity Information may be given.

- B. Voting instructions may be given to the Depository only in respect of a number of GDRs representing an integral number of Shares or other Deposited Property. Subject to applicable law, the provisions of the Deposit Agreement, the Conditions, the Charter and the provisions of the Deposited Property, if the Depository has received voting instructions and Identity Information from a Holder as of the GDR Record Date to vote the Deposited Property on or before the date specified by the Depository, the Depository shall endeavour, in so far as is practicable and permitted by Kazakhstan law and practice, to vote or cause the Custodian to vote the Shares and/or other Deposited Property represented by such Holder’s GDRs for which timely and valid voting instructions and Identity Information have been received in the manner so instructed by such Holders.
- C. Neither the Depository nor the Custodian shall, under any circumstances exercise any discretion as to voting and neither the Depository nor the Custodian shall vote, attempt to exercise the right to vote,



or in any way make use of the Shares or other Deposited Property represented by GDRs except pursuant to and in accordance with such instructions from Holders acting on behalf of their Beneficial Owners. If the Depositary timely receives voting instructions and Identity Information from a Holder which fail to specify the manner in which the Depositary is to vote the Deposited Property represented by such Holder's GDRs, the Depositary will deem such Holder (unless otherwise specified in the notice distributed to Holders) to have instructed the Depositary to vote in favour of the items set forth in such voting instructions. Notwithstanding anything else contained herein, the Depositary shall only represent Deposited Property in relation to which valid voting instructions and Identity Information have been received for the purpose of establishing quorum at a meeting of shareholders.

- D. There can be no assurance that Holders generally or any Holder in particular will receive the notice described above with sufficient time to enable the Holder to return voting instructions and Identity Information to the Depositary in a timely manner.

By continuing to hold GDRs, all Holders and Beneficial Owners shall be deemed to have agreed to the provisions of this Condition 16 as it may be amended from time to time in order to comply with applicable Kazakhstan law.

A valid corporate decision of the Company will bind the Depositary and the Holders and Beneficial Owners of GDRs shall be deemed to agree to being bound by such a corporate decision of the Company.

- E. Notwithstanding anything else contained in the Deposit Agreement or the Conditions, the Depositary shall not have any obligation to take any action with respect to any meeting, or solicitation of consents or proxies, of holders of Deposited Property if the taking of such action would violate U.S., English or Kazakhstan laws. The Company agrees to take any and all actions reasonably necessary to enable Holders and Beneficial Owners to exercise the voting rights accruing to the Deposited Property and to deliver to the Depositary an opinion of U.S., English and/or Kazakhstan counsel (obtained at the expense of the Company), if so requested by the Depositary, addressing any actions requested to be taken.

## **17. Liability**

- A. Neither the Depositary nor the Company shall be obligated to do or perform any act which is inconsistent with the provisions of the Deposit Agreement or the Conditions or shall incur any liability (i) if the Depositary or the Company shall be prevented or forbidden from, or delayed in, doing any act or thing required by the terms of the Deposit Agreement or the Conditions, by reason of any provision of any present or future law or regulation of the U.S., England, Kazakhstan or any other country, or of any relevant governmental or regulatory authority or stock exchange, or by reason of the interpretation or application of any such present or future law or regulation or any change therein, or on account of potential criminal or civil penalties or restraint, or by reason of any provision, present or future, of the Charter or any provision of or governing any Deposited Property or by reason of any other circumstances beyond their control (including, without limitation, acts of God or war, nationalisation, expropriation, currency restrictions, work stoppage, strikes, civil unrest, acts of terrorism, revolutions, rebellions, explosions and computer failure), (ii) by reason of any exercise of, or failure to exercise, any discretion provided for in the Deposit Agreement, the Conditions or in the Charter or provisions of or governing Deposited Property, (iii) for any action or inaction in reliance upon the advice or information from legal counsel, accountants, any person presenting Shares for deposit, any Holder, any Beneficial Owner or authorised representative thereof, or any other person believed by it in good faith to be competent to give such advice or information, but only insofar as the terms of this subsection (iii) are not prohibited by applicable law, (iv) for the inability by a Holder or Beneficial Owner to benefit from any distribution, offering, right or other benefit which is made available to holders of Shares but is not, under the terms of the Deposit Agreement or the Conditions, made available to Holders of GDRs or (v) for any consequential or punitive damages for any breach of the terms of the Deposit Agreement or the Conditions.
- B. The Company assumes no obligation and shall not be subject to any liability under the Deposit Agreement, the Conditions, or any GDR Certificates to any Holder(s) or Beneficial Owner(s), except that the Company agrees to perform its obligations specifically set forth in the Deposit Agreement, the Conditions, or the applicable GDR Certificates without negligence, willful default or bad faith.
- C. In acting hereunder the Depositary shall have only those duties, obligations and responsibilities expressly specified in the Deposit Agreement and these Conditions and, other than holding the



Deposited Property for the benefit of Holders as bare trustee, does not assume any relationship of trust for or with the Holders or the Beneficial Owners.

- D. The Depositary, its controlling persons, its agents, any Custodian and the Company, its controlling persons and its agents may rely on, and shall be protected in acting upon, any written notice, request, direction or other document believed by it to be genuine and to have been duly signed or presented by the proper party or parties (including a translation which is made by a translator believed by it to be competent or which appears to be authentic).
- E. No disclaimer of liability under the Securities Act is intended by any provision of the Deposit Agreement or the Conditions.
- F. Without limitation of the foregoing, neither the Depositary, nor the Company, nor any of their respective controlling persons or agents, shall be under any obligation to appear in, prosecute or defend any action, suit or other proceeding in respect of any Deposited Property or in respect of the GDRs, which in its opinion may involve it in expense or liability, unless indemnity satisfactory to it against all expense (including fees and disbursements of counsel) and liability be furnished as often as may be required (and no Custodian shall be under any obligation whatsoever with respect to such proceedings, the responsibility of the Custodian being solely to the Depositary).
- G. The Depositary has no obligation under the Deposit Agreement to take steps to monitor, supervise or enforce the observance and performance by the Company of its obligations under the Deposit Agreement or the Conditions.
- H. Neither the Depositary, the Custodian nor any of their agents, officers, directors or employees shall be liable (except by reason of its own negligence, willful default or bad faith or that of its agents, officers, directors or employees) to the Company or any Holder or owner of a GDR, by reason of having accepted as valid or not having rejected any certificate for Shares or GDRs purporting to be such and subsequently found to be forged or not authentic.
- I. The Depositary and each of its agents (and any holding, subsidiary or associated company of the Depositary) may engage or be interested in any financial or other business transactions with the Company or any of its subsidiaries or affiliates or in relation to the Deposited Property (including, without prejudice to the generality of the foregoing, the conversion of any part of the Deposited Property from one currency to another), may at any time hold GDRs for its own account, and shall be entitled to charge and be paid all usual fees, commissions and other charges for business transacted and acts done by it as a bank or in any other capacity, and not in the capacity of Depositary, in relation to matters arising under the Deposit Agreement (including, without prejudice to the generality of the foregoing, charges on the conversion of any part of the Deposited Property from one currency to another and any sales of property) without accounting to Holders or any other person for any profit arising therefrom.
- J. The Depositary shall endeavour to effect any such sale as is referred to or contemplated in Conditions 6, 7, 8, 13 or 14 or any such conversion as is referred to in Condition 8 in accordance with the Depositary's normal practices and procedures, but shall have no liability (in the absence of its own negligence, willful default or bad faith or that of its agents, officers, directors or employees) with respect to the terms of such sale or conversion or if such sale or conversion shall not be possible.
- K. The Depositary shall, subject to all applicable laws, have no responsibility whatsoever to the Company, any Holder, Beneficial Owner or person with an interest in a GDR as regards any deficiency which might arise because the Depositary is subject to any tax in respect of the Deposited Property or any part thereof or any income therefrom or any proceeds thereof.
- L. In connection with any proposed modification, waiver, authorisation or determination permitted by the terms of the Deposit Agreement or the Conditions, the Depositary shall not, except as otherwise expressly provided in Condition 24, be obliged to have regard to the consequence thereof for the Holders, Beneficial Owners, a person with an interest in a GDR or any other person.
- M. Notwithstanding anything else contained in the Deposit Agreement or the Conditions, the Depositary may refrain from doing anything which could or might, in its reasonable opinion, render it liable to any person and the Depositary may do anything which is, in its reasonable opinion, necessary to comply with any law, directive or regulation.

- N. The Depositary shall be under no obligation to check, monitor or enforce compliance with any ownership restrictions in respect of GDRs or Shares under any applicable Kazakhstan law. Notwithstanding the generality of Condition 3, the Depositary shall refuse to register any transfer of GDRs or any deposit of Shares against issue of GDRs if notified by the Company, or if the Depositary becomes aware of the fact that such transfer or issue would be in violation of the limitations set forth above or any other applicable laws.
- O. The Depositary may call for, and shall be at liberty to accept as sufficient, evidence of any fact or matter or the expediency of any transaction or thing, a certificate, letter or other communication, whether oral or written, signed or otherwise communicated on behalf of the Company, by the Board of Directors of the Company or by a person duly authorised by the Board of Directors of the Company, or such other certificate from persons which the Depositary considers appropriate and the Depositary shall not be bound in any such case to call for further evidence or be responsible for any loss or liability that may be occasioned by the Depositary acting on such certificate.
- P. The Depositary and its agents shall not be liable for any failure to carry out any instructions to vote any of the Deposited Property, or for the manner in which any vote is cast or the effect of any vote (other than where such failure or action is a result of its own negligence, willful default or bad faith or is not in accordance with the terms of the Deposit Agreement and the Conditions). The Depositary shall not incur any liability (save in the case of its own negligence, willful default or bad faith) for any failure to determine that any distribution or action may be lawful or reasonably practicable, for the content of any information submitted to it by the Company for distribution to the Holders or for any inaccuracy of any translation thereof, for any investment risk associated with acquiring an interest in the Deposited Property, for the validity or worth of the Deposited Property, for the creditworthiness of any third party, for any tax consequences that may result from the ownership of GDRs, Shares or Deposited Property, for allowing any rights to lapse upon the terms of the Deposit Agreement and the Conditions, for the failure or timeliness of any notice from the Company.
- Q. No provision of the Deposit Agreement or the Conditions shall require the Depositary to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties or in the exercise of any of its rights or powers, if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity and security against such risk of liability is not assured.
- R. The Depositary may, in the performance of its obligations hereunder, instead of acting personally, employ and pay an agent, whether a lawyer or other person, including obtaining an opinion of legal advisers in form and substance reasonably satisfactory to it, to transact or concur in transacting any business and do or concur in doing all acts required to be done by such party, including the receipt and payment of money. Save for the failure on the part of the Depositary to exercise reasonable care in the selection or retention of any such agent, the Depositary will not be liable to anyone for any misconduct or omission by any such agent so employed by it or be bound to supervise the proceedings or acts of any such agent.
- S. None of the Depositary, the Custodian, the Company or any of their respective agents or affiliates shall be required to take any actions whatsoever on behalf of Holders or Beneficial Owners to satisfy reporting requirements or obtain regulatory approvals under applicable laws and regulations which shall be the sole responsibility of the Holders and Beneficial Owners as described in Condition 4C.
- T. The Depositary shall not be liable for any acts or omissions made by a successor depositary whether in connection with a previous act or omission of the Depositary or in connection with any matter arising wholly after the removal or resignation of the Depositary, provided that in connection with the issue out of which such potential liability arises the Depositary performed its obligations without negligence, willful default or bad faith while it acted as Depositary.
- U. The Depositary shall not be liable for any acts or omissions made by a predecessor depositary whether in connection with an act or omission of the Depositary or in connection with any matter arising wholly prior to the appointment of the Depositary or after the removal or resignation of the Depositary, provided that in connection with the issue out of which such potential liability arises the Depositary performed its obligations without negligence, willful default or bad faith while it acted as Depositary.

## 18. Issue and Delivery of Replacement GDRs and Exchange of GDRs

Subject to the payment of the relevant fees, taxes, duties, charges, costs and expenses and such terms as to evidence and indemnity as the Depositary may require, replacement GDRs will be issued by the Depositary and will be delivered in exchange for or in replacement of outstanding lost, stolen, mutilated, defaced or destroyed GDRs upon surrender thereof (except in the case of destruction, loss or theft) at the Principal New York Office.

## 19. GDR Fees and Charges

A. The following GDR fees are payable under the terms of the Deposit Agreement:

- (i) Issuance Fee: by any person for whom the GDRs are issued (i.e., an issuance upon a deposit of Shares, upon a change in the GDR(s)-to-Share(s) ratio, or for any other reason (excluding issuances as a result of distributions described in paragraph (iv) below), a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) issued under the terms of the Deposit Agreement and the Conditions;
- (ii) Cancellation Fee: by any person for whom GDRs are being cancelled (e.g., a cancellation of GDRs for delivery of Deposited Property, upon a change in the GDR(s)-to-Share(s) ratio, or for any other reason), a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) cancelled;
- (iii) Cash Distribution Fee: by any Holder of GDRs, a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) held for the distribution of cash dividends or other cash distributions (e.g., upon the sale of rights and other entitlements);
- (iv) Stock Distribution /Rights Exercise Fees: by any Holder of GDRs, a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) held for the distribution of GDRs pursuant to (a) stock dividends or other free stock distributions, or (b) an exercise of rights to purchase additional GDRs;
- (v) Other Distribution Fee: by any Holder of GDRs, a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) held for the distribution of securities other than GDRs or rights to purchase additional GDRs (e.g., spin-off shares); and
- (vi) Depositary Services Fee: by any Holder of GDRs, a fee not in excess of US\$5.00 per 100 GDRs (or fraction thereof) held on the applicable record date(s) established by the Depositary.

Certain of the GDR fees and charges (such as the Depositary Services Fee) may become payable shortly after the closing of an offering of the GDRs.

In addition, the Company, Holders, Beneficial Owners, persons depositing Shares or withdrawing Deposited Property in connection with GDR issuances and cancellations, and persons for whom GDRs are issued or cancelled shall be responsible for the following GDR charges under the terms of the Deposit Agreement:

- (i) taxes (including applicable interest and penalties) and other governmental charges;
- (ii) such registration fees as may from time to time be in effect for the registration of Shares or other Deposited Property on the share register and applicable to transfers of Shares or other Deposited Property to or from the name of the Custodian, the Depositary or any nominees upon the making of deposits and withdrawals, respectively;
- (iii) such cable, telex and facsimile transmission and delivery expenses as are expressly provided in the Deposit Agreement to be at the expense of the person depositing Shares or withdrawing Deposited Property or of the Holders and Beneficial Owners of GDRs;
- (iv) the expenses and charges incurred by the Depositary in the conversion of foreign currency;

- (v) such fees and expenses as are incurred by the Depositary in connection with compliance with exchange control regulations and other regulatory requirements applicable to Shares, Deposited Property, GDRs and GDR Certificates; and
  - (vi) the fees and expenses incurred by the Depositary, the Custodian or any nominee in connection with the servicing or delivery of Deposited Property.
- B. Any other charges and expenses of the Depositary under the Deposit Agreement and the Conditions will be paid by the Company upon agreement between the Depositary and the Company. All GDR fees and charges may, at any time and from time to time, be changed by agreement between the Depositary and Company but, in the case of GDR fees and charges payable by Holders and Beneficial Owners, only in the manner contemplated by Condition 24. The Depositary shall provide, without charge, a copy of its latest GDR fee schedule to anyone upon request.
- C. GDR fees and charges payable for (i) the issuance of GDRs and (ii) the cancellation of GDRs will be payable by the person for whom the GDRs are so issued by the Depositary (in the case of GDR issuances) and by the person for whom GDRs are being cancelled (in the case of GDR cancellations). In the case of GDRs issued by the Depositary into DTC, Euroclear or Clearstream, the GDR issuance and cancellation fees and charges will be payable by the DTC Participant(s), Euroclear Participant(s) or Clearstream Participant(s) receiving the GDRs from the Depositary or the DTC Participant(s), Euroclear Participant(s) or Clearstream Participant(s) holding the GDRs being cancelled, as the case may be, on behalf of the Beneficial Owner(s) and will be charged by the DTC Participant(s), Euroclear Participant(s) or Clearstream Participant(s) to the account(s) of the applicable Beneficial Owner(s) in accordance with the procedures and practices of the DTC Participant(s), Euroclear Participant(s) or Clearstream Participant(s) as in effect at the time. GDR fees and charges in respect of distributions and the Depositary services fee are payable by Holders as of the applicable GDR Record Date established by the Depositary. In the case of distributions of cash, the amount of the applicable GDR fees and charges is deducted from the funds being distributed. In the case of (i) distributions other than cash and (ii) the Depositary services fee, the applicable Holders as of the GDR Record Date established by the Depositary will be invoiced for the amount of the GDR fees and charges, and such GDR fees and charges may be deducted from distributions made to Holders. For GDRs held through DTC, Euroclear or Clearstream, the GDR fees and charges for distributions other than cash and the Depositary services fee may be deducted from distributions made through DTC, Euroclear or Clearstream and may be charged to the DTC Participants, Euroclear Participants or Clearstream Participants in accordance with the procedures and practices prescribed by DTC, Euroclear or Clearstream from time to time and the DTC Participants, Euroclear Participants or Clearstream Participants in turn charge the amount of such GDR fees and charges to the Beneficial Owners for whom they hold GDRs.
- D. The Depositary may reimburse the Company for certain expenses incurred by the Company in respect of the Global Depositary Receipts program established pursuant to the Deposit Agreement, by making available a portion of the GDR fees charged in respect of the GDR program or otherwise, upon such terms and conditions as the Company and the Depositary may agree from time to time. The Company shall pay to the Depositary such fees and charges and reimburse the Depositary for such out of pocket expenses as the Depositary and the Company may agree from time to time. Responsibility for payment of such fees, charges and reimbursements may from time to time be changed by agreement between the Company and the Depositary. Unless otherwise agreed, the Depositary shall present its statement for such fees, charges and reimbursements to the Company once every three months. The charges and expenses of the Custodian are for the sole account of the Depositary.

## 20. Listing

The Company has undertaken in the Deposit Agreement to use its commercially reasonable endeavours to obtain and thereafter maintain, for a period of at least 12 months from the date hereof, admission of trading for GDRs on the London Stock Exchange's main market for listed securities and a listing of the Shares on the Astana International Exchange ("AIX"). For that purpose the Company will pay all fees and sign and deliver all undertakings required by the London Stock Exchange and the AIX in connection therewith. In the event that such listings are not maintained or where it becomes unreasonably burdensome or impracticable for the Company to do so, the Company has undertaken in the Deposit Agreement to use its commercially reasonable endeavours to obtain and maintain a listing of the GDRs on another internationally recognized investment

exchange in Europe designated as a “recognized investment exchange” for the purposes of the United Kingdom Financial Services and Markets Act 2000 and a listing of the Shares on a stock exchange in Kazakhstan, as it may decide in its sole discretion.

## **21. The Custodian**

The Depositary has agreed with the Custodian that the Custodian will receive and hold all Deposited Property for the account and to the order of the Depositary in accordance with the applicable terms of the Deposit Agreement. The Custodian shall be responsible solely to the Depositary. Upon receiving notice of the resignation of the Custodian, the Depositary shall promptly appoint a successor Custodian (and shall notify the Company of such appointment as soon as reasonably practicable), which shall, upon acceptance of such appointment, become the Custodian under the Deposit Agreement. Whenever the Depositary, in its sole discretion, determines that it is in the best interest of the Holders to do so, it may terminate the appointment of the Custodian and, in the event of the termination of the appointment of the Custodian, the Depositary shall promptly appoint a successor Custodian (and shall notify the Company of such appointment as soon as reasonably practicable), which shall, upon acceptance of such appointment, become the Custodian under the Deposit Agreement. The Depositary shall notify the Company and the Holders of such change as soon as is practically possible following such change taking effect in accordance with Condition 25.

Citibank, N.A. may at any time act as Custodian of the Deposited Securities pursuant to the Deposit Agreement, in which case any reference to Custodian shall mean Citibank, N.A. solely in its capacity as Custodian pursuant to the Deposit Agreement. Notwithstanding anything contained in the Deposit Agreement or the Conditions, the Depositary shall not be obligated to give notice to the Company, any Holders of GDRs or any other Custodian of its acting as Custodian pursuant to the Deposit Agreement.

## **22. Resignation and Termination of Appointment of the Depositary**

A. The Depositary may at any time resign as Depositary hereunder by written notice of resignation delivered to the Company, which resignation shall be effective on the earlier to occur of (i) the 90<sup>th</sup> day after delivery thereof to the Company, after which the Depositary shall be entitled to take the termination actions contemplated in Condition 23(A), and (ii) the appointment by the Company of a successor depositary and the acceptance by such successor depositary of such appointment.

The Depositary may at any time be removed by the Company by written notice of removal delivered to the Depositary, which removal shall be effective on the later to occur of (i) the 90<sup>th</sup> day after delivery thereof to the Company, after which the Depositary shall be entitled to take the termination actions contemplated in Condition 23(A), and (ii) the appointment by the Company of a successor depositary and the acceptance by such successor depositary of such appointment.

B. The Company has undertaken in the Deposit Agreement to use its best efforts to procure the appointment of a successor depositary following the receipt of a notice of resignation from the Depositary or the giving of a notice of the termination of the appointment of the Depositary. Upon any such appointment and acceptance, notice thereof shall be duly given by the successor depositary to the Holders in accordance with Condition 25.

C. Any corporation into or with which the Depositary may be merged or consolidated shall be the successor of the Depositary without the execution or filing of any document or any further act.

## **23. Termination of Deposit Agreement**

A. The Company may at any time terminate the Deposit Agreement. Upon written direction of the Company, the Depositary shall provide notice of such termination to the Holders of all GDR Certificates then outstanding at least thirty (30) days prior to the date fixed in such notice for such termination.

If ninety (90) days shall have expired after (i) the Depositary shall have delivered to the Company a written notice of its election to resign pursuant to Clause 11.1 of the Deposit Agreement and Condition 22(A) or (ii) the Company shall have delivered to the Depositary a written notice of the removal of the Depositary pursuant to Clause 11.1 of the Deposit Agreement and Condition 22(A) and, in either case, a successor depositary shall not have been appointed and accepted its appointment as provided in Clause 11.1 of the Deposit Agreement and Condition 22(B), the Depositary may terminate the Deposit Agreement by providing notice of such termination to the Holders of all GDR Certificates then outstanding at least thirty (30) days prior to the date fixed in such notice for such termination.



The date fixed for termination of the Deposit Agreement in any termination notice distributed by the Depositary to the Holders of GDRs is referred to as the “**Termination Date**”. Until the Termination Date, the Depositary shall continue to perform all of its obligations under the Deposit Agreement and the Conditions, and the Holders and Beneficial Owners will be entitled to all of their rights under the Deposit Agreement and the Conditions.

- B. If any GDRs shall remain outstanding after the Termination Date, the Registrar and the Depositary shall not, after the Termination Date, have any obligation to perform any further acts under the Deposit Agreement or the Conditions, except that the Depositary shall, subject, in each case, to the terms and conditions of the Deposit Agreement and the Conditions, continue to (i) collect dividends and other distributions pertaining to Deposited Property, (ii) sell securities and other property received in respect of Deposited Property, (iii) deliver Deposited Property, together with any dividends or other distributions received with respect thereto and the net proceeds of the sale of any securities or other property, in exchange for GDRs surrendered to the Depositary (after deducting or charging, as the case may be, in each case, the fees and charges of, and expenses incurred by, the Depositary, and all applicable taxes or governmental charges for the account of the Holders and Beneficial Owners, in each case upon the terms set forth in Clause 10.1 of the Deposit Agreement and Condition 19), and (iv) take such actions as may be required under applicable law in connection with its role as Depositary under the Deposit Agreement.

At any time after the Termination Date, the Depositary may sell the Deposited Property then held under the Deposit Agreement and shall after such sale hold un-invested the net proceeds of such sale, together with any other cash then held by it under the Deposit Agreement, in an un-segregated account and without liability for interest, for the pro-rata benefit of the Holders whose GDRs have not theretofore been surrendered. After making such sale, the Depositary shall be discharged from all obligations under the Deposit Agreement and the Conditions except (i) to account for such net proceeds and other cash (after deducting or charging, as the case may be, in each case, the fees and charges of, and expenses incurred by, the Depositary, and all applicable taxes or governmental charges for the account of the Holders and Beneficial Owners, in each case upon the terms set forth in Clause 10.1 of the Deposit Agreement and Condition 19), and (ii) as may be required at law in connection with the termination of the Deposit Agreement. After the Termination Date, the Company shall be discharged from all obligations under the Deposit Agreement and the Conditions, except for its obligations to the Depositary under Clause 10 of the Deposit Agreement and Condition 19. The obligations under the terms of the Deposit Agreement and the Conditions of Holders and Beneficial Owners of GDRs outstanding as of the Termination Date shall survive the Termination Date and shall be discharged only when the applicable GDRs are presented by their Holders to the Depositary for cancellation under the terms of the Deposit Agreement and the Conditions (except as specifically provided therein).

#### **24. Amendment of Deposit Agreement and Conditions**

All and any of the provisions of the Deposit Agreement and these Conditions may at any time and from time to time be amended by written agreement between the Company and the Depositary in any respect which they may deem necessary or desirable. Notice of any amendment of the Deposit Agreement and these Conditions (except to correct a manifest error) shall be duly given to the Holders by the Depositary and any amendment (except as aforesaid) which shall increase or impose fees or charges payable by Holders or which shall otherwise, in the opinion of the Depositary, be materially prejudicial to the interests of the Holders (as a class) shall not become effective so as to impose any obligation on the Holders of the outstanding GDRs until the expiry of thirty (30) days after such notice shall have been given. Every Holder or Beneficial Owner at the time any amendment or supplement so becomes effective shall be deemed, by continuing to hold GDRs or any beneficial interest therein to consent to and approve such amendment or supplement and to be bound by the terms of the Deposit Agreement and the Conditions as amended and supplemented thereby.

In no event shall any amendment impair the right of any Holder to receive, subject to and upon compliance with Clause 3 of the Deposit Agreement and Condition 2, the Deposited Property attributable to the relevant GDR except in order to comply with mandatory provisions of applicable law.

The parties hereto agree that substantial rights of Holders and Beneficial Owners shall not be deemed materially prejudiced by any amendments or supplements which (i) are reasonably necessary (as agreed by the Company and the Depositary) in order for the GDRs or Shares to be settled in electronic-book entry form and (ii) do not impose or increase any fees or charges to be borne by Holders or Beneficial Owners.

Notwithstanding anything in the Deposit Agreement or the Conditions to the contrary, if any governmental body should adopt new laws, rules or regulations which would require an amendment or supplement of the Deposit Agreement or the Conditions to ensure compliance therewith, the Company and the Depositary may amend or supplement the Deposit Agreement, and the Conditions at any time in accordance with such changed laws, rules or regulations. Such amendment or supplement to the Deposit Agreement and the Conditions in such circumstances may become effective before a notice of such amendment or supplement is given to Holders or within any other period of time as required for compliance with such laws, rules or regulations.

**25. Notices**

Any and all notices to be given to any Holder shall be deemed to have been duly given if (a) personally delivered or sent by mail, air courier or facsimile transmission, confirmed by letter, addressed to such Holder at the address of such Holder as it appears on the books of the Depositary or, if such Holder shall have filed with the Depositary a request that notices intended for such Holder be mailed to some other address, at the address specified in such request, or (b) if a Holder shall have designated such means of notification as an acceptable means of notification under the terms of the Deposit Agreement and the Conditions, by means of electronic messaging addressed for delivery to the e-mail address designated by the Holder for such purpose.

Notice to Holders shall be deemed to be notice to Beneficial Owners for all purposes of the Deposit Agreement and the Conditions. Failure to notify a Holder or any defect in the notification to a Holder shall not affect the sufficiency of notification to other Holders or to the Beneficial Owners of GDRs held by such other Holders.

Delivery of a notice sent by mail, air courier or facsimile transmission shall be deemed to be effective at the time when a duly addressed letter containing the same (or a confirmation thereof in the case of a facsimile transmission) is deposited, postage prepaid, in a post office letter box or delivered to an air courier service, without regard for the actual receipt or time of actual receipt thereof by a Holder. The Depositary or the Company may, however, act upon any facsimile transmission received by it from any Holder, the Custodian, the Depositary or the Company, notwithstanding that such facsimile transmission shall not be subsequently confirmed by letter.

Delivery of a notice by means of electronic messaging shall be deemed to be effective at the time of the initiation of the transmission by the sender (as shown on the sender's records), notwithstanding that the intended recipient retrieves the message at a later date, fails to retrieve such message, or fails to receive such notice on account of its failure to maintain the designated e-mail address, its failure to designate a substitute e-mail address or for any other reason.

**26. Reports and Information on the Company**

If, so long as any of the Rule 144A GDRs or the Shares represented thereby remain outstanding and are "restricted securities" within the meaning of Rule 144(a)(3) under the Securities Act and the Company is neither a reporting company under Section 13 or Section 15(d) of the Exchange Act nor exempt from reporting pursuant to Rule 12g3-2(b) under the Exchange Act, the Company hereby undertakes to provide to any Holder, Beneficial Owner or holder of Shares or any prospective purchaser designated by such Holder, Beneficial Owner or holder of Shares, upon the request of such Holder, Beneficial Owner, holder of Shares or prospective purchaser, copies of the information required to be delivered pursuant to Rule 144A(d)(4) under the Securities Act to permit compliance with Rule 144A thereunder in connection with resales of GDRs or Shares or interests therein in reliance on Rule 144A under the Securities Act.

**27. Copies of Company Notices**

On or before the day when the Company first gives notice, by publication, or otherwise, to holders of any Shares or other Deposited Property, whether in relation to the taking of any action in respect thereof or in respect of any dividend or other distribution thereon or of any meeting or adjourned meeting of such holders or otherwise, the Company has undertaken in the Deposit Agreement to transmit to the Custodian and the Depositary a copy of such notice and any other material in English but otherwise in the form given or to be given to holders of Shares or other Deposited Property.

In addition, the Company will transmit to the Depositary English-language versions of the other notices, reports and communications which are generally made available by the Company to holders of Shares or other Deposited Property. The Depositary will, at the expense of the Company, make available a copy of any such

notices, reports or communications issued by the Company and delivered to the Depositary for inspection by the Holders and Beneficial Owners at the Principal New York Office and the Principal London Office, at the office of the Custodian and at any other designated transfer office. The Depositary shall arrange, at the request of the Company and at the Company's expense, for the distribution of copies thereof to all Holders on a basis similar to that for holders of Shares or other Deposited Property or on such other basis as the Company may advise the Depositary.

**28. Moneys Held by the Depositary**

The Depositary shall be entitled to deal with moneys paid to it by the Company for the purposes of the Deposit Agreement in the same manner as other moneys paid to it as a banker by its customers and shall not be liable to account to the Company or any holder or any other person for any interest thereon, except as otherwise agreed.

**29. Severability**

If any one or more of the provisions contained in the Deposit Agreement or in the Conditions shall be or become invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained therein or herein shall in no way be affected, prejudiced or otherwise disturbed thereby.

**30. Governing Law**

A. The Deposit Agreements, the Conditions, the Deed Polls and the GDRs (the "**GDR Documents**"), and any non-contractual obligations arising out of or in connection with them, shall be governed by and construed in accordance with English law, except that the that the certifications set forth in Schedule 3 to the Deposit Agreements shall be governed by the laws of the State of New York. For the avoidance of doubt, the rights and obligations attaching to the Deposited Shares are governed by Kazakhstan law.

B. Any claim, dispute or difference of whatever nature arising under, out of or in connection with the GDR Documents and the legal relationship established thereby (including any claim, dispute or difference regarding the existence, termination or validity of the GDR Documents or any non-contractual obligations arising out of or in connection with any of them) (a "**Dispute**"), shall be referred to, and finally resolved by, binding arbitration under the LCIA Arbitration Rules (2014) (the "**Rules**"), which Rules shall be deemed incorporated into this Condition 30(B).

The seat, or legal place, of the arbitration shall be London, England and the language of the arbitration shall be English.

The arbitral tribunal shall consist of three arbitrators. The claimant(s), irrespective of number, shall constitute one 'side' which shall nominate one arbitrator; the respondent(s), irrespective of number, shall constitute one 'side' which shall nominate the second arbitrator; and a third arbitrator, who shall serve as Chairman, shall be appointed by the LCIA Court.

The jurisdiction of the courts under Sections 45 and 69 of the Arbitration Act 1996 is expressly excluded.

Each of (a) the Company; (b) the Depositary; and (c) the Holders and the Beneficial Owners (who are deemed, by virtue of being a Holder or Beneficial Owner and owning, acquiring or holding, as the case may be, a GDR, to have notice of and be subject to all applicable provisions of the Deposit Agreements and the Conditions):

- (i) irrevocably consents to the consolidation of arbitrations pursuant to the Rules (or as otherwise permitted), and to be joined, and to the joinder of any other persons, to such consolidated arbitration(s);
- (ii) agrees not to challenge the terms and enforceability of this Condition 30(B) including, but not limited to, any challenge based on lack of mutuality, and hereby irrevocably waives any such challenge;
- (iii) irrevocably and unconditionally waives, to the fullest extent permitted by law, any objection that it or they may now or hereafter have to the proceedings brought in the arbitral tribunal

specified in this Condition 30(B), and hereby further irrevocably and unconditionally waives and agrees not to plead or claim in the arbitral tribunal that any proceedings brought in the arbitral tribunal specified in this Condition 30(B) has been brought in an inconvenient forum;

- (iv) irrevocably and unconditionally waives, to the fullest extent permitted by law, and agrees not to plead or claim, any right of sovereign or other immunity from proceedings brought in the arbitral tribunal specified in this Condition 30(B) with respect to any matter arising out of, or in connection with the GDR Documents; and
- (v) hereby 'opts out' of Article 9B of the Rules.

**31. Contracts (Rights of Third Parties) Act 1999**

A person who is not a party to the Deposit Agreement has no right under the Contracts (Rights of Third Parties) Act 1999 (the "Act") of the United Kingdom to enforce any term of the Deposit Agreement but this does not affect any right or remedy granted under the Deed Poll or which otherwise exists or is available apart from the Act.

**DEPOSITARY**

Citibank, N.A.  
388 Greenwich Street  
New York, New York 10013  
United States of America

**CUSTODIAN**

Citibank Kazakhstan JSC  
Park Place, Building A  
41 Kazybek Bi Street  
Almaty 050010  
Republic of Kazakhstan

and/or such other Depositary and/or such other Custodian or Custodians and/or principal offices as may from time to time be duly appointed and notified to the Holders.

## SUMMARY OF PROVISIONS RELATING TO THE GDRS WHILE IN MASTER FORM

The GDRs will initially be evidenced by: (i) a single Regulation S Master GDR in registered form; and (ii) a single Rule 144A Master GDR in registered form. The Rule 144A Master GDR will be registered in the name of Cede & Co. as nominee for DTC on the date the GDRs are issued. The Regulation S Master GDR will be registered in the name of Citivic Nominees Limited, as nominee for Citibank Europe plc as common depositary for Euroclear and Clearstream, Luxembourg on the date the GDRs are issued.

The Regulation S Master GDR and the Rule 144A Master GDR contain provisions which apply to the GDRs whilst they are in master form. Words and expressions given a defined meaning in the Conditions shall have the same meanings in this section unless otherwise provided in this section.

The Master GDRs will only be exchanged for certificates in definitive registered form representing GDRs in the circumstances described in paragraphs (i), (ii), (iii) or (iv) below in whole but not in part. The Depositary will irrevocably undertake in the Master GDRs to deliver certificates in definitive registered form representing GDRs in exchange for the relevant Master GDR to the Holders within 60 calendar days in the event that:

- (i) DTC, in the case of the Rule 144A Master GDR, or Euroclear, Clearstream, Luxembourg, in the case of the Regulation S Master GDR, notifies the Company that it is unwilling or unable to continue as common depositary and a successor common depositary system is not appointed within 90 calendar days; or
- (ii) either DTC, in the case of the Rule 144A Master GDR, or Euroclear, Clearstream, Luxembourg, in the case of the Regulation S Master GDR, is closed for business for a continuous period of 14 calendar days (other than by reason of holiday, statutory or otherwise) or announces an intention permanently to cease business or does in fact do so, and, in each case, no alternative clearing system satisfactory to the Depositary is available within 45 calendar days; or
- (iii) in respect of the Rule 144A Master GDR, DTC or any successor ceases to be a “clearing agency” registered under the Exchange Act; or
- (iv) the Depositary has determined that, on the occasion of the next payment in respect of the Master GDRs, the Depositary or its agent would be required to make any deduction or withholding from any payment in respect of the Master GDRs which would not be required were the GDRs represented by certificates in definitive registered form, *provided that* the Depositary shall have no obligation to so determine or to attempt to so determine.

Any exchange shall be at the expense (including printing costs) of the Company.

A GDR evidenced by an individual definitive certificate will not be eligible for clearing and settlement through Euroclear, Clearstream, Luxembourg, or DTC. Upon any exchange of a Master GDR for certificates in definitive registered form, or any exchange of interests between the Rule 144A Master GDR and the Regulation S Master GDR pursuant to Clause 3 of each of the Deposit Agreements, or any distribution of GDRs pursuant to Conditions 4, 5, 6, 7 or 9 or any reduction in the number of GDRs represented thereby following any withdrawal of Deposited Property pursuant to Condition 2, or any increase in the number of GDRs following the deposit of Shares pursuant to Condition 1, the relevant details shall be entered by the Depositary on the register maintained by the Depositary whereupon the number of GDRs represented by the Master GDR shall be reduced or increased (as the case may be) for all purposes by the number so exchanged and entered on the register. If the number of GDRs represented by a Master GDR is reduced to zero, such Master GDR shall continue in existence until the obligations of the Company under the Deposit Agreements and the obligations of the Depositary pursuant to the Deposit Agreements and the Conditions have terminated.

### **Payments, Distributions and Voting Rights**

Payments of cash dividends and other amounts (including cash distributions) will, in the case of GDRs represented by the Regulation S Master GDR, be made by the Depositary through Euroclear, Clearstream, Luxembourg and, in the case of GDRs represented by the Rule 144A Master GDR, will be made by the Depositary through DTC, on behalf of persons entitled thereto upon receipt of funds therefore from the Company. Any free distribution or rights issue of Shares to the Depositary on behalf of the Holders will result in the records maintained by the Depositary being adjusted to reflect the enlarged number of GDRs represented by the relevant Master GDR.

Holders of GDRs will have voting rights as set out in the Conditions.



**Surrender of GDRs**

Any requirement in the Conditions relating to the surrender of a GDR to the Depositary shall be satisfied by the production by Euroclear or Clearstream, Luxembourg, in the case of GDRs represented by the Regulation S Master GDR, or by DTC, in the case of GDRs represented by the Rule 144A Master GDR, on behalf of a person entitled to an interest therein of such evidence of entitlement of such person as the Depositary may reasonably require, which is expected to be a certificate or other documents issued by Euroclear or Clearstream, Luxembourg or DTC, as appropriate. The delivery or production of any such evidence shall be sufficient evidence in favour of the Depositary, any Agent and the Custodian of the title of such person to receive (or to issue instructions for the receipt of) all money or other property payable or distributable in respect of the Deposited Property represented by such GDRs and to issue voting instructions.

**Notices**

For as long as the Regulation S Master GDR is registered in the name of a nominee for a common depositary holding on behalf of Euroclear and Clearstream, Luxembourg, and the Rule 144A Master GDR is registered in the name of DTC or its nominee, notices to Holders may be given by the Depositary by delivery of the relevant notice to Euroclear and Clearstream, Luxembourg, or (as appropriate) DTC, for communication to persons entitled thereto in substitution for delivery of notices in accordance with Condition 24.

The Master GDRs, and any non-contractual obligations arising out of or in connection with the Master GDRs, shall be governed by and construed in accordance with English law.

## **DESCRIPTION OF ARRANGEMENTS TO SAFEGUARD THE RIGHTS OF THE HOLDERS OF THE GDRS**

### **The Depositary**

The Depositary is Citibank, N.A., a national banking association organised under the laws of the United States. The Depositary is an indirect wholly-owned subsidiary of Citigroup, Inc., a Delaware corporation.

### ***Rights of Holders of GDRs***

*Relationship of Holders of GDRs with the Depositary:* The rights of Holders against the Depositary are governed by the Conditions and the Deposit Agreements, which are governed by English law. The Depositary and the Company are parties to the Deposit Agreements. Holders of GDRs have contractual rights in relation to cash or other Deposited Property (including Deposited Shares, which are Shares of the Company represented by GDRs) deposited with the Depositary under Clause 3 of each of the Deposit Agreements, and otherwise under the Deposit Agreements by virtue of the Deed Poll.

*Voting:* With respect to voting of Deposited Shares and other Deposited Property represented by GDRs, the Conditions and the Deposit Agreements provide that, upon receipt of notice from the Company of any meeting at which the holders of Shares or other Deposited Property are entitled to vote, or of a solicitation of consent or proxy from holders of Shares or Deposited Property, the Depositary shall, providing that no relevant legal prohibitions exist, send to any person who is a Holder on the record date established by the Depositary for that purpose (which shall be as close as possible to the corresponding record date set by the Company) such notice of meeting or solicitation of consent or proxy, along with a brief statement on the manner in which such Holders may provide the Depositary with voting instructions for matters to be considered and certain identity and other information as to their Beneficial Owners as required under Kazakhstan law. The Deposit Agreements provide that the Depositary will endeavour to exercise or cause to be exercised the voting rights with respect to Deposited Shares in accordance with instructions from Holders; provided that the Depositary has received valid identity information with such instructions. As at the date of this Prospectus, the Company confirms that there are no restrictions under applicable law, the Charter of the Company or the provisions of the Deposited Shares that would prohibit or restrict the Depositary from voting any of the Deposited Shares in accordance with instructions from Holders.

*Delivery of GDRs:* The Deposit Agreements provide that the Deposited Shares can only be delivered out of the Regulation S and Rule 144A GDR facilities to, or to the order of, a Holder of related GDRs upon receipt and cancellation of such GDRs.

### ***Rights of the Company***

The Company has broad rights to remove the Depositary under the terms of the Deposit Agreements, but no specific rights under the Deposit Agreements which are triggered in the event of the insolvency of the Depositary.

### ***Insolvency of the Depositary***

*Applicable insolvency law:* If the Depositary becomes insolvent, the insolvency proceedings will be governed by U.S. laws applicable to the insolvency of banks.

*Effect of applicable insolvency law in relation to cash:* The Conditions state that any cash held by the Depositary for Holders is held by the Depositary as banker. Under current U.S. and English law, it is expected that any cash held for Holders by the Depositary as banker under the Conditions would constitute an unsecured obligation of the Depositary. Holders would therefore only have an unsecured claim in the event of the Depositary's insolvency for such cash that would be also be available to general creditors of the Depositary.

*Effect of applicable insolvency law in relation to non-cash assets:* The Deposit Agreements state that the Deposited Shares and other non-cash assets which are held by the Depositary for Holders are held by the Depositary as bare trustee and, accordingly, the Holders will be tenants in common for such Deposited Shares and other non-cash assets. Under current U.S. and English law, it is expected that any Deposited Shares and other non-cash assets held for Holders by the Depositary on trust under the Conditions would not constitute assets of the Depositary and that Holders would have ownership rights relating to such Deposited Shares and other non-cash assets and be able to request the Depositary's receiver or conservator to deliver such Deposited Shares and other non-cash assets that would be unavailable to general creditors of the Depositary.

### ***Default of the Depositary***

If the Depositary fails to pay cash or deliver non-cash assets to Holders in the circumstances required by the Conditions and the Deposit Agreements or otherwise engages in a default for which it would be liable under the terms of the Conditions and the Deposit Agreements, the Depositary will be in breach of its contractual obligations under the Conditions. In such case, Holders will have a claim under English law against the Depositary for the Depositary's breach of its contractual obligations under the Deposit Agreements.

### ***The Custodian***

The Custodian is Citibank Kazakhstan JSC, a company organised under the laws of the Republic of Kazakhstan.

*Relationship of Holders of GDRs with the Custodian:* The Custodian and the Depositary are parties to a custody agreement, which is governed by New York law. The Holders do not have any contractual relationship with, or rights enforceable against, the Custodian. The Custodian will hold one or more certificates representing Deposited Shares, each of which will be registered in the Company's share register in the name of the Depositary or its nominee, as the case may be, and deposited in the Regulation S and Rule 144A GDR facilities.

### ***Default of the Custodian***

*Failure to deliver cash:* If the Custodian fails to deliver cash held for the Depositary as required by the custody agreement or otherwise defaults under the terms of the custody agreement, the Custodian will be in breach of its obligations to the Depositary. In such case, the Depositary will have a claim under New York law against the Custodian for the Custodian's breach of its obligations under the custody agreement. The Depositary can also remove the Custodian and appoint a substitute or additional custodians and may exercise such rights if it deems necessary.

*Failure to deliver non-cash assets:* If the Custodian fails to deliver Deposited Shares or other non-cash assets held for the Depositary as required by the custody agreement or otherwise defaults under the terms of the custody agreement, the Custodian will be in breach of its obligations to the Depositary. In such case, the Depositary will have a claim under New York law against the Custodian for the Custodian's breach of its obligations under the custody agreement. The Depositary can also remove the Custodian and appoint a substitute or additional custodians and may exercise such rights if it deems necessary.

*The Depositary's obligations:* The Depositary has no obligation to pursue a claim for breach of obligations against the Custodian on behalf of Holders. The Depositary is not responsible for and shall incur no liability in connection with or arising from default by the Custodian due to any act or omission to act on the part of the Custodian.

### ***Insolvency of the Custodian***

*Applicable law:* If the Custodian becomes insolvent, the insolvency proceedings will be governed by applicable Kazakhstan law.

*Effect of applicable insolvency law in relation to cash:* On an insolvency of the Custodian, due to conflicting provisions of Kazakhstan law, it is uncertain whether any cash held by the Custodian in its capacity as Custodian would constitute assets of the Custodian and whether the Holders would have ownership rights relating to such cash. In the event that such cash does constitute assets of the Custodian, it would be available to the general creditors of the Custodian and the Holders would not be able to request the Custodian's liquidation commission to deliver such cash to them outside of insolvency proceedings.

*Effect of applicable insolvency law in relation to non-cash assets:* Under the Deposit Agreements, all Deposited Shares are registered in the name of the Depositary and are held by the Custodian, for the account and to the order of the Depositary (on behalf of Holders) and must be identified as being held to the account of the Depositary and segregated from all other property held by the Custodian. The Custodian must maintain records of all Deposited Shares held by it for the account and to the order of the Depositary and make such records available to the Depositary. Under Kazakhstan law, in the event the Custodian becomes insolvent, the Deposited Shares would not be deemed to form part of the assets of the Custodian and the Holders would have ownership rights relating to such Deposited Shares and be able to request the Custodian's liquidation commission to deliver such Deposited Shares which would not be available to the general creditors of the Custodian.

*The Depositary's obligations:* The Depositary has no obligation to pursue a claim in the Custodian's insolvency on behalf of the Holders. The Depositary has no responsibility for, and will incur no liability in connection with or arising from, the insolvency of any custodian. In the event of the insolvency of the Custodian, the Holders have no direct recourse to the Custodian under the Deposit Agreements, though the Depositary can remove the Custodian and appoint a substitute or additional custodian(s) and may exercise such rights if it deems necessary.

**PERSONS HOLDING BENEFICIAL TITLE TO GDRS OR INTERESTS THEREIN ARE REMINDED THAT THE ABOVE DOES NOT CONSTITUTE LEGAL ADVICE AND IN THE EVENT OF ANY DOUBT REGARDING THE EFFECT OF THE DEFAULT OR INSOLVENCY OF THE DEPOSITARY OR THE CUSTODIAN, SUCH PERSONS SHOULD CONSULT THEIR OWN ADVISORS IN MAKING A DETERMINATION.**

## TAXATION

*The following statements are intended only as a general guide to Kazakhstan, U.K. and United States tax considerations which apply to holders of the Securities. It does not purport to be a comprehensive analysis of all the tax considerations applicable to all types of holders of Securities and is based on current law and practice which may be subject to change. Accordingly, holders should consult their own adviser regarding the tax considerations of an investment in the Securities.*

### KAZAKHSTAN TAXATION CONSIDERATIONS

The following summary of Kazakhstan taxation matters is based on the laws and practice in force as at the date of this Prospectus and is subject to any changes in law and the interpretation and application thereof, which changes could be made with retroactive effect. The following summary does not purport to be a comprehensive description of all the tax considerations that may be relevant to a decision to acquire, hold or dispose of Shares or GDRs, and does not purport to deal with the tax considerations applicable to all categories of investors, some of which (such as dealers in securities) may be subject to special rules. Save as otherwise indicated, this summary only addresses the position of investors who do not have any connection with Kazakhstan other than through a holding of Shares or GDRs. Investors should consult their professional advisers on the tax considerations of their acquiring, holding and disposing of Shares or GDRs, including their eligibility for the benefits of double tax treaties, under the laws of their country of citizenship, residence, domicile or incorporation, and seek specialist Kazakhstan tax advice as necessary.

This summary discusses the Kazakhstan tax considerations of the acquisition, ownership and disposal of Shares and GDRs. In general, Kazakhstan tax legislation with respect to the taxation of securities and financial instruments is not well developed, and in many cases the exact scope of Kazakhstan tax, compliance rules and enforcement mechanism is unclear or open to different interpretations.

The only tax that may under certain circumstances apply in Kazakhstan to the above transactions is income tax. No other taxes or duties should be levied in Kazakhstan with respect to the above transactions. For all relevant purposes of this summary, except as noted below (e.g. in relation to tax relief), legal entities and individuals are subject to similar income tax treatment.

#### **Tax residence**

Non-resident persons will not become resident in Kazakhstan for Kazakhstan tax purposes by reason only of the acquisition, ownership or disposal of Shares or GDRs. Therefore, under Kazakhstan tax law, legal owners of Shares (the “**Shareholders**”) and holders of GDRs (the “**GDR Holders**”) should only be taxed on their income earned from sources in Kazakhstan, rather than their worldwide income.

All Shareholders, GDR Holders and GDR Issuers are not considered as residents in Kazakhstan for tax purposes in this brief description.

#### **Exempt disposals of Shares**

The current Tax Code came into effect in Kazakhstan on 1 January 2018. Under the Tax Code, generally all disposals and acquisitions of shares are subject to income tax in Kazakhstan. In addition, gain of the Shares will be tax exempt until 1 January 2066 if the Shares are on the official list of the Stock Exchange of the Astana International Financial Centre (AIX), which has been operating in Kazakhstan since July 2018. The Special Constitutional Law “On Astana International Financial Centre” (the “**AIFC Law**”) provides such relief. Accordingly after the Shares are admitted to the official list of the exchange market AIX, any income derived from sales of the Shares on AIX will be tax exempt.

#### **Taxable disposals of Shares**

This discussion applies only to disposals that are not exempt as described above.

#### ***Treatment of acquirer***

Non-resident buyers or other transferees (including recipients of gift or inheritance) of Shares are not subject to Kazakhstan income tax on acquisition.

However, the tax obligations on assessment, declaration, withholding and remittance to the budget of tax on gains shall be fulfilled by an acquirer as a tax agent, regardless of whether the acquirer is a resident or non-resident. In order to fulfil their obligations as a tax agent, non-residents should register with the tax authorities of Kazakhstan. As stated in subsection “—*Exempt disposals of Shares*” above, any income derived from stock trade on the AIX exchange market is tax exempt, provided that such Shares are admitted to the official lists of such stock exchange at the time of sale, and the acquirer would not have any obligation to withhold tax or register with the Kazakhstan tax authorities.

### ***Treatment of transferor***

As a general rule the net gain realised from the disposal of the Shares is subject to withholding tax in Kazakhstan at the rate of 15%. If the transferor is registered in a Country with a Favourable Tax Regime, the net gain realised from the disposal of the Shares is subject to withholding tax at the rate of 20%. Disposals include sales, exchanges and gifts.

The Tax Code defines a “**Country with a Favourable Tax Regime**” as either a foreign country or its administrative division if such foreign country or its administrative division has either:

- an income tax rate which is less than 10%; or
- laws on confidentiality of financial information or laws which allow to keep confidential information about the actual owner of property or income or the actual owners, participants, founders or shareholders of a legal entity (except for a foreign country or its administrative division which has entered into an international treaty with the Republic of Kazakhstan, which provides for exchange of information between competent authorities except where the foreign country or its administrative division either (a) refuses to provide information exchange of which is provided for by the relevant international treaty or (b) does not provide such information within a period exceeding two years after the competent authority has sent the relevant request).

The exact list of Countries with a Favourable Tax Regime is approved by the Government. The following jurisdictions are currently included in Government’s list of Countries with a Favourable Tax Regime: Principality of Andorra, Antigua and Barbuda, Commonwealth of The Bahamas, Barbados, Kingdom of Bahrain, Belize, Negara Brunei Darussalam, Republic of Vanuatu, Republic of Guyana, Republic of Guatemala, Grenada, Republic of Djibouti, Dominican Republic, Commonwealth of Dominica, Ireland (in respect of the territories of the cities of Dublin and Shannon only), Kingdom of Spain (in respect of the territories of The Canary Islands only), Republic of Cyprus, People’s Republic of China (in respect of the territories of the special administrative regions of Macau and Hong Kong only), Republic of Colombia, Union of the Comoros, Republic of Costa Rica, Malaysia (in respect of the territory of Labuan enclave only), Republic of Liberia, Republic of Lebanon, Principality of Liechtenstein, Grand Duchy of Luxembourg, Republic of Mauritius, Islamic Republic of Mauritania, Republic of Portugal (in respect of the territory of the islands of Madeira only), Republic of Maldives, Republic of the Marshall Islands, Principality of Monaco, Republic of Malta, Mariana Islands, Kingdom of Morocco (in respect of the territory of the city of Tangier only), Republic of the Union of Myanmar, Republic of Nauru, Kingdom of the Netherlands (in respect of the territories of the islands of Aruba and dependent territories of the Antilles islands only), Federal Republic of Nigeria, New Zealand (in respect of the territories of the Cook Islands and Niue only), United Arab Emirates (in respect of the territory of the city of Dubai only), Republic of Palau, Republic of Panama, Independent State of Samoa, Republic of San Marino, Republic of Seychelles, Saint Vincent and the Grenadines, Saint Kitts and Nevis, Saint Lucia, United Kingdom of Great Britain and Northern Ireland (in respect of the following territories only: Anguilla; Bermuda; the British Virgin Islands; Gibraltar; the Cayman Islands; Montserrat; the Turks and Caicos Islands, Isle of Man, the Channel Islands (Guernsey, Jersey, Sark and Alderney), South Georgia and the South Sandwich Islands, Chagos Island), United States of America (in respect of the following territories only: The Virgin Islands of the United States, Guam, Commonwealth of Puerto Rico, State of Wyoming, State of Delaware), Republic of Suriname, United Republic of Tanzania, Kingdom of Tonga, Republic of Trinidad and Tobago, Republic of Fiji, Republic of the Philippines, Republic of France (in respect of the following territories only: Kerguelen Islands, French Polynesia, French Guiana), Montenegro, Democratic Socialist Republic of Sri Lanka, Jamaica.

### **Taxation of dividends on Shares**

Under the AIFC Law, dividends paid on the Shares will be exempt until 1 January 2066 from tax provided the Shares are in the official list of the exchange market AIX at the time the dividend is accrued.

If dividends paid on the Shares are not exempt, such dividends are subject to withholding tax at the rate of 15%. If dividends are paid on the Shares held by a resident of a Country with a Favourable Tax Regime such dividends are subject to withholding tax at the rate of 20%. The withholding tax is applied to the gross amount of dividends without allowance for any deductions and satisfies all Kazakhstan income tax obligations with respect to dividends. Shareholders should not be subject to any other tax reporting, payment, registration or compliance requirements with respect to dividends paid on the Shares.

Shareholders who are resident in countries with which Kazakhstan has double taxation treaties may be entitled to a reduced rate of withholding tax.

Subject to the above, depending on the country of residence and satisfaction of certain other conditions, the dividend withholding tax rates under Kazakhstan’s double tax treaties in effect as at the date of this Prospectus may be between



5% and 15%. Under double tax treaties effective on the date of this Prospectus, reductions below 10% may only be available to beneficial owners that are legal entities.

In order to avail themselves of this relief, eligible Shareholders have to provide the Company with a document issued by the tax authority of their country of residence confirming their tax residence in a treaty jurisdiction. To be valid in Kazakhstan, this document should also be apostilled or legalised by a Shareholder's home country's competent authority.

If the above document is not made available to the Company prior to 31 December of the year when dividends are paid, then the Company should apply withholding tax at a standard 15% rate or 20% rate, as applicable, and account for the withheld amounts to the relevant authority. Shareholders who are eligible for a lower withholding tax rate should later be able to claim a refund of overpaid tax from the Government of Kazakhstan. In doing so, they should provide the respective tax authority with tax residence confirmation. In practice, however, this process may prove to be administratively burdensome.

## **Taxation of GDR Holders**

### ***Disposals***

Kazakhstan tax legislation does not provide clear and explicit treatment of operations performed on the stock exchange. This ambiguity, including, in particular, the uncertainty surrounding taxation of transactions with GDRs, creates a risk that tax authorities may take a view different than that outlined below.

Under the Tax Code, depositary receipts shall be treated as securities, and thus disposal of GDRs representing Shares in the Company is subject to taxation in accordance with provisions on determining of income (gains) derived from disposal of securities and shares.

At the same time, the gain derived from the disposal of GDRs can be exempt from withholding tax if taxation of GDRs is being treated similarly to taxation of Shares by tax authorities. In this case, tax relief on income in the form of gain derived from disposal of GDRs shall be identical to the criteria applicable to Shares.

If tax authorities were to recognise GDRs as securities issued by non-resident, then income on disposal of GDRs shall not be recognised as income from sourced in Kazakhstan and shall not be subject to taxation at the source of payment.

### ***Dividends***

Dividends paid on Shares (the underlying asset of the GDRs) shall be recognized as income from the source of Kazakhstan regardless of whether GDRs are being treated as securities or GDRs taxation is being treated similarly to taxation of Shares.

If GDRs are treated as Shares, under the Tax Code, dividends paid on the Shares (the underlying asset of the GDRs) are exempt from tax payment, reporting or compliance requirements in Kazakhstan if such Shares are admitted to the official list of AIX on the date of accrual of such dividends.

If dividends paid on the Shares (the underlying asset of the GDRs) are not exempt, such dividends are subject to Kazakhstan withholding tax at the rate of 15% or 20% if payment is made to a GDR holder registered in a Country with a Favourable Tax Regime. The withholding tax is applied to the gross amount of dividends without allowance for any deductions and satisfies all Kazakhstan income tax obligations with respect to the dividends.

If tax authorities recognize taxation of GDRs to be different from taxation of Shares, income on dividends shall not be exempt but shall be subject to taxation at the source of payment.

GDR holders who are residents in countries with which Kazakhstan has double taxation treaties may be entitled to a reduced rate of withholding tax. Subject to the above, depending on the country of residence and satisfaction of certain other criteria, the dividend withholding tax rates under Kazakhstan's double tax treaties in effect as at the date of this Prospectus may be between 5% and 15%. Under double tax treaties effective on the date of this Prospectus, reductions below 10% may only be available to beneficiary owners that are legal entities.

In order to avail themselves of this relief, eligible GDR Holders must provide the Company with an apostilled or legalised document issued by the tax authority of their country of residence confirming their tax residence in a treaty jurisdiction. In addition, the Company should have the list of GDR Holders provided by the Kazakhstan Central Depositary containing information about GDRs and GDR Holders. On the basis of the above documents, the Company may be entitled to withhold tax at an applicable reduced rate established by a relevant treaty, subject to the Deposit Agreements.

If the above documents are not made available to the Company prior to the date of payment of dividends, then the Company should apply withholding tax at a standard 15% rate and account for the withheld amounts to the relevant authority. GDR Holders who are eligible for a lower withholding tax rate should later be able to claim a refund of overpaid tax from the Government of Kazakhstan. In doing so, they should provide the respective tax authority with a tax residence confirmation and an extract from the account with the Kazakhstan Central Depository containing information about GDRs and GDR Holders. In practice, however, this process may prove to be administratively burdensome.

## UNITED KINGDOM TAXATION CONSIDERATIONS

### General

The following comments are of a general nature. They are based on current U.K. tax law as applied in England and Wales and HM Revenue & Customs published practice (which may not be binding) as at the date of this document, both of which are subject to change and may be repealed, revoked or modified, possibly with retrospective effect. These statements are not intended to be exhaustive and do not purport to be a complete analysis of all U.K. tax considerations of acquiring, holding or disposing of the GDRs.

The following comments do not constitute legal or tax advice and are intended as a general guide only to U.K. tax considerations. Save where otherwise stated, this summary only covers principal U.K. taxation considerations for investors who: (i) are U.K. tax resident and, in the case of an individual, domiciled in (and only in) the U.K. for tax purposes (except insofar as express reference is made to the treatment of non-U.K. tax residents); (ii) are the absolute beneficial owners of the GDRs (in particular investors holding their GDRs in a depository receipt system or clearance service should note that they may not be the absolute beneficial owners thereof); (iii) are holding the GDRs as investments (other than under an Individual Savings Account or a Self-Investment Personal Pension); (iv) have not (and are not deemed to have) acquired their GDRs by virtue of an office or employment (including any former or prospective office or employment) and who are not otherwise connected with the Company. These comments also assume that any U.K. holders of GDRs are, for U.K. tax purposes, beneficially entitled to the underlying Shares and to dividends on those Shares.

These statements may not apply to certain classes of investors who are subject to special rules (such as brokers, traders or dealers in securities, insurance companies, charities, collective investment schemes or pension providers). Each investor's specific circumstances will impact on their taxation position. All investors are recommended to obtain their own taxation advice. In particular, all investors, including investors who are tax resident in the U.K., are advised to consider the potential impact of any relevant double tax agreements on their shareholding.

**POTENTIAL INVESTORS WHO ARE IN ANY DOUBT AS TO THEIR TAX POSITION OR ARE OR MAY BE SUBJECT TO TAX IN A JURISDICTION OTHER THAN THE U.K. SHOULD CONSULT AN APPROPRIATE PROFESSIONAL ADVISER.**

### Dividends

The Company will not be required to withhold any amounts at source in respect of U.K. tax when paying a dividend. Liability to U.K. tax on dividends will depend upon the individual circumstances of the investor.

#### (i) *Individual investors*

An individual investor who is resident for tax purposes in the U.K. and who receives a dividend from the Company on the GDRs will pay no tax on the first £2,000 of dividend income received in each tax year (the "**dividend allowance**"). For these purposes "**dividend income**" includes the gross amount of any U.K. and non-U.K. source dividends and certain other distributions in respect of shares (including dividends on the Shares including where represented by the GDRs).

The rates of income tax for the 2018/2019 tax year on dividends received above the dividend allowance are: (i) 7.5% for dividends taxed in the basic rate band; (ii) 32.5% for dividends taxed in the higher rate band; and (iii) 38.1% for dividends taxed in the additional rate band. An individual investor's dividend income that is within the dividend allowance counts towards an individual's basic or higher rate limits and will therefore affect the level of savings allowance to which they are entitled, and the rate of tax that is due on any dividend income in excess of this allowance. In calculating into which tax band any dividend income over the £2,000 allowance falls, savings and dividend income are treated as the highest part of an individual's income. Where an individual has both savings and dividend income, the dividend income is treated as the top slice.

**(ii) Corporate investors**

Corporate investors who are within the charge to U.K. corporation tax which are “small companies” (for the purposes of U.K. taxation of dividends) will not generally be subject to U.K. corporation tax on dividends on the Shares (including where represented by the GDRs), provided certain conditions are met.

Other corporate investors who are within the charge to U.K. corporation tax will prima facie be subject to U.K. corporation tax on any dividends on the Shares (including where represented by the GDRs) unless certain conditions for exemption are satisfied. Although each investor’s position will depend on its own individual circumstances, and subject to anti-avoidance rules, the exemption is of wide application and such investors will therefore generally not be subject to U.K. corporation tax on the dividend.

If the conditions for exemption are not met (or cease to be satisfied), or an investor elects for an otherwise exempt dividend to be taxable, the investor will be subject to U.K. corporation tax on dividends received from the Company at the rate of corporation tax applicable to that investor (currently 19%).

**(iii) Credit for Kazakhstan withholding taxes**

As discussed in “—*Kazakhstan Taxation Considerations*,” dividend payments in respect of the Shares will be subject to Kazakhstan withholding tax provided that all conditions stipulated by Kazakhstan Tax Code are met. Taxation of dividend payments in respect of GDRs will depend on treatment of GDRs whether GDRs are being treated as securities or GDRs taxation is being treated similarly to taxation of Shares. A U.K. holder should generally be entitled to a credit for Kazakhstan tax properly withheld from such payments against such investor’s liability to income tax or corporation tax on such amounts, subject to U.K. tax rules for calculation of such credit.

**Disposal of the Shares or GDRs**

**(i) Individual investors**

An individual investor has a capital gains tax (“CGT”) annual exemption (£11,700 for the 2018/2019 tax year) and so will only be subject to CGT to the extent his or her total chargeable gains in the year (including any gains on the disposal or deemed disposal of his or her Shares or GDRs) exceed this annual exemption.

The rate of CGT will depend on the individual’s total taxable income and gains in the relevant tax year. An individual whose total taxable income and gains in a given tax year (including gains on a disposal or deemed disposal of Shares or GDRs) are less than or equal to the individual’s basic rate band will generally be subject to CGT at 10% of the gain on the disposal or deemed disposal of the Shares or GDRs. However, if any capital gains exceed the unused basic rate band, the applicable rate will normally be 20%.

**(ii) Corporate investors**

For investors within the charge to U.K. corporation tax, a disposal or deemed disposal of Shares or GDRs may give rise to a chargeable gain or an allowable loss for the purposes of U.K. corporation tax, subject to any available exemptions, reliefs or allowances. The main rate of U.K. corporation tax is currently 19%.

**(iii) Non-U.K. tax resident investors**

An investor who is not resident for tax purposes in the U.K. will not generally be subject to U.K. CGT or U.K. corporation tax on a disposal of Shares or GDRs, unless the investor is carrying on a trade, profession or vocation in the U.K. through a branch or agency (or, in the case of a corporate investor, they are carrying on a trade through a permanent establishment) in connection with which the Shares or GDRs are used, held or acquired. Such investors may be subject to foreign taxation on any gain under local law and should seek their own local law tax advice.

An individual investor who is not U.K. tax resident on a temporary basis (which, depending upon the individual’s circumstances, can be up to six U.K. tax years) and who disposes of all or part of his or her Shares or GDRs or who received a cash payment in respect of the lapse of such rights during that period may be liable to CGT on his or her return to the U.K. subject to any available exemptions or reliefs.

**U.K. stamp duty and U.K. stamp duty reserve tax**

The following comments are intended as a general guide to the current U.K. stamp duty and SDRT position, and apply regardless of whether or not an investor is resident in U.K. It should be noted that certain categories of person, including market makers, brokers, dealers, and other specified market intermediaries, are entitled to exemption from stamp duty and SDRT in respect of purchases of securities in specified circumstances.

No U.K. stamp duty or SDRT will be payable on (i) the issue by the Depositary of the GDRs; (ii) the delivery of the GDRs into Euroclear or Clearstream; or (iii) any dealings in the GDRs once they are delivered into such clearance systems, where such dealings are effected in book-entry form in accordance with the procedures of Euroclear or Clearstream (as applicable) and not by written instrument of transfer.

Assuming that any document effecting a transfer of the Shares or GDRs, or containing an agreement to transfer an equitable interest in the Shares or GDRs is neither (i) executed in the U.K.; nor (ii) relates to any property situate or to any matter or thing done or to be done, in the U.K. (the term “matter or thing done or to be done” is very wide and may include involvement of U.K. bank accounts in payment mechanics), then no U.K. stamp duty should be payable on such document.

Even if a document effecting a transfer of the Shares or GDRs, or containing an agreement to transfer an equitable interest in the Shares or GDRs, is (i) executed in the U.K.; and/or (ii) relates to any property situate, or to any matter or thing done or to be done, in the U.K., in practice it should not be necessary to pay any U.K. stamp duty on such document unless the document is required for any purposes in the U.K. If it is necessary to pay U.K. stamp duty, it may also be necessary to pay interest and penalties.

Provided that the Shares and GDRs are not registered in any register kept in the U.K. by or on behalf of the Company and that the Shares and GDRs are not paired with shares issued by a company incorporated in the U.K., any agreement to transfer the Shares or GDRs will not be subject to SDRT.

### **UNITED STATES (“U.S.”) TAXATION CONSIDERATIONS**

The following discussion is a summary of U.S. federal income tax considerations generally applicable to the ownership and disposition of the Shares or GDRs by U.S. Holders (as defined below). This discussion applies only to U.S. Holders that hold the Shares or GDRs as capital assets (generally, property held for investment). This discussion is based on the U.S. Internal Revenue Code of 1986, as amended, U.S. Treasury regulations promulgated thereunder (the “**U.S. Tax Regulations**”), published positions of the Internal Revenue Service (the “**IRS**”), court decisions and other applicable authorities, all as of the date hereof and all of which are subject to change or differing interpretations (possibly with retroactive effect).

This discussion does not address all U.S. federal income tax considerations that may be applicable to U.S. Holders in light of their particular circumstances or U.S. Holders subject to special treatment under U.S. federal income tax law, such as:

- banks, insurance companies and other financial institutions;
- entities treated as partnerships for U.S. federal income tax purposes, S corporations or other pass-through entities;
- tax-exempt entities;
- real estate investment trusts;
- regulated investment companies;
- brokers, dealers, or traders in securities that elect to use a mark-to-market method of accounting;
- certain former citizens or residents of the United States;
- persons that elect to mark their securities to market;
- persons whose Shares or GDRs are part of a hedging, integrated, straddle, conversion or constructive sale transaction for U.S. federal income tax purposes;
- persons that have a functional currency other than the U.S. dollar;
- persons required to accelerate the recognition of any item of gross income with respect to the Shares or GDRs as a result of such income being recognised on an applicable financial statement; and
- persons that actually or constructively own 10% or more of our stock by vote or value.

This discussion does not address any U.S. state or local or non-U.S. tax considerations or any U.S. federal estate, gift, alternative minimum tax or Medicare contribution tax considerations.

For purposes of this discussion, a “**U.S. Holder**” is a beneficial owner of the Shares or GDRs that is for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation (including any entity treated as a corporation for U.S. federal income tax purposes) created or organised in or under the laws of the United States or any state thereof or the District of Columbia;
- an estate whose income is subject to U.S. federal income taxation regardless of its source; or
- a trust, (i) the administration of which is subject to the primary supervision of a court within the United States and for which one or more U.S. persons have the authority to control all substantial decisions, or (ii) that has a valid election in effect under applicable U.S. Tax Regulations to be treated as a U.S. person.

If a partnership or other entity treated as a partnership for U.S. federal income tax purposes holds the Shares or GDRs, the tax treatment of a partner will generally depend on the status and the activities of the partnership. Partners in a partnership holding the Shares or GDRs should consult their tax advisors regarding the tax considerations of an investment in the Shares or GDRs.

The discussion below assumes that the representations contained in the Deposit Agreements are true and that the obligations in the Deposit Agreements and any related agreement have been and will be complied with in accordance with their terms.

**EACH PROSPECTIVE HOLDER OF SHARES OR GDRS SHOULD CONSULT THEIR TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE AND LOCAL OR OTHER TAX CONSIDERATIONS OF OWNING AND DISPOSING OF THE COMPANY’S SHARES OR GDRS IN LIGHT OF THEIR PARTICULAR CIRCUMSTANCES. U.S. HOLDERS SHOULD ALSO REVIEW THE DISCUSSION UNDER “—KAZAKHSTAN TAXATION CONSIDERATIONS” AND “—UNITED KINGDOM TAXATION CONSIDERATIONS” ABOVE FOR THE KAZAKHSTAN AND UNITED KINGDOM TAX CONSIDERATIONS TO A U.S. HOLDER OF THE OWNERSHIP AND DISPOSITION OF THE SHARES OR GDRS.**

### **Ownership of GDRs in General**

For United States federal income tax purposes, a holder of GDRs generally should be treated as the owner of the underlying Shares represented by those GDRs for U.S. federal income tax purposes. No gain or loss will be recognised upon the exchange of GDRs for the U.S. Holder’s proportionate interest in Shares. A U.S. Holder’s tax basis in the withdrawn shares should be the same as the U.S. Holder’s tax basis in the GDRs surrendered, and the holding period of the Shares should include the holding period of the GDRs.

### **Distributions**

Subject to the discussion below under “—*Passive Foreign Investment Company Rules*,” the gross amount of any distribution to a U.S. Holder with respect to the Shares or GDRs will generally be included in such holder’s gross income as ordinary dividend income on the date actually or constructively received by such holder, in the case of Shares, or by the depository, in the case of GDRs, to the extent that the distribution is paid out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles). To the extent the amount of such distribution exceeds the Company’s current or accumulated earnings and profits, such amount will be treated first as a non-taxable return of capital to the extent of such U.S. Holder’s adjusted tax basis in its Shares or GDRs, and to the extent the amount of such distribution exceeds such adjusted tax basis, will be treated as capital gain from the sale of the Shares or GDRs. The Company does not intend to calculate its earnings and profits under U.S. federal income tax principles. Therefore, U.S. Holders should expect that any distribution from the Company will generally be reported as a dividend. The amount of such dividend will include amounts withheld by the Company or the Company’s paying agent in respect of any foreign taxes. Any dividend from the Company will not be eligible for the dividends-received deduction generally allowed to corporations in respect of dividends received from U.S. corporations.

The amount of any dividend paid in foreign currency will equal the U.S. dollar value of the foreign currency received calculated by reference to the exchange rate in effect on the date the dividend is received by a U.S. Holder, in the case



of Shares, or by the depositary in the case of GDRs, regardless of whether the foreign currency is converted into U.S. dollars. If the foreign currency received as a dividend is converted into U.S. dollars on the date it is received, a U.S. Holder will generally not be required to recognise foreign currency gain or loss in respect of the dividend income. If the foreign currency received as a dividend is not converted into U.S. dollars on the date of receipt, a U.S. Holder will have a basis in the foreign currency equal to its U.S. dollar value on the date of receipt. Any gain or loss realised on a subsequent conversion or other disposition of the foreign currency will be treated as U.S. source ordinary income or loss.

With respect to individuals and certain other non-corporate U.S. Holders, dividends may constitute “qualified dividend income” that are subject to tax at the lower applicable capital gains rates provided that (1) the Company is eligible for the benefits of the income tax treaty between the United States and Kazakhstan, (2) the Company is not a PFIC for either the Company’s taxable year in which the dividend was paid or the preceding taxable year, and (3) certain holding period requirements are met. Assuming the Company is eligible for the benefits of the income tax treaty between the United States and Kazakhstan, dividends the Company pays on the Shares, regardless of whether such shares are represented by the GDRs, would be eligible for the reduced rates of taxation. U.S. Holders should consult their tax advisors regarding the availability of the lower capital gains rate applicable to qualified dividend income for dividends paid with respect to the Shares or GDRs (including rules relating to foreign tax credit limitations).

Dividends from the Company will generally constitute non-U.S. source income and be treated as “passive category income” for foreign tax credit limitation purposes. U.S. Holders may be eligible, subject to a number of complex limitations, to claim a foreign tax credit in respect of any non-refundable foreign withholding tax imposed on dividends received on the Shares or GDRs. If a U.S. Holder does not elect to claim a foreign tax credit for foreign taxes withheld, such holder may instead claim a deduction for U.S. federal income tax purposes in respect of such taxes, but only for a year in which such holder elects to do so for all creditable foreign income taxes. The rules governing the foreign tax credit are complex. U.S. Holders should consult their tax advisors regarding the availability of the foreign tax credit under their particular circumstances.

#### **Sale or Other Disposition of Shares or GDRs**

Subject to the discussion below under “—*Passive Foreign Investment Company Rules*,” a U.S. Holder will generally recognise gain or loss for U.S. federal income tax purposes upon the sale or other disposition of Shares or GDRs in an amount equal to the difference between the U.S. dollar value of the amount realised from such sale or other disposition and the U.S. Holder’s tax basis in such Shares or GDRs. Such gain or loss will generally be capital gain or loss. Capital gains of individuals and certain other non-corporate U.S. Holders recognised on the sale or other disposition of Shares or GDRs held for more than one year are generally eligible for a reduced rate of taxation. The gain or loss will generally be income or loss from sources within the United States for foreign tax credit limitation purposes. The deductibility of capital losses is subject to limitations.

A U.S. Holder’s adjusted tax basis in the Shares or GDRs will generally equal the U.S. dollar value of the purchase price for the Shares or GDRs, based on the prevailing exchange rate on the date of such purchase. The amount realised on a disposition of the Shares or GDRs in exchange for foreign currency will generally equal the U.S. dollar value of such currency translated at the spot exchange rate in effect on the date of the disposition. If, however, the Shares or GDRs are treated as traded on an “established securities market” for U.S. federal income tax purposes, a cash basis U.S. Holder (or, if it elects, an accrual basis U.S. Holder) will determine the U.S. dollar value of the purchase price for the Shares or GDRs or the amount realised on a disposition of the Shares or GDRs in exchange for non-U.S. currency by translating the amount paid or received at the spot exchange rate in effect on the settlement date of the purchase or disposition, as the case may be. Any such election by an accrual basis U.S. Holder must be applied consistently from year to year and cannot be changed without the consent of the IRS. A U.S. Holder’s tax basis in any non-U.S. currency received on a disposition of the Shares or GDRs will generally equal the U.S. dollar value of such currency on the date of receipt. Any gain or loss realised by a U.S. Holder on a subsequent conversion or other disposition of the non-U.S. dollar currency will generally be foreign currency gain or loss and treated as U.S. source ordinary income or loss. U.S. Holders should consult their tax advisors regarding the sale or other taxable disposition of the Shares or GDRs under their particular circumstances.

#### **Passive Foreign Investment Company Rules**

A non-U.S. corporation, such as the Company, will be classified as a passive foreign investment company (“**PFIC**”) for U.S. federal income tax purposes for any taxable year, if either (i) 75% or more of its gross income for such year consists of certain types of “passive” income or (ii) 50% or more of the value of its assets (determined on the basis of a quarterly average) during such year produce or are held for the production of passive income. Passive income generally includes dividends, interest, royalties, rents, annuities, net gains from the sale or exchange of property producing such

income, net foreign currency gains and gains from commodities transactions, other than gains derived from “qualified active sales” of commodities and “qualified hedging transactions” involving commodities, within the meaning of the applicable Regulations (the “**Commodity Exception**”). For this purpose, cash is categorised as a passive asset and the Company’s unbooked intangibles associated with active business activity are taken into account as a non-passive asset. The Company will be treated as owning its proportionate share of the assets and earning its proportionate share of the income of any other corporation in which the Company owns, directly, indirectly or constructively, 25% or more (by value) of the stock.

Based on the Company’s income and assets, the value of the Shares and GDRs and relying on the Commodity Exception, the Company does not believe that the Company was a PFIC, for U.S. federal income tax purposes, for the taxable year ended December 31, 2017, and do not anticipate the Company becoming a PFIC for the current taxable year or for the foreseeable future. Nevertheless, because PFIC status is a factual determination made annually after the close of each taxable year on the basis of the composition of the Company’s income and assets, there can be no assurance that the Company will not be a PFIC for the current taxable year or any future taxable year. Under circumstances where revenues from activities that produce passive income significantly increase relative to the Company’s revenues from activities that produce non-passive income, the Company’s risk of becoming classified as a PFIC may substantially increase. In addition, because the Company will value its goodwill based on the market value of the Shares or GDRs, a decrease in the market value of the Shares or GDRs may also result in the Company becoming a PFIC.

If the Company is a PFIC for any taxable year during which a U.S. Holder holds the Shares or GDRs, such holder will be subject to special tax rules with respect to any “excess distribution” that such holder receives on the Shares or GDRs and any gain such holder realises from a sale or other disposition (including a pledge) of our Shares or GDRs, unless such holder makes a “mark-to-market” election as discussed below. Distributions received by a U.S. Holder in a taxable year that are greater than 125% of the average annual distributions such holder received during the shorter of the three preceding taxable years or such holder’s holding period for the Shares or GDRs will be treated as an excess distribution. Under these special tax rules:

- the excess distribution or gain will be allocated rateably over the U.S. Holder’s holding period for the Shares or GDRs;
- amounts allocated to the current taxable year and any taxable years in the U.S. Holder’s holding period prior to the first taxable year in which the Company is classified as a PFIC (a “**pre-PFIC year**”) will be subject to tax as ordinary income; and
- amounts allocated to each prior taxable year, other than the current taxable year or a pre-PFIC year, will be subject to tax at the highest tax rate in effect applicable to the U.S. Holder for that year, and such amounts will be increased by an additional tax equal to interest on the resulting tax deemed deferred with respect to such years.

If the Company is a PFIC for any taxable year during which a U.S. Holder holds Shares or GDRs and any of the Company’s non-U.S. subsidiaries and consolidated affiliated entities are also PFICs, such holder will be treated as owning a proportionate amount (by value) of the shares of each such non-U.S. subsidiary classified as a PFIC for purposes of the application of these rules.

A U.S. Holder of “marketable stock” (as defined below) in a PFIC may make a mark-to-market election for such stock of a PFIC to elect out of the tax treatment discussed in the second preceding paragraph. If a U.S. Holder makes a valid mark-to-market election for the Shares or GDRs, the U.S. Holder will include in income each year an amount equal to the excess, if any, of the fair market value of the Shares or GDRs as of the close of such holder’s taxable year over such holder’s adjusted basis in such Shares or GDRs. The U.S. Holder is allowed a deduction for the excess, if any, of such holder’s adjusted basis in the Shares or GDRS over their fair market value as of the close of the taxable year to the extent of any net mark-to-market gains on the Shares or GDRs included in the U.S. Holder’s income for prior taxable years. Amounts included in the U.S. Holder’s income under a mark-to-market election, as well as gain on the actual sale or other disposition of the Shares or GDRs, are treated as ordinary income. Ordinary loss treatment also applies to the deductible portion of any mark-to-market loss on the Shares or GDRs, as well as to any loss realised on the actual sale or disposition of the Shares or GDRs, to the extent that the amount of such loss does not exceed the net mark-to-market gains previously included in income for such Shares or GDRs. The U.S. Holder’s basis in the Shares or GDRs will be adjusted to reflect any such income or loss amounts. If a U.S. Holder makes such a mark-to-market election, tax rules that apply to distributions by corporations which are not PFICs would apply to distributions by the Company (except that the lower applicable capital gains rate for qualified dividend income would not apply). If a

U.S. Holder makes a valid mark-to-market election, and the Company subsequently cease to be classified as a PFIC, such U.S. Holder will not be required to take into account the mark-to-market income or loss described above during any period that the Company is not classified as a PFIC.

The mark-to-market election is available only for “marketable stock” which is stock that is traded in other than de minimis quantities on at least 15 days during each calendar quarter (“**regularly traded**”) on a qualified exchange or other market, as defined in applicable Regulations. The Company expects that the GDRs will continue to be listed on the LSE, which is a qualified exchange for these purposes, and, consequently, assuming that the GDRs are regularly traded, if a U.S. Holder holds the GDRs, it is expected that the mark-to-market election would be available to such holder were the Company to become a PFIC. A mark-to-market election may not, however, be made with respect to the Shares as they are not marketable stock. Accordingly, if the Company is a PFIC during any year in which a U.S. Holder holds Shares, such holder will generally be subject to the special tax rules discussed above.

In addition, because, as a technical matter, a mark-to-market election cannot be made for any lower-tier PFICs that the Company may own, a U.S. Holder may continue to be subject to the PFIC rules with respect to such holder’s indirect interest in any investments held by the Company that are treated as an equity interest in a PFIC for U.S. federal income tax purposes.

The Company does not intend to provide information necessary for U.S. Holders to make qualified electing fund elections, which, if available, would result in tax treatment different from the general tax treatment for PFICs described above.

If a U.S. Holder owns the Shares or GDRs during any taxable year that the Company is a PFIC, such holder must generally file an annual report with the IRS. U.S. Holders should consult their tax advisors concerning the U.S. federal income tax considerations of holding and disposing of Shares or GDRs if the Company is or becomes a PFIC, including the availability and possibility of making a mark-to-market election.

***Information with Respect to Foreign Financial Assets***

Owners of “specified foreign financial assets” with an aggregate value in excess of \$50,000 (and in some circumstances, a higher threshold) may be required to file IRS Form 8938 (Statement of Specified Foreign Financial Assets) with respect to such assets with their tax returns. “Specified foreign financial assets” may include financial accounts maintained by foreign financial institutions, as well as any of the following, if they are held for investment and not held in accounts maintained by financial institutions: (i) stocks and securities issued by non-U.S. persons, (ii) financial instruments and contracts held for investment that have non-U.S. issuers or counterparties, and (iii) interests in foreign entities. U.S. Holders are urged to consult their tax advisors regarding the application of these rules to their ownership of the Shares or GDRs.

**THE PRECEDING DISCUSSION OF U.S. FEDERAL INCOME TAX CONSIDERATIONS IS INTENDED FOR GENERAL INFORMATION ONLY AND DOES NOT CONSTITUTE TAX ADVICE. U.S. HOLDERS SHOULD CONSULT THEIR TAX ADVISORS AS TO THE U.S. FEDERAL, STATE, LOCAL AND NON-U.S. TAX CONSIDERATIONS TO THEM OF THE OWNERSHIP AND DISPOSITION OF THE SHARES OR GDRS IN THEIR PARTICULAR CIRCUMSTANCES.**

## PLAN OF DISTRIBUTION

### Structure of the Offering

The Offering is being made by way of an offer of GDRs (1) within the United States to QIBs, as defined in, and in reliance on, Rule 144A under the Securities Act, or another exemption from, the registration requirements of the Securities Act and (2) outside the United States to institutional investors in “offshore transactions” as defined in, and in reliance on, Regulation S.

In the Offering the Selling Shareholder will offer up to 38,903,491 Shares in the form of GDRs, representing in aggregate approximately 15% of the total number of existing shares issued by the Company (including the Over-Allotment Option). Pursuant to the applicable securities market regulations of the Republic of Kazakhstan not less than 20% of the maximum number of Shares in the form of GDRs offered in the Offering shall also be offered for sale on the AIX. Therefore, the number of the Shares and GDRs sold in the AIX Offering will reduce the number of the GDRs available for sale in the Offering.

Pursuant to the Resolution of the Government of the Republic of Kazakhstan No. 661 dated 19 October 2018, the Selling Shareholder is authorised to sell up to 64,839,152 Securities, representing in aggregate approximately 25% of the total number of existing shares (the “**Authorised Limit**”). The Selling Shareholder may, subject to the exercise of the upsize option in consultation with the Joint Global Coordinators specified below, increase the maximum number of the Securities offered in the Offering and the AIX Offering by up to additional 25,935,661 Securities (“**Upsize Option**”). The final size of the Offering will be set out in the Pricing Statement.

The GDRs will be offered at the Offer Price Range and will be sold at the Final Offer Price.

The Company, the Selling Shareholder and the Managers intend to enter into the Underwriting Agreement on the Pricing Date in relation to the sale and offer of the GDRs. See “—*Underwriting Arrangements*” below.

Allocation of the GDRs will take place, and the Final Offer Price expected to be publicly announced on or about the Pricing Date. Pursuant to the Underwriting Agreement, the basis of allocations and the proportions in which purchasers under the Offering will receive the GDRs will be at the discretion of, and will be subject to final approval by, the Company and the Selling Shareholder.

The transaction related to the GDRs is expected to take place on or about the Pricing Date and the transfer of the GDRs will be settled within three business days from the Pricing Date. Payment for the GDRs is expected to be made in US dollars in same-day funds through the facilities of DTC, Euroclear and Clearstream, Luxembourg on the Closing Date. The GDRs will be issued after the Pricing Date according to the Deposit Agreements. See “*Terms and Conditions of the Global Depositary Receipts*”. Unconditional dealings in the GDRs on the London Stock Exchange are expected to commence on or about the Closing Date.

The timetable above may be subject to change. Certain events provided therein are beyond the control of the Company, the Selling Shareholder or the Managers. The Company, in agreement with the Managers, reserves the right to change the above timetable for the Global Offering. Information about any changes to the proposed timetable of the Global Offering will be notified to investors and, if necessary, supplements to the Prospectus will be made in accordance with applicable regulations.

### Offer Price

The GDRs are offered at the Offer Price Range of US\$11.60 to US\$15.40.

Commencing on 31 October 2018, a bookbuilding process for the GDRs will be carried out. During the bookbuilding process, the Managers will gauge the level of interest in the Global Offering on the part of investors and the price sensitivity of such investors in relation to the GDRs. Investors will be required to specify the number of the GDRs which they would be prepared to acquire and the related price for such GDRs. Such number of GDRs and the price at which investors express their interest will be recorded in a book managed by the Managers.

The GDRs are only to be sold at the Final Offer Price and only to those investors who subscribed GDRs at a price equal to, or higher than, the Final Offer Price.

The Managers will notify investors with respect to the Final Offer Price on the Pricing Date. The relevant pricing information will be published on the Company’s website and through the RNS.

## **Underwriting Arrangements**

The Company, the Selling Shareholder and the Managers intend to enter into the Underwriting Agreement on or about the Pricing Date with respect to the Offering subject to the satisfaction of certain conditions, including the execution of a pricing supplement setting out, among other things, the size of the Offering and the Final Offer Price, once the Final Offer Price has been determined as described in “—Offer Price”. Upon the execution of the Underwriting Agreement, the Selling Shareholder will, subject to the terms and conditions set out therein, agree to sell the GDRs and each Manager will agree, severally but not jointly, to procure purchasers for, or, failing that, to purchase themselves, the GDRs at the Final Offer Price in accordance with their respective commitments under the Underwriting Agreement.

The GDRs will be represented by a Rule 144A Master GDR and a Regulation S Master GDR and will be subject to certain restrictions as further discussed in “*Terms and Conditions of the Global Depositary Receipts*”.

The Managers will receive total commissions of approximately US\$15.6 million, assuming the Final Offer Price at the mid-point of the Offer Price Range, the Over-allotment Option is exercised in full, the Upsize Option has not been exercised and full payment of the discretionary fee to the Managers, which commissions are payable by the Selling Shareholder.

In the Underwriting Agreement, the Company and the Selling Shareholder will make certain representations and warranties, and the Company and the Selling Shareholder will agree to severally indemnify in respect of itself the Managers, against certain liabilities, including liability under the Securities Act. If these indemnities are unenforceable, the Company and the Selling Shareholder will agree to severally contribute in respect of itself to any payments that the Managers are required to make in respect of the liabilities against which the Company and the Selling Shareholder, as applicable, will have agreed to indemnify them.

The Managers are offering the GDRs, subject to prior sale, when, as and if delivered to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the Shares and other conditions contained in the Underwriting Agreement, such as the receipt by the Managers of officers’ certificates and legal opinions.

The Underwriting Agreement will provide that, upon the occurrence of certain events, such as the suspension or limitation of trading on the London Stock Exchange or AIX or a material adverse change in the Group’s financial condition or business, and on certain other conditions, the Managers have the right, collectively but not individually, to withdraw from the Offering before delivery of GDRs.

## **Stabilisation**

In connection with the Offering, the Stabilising Manager, or persons acting on its behalf, may (but will be under no obligation to), to the extent permitted by applicable law, over-allot the GDRs or effect other stabilisation transactions with a view to supporting the market price of the GDRs at a level higher than that which might otherwise prevail in the open market for a limited period after the Closing Date. However, the Stabilising Manager is not required to enter into such transactions. Such stabilisation, if commenced, may be discontinued at any time without prior notice, and may only be undertaken during the Stabilisation Period.

In connection with the Offering, the Stabilising Manager or any persons acting for the Stabilising Manager, may, for stabilisation purposes, over-allot GDRs up to a maximum of 15% of the total number of GDRs being sold in the Offering. For the purposes of allowing the Stabilising Manager to cover short positions resulting from any such over-allotments and/or from sales of GDRs effected by the Stabilising Manager during the Stabilisation Period, the Selling Shareholder has granted Managers the Over-Allotment Option pursuant to which the Joint Global Coordinators, on behalf of the Managers, may require the Selling Shareholder to sell additional GDRs, up to a maximum of 15% of the total number of GDRs being sold in the Offering, at the Final Offer Price.

The Over-allotment Option is exercisable in whole or in part on one occasion only during the Stabilisation Period for the purposes of meeting over-allotments that may be made, if any, in connection with the Offering and short positions resulting from stabilisation transactions upon written notice from the Joint Global Coordinators, on behalf of the Managers, to the Selling Shareholder and to the extent not previously exercised by the Joint Global Coordinators may be terminated by the Joint Global Coordinators at any time. Any GDRs made available pursuant to the Over-Allotment Option will be issued on the same terms and conditions as the GDRs being issued in the Offering and will form a single class for all purposes with the other GDRs.

Save as required by law or regulation, neither the Stabilising Manager nor any of its agents intends to disclose the extent of any over-allotments made and/or stabilisation transactions conducted in relation to the Offering.



## **Lock-up Arrangements**

Each of the Company and the Selling Shareholder has undertaken to each of the Managers that from the date of the Underwriting Agreement until 180 days from the date of the LSE Admission, neither it nor any of its subsidiaries or their affiliates nor any person acting on its behalf will, subject to certain exceptions, without the prior written consent of the Joint Global Coordinators (on behalf of the Managers), (i) issue, offer, pledge, sell, contract to sell, sell or grant any option, right, warrant or contract to purchase, exercise any option to sell, purchase any option or contract to sell, or lend or otherwise transfer or dispose of any Shares, any GDRs or other shares of the Company, or any securities convertible into or exercisable or exchangeable for Shares, GDRs or other shares of the Company, or file any registration statement under the Securities Act or any similar document with any other securities regulator, stock exchange, or listing authority with respect to any of the foregoing; or (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of any Shares, any GDRs or other shares of the Company, whether any such transaction described in sub-clause (i) or (ii) above is to be settled by delivery of Shares, GDRs or other securities, in cash or otherwise; or (iii) publicly announce such an intention to effect any such transaction.

## **AIX Offering**

Separately from the Offering, the Selling Shareholder is offering Shares and GDRs to institutional and retail investors in Kazakhstan through the facilities of the AIX pursuant to its regulations and settlement procedures. The AIX Offering will be led by JSC Halyk Finance.

## **Other Relationships**

The Managers and their respective affiliates have engaged in transactions with and performed various investment banking, financial advisory and other services for the Selling Shareholder and its affiliates, for which they received customary fees, and they and their respective affiliates may provide such services for the Company and the Selling Shareholder and their respective affiliates in the future. As a result, the Managers and their respective affiliates may have a commercial interest in continuing to provide services to the Company and the Selling Shareholder that may be material to the Offering.

In connection with the Offering, each of the Managers and any affiliate, acting as an investor for its own account, may take up GDRs and in that capacity may retain, purchase or sell for its own account such GDRs and any related investments and may offer or sell such GDRs or other investments otherwise than in connection with the Offering. Accordingly, references in this Prospectus to the GDRs being offered or placed should be read as including any offering or placement of GDRs to the Managers and any affiliate acting in such capacity. None of the Managers intends to disclose the extent of any such investment or transactions otherwise than to the Company and the Selling Shareholder and in accordance with any legal or regulatory obligation to do so.

## SELLING RESTRICTIONS

### General

No action has been or will be taken in any jurisdiction that would permit a public offering of the GDRs, or possession or distribution of this Prospectus or any other offering material in any country or jurisdiction where action for that purpose is required. Accordingly, the GDRs may not be offered or sold, directly or indirectly, and neither this Prospectus nor any other offering material or advertisement in connection with the GDRs may be distributed or published in or from any country or jurisdiction except under circumstances that will result in compliance with any and all applicable rules and regulations of any such country or jurisdiction. Persons into whose possession this Prospectus comes should inform themselves about and observe any restrictions on the distribution of this Prospectus and the offer and sale of the GDRs offered in the Offering, including those in the paragraphs below. Any failure to comply with these restrictions may constitute a violation of the securities laws of any such jurisdiction. This Prospectus does not constitute an offer to subscribe for or buy any of the GDRs offered in the Offering to any person in any jurisdiction to whom it is unlawful to make such offer or solicitation in such jurisdiction.

### United States

This Prospectus is not a public offering (within the meaning of the Securities Act) of securities in the United States. The GDRs have not been and will not be registered under the Securities Act or with any securities regulatory authority of any state of the United States for offer or sale as part of their distribution and may not be offered or sold within the United States unless the GDRs are registered under the Securities Act or an exemption from the registration requirements of the Securities Act is available. In the United States the GDRs will be sold only to persons reasonably believed to be QIBs as defined in, and in reliance on, Rule 144A under the Securities Act or pursuant to another exemption from, or in a transaction not subject to, the registration requirements under the Securities Act and applicable state securities laws. All offers and sales of the GDRs outside the United States will be made in compliance with Regulation S under the Securities Act and in accordance with applicable law.

In addition, until the end of the fortieth calendar day after commencement of the Offering, an offering or sale of GDRs within the United States by a dealer (whether or not participating in the Offering) may violate the registration requirements of the Securities Act if such offer or sale is made otherwise than in accordance with Rule 144A under the Securities Act.

The Offering of the GDRs is being made in the United States through United States broker-dealer affiliates of the Managers only.

Each acquirer of GDRs within the United States, by accepting delivery of this document, will be deemed to have represented, agreed and acknowledged that it has received a copy of this document and such other information as it deems necessary to make an investment decision.

### United Kingdom

This Prospectus and any other material in relation to the Offering described herein is only being distributed to, and is only directed at persons in the United Kingdom who are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive (“**qualified investors**”) that are also: (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the “**Order**”); (ii) high net worth entities or other persons falling within Article 49(2)(a) to (d) of the Order; or (iii) persons to whom distributions may otherwise lawfully be made (all such persons together being referred to as “**Relevant Persons**”) or otherwise in circumstances which do not require publication by the Company of a prospectus pursuant to section 85(1) of the FSMA. The GDRs are only available to, and any investment or investment activity to which this Prospectus relates is available only to, and will be engaged in only with, Relevant Persons). This Prospectus and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other person in the United Kingdom. Persons who are not Relevant Persons should not take any action on the basis of this Prospectus and should not rely on it.

### EEA

In relation to each EEA Relevant Member State, no offer to the public of any GDRs has been, or will be, made in that EEA Relevant Member State prior to the publication of the Prospectus which has been approved by the competent authority in the that EEA Relevant Member State in accordance with the Prospectus Directive, except that an offer to the public in that EEA Relevant Member State of any GDRs may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that EEA Relevant Member State:

- (a) to legal entities which are qualified investors as defined under the Prospectus Directive;

- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the Joint Global Coordinators for any such offer; or
- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive,

*provided that* no such offer of GDRs shall result in a requirement for the Company or any Manager to publish a prospectus pursuant to Article 3 of the Prospectus Directive or supplement a prospectus pursuant to Article 16 of the Prospectus Directive, and each person in an EEA Relevant Member State who initially acquires any GDRs or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with the Company and the Managers that it is a qualified investor within the meaning of the law in that EEA Relevant Member State implementing Article 2(1)(e) of the Prospectus Directive.

In the case of any GDRs being offered to a financial intermediary as that term is used in Article 3(2) of the Prospectus Directive, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the GDRs acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer to the public other than their offer or resale in an EEA Relevant Member State to qualified investors, in circumstances in which the prior consent of the Managers has been obtained to each such proposed offer or resale.

The Company, the Managers and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements.

For the purposes of this provision, the expression an “**offer to the public**” in relation to any GDRs in any EEA Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any GDRs to be offered so as to enable an investor to decide to purchase any GDRs, as the same may be varied in that EEA Relevant Member State by any measure implementing the Prospectus Directive in that EEA Relevant Member State, the expression “**Prospectus Directive**” means Directive 2003/71/EC (and amendments thereto, including the Directive 2010/73/EU), and includes any relevant implementing measure in each EEA Relevant Member State.

### **Russia**

Neither the GDRs nor this Prospectus have been, or are intended to be, registered with the Bank of Russia or any other state bodies that may from time to time be responsible for such registration. The GDRs will not be offered, transferred or sold as part of their initial distribution or at any time thereafter to or for the benefit of any persons (including legal entities) resident, incorporated, established or having their usual residence in Russia or to any person located within the territory of Russia unless and to the extent otherwise permitted under Russian law. It is understood and agreed that the Managers or their affiliates may distribute this Prospectus to “qualified investors” (as defined in Russian law) in a manner that does not constitute an “advertisement” (as defined under Russian law) of the GDRs and may sell the GDRs to “qualified investors” (as defined in Russian law) in a manner that does not constitute a “placement” or a “public circulation” of the GDRs in Russia (as defined in Russian law).

### **Switzerland**

The GDRs may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (“**SIX**”) or on any other stock exchange or regulated trading facility in Switzerland. This Prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this Prospectus nor any other offering or marketing material relating to the GDRs or the Offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this Prospectus nor any other offering or marketing material relating to the offer, the Company or the GDRs have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of the GDRs will not be supervised by, the Swiss Financial Market Supervisory Authority (FINMA), and the offer of Securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (“**CISA**”). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of the GDRs.

### **Canada**

The GDRs may be sold by underwriters who are registered dealers in Canada or who are relying on the international dealer exemption under National Instrument 31-1-3 Registration Requirements, Exemptions and Ongoing Registrant

Obligations (“NI 31-103”) only to purchasers that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario) who are purchasing or deemed to be purchasing as principal, and are permitted clients, as defined in NI 31-103. Any resale of the GDRs must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

### **Australia**

ASIC has not reviewed this document or commented on the merits of investing in the GDRs nor has any other Australian regulator. No offer of the GDRs is being made in Australia, and the distribution or receipt of this document in Australia does not constitute an offer of securities capable of acceptance by any person in Australia, except in the limited circumstances described below relying on certain exemptions in the Corporations Act. This document may only be provided in Australia to select investors who are able to demonstrate that they are “wholesale clients” for the purposes of Chapter 7 of the Corporations Act and fall within one or more of the following categories: “sophisticated investors” or “professional investors” who meet the criteria set out in, respectively, section 708(8) and section 708(11) and as defined in section 9 of the Corporations Act, experienced investors who receive the offer through an Australian financial services licensee, where all of the criteria set out in section 708(10) of the Corporations Act have been satisfied or senior managers of the Company (or a related body, including a subsidiary), their spouse, parent, child, brother or sister, or a body corporate controlled by any of those persons, as referred to in section 708(12) of the Corporations Act.

### **China**

The GDRs are not being offered or sold, directly or indirectly, in the People’s Republic of China (for such purposes, not including the Hong Kong and Macau Special Administrative Regions of Taiwan), except as permitted by the securities laws of the People’s Republic of China.

### **Singapore**

This Prospectus has not been and will not be registered as a prospectus with the Monetary Authority of Singapore and the securities will be offered pursuant to exemptions under the Securities and Futures Act, Chapter 289 of Singapore (the “SFA”). Accordingly, this Prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the securities may not be circulated or distributed, nor may the securities be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (1) to an institutional investor under Section 274 of the SFA; (2) to a relevant person pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions, specified in Section 275 of the SFA or (3) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the securities are subscribed or purchased under Section 275 by a relevant person which is: (a) a corporation (which is not an accredited investor) (as defined in Section 4A of the SFA) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary is an accredited investor, securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries’ rights and interest in that trust shall not be transferable for 6 months after that corporation or that trust has acquired the securities under Section 275 of the SFA except:

- (i) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- (ii) where no consideration is or will be given for the transfer;
- (iii) where the transfer is by operation of law;
- (iv) as specified in Section 276(7) of the SFA; or
- (v) as specified in Regulation 32 of the Securities and Futures (Offers and Investments) (Shares and Debentures) Regulations 2005 of Singapore.

### **DIFC**

This Prospectus related to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority (“DFSA”). This Prospectus is intended for distribution only to persons of a type specified in the

Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this Prospectus nor taken steps to verify the information set forth herein and has no responsibility for the Prospectus. The GDRs to which this Prospectus relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the GDRs offered should conduct their own due diligence on the GDRs. If you do not understand the contents of this Prospectus you should consult an authorised financial advisor.

### **Hong Kong**

The GDRs will not be offered or sold in Hong Kong, by means of any document, other than (a) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (b) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance.

No advertisement, invitation or document relating to the GDRs, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong has been issued or has been possessed for the purposes of issue, or will be issued or possessed for the purposes of issue, whether in Hong Kong or elsewhere (except if permitted to do so under the securities laws of Hong Kong), other than with respect to GDRs which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

### **Japan**

No registration pursuant to Article 4, paragraph 1 of the Financial Instruments and Exchange Act of Japan (Law No. 25 of 1948) (the “FIEA”) has been made or will be made with respect to the solicitation of the application for the acquisition of the GDRs as such solicitation falls within a Solicitation for Small Number Investors (as defined in Article 23-13 paragraph 4 of the FIEA). Accordingly, the GDRs have not been, directly or indirectly, offered, issued or delivered and will not be, directly or indirectly, offered, issued or delivered in Japan or to, or for the benefit of, any resident in Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organised under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly in Japan or to, or for the benefit of, any resident of Japan except in compliance with the requirements for the Small Number Private Placement Exemption under of Article 2, paragraph 3, item 2(c) of the FIEA and the other applicable laws and regulations of Japan.

Pursuant to the Small Number Private Placement Exemption, any transfer of the GDRs by a resident in Japan is prohibited other than by way of transfer of all GDRs (but not in part) that such resident in Japan holds.

### **Qatar**

This Prospectus and any other material in relation to the Offering do not, and are not intended to, constitute an invitation or an offer of securities in the State of Qatar (including the Qatar Financial Centre) and accordingly should not be construed as such. The GDRs have not been, and shall not be, offered, sold or delivered at any time, directly or indirectly, in the State of Qatar. Any offering of the GDRs shall not constitute a public offer of securities in the State of Qatar.

By receiving this document, the person or entity to whom it has been provided understands, acknowledges and agrees that: (i) neither this document nor the GDRs have been registered, considered, authorised or approved by the Qatar Central Bank, the Qatar Financial Markets Authority, the Qatar Financial Centre Regulatory Authority or any other authority or agency in the State of Qatar; (ii) neither the Company, the Selling Shareholder, nor persons representing them are authorised or licensed by the Qatar Central Bank, the Qatar Financial Markets Authority, the Qatar Financial Centre Regulatory Authority or any other authority or agency in the State of Qatar, to market or sell the GDRs within the State of Qatar; (iii) this document may not be provided to any person other than the original recipient and is not for general circulation in the State of Qatar; and (iv) no agreement relating to the sale of the GDRs shall be consummated within the State of Qatar.

No marketing of the GDRs has been or will be made from within the State of Qatar and no subscription to the GDRs may or will be consummated within the State of Qatar. Any applications to invest in the GDRs shall be received from outside of Qatar. This document shall not form the basis of, or be relied on in connection with, any contract in Qatar. Neither the Company, the Selling Shareholder, nor person representing them are, by distributing this document, advising individuals resident in the State of Qatar as to the appropriateness of investing in or purchasing securities or other financial products. Nothing contained in this document is intended to constitute investment, legal, tax, accounting or other professional advice in, or in respect of, the State of Qatar.



### **Saudi Arabia**

Any offer of GDRs to any investor in the Kingdom of Saudi Arabia or who is a Saudi person shall comply with Article 11 or Article 12 or Article 13 or Article 15 of the “Offers of Securities Regulations” as issued by the Board of the Capital Market Authority resolution number 2-11-2004 dated 4 October 2004 and amended by the Board of the Capital Market Authority resolution number 3-151-2016 dated 21 December 2016.

### **UAE (excluding the DIFC and the ADGM)**

The GDRs have not been and will not be offered, sold or publicly promoted or advertised in the United Arab Emirates other than in compliance with any laws applicable in the United Arab Emirates governing the issue, offering, promotion and sale of securities.

### **Oman**

This Prospectus has not been approved by the Capital Market Authority of Oman (the “CMA”) or any other regulatory body or authority in the Sultanate of Oman (“Oman”), nor have the Managers received any authorisation, licensing or approval from the CMA or any other regulatory authority in Oman, to market, offer, sell, the GDRs within Oman.

No marketing, offering, selling or distribution of any interests in the GDRs has been or will be made from within Oman and no subscription for any Securities may or will be consummated within Oman. None of the Managers is a company licensed by the CMA to provide investment advisory, brokerage, or portfolio management services in Oman, nor a bank licensed by the Central Bank of Oman to provide investment banking services in Oman. None of the Managers advise persons or entities resident or based in Oman as to the appropriateness of investing in or purchasing or selling securities or other financial products.

The GDRs offered under this Prospectus have not and will not be listed on any stock exchange in Oman.

Nothing contained in this Prospectus is intended to constitute Omani investment, legal, tax, accounting or other professional advice. This Prospectus are for your information only, and nothing herein is intended to endorse or recommend a particular course of action. You should consult with an appropriate professional for specific advice on the basis of your situation.

## TRANSFER RESTRICTIONS

### *Rule 144A GDRs*

Each purchaser of GDRs located in the United States pursuant to Rule 144A, by its acceptance of delivery of this Prospectus, will be deemed to have represented, agreed and acknowledged as follows:

1. The purchaser: (1) is a QIB as that term is defined in Rule 144A under the Securities Act; (2) is aware that, and each beneficial owner of such GDRs has been advised that, the sale to it is being made in reliance on Rule 144A under the Securities Act or another exemption from, or transaction not subject to, the registration requirements of the Securities Act; (3) is acquiring such GDRs for its own account or for the account of one or more QIBs; and (4) if it is acquiring such GDRs for the account of one or more QIBs, has sole investment discretion with respect to each such account and has full power to make the acknowledgements, representations and agreements herein on behalf of each such account.
2. The purchaser is aware that the GDRs purchased pursuant to Rule 144A under the Securities Act or another exemption from, or transaction not subject to, the registration requirements of the Securities Act have not been and will not be registered under the Securities Act or with any securities regulatory authority of any state of the United States and are subject to restrictions on transfer and are being offered in the United States only in transactions not involving any public offering in the United States and are Restricted Securities.
3. The purchaser understands that the Rule 144A GDRs will initially be represented by a Master Rule 144A GDR and, before any beneficial interests in Rule 144A GDRs represented by the Master Rule 144A GDR may be transferred to a person who takes delivery in the form of a beneficial interest in Regulation S GDRs represented by the Master Regulation S GDR, the transferor will be required to provide certain written certifications.
4. The purchaser agrees (or, if it is acting for the account of another person, such person has confirmed to it that such person agrees) that it (or such person) will not offer, resell, pledge or otherwise transfer the GDRs purchased pursuant to Rule 144A under the Securities Act or another exemption from, or transaction not subject to, the registration requirements of the Securities Act, except in accordance with the following legend, which the GDRs purchased pursuant to Rule 144A under the Securities Act or another exemption from, or transaction not subject to, the registration requirements of the Securities Act will bear unless otherwise determined by the Company and the Depository in accordance with applicable law:

THIS RULE 144A GDR CERTIFICATE, THE RULE 144A GDRS EVIDENCED HEREBY AND THE ORDINARY SHARES OF JSC NATIONAL ATOMIC COMPANY KAZATOMPROM REPRESENTED HEREBY (THE “**SHARES**”) HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE UNITED STATES SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”), OR WITH ANY SECURITIES REGULATORY AUTHORITY OF ANY STATE OR OTHER JURISDICTION OF THE UNITED STATES. THE HOLDERS AND BENEFICIAL OWNERS HEREOF, BY PURCHASING OR OTHERWISE ACQUIRING THIS RULE 144A GDR CERTIFICATE, THE RULE 144A GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY, ACKNOWLEDGE THAT THAT SUCH RULE 144A GDR CERTIFICATE, THE RULE 144A GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT AND AGREE FOR THE BENEFIT OF JSC NATIONAL ATOMIC COMPANY KAZATOMPROM AND THE DEPOSITARY THAT THIS RULE 144A GDR CERTIFICATE, THE RULE 144A GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY MAY BE REOFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY IN COMPLIANCE WITH THE SECURITIES ACT AND APPLICABLE LAWS OF THE STATES, TERRITORIES AND POSSESSIONS OF THE UNITED STATES GOVERNING THE OFFER AND SALE OF SECURITIES AND ONLY (1) IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH RULE 903 OR RULE 904 OF REGULATION S UNDER THE SECURITIES ACT, (2) TO A PERSON WHOM THE HOLDER AND BENEFICIAL OWNER REASONABLY BELIEVE IS A QUALIFIED INSTITUTIONAL BUYER (WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT) PURCHASING FOR ITS OWN ACCOUNT OR FOR THE ACCOUNT OF ANOTHER QUALIFIED INSTITUTIONAL BUYER IN A TRANSACTION MEETING THE REQUIREMENTS OF RULE 144A, (3) PURSUANT TO AN EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT PROVIDED BY RULE 144 UNDER THE SECURITIES ACT (IF AVAILABLE) OR (4) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT. THE HOLDER OF THE GDRS WILL, AND EACH SUBSEQUENT HOLDER IS REQUIRED TO, NOTIFY ANY SUBSEQUENT PURCHASER OF SUCH GDRS OF THE RESALE RESTRICTIONS REFERRED TO ABOVE.

THE BENEFICIAL OWNER OF SHARES RECEIVED UPON CANCELLATION OF ANY RULE 144A GDR MAY NOT DEPOSIT OR CAUSE TO BE DEPOSITED SUCH SHARES INTO ANY DEPOSITARY RECEIPT FACILITY IN RESPECT OF SHARES ESTABLISHED OR MAINTAINED BY A DEPOSITARY BANK, OTHER THAN A RULE 144A RESTRICTED DEPOSITARY RECEIPT FACILITY, SO LONG AS SUCH SHARES ARE “RESTRICTED SECURITIES” WITHIN THE MEANING OF RULE 144(a)(3) UNDER THE SECURITIES ACT. NO REPRESENTATION CAN BE MADE AS TO THE AVAILABILITY OF THE EXEMPTION PROVIDED BY RULE 144 UNDER THE SECURITIES ACT FOR RESALE OF THE SHARES OR ANY RULE 144A GDRS.

EACH HOLDER AND BENEFICIAL OWNER, BY ITS ACCEPTANCE OF THIS RULE 144A GDR CERTIFICATE OR A BENEFICIAL INTEREST IN THE RULE 144A GDRS EVIDENCED HEREBY, AS THE CASE MAY BE, REPRESENTS FOR THE BENEFIT OF JSC NATIONAL ATOMIC COMPANY KAZATOMPROM AND THE DEPOSITARY NAMED BELOW THAT IT UNDERSTANDS AND AGREES TO THE FOREGOING RESTRICTIONS.

5. For so long as Shares or GDRs are Restricted Securities, it will not deposit such Shares or GDRs into any depositary receipt facility in respect of shares established and maintained by a depositary bank other than a Rule 144A restricted depositary receipt facility.
6. The Company, the Managers, the Depositary and their respective affiliates, and others will rely upon the truth and accuracy of the foregoing acknowledgements, representations and agreements.

**Prospective purchasers are hereby notified that the sellers of the GDRs purchased pursuant to Rule 144A under the Securities Act may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A under the Securities Act.**

#### ***Regulation S GDRs***

Each purchaser of the Regulation S GDRs outside the United States pursuant to Regulation S will be deemed to have represented, agreed and acknowledged as follows (terms used in this paragraph that are defined in Regulation S are used herein as defined therein):

1. The purchaser is, at the time of the offer to it of GDRs and at the time the buy order originated, outside the United States for the purposes of Rule 903 under the Securities Act;
2. The purchaser is aware that the Regulation S GDRs have not been and will not be registered under the Securities Act or with any securities regulatory authority of any state of the United States and are being offered outside the United States in reliance on Regulation S;
3. Any offer, sale, pledge or other transfer made other than in compliance with the above-stated restrictions shall not be recognised by the Company in respect of the Regulation S GDRs;
4. The purchaser understands that the Regulation S GDRs and the Regulation S Master GDR will bear a legend substantially to the following effect:

THIS REGULATION S GDR CERTIFICATE, THE REGULATION S GDRS EVIDENCED HEREBY AND THE ORDINARY SHARES OF JSC NATIONAL ATOMIC COMPANY KAZATOMPROM REPRESENTED THEREBY (THE “**SHARES**”) HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE UNITED STATES SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”), OR WITH ANY SECURITIES REGULATORY AUTHORITY OF ANY STATE OR OTHER JURISDICTION OF THE UNITED STATES. THE HOLDERS AND THE BENEFICIAL OWNERS HEREOF, BY PURCHASING OR OTHERWISE ACQUIRING THIS REGULATION S GDR CERTIFICATE, THE REGULATION S GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY, ACKNOWLEDGE THAT SUCH REGULATION S GDR CERTIFICATE, THE REGULATION S GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT AND AGREE FOR THE BENEFIT OF JSC NATIONAL ATOMIC COMPANY KAZATOMPROM AND THE DEPOSITARY THAT THIS REGULATION S GDR CERTIFICATE, THE REGULATION S GDRS EVIDENCED HEREBY AND THE SHARES REPRESENTED THEREBY MAY BE REOFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY IN COMPLIANCE WITH THE SECURITIES ACT AND APPLICABLE LAWS OF THE STATES, TERRITORIES AND POSSESSIONS OF THE UNITED STATES GOVERNING THE OFFER AND SALE OF SECURITIES.

5. It understands that the Master Regulation S GDR and the Regulation S GDRs will initially be represented by a Master Regulation S GDR and, before any beneficial interest in the Regulation S GDRs represented by the Master Regulation S GDR may be transferred to a person who takes delivery in the form of a beneficial interest in the Rule 144A GDRs represented by the Master Rule 144A GDR, the transferor will be required to provide certain written certifications; and
6. The Company, the Managers, the Depositary and their respective affiliates and others will rely upon the truth and accuracy of the foregoing acknowledgements, representations and agreements.

If a purchaser of GDRs is acquiring such GDRs as a fiduciary or agent for one or more investor accounts, it represents that it has sole investment discretion with respect to each such account and it has full power to make the foregoing representations and agreements on behalf of each account.

***Other Provisions regarding Transfers of the GDRs***

Interests in the Rule 144A GDRs may be transferred to a person whose interest in such GDRs is subsequently represented by a Regulation S GDR only upon receipt by the Depositary of written certification (in the form provided in the Deposit Agreements) from the transferor to the effect that, amongst other things, such transfer is being made in accordance with Regulation S. Interests in Regulation S GDRs may be transferred to a person whose interest in such GDRs is subsequently represented by a Rule 144A GDR only upon receipt by the Depositary of written certifications from the transferor (in the forms provided in the Deposit Agreements) to the effect that, amongst other things, such transfer is being made in accordance with Rule 144A. Any interest in GDRs represented by one of the Master GDRs that is transferred to a person whose interest in such GDRs is subsequently represented by the other Master GDR will, upon transfer, cease to be an interest in the GDRs represented by such first Master GDR and, accordingly, will thereafter be subject to all transfer restrictions and other procedures applicable to interests in GDRs represented by such other Master GDR for so long as it remains such an interest.

## SETTLEMENT AND TRANSFER

### **Clearing and Settlement of GDRs**

Custodial and depositary links have been established between Euroclear, Clearstream, Luxembourg and DTC as the U.S. Clearing Agent to facilitate the initial issue of the GDRs and cross-market transfers of the GDRs associated with secondary market trading.

### **The Clearing Systems**

#### ***Euroclear and Clearstream, Luxembourg***

Euroclear and Clearstream, Luxembourg each hold securities for participating organisations and facilitate the clearance and settlement of securities transactions between their respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream, Luxembourg provide to their respective participants, amongst other things, services for safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Euroclear and Clearstream, Luxembourg participants are financial institutions throughout the world, including underwriters, securities brokers and dealers, banks, trust companies, clearing corporations and certain other organisations. Euroclear and Clearstream, Luxembourg have established an electronic bridge between their two systems across which their respective customers may settle trades with each other. Indirect access to Euroclear or Clearstream, Luxembourg is also available to others, such as banks, brokers, dealers and trust companies which clear through or maintain a custodial relationship with a Euroclear or Clearstream, Luxembourg participant, either directly or indirectly.

Distributions of dividends and other payments with respect to book-entry interests in the GDRs held through Euroclear or Clearstream, Luxembourg will be credited, to the extent received by the Depositary, to the cash accounts of Euroclear or Clearstream, Luxembourg participants in accordance with the relevant system's rules and procedures.

#### ***The U.S. Clearing Agent***

The U.S. Clearing Agent has advised the Company as follows: the U.S. Clearing Agent is a limited-purpose trust company organised under the laws of the State of New York, a "banking organisation" within the meaning of the New York Banking Law, a member of the United States Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act, the U.S. Clearing Agent holds securities for the U.S. Clearing Agent participants and facilitates the clearance and settlement of securities transactions between the U.S. Clearing Agent participants through electronic computerised book-entry changes in the U.S. Clearing Agent participants' accounts, the U.S. Clearing Agent participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organisations. Indirect access to the U.S. Clearing Agent system is also available to others such as securities brokers and dealers, banks, and trust companies that clear through or maintain a custodial relationship with a the U.S. Clearing Agent participant, either directly or indirectly.

Holders of book-entry interests in the GDRs holding through the U.S. Clearing Agent will receive, to the extent received by the Depositary, all distributions of dividends or other payments with respect to book-entry interests in the GDRs from the Depositary through the U.S. Clearing Agent and the U.S. Clearing Agent participants. Distributions in the United States will be subject to relevant U.S. tax laws and regulations. See "*Taxation—United States Taxation*".

As the U.S. Clearing Agent can act on behalf of the U.S. Clearing Agent direct participants only, who in turn act on behalf of the U.S. Clearing Agent indirect participants, the ability of beneficial owners who are indirect participants to pledge book-entry interests in the GDRs to persons or entities that do not participate in the U.S. Clearing Agent, or otherwise take actions with respect to book-entry interests in the GDRs, may be limited.

#### ***Registration and Form***

Book-entry interests in the GDRs held through Euroclear and Clearstream, Luxembourg will be represented by the Regulation S Master GDR registered in the name of Citivic Nominees Limited, as nominee for Citibank Europe plc, as common depositary for Euroclear and Clearstream, Luxembourg. Book-entry interests in the GDRs held through the U.S. Clearing Agent will be represented by the Rule 144A Master GDR registered in the name of Cede & Co., as nominee for the U.S. Clearing Agent, which will be held by the Depositary as custodian for the U.S. Clearing Agent. As necessary, the Depositary will adjust the amounts of GDRs on the relevant register for the accounts of the common nominee and nominee, respectively, to reflect the amounts of GDRs held through Euroclear, Clearstream, Luxembourg and the U.S. Clearing Agent, respectively. Beneficial ownership in the GDRs will be held through financial institutions, as direct and indirect participants in Euroclear, Clearstream, Luxembourg and the U.S. Clearing Agent.



The aggregate holdings of book-entry interests in the GDRs in Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent will be reflected in the book-entry accounts of each such institution. Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent, as the case may be, and every other intermediate holder in the chain to the beneficial owner of book-entry interests in the GDRs, will be responsible for establishing and maintaining accounts for their participants and customers having interests in the book-entry interests in the GDRs. The Depository will be responsible for maintaining a record of the aggregate holdings of GDRs registered in the name of the common depository for Euroclear and Clearstream, Luxembourg and the nominee for the U.S. Clearing Agent. The Depository will be responsible for ensuring that payments received by it from the Company for holders holding through Euroclear and Clearstream, Luxembourg are credited to Euroclear or Clearstream, Luxembourg, as the case may be, and the Depository will also be responsible for ensuring that payments received by it from the Company for holders holding through the U.S. Clearing Agent are received by the U.S. Clearing Agent. The address for the U.S. Clearing Agent is 55 Water Street, New York City, U.S. The address for Euroclear is 1 Boulevard du Roi Albert II, B-1210 Brussels, Belgium. The address for Clearstream, Luxembourg is 42 Avenue J.F. Kennedy, L-1855 Luxembourg, Luxembourg.

The Company will not impose any fees in respect of the GDRs; however, holders of book-entry interests in the GDRs may incur fees normally payable in respect of the maintenance and operation of accounts in Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent and certain fees and expenses payable to the Depository in accordance with the terms of the Deposit Agreements.

## **Global Clearing and Settlement Procedures**

### ***Initial Settlement***

The GDRs will be in global form evidenced by the two Master GDRs. Purchasers electing to hold book-entry interests in the GDRs through Euroclear and Clearstream, Luxembourg accounts will follow the settlement procedures applicable to depository receipts, the U.S. Clearing Agent participants acting on behalf of purchasers electing to hold book-entry interests in the GDRs through the U.S. Clearing Agent will follow the delivery practices applicable to depository receipts.

### ***Transfer Restrictions***

For a description of the transfer restrictions relating to the GDRs, see “*Terms and Conditions of the Global Depository Receipts—Transfer and Ownership*” and “*Transfer Restrictions*”.

### ***Trading between Euroclear and Clearstream, Luxembourg Participants***

Secondary market sales of book-entry interests in the GDRs held through Euroclear or Clearstream, Luxembourg to purchasers of book-entry interests in the GDRs through Euroclear or Clearstream, Luxembourg will be conducted in accordance with the normal rules and operating procedures of Euroclear and Clearstream, Luxembourg and will be settled using the normal procedures applicable to depository receipts.

### ***Trading between the U.S. Clearing Agent Participants***

Secondary market sales of book-entry interests in the GDRs held through the U.S. Clearing Agent will occur in the ordinary way in accordance with the U.S. Clearing Agent rules and will be settled using the procedures applicable to depository receipts if payment is effected in U.S. Dollars, or free of payment, if payment is not effected in U.S. Dollars. Where payment is not effected in U.S. Dollars, separate payment arrangements outside the U.S. Clearing Agent are required to be made between the U.S. Clearing Agent participants.

### ***Trading between the U.S. Clearing Agent Seller and Euroclear/Clearstream, Luxembourg Purchaser***

When book-entry interests in the GDRs are to be transferred from the account of a the U.S. Clearing Agent participant to the account of a Euroclear or Clearstream, Luxembourg participant, the U.S. Clearing Agent participant must send to the U.S. Clearing Agent a delivery free of payment or a delivery versus payment instruction at least two business days prior to the settlement date, the U.S. Clearing Agent will in turn transmit such instruction to Euroclear or Clearstream, Luxembourg, as the case may be on the settlement date. In case of delivery free of payment, separate payment arrangements are required to be made between the U.S. Clearing Agent participant and the relevant Euroclear or Clearstream, Luxembourg participant. On the settlement date, the U.S. Clearing Agent will debit the account of the U.S. Clearing Agent participant and will instruct the Depository to instruct Euroclear or Clearstream, Luxembourg, as the case may be, to credit the relevant account of the Euroclear or Clearstream, Luxembourg participant, as the case may be. In addition, the U.S. Clearing Agent will on the settlement date instruct the Depository to (1) decrease the amount of book-entry interests in the GDRs registered in the name of a nominee for the U.S. Clearing Agent and represented by the Rule 144A Master GDR and (2) increase the amount of book-entry interests in the GDRs registered in the name of the common nominee for Euroclear and Clearstream, Luxembourg and represented by the Regulation S Master GDR.

### ***Trading between Clearstream, Luxembourg/Euroclear Seller and the U.S. Clearing Agent Purchaser***

When book-entry interests in the GDRs are to be transferred from the account of a Euroclear or Clearstream, Luxembourg participant to the account of a the U.S. Clearing Agent participant, the Euroclear or Clearstream, Luxembourg participant must send to Euroclear or Clearstream, Luxembourg a delivery free of payment or a delivery versus payment instruction at least one business day prior to the settlement date. In case of delivery free of payment, separate payment arrangements are required to be made between the U.S. Clearing Agent participant and the relevant Euroclear or Clearstream, Luxembourg participant, as the case may be. On the settlement date, Euroclear or Clearstream, Luxembourg, as the case may be, will debit the account of its participant and will instruct the Depositary to instruct the U.S. Clearing Agent to credit the relevant account of Euroclear or Clearstream, Luxembourg, as the case may be, and will deliver such book-entry interests in the GDRs free of payment or versus payment, as applicable, to the relevant account of the U.S. Clearing Agent participant. In addition, Euroclear or Clearstream, Luxembourg, as the case may be, will on the settlement date instruct the Depositary to (1) decrease the amount of the book-entry interests in the GDRs registered in the name of the common nominee and represented by the Regulation S Master GDR and (2) increase the amount of the book-entry interests in the GDRs registered in the name of a nominee for the U.S. Clearing Agent and represented by the Rule 144A Master GDR.

### **General**

Although the foregoing sets out the procedures of Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent in order to facilitate the transfers of interests in the GDRs among participants of Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent, none of Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent is under any obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time.

None of the Company, the Managers, the Depositary, the Custodian or its or their respective agents will have any responsibility for the performance by Euroclear, Clearstream, Luxembourg, the U.S. Clearing Agent or their respective participants of their respective obligations under the rules and procedures governing their operations.

### INFORMATION RELATING TO THE DEPOSITARY

Citibank, N.A. (“**Citibank**”) has been appointed as Depositary pursuant to the Deposit Agreements. Citibank is an indirect wholly owned subsidiary of Citigroup Inc., a Delaware corporation. Citibank is a commercial bank that, along with its subsidiaries and affiliates, offers a wide range of banking and trust services to its customers throughout the United States and the world.

Citibank was originally organised on 16 June 1812, and is now a national banking association organised under the National Bank Act of 1864 of the United States of America. Citibank is primarily regulated by the United States Office of the Comptroller of the Currency. Its principal executive office is at 388 Greenwich Street, New York, NY 10013. Citibank’s Consolidated Balance Sheets are set forth in Citigroup’s most recent Annual Report (audited balance sheet) and Quarterly Report (unaudited), each on file on Form 10-K and Form 10-Q, respectively, with the United States Securities and Exchange Commission.

Citibank’s Articles of Association and By-laws, each as currently in effect, together with Citigroup’s Annual Report on Form 10-K and Quarterly Report on Form 10-Q are available for inspection at the Depositary Receipt office of Citibank, 388 Greenwich Street, New York, New York 10013, United States.

## **LEGAL MATTERS**

Certain legal matters in connection with the Offering will be passed upon for Company with respect to US and English law by Skadden, Arps, Slate, Meagher & Flom (UK) LLP. Certain legal matters with respect to Kazakhstan law will be passed upon for the Company by Zan Hub LLP. Certain legal matters in connection with the Offering will be passed upon for the Managers with respect to US and English law by White & Case LLP and Kazakhstan law by White & Case Kazakhstan LLP.

## INDEPENDENT ACCOUNTANTS

The financial statements as of 31 December 2017 and 2016 and for each of the three years in the period ended 31 December 2017 included in this Prospectus have been audited by PricewaterhouseCoopers LLP, independent accountants, as stated in their report appearing herein (the “**Independent Audit Report**”).

With respect to the Group’s unaudited interim condensed consolidated financial information as of and for the six months ended 30 June 2018 included in this Prospectus, PricewaterhouseCoopers LLP reported that they applied limited procedures in accordance with professional standards for a review of such information (the “**Independent Auditor’s Review Report**”). As stated in the Independent Auditor’s Review Report included at page F-4 of this Prospectus, PricewaterhouseCoopers LLP has not audited and do not express an opinion on the unaudited interim condensed consolidated financial information. Accordingly, the degree of reliance on their report on such information should be restricted in light of the limited nature of the review procedures applied. The address of PricewaterhouseCoopers LLP is 34 Al-Farabi Ave., A25D5F6 Almaty, Kazakhstan. PricewaterhouseCoopers LLP is a member of Professional Audit Organization “Chamber of Auditors of the Republic of Kazakhstan.”

For the purposes of paragraph 5.5.4R(2)(f) of the Prospectus Rules, PwC is responsible for the Independent Auditor’s report and Independent Auditor’s Review Report, as part of the Prospectus, and declare that it has taken all reasonable care to ensure that the information contained in the Independent Auditor’s Report and Independent Auditor’s Review Report is, to the best of PwC’s knowledge, in accordance with the facts and contains no omission likely to affect its import. This declaration is included in the Prospectus in compliance with item 1.2 of Annex X in Appendix 3 of Prospectus Rules.

For the purpose of compliance with item 23.1 of Annex X in Appendix 3 to the Prospectus Rules, PwC has given and not withdrawn its written consent to the inclusion of the Independent Auditor’s Report and Independent Auditor’s Review Report, in the form and context in which it is included and has authorised the content of the Independent Auditor’s Report and Independent Auditor’s Review Report.

A written consent under the Prospectus Rules is different from a consent filed with the U.S. Securities and Exchange Commission under Section 7 of the Securities Act, which is applicable only to transactions involving securities registered under the Securities Act. As the GDR’s have not and will not be registered under the Securities Act, PricewaterhouseCoopers LLP has not filed a consent under Section 7 of the Securities Act.



## EXPERTS

SRK, independent experts with respect to mining assets, have prepared the SRK Report at the request of the Company. SRK has no material interest in the Company. SRK's trading address is 5<sup>th</sup> Floor, Churchill House, 17 Churchill Way, Cardiff CF10 2HH, Wales, United Kingdom. The SRK Report and the technical and economic information as sourced therefrom has been included in the form and context in which it is included with the consent of that person who has authorised the contents of that report for the purposes of item 23.1 of Annex X of the Prospectus Rules. For the purposes of rule 5.5.4R2(f) the Prospectus Rules, SRK accepts responsibility for the SRK Report. Having taken all reasonable care to ensure that such is the case, SRK declares that the information contained in the SRK Report is, to the best of the knowledge of SRK, in accordance with the facts and contains no omission likely to affect its import.

UxC, independent experts with respect to the uranium industry and market, have prepared the UxC Report regarding the uranium industry and market at the request of the Company. UxC has no material interest in the Company. Their trading address is 1501 Macy Dr, Roswell, GA 30076, United States. The UxC Report and the technical and economic information as sourced therefrom has been included in the form and context in which it is included with the consent of that person who has authorised the contents of that report for the purposes of item 23.1 of Annex X of the Prospectus Rules. For the purposes of rule 5.5.4R2(f) the Prospectus Rules, UxC accepts responsibility for the UxC Report. Having taken all reasonable care to ensure that such is the case, UxC declares that the information contained in the UxC Report is, to the best of the knowledge of UxC, in accordance with the facts and contains no omission likely to affect its import.

Roskill, independent experts with respect to the rare metals industry and market, have prepared the Roskill Report regarding the rare metals industry and market at the request of the Company. Their trading address is 54 Russell Rd, Wimbledon, London SW19 1QL. The Roskill Report and the technical and economic information as sourced therefrom has been included in the form and context in which it is included with the consent of that person who has authorised the contents of that report for the purposes of item 23.1 of Annex X of the Prospectus Rules. For the purposes of rule 5.5.4R2(f) the Prospectus Rules, Roskill accepts responsibility for the Roskill Report. Having taken all reasonable care to ensure that such is the case, Roskill declares that the information contained in the Roskill Report is, to the best of the knowledge of Roskill, in accordance with the facts and contains no omission likely to affect its import.

## GENERAL INFORMATION

The Company is a joint stock company incorporated under the laws of Kazakhstan on 14 July 1997 initially as Open Joint Stock Company Kazatomprom, with registration number 41031-1901-AO, business identification number 970240000816 and registered office at 10 D. Kunayev Street, 010000, Astana, Republic of Kazakhstan. The principal legislation under which the Company operates is the Law of the Republic of Kazakhstan No.415-II “On Joint Stock Company” dated 13 May 2003 (as amended), Law of the Republic of Kazakhstan No. 413-IV “On State Property” dated 1 March 2011 (as amended), Law of the Republic of Kazakhstan No. 550-IV “On Sovereign Wealth Fund” dated 1 February 2012 (as amended), Decree No. 3593 of the President of the Republic of Kazakhstan “On the establishment of the National Atomic Company Kazatomprom” dated 14 July 1997 and Resolution No. 1148 of the Government of the Republic of Kazakhstan “Issues of the National Atomic Company Kazatomprom” dated 22 July 1997.

### Listing and Trading

It is expected that the GDRs will be admitted, subject only to the issue of the Master Regulation S GDR and the Master Rule 144A GDR, to listing on the Official List by the United Kingdom FCA on or about the Closing Date. Prior to this, application will be made for the GDRs to be traded on the London Stock Exchange through its international order book on or about the Closing Date. Transactions in GDRs will normally be effected for delivery on the third working day after the day of the transaction.

It is expected that the Shares and GDRs will be admitted to trading on the AIX on or about the Pricing Date.

### Authorisations

As of the listing date, the Company has obtained all consents, approvals and authorisations required under Kazakhstan law in connection with the Underwriting Agreement, the Deposit Agreements, the issue of the GDRs, and the listing of the GDRs on the Official List and LSE Admission.

### Significant Change

Save as disclosed below, there has been no significant change in the financial or trading position of the Group since 30 June 2018, the end of the last financial period for which financial information has been published.

As described in “*Operating and Financial Review—Current Trading and Recent Developments,*” since 30 June 2018, the Company raised KZT70,000 million, and entered into a US\$100 million loan agreement with Mizuho Bank, Ltd. (under which no drawdowns were made as of the date of this Prospectus), to fund its working capital and for general corporate purposes. The Company intends to draw down all or substantially all of the funds available under the US\$100 million loan agreement with Mizuho Bank, Ltd. between 5 and 9 November of 2018.

### Mineral Assets

There has been no material change to the Group’s mineral assets since 30 September 2018 (the effective date of the SRK Report).

### Legal Proceedings

In the ordinary course of its business activities, the Group is regularly involved in legal proceedings, both as a claimant and as a defendant. These proceedings are routine matters of labour and other laws, and do not have a significant impact on the Group’s business.

During the 12 months preceding the date of this Prospectus, there have been no governmental, legal or arbitration proceedings (nor any such proceedings which are pending or threatened of which the Company is aware), which may have, or have had in the recent past significant effects on the Company’s and/or the Group’s financial position or profitability.

## Security Codes

The security codes are expected to be as follows:

Regulation S GDRs:

ISIN: US63253R2013  
 CUSIP Number: 63253R201  
 SEDOL Number: BGXQL36

Rule 144A GDRs:

ISIN: US63253R1023  
 CUSIP Number: 63253R102  
 SEDOL Number: BGXQL25

London Stock Exchange Regulation S GDR trading symbol: KAP

London Stock Exchange Rule 144A GDR trading symbol: KAP

Legal Entity Identifier:

The LEI number for the Company is 5493008JG5TXJP2JSY44.

## GDRs

The GDRs are denominated in U.S. Dollars and have no nominal value. The Final Offer Price will be determined based on the results of the bookbuilding exercise conducted by the Managers. The results of the Offering will be made public by the Company through a press release and notice to the Regulatory Information Service promptly upon the closing of the Offering. No expenses or taxes are to be charged to the subscribers or purchasers of GDRs. It is expected that, following LSE Admission, the number of GDRs in public hands (as a percentage of the total number of GDRs in issue) will exceed 25%, the GDRs will be fully paid and freely transferable (subject to the restrictions described at “*Transfer restrictions*” of this Prospectus).

## GDR Depositary

GDR Holders may contact Citibank, N.A., as Depositary with questions relating to the transfer of GDRs on the books of the Depositary, which shall be maintained at the Depositary’s office at 388 Greenwich Street, New York, New York 10013, United States.

If definitive certificates are issued in exchange for the Master GDRs, the Company will appoint an agent in the United Kingdom.

## Significant subsidiaries

The following table sets out the Group’s principal subsidiaries, JVs and Associates by category of operations, as well as the Group’s ownership interest therein (which is in all cases equal to the Group’s voting rights, with the exception of Ulba Metallurgical Plant JSC and Volkovgeologia JSC, in each of which the Group had 100% voting rights) as at 30 June 2018:

Subsidiaries		Joint Ventures		Joint Operations		Associates		Equity Investments	
Name	Group’s interest	Name	Group’s interest	Name	Group’s interest	Name	Group’s interest	Name	Group’s interest
<b>Key assets</b>									
<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>		<i>Uranium mining and processing</i>	
Ortalyk LLP . . . . .	100.00%	JV Budenovskoye LLP . . . . .	51.00%	JV Akbastau JSC . . . . .	50.00%	JV Katco LLP . . . . .	49.00%	Baiken-U LLP . . . . .	5.00%
Kazatomprom-SaUran LLP <sup>(1)</sup> . . . . .	100.00%	Semizbai-U LLP . . . . .	51.00%	Karatau LLP . . . . .	50.00%	JV Khorassan-U LLP . . . . .	33.98%	JSC IUEC . . . . .	10.00%
RU-6 LLP <sup>(1)</sup> . . . . .	100.00%	<i>Nuclear fuel cycle</i>				JV SMCC LLP . . . . .	30.00%	Energy Asia (BVI) Limited . . . . .	9.95%
Appak LLP . . . . .	65.00%	UEC CJSC . . . . .	50.00%			JV Zarechnoye JSC . . . . .	49.98%		
JV Inkai LLP <sup>(2)</sup> . . . . .	60.00%	JSC UEIP <sup>(3)</sup> . . . . .	25.00%			Kyzylkum LLP . . . . .	30.00%		

Subsidiaries		Joint Ventures		Joint Operations		Associates		Equity Investments	
Name	Group's interest	Name	Group's interest	Name	Group's interest	Name	Group's interest	Name	Group's interest
<b>Key assets</b>									
<i>Nuclear fuel cycle and metallurgy</i>		Uranenergo LLP <sup>(4)</sup> . . . . . 75.44%							
Ulba Metallurgical Plant JSC . . . . . 90.18%				<i>Ancillary operations</i>					
				JV SKZ					
				Kazatomprom LLP . . . . . 9.89%					
<i>Ancillary operations</i>		<i>Ancillary operations</i>							
High Technology Institute LLP . . 100.00%		SKZ-U LLP . . . . 49.00%							
KazakAtom TH AG . . . . . 100.00%		Ulba FA LLP . . . . 51.00%							
KAP-Technology JSC . . . . . 100.00%									
Trading and Transportation Company LLP . . . . . 99.99%									
Volkovgeologia JSC . . . . . 90.00%									
<b>Assets for sale or subject to restructuring</b>									
<i>Nuclear and Alternative Energy</i>		<i>Nuclear fuel cycle</i>				<i>Ancillary operations</i>			
Kazakhstan Solar Silicon LLP <sup>(5)</sup> . . . . . 100.0%		Ulba Conversion LLP <sup>(8)</sup> . . . . . 50.96%				Caustic JSC <sup>(5)</sup> . . . . 40.00%			
MK KazSilicon LLP <sup>(5)</sup> . . . . . 100.0%		JV UKR TVS CJSC <sup>(5)</sup> . . . . . 33.33%				JV Betpak Dala LLP <sup>(8)</sup> . . . . . 30.00%			
Astana Solar LLP <sup>(5)</sup> . . . . . 100.0%									
MAEK LLP <sup>(6)</sup> . . . . 100.0%									
<i>Rare and rare earth metals</i>									
SARECO LLP <sup>(7)</sup> . . . . . 100.0%									
Kyzyltu LLP <sup>(5)</sup> . . . . 76.00%									
<i>Ancillary operations</i>									
Kazatomprom-Damu LLP <sup>(8)</sup> . . . . 78.85%									

- (1) The Company expects to transfer its rights and obligations under the subsoil use agreements relating to Kanzhugan, Central Moinkum, Southern Moinkum, Eastern Mynkuduk and Uvanas deposits, along with the associated production assets to Kazatomprom-SaUran LLP and its rights and obligations under the subsoil use agreements relating to the Southern and Northern Karamurun deposits, to RU-6 LLP, prior to 31 December 2018.
- (2) The Company increased its interest in JV Inkai LLP from 40% to 60%, and accordingly started fully consolidating it in its financial statements, with effect from 1 January 2018.
- (3) UEC JSC, in which the Company holds a 50% interest, holds 25% plus one share in JSC Urals Electrochemical Integrated Plant, world's largest uranium enrichment facility based in Russia.
- (4) Following a reassessment of the nature of control, the Company reclassified its investment in Uranenergo LLP into a joint venture from an associate, with effect from 1 April 2016.
- (5) The Company intends to dispose of 75% of its interest in Astana Solar LLP, MK KazSilicon LLP, Kazakhstan Solar Silicon LLP and its entire interests in each of Caustic JSC, JV UKR TVS CJSC, and Kyzyltu LLP, prior to 31 December 2018.
- (6) The Company disposed of its entire interest in MAEK on 3 July 2018. MAEK was the primary subsidiary engaged in the Energy segment, which has been discontinued since 3 July 2018.
- (7) The Company disposed of its entire interest in SARECO LLP on 18 October 2018.
- (8) Ulba Conversion LLP, and JV Betpak Dala LLP and Kazatomprom-Damu LLP are in the process of liquidation which the Company expects to complete prior to 30 June 2019.

For further details of the Group's JVs and Associates, see Notes 25 and 26 to the Annual Financial Statements and Notes 21 and 22 to the Interim Financial Statements.

**Documents Available for Inspection**

Copies of the following documents will be available for inspection free of charge, during normal business hours on any weekday, at the registered offices of the Company for the life of this Prospectus, and in electronic form on the on the Company's website ([www.kazatomprom.kz](http://www.kazatomprom.kz)):

- this Prospectus;
- the Charter;
- the Financial Statements, including the independent accountants' reports thereon; and
- the SRK Report.



## DEFINITIONS

“2018 Tax Code”	the Kazakhstan tax code introduced with effect from 1 January 2018
“Additional Protocol”	the protocol in addition to the Safeguards Agreement signed by Kazakhstan and the IAEA in 2004 and ratified by Kazakhstan in 2007
“Adjusted EBITDA”	a non-IFRS measure, calculated as profit before income tax adjusted to exclude as applicable for any period the impact of foreign exchange gains and losses, finance income and finance costs, depreciation and amortisation expense, net results from business combinations, gain on exercise of put option, impairment losses, reversal of impairment of assets
“AEC”	the Atomic Energy Committee of Kazakhstan
“AECC”	the Federal State Unitary Enterprise Angarsk Electrolysis Chemical Complex
“AIX”	AIX Limited, the stock exchange of the Astana International Financial Centre
“Annual Financial Statements”	the Company’s audited consolidated financial statements for the three years ended 31 December 2015, 2016 and 2017
“Audit Reports”	the audit reports of PricewaterhouseCoopers LLP, independent accountants of the Group’s consolidated financial statements as of and for the years ended 31 December 2016 and 2017 and for each of the three years in the period ended 31 December 2017, included in this Prospectus
“BN-350”	the fast-neutron BN-350 RF nuclear reactor in the city of Aktau
“Buy American”	a proposed policy that would require U.S. government agencies to procure uranium produced in the United States
“Central Registrar”	the shareholders register of the Company, which is maintained by the JSC “The Integrated Securities Registrar”
“CGT”	Capital gains tax
“CIT”	Corporate income tax
“Clearstream, Luxembourg”	Clearstream Banking, <i>société anonyme</i>
“Commerce Department”	the U.S. Department of Commerce
“Commodity Exception”	the exception as concerns gains from commodities transaction to the definition of “passive” income for such gains derived from “qualified active sales” of commodities and “qualified hedging transactions” involving commodities, within the meaning of the applicable Regulations
“Company” or “Issuer”	JSC National Atomic Company “Kazatomprom”
“Competent Authority”	the Ministry of Energy being the government body of competent authority in the field of subsoil use
“Corporations Act”	the Corporations Act 2001 (Cwth) of Australia
“Country with a Favourable Tax Regime”	as defined in the Tax Code
“Currency Law”	Kazakhstan’s Law On Currency Regulation and Currency Control dated 13 June 2005, as amended

<b>“Deposit Agreements”</b> .....	the Regulation S Deposit Agreement and the Rule 144A Deposit Agreement, each dated on or about the Pricing Date, between the Company and the Depositary
<b>“Depositary”</b> .....	Citibank, N.A.
<b>“DTC” or “U.S. Clearing Agent”</b> ....	The Depository Trust Company
<b>“EAL”</b> .....	Energy Asia Limited
<b>“EBITDA”</b> .....	a non-IFRS measure, calculated for any period as profit before interest and income taxes plus depreciation and amortisation expense
<b>“EEA Relevant Member State”</b> .....	an EEA Member State which has implemented the Prospectus Directive
<b>“ESAPs”</b> .....	environmental and social action plans relating to the Group’s mining and non-mining assets
<b>“ESMA”</b> .....	the European Securities and Markets Authority
<b>“ESMA Recommendations”</b> .....	ESMA recommendations for the consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive
<b>“Euro” or “€”</b> .....	the single currency of the participating member states in the Third Stage of the European Economic and Monetary Union of the Treaty Establishing the European Community, as amended from time to time
<b>“Euroclear”</b> .....	Euroclear Bank S.A./N.V.
<b>“Exchange Act”</b> .....	the United States Securities Exchange Act of 1934
<b>“EXPO”</b> .....	the EXPO-2017 international exposition in Astana focused on the future of energy and power generation
<b>“FCA”</b> .....	the Financial Conduct Authority of the U.K.
<b>“Financial Statements”</b> .....	the Interim Financial Statements collectively with the Annual Financial Statements
<b>“Final Offer Price”</b> .....	the final offer price of the GDRs, which is expected to be announced on the Pricing Date
<b>“FSMA”</b> .....	the Financial Services and Markets Act 2000 of the U.K.
<b>“Fukushima Accident”</b> .....	the accident at Fukushima Dai-ichi Nuclear Power Plant of 2011 in Japan
<b>“GDR Holders”</b> .....	holders of GDRs
<b>“GDRs”</b> .....	global depositary receipts representing interests in Shares
<b>“GDR Admission”</b> .....	admission of the GDRs to the standard listing segment of the Official List and to trading on the London Stock Exchange’s Main Market through its IOB
<b>“Government”</b> .....	the Government of the Republic of Kazakhstan
<b>“Group”</b> .....	the Company, taken together with its subsidiaries
<b>“IAEA”</b> .....	the International Atomic Energy Agency
<b>“IAS 34”</b> .....	International Accounting Standard 34 “Interim Financial Reporting”

“IFRS”	International Financial Reporting Standards as issued by the International Accounting Standards Board
“Interim Financial Statements”	the Company’s unaudited condensed consolidated interim financial statements for the six months ended 30 June 2018
“IOB”	the International Order Book (regulated market segment) of the London Stock Exchange
“Iran Agreement”	the U <sub>3</sub> O <sub>8</sub> supply agreement entered into between the Company and an Iranian counterparty in 2016
“IRS”	the U.S. Internal Revenue Service
“ISR”	in-situ recovery
“IUEC”	JSC International Uranium Enrichment Centre
“JCPOA”	the Joint Comprehensive Plan of Action establishing, <i>inter alia</i> , the procurement process complied with in entering into the Iran Agreement
“Katco”	JV Katco LLP
“KZT or Tenge”	the currency of Kazakhstan
“Local Content Requirements”	the Subsoil Code and other related laws
“London Stock Exchange”	the London Stock Exchange plc
“LSE Admission”	admission of the GDRs to the standard listing segment of the Official List and to trading on the London Stock Exchange’s Main Market through its IOB
“LTIFR”	lost time injury frequency rate, the key HSE-efficiency metric in the mining industry
“MAEK”	MAEK Kazatomprom LLP
“Main Market”	the London Stock Exchange’s main market for listed securities
“Major Shareholder”	a major shareholder, being any shareholder or group of shareholders representing not less than 10% of the voting shares
“Managers”	Credit Suisse Securities (Europe) Limited, J.P. Morgan Securities plc, China International Capital Corporation Hong Kong Securities Limited, JSC Halyk Finance, Mizuho International plc and Numis Securities Limited
“Master GDRs”	the Master Regulation S GDR and the Master Rule 144A GDR
“Master Regulation S GDR”	a Regulation S Master Global Depositary Receipt registered in the name of Citivic Nominees Limited as nominee for Citibank Europe plc, as common depositary for Euroclear and Clearstream, Luxembourg
“Master Rule 144A GDR”	a Rule 144A Master Global Depositary Receipt registered in the name of Cede & Co., as nominee for DTC in New York
“MET”	mineral extraction tax
“MEWR”	the Ministry of Environment and Water Resources of Kazakhstan

“MiFID II”	Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments (as amended)
“MOX”	mixed-oxide uranium/plutonium fuel
“NBK”	the National Bank of Kazakhstan
“NEA”	Nuclear Energy Agency
“New Currency Law”	the new Law On Currency Regulation and Currency Control, which was signed by the President of Kazakhstan on 2 July 2018
“NPT Treaty”	the Non-Proliferation of Nuclear Weapons of 1968
“OFAC”	the U.S. Treasury Department’s Office of Foreign Assets Control
“Offer Price Range”	US\$11.60 to US\$15.40 per GDR
“Offering”	the offering of the GDRs by the Selling Shareholder
“Official List”	the Official List of the FCA
“Order”	the Financial Services and Market Act (Financial Promotion) Order 2005
“Over-Allotment Option”	the option granted by the Selling Shareholder to the Stabilising Manager, exercisable in the Stabilisation Period, to purchase up to a maximum of 15% of the total number of the GDRs comprised in the Offering, solely to cover over-allotments
“periods under review”	the periods for which Financial Statements have been included in this Prospectus
“PFIC”	a passive foreign investment company
“Pricing Date”	on or about 13 November 2018
“Prospectus”	this prospectus dated 31 October 2018
“Prospectus Directive”	Directive 2003/71/EC (and amendments thereto, including the Directive 2010/73/EU), including any relevant implementing measure in each EEA Relevant Member State
“Prospectus Rules”	the prospectus rules made by the UK Listing Authority under Part VI of the FSMA (as set out in the FCA Handbook, as amended)
“PSIL”	Power System International Limited
“QIB”	a “qualified institutional buyer” within the meaning of Rule 144A
“Qualified Investor”	a “qualified investor” within the meaning of Article 2(1)(e) of the Prospectus Directive
“Red Book”	the International Atomic Energy Agency, Uranium 2016: Resources, Production and Demand, 26th Edition
“Regulation S”	Regulation S under the Securities Act
“Regulation S GDRs”	GDRs being offered and sold outside the United States
“Relevant Persons”	persons: (i) having professional experience in matters relating to investments falling within Article 19(5) of the Order; or (ii) to persons of a kind described in Article 49(2) (a) to (d) of the Order

<b>“Report”</b> .....	a report issued by the U.S. Department of Treasury on 29 January 2018 on Russian senior political figures and oligarchs, Russian parastatal entities and illicit financing in Russia, presumably to determine whether other parties should be sanctioned
<b>“RSE MAEK”</b> .....	Republican State Enterprise MAEK
<b>“Rule 144A”</b> .....	Rule 144A under the Securities Act
<b>“Rule 144A GDRs”</b> .....	GDRs being offered and sold within the United States
<b>“Rules”</b> .....	the Subsoil Code and Rules for submitting subsoil users reports in the conduct of operations for the exploration and production of solid minerals and the extraction of common mineral resources
<b>“Safeguards Agreement”</b> .....	an agreement on acceptance of safeguards in connection with the NPT Treaty, which was ratified in 1995
<b>“SDN”</b> .....	
<b>“SEC”</b> .....	
<b>“Section 232”</b> .....	Section 232 of the U.S. Trade Expansion Act of 1962, as amended
<b>“Securities”</b> .....	the Shares and the GDRs
<b>“Securities Act” or “U.S. Securities Act”</b> .....	the United States Securities Act of 1933, as amended, and the
<b>“Selling Shareholder or Samruk-Kazyna”</b> .....	JSC Sovereign Wealth Fund Samruk-Kazyna
<b>“SERERS”</b> .....	a set of hygienic rules “Sanitary and Epidemiological Requirements for Ensuring Radiation Safety” approved by order of the Minister of National Economy of Kazakhstan No. 155
<b>“SGChE”</b> .....	JSC Siberian Group of Chemical Enterprises
<b>“Shareholders”</b> .....	owners of Shares
<b>“Shares”</b> .....	ordinary shares of the Company
<b>“SRK”</b> .....	SRK Consulting (UK) Limited
<b>“SRK Report”</b> .....	the Competent Persons’ Report by SRK attached as Annex A to this Prospectus
<b>“Stabilisation Period”</b> .....	a period of 30 days after the Pricing Date
<b>“Stabilising Manager”</b> .....	Credit Suisse Securities (Europe) Limited
<b>“Subsoil Law”</b> .....	the Law “on Subsoil and the Use of Subsoil” dated 24 June 2010
<b>“Subsoil Code”</b> .....	the Code on Subsoil and the Use of Subsoil dated 27 December 2017 which replaced the Subsoil Law
<b>“THK”</b> .....	Trade House KazakAtom AG
<b>“Toshiba HoldCos”</b> .....	Toshiba Nuclear Energy Holdings US, Inc. and Toshiba Nuclear Energy Holdings UK Ltd.



“TradeTech”	TradeTech LLC
“Transformation Initiative”	the comprehensive modernization initiative under the umbrella name “Transformation” launched in 2015 described in “ <i>Business—Transformation Initiative</i> ”
“United States or U.S.”	the United States of America, its territories and possessions, any state of the United States and the District of Columbia
“U.S. Holder”	a beneficial owner of the Shares or GDRs as applicable under the United States federal income tax purposes
“U.S. Tax Regulations”	U.S. Treasury regulations promulgated under the U.S. Internal Revenue Code of 1986, as amended
“U-235”	Uranium 235
“U-238”	Uranium 238
“UEC”	JSC Uranium Enrichment Centre
“UEIC”	JSC Urals Electrochemical Integrated Plant
“UEIP”	JSC Urals Electrochemical Integrated Plant
“Ulba Facility”	the facility in Kazakhstan owned and operated by UMP
“UME”	uranium metal content equivalent
“UMP”	Ulba Metallurgic Plant JSC
“Underwriting Agreement”	the underwriting agreement entered into on the Pricing Date between the Company, the Selling Shareholder and the Managers
“Unified Rules”	the special procurement rules adopted by Samruk-Kazyna
“UNSCR”	United Nations Security Council Resolution
“US Dollar or US\$”	the currency of the United States of America
“UxC”	Ux Consulting Company
“VAT”	value added tax
“Westinghouse”	Westinghouse Electric Company LLC
“WNA”	the World Nuclear Association

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**JSC National Atomic Company Kazatomprom**

**Condensed interim consolidated financial statements (unaudited) for six months ended 30 June 2018**

## JSC National Atomic Company Kazatomprom

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## ***Report on review of condensed interim consolidated financial statements***

To the Shareholder and the Board of Directors of National Atomic Company Kazatomprom JSC

### ***Introduction***

We have reviewed the accompanying condensed interim consolidated statement of financial position of National Atomic Company Kazatomprom JSC and its subsidiaries as of 30 June 2018 and the related condensed interim consolidated statements of profit or loss and other comprehensive income, changes in equity and cash flows for the six-month period then ended and notes, comprising a summary of significant accounting policies and other explanatory notes. Management is responsible for the preparation and presentation of these condensed interim consolidated financial statements in accordance with International Accounting Standard 34, 'Interim Financial Reporting'. Our responsibility is to express a conclusion on these condensed interim consolidated financial statements based on our review.

### ***Scope of review***

We conducted our review in accordance with International Standard on Review Engagements 2410, 'Review of Interim Financial Information Performed by the Independent Auditor of the Entity'. A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with International Standards on Auditing and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

### ***Conclusion***

Based on our review, nothing has come to our attention that causes us to believe that the accompanying condensed interim consolidated financial statements are not prepared, in all material respects, in accordance with International Accounting Standard 34, 'Interim Financial Reporting'.

PricewaterhouseCoopers LLP

28 September 2018  
Almaty, Kazakhstan



**JSC National Atomic Company Kazatomprom**

**Condensed Interim Consolidated Statement of Profit or Loss and Other Comprehensive Income  
for the six months ended 30 June 2018**

<i>In millions of Kazakhstani Tenge</i>	Note	Six months ended	
		30 June 2018 (unaudited)	30 June 2017 (unaudited) restated
Revenue . . . . .	7	145,029	153,188
Cost of sales . . . . .	8	(106,539)	(120,924)
<b>Gross profit</b> . . . . .		<b>38,490</b>	<b>32,264</b>
Distribution expenses . . . . .	9	(3,361)	(2,402)
General and administrative expenses . . . . .	10	(12,573)	(11,558)
Impairment losses . . . . .	11	(3,486)	(4,020)
Net foreign exchange gain/(loss) . . . . .		1,296	(1,142)
Net result from business combinations . . . . .	37	96,858	—
Other income . . . . .	12	110	6,209
Other expenses . . . . .	13	(1,187)	(1,564)
Finance income . . . . .	14	2,638	2,429
Finance costs . . . . .	14	(5,088)	(4,387)
Share of results of associates . . . . .	21	6,948	11,644
Share of results of joint ventures . . . . .	22	(1,905)	13,637
<b>Profit before tax</b> . . . . .		<b>118,740</b>	<b>41,110</b>
Income tax expense . . . . .	16	(4,823)	(13,032)
<b>Profit from continuing operations</b> . . . . .		<b>113,917</b>	<b>28,078</b>
Profit from discontinued operation . . . . .	38	1,103	2,087
<b>PROFIT FOR THE PERIOD</b> . . . . .		<b>115,020</b>	<b>30,165</b>
<b>Other comprehensive income</b>			
<i>Items that may be subsequently reclassified to profit or loss:</i>			
Exchange differences arising on translation of foreign operations . . . . .		(22,123)	9
<b>Other comprehensive (loss)/income for the period</b> . . . . .		<b>(22,123)</b>	<b>9</b>
<b>TOTAL COMPREHENSIVE INCOME FOR THE PERIOD</b> . . . . .		<b>92,897</b>	<b>30,174</b>
<b>Profit for the period attributable to:</b>			
- Owners of the Company . . . . .		114,220	29,949
- Non-controlling interest . . . . .		800	216
<b>Profit for the period</b> . . . . .		<b>115,020</b>	<b>30,165</b>
<b>Total comprehensive income for the period attributable to:</b>			
- Owners of the Company . . . . .		92,093	29,957
- Non-controlling interest . . . . .		804	217
<b>Total comprehensive income for the period</b> . . . . .		<b>92,897</b>	<b>30,174</b>
Earnings per share from continuing operations, basic and diluted (rounded to Tenge) . . . . .		3,083	810

These condensed interim consolidated financial statements were approved by management on 28 September 2018:

\_\_\_\_\_  
Yussupov M.B.  
Chief Financial Officer

\_\_\_\_\_  
Kozha-Akhmet D.A.  
Financial Controller

\_\_\_\_\_  
Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these condensed interim consolidated financial statements.**

**JSC National Atomic Company Kazatomprom**

**Condensed Interim Consolidated Statement of Financial Position as at 30 June 2018**

<i>In millions of Kazakhstani Tenge</i>	<b>Note</b>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017 (audited)</b>
<b>ASSETS</b>			
<b>Non-current assets</b>			
Intangible assets		8,736	8,009
Property, plant and equipment	17	134,685	122,175
Mine development assets	18	102,762	43,530
Mineral rights	19	161,130	2,004
Exploration and evaluation assets	20	6,610	5,608
Investments in associates	21	62,231	101,746
Investments in joint ventures	22	41,240	74,818
Other investments	23	4,411	1,726
Accounts receivable		243	140
Deferred tax assets		8,948	6,836
Term deposits		11	—
Loans to related parties	24	13,091	20,302
Other non-current assets	28	25,610	24,125
		<b>569,708</b>	<b>411,019</b>
<b>Current assets</b>			
Accounts receivable	25	73,752	58,085
Prepaid income tax		9,869	5,493
Value-added tax		21,375	24,182
Inventories	26	202,918	169,675
Term deposits		7,618	8,472
Loans to related parties	24	8,119	—
Cash and cash equivalents	27	100,542	239,936
Other current assets	28	23,852	18,396
		<b>448,045</b>	<b>524,239</b>
Assets of disposal groups classified as held for sale	39	40,162	2,774
		<b>488,207</b>	<b>527,013</b>
<b>TOTAL ASSETS</b>		<b>1,057,915</b>	<b>938,032</b>
<b>EQUITY</b>			
Share capital	29	37,051	37,051
Additional paid-in capital		4,785	4,785
Reserves		(979)	(2,229)
Retained earnings		543,620	586,998
Equity attributable to shareholders of the Company		584,477	626,605
Non-controlling interest		91,997	14,571
<b>TOTAL EQUITY</b>		<b>676,474</b>	<b>641,176</b>
<b>LIABILITIES</b>			
<b>Non-current liabilities</b>			
Borrowings	30	369	38,910
Finance lease liabilities		418	294
Accounts payable	31	588	582
Provisions	32	27,581	22,688
Deferred tax liabilities		35,581	4,443
Employee benefits		943	1,247
Other non-current liabilities	33	6,081	7,711
		<b>71,561</b>	<b>75,875</b>
<b>Current liabilities</b>			
Borrowings	30	90,209	82,374
Finance lease liabilities		119	125
Provisions	32	143	189
Accounts payable	31	53,653	112,642
Other tax and compulsory payments liabilities		5,659	4,168
Employee benefits		126	173
Income tax liabilities		508	5,618
Other current liabilities	33	105,582	14,349
		<b>255,999</b>	<b>219,638</b>
Liabilities of disposal groups classified as held for sale	39	53,881	1,343
<b>TOTAL LIABILITIES</b>		<b>381,441</b>	<b>296,856</b>
<b>TOTAL EQUITY AND LIABILITIES</b>		<b>1,057,915</b>	<b>938,032</b>

These condensed interim consolidated financial statements were approved by management on 28 September 2018:

Yussupov M.B.  
Chief Financial Officer

Kozha-Akhmet D.A.  
Financial Controller

Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these condensed interim consolidated financial statements.**

**JSC National Atomic Company Kazatomprom**

**Condensed Interim Consolidated Statement of Cash Flows  
for the six months ended 30 June 2018**

<i>In millions of Kazakhstani Tenge</i>	<b>Six months ended 30 June 2018 (unaudited)</b>	<b>Six months ended 30 June 2017 (unaudited)</b>
<b>OPERATING ACTIVITIES</b>		
Cash receipts from customers .....	182,320	224,080
VAT refund .....	12,808	10,379
Interest received .....	1,006	1,288
Payments to suppliers .....	(207,003)	(183,290)
Payments to employees .....	<u>(22,389)</u>	<u>(19,297)</u>
<b>Cash flows (used in) / from operating activities .....</b>	<b>(33,258)</b>	<b>33,160</b>
Income tax paid .....	(8,750)	(6,205)
Interest paid .....	<u>(2,993)</u>	<u>(2,225)</u>
<b>Cash (outflow) / inflow from operating activities .....</b>	<b><u>(45,001)</u></b>	<b><u>24,730</u></b>
<b>INVESTING ACTIVITIES</b>		
Acquisition of property, plant and equipment .....	(9,046)	(7,138)
Proceeds from disposal of property, plant and equipment .....	44	470
Acquisition of intangible assets .....	(1,850)	(589)
Acquisition of mine development assets .....	(10,712)	(4,391)
Acquisition of exploration and evaluation assets .....	(1,003)	(986)
Placement of term deposits .....	(3,123)	(23,261)
Redemption of term deposits .....	4,847	53,333
Cash acquired from acquisition of subsidiaries and joint operations .....	2,921	—
Dividends received from associates, joint ventures and other investments .....	7,135	20,323
Proceeds from disposal of investments in subsidiary .....	89	—
Cash contributions to the capital of joint ventures .....	(1,301)	(2,674)
Cash of disposed subsidiary .....	(774)	—
Other .....	<u>(385)</u>	<u>(52)</u>
<b>Cash (outflow) / inflow from investing activities .....</b>	<b><u>(13,158)</u></b>	<b><u>35,035</u></b>
<b>FINANCING ACTIVITIES</b>		
Proceeds from borrowings .....	32,142	9,702
Repayment of borrowings .....	(67,931)	(27,020)
Finance lease payments .....	(96)	(18)
Dividends paid to the shareholder .....	(45,019)	—
Dividends paid to non-controlling interest .....	(1,976)	(5)
Other payments for non-controlling interest .....	<u>—</u>	<u>(326)</u>
<b>Cash outflow from financing activities .....</b>	<b><u>(82,880)</u></b>	<b><u>(17,667)</u></b>
<b>Net (decrease) / increase in cash and cash equivalents .....</b>	<b>(141,039)</b>	<b>42,098</b>
Cash and cash equivalents at the beginning of the period .....	239,936	75,052
Effect of exchange rate fluctuations on cash and cash equivalents .....	<u>1,645</u>	<u>(2,517)</u>
<b>Cash and cash equivalents at the end of the period .....</b>	<b><u>100,542</u></b>	<b><u>114,633</u></b>

These condensed interim consolidated financial statements were approved by management on 28 September 2018:

\_\_\_\_\_  
Yussupov M.B.  
Chief Financial Officer

\_\_\_\_\_  
Kozha-Akhmet D.A.  
Financial Controller

\_\_\_\_\_  
Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these condensed interim consolidated financial statements.**

**JSC National Atomic Company Kazatomprom**

**Condensed Interim Consolidated Statement Of Changes In Equity  
for the six months ended 30 June 2018**

<i>In millions of Kazakhstani Tenge</i>	Attributable to the shareholder of the Company				Total	Non-controlling interest	Total equity
	Share capital	Reserves	Retained earnings	Additional paid-in capital			
<b>Balance at 1 January 2017</b> . . . . .	<b>36,785</b>	<b>18,061</b>	<b>495,732</b>	<b>4,785</b>	<b>555,363</b>	<b>12,467</b>	<b>567,830</b>
Profit for the period . . . . .	—	—	29,949	—	29,949	216	30,165
Exchange differences arising on translation of foreign operations . . . . .	—	8	—	—	8	1	9
<b>Total comprehensive income for the period (unaudited)</b> . . . . .	<b>—</b>	<b>8</b>	<b>29,949</b>	<b>—</b>	<b>29,957</b>	<b>217</b>	<b>30,174</b>
Dividends declared . . . . .	—	—	(65,849)	—	(65,849)	(18)	(65,867)
Acquisition of non-controlling interests in subsidiaries . . . . .	—	—	(2,012)	—	(2,012)	1,686	(326)
Contributions of owners . . . . .	266	—	—	—	266	—	266
Transfer between reserves . . . . .	—	(20,677)	20,677	—	—	—	—
<b>Balance at 30 June 2017 (unaudited)</b> . . . . .	<b>37,051</b>	<b>(2,608)</b>	<b>478,497</b>	<b>4,785</b>	<b>517,725</b>	<b>14,352</b>	<b>532,077</b>
<b>Previously reported balance at 1 January 2018</b> . . . . .	<b>37,051</b>	<b>(2,229)</b>	<b>586,998</b>	<b>4,785</b>	<b>626,605</b>	<b>14,571</b>	<b>641,176</b>
Effect of adoption of new standards (Note 35) . . . . .	—	2,701	(1,910)	—	791	—	791
<b>Adjusted at 1 January 2018</b> . . . . .	<b>37,051</b>	<b>472</b>	<b>585,088</b>	<b>4,785</b>	<b>627,396</b>	<b>14,571</b>	<b>641,967</b>
Profit for the period . . . . .	—	—	114,220	—	114,220	800	115,020
Exchange differences arising on translation of foreign operations . . . . .	—	(1,451)	(20,676)	—	(22,127)	4	(22,123)
<b>Total comprehensive income for the period (unaudited)</b> . . . . .	<b>—</b>	<b>(1,451)</b>	<b>93,544</b>	<b>—</b>	<b>92,093</b>	<b>804</b>	<b>92,897</b>
Dividends declared . . . . .	—	—	(135,012)	—	(135,012)	(139)	(135,151)
Acquisition of non-controlling interest in subsidiary . . . . .	—	—	—	—	—	76,761	76,761
<b>Balance at 30 June 2018 (unaudited)</b> . . . . .	<b>37,051</b>	<b>(979)</b>	<b>543,620</b>	<b>4,785</b>	<b>584,477</b>	<b>91,997</b>	<b>676,474</b>

These condensed interim consolidated financial statements were approved by management on 28 September 2018:

Yussupov M.B.  
Chief Financial Officer

Kozha-Akhmet D.A.  
Financial Controller

Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these condensed interim consolidated financial statements.**

## **1. General Information**

### ***Organisational structure and operations***

These condensed interim consolidated financial statements have been prepared in accordance with International Accounting Standard 34 *Interim Financial Reporting* for the six-month period ended 30 June 2018 for JSC National Atomic Company Kazatomprom (the “Company”) and its subsidiaries (hereafter collectively referred to as “the Group” or JSC NAC Kazatomprom).

The Company is a joint stock company set up in accordance with regulations of the Republic of Kazakhstan. The Company was established pursuant to the Decree of the President of the Republic of Kazakhstan on the establishment of National Atomic Company Kazatomprom No. 3593, dated 14 July 1997, and the Decree of the Government of the Republic of Kazakhstan on matters of National Atomic Company Kazatomprom No. 1148 dated 22 July 1997 as a closed joint stock company with a 100% government shareholding. Currently, 100% of the Company’s shares are held by the National Welfare Fund Samruk-Kazyna (hereinafter the “Shareholder” or “Samruk-Kazyna”). The Company’s registered address is 10 Kunayev Street, Astana, the Republic of Kazakhstan. The principal place of business is Kazakhstan.

The Group’s key activities are the production of uranium and sale of uranium products. The Group is among the leading uranium production companies in the world. In addition, the Group is engaged in mining of rare metals, production and sale of beryllium and tantalum products, and development of high technologies.

The Group sells its products on export and domestically.

### ***Operating environment***

Kazakhstan economy displays certain characteristics of an emerging market. Its economy is particularly sensitive to prices for mineral resources. The legal, tax and regulatory frameworks continue to develop and are subject to varying interpretations.

The ongoing uncertainty and volatility of the financial markets, in particular in Europe and the Russian Federation, and other risks could have significant negative effects on financial and corporate sectors in Kazakhstan. Management has assessed the potential impairment of long-term assets of the Group, taking into account the current economic situation and its prospects. Future economic situation and regulatory environment may differ from the current expectations of management.

### ***Changes in the Group structure***

#### ***JV Inkai LLP***

In December 2017, the Group and Cameco completed restructuring of JV Inkai LLP (Note 37). Under the terms of the sales agreement, effective from 1 January 2018 the Group increased its interest in JV Inkai LLP from 40% to 60% and obtained control over the investee. The Group consolidates JV Inkai LLP from 1 January 2018.

#### ***JV Akbastau JSC and Karatau LLP***

In 2018, the Group and Uranium One Inc. signed a number of agreements related to Karatau LLP and JV Akbastau JSC (Note 37). As a result, these joint ventures were classified as joint operations under the IFRS 11. The Group ceased recognition of investments in joint ventures and recognised its share in joint operations by proportionate consolidation of entities’ assets, liabilities, revenue and expenses.

#### ***MAEK-Kazatomprom LLP***

On 25 June 2018, the Group signed an agreement with Samruk-Kazyna for sale of 100% interest in MAEK-Kazatomprom LLP (Note 38). The corresponding government consent was signed on 3 July 2018. Accordingly, in this condensed interim consolidated financial statements MAEK-Kazatomprom LLP is presented as a discontinued operation.

#### ***Kazakhstan Nuclear Electric Stations JSC***

On 25 June 2018 the Group signed an agreement with Samruk-Kazyna for sale of 100% interest in Kazakhstan Nuclear Electric Stations JSC (Note 36).



### *Sale of assets under Privatisation plan*

In accordance with the Government Decree of the Republic of Kazakhstan No. 1141 «On privatisation program 2016-2020» dated 30 December 2015 the Group plans to realise a number of its non-core assets, including entities of KazPV project: «Astana Solar» LLP, «Kazakhstan Solar Silicon» LLP and «MK KazSilicon» LLP. The sale of these entities is expected in the second half of 2018, accordingly the Group has presented assets and liabilities of this disposal group as held for sale (Note 39).

The Group also plans to realise SARECO LLP and Kaustik JSC as part of the privatisation program and currently searches for potential investors. As of the date of these interim financial statements, there was no sufficient basis to classify these assets as held for sale.

## **2. Basis of Preparation**

These condensed interim consolidated financial statements as at and for the six-month period ended 30 June 2018 have been prepared in accordance with the International Accounting Standard 34, Interim Financial Reporting.

The condensed interim consolidated financial statements are unaudited and do not include all the information and disclosures required in the annual financial statements. The Group omitted disclosures which would substantially duplicate the information contained in its audited annual consolidated financial statements for the year ended 31 December 2017 prepared in accordance with International Financial Reporting Standards (IFRS), such as accounting policies and details of accounts which have not changed significantly in amount or composition. Additionally, the Group has provided disclosures where significant events have occurred subsequent to the issuance of the Group's annual consolidated financial statements for the year ended 31 December 2017 prepared in accordance with IFRS.

Management believes that disclosures in these condensed interim consolidated financial statements provide sufficient information if these financial statements are read in conjunction with the Group's annual consolidated financial statements for the year 2017 prepared in accordance with IFRS. In the opinion of management, these condensed interim consolidated financial statements reflect all adjustments necessary to present fairly the Group's financial position, results of operations, statements of changes in equity and cash flows for the interim reporting period.

## **3. Summary of Significant Accounting Policies**

The accounting principles applied during the preparation of the condensed interim consolidated financial statements are in line with the principles applied in preparation of the Group's annual consolidated financial statements for the year ended 31 December 2017, except for the adoption of new and amended standards and other matters as set out below.

### ***IFRS 15 Revenue from Contracts with Customers***

IFRS 15, Revenue from Contracts with Customers (issued on 28 May 2014 and effective for the periods beginning on or after 1 January 2018). The new standard introduces the core principle that revenue must be recognised when the goods or services are transferred to the customer, at the transaction price. Any bundled goods or services that are distinct must be separately recognised, and any discounts or rebates on the contract price generally must be allocated to the separate elements. When the consideration varies for any reason, minimum amounts must be recognised if they are not at significant risk of reversal. Costs incurred to secure contracts with customers have to be capitalised and amortised over the period when the benefits of the contract are consumed.

Amendments to IFRS 15, Revenue from Contracts with Customers. The amendments do not change the underlying principles of the Standard, but clarify how those principles should be applied. The amendments clarify how to identify a performance obligation (the promise to transfer a good or a service to a customer) in a contract, how to determine whether a company is a principal (the provider of a good or service) or an agent (responsible for arranging for the good or service to be provided), and how to determine whether the revenue from granting a licence should be recognised at a point in time or over time.

Based on the analysis of Group's regular revenue streams, individual contract terms and based on the facts and circumstances existing at that date, and taking into account simplified method of transition, the Group's management concluded that the standard had no impact on the Group's applied accounting practices. In accordance with the IFRS 15 transitional statements, the Group selected a simplified method to reflect the transition impact to the new standard, as of 1 January 2018, in the consolidated financial statements for the year ended 31 December 2018, which will be the first year of IFRS 15 adoption.

## ***IFRS 9 Financial instruments***

The Group applied IFRS 9 retrospectively, but in accordance with IFRS 9 (7.2.15) and (7.2.26) transitional statements the Group did not restate comparative information, therefore, comparative information is presented in accordance with previous accounting policies disclosed in the financial statements for the year ended 31 December 2017. The Group does not apply hedge accounting, so IFRS 9 is not applicable in this respect. The impact of this standard on the financial statements is presented below. Other standards did not have an impact on the Group's accounting policies and did not require a retrospective adjustment of past periods.

### *(a) Classification of financial assets*

From 1 January 2018 the Group classifies its financial assets in the following measurement categories:

- amortised cost,
- fair value through profit or loss,
- fair value through other comprehensive income.

The classification depends on the Group's business model for managing the financial assets and the contractual terms of the cash flows. The Group reclassifies debt investments when and only when its business model for managing those assets changes

### *(b) Debt instruments – Financial assets measured at amortised cost (Note 35)*

Debt instruments that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest (SPPI) are measured at amortised cost. Interest income from these financial assets is calculated using the effective interest rate method and presented as "interest income" in the statement of profit or loss. Impairment losses are recognised according to the policy stated in the note (f) and presented in "impairment loss on financial assets".

### *(c) Debt instruments – Financial assets measured at fair value through other comprehensive income (FVOCI)*

Debt instruments that are held for collection of contractual cash flows and for selling, where the assets' cash flows represent solely payments of principal and interest, are measured at FVOCI. Movements in the carrying amount are taken through OCI, except for the recognition of impairment gains or losses, which are recognised in profit or loss. When the financial asset is derecognised, the cumulative gain or loss previously recognised in OCI is reclassified from equity to profit or loss and recognised as "other gains/(losses)". Interest income from these financial assets is included in "interest income" using the effective interest rate method. The impairment losses are recognised according to the policy stated in the note (f) and presented as "impairment loss on financial assets".

### *(d) Debt instruments – Financial assets measured at fair value through profit or loss*

Debt instruments that do not meet classification criteria for amortised cost or FVOCI are measured at fair value through profit or loss.

A gain or loss on fair value measurement of debt instrument is recognised in profit or loss as "fair value gains/(losses)" in the period in which it arises, except for interest income which is calculated using the effective interest rate method and included in "interest income".

### *(e) Equity instruments – Financial assets measured at fair value through other comprehensive income (FVOCI) (Note 35)*

The Group measures all equity investments at fair value. The Group elected to present fair value gains and losses on equity instruments in OCI as they are not held for generating investment returns. Where such an election is made there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividends from such investments are recognised in profit or loss when the Group's right to receive payment is established. Impairment losses (and reversal of impairment losses) on equity instruments measured at FVOCI are not reported separately from other changes in fair value.

### *(f) Impairment of financial assets referred to in point (b)- (c) above*

The Group assesses on a forward-looking basis the expected credit losses associated with its debt instruments carried at amortised cost and FVOCI regardless of any impairment indicators.

The Group follows a four-stage model for asset impairment, excluding receivables:

- Stage 1 – financial assets without significant increase in credit risk since the initial recognition,

- Stage 2 – financial assets with a significant increase in credit risk since the initial recognition,
- Stage 3 – financial assets at default,
- Stage 4 – acquired or created credit-impaired assets. These assets cannot change their stage over the lifetime of financial instrument.

For current receivables without significant financial component, the Group applies simplified approach in accordance with IFRS 9 and assesses credit losses over the lifetime of an asset from the initial recognition. Assessment of estimated provision is based on the assumption that in any reporting period amounts under risk fall either in “default category” or “non-default category”. Therefore, the Group classifies unimpaired assets as “non-default” (stage 2) or “default” (stage 3), in case of meeting the criteria of default. Provision on receivables is created for the entire term.

The Group considers the following indicators for classification of financial instruments into impairment categories: overdue days, significant increase in credit risk, presence of default and other criteria.

*(g) Modification of financial liabilities*

A gain or loss from the modification of financial liabilities’ contractual terms that do not result in derecognition of existing liability is recognised immediately in profit or loss. The gain or loss is calculated as the difference between the present values of modified and original cash flows, both discounted using the original effective interest rate of the liability.

***Discontinued operations***

A discontinued operation is a component of the Group that either has been disposed of, or that is classified as held for sale, and: (a) represents a separate major line of business or geographical area of operations; (b) is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or (c) is a subsidiary acquired exclusively with a view to resale. Earnings and cash flows of discontinued operations, if any, are disclosed separately from continuing operations with comparatives being re-presented.

***Seasonality***

The Group’s operations do not significantly depend on seasonal fluctuations.

***Exchange rates***

At the date of these financial statements exchange rate of the National Bank of the Republic of Kazakhstan was Tenge 361.82 per USD 1 compared to Tenge 341.08 per USD 1 as at 30 June 2018 (31 December 2017: Tenge 332.33 per USD 1). Average exchange rate for 6 months of 2018 was Tenge 326.49 per USD 1 (6 months of 2017: 318.75).

***Income tax***

Interim period income tax expense is accrued using the effective tax rate that would be applicable to expected total annual earnings.

***Revision of statement of profit or loss for six months ended 30 June 2018***

*Swap transactions (a)*

In accordance with the approach adopted in preparation of the consolidated financial statements for 2017, the Group presented deliveries of uranium products on swap terms for the six months ended 30 June 2017 on net basis. Comparative information was restated accordingly.

*Enriched uranium sale (b)*

In accordance with the approach adopted in preparation of the consolidated financial statements for 2017, the Group netted off revenue and cost from delivery of enriched uranium in the first half of 2017 for the amount of Tenge 4,935 million.

*Discontinued operation (c)*

As disclosed in Note 38, as at 30 June 2018 MAEK-Kazatomprom LLP was classified as a discontinued operation. Earnings and cash flows from discontinued operations are presented separately from continuing operations both for current and comparative periods. Comparative information was restated accordingly.

The financial information in relation to restatements made for items (a), (b) and (c) described above is presented below:

<i>In millions of Kazakhstani Tenge</i>	<b>6 months 2017 (as originally presented)</b>	<b>Adjustment (a)</b>	<b>Adjustment (b)</b>	<b>Adjustment (c)</b>	<b>6 months 2017 restated</b>
Revenue	203,403	(15,939)	(4,935)	(29,341)	153,188
Cost of sales	(162,550)	10,698	4,935	25,993	(120,924)
<b>Gross profit</b>	<b>40,853</b>	<b>(5,241)</b>	<b>—</b>	<b>(3,348)</b>	<b>32,264</b>
Distribution expenses	(2,649)	—	—	247	(2,402)
General and administrative expenses	(12,492)	—	—	934	(11,558)
Impairment losses	(4,028)	—	—	8	(4,020)
Net foreign exchange loss	(987)	—	—	(155)	(1,142)
Other income	6,213	—	—	(4)	6,209
Other expenses	(1,713)	—	—	149	(1,564)
Finance income	2,475	—	—	(46)	2,429
Finance costs	(4,469)	—	—	82	(4,387)
Share of results of associates	11,644	—	—	—	11,644
Share of results of joint ventures	13,637	—	—	—	13,637
<b>Profit before tax</b>	<b>48,484</b>	<b>(5,241)</b>	<b>—</b>	<b>(2,133)</b>	<b>41,110</b>
Income tax expense	(14,126)	1,048	—	46	(13,032)
<b>Profit from continuing operations</b>	<b>34,358</b>	<b>(4,193)</b>	<b>—</b>	<b>(2,087)</b>	<b>28,078</b>
Profit from discontinued operation	—	—	—	2,087	2,087
<b>PROFIT FOR THE PERIOD</b>	<b>34,358</b>	<b>(4,193)</b>	<b>—</b>	<b>—</b>	<b>30,165</b>

#### 4. Critical Accounting Estimates and Judgements in Applying Accounting Policies

The preparation of interim financial statements requires management to make judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities, income and expense. Actual results may differ from these estimates.

In preparing these condensed interim consolidated financial statements, the significant judgments made by management in applying the Group's accounting policies and the key sources of estimation uncertainty were consistent with those applied to the Group's annual consolidated financial statements for 2017 prepared in accordance with IFRS.

#### *SRK reports on JORC reserves and assets retirement obligations*

In 2017, the Group engaged SRK Consulting (UK) Limited (hereinafter SRK) to assess the Group's reserves and resources in accordance with the Australasian Code for reporting on geological exploration works, mineral resources and ore reserves (2012) (hereinafter JORC Code) and for calculation of the Group's provision for assets retirement obligations (ARO).

Information on reserves and asset retirement obligations were updated by SRK as of 30 June 2018 and accounted for in preparation of these condensed interim consolidated financial statements.

#### 5. New Accounting Pronouncements

Certain new standards, amendments to standards and interpretations have not become effective as of 30 June 2018. Requirements of these standards were not accounted for during preparation of these condensed interim consolidated financial statements. The Group expects adoption of these standards when they become effective.

The Group has not applied the following new and revised IFRSs that have been issued but are not yet effective:

- IFRS 16, Leases (issued in January 2016 and effective for annual periods beginning on or after 1 January 2019);
- Sale or Contribution of Assets between an Investor and its Associate or Joint Venture – Amendments to IFRS 10 and IAS 28 (issued on 11 September 2014 and effective for annual periods beginning on or after a date to be determined by the IASB);
- IFRIC 23 Uncertainty about income taxation methods (issued on 7 June 2017 and effective for annual periods beginning on or after 1 January 2019);

- Amendments to IFRS 9 Financial Instruments and IAS 28 (issued on 12 October 2017 and effective for annual periods beginning on or after 1 January 2019);
- Annual Improvements to IFRSs 2015-2017 cycle – amendments to IFRS 3, IFRS 11, IAS 12 and IAS 23 (issued on 12 December 2017 and effective for annual periods beginning on or after 1 January 2019).

## 6. Balances and Transactions with Related Parties

Entities under common control include companies under control of Samruk-Kazyna. Transactions with other government owned entities are not disclosed when they are entered into in the ordinary course of business with terms consistently applied to all public and private entities i) when they are not individually significant, ii) if the Group's services are provided on the standard terms available for all customers, or iii) where there is no choice of supplier of such services as electricity transmission services, telecommunications and etc.

The outstanding balances with related parties as at 30 June 2018 are as follows:

<i>In millions of Kazakhstani Tenge</i>	Accounts receivable and other assets (Note 25, 28)	Dividends receivable (Note 28)	Loans given (Note 24)	Accounts payable and other liabilities (Note 31, 33)
Associates . . . . .	3,020	—	21,210	24,907
Joint ventures . . . . .	1,553	—	—	1,169
Entities under common control . . . . .	663	—	—	560
Associates of the Shareholder . . . . .	28	14,155	—	1
Shareholder . . . . .	—	—	—	89,993
Other . . . . .	115	—	—	11,360
<b>Total . . . . .</b>	<b>5,379</b>	<b>14,155</b>	<b>21,210</b>	<b>127,990</b>

The income and expenses and other transactions with related parties for the period ended 30 June 2018 are as follows:

<i>In millions of Kazakhstani Tenge</i>	Sale of goods and services	Dividends received (Note 21, 22)	Purchase of goods and services	Dividends to the Shareholder	Interest income
Associates . . . . .	6,613	5,816	26,115	—	595
Joint ventures . . . . .	4,186	—	6,221	—	—
Entities under common control . . . . .	8,578	—	23,670	—	—
Associates of the Shareholder . . . . .	49	—	116	—	—
Shareholder . . . . .	89	—	—	135,012	—
Other . . . . .	490	—	10,862	—	—
<b>Total . . . . .</b>	<b>20,005</b>	<b>5,816</b>	<b>66,984</b>	<b>135,012</b>	<b>595</b>

The outstanding balances with related parties as at 31 December 2017 are as follows:

<i>In millions of Kazakhstani Tenge</i>	Accounts receivable and other assets (Note 25, 28)	Dividends receivable (Note 28)	Loans given (Note 24)	Accounts payable and other liabilities (Note 31, 33)
Associates . . . . .	3,189	13,707	20,302	39,196
Joint ventures . . . . .	2,981	—	—	21,989
Entities under common control . . . . .	186	—	—	8,778
Associates of the Shareholder . . . . .	49	—	—	1,607
Other . . . . .	340	—	—	16,246
<b>Total . . . . .</b>	<b>6,745</b>	<b>13,707</b>	<b>20,302</b>	<b>87,816</b>

The income and expenses and other transactions with related parties for the period ended 30 June 2017 are as follows:

<i>In millions of Kazakhstani Tenge</i>	Sale of goods and services	Dividends received (Note 21, 22)	Purchase of goods and services	Dividends to the Shareholder	Interest income	Interest expense
Associates . . . . .	8,479	21,244	29,287	—	856	54
Joint ventures . . . . .	6,926	22,942	27,464	—	—	—
Entities under common control . . . . .	8,653	—	21,370	—	—	—
Shareholder . . . . .	—	—	—	65,849	—	—
Other . . . . .	994	—	11,688	—	—	—
<b>Total . . . . .</b>	<b>25,052</b>	<b>44,186</b>	<b>89,809</b>	<b>65,849</b>	<b>856</b>	<b>54</b>



The table below shows the remuneration of key management personnel:

<i>In millions of Kazakhstani Tenge</i>	30 June 2018 (unaudited)		30 June 2017 (unaudited)	
	Expenses	Accrued liability	Expenses	Accrued liability
<i>Short-term benefits</i>				
Salaries and bonuses .....	254	49	101	21
<b>Total</b> .....	<b>254</b>	<b>49</b>	<b>101</b>	<b>21</b>

## 7. Revenue

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Sales of uranium products .....	112,889	120,819
Sales of purchased goods .....	8,258	10,177
Sales of beryllium .....	7,414	6,061
Sales of tantalum .....	7,353	5,573
Drilling services .....	3,630	4,550
Sales of other services .....	3,640	3,750
Transportation services .....	1,391	1,989
Sales of photovoltaic cells .....	238	49
Other .....	216	220
<b>Total revenue</b> .....	<b>145,029</b>	<b>153,188</b>

## 8. Cost of Sales

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Materials and supplies .....	63,713	88,801
Depreciation and amortisation .....	11,755	7,100
Wages and salaries .....	11,072	9,682
Taxes other than income tax .....	9,362	5,938
Processing and other services .....	5,698	6,132
Transportation expenses .....	1,762	1,301
Maintenance and repair .....	1,198	736
Utilities .....	922	832
Other .....	1,057	402
<b>Total cost of sales</b> .....	<b>106,539</b>	<b>120,924</b>

## 9. Distribution Expenses

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Shipping, transportation and storage .....	2,446	1,837
Wages and salaries .....	241	215
Rent .....	130	37
Materials and supplies .....	84	75
Depreciation and amortisation .....	30	37
Other .....	430	201
<b>Total distribution expenses</b> .....	<b>3,361</b>	<b>2,402</b>

## 10. General and Administrative Expenses

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Wages and salaries	6,792	6,238
Consulting and information services	1,172	2,052
Impairment of accounts receivable and prepaid expenses	1,289	(39)
Rent	631	523
Depreciation and amortisation	425	323
Maintenance and repair	335	55
Business trip expenses	279	263
Communication	176	73
Materials and supplies	130	120
Taxes other than income tax	118	308
Utilities	93	78
Corporate events	69	157
Penalties and fines	35	183
Other	1,029	1,224
<b>Total general and administrative expenses</b>	<b>12,573</b>	<b>11,558</b>

## 11. Impairment Losses

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Losses from assets impairment	3,605	4,058
Reversal of impairment losses	(119)	(38)
<b>Total impairment losses</b>	<b>3,486</b>	<b>4,020</b>

Impairment losses as of 30 June 2018 include write down to net realisable value of produced uranium products of Tenge 1,331 million and provision in the amount of Tenge 1,558 million for mispackaged uranium deliveries.

As of 30 June 2018 management has performed analysis of impairment indications of assets (cash-generating units) related to uranium production. Management has not identified additional factors, in comparison to the impairment assessment made as of 31 December 2017. During mid-2018 there was an increase in market prices for uranium products (spot price in July 2018 exceeded USD 25 per pound of U<sub>3</sub>O<sub>8</sub>).

## 12. Other Income

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Fines and penalties	31	29
Gain on disposal of property, plant and equipment	18	392
Gain on disposal of subsidiary	9	—
Gain on transfer of subsoil use right to charter capital	—	5,726
Other	52	62
<b>Total other income</b>	<b>110</b>	<b>6,209</b>

## 13. Other Expenses

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Loss on suspension of production	407	376
Social sphere expenses	328	311
Depreciation of property, plant and equipment during suspension of production	79	76
EXPO related expenses	—	769
Other	373	32
<b>Total other expenses</b>	<b>1,187</b>	<b>1,564</b>

#### 14. Finance Income and Costs

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
<b>Finance income</b>		
Interest income . . . . .	1,634	2,081
Gain from remeasurement of financial assets . . . . .	961	281
Gain from remeasurement of financial liabilities . . . . .	10	27
Unwinding of discount on financial assets . . . . .	33	40
<b>Total finance income</b> . . . . .	<b>2,638</b>	<b>2,429</b>
<b>Finance costs</b>		
Interest expense on borrowings . . . . .	3,138	2,667
Unwinding of discount on provisions . . . . .	1,065	598
Loss from remeasurement of financial assets . . . . .	592	781
Unwinding of discount on other financial liabilities . . . . .	120	130
Loss on remeasurement of financial liabilities . . . . .	—	129
Other finance costs . . . . .	173	82
<b>Total finance costs</b> . . . . .	<b>5,088</b>	<b>4,387</b>

#### 15. Personnel Costs

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Wages and salaries . . . . .	28,217	25,033
Social tax and social contributions . . . . .	2,983	2,665
<b>Total personnel costs</b> . . . . .	<b>31,200</b>	<b>27,698</b>

#### 16. Income Tax Expense

<i>In millions of Kazakhstani Tenge</i>	Six months ended	
	30 June 2018 (unaudited)	30 June 2017 (unaudited)
Current income tax . . . . .	7,003	14,352
Deferred income tax . . . . .	(2,180)	(1,320)
<b>Total income tax expense</b> . . . . .	<b>4,823</b>	<b>13,032</b>

Income tax expense is recognised based on management's estimate of the weighted average effective income tax rate. The estimated average annual tax rate used for the year to 30 June 2018 is 22%, compared to 21% for the six months ended 30 June 2017. The tax rate is comparable to prior period.

## 17. Property, Plant and Equipment

<i>In millions of Kazakhstani Tenge</i>	<u>Land</u>	<u>Buildings</u>	<u>Machinery and equipment</u>	<u>Vehicles</u>	<u>Other</u>	<u>Con-struction in progress</u>	<u>Total</u>
<b>At 1 January 2018</b>							
Cost .....	360	100,308	81,301	15,699	6,015	49,519	253,202
Accumulated depreciation and impairment ..	—	(35,928)	(48,520)	(9,179)	(3,553)	(33,847)	(131,027)
<b>Carrying amount .....</b>	<b>360</b>	<b>64,380</b>	<b>32,781</b>	<b>6,520</b>	<b>2,462</b>	<b>15,672</b>	<b>122,175</b>
Additions .....	—	13	435	133	210	4,150	4,941
Additions from business combinations							
(Note 37) .....	—	19,504	17,569	1,147	559	3,665	42,444
Transfers .....	—	317	1,287	29	365	(1,998)	—
Transfer to mine development assets .....	—	—	—	—	—	(14)	(14)
Transfers (to)/from inventories .....	—	—	(28)	6	(24)	45	(1)
Depreciation charge .....	—	(2,678)	(3,127)	(716)	(573)	—	(7,094)
Impairment loss .....	—	(86)	(551)	(4)	(10)	(310)	(961)
Reversal of impairment loss .....	—	4	43	150	18	28	243
Disposals .....	(11)	(22)	(26)	(31)	(6)	(4)	(100)
Changes in estimates .....	—	(452)	134	—	—	—	(318)
Transfers to non-current assets held for sale .....	(82)	(6,112)	(10,485)	(467)	(1,139)	(8,278)	(26,563)
Transfers (to)/from intangible assets .....	—	—	—	—	1	(68)	(67)
<b>At 30 June 2018 (unaudited)</b>							
Cost .....	267	105,190	73,527	15,916	4,355	20,534	219,789
Accumulated depreciation and impairment ..	—	(30,322)	(35,495)	(9,149)	(2,492)	(7,646)	(85,104)
<b>Carrying amount .....</b>	<b>267</b>	<b>74,868</b>	<b>38,032</b>	<b>6,767</b>	<b>1,863</b>	<b>12,888</b>	<b>134,685</b>

As of 30 June 2018, commitments relating to the acquisition of property, plant and equipment were Tenge 10,616 million (31 December 2017: Tenge 1,890 million).

## 18. Mine Development Assets

<i>In millions of Kazakhstani Tenge</i>	<u>Field preparation</u>	<u>Site restoration asset</u>	<u>Ion-exchange resin</u>	<u>Total</u>
<b>At 1 January 2018</b>				
Cost .....	65,843	11,728	5,359	82,930
Accumulated depreciation and impairment .....	(35,487)	(2,462)	(1,451)	(39,400)
<b>Carrying amount .....</b>	<b>30,356</b>	<b>9,266</b>	<b>3,908</b>	<b>43,530</b>
Additions .....	8,115	—	12	8,127
Additions from business combinations (Note 37) .....	51,195	170	4,624	55,989
Transfers from inventory .....	2,280	—	50	2,330
Transfers from property, plant and equipment .....	14	—	—	14
Depreciation charge .....	(8,147)	(654)	(333)	(9,134)
Impairment loss .....	(524)	—	—	(524)
Reversal of impairment loss .....	3	3	—	6
Changes in estimates .....	—	2,424	—	2,424
<b>At 30 June 2018 (unaudited)</b>				
Cost .....	188,647	15,853	11,986	216,486
Accumulated depreciation and impairment .....	(105,355)	(4,644)	(3,725)	(113,724)
<b>Carrying amount .....</b>	<b>83,292</b>	<b>11,209</b>	<b>8,261</b>	<b>102,762</b>

Additions for the period are mainly represented by capitalised drilling costs of new wells.

## 19. Mineral Rights

*In millions of Kazakhstani Tenge*

### At 1 January 2018

Cost .....	9,183
Accumulated depreciation and impairment .....	(7,179)

**Carrying amount .....** **2,004**

Additions from business combinations (Note 37) .....	160,090
Additions .....	4
Amortisation and impairment charge .....	(968)
Changes in estimates .....	2
Transfers to assets held for sale .....	(2)

### At 30 June 2018 (unaudited)

Cost .....	164,724
Accumulated depreciation and impairment .....	(3,594)

**Carrying amount .....** **161,130**

## 20. Exploration and Evaluation Assets

*In millions of Kazakhstani Tenge*

	<u>Tangible assets</u>	<u>Intangible assets</u>	<u>Total</u>
<b>At 1 January 2018</b> .....	<b>4,678</b>	<b>930</b>	<b>5,608</b>
Additions .....	867	135	1,002
<b>At 30 June 2018 (unaudited)</b> .....	<b><u>5,545</u></b>	<b><u>1,065</u></b>	<b><u>6,610</u></b>

## 21. Investments in Associates

The table below summarises the changes in the carrying value of the Group's investments in associates:

*In millions of Kazakhstani Tenge*

<b>Carrying value at 1 January 2018</b> .....	<b>101,746</b>
Share of results of associates .....	6,948
Disposal (Note 37) .....	(40,389)
Dividends received from associates .....	(5,816)
Other .....	(258)
<b>Carrying value at 30 June 2018 (unaudited)</b> .....	<b><u>62,231</u></b>



The Group has the following investments in associates:

	Country of incorporation	Principal activities	30 June 2018 (unaudited)		31 December 2017	
			% ownership interest held / % of voting rights	In millions of Kazakhstani Tenge	% ownership interest held / % of voting rights	In millions of Kazakhstani Tenge
JV Inkai LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	—	—	40%	40,389
JV KATKO LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	49.00%	42,183	49%	38,504
JV Zarechnoe JSC . . . . .	Kazakhstan	Extraction, processing and export of uranium products	49.98%	1,852	49.98%	1,947
JV Khorasan-U LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	33.98%	5,332	33.98%	5,259
Kaustik JSC . . . . .	Kazakhstan	Supply of caustic soda	40.00%	3,631	40%	3,775
Kyzylkum LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	30.00%	3,992	30%	3,621
JV Betpak Dala LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	30.00%	1,943	30%	1,949
JV South Mining Chemical Company LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	30.00%	1,714	30%	5,029
JV SKZ Kazatomprom LLP . . . . .	Kazakhstan	Production of sulphuric acid	9.89%	718	9.89%	720
JV Rosburmash LLP . . . . .	Kazakhstan	Geological exploration	49.00%	866	49%	553
<b>Total investments in associates . . . . .</b>				<b><u>62,231</u></b>		<b><u>101,746</u></b>

Summarised financial information for the first half of 2018 and as of 30 June 2018 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associates' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

<i>In millions of Kazakhstani Tenge</i>	JV Betpak Dala LLP	Kyzylkum LLP	JV KATKO LLP	JV South Mining Chemical Company LLP	JV Zarechnoe JSC	JV Khorasan-U LLP	Other	Total
Current assets	6,477	8,174	40,614	25,138	9,807	18,457	6,325	114,992
Including cash	6,045	976	11,142	1,698	2,086	4,662	1,502	28,111
Non-current assets	—	29,345	62,574	39,445	16,228	24,169	23,846	195,607
<b>Total assets</b>	<b>6,477</b>	<b>37,519</b>	<b>103,188</b>	<b>64,583</b>	<b>26,035</b>	<b>42,626</b>	<b>30,171</b>	<b>310,599</b>
Current liabilities	(2)	(8,955)	(6,421)	(50,275)	(7,810)	(25,846)	(7,375)	(106,684)
Including financial liabilities net of trade and other accounts payable and provisions	—	(8,079)	(114)	(28)	(4,199)	(17,471)	(1,347)	(31,238)
<i>Incl. loan from the Company</i>	—	(8,079)	—	—	—	—	—	(8,079)
Non-current liabilities	—	(15,090)	(8,439)	(7,124)	(1,299)	(832)	(14,072)	(46,856)
Including financial liabilities net of trade and other accounts payable and provisions	—	(14,064)	—	—	—	—	(13,401)	(27,465)
<i>Incl. loan from the Company</i>	—	(14,064)	—	—	—	—	—	(14,064)
<b>Total liabilities</b>	<b>(2)</b>	<b>(24,045)</b>	<b>(14,860)</b>	<b>(57,399)</b>	<b>(9,109)</b>	<b>(26,678)</b>	<b>(21,447)</b>	<b>(153,540)</b>
<b>Net assets</b>	<b>6,475</b>	<b>13,474</b>	<b>88,328</b>	<b>7,184</b>	<b>16,926</b>	<b>15,948</b>	<b>8,724</b>	<b>157,059</b>
Group's share of net assets of associates	1,943	4,042	43,281	2,155	8,460	5,419	1,068	66,368
Unrealised profit in the Group	—	—	(1,166)	(104)	(94)	(87)	—	(1,451)
Impairment	—	—	—	—	(6,556)	—	—	(6,556)
Other movements	—	(50)	—	—	—	—	(291)	(341)
Goodwill	—	—	68	—	—	—	4,438	4,506
Share in accumulated unrecognised losses	—	—	—	(337)	42	—	—	(295)
<b>Carrying value of investments in associates</b>	<b>1,943</b>	<b>3,992</b>	<b>42,183</b>	<b>1,714</b>	<b>1,852</b>	<b>5,332</b>	<b>5,215</b>	<b>62,231</b>
Total revenue	—	6,869	27,471	19,167	4,687	10,560	8,678	77,432
Depreciation and amortisation	—	(387)	(5,902)	(2,535)	(1,107)	(1,849)	(1,060)	(12,840)
Finance income	14	9	6	142	24	98	49	342
Finance costs	—	(980)	(449)	(119)	(122)	(37)	(584)	(2,291)
Foreign exchange gain / (loss)	—	—	519	519	(97)	(86)	(95)	760
(Impairment) / reversal of impairment	—	—	98	57	122	(1)	—	276
Income tax expense	—	(497)	(2,492)	(1,564)	204	(142)	(163)	(4,654)
Profit / (loss) for the period	(23)	1,588	9,512	7,357	412	376	260	19,482
<b>Total comprehensive income / (loss)</b>	<b>(23)</b>	<b>1,588</b>	<b>9,512</b>	<b>7,357</b>	<b>412</b>	<b>376</b>	<b>260</b>	<b>19,482</b>
Other	—	—	(982)	167	(37)	(38)	—	(890)
Dividends accrued	—	—	—	5,617	199	—	—	5,816

Summarised financial information as of 31 December 2017 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associates' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

<i>In millions of Kazakhstani Tenge</i>	JV Betpak Dala LLP	Kyzylkum LLP	JV KATKO LLP	JV Inkai LLP	JV South Mining Chemical Company LLP	JV Zarechnoe JSC	JV Khorasan-U LLP	Other	Total
Current assets	6,519	7,877	39,270	28,850	27,585	7,935	19,391	6,306	143,733
Including cash	1,623	132	1,359	1,036	1,254	684	2,106	575	8,769
Non-current assets	—	29,700	62,572	130,998	36,450	15,663	23,986	26,755	326,124
<b>Total assets</b>	<b>6,519</b>	<b>37,577</b>	<b>101,842</b>	<b>159,848</b>	<b>64,035</b>	<b>23,598</b>	<b>43,377</b>	<b>33,061</b>	<b>469,857</b>
Current liabilities	(21)	(3,072)	(15,152)	(43,551)	(42,686)	(5,679)	(26,862)	(6,948)	(143,971)
Including financial liabilities net of trade and other accounts payable and provisions	—	—	(360)	(38,955)	(4,625)	(2,813)	(17,499)	(1,611)	(65,863)
Non-current liabilities	—	(22,269)	(7,875)	(11,720)	(2,562)	(876)	(892)	(15,807)	(62,001)
Including financial liabilities net of trade and other accounts payable and provisions	—	(21,179)	—	(45)	—	—	—	(14,614)	(35,838)
<i>Incl. loan from the Company</i>	—	(21,179)	—	—	—	—	—	—	(21,179)
<b>Total liabilities</b>	<b>(21)</b>	<b>(25,341)</b>	<b>(23,027)</b>	<b>(55,271)</b>	<b>(45,248)</b>	<b>(6,555)</b>	<b>(27,754)</b>	<b>(22,755)</b>	<b>(205,972)</b>
<b>Net assets</b>	<b>6,498</b>	<b>12,236</b>	<b>78,815</b>	<b>104,577</b>	<b>18,787</b>	<b>17,043</b>	<b>15,623</b>	<b>10,306</b>	<b>263,885</b>
Group's share of net assets of associates	1,949	3,671	38,620	41,831	5,636	8,518	5,308	1,644	107,177
Unrealised profit in the Group	—	—	(184)	(1,442)	(607)	(57)	(49)	—	(2,339)
Impairment	—	—	—	—	—	(6,556)	—	—	(6,556)
Other movements	—	(50)	—	—	—	42	—	(1,034)	(1,042)
Goodwill	—	—	68	—	—	—	—	4,438	4,506
Share in accumulated unrecognised losses	—	—	—	—	—	—	—	—	—
<b>Carrying value of investments in associates</b>	<b>1,949</b>	<b>3,621</b>	<b>38,504</b>	<b>40,389</b>	<b>5,029</b>	<b>1,947</b>	<b>5,259</b>	<b>5,048</b>	<b>101,746</b>

Summarised financial information for the first half of 2017 in respect of each of the Group's material associates is set out below.

<i>In millions of Kazakhstani Tenge</i>	JV Betpak Dala LLP	Kyzylkum LLP	JV KATKO LLP	JV Inkai LLP	JV South Mining Chemical Company LLP	JV Zarechnoe JSC	JV Khorasan-U LLP	Other	Total
Total revenue	—	8,535	32,222	9,140	17,514	4,866	13,070	10,016	95,363
Depreciation and amortisation	—	(324)	(6,988)	(2,134)	(2,744)	(969)	(1,973)	(946)	(16,078)
Finance income	11	508	54	54	65	23	66	38	819
Finance costs	—	(788)	(956)	(89)	(84)	(30)	(58)	(564)	(2,569)
Foreign exchange gain / (loss)	—	203	(774)	—	(43)	29	(77)	149	(513)
(Impairment) / reversal of impairment	—	—	(65)	—	18	10	(198)	—	(235)
Income tax expense	(8)	(905)	(2,621)	(823)	(1,522)	310	(28)	(282)	(5,879)
Profit / (loss) for the period	(1,190)	4,049	9,589	3,169	7,148	1,089	786	1,265	25,905
<b>Total comprehensive income / (loss)</b>	<b>(1,190)</b>	<b>4,049</b>	<b>9,589</b>	<b>3,169</b>	<b>7,148</b>	<b>1,089</b>	<b>786</b>	<b>1,265</b>	<b>25,905</b>
Other	—	6	71	295	34	550	260	—	1,216
Dividends accrued	—	—	10,834	—	9,023	1,089	—	298	21,244

## 22. Investments in Joint Ventures

The table below summarises the changes in the carrying value of the Group's investments in joint ventures:

*In millions of Kazakhstani Tenge*

<b>Carrying value at 1 January 2018</b> . . . . .	<b>74,818</b>
Additions . . . . .	790
Share of results of joint ventures . . . . .	(1,905)
Contributions to capital . . . . .	1,300
Effect of translation to presentation currency . . . . .	(995)
Disposal (Note 37) . . . . .	(32,523)
Other . . . . .	(245)
<b>Carrying value at 30 June 2018 (unaudited)</b> . . . . .	<b><u>41,240</u></b>

The Group has the following investments in joint ventures:

	Country of incorporation	Principal activity	30 June 2018 (unaudited)		31 December 2017	
			% ownership interest held	In millions of Kazakhstani Tenge	% ownership interest held	In millions of Kazakhstani Tenge
TsOU JSC . . . . .	Russia	Production of advanced uranium products	50.00%	13,422	50.00%	16,787
Semizbay-U LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	51.00%	9,891	51.00%	10,037
JV Akbastau JSC . . . . .	Kazakhstan	Extraction, processing and export of uranium products	—	—	50.00%	17,887
Karatau LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	—	—	50.00%	14,637
JV Budenovskoe LLP . . . . .	Kazakhstan	Extraction, processing and export of uranium products	51.00%	5,508	51%	5,719
Ulba TVS LLP . . . . .	Kazakhstan	Construction of fuel assembly units plant and production, marketing and sale of fuel assembly units	51.00%	6,387	51.00%	5,287
Uranenergo LLP . . . . .	Kazakhstan	Transfer and distribution of electricity, grid operations	75.44%	3,824	58.90%	2,818
SKZ-U LLP . . . . .	Kazakhstan	Production of sulphuric acid	49.00%	2,187	49.00%	1,625
JV UKR TVS CJSC . . . . .	Ukraine	Production of nuclear fuel	33.33%	21	33.33%	21
<b>Total investments in joint ventures</b> . . . . .				<b><u>41,240</u></b>		<b><u>74,818</u></b>



Summarised financial information as of 30 June 2018 and 31 December 2017 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associates' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

<i>In millions of Kazakhstani Tenge</i>	Karatau LLP		Akbastau JSC		Semizbay-U LLP		TsOU JSC		Budenovskoye LLP		Other		Total	
	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.
Current assets	—	14,306	—	18,326	12,421	11,921	8,259	13,179	2,061	3,992	15,132	14,174	37,873	75,898
Including cash	—	743	—	3,027	3,243	177	584	12,239	2,053	3,987	6,040	3,312	11,920	23,485
Non-current assets	—	26,108	—	21,503	15,648	15,104	124,322	124,690	14,542	13,094	34,343	33,131	188,855	233,630
<b>Total assets</b>	—	<b>40,414</b>	—	<b>39,829</b>	<b>28,069</b>	<b>27,025</b>	<b>132,581</b>	<b>137,869</b>	<b>16,603</b>	<b>17,086</b>	<b>49,475</b>	<b>47,305</b>	<b>226,728</b>	<b>309,528</b>
Current liabilities	—	(9,132)	—	(2,199)	(12,930)	(12,088)	(22,484)	(23,381)	(272)	(360)	(7,627)	(7,237)	(43,313)	(54,397)
Including financial liabilities net of trade and other accounts payable and provisions	—	(4,470)	—	—	(10,547)	(9,497)	(5,746)	(6,050)	—	—	(4,750)	(4,590)	(21,043)	(24,607)
Non-current liabilities	—	(829)	—	(1,156)	(3,371)	(2,883)	(83,253)	(80,914)	(20)	—	(18,190)	(19,936)	(104,834)	(105,718)
Including financial liabilities net of trade and other accounts payable and provisions	—	—	—	—	(50)	(47)	(83,253)	(80,914)	—	—	(18,180)	(19,926)	(101,483)	(100,887)
<b>Total liabilities</b>	—	<b>(9,961)</b>	—	<b>(3,355)</b>	<b>(16,301)</b>	<b>(14,971)</b>	<b>(105,737)</b>	<b>(104,295)</b>	<b>(292)</b>	<b>(360)</b>	<b>(25,817)</b>	<b>(27,173)</b>	<b>(148,147)</b>	<b>(160,115)</b>
<b>Net assets</b>	—	<b>30,453</b>	—	<b>36,474</b>	<b>11,768</b>	<b>12,054</b>	<b>26,844</b>	<b>33,574</b>	<b>16,311</b>	<b>16,726</b>	<b>23,658</b>	<b>20,132</b>	<b>78,581</b>	<b>149,413</b>
Group's share of net assets of joint ventures	—	15,227	—	18,237	6,002	6,147	13,422	16,787	8,319	8,530	13,633	10,713	41,376	75,641
Share in accumulated unrecognised losses	—	—	—	—	—	—	—	—	(2,811)	(2,811)	183	435	(2,628)	(2,376)
Goodwill	—	—	—	—	4,105	4,105	—	—	—	—	(1,397)	(1,397)	2,708	2,708
Impairment	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrealised profit in the Group	—	(590)	—	(350)	(216)	(215)	—	—	—	—	—	—	(216)	(1,155)
<b>Carrying value of investments in joint ventures</b>	—	<b>14,637</b>	—	<b>17,887</b>	<b>9,891</b>	<b>10,037</b>	<b>13,422</b>	<b>16,787</b>	<b>5,508</b>	<b>5,719</b>	<b>12,419</b>	<b>9,751</b>	<b>41,240</b>	<b>74,818</b>

Summarised financial information for the first half of 2018 and 2017 in respect of each of the Group's material associates is set out below.

	Karatau LLP		Akbastau JSC		Semizbay-U LLP		TsOU JSC		Budenovskoye LLP		Other		Total	
	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.	2018 r.	2017 r.
Total revenue	—	21,965	—	17,293	9,545	9,809	18,743	31,375	—	—	7,377	8,427	35,665	88,869
Depreciation and amortisation	—	(2,256)	—	(1,880)	(1,575)	(2,651)	(1)	(2)	—	—	(584)	(607)	(2,160)	(7,396)
Finance income	—	46	—	462	37	30	81	83	13	7	126	102	257	730
Finance costs	—	(36)	—	(45)	(417)	(383)	(2,273)	(2,333)	(6)	(33)	(306)	(321)	(3,002)	(3,151)
Foreign exchange gain / (loss)	—	(171)	—	(339)	(396)	260	(7,460)	2,366	32	—	(572)	937	(8,396)	3,053
(Impairment) / reversal of impairment	—	—	—	—	(939)	122	—	—	—	—	34	15	(905)	137
Income tax expense	—	(2,822)	—	(2,048)	(44)	(67)	1,447	(1,090)	(21)	—	(436)	(815)	946	(6,842)
Profit / (loss) for the period	—	9,886	—	8,416	(206)	853	(4,740)	4,361	(162)	(45)	1,273	2,368	(3,835)	25,839
Comprehensive income / (loss)	—	<b>9,886</b>	—	<b>8,416</b>	<b>(206)</b>	<b>853</b>	<b>(4,740)</b>	<b>4,361</b>	<b>(162)</b>	<b>(45)</b>	<b>1,273</b>	<b>2,368</b>	<b>(3,835)</b>	<b>25,839</b>
Other	—	(315)	—	889	—	164	—	—	—	—	(13)	—	(13)	738
Dividends accrued	—	11,861	—	10,766	—	315	—	—	—	—	—	—	—	22,942

## 23. Other Investments

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
EAL (Energy Asia Limited BVI) .....	2,362	91
Baiken-U LLP .....	1,409	1,022
Other .....	640	613
<b>Total other investments</b> .....	<b><u>4,411</u></b>	<b><u>1,726</u></b>

Investments in EAL and Baiken-U LLP represent 9.95% and 5% interest in equity of the investees, respectively. Fair value of the Group's investments was determined on the basis of independent valuation.

## 24. Loans to Related Parties

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
<b>Kyzylkum LLP</b>		
- non-current portion .....	13,091	20,302
- current portion .....	8,119	—
<b>Total loans to related parties</b> .....	<b><u>21,210</u></b>	<b><u>20,302</u></b>

The weighted average annual interest rate on loans to related parties in the six months ended 30 June 2018 was 8.5%.

## 25. Current Accounts Receivable

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
Trade accounts receivable .....	70,271	53,217
Trade accounts receivable from related parties .....	4,339	5,997
<b>Total gross trade accounts receivable</b> .....	<b>74,610</b>	<b>59,214</b>
Provision for impairment of receivables .....	(924)	(1,246)
Provision for impairment of receivables from related parties .....	(52)	(52)
<b>Total net trade accounts receivable</b> .....	<b><u>73,634</u></b>	<b><u>57,916</u></b>
Other accounts receivable .....	548	595
Other accounts receivable from related parties .....	3	7
<b>Total gross other accounts receivable</b> .....	<b>551</b>	<b>602</b>
Provision for impairment of other accounts receivable .....	(433)	(433)
<b>Total net other accounts receivable</b> .....	<b><u>118</u></b>	<b><u>169</u></b>
<b>Total current accounts receivable</b> .....	<b><u>73,752</u></b>	<b><u>58,085</u></b>

## 26. Inventories

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
Finished goods and goods for resale .....	174,525	140,533
Work-in-process .....	15,999	17,563
Raw materials .....	12,695	14,520
Materials in process .....	1,573	762
Fuel .....	1,170	889
Spare parts .....	778	819
Other materials .....	5,559	2,842
Provision for obsolescence and write-down to net realisable value ...	(9,381)	(8,253)
<b>Total inventories</b> .....	<b><u>202,918</u></b>	<b><u>169,675</u></b>

## 27. Cash and Cash Equivalents

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
Current bank accounts .....	96,099	234,845
Demand deposits .....	4,389	5,053
Cash in hand .....	90	38
Provision for impairment of cash and cash equivalents .....	(36)	—
<b>Total cash and cash equivalents .....</b>	<b><u>100,542</u></b>	<b><u>239,936</u></b>

## 28. Other Assets

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
<b>Non-current</b>		
Advances for non-current assets .....	12,575	10,430
Long-term inventories .....	6,643	7,349
Restricted cash .....	4,324	4,377
Loans to employees .....	984	898
Prepaid expenses .....	673	674
Advances to related parties .....	411	397
<b>Total other non-current assets .....</b>	<b><u>25,610</u></b>	<b><u>24,125</u></b>
<b>Current</b>		
Dividends receivable from related parties .....	14,155	13,707
Advances for goods and services .....	6,741	2,813
Advances to related parties for goods and services .....	678	396
Due from employees .....	454	414
Prepaid expenses .....	807	355
Prepaid insurance .....	327	162
Prepaid taxes other than income tax .....	235	291
Restricted cash .....	429	242
Other .....	26	16
<b>Total other current assets .....</b>	<b><u>23,852</u></b>	<b><u>18,396</u></b>

## 29. Share Capital

All issued ordinary shares of the Company are owned by Samruk-Kazyna (Note 1), which solely and ultimately decides on dividend distribution. Each ordinary share carries one vote. On 22 February 2017, the National Bank registered an increase in the Company's common shares by 265,983 shares. At 30 June 2018, the total number of authorised and paid ordinary shares is 37,050,944.

Dividends declared and paid during the period were as follows:

<i>In millions of Kazakhstani Tenge</i>	
Dividends payable at 1 January 2018 .....	—
Dividends declared during the period .....	135,012
Dividends paid during the period .....	<u>(45,019)</u>
<b>Dividends payable at 30 June 2018 (unaudited) .....</b>	<b><u>89,993</u></b>
<b>Dividends per share declared during the period, in Tenge .....</b>	<b><u>3,644</u></b>

### 30. Borrowings

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
<b>Non-current</b>		
Bank loans .....	—	38,557
Non-bank loans .....	369	353
<b>Non-current borrowings .....</b>	<b>369</b>	<b>38,910</b>
<b>Current</b>		
Bank loans .....	54,007	82,374
Non-bank loans .....	36,202	—
<b>Total current borrowings .....</b>	<b>90,209</b>	<b>82,374</b>

On 19 January 2015, the Group signed an agreement for an unsecured syndicated loan with five banks for the total amount of USD 450 million. The purpose of the syndicated loan was to refinance bonds. The loan is repayable by equal instalments starting from September 2015 till June 2019. Covenants of the loan include restriction on significant sale and leaseback and factoring transactions by the Group as well as significant mergers, splits, amalgamations and corporate restructuring, significant acquisition and establishment of entities, except for allowed under the agreement. The Group is also required to maintain ratio of financial liabilities to EBITDA of not more than 3.5 to 1 and ratio of financial liabilities to equity of not more than 1 to 1. Information about the Group's loans and borrowings is presented as follows:

<i>In millions of Kazakhstani Tenge</i>	
<b>At 1 January 2018 .....</b>	<b>121,284</b>
Proceeds from borrowings .....	32,142
Additions from business combinations .....	41,190
Repayment of borrowings .....	(67,931)
Transfers to disposal groups .....	(39,170)
Interest accrued .....	3,051
Interest paid .....	(2,971)
Foreign currency translation .....	2,634
Other .....	349
<b>At 30 June 2018 (unaudited) .....</b>	<b>90,578</b>

### 31. Accounts Payable

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018 (unaudited)</b>	<b>31 December 2017</b>
<b>Non-current</b>		
Trade accounts payable .....	587	573
<i>Total financial non-current accounts payable .....</i>	<i>587</i>	<i>573</i>
Other accounts payable .....	1	9
<b>Total financial non-current accounts payable .....</b>	<b>588</b>	<b>582</b>
<b>Current</b>		
Trade accounts payable to related parties .....	37,720	83,712
Trade accounts payable .....	14,840	24,979
<i>Total financial current accounts payable .....</i>	<i>52,560</i>	<i>108,691</i>
Other accounts payable to related parties .....	1	—
Other accounts payable .....	1,092	3,951
<b>Total current accounts payable .....</b>	<b>53,653</b>	<b>112,642</b>



### 32. Provisions

<i>In millions of Kazakhstani Tenge</i>	<u>Compensation for occupa- tional diseases</u>	<u>Environment protection</u>	<u>Site restoration</u>	<u>Other</u>	<u>Total</u>
<b>At 1 January 2018</b>					
Non-current .....	254	2,460	19,939	35	22,688
Current .....	93	96	—	—	189
<b>Total .....</b>	<b>347</b>	<b>2,556</b>	<b>19,939</b>	<b>35</b>	<b>22,877</b>
Provision for the period .....	—	—	—	1	1
Additions from business combinations .....	—	—	2,273	—	2,273
Unwinding of discount .....	16	96	952	1	1,065
Transfer to disposal groups .....	—	—	(320)	—	(320)
Provision used .....	(46)	—	(233)	—	(279)
Change in estimates .....	—	—	2,107	—	2,107
<b>At 30 June 2018 (unaudited)</b>					
Non-current .....	270	2,556	24,718	37	27,581
Current .....	47	96	—	—	143
<b>Total .....</b>	<b>317</b>	<b>2,652</b>	<b>24,718</b>	<b>37</b>	<b>27,724</b>

### 33. Other Liabilities

<i>In millions of Kazakhstani Tenge</i>	<u>30 June 2018 (unaudited)</u>	<u>31 December 2017</u>
<b>Non-current</b>		
Advances received .....	3,260	3,261
Historical costs liabilities .....	1,652	1,749
Deferred income .....	766	856
Preferred shares .....	265	265
Advances received from related parties .....	20	1,450
Issued financial guarantees .....	89	96
Other liabilities .....	29	34
<b>Total non-current other liabilities .....</b>	<b>6,081</b>	<b>7,711</b>
<b>Current</b>		
Dividends payable to related parties (Note 29) .....	89,993	—
Liability under joint operations .....	6,747	—
Accrued unused vacation payments and bonuses .....	3,931	4,460
Wages and salaries payable .....	2,025	2,620
Advances received .....	727	2,120
Historical costs liabilities .....	579	818
Social contributions payable .....	456	963
Advances received from related parties .....	256	2,654
Dividends payable to other parties .....	252	253
Deferred income .....	77	102
Other .....	539	359
<b>Total current other liabilities .....</b>	<b>105,582</b>	<b>14,349</b>

### 34. Contingencies and Commitments

Except for items disclosed below, as of 30 June 2018, there are no contingent liabilities, commitments and operating risks in addition to those disclosed in the consolidated financial statements for the year ended 31 December 2017.

#### *Tax legislation*

The tax environment in the Republic of Kazakhstan is subject to change and inconsistent application and interpretations. In particular, existing subsurface use contracts do not have tax stability from 1 January 2009 and tax liabilities are computed under common regime. This could result in unfavourable changes to subsurface users' tax positions, including those of the Group. Non-compliance with Kazakhstani law and regulations as interpreted by the Kazakhstani authorities may lead to the assessment of additional taxes, penalties and interest. Kazakhstani tax legislation and practice is in a state of continuous development, and therefore is subject to varying interpretations and

frequent changes, which may be retroactive. In certain situations, to determine a tax base, the tax legislation refers to IFRS provisions. In such cases, interpretation of IFRS provisions by the Kazakhstani tax authorities may differ from accounting policies, judgments and estimates used by management for preparation of these condensed interim consolidated financial statements, and this may result in additional tax liabilities for the Group. Tax periods remain open to retroactive review by the Kazakhstan tax authorities for five years.

During previous periods, the tax authorities performed a number of complex and thematic tax audits of the Company and its subsidiaries, associates and joint ventures, as a result of which significant additional tax liabilities with penalties and fines were claimed. Most of these tax claims were not accepted by the Group, and accordingly were challenged in accordance with the generally established procedures. Nature of these tax disputes, management's position, status and impact on the financial statements were disclosed in the consolidated financial statements for the years ended 31 December 2017 and 2016. During six months period ended 30 June 2018, there were no significant changes in the open tax disputes, which could have significant adverse impact on the Group's financial statements.

### **Guarantees**

The maximum exposure to credit risk under financial guarantees, provided to secure financing of certain related parties, at 30 June 2018 is Tenge 13,746 million (31 December 2017: Tenge 14,732 million).

### **Significant planned transactions**

#### *Corporate claims*

In 2006, JSC NAC Kazatomprom sold 95% and 40% of interest in Baiken-U LLP (Note 23) and Kyzylkum LLP (Note 21). The Group is currently in the process of negotiations with the Japanese partners to restore the Group's interests in Baiken-U LLP, JV Khorasan-U LLP and Kyzylkum LLP. These condensed interim consolidated financial statements do not provide full disclosure of the matter including potential contingencies that have confidential nature. Disclosure of such information may seriously prejudice the position of the Group in negotiation process with the involved parties. Management believes that the Group does not have any material liabilities or contingent liabilities related to this matter.

On 3 September 2018, JSC NAC Kazatomprom, PSIL, Marubeni Corporation, Energy Asia Holdings Ltd (EAHL) and Energy Asia (BVI) Limited (EAL) signed a settlement deed agreement. According to the agreement, upon the satisfaction of conditions precedents, each of the parties automatically and without need of any further action by any party, discharge in full any and all claims, which they may have against each and any their respective associates. The agreement also envisages increases in (recovery of) the Group's underlying interests in JV Khorasan-U LLP, Baiken-U LLP and Kyzylkum LLP.

#### *Sales contract with Yellow Cake plc*

On 10 May 2018, the Group and Yellow Cake plc signed a framework agreement relating to the sale and purchase of U<sub>3</sub>O<sub>8</sub>, including the initial delivery of 3,100 tons in July 2018 and an option to purchase additional quantities in each of the delivery years 2019 through 2027, inclusive. The Group has an option to purchase from Yellow Cake plc certain repurchase quantity of U<sub>3</sub>O<sub>8</sub> when the uranium spot price exceeds certain threshold (above USD 37.5 per pound of U<sub>3</sub>O<sub>8</sub>).

### **35. IFRS 9 Financial Instruments – Impact of adoption**

The effect of IFRS 9 adoption is presented below:

<i>In millions of Kazakhstani Tenge</i>	<b>31 December 2017</b>	<b>IFRS 9</b>	<b>1 January 2018 restated</b>
Other investments . . . . .	1,726	2,701	4,427
Accounts receivable . . . . .	58,085	(394)	57,691
Term deposits . . . . .	8,472	(109)	8,363
Cash and cash equivalents . . . . .	239,936	(201)	239,735
Other lines . . . . .		(1,206)	
<b>Total effect on net assets . . . . .</b>		<b>791</b>	
Reserves . . . . .	—	2,701	2,701
Retained earnings . . . . .	586,998	(1,910)	585,088
<b>Total effect on equity . . . . .</b>		<b>791</b>	

IFRS 9 replaces the provisions of IAS 39 that relate to the recognition, classification and measurement of financial assets and financial liabilities, derecognition of financial instruments, impairment of financial assets and hedge accounting.

The effect of IFRS 9 adoption on other investments is due to valuation of investments in EAL and Baiken-U LLP (Note 23) by an independent appraiser, that were previously accounted for at cost.

The total impact on the Group's retained earnings as at 1 January 2018 is as follows:

*In millions of Kazakhstani Tenge*

<b>Retained earnings at 31 December 2017—IFRS 39</b> . . . . .	<b>586,998</b>
Increase in provision for trade receivables . . . . .	(394)
Increase in provision for guarantees obligations . . . . .	(541)
Increase in provision for instruments at amortised cost . . . . .	(975)
<b>Retained earnings at 1 January 2018—IFRS 9</b> . . . . .	<b><u>585,088</u></b>

### 36. Principal Subsidiaries

These condensed interim consolidated financial statements include the following subsidiaries:

	Principal activity	Ownership/voting	
		30 June 2018	31 December 2017
MAEK-Kazatomprom LLP (Note 38)	Production, transfer and sales of electric power and heat, production and sales of potable, technical and distilled water, transportation of sea water and gas	100%	100%
Kazatomprom-Damu LLP	Social services, construction and management of social services facilities in subsurface use areas	90%	90%
KAP-Technology JSC	Communication services	100%	100%
Korgan Kazatomprom LLP	Security services	100%	100%
Appak LLP	Exploration, production, processing and sale of uranium products	65%	65%
Ulba Metallurgical Plant JSC	Production and processing of uranium materials, production of rare metals and semiconductor materials	90.18%	90.18%
Volkovgeologiya JSC	Exploration and research of uranium reserves, drilling services, monitoring of radiation level and environment conditions	90%	90%
High Technology Institute LLP	Research, project, development and engineering consulting services	100%	100%
Kyzyltu LLP	Exploration, extraction and processing of molybdenum-copper ores with uranium content	76%	76%
SARECO LLP	Ore enrichment, hydro-metallurgical production of rare metals concentrates, chemical production of rare metals	100%	100%
MK KazSilicon LLP	Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste	100%	100%
Kazakhstan Solar Silicon LLP	Production of silicon of solar quality, silicon slices and photovoltaic slices	100%	100%
Astana Solar LLP	Production of photovoltaic modules	100%	100%
DP Ortalyk LLP	Exploration, production, processing and sale of uranium products	100%	100%
RU-6 LLP	Exploration, production and preliminary processing of uranium ore	100%	100%
Kazatomprom-SaUran LLP	Exploration, production and preliminary processing of uranium ore	100%	100%
Geotechnoservice LLP	Development of mining works plans, mining projects, geophysical research	—	100%
Trade and Transportation Company LLP	Procurement and transportation services	99.9999%	99.9998%
Kazakhstan Nuclear Electric Stations JSC	Implementation of projects on construction of nuclear electric stations and their operation	—	100%
Kazakatom TH AG	Marketing function for sale of uranium, investment and administration of finances, goods and rights	100%	100%
JV Inkai LLP	Exploration, production, processing and sale of uranium products	60%	—

### 37. Business Combinations

Net result from business combinations is as follows:

*In millions of Kazakhstani Tenge*

*JV Inkai LLP*

Fair value of the investment in associate prior to the acquisition . . .	77,850
Less: carrying value of the investment in associate . . . . .	(40,389)
Transfer of foreign currency translation reserve . . . . .	21,174
Negative goodwill arising from the acquisition . . . . .	37,283

*JV Akbastau JSC and Karatau LLP*

Negative goodwill arising from the acquisition . . . . .	940
<b>Net result from business combinations . . . . .</b>	<b><u>96,858</u></b>

#### *JV Inkai LLP*

In December 2017, the Group and Cameco completed the deal on restructuring of JV Inkai LLP. In accordance with the terms of the sales agreement, the Group increased its interest in JV Inkai LLP from 40% to 60% and from 1 January 2018 obtained control over the investee (Note 21).

The Group obtained control through its ability to cast a majority of votes in the general meeting of shareholders and the supervisory board when making decisions over the relevant activities of the investee. The subsidiary will increase the Group's share on the market of uranium production and is expected to improve the profitability of operations through increased production and sales.

The acquisition-date fair value of the total purchase consideration and its components are as follows:

*In millions of Kazakhstani Tenge*

Cash consideration paid . . . . .	11
Liabilities from pre-existing relationships . . . . .	(21,271)
<b>Total consideration transferred . . . . .</b>	<b>(21,260)</b>
Fair value of the investment in associate prior to the acquisition . . . . .	77,850
<b>Total purchase consideration and fair value of previously held interest in the acquiree . . . . .</b>	<b><u>56,590</u></b>

The consideration transferred by the Group is based on the book value of the share in the charter capital. The Group facilitated the signing of the addendum to the subsoil use contract with the competent authority allowing extension of the contract period and increase in annual production volume.

The difference between the consideration transferred and the net fair value of the acquiree's identifiable assets, and liabilities assumed and contingent liabilities led to recognition of 'negative goodwill', as presented in the table below, which is recognised immediately in profit or loss for the period less deferred tax (as 'excess of the net fair value of the acquiree's identifiable assets, liabilities and contingent liabilities over the cost of the business combination').

Details of the assets and liabilities acquired and negative goodwill arising as of 1 January 2018 are as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Fair value</b>
Cash and cash equivalents	1,036
Accounts receivable	19,063
Inventories	5,579
Prepaid income tax	2,313
Mineral rights	159,934
Property, plant and equipment	32,671
Mine development assets	43,582
Other assets	4,830
Borrowings	(38,955)
Accounts payable	(4,596)
Deferred tax liabilities	(32,162)
Other liabilities	(1,390)
Fair value of identifiable net assets acquired (before elimination of intra-group balances)	191,905
Less: elimination of intra-group balances	(21,271)
<b>Fair value of identifiable net assets acquired</b>	<b>170,634</b>
Less: non-controlling interest	(76,761)
Less: negative goodwill arising from the acquisition	(37,283)
<b>Total purchase consideration and previously held interest in the acquiree</b>	<b>56,590</b>

The valuation of identifiable assets and liabilities was performed by an independent professional appraiser.

Based on the valuation the assets value increased by Tenge 109,160 million, mainly due to valuation of the subsoil use (mineral) right, as a result of which the carrying value increased from Tenge 6,185 million to Tenge 159,934 million. The value of property, plant and equipment and mine preparation works decreased by Tenge 27,151 million and Tenge 15,485 million, respectively.

The non-controlling interest represents a share in the net assets of the acquiree attributable to owners of the non-controlling interest. The non-controlling interest was determined based on proportionate share of the acquiree's net assets' fair value.

The deferred tax in the amount of KZT 21,832 million was calculated on the excess of the fair value over the carrying value.

As of 1 January 2018, the Group had payable to JV Inkai LLP in the amount of Tenge 18,846 million under uranium purchase agreement, advances received in the amount of Tenge 524 million, long-term advances received for the road use right in the amount of Tenge 2,701 million, and receivables in the amount of Tenge 800 million under supply contracts.

The acquired subsidiary contributed revenue of Tenge 13,986 million and profit of Tenge 2,638 million to the Group for the period from 1 January 2018 to 30 June 2018.

#### ***Karatau LLP, JV Akbastau JSC***

The Group and Uranium One Inc hold 50% interest each in Karatau LLP and JV Akbastau JSC. In 2018, the Group and Uranium One Inc signed a number of agreements that formalised their obligation to purchase all production of the investees at equitable terms, as well as to provide financing to the joint arrangement in proportion to their shares. Both parties have direct rights to the assets and obligations for the liabilities of the investees, accordingly starting from 2018 the entities have been classified as joint operations. The Group recognised its direct right in joint assets, liabilities, income and expenses in proportion to 50% ownership interest, these items are consolidated in the Group's financial statements on line by line basis. Until 2018, investments in Karatau LLP (50% interest) and JV Akbastau JSC (50% interest) were accounted for using equity method.

Transfer of Karatau LLP and JV Akbastau JSC from classification as joint venture to joint operations was accounted for as a business combination. Accordingly, acquired assets and liabilities are recognised using the acquisition method under IFRS 3.

Financial information on joint operations and impact on the consolidated financial statements of the Group are as follows:

<i>In millions of Kazakhstani Tenge</i>	30 June 2018					
	JV Akbastau JSC	Karatau LLP	Total	50% share	Adj.-s	Consol.-ed
Current assets . . . . .	16,638	17,918	34,556	17,278	(1,931)	15,347
Non-current assets . . . . .	22,080	25,776	47,856	23,928	—	23,928
Current liabilities . . . . .	(9,816)	(25,402)	(35,218)	(17,609)	7,758	(9,851)
Non-current liabilities . . . . .	(2,054)	(1,786)	(3,840)	(1,920)	—	(1,920)
<b>Net assets . . . . .</b>	<b>26,848</b>	<b>16,506</b>	<b>43,354</b>	<b>21,677</b>	<b>5,827</b>	<b>27,504</b>
Revenue . . . . .	10,967	11,329	22,296	11,148	(11,148)	—
Cost of sales . . . . .	(3,949)	(4,634)	(8,583)	(4,292)	4,292	—
Other income and (expenses) . . . . .	(1,163)	(457)	(1,620)	(809)	—	(809)
<b>Profit for the period . . . . .</b>	<b>5,855</b>	<b>6,238</b>	<b>12,093</b>	<b>6,047</b>	<b>(6,856)</b>	<b>(809)</b>

The acquisition-date fair value of the total purchase consideration and its components are as follows:

<i>In millions of Kazakhstani Tenge</i>	
Cash consideration paid . . . . .	—
Liabilities from pre-existing relationships . . . . .	(8,538)
<b>Total consideration transferred . . . . .</b>	<b>(8,538)</b>
Investments in the joint ventures prior to the acquisition . . . . .	32,523
<b>Total purchase consideration and previously held interest in the joint ventures . . . . .</b>	<b>23,985</b>

The Group is currently assessing the fair value of the identifiable assets acquired and the liabilities and contingent liabilities assumed in the acquisition of the entity under IFRS 3 Business Combinations. The valuation is being performed by an independent professional appraiser and has not been completed as of the date of these financial statements.

The difference between the consideration transferred and the net fair value of the acquiree's identifiable assets, and liabilities assumed and contingent liabilities led to recognition of 'negative goodwill', as presented in the table below, which is recognised immediately in profit or loss for the period less deferred tax (as 'excess of the net fair value of the acquiree's identifiable assets, liabilities and contingent liabilities over the cost of the business combination').

As at the date of financial statements, no information on fair values was available, presented below is the information on the acquired assets, liabilities assumed (proportionate 50% share) and arising negative goodwill based on the carrying (provisional) values:

<i>In millions of Kazakhstani Tenge</i>	Carrying value
Cash and cash equivalents . . . . .	1,885
Accounts receivable . . . . .	10,901
Inventories . . . . .	2,922
Mineral rights . . . . .	156
Property, plant and equipment . . . . .	9,773
Mine development assets . . . . .	12,407
Other assets . . . . .	2,078
Borrowings . . . . .	(2,235)
Accounts payable . . . . .	(2,867)
Other liabilities . . . . .	(1,557)
Carrying value of identifiable net assets acquired (before elimination of intra-group balances) . . . . .	33,463
Less: elimination of intra-group balances . . . . .	(8,538)
<b>Carrying value of identifiable net assets acquired . . . . .</b>	<b>24,925</b>
Negative goodwill arising from the acquisition . . . . .	(940)
<b>Total purchase consideration and previously held interest in the joint ventures . . . . .</b>	<b>23,985</b>



### 38. Discontinued Operations

On 25 June 2018, the Group signed an agreement with Samruk-Kazyna for sale of 100% interest in MAEK-Kazatomprom LLP. On 3 July 2018, the government consent was signed. As of 30 June 2018 all assets and liabilities of MAEK-Kazatomprom LLP were included into the disposal group. Since the operations of MAEK-Kazatomprom LLP represent a separate major line of business, this disposal group is presented in these condensed interim consolidated financial statements as a discontinued operation. The consolidated statement of profit or loss and other comprehensive income for the comparative period was restated accordingly (Note 3).

The selling price for 100% interest in MAEK-Kazatomprom LLP is Tenge 17,853 million. In accordance with the sales and purchase agreement the Group is responsible for risks and liabilities related to the financial, environmental and other activities of MAEK-Kazatomprom LLP prior to the transfer of ownership, however the Group is not liable for any risks and liabilities, directly or indirectly associated with the BN-350 reactor. Currently, the Group and the Shareholder are considering the possibility of transfer of 100% interest in MAEK-Kazatomprom LLP under trust management to the Group.

An analysis of the result and cash flows of discontinued operation for the six months ended 30 June 2018 and 2017 is as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Six months ended</b>	
	<b>30 June 2018 (unaudited)</b>	<b>30 June 2017 (unaudited)</b>
Revenue . . . . .	31,799	29,775
Expenses . . . . .	<u>(30,329)</u>	<u>(27,642)</u>
Profit before tax . . . . .	1,470	2,133
Income tax expense . . . . .	<u>(367)</u>	<u>(46)</u>
<b>Profit from discontinued operation . . . . .</b>	<b><u>1,103</u></b>	<b><u>2,087</u></b>
Cash flows from operating activities . . . . .	(532)	1,904
Cash flows from investing activities . . . . .	(509)	(320)
Cash flows from financing activities . . . . .	(772)	(475)
Effect of exchange rate fluctuations on cash and cash equivalents . . .	<u>(16)</u>	<u>—</u>
<b>Net (decrease)/increase in cash and cash equivalents . . . . .</b>	<b><u>(1,829)</u></b>	<b><u>1,109</u></b>
<b>Earnings per share from discontinued operation . . . . .</b>	<b><u>29.8</u></b>	<b><u>56</u></b>

According to the valuation performed by an independent appraiser the selling price of MAEK-Kazatomprom LLP approximates the carrying amount of net assets (at the date of valuation).

The carrying amount of assets and liabilities as of 30 June 2018:

<i>In millions of Kazakhstani Tenge</i>	<b>30 June 2018</b>
Property, plant and equipment . . . . .	25,566
Current accounts receivable . . . . .	4,725
Inventories . . . . .	2,243
Other assets . . . . .	<u>1,469</u>
<b>Total assets . . . . .</b>	<b><u>34,003</u></b>
Accounts payable . . . . .	(4,809)
Other liabilities . . . . .	(7,332)
Borrowings . . . . .	<u>(4,365)</u>
<b>Total liabilities . . . . .</b>	<b><u>(16,506)</u></b>
<b>Net assets . . . . .</b>	<b><u>17,497</u></b>

### 39. Assets Classified as Held for Sale

The assets classified as held for sale include MAEK-Kazatomprom LLP (sold to Samruk-Kazyna in July 2018, Note 38), Kyzyltu LLP (classified as held for sale as of 31 December 2017), and KazPV project entities: Astana Solar LLP, Kazakhstan Solar Silicon LLP, MK KazSilicon LLP (at the stage of sale to a competitive environment):

<i>In millions of Kazakhstani Tenge</i>	<u>Kyzyltu LLP</u>	<u>KazPV</u>	<u>MAEK-Kazatomprom LLP</u>	<u>Other assets</u>	<u>Total</u>
Mineral rights . . . . .	2,193	2	—	—	2,195
Property, plant and equipment . . . . .	556	970	25,566	—	27,092
Other non-current assets . . . . .	169	4	601	30	804
<b>Total non-current assets . . . . .</b>	<b><u>2,918</u></b>	<b><u>976</u></b>	<b><u>26,167</u></b>	<b><u>30</u></b>	<b><u>30,091</u></b>
Cash and cash equivalents . . . . .	2	100	591	—	693
Accounts receivable . . . . .	494	89	4,725	—	5,308
Inventories . . . . .	153	943	2,243	—	3,339
Other current assets . . . . .	113	341	277	—	731
<b>Total current assets . . . . .</b>	<b><u>762</u></b>	<b><u>1,473</u></b>	<b><u>7,836</u></b>	<b><u>—</u></b>	<b><u>10,071</u></b>
<b>Total assets of disposal groups classified as held for sale as of 30 June 2018 . . . . .</b>	<b><u>3,680</u></b>	<b><u>2,449</u></b>	<b><u>34,003</u></b>	<b><u>30</u></b>	<b><u>40,162</u></b>
Borrowings . . . . .	—	(34,805)	(4,365)	—	(39,170)
Accounts payable . . . . .	(2,032)	(199)	(4,809)	—	(7,040)
Deferred tax liabilities . . . . .	—	—	(1,124)	—	(1,124)
Other current liabilities . . . . .	(881)	(311)	(4,476)	—	(5,668)
Other non-current liabilities . . . . .	(69)	(297)	(513)	—	(879)
<b>Total liabilities of disposal groups classified as held for sale as of 30 June 2018 . . . . .</b>	<b><u>(2,982)</u></b>	<b><u>(35,612)</u></b>	<b><u>(15,287)</u></b>	<b><u>—</u></b>	<b><u>(53,881)</u></b>
<b>Net assets / (liabilities) . . . . .</b>	<b><u>698</u></b>	<b><u>(33,163)</u></b>	<b><u>18,716</u></b>	<b><u>30</u></b>	<b><u>(13,719)</u></b>

### 40. Segment Information

Operating segments are components that engage in business activities that may earn revenues or incur expenses, whose operating results are regularly reviewed by the chief operating decision maker (CODM) and for which discrete financial information is available. The CODM is the person or group of persons who allocates resources and assesses the performance for the entity. The CODM has been identified as the Management Board of the Group headed by CEO.

#### (a) Description of products and services from which each reportable segment derives its revenue

The Group is a vertically integrated business involved in the production chain of end products – from geological exploration, mining of uranium and nuclear fuel production, to marketing and auxiliary services (transportation and logistics, procurement, research and other). The Group is organised on the basis of three main business segments:

- Uranium – uranium mining and processing from the Group’s mines, purchases of uranium from joint ventures and associates, external sales and marketing of produced and purchased uranium. Uranium segment includes the Group’s share in net results of joint ventures and associates engaged in uranium production, as well as the Group’s HQ (JSC NAC Kazatomprom);
- Energy – production and sales of electricity, heating power, industrial, drinking and hot water in Mangistau region. Energy segment sales are made to external parties only. Energy segment comprises results and operations of MAEK-Kazatomprom LLP (Note 38);
- UMP (Ulba Metallurgical Plant JSC) – production and sales of products containing beryllium, tantalum and niobium, hydrofluoric acid and by-products, processing of uranium on tolling basis for the Group’s uranium entities and production and marketing of uranium powders and tablets to external market.

The revenues and expenses of some of the Group’s subsidiaries, which primarily provide services to uranium segment (drilling, transportation, security, geological, etc.), are not allocated to the results of this operating segment. These Group’s businesses are not included within reportable operating segments as their financial results do not meet the quantitative threshold. The results of these and other minor operations are included in “Other” caption.

***(b) Factors that management used to identify the reportable segments***

The Group's segments are strategic business units that focus on different customers. They are managed separately because of the differences in the production processes, the nature of products produced and required marketing and investment strategies.

Segment financial information reviewed by the CODM includes:

- information about income and expenses by business units (segments) based on IFRS figures on a quarterly basis;
- assets and liabilities as well as capital expenditures by segment on a quarterly basis;
- operating data (such as production and inventory volumes) and revenue data (such as sales volumes per type of product, average sales price) are also reviewed by the CODM on a monthly and quarterly basis.

***(c) Measurement of operating segment profit or loss, assets and liabilities***

The CODM evaluates performance of each segment based on gross and net profit. Segment financial information is prepared on the basis of IFRS financial information and measured in a manner consistent with that in these consolidated financial statements.

Revenues from other segments include transfers of raw materials, goods and services from one segment to another, amount is determined based on market prices for similar goods.

**(d) Information about reportable segment profit or loss, assets and liabilities**

Segment information for the reportable segments for the 6 months ended 30 June 2018 and 30 June 2017 is set out below:

	Uranium		UMP		Other		Eliminations		Total	
	30 June 2018	30 June 2017	30 June 2018	30 June 2017	30 June 2017	30 June 2018	30 June 2017	30 June 2018	30 June 2017	
<i>In millions of Kazakhstani Tenge</i>										
External revenue *	112,084	120,240	17,331	13,909	15,614	19,039	—	—	145,029	153,188
Revenues from other segments	184	263	1,795	1,957	21,422	19,815	(23,401)	(22,035)	—	—
Cost of sales	(79,469)	(96,284)	(14,410)	(13,073)	(35,207)	(36,031)	22,547	24,464	(106,539)	(120,924)
<b>Gross profit</b>	<b>32,799</b>	<b>24,219</b>	<b>4,716</b>	<b>2,793</b>	<b>1,829</b>	<b>2,823</b>	<b>(854)</b>	<b>2,429</b>	<b>38,490</b>	<b>32,264</b>
Impairment losses, net of impairment reversals	(3,112)	(3,341)	(353)	(83)	(363)	(627)	342	31	(3,486)	(4,020)
Net result from business combinations	96,858	—	—	—	—	—	—	—	96,858	—
Share of results of associates and joint ventures	6,594	21,297	(111)	(31)	(1,440)	4,015	—	—	5,043	25,281
Net foreign exchange gain/(loss)	1,266	452	241	(621)	(219)	(962)	8	(11)	1,296	(1,142)
Finance income	3,078	3,655	103	181	208	78	(751)	(1,485)	2,638	2,429
Finance costs	(4,063)	(5,679)	(133)	(149)	(1,236)	(1,254)	344	2,695	(5,088)	(4,387)
Income tax expense	(4,023)	(12,688)	(714)	(255)	(86)	(89)	—	—	(4,823)	(13,032)
<b>Profit for the period from continuing operations</b>	<b>118,331</b>	<b>24,883</b>	<b>1,826</b>	<b>377</b>	<b>(4,481)</b>	<b>405</b>	<b>(1,759)</b>	<b>2,413</b>	<b>113,917</b>	<b>28,078</b>
Capital expenditures	13,726	9,733	497	957	743	1,396	—	—	14,966	12,086
Depreciation and amortisation charge	(9,318)	(4,764)	(706)	(631)	(2,416)	(2,368)	151	227	(12,289)	(7,536)

\* Revenue is recognised at a point in time (on a delivery date).

Capital expenditure represents additions to non-current assets other than financial instruments, deferred tax assets, post-employment benefits assets and rights arising under insurance contracts.

Segment information for the reportable segments for the 6 months ended 30 June 2018 and 30 June 2017 is set out below (continued):

	Uranium		Energy		UMP		Other		Eliminations		Total	
	30 June 2018	31 Dec 2017	30 June 2018	31 Dec 2017	30 June 2018	31 Dec 2017	30 June 2018	31 Dec 2017	30 June 2018	31 Dec 2017	30 June 2018	31 Dec 2017
<i>In millions of Kazakhstani Tenge</i>												
Investments in associates and joint ventures . . . . .	72,415	144,978	—	2,818	6,386	5,287	24,670	23,481	—	—	103,471	176,564
<b>Total reportable segment assets</b> . . . . .	<b>892,342</b>	<b>742,378</b>	<b>—</b>	<b>38,585</b>	<b>74,234</b>	<b>72,738</b>	<b>99,316</b>	<b>105,262</b>	<b>(48,139)</b>	<b>(23,705)</b>	<b>1,017,753</b>	<b>935,258</b>
Assets of disposal groups classified as held for sale . . . . .									40,162	2,774		
<b>Total assets</b> . . . . .											<b>1,057,915</b>	<b>938,032</b>
<b>Total reportable segment liabilities</b> . . . . .	<b>357,600</b>	<b>232,913</b>	<b>—</b>	<b>18,008</b>	<b>9,126</b>	<b>9,033</b>	<b>24,380</b>	<b>82,844</b>	<b>(63,546)</b>	<b>(47,285)</b>	<b>327,560</b>	<b>295,513</b>
Liabilities of disposal groups classified as held for sale . . . . .											53,881	1,343
<b>Total liabilities</b> . . . . .											<b>381,441</b>	<b>296,856</b>

*(e) Analysis of revenues by products and services*

The Group's revenues are analysed by products and services in Note 7. Information about finance income and costs is disclosed in Note 14.

**(f) Geographical information**

All the Group's main assets are located in the Republic of Kazakhstan. Distribution of Group's sales between countries on the basis of the customer's country of domicile was as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>for the six months ended</b>	
	<b>30 June 2018 (unaudited)</b>	<b>30 June 2017 (unaudited)</b>
China .....	38,183	76,680
Kazakhstan .....	32,947	20,071
India .....	28,011	16,468
France .....	20,523	16,542
USA .....	10,844	4,863
Japan .....	2,005	1,066
Germany .....	1,018	7,090
South Korea .....	398	3,457
Other countries .....	11,100	6,951
<b>Total consolidated revenues</b> .....	<b><u>145,029</u></b>	<b><u>153,188</u></b>

**Major customers**

The Group has a group of customers with common ultimate parent that accounts for more than 10% of the Group's consolidated revenue in the amount of Tenge 32,446 million for the six months ended 30 June 2018 (six months 2017: Tenge 73,415 million). This revenue is reported under Uranium segment.

**41. Non-controlling Interest**

The following table provides information about each significant subsidiary that has non-controlling interest that is material to the Group as of 30 June 2018:

<u>Name</u>	<u>Country of incorporation and principal place of business</u>	<u>Ownership rights held by non- controlling interest</u>	<u>Profit or loss attributable to non- controlling interest</u>	<u>Accumulated non- controlling interest</u>
Ulba Metallurgical Plant JSC .....	Kazakhstan	9.82%	190	6,563
Appak LLP .....	Kazakhstan	35%	(74)	6,923
Inkai LLP .....	Kazakhstan	40%	1,055	77,817
<b>Total</b> .....			<b><u>1,171</u></b>	<b><u>91,303</u></b>

The following table provides information about each significant subsidiary that has non-controlling interest that is material to the Group as of 31 December 2017:

<u>Name</u>	<u>Country of incorporation and principal place of business</u>	<u>Ownership rights held by non- controlling interest</u>	<u>Profit or loss attributable to non- controlling interest</u>	<u>Accumulated non- controlling interest</u>
Ulba Metallurgical Plant JSC .....	Kazakhstan	9.82%	155	6,369
Appak LLP .....	Kazakhstan	35%	620	7,121
<b>Total</b> .....			<b><u>775</u></b>	<b><u>13,490</u></b>

The summarised financial information of these subsidiaries as of 30 June 2018 and 31 December 2017 as well as for the period of six months, ended 30 June 2018 and 30 June 2017 is as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Ulba Metallurgical Plant JSC</b>		<b>Appak LLP</b>		<b>Inkai LLP</b>	
	<b>2018</b>	<b>2017</b>	<b>2018</b>	<b>2017</b>	<b>2018</b>	<b>2017</b>
Current assets .....	39,817	38,798	12,834	16,200	26,043	—
Non-current assets .....	37,768	37,008	14,096	14,367	243,754	—
Current liabilities .....	(3,544)	(3,510)	(5,005)	(8,643)	(40,562)	—
Non-current liabilities .....	(5,582)	(5,523)	(2,172)	(1,579)	(34,663)	—
Equity, incl. ....	68,459	66,773	19,775	20,357	194,572	—
Equity attributable to the Group .....	61,896	60,404	12,852	13,236	116,755	—
Non-controlling interest .....	6,563	6,369	6,923	7,121	77,817	—



<i>In millions of Kazakhstani Tenge</i>	Six months ended					
	30 June 2018	30 June 2017	30 June 2018	30 June 2017	30 June 2018	30 June 2017
Revenue .....	19,126	15,865	4,878	5,686	13,986	—
Depreciation and amortisation .....	(706)	(631)	(679)	(1,064)	(2,712)	—
Finance income .....	103	181	95	149	19	—
Finance costs .....	(133)	(149)	(169)	(2,016)	(789)	—
Income tax expense .....	(714)	(255)	71	(853)	(717)	—
Net foreign exchange gain/(loss) .....	241	(621)	(185)	(17)	(788)	—
Impairment (loss)/reversal .....	(353)	(83)	22	—	—	—
<b>Profit / (loss) for the period</b> .....	<b>2,149</b>	<b>556</b>	<b>(211)</b>	<b>635</b>	<b>2,638</b>	<b>—</b>
Profit / (loss) attributable to the owners of the Company .....	1,959	516	(137)	413	1,583	—
Profit / (loss) attributable to non-controlling interest .....	190	40	(74)	222	1,055	—
<b>Total comprehensive income / (loss) for the period</b> .....	<b>2,184</b>	<b>566</b>	<b>(211)</b>	<b>635</b>	<b>2,638</b>	<b>—</b>
Net cash inflow / (outflow) from:						
- operating activities .....	2,835	(706)	(1,723)	(322)	8,685	—
- investing activities .....	(1,753)	1,256	(382)	(633)	(4,999)	—
- financing activities .....	—	—	156	—	(3,645)	—
Effect of exchange rate fluctuations on cash and cash equivalents .....	179	(548)	(19)	(81)	48	—
<b>Net change in cash and cash equivalents</b> .....	<b>1,261</b>	<b>2</b>	<b>(1,968)</b>	<b>(1,036)</b>	<b>89</b>	<b>—</b>

**JSC National Atomic Company Kazatomprom**

**International Financial Reporting Standards  
Consolidated Financial Statements  
for the three years ended  
31 December 2017, 2016 and 2015 and  
Independent Auditor's Report**

## **JSC National Atomic Company Kazatomprom**

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## *Independent Auditor's Report*

To the Shareholder and the Board of Directors of National Atomic Company Kazatomprom JSC

### *Our opinion*

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of National Atomic Company Kazatomprom JSC (the "Company") and its subsidiaries (together – the "Group") as at 31 December 2017, 31 December 2016 and 31 December 2015, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards (IFRS).

### **What we have audited**

The Group's consolidated financial statements comprise:

- the consolidated statements of financial position as at 31 December 2017, 31 December 2016, 31 December 2015;
- the consolidated statements of profit or loss and other comprehensive income for the years then ended;
- the consolidated statements of changes in equity for the years then ended;
- the consolidated statements of cash flows for the years then ended; and
- the notes to the consolidated financial statements, which include significant accounting policies and other explanatory information.

### *Basis for opinion*

We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### **Independence**

We are independent of the Group in accordance with the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants (IESBA Code). We have fulfilled our other ethical responsibilities in accordance with the IESBA Code.





### *Responsibilities of management and those charged with governance for the consolidated financial statements*

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's financial reporting process.

### *Auditor's responsibilities for the audit of the consolidated financial statements*

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements.



We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

*PricewaterhouseCoopers LLP*

28 September 2018  
Almaty, Kazakhstan



**JSC National Atomic Company Kazatomprom**

**Consolidated Statements of Profit or Loss and Other Comprehensive Income**

<i>In millions of Kazakhstani Tenge</i>	<b>Note</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Revenue . . . . .	9	336,517	394,315	383,960
Cost of sales . . . . .	10	(263,864)	(283,882)	(280,598)
<b>Gross profit . . . . .</b>		<b>72,653</b>	<b>110,433</b>	<b>103,362</b>
Distribution expenses . . . . .	11	(4,858)	(6,314)	(4,116)
General and administrative expenses . . . . .	12	(32,274)	(30,877)	(25,655)
Reversal of impairment of assets . . . . .	13	543	184	86
Impairment losses . . . . .	13	(27,958)	(22,007)	(30,716)
Gain on disposal of subsidiary . . . . .		—	290	—
Net foreign exchange (loss) / gain . . . . .	15	(768)	3,614	(53,446)
Other income . . . . .	14	115,111	775	1,352
Other expenses . . . . .	15	(6,768)	(6,160)	(7,535)
Finance income . . . . .	17	5,888	15,825	21,986
Finance costs . . . . .	17	(9,067)	(11,017)	(8,676)
Share of results of associates . . . . .	25	22,007	38,058	38,823
Share of results of joint ventures . . . . .	26	22,107	36,739	14,080
<b>Profit before tax . . . . .</b>		<b>156,616</b>	<b>129,543</b>	<b>49,545</b>
Income tax expense . . . . .	18	(17,462)	(17,988)	(13,044)
<b>Profit for the year . . . . .</b>		<b>139,154</b>	<b>111,555</b>	<b>36,501</b>
<b>Other comprehensive income</b>				
<i>Items that may be subsequently reclassified to profit or loss:</i>				
Exchange differences arising on translation of foreign operations . . . . .		383	(97)	17,271
Share in other comprehensive income / (loss) of equity method investments . . . . .		—	(658)	159
<i>Items that will not be reclassified to profit or loss:</i>				
Remeasurements of post-employment benefit obligations . . . . .		113	194	(241)
Share in other comprehensive loss of equity method investments . . . . .		(189)	(216)	—
<b>Other comprehensive income / (loss) for the year . . . . .</b>		<b>307</b>	<b>(777)</b>	<b>17,189</b>
<b>TOTAL COMPREHENSIVE INCOME FOR THE YEAR . . . . .</b>		<b>139,461</b>	<b>110,778</b>	<b>53,690</b>
<b>Profit for the year attributable to:</b>				
- Owners of the Company . . . . .		138,527	108,795	38,442
- Non-controlling interest . . . . .		627	2,760	(1,941)
<b>Profit for the year . . . . .</b>		<b>139,154</b>	<b>111,555</b>	<b>36,501</b>
<b>Total comprehensive income attributable to:</b>				
- Owners of the Company . . . . .		138,837	108,014	55,635
- Non-controlling interest . . . . .		624	2,764	(1,945)
<b>Total comprehensive income for the year . . . . .</b>		<b>139,461</b>	<b>110,778</b>	<b>53,690</b>
Earnings per share from continuing operations, basic and diluted (rounded to Tenge) . . . . .	19	3,748	2,963	1,048

These consolidated financial statements were approved by management on 28 September 2018:

Yussupov M.B.  
Chief Financial Officer

Kozha-Akhmet D.A.  
Financial Controller

Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these consolidated financial statements.**

## JSC National Atomic Company Kazatomprom

### Consolidated Statements of Financial Position

*In millions of Kazakhstani Tenge*

	Note	2017	2016	2015
<b>ASSETS</b>				
<b>Non-current assets</b>				
Intangible assets	20	8,009	7,117	7,173
Property, plant and equipment	21	122,175	117,335	130,411
Mine development assets	22	43,530	41,682	38,578
Mineral rights	23	2,004	2,291	2,067
Exploration and evaluation assets	24	5,608	3,471	8,538
Investments in associates	25	101,746	107,773	121,938
Investments in joint ventures	26	74,818	66,862	43,519
Other investments	27	1,726	67,041	67,041
Accounts receivable	28	140	—	36
Deferred tax assets	18	6,836	4,299	1,829
Term deposits	31	—	15	3,182
Loans to related parties	32	20,302	19,151	32,344
Other non-current assets	29	24,125	19,517	19,627
		<b>411,019</b>	<b>456,554</b>	<b>476,283</b>
<b>Current assets</b>				
Accounts receivable	28	58,085	67,921	107,512
Prepaid income tax		5,493	7,391	2,427
VAT recoverable		24,182	22,235	28,528
Inventories	30	169,675	120,095	99,692
Term deposits	31	8,472	56,476	9,020
Loans to related parties	32	—	13	1,224
Cash and cash equivalents	33	239,936	75,052	55,869
Other current assets	29	18,396	10,831	12,557
		<b>524,239</b>	<b>360,014</b>	<b>316,829</b>
Assets of disposal groups classified as held for sale		2,774	3,463	164
		<b>527,013</b>	<b>363,477</b>	<b>316,993</b>
<b>TOTAL ASSETS</b>		<b>938,032</b>	<b>820,031</b>	<b>793,276</b>
<b>EQUITY</b>				
Share capital	34	37,051	36,785	36,692
Additional paid-in capital		4,785	4,785	4,785
Foreign currency translation reserve		(2,229)	18,061	18,819
Retained earnings		586,998	495,732	398,991
Equity attributable to shareholders of the Company		626,605	555,363	459,287
Non-controlling interest		14,571	12,467	10,118
<b>TOTAL EQUITY</b>		<b>641,176</b>	<b>567,830</b>	<b>469,405</b>
<b>LIABILITIES</b>				
<b>Non-current liabilities</b>				
Loans and borrowings	35	38,910	77,184	119,776
Finance lease liabilities		294	120	—
Accounts payable	37	582	581	585
Provisions	36	22,688	17,320	17,183
Deferred tax liabilities	18	4,443	4,743	4,509
Employee benefits		1,247	1,346	2,045
Other non-current liabilities	38	7,711	5,199	6,141
		<b>75,875</b>	<b>106,493</b>	<b>150,239</b>
<b>Current liabilities</b>				
Loans and borrowings	35	82,374	50,581	52,845
Finance lease liabilities		125	44	—
Provisions	36	189	98	101
Accounts payable	37	112,642	74,654	101,622
Other tax and compulsory payments liabilities		4,168	6,198	5,027
Employee benefits		173	244	213
Income tax liabilities		5,618	134	1,036
Other current liabilities	38	14,349	11,789	12,788
		<b>219,638</b>	<b>143,742</b>	<b>173,632</b>
Liabilities of disposal groups classified as held for sale		1,343	1,966	—
<b>TOTAL LIABILITIES</b>		<b>296,856</b>	<b>252,201</b>	<b>323,871</b>
<b>TOTAL EQUITY AND LIABILITIES</b>		<b>938,032</b>	<b>820,031</b>	<b>793,276</b>

These consolidated financial statements were approved by management on 28 September 2018:

Yussupov M.B.  
Chief Financial Officer

Kozha-Akhmet D.A.  
Financial Controller

Kaliyeva Z.G.  
Chief Accountant

The accompanying notes are an integral part of these consolidated financial statements.

**JSC National Atomic Company Kazatomprom**

**Consolidated Statements of Cash Flows**

<i>In millions of Kazakhstani Tenge</i>	<b>2017</b>	<b>2016</b>	<b>2015</b>
<b>OPERATING ACTIVITIES</b>			
Cash receipts from customers	435,199	485,829	395,725
VAT refund	18,849	29,638	24,895
Interest received	3,025	6,830	1,416
Payments to suppliers	(373,006)	(379,103)	(320,921)
Payments to employees	(43,213)	(42,638)	(40,191)
<b>Cash flows from operating activities</b>	<b>40,854</b>	<b>100,556</b>	<b>60,924</b>
Income tax paid	(13,069)	(28,216)	(5,662)
Interest paid	(4,430)	(5,464)	(6,127)
<b>Cash flows from operating activities</b>	<b>23,355</b>	<b>66,876</b>	<b>49,135</b>
<b>INVESTING ACTIVITIES</b>			
Acquisition of property, plant and equipment	(14,913)	(8,975)	(12,153)
Proceeds from disposal of property, plant and equipment	749	190	491
Advance paid for property, plant and equipment	(5,461)	(5,361)	(616)
Acquisition of intangible assets	(628)	(477)	(414)
Acquisition of mine development assets	(12,011)	(11,494)	(9,930)
Acquisition of exploration and evaluation assets	(2,775)	(3,264)	(1,618)
Proceeds from exercise of put option (Note 27)	173,719	—	—
Proceeds from sale of investments in associates and joint ventures	—	82	—
Proceeds from disposal of subsidiary	2	175	—
Placement of term deposits and restricted cash	(12,095)	(54,124)	(14,370)
Redemption of term deposits and restricted cash	55,216	9,054	5,798
Repayment of loans to related parties	8	12,787	1,211
Acquisition of control over subsidiary ventures	(91)	—	—
Acquisition of investments in associates and joint ventures	(2,687)	(4,647)	(2,046)
Dividends received from associates, joint ventures and other investments	36,486	78,805	42,867
Other	56	(96)	(94)
<b>Cash flows from investing activities</b>	<b>215,575</b>	<b>12,655</b>	<b>9,126</b>
<b>FINANCING ACTIVITIES</b>			
Proceeds from loans and borrowings	52,793	10,072	163,851
Repayment of loans and borrowings	(61,410)	(53,430)	(215,676)
Dividends paid to the shareholder (Note 34)	(65,849)	(12,031)	(2,323)
Dividends paid to non-controlling interest	(19)	(134)	(47)
Other	(396)	(673)	103
<b>Cash flows used in financing activities</b>	<b>(74,881)</b>	<b>(56,196)</b>	<b>(54,092)</b>
<b>Net increase in cash and cash equivalent</b>	<b>164,049</b>	<b>23,335</b>	<b>4,169</b>
Cash and cash equivalents at the beginning of the year	75,052	55,869	29,432
Effect of exchange rate fluctuations on cash and cash equivalents	835	(4,152)	22,268
<b>Cash and cash equivalents at the end of the year (Note 33)</b>	<b>239,936</b>	<b>75,052</b>	<b>55,869</b>

These consolidated financial statements were approved by management on 28 September 2018:

Yussupov M.B.  
Chief Financial Officer

Kozha-Akhmet D.A.  
Financial Controller

Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these consolidated financial statements.**

**JSC National Atomic Company Kazatomprom**  
**Consolidated Statements of Changes in Equity**

<i>In millions of Kazakhstani Tenge</i>	Attributable to the shareholder of the Company						
	Share capital	Foreign currency translation reserve	Retained earnings	Additional paid-in capital	Total	Non-controlling interest	Total equity
<b>Balance at 1 January 2015</b> . . . . .	<b>36,692</b>	<b>1,558</b>	<b>363,590</b>	<b>4,785</b>	<b>406,625</b>	<b>12,128</b>	<b>418,753</b>
Profit / (loss) for the year . . . . .	—	—	38,442	—	38,442	(1,941)	36,501
Foreign currency translation difference . . . . .	—	17,261	—	—	17,261	10	17,271
Remeasurements of post-employment benefit obligations . . . . .	—	—	(227)	—	(227)	(14)	(241)
Share of other comprehensive income in equity method investments . . . . .	—	—	159	—	159	—	159
<b>Total comprehensive income for the year</b> . . . . .	<b>—</b>	<b>17,261</b>	<b>38,374</b>	<b>—</b>	<b>55,635</b>	<b>(1,945)</b>	<b>53,690</b>
Dividends declared . . . . .	—	—	(2,323)	—	(2,323)	(65)	(2,388)
Contribution to share capital . . . . .	—	—	(650)	—	(650)	—	(650)
<b>Balance at 31 December 2015</b> . . . . .	<b>36,692</b>	<b>18,819</b>	<b>398,991</b>	<b>4,785</b>	<b>459,287</b>	<b>10,118</b>	<b>469,405</b>
Profit for the year . . . . .	—	—	108,795	—	108,795	2,760	111,555
Foreign currency translation difference . . . . .	—	(100)	—	—	(100)	3	(97)
Remeasurements of post-employment benefit obligations . . . . .	—	—	193	—	193	1	194
Share of other comprehensive loss in equity method investments . . . . .	—	(658)	(216)	—	(874)	—	(874)
<b>Total comprehensive income for the year</b> . . . . .	<b>—</b>	<b>(758)</b>	<b>108,772</b>	<b>—</b>	<b>108,014</b>	<b>2,764</b>	<b>110,778</b>
Dividends declared . . . . .	—	—	(12,031)	—	(12,031)	(415)	(12,446)
Contribution to share capital . . . . .	93	—	—	—	93	—	93
<b>Balance at 31 December 2016</b> . . . . .	<b>36,785</b>	<b>18,061</b>	<b>495,732</b>	<b>4,785</b>	<b>555,363</b>	<b>12,467</b>	<b>567,830</b>
Profit for the year . . . . .	—	—	138,527	—	138,527	627	139,154
Foreign currency translation difference . . . . .	—	386	—	—	386	(3)	383
Remeasurements of post-employment benefit obligations . . . . .	—	—	113	—	113	—	113
Share of other comprehensive loss in equity method investments . . . . .	—	—	(189)	—	(189)	—	(189)
<b>Total comprehensive income for the year</b> . . . . .	<b>—</b>	<b>386</b>	<b>138,451</b>	<b>—</b>	<b>138,837</b>	<b>624</b>	<b>139,461</b>
Dividends declared . . . . .	—	—	(65,849)	—	(65,849)	(205)	(66,054)
Contribution to share capital . . . . .	266	—	—	—	266	—	266
Change in non-controlling interest . . . . .	—	—	(2,012)	—	(2,012)	1,685	(327)
Transfers between reserves . . . . .	—	(20,676)	20,676	—	—	—	—
<b>Balance at 31 December 2017</b> . . . . .	<b>37,051</b>	<b>(2,229)</b>	<b>586,998</b>	<b>4,785</b>	<b>626,605</b>	<b>14,571</b>	<b>641,176</b>

These consolidated financial statements were approved by management on 28 September 2018:

\_\_\_\_\_  
Yussupov M.B.  
Chief Financial Officer

\_\_\_\_\_  
Kozha-Akhmet D.A.  
Financial Controller

\_\_\_\_\_  
Kaliyeva Z.G.  
Chief Accountant

**The accompanying notes are an integral part of these consolidated financial statements.**

## 1. Kazatomprom Group and its Operations

These consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) for the years ended 31 December 2017, 2016 and 2015 for JSC National Atomic Company Kazatomprom (the “Company”) and its subsidiaries (hereinafter collectively referred to as “the Group” or “JSC NAC Kazatomprom”).

The Company is a joint stock company set up in accordance with regulations of the Republic of Kazakhstan. The Company was established pursuant to the Decree of the President of the Republic of Kazakhstan on the establishment of National Atomic Company Kazatomprom No. 3593, dated 14 July 1997, and the Decree of the Government of the Republic of Kazakhstan on National Atomic Company Kazatomprom Issues No. 1148 dated 22 July 1997, as a closed joint stock company with a 100% government shareholding. Currently, 100% of the Company’s shares are held by the government via National Welfare Fund Samruk-Kazyna (hereinafter “Samruk-Kazyna JSC”). The Company’s registered address is 10 Kunayev Street, Astana, the Republic of Kazakhstan. The principal place of business is the Republic of Kazakhstan.

The Group’s principal activities include production of uranium and sale of uranium products. The Group is one of the leading uranium producing companies of the world. Besides, the Group is involved in mining of rare and rare-earth metals; manufacture and sale of beryllium and tantalum products; development of high technologies and power supply.

JSC NAC Kazatomprom is an entity representing interests of the Republic of Kazakhstan at the initial stages of the nuclear fuel cycle. The Group is a participant to a number of associates and joint ventures which generate significant portion of its current and prospective sources of revenue (Notes 25 and 26). The Group’s revised development strategy is focused on a return to the core business of uranium mining and its value chain components in order to ensure long term value growth. Production volumes are optimised according to market conditions and sales capabilities will be enhanced, both of which reflect the Group’s shift to a market centric focus.

As at 31 December 2017, the Group was a party to the following contracts on production and exploration of uranium:

<u>Mine/area</u>	<u>Stage</u>	<u>Contract date</u>	<u>Contract term</u>	<u>Subsurface user</u>	<u>Service company</u>
Kanzhugan	Production	27.11.1996	25 years	Company	Kazatomprom-SaUran LLP
Uvanas	Production	27.11.1996	25 years	Company	Kazatomprom-SaUran LLP
Mynkuduk, East lot	Production	27.11.1996	25 years	Company	Kazatomprom-SaUran LLP
Moinkum, lot 1 (South) (south part)	Production	26.09.2000	20 years	Company	Kazatomprom-SaUran LLP
Mynkuduk, Central lot	Production	08.07.2005	28 years	DP Ortalyk LLP	—
Mynkuduk, West lot	Production	30.07.2005	30 years	Appak LLP	—
North and South Karamurun	Production	27.11.1996	28 years	Company	RU-6 LLP
Moinkum, lot 3 (Central) (north part)	Production	31.05.2010	29 years	Company	Kazatomprom-SaUran LLP
Zhalpak	Exploration	31.05.2010	8 years	DP Ortalyk LLP	—

At 31 December 2017 the Group comprises more than 40 (2016: 40; 2015: 70) entities, including associates and joint ventures, located in 7 regions of the Republic of Kazakhstan: South Kazakhstan (from 19 June 2018 – Turkestan) region, East Kazakhstan region, Kyzylorda region, Mangistau region, Akmola region, Pavlodar region and Almaty region. At 31 December 2017 aggregate number of employees of the Group exceeded 25 thousand (2016: 26 thousand; 2015: 26 thousand) people.

## 2. Operating Environment of the Group

In general, the economy of the Republic of Kazakhstan continues to display characteristics of an emerging market. Its economy is particularly sensitive to prices for oil and gas and other commodities, which constitute major part of the country’s export. These characteristics include, but are not limited to, the existence of national currency that is not freely convertible outside of the country and a low level of liquidity of debt and equity securities in the markets.

Low prices on oil and other commodities and the volatility of the exchange rate have caused and may continue to cause negative impact on the economy of the Republic of Kazakhstan, including a decrease in liquidity.

On 20 August 2015, the National Bank and the Government of the Republic of Kazakhstan made a resolution about discontinuation of supporting the exchange rate of Tenge and implementation of the new monetary policy, which is based on an inflation targeting regime, cancellation of exchange rate trading band and transition to a free floating exchange rate. As the result, during the period of August-December 2015 the exchange rate of Tenge had varied from 187 to 350 Tenge per 1 US Dollar. As at the date of this report the official exchange rate of the National Bank of the Republic Kazakhstan was Tenge 361.82 per USD 1, compared to Tenge 332.33 per USD 1 as at 31 December 2017 (31 December 2016: Tenge 333.29 per USD 1; 31 December 2015: Tenge 339.47 per USD 1). Therefore, uncertainty exists in relation to exchange rate of Tenge, future action of the National Bank and the Government of the Republic of Kazakhstan, and the impact of the factors on the economy of the Republic of Kazakhstan.

In January 2016, the international rating agency Standard & Poor's has significantly reduced its oil prices forecasts for the period 2016-2019. As the economy of Kazakhstan is largely dependent on the oil and gas sector, Standard & Poor's is now expecting stagnation or a very small increase in GDP, according to a press release. Accordingly, in February 2016, Standard & Poor's lowered Kazakhstan's long-term credit ratings on liabilities in foreign and national currencies from BBB + to BBB-. In addition, Standard & Poor's lowered Kazakhstan's short-term ratings on liabilities in foreign and national currencies from "A-2" to "A-3", and the national scale rating from "kzAA +" to "kzAA".

The outlook on the long-term ratings is "stable". The stable outlook reflects the Standard & Poor's agency expectation that fiscal costs of the authorities' banking sector recapitalisation plans are captured in their projections and that economic activity will remain relatively robust over the period to 2020.

The financial markets continue to be volatile and are characterised by frequent significant price movements and increased trading spreads. This operating environment has a significant impact on the Group's operations. Management is taking necessary measures to ensure sustainability of the Group's operations. However, the future effects of the current economic situation are difficult to predict and management's current expectations and estimates could differ from actual results.

Additionally, the mining sector in the Republic of Kazakhstan is still impacted by political, legislative, fiscal and regulatory developments. The legal, tax and regulatory frameworks continue to develop and are subject to varying interpretations (Note 39). The prospects for future economic stability in the Republic of Kazakhstan are largely dependent upon the effectiveness of economic measures undertaken by the Government, together with legal, controlling and political developments, which are beyond the Group's control. Management has assessed the potential impairment of long-term assets of the Group, taking into account the current economic situation and its prospects (Note 4). Future economic situation and regulatory environment may differ from the current expectations of management.

### **3. Significant Accounting Policies**

#### ***Basis of preparation***

These consolidated financial statements have been prepared in accordance with IFRS under the historical cost convention, except the initial recognition of financial instruments based on fair value. The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the periods presented, unless otherwise stated (Note 5).

#### ***Presentation currency***

These consolidated financial statements are presented in millions of Kazakhstani Tenge ("Tenge"), unless otherwise stated.

#### ***Consolidation***

##### ***(i) Consolidated financial statements***

Subsidiaries are those investees, including structured entities, that the Group controls because the Group (i) has power to direct the relevant activities of the investees that significantly affect their returns, (ii) has exposure, or rights, to variable returns from its involvement with the investees, and (iii) has the ability to use its power over the investees to affect the amount of the investor's returns. The existence and effect of substantive rights, including substantive potential voting rights, are considered when assessing whether the Group has power over another entity. For a right to be substantive, the holder must have a practical ability to exercise that right when decisions about the direction of the relevant activities of the investee need to be made. The Group may have power over an investee even when it holds



less than the majority of the voting power in an investee. In such a case, the Group assesses the size of its voting rights relative to the size and dispersion of holdings of the other vote holders to determine if it has de-facto power over the investee. Protective rights of other investors, such as those that relate to fundamental changes of the investee's activities or applied only in exceptional circumstances, do not prevent the Group from controlling an investee. Subsidiaries are consolidated from the date on which control is transferred to the Group (acquisition date) and are deconsolidated from the date on which control ceases.

The acquisition method of accounting is used to account acquisition of subsidiaries other than those acquired from parties under common control. Identifiable assets, liabilities and contingent liabilities acquired in a business combination are measured at their fair values at the acquisition date, irrespective of the extent of any non-controlling interest.

The Group measures non-controlling interest that represents present ownership interest and entitles the holder to a proportionate share of net assets in the event of liquidation on a transaction by transaction basis, either at: (a) fair value, or (b) the non-controlling interest's proportionate share of net assets of the acquiree.

Goodwill is measured by deducting the net assets of the acquiree from the aggregate of the consideration transferred for the acquiree, the amount of non-controlling interest in the acquiree and the fair value of an interest in the acquiree held immediately before the acquisition date. Any negative amount ("negative goodwill" or a "bargain purchase") is recognised in profit or loss, after management reassesses whether it identified all the assets acquired and all the liabilities and contingent liabilities assumed and reviews the appropriateness of their measurement.

The consideration transferred for the acquiree is measured at the fair value of the assets given up, equity instruments issued and liabilities incurred or assumed, including the fair value of assets or liabilities from contingent consideration arrangements, but excludes acquisition related costs such as advisory, legal, valuation and similar professional services. Transaction costs related to the acquisition of and incurred for issuing equity instruments are deducted from equity; transaction costs incurred for issuing debt as part of the business combination are deducted from the carrying amount of the debt and all other transaction costs associated with the acquisition are expensed.

Intercompany transactions, balances and unrealised gains on transactions between Group companies are eliminated; unrealised losses are also eliminated unless the cost cannot be recovered. The Company and all of its subsidiaries use uniform accounting policies consistent with the Group's policies.

Non-controlling interest is that part of the net results and of the equity of a subsidiary attributable to interests which are not owned, directly or indirectly, by the Group. Non-controlling interest forms a separate component of the Group's equity.

*(ii) Purchases and sales of non-controlling interests*

The Group applies the economic entity model to account for transactions with owners of non-controlling interest in transactions that do not result in a loss of control. Any difference between the purchase consideration and the carrying amount of non-controlling interest acquired is recorded as a capital transaction directly in equity. The Group recognises the difference between sales consideration and the carrying amount of non-controlling interest sold as a capital transaction in the consolidated statements of changes in equity.

*(iii) Purchases of subsidiaries from parties under common control*

Purchases of subsidiaries from parties under common control are accounted for using the predecessor values method. Under this method the consolidated financial statements of the combined entity are presented as if the businesses had been combined from the beginning of the earliest period presented or, if later, the date when the combining entities were first brought under common control. The assets and liabilities of the subsidiary transferred under common control are at the predecessor entity's carrying amounts.

The predecessor entity is considered to be the highest reporting entity in which the subsidiary's IFRS financial information was consolidated. Related goodwill inherent in the predecessor entity's original acquisitions is also recorded in these consolidated financial statements. Any difference between the carrying amount of net assets, including the predecessor entity's goodwill, and the consideration for the acquisition is accounted for in these consolidated financial statements as an adjustment to retained earnings within equity.

*(iv) Associates*

Associates are entities over which the Group has significant influence (directly or indirectly), but not control, generally accompanying a shareholding of between 20 and 50 percent of the voting rights. Investments in associates are

accounted for using the equity method of accounting and are initially recognised at cost. Dividends received from associates reduce the carrying value of the investment in associates. Other post-acquisition changes in the Group's share of net assets of an associate are recognised as follows: (i) the Group's share of profits or losses of associates is recorded in the consolidated profit or loss for the year as the share of results of associates, (ii) the Group's share of other comprehensive income is recognised in other comprehensive income and presented separately, (iii) other changes in the Group's share of the carrying value of net assets of associates are recognised in profit or loss within the share of results of associates.

However, when the Group's share of losses in an associate equals or exceeds its interest in the associate, including any other unsecured receivables, the Group does not recognise further losses, unless it has incurred obligations or made payments on behalf of the associate.

Unrealised gains on transactions between the Group and its associates are eliminated to the extent of the Group's interest in the associates; unrealised losses are also eliminated unless the transaction provides evidence of an impairment of the asset transferred.

#### *(v) Joint arrangements*

The Group is a party of joint arrangement when it exercises joint control over arrangement by acting collectively with other parties and decisions about the relevant activities require unanimous consent of the parties sharing control. The joint arrangement is either a joint operation or a joint venture depending on the contractual rights and obligations of the parties to the arrangement.

In relation to interest in joint operations the Group recognises: (i) its assets, including its share of any assets held jointly, (ii) liabilities, including its share of any liabilities incurred jointly, (iii) revenue from the sale of its share of the output arising from the joint operation, (iv) its share of the revenue from the sale of the output by the joint operations, and (v) its expenses, including its share of any expenses incurred jointly.

The Group's interests in joint ventures are accounted for using the equity method and are initially recognised at cost. Dividends received from joint ventures reduce the carrying value of the investment in joint ventures. Other post-acquisition changes in the Group's share of net assets of joint ventures are recognised as follows: (i) the Group's share of profits or losses of joint ventures is recorded in the consolidated profit or loss for the year as share of result of joint ventures, (ii) the Group's share of other comprehensive income is recognised in other comprehensive income and presented separately, (iii) other changes in the Group's share of the carrying value of net assets of joint ventures are recognised in profit or loss within the share of result of joint ventures.

When the Group's share of losses in a joint venture equals or exceeds its interests in the joint ventures (which includes any long-term interests that, in substance, form part of the Group's net investment in the joint ventures), the Group does not recognise further losses, unless it has incurred obligations or made payments on behalf of the joint ventures. The Group's share of joint venture's other comprehensive income or loss is recognised in other comprehensive income in the Group's consolidated financial statements.

Unrealised gains on transactions between the Group and its joint ventures are eliminated to the extent of the Group's interest in the joint ventures. Unrealised losses are also eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of the joint ventures have been changed where necessary to ensure consistency with the policies adopted by the Group.

#### *(vi) Disposals of subsidiaries, associates or joint ventures*

When the Group ceases to have control or significant influence, any retained interest in the entity is remeasured to its fair value at the date when control is lost, with the change in carrying amount recognised in profit or loss. The fair value is the initial carrying amount for the purposes of subsequently accounting for the retained interest as an associate, joint venture or financial asset. In addition, any amounts previously recognised in other comprehensive income in respect of that entity, are accounted for as if the Group had directly disposed of the related assets or liabilities. This may mean that amounts previously recognised in other comprehensive income are reclassified to profit or loss.

If the ownership interest in an associate is reduced but significant influence is retained, only a proportionate share of the amounts previously recognised in other comprehensive income are reclassified to profit or loss where appropriate.

### ***Financial instruments***

#### *(i) Key measurement terms*

Depending on their classification financial instruments are carried at fair value, cost, or amortised cost as described below.

*Fair value* is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The best evidence of fair value is the price in an active market. An active market is one in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis.

Fair value of financial instruments traded in an active market is measured as the product of the quoted price for the individual asset or liability and the number of instruments held by the entity. This is the case even if a market's normal daily trading volume is not sufficient to absorb the quantity held and placing orders to sell the position in a single transaction might affect the quoted price.

Valuation techniques such as discounted cash flow models or models based on recent arm's length transactions or consideration of financial data of the investees are used to measure fair value of certain financial instruments for which external market pricing information is not available. Fair value measurements are analysed by level in the fair value hierarchy as follows: (i) level one are measurements at quoted prices (unadjusted) in active markets for identical assets or liabilities, (ii) level two measurements are valuations techniques with all material inputs observable for the asset or liability, either directly (that is, as prices) or indirectly (that is, derived from prices), and (iii) level three measurements are valuations not based on solely observable market data (that is, the measurement requires significant unobservable inputs). Transfers between levels of the fair value hierarchy are deemed to have occurred at the end of the reporting period.

*Cost* is the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition and includes transaction costs. Measurement at cost is only applicable to investments in equity instruments that do not have a quoted market price and whose fair value cannot be reliably measured and derivatives that are linked to, and must be settled by, delivery of such unquoted equity instruments.

*Transaction costs* are incremental costs that are directly attributable to the acquisition, issue or disposal of a financial instrument. An incremental cost is one that would not have been incurred if the transaction had not taken place. Transaction costs include fees and commissions paid to agents (including employees acting as selling agents), advisors, brokers and dealers, levies by regulatory agencies and securities exchanges, and transfer taxes and duties. Transaction costs do not include debt premiums or discounts, financing costs or internal administrative or holding costs.

*Amortised cost* is the amount at which the financial instrument was recognised at initial recognition less any principal repayments, plus accrued interest, and for financial assets less any write-down for incurred impairment losses. Accrued interest includes amortisation of transaction costs deferred at initial recognition and of any premium or discount to the maturity amount using the effective interest method. Accrued interest income and accrued interest expense, including both accrued coupon and amortised discount or premium (including fees deferred at origination, if any), are not presented separately and are included in the carrying values of the related items in the consolidated statements of financial position.

*The effective interest method* is a method of allocating interest income or interest expense over the relevant period, so as to achieve a constant periodic rate of interest (effective interest rate) on the carrying amount. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts (excluding future credit losses) through the expected life of the financial instrument or a shorter period, if appropriate, to the net carrying amount of the financial instrument. The effective interest rate discounts cash flows of variable interest instruments to the next interest repricing date, except for the premium or discount which reflects the credit spread over the floating rate specified in the instrument, or other variables that are not reset to market rates. Such premiums or discounts are amortised over the whole expected life of the instrument. The present value calculation includes all fees paid or received between parties to the contract that are an integral part of the effective interest rate.

#### *(ii) Classification of financial assets*

Financial assets have the following categories: (a) loans and receivables; (b) available-for-sale financial assets; (c) financial assets held to maturity and (d) financial assets at fair value through profit or loss. Financial assets at fair value through profit or loss have two sub-categories: (i) assets designated as such upon initial recognition, and (ii) those classified as held for trading.

*Derivative financial instruments* are carried at their fair value. All derivative instruments are carried as assets when fair value is positive and as liabilities when fair value is negative. Changes in the fair value of derivative instruments are included in profit or loss for the year. The Group does not apply hedge accounting.

Certain derivative instruments embedded in other financial instruments are treated as separate derivative instruments when their risks and characteristics are not closely related to those of the host contract.

*Loans and receivables* are unquoted non-derivative financial assets with fixed or determinable payments other than those that the Group intends to sell in the near term.

All other financial assets are included in the available-for-sale category.

*(iii) Classification of financial liabilities*

Financial liabilities have the following measurement categories: (a) held for trading which also includes financial derivatives and (b) other financial liabilities. Liabilities held for trading are carried at fair value with changes in value recognised in profit or loss for the year (as finance income or finance costs) in the period in which they arise. Other financial liabilities are carried at amortised cost.

*(iv) Initial recognition of financial instruments*

All financial instruments are initially recorded at fair value plus transaction costs. Fair value at initial recognition is best evidenced by the transaction price. A gain or loss on initial recognition is only recorded if there is a difference between fair value and transaction price which can be evidenced by other observable current market transactions in the same instrument or by a valuation technique whose inputs include only data from observable markets.

All purchases and sales of financial assets that require delivery within the time frame established by regulation or market convention (“regular way” purchases and sales) are recorded at trade date, which is the date on which the Group commits to deliver a financial asset. All other purchases are recognised when the entity becomes a party to the contractual provisions of the instrument.

The Group uses discounted cash flow valuation techniques to determine the fair value of loans to related parties that are not traded in an active market. Differences may arise between the fair value at initial recognition, which is considered to be the transaction price, and the amount determined at initial recognition using a valuation technique. Any such differences are amortised on a straight line basis over the term of the loans to related parties.

*(v) Derecognition of financial assets*

The Group derecognises financial assets when (a) the assets are redeemed or the rights to cash flows from the assets otherwise expire or (b) the Group has transferred the rights to the cash flows from the financial assets or entered into a qualifying pass-through arrangement whilst (i) also transferring substantially all the risks and rewards of ownership of the assets or (ii) neither transferring nor retaining substantially all the risks and rewards of ownership but not retaining control.

Control is retained if the counterparty does not have the practical ability to sell the asset in its entirety to an unrelated third party without needing to impose additional restrictions on the sale.

*(vi) Available-for-sale investments*

Available-for-sale investments are carried at fair value. Interest income on available-for-sale debt securities is calculated using the effective interest method and recognised in profit or loss for the year as finance income. Dividends on available-for-sale equity instruments are recognised in profit or loss for the year as finance income when the Group’s right to receive payment is established and it is probable that the dividends will be collected. All other elements of changes in the fair value are recognised in other comprehensive income until the investment is derecognised or impaired at which time the cumulative gain or loss is reclassified from other comprehensive income to finance income in profit or loss for the year. If management cannot reliably estimate fair value of its available-for-sale investments in shares the investments are carried at cost.

Impairment losses are recognised in profit or loss for the year when incurred as a result of one or more events (“loss events”) that occurred after the initial recognition of available-for-sale investments. A significant or prolonged decline in the fair value of an equity security below its cost is an indicator that it is impaired. The cumulative impairment loss – measured as the difference between the acquisition cost and the current fair value, less any impairment loss on that asset previously recognised in profit or loss – is reclassified from other comprehensive income to finance costs in profit or loss for the year.

Impairment losses on equity instruments are not reversed and any subsequent gains are recognised in other comprehensive income. If, in a subsequent period, the fair value of a debt instrument classified as available-for-sale increases and the increase can be objectively related to an event occurring after the impairment loss was recognised in profit or loss, the impairment loss is reversed through current period’s profit or loss.

*(vii) Offsetting financial instruments*

Financial assets and liabilities are offset and the net amount reported in the consolidated statements of financial position only when there is a legally enforceable right to offset the recognised amounts, and there is an intention to either settle on a net basis, or to realise the asset and settle the liability simultaneously. Such a right of set off (a) must not be contingent on a future event and (b) must be legally enforceable in all of the following circumstances: (i) in the normal course of business, (ii) in the event of default and (iii) in the event of insolvency or bankruptcy.

***Property, plant and equipment***

*(i) Recognition and measurement of property, plant and equipment*

Property, plant and equipment are stated at cost, less accumulated depreciation and provision for impairment.

Cost comprises purchase price, including import duties and non-refundable purchase taxes, after deducting trade discounts and rebates, and any costs directly attributable to bringing the asset to the location and condition necessary for its intended use. The cost of self-constructed assets includes the cost of materials, direct labour and an appropriate proportion of production overheads. The individual significant parts of an item of property, plant and equipment (components), whose useful lives are different from the useful life of the given asset as a whole are depreciated individually, applying depreciation rates reflecting their anticipated useful lives.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. Specialised spare parts and servicing equipment with a significant initial value and a useful life of more than one year are recognised as an item of property, plant and equipment. Other spare parts and auxiliary equipment are recognised as inventories and accounted for in profit and loss for the year as retired.

Costs of minor repairs and day-to-day maintenance are expensed when incurred. Cost of replacing major parts or components of property, plant and equipment items are capitalised and the replaced part is retired.

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised in profit or loss for the year.

*(ii) Depreciation*

Land is not depreciated. Depreciation of items within buildings category that are used in extraction of uranium and its preliminary processing is charged on a unit-of-production (UoP) method in respect of items for which this basis best reflects the pattern of consumption. Depreciation on other items of property, plant and equipment is calculated using the straight-line method to allocate their cost to their residual values over their estimated useful lives:

	<u>Useful lives in years</u>
Buildings .....	10 to 50
Machinery and equipment .....	3 to 50
Vehicles .....	3 to 10
Other .....	3 to 20

Each item's estimated useful life depends on its own useful life limitations and/or term of a subsurface use contract and the present assessment of economically recoverable reserves of the mine property at which the item is located.

The residual value of an asset is the estimated amount that the Group would currently obtain from the disposal of the asset less the estimated costs of disposal, if the asset was already of the age and in the condition expected at the end of its useful life. The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

***Mine development assets***

Mine development assets are stated at cost, less accumulated depreciation and provision for impairment, where required.

Mine development assets comprise the capitalised costs of pump-in and pump-out well drilling, main external tying of the well with surface piping, equipment, measuring instruments, ion-exchange resin, estimated site restoration and other development costs. Mine development assets are amortised at the mine or block level using the unit-of-production method. Unit-of-production rates are based on proved reserves estimated to be recovered from



mines (blocks) using existing facilities and operating methods. The estimate of proved reserves is based on reserve reports which are integral part of each subsoil use agreement. These reserve reports are incorporated into feasibility models which are approved by the government and detail the total proven reserves and estimated scheduled extraction by year. Since 2017, the Group uses reserve reports prepared by an independent consultant (Note 4).

### **Intangible assets**

#### *(i) Recognition and measurement of intangible assets*

The Group's intangible assets other than goodwill have definite useful lives and primarily include capitalised production technology development costs, computer software, patents, and licences. Acquired computer software licences and patents are initially measured at costs incurred to acquire and bring them to use.

#### *(ii) Amortisation of intangible assets*

Intangible assets are amortised using the straight-line method over their useful lives:

	<u>Useful lives in years</u>
Licences and patents . . . . .	3 to 20
Software . . . . .	1 to 14
Other . . . . .	2 to 15

If impaired, the carrying amount of intangible assets is written down to the higher of value in use and fair value less costs to sell.

#### *(iii) Goodwill*

Goodwill is carried at cost less accumulated impairment losses, if any. The Group tests goodwill for impairment at least annually and whenever there are indications that goodwill may be impaired. Goodwill is allocated to the cash-generating units, or groups of cash-generating units, that are expected to benefit from the synergies of the business combination. Such units or groups of units represent the lowest level at which the Group monitors goodwill and are not larger than an operating segment.

Gains or losses on disposal of an operation within a cash-generating unit to which goodwill has been allocated include the carrying amount of goodwill associated with the disposed operation, generally measured on the basis of the relative values of the disposed operation and the portion of the cash-generating unit which is retained.

#### *(iv) Research and development costs*

Research expenditure is recognised as an expense when incurred. Costs incurred on development projects (relating to the design and testing of new or improved products) are recognised as intangible assets when it is probable that the project will be a success considering its commercial and technological feasibility, and costs can be measured reliably. Other development expenditures are recognised as an expense as incurred. Development costs previously recognised as an expense are not recognised as an asset in a subsequent period.

Development costs with a finite useful life that have been capitalised are amortised from the commencement of the commercial production of the product on a straight-line basis over the period of its expected benefit.

### **Mineral rights**

Mineral rights are stated at cost, less accumulated depreciation and provision for impairment, where required. The capitalised cost of acquisition of mineral rights comprises subscription bonus, commercial discovery bonus, the cost of subsurface use rights and capitalised historical costs. The Group is obliged to reimburse historical costs incurred by the government in respect of licensing areas prior to licence being issued. These historical costs are recognised as part of the acquisition cost with a corresponding liability equal to the present value of payments made during the licence period.

Mineral rights are amortised using unit-of-production method based upon proved reserves commencing when uranium first starts to be extracted.

The estimate of proved reserves is based on reserve reports which are integral part of each subsoil use agreement. These reserve reports are incorporated into feasibility models which are approved by the government and detail the total proven reserves and estimated scheduled extraction by year. Since 2017, the Group uses reserve reports prepared by an independent consultant (Note 4).



### ***Exploration and evaluation assets***

Exploration and evaluation assets are measured at cost less provision for impairment, where required. The Group classifies exploration and evaluation assets as tangible or intangible according to the nature of the assets acquired.

Exploration and evaluation assets comprise the capitalised costs incurred after the Group has obtained the legal rights to explore a specific area and prior to proving that viable production is possible and include geological and geophysical costs, the costs of exploratory wells and directly attributable overheads associated with exploration activities.

Activities prior to the acquisition of the natural resources rights are pre-exploration. All pre-exploration costs are expensed as incurred and include such costs as design work on operations, technical and economical assessment of a project, and overheads associated with the pre-exploration. A decision on termination or extension of a subsurface contract upon expiry of the exploration and evaluation period is subject to success of the exploration and evaluation of mineral resources and the Group's decision whether or not progress to the production (development) stage.

Tangible exploration and evaluation assets are transferred to mine development assets upon demonstration of commercial viability of uranium production and amortised using unit-of-production method based upon proved reserves. Once commercial reserves (proved or commercial reserves) are found, intangible exploration and evaluation assets are transferred to mineral rights. Accordingly, the Group does not amortise exploration and evaluation assets before commercial reserves (proved or commercial reserves) are found. If no commercial reserves are found exploration and evaluation assets are expensed.

Exploration and evaluation assets are tested by the Group for impairment whenever facts and circumstances indicate assets' impairment. An impairment loss is recognised for the amount by which exploration and evaluation assets' carrying amount exceeds their recoverable amount. The recoverable amount is the higher of the exploration and evaluation assets' fair value less costs to sell and their value in use. One or more of the following facts and circumstances indicate that the Group should test its exploration and evaluation assets for impairment (the list is not exhaustive):

- the period for which the Group has the right to explore in the specific area has expired during the period or will expire in the near future, and is not expected to be renewed;
- substantive expenditure on further exploration for and evaluation of mineral reserves in the specific area is neither budgeted nor planned;
- exploration for and evaluation of mineral reserves in the specific area have not led to the discovery of commercially viable quantities of mineral reserves and the Group has decided to discontinue such operations in the specific area;
- sufficient data exist to indicate that, although development works in the specific area are likely to proceed, the carrying amount of the exploration and evaluation assets is unlikely to be recovered in full resulting from efficient development or by sale.

### ***Impairment of non-financial assets***

The carrying amounts of the Group's non-financial assets, other than inventories and deferred tax assets, are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, management estimates the recoverable amount, which is determined as the higher of an asset's fair value less costs to sell (the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date) and its value in use (being the net present value of expected future cash flows of the relevant cash-generating unit). In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the future cash flow estimates have not been adjusted.

If it is not possible to estimate the recoverable amount of the individual asset, the Group determines the recoverable amount of the cash-generating unit to which the asset belongs. A cash-generating unit is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. Basis for determination of cash-generating units is presented in Note 4.

The estimates used for impairment reviews are based on detailed mine layouts and operating budgets, modified as appropriate to meet the requirements of IAS 36 "Impairment of Assets". Future cash flows are based on:

- estimates of the volumes of the reserves for which there is a high degree of confidence of economic extraction;

- future production levels;
- future commodity prices (assuming the current market prices will revert to the Group's assessment of the long term average price, generally over a period of three to five years); and
- future costs of production and other operating and capital expenditures.

If the carrying amount of the asset exceeds its recoverable amount, the asset is impaired and an impairment loss is charged to profit and loss for the year so as to reduce the carrying amount in the consolidated statements of financial position to its recoverable amount. An impairment loss recognised for an asset in prior years is reversed where appropriate if there has been a change in the estimates used to determine the asset's value in use or fair value less costs to sell. This reversal is recognised in profit and loss for the year, and is limited to the carrying amount that would have been determined, net of depreciation, if no impairment loss had been recognised in prior years.

### ***Operating leases***

Where the Group is a lessee in a lease which does not transfer substantially all the risks and rewards incidental to ownership from the lessor to the Group, the total lease payments are charged to profit or loss for the year on a straight-line basis over the lease term. The lease term is the non-cancellable period for which the lessee has contracted to lease the asset together with any further terms for which the lessee has the option to continue to lease the asset, with or without further payment, when at the inception of the lease it is reasonably certain that the lessee will exercise the option.

### ***Finance lease liabilities***

Where the Group is a lessee in a lease which transferred substantially all the risks and rewards incidental to ownership to the Group, the assets leased are capitalised in property, plant and equipment at the commencement of the lease at the lower of the fair value of the leased asset and the present value of the minimum lease payments. Each lease payment is allocated between the liability and finance charges so as to achieve a constant rate on the finance balance outstanding. The corresponding rental obligations, net of future finance charges, are included in borrowings. The interest cost is charged to profit or loss over the lease period using the effective interest method. The assets acquired under finance leases are depreciated over their useful life or the shorter lease term, if the Group is not reasonably certain that it will obtain ownership by the end of the lease term.

### ***Income taxes***

Income taxes have been provided for in the consolidated financial statements in accordance with legislation enacted by the end of the reporting period. The income tax charge/(credit) comprises current tax and deferred tax and is recognised in profit or loss for the year, except if it is recognised in other comprehensive income or directly in equity because it relates to transactions that are also recognised, in the same or a different period, in other comprehensive income or directly in equity.

Current tax is the amount expected to be paid to, or recovered from, the taxation authorities in respect of taxable profits or losses for the current and prior periods. Taxable profits or losses are based on estimates if consolidated financial statements are authorised prior to filing relevant tax returns. Taxes other than on income are recorded within operating expenses.

Deferred income tax is provided using the balance sheet liability method for tax loss carry forwards and temporary differences arising between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes. In accordance with the initial recognition exemption, deferred taxes are not recorded for temporary differences on initial recognition of an asset or a liability in a transaction other than a business combination if the transaction, when initially recorded, affects neither accounting nor taxable profit. Deferred tax liabilities are not recorded for temporary differences on initial recognition of goodwill, and subsequently for goodwill which is not deductible for tax purposes. Deferred tax balances are measured at tax rates enacted at the end of the reporting period, which are expected to apply to the period when the temporary differences will reverse or the tax loss carry forwards will be utilised. Deferred tax assets and liabilities are netted only within the individual companies of the Group. Deferred tax assets for deductible temporary differences and tax loss carry forwards are recorded only to the extent that it is probable that the temporary difference will reverse in the future and there is sufficient future taxable profit available against which the deductions can be utilised.

The Group controls the reversal of temporary differences relating to taxes chargeable on dividends from subsidiaries or on gains upon their disposal. The Group does not recognise deferred tax liabilities on such temporary differences except to the extent that management expects the temporary differences to reverse in the foreseeable future.

The Group's uncertain tax positions are reassessed by management at the end of each reporting period. Liabilities are recorded for income tax positions that are determined by management as more likely than not to result in additional taxes being levied if the positions were to be challenged by the tax authorities. The assessment is based on the interpretation of tax laws that have been enacted by the end of the reporting period, and any known court or other rulings on such issues.

Liabilities for penalties, interest and taxes other than on income are recognised based on management's best estimate of the expenditure required to settle the obligations at the end of the reporting period.

#### ***Trade and other receivables***

Trade and other receivables are recognised initially at fair value and are subsequently carried at amortised cost using the effective interest method.

#### ***Inventories***

Inventories are recorded at the lower of cost and net realisable value. The cost of inventory is determined on the weighted average basis. The cost of finished goods and work in progress comprises raw material, direct labour, other direct costs and related production overheads (based on the normal operating capacity) but excludes borrowing costs. Net realisable value is the estimated selling price in the ordinary course of business, less the estimated cost of completion and selling expenses.

#### ***Impairment of financial assets carried at amortised cost***

Impairment losses are recognised in profit or loss when incurred as a result of one or more events ("loss events") that occurred after the initial recognition of the financial asset and which have an impact on the amount or timing of the estimated future cash flows of the financial asset or group of financial assets that can be reliably estimated. If the Group determines that no objective evidence exists that impairment was incurred for an individually assessed financial asset, whether significant or not, it includes the asset in a group of financial assets with similar credit risk characteristics, and collectively assesses them for impairment. The primary factors that the Group considers in determining whether a financial asset is impaired are its overdue status and realisability of related collateral, if any. The following other principal criteria are also used to determine whether there is objective evidence that an impairment loss has occurred:

- any portion or instalment is overdue and the late payment cannot be attributed to a delay caused by the settlement systems;
- the counterparty experiences a significant financial difficulty as evidenced by its financial information that the Group obtains;
- the counterparty considers bankruptcy or a financial reorganisation;
- there is adverse change in the payment status of the counterparty as a result of changes in the national or local economic conditions that impact the counterparty; or
- the value of collateral, if any, significantly decreases as a result of deteriorating market conditions.

If the terms of an impaired financial asset held at amortised cost are renegotiated or otherwise modified because of financial difficulties of the counterparty, impairment is measured using the original effective interest rate before the modification of terms. The renegotiated asset is then derecognised and a new asset is recognised at its fair value only if the risks and rewards of the asset substantially changed. This is normally evidenced by a substantial difference between the present values of the original cash flows and the new expected cash flows.

Impairment losses are always recognised through an allowance account to write down the asset's carrying amount to the present value of expected cash flows (which exclude future credit losses that have not been incurred) discounted at the original effective interest rate of the asset. The calculation of the present value of the estimated future cash flows of a collateralised financial asset reflects the cash flows that may result from foreclosure less costs for obtaining and selling the collateral, whether or not foreclosure is probable.

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised (such as an improvement in the debtor's credit rating), the previously recognised impairment loss is reversed by adjusting the allowance account through profit or loss for the year.

Uncollectible assets are written off against the related impairment loss provision after all the necessary procedures to recover the asset have been completed and the amount of the loss has been determined. Subsequent recoveries of amounts previously written off are credited to the impairment loss account within the profit or loss for the year.

### ***Cash and cash equivalents***

Cash and cash equivalents include cash in hand, deposits held at call with banks, and other short-term highly liquid investments with original maturities of three months or less. Cash and cash equivalents are carried at amortised cost using the effective interest method.

### ***Prepayments***

Prepayments are carried at cost less provision for impairment. A prepayment is classified as non-current when the goods or services relating to the prepayment are expected to be obtained after one year, or when the prepayment relates to an asset which will itself be classified as non-current upon initial recognition. Prepayments to acquire assets are transferred to the carrying amount of the asset once the Group has obtained control of the asset and it is probable that future economic benefits associated with the asset will flow to the Group. Other prepayments are written off to profit or loss when the goods or services relating to the prepayments are received. If there is an indication that the assets, goods or services relating to a prepayment will not be received, the carrying value of the prepayment is written down accordingly and a corresponding impairment loss is recognised in profit or loss for the year. Non-current prepayments are not discounted.

### ***Non-current assets classified as held for sale***

Non-current assets and disposal groups (which may include both non-current and current assets) are classified in the consolidated statements of financial position as 'non-current assets held for sale' if their carrying amount will be recovered principally through a sale transaction (including loss of control of a subsidiary holding the assets) within twelve months after the reporting period. Assets are reclassified when all of the following conditions are met: (a) the assets are available for immediate sale in their present condition; (b) the Group management approved and initiated an active programme to locate a buyer; (c) the assets are actively marketed for sale at a reasonable price; (d) the sale is expected within one year; and (e) it is unlikely that significant changes to the plan to sell will be made or that the plan will be withdrawn.

Non-current assets or disposal groups classified as held for sale in the current period's consolidated statements of financial position are not reclassified or re-presented in the comparative statements of financial position to reflect the classification at the end of the current period.

A disposal group is a group of assets (current or non-current) to be disposed of, by sale or otherwise, together as a group in a single transaction, and liabilities directly associated with those assets that will be transferred in the transaction. Goodwill is included if the disposal group includes an operation within a cash-generating unit to which goodwill has been allocated on acquisition. Non-current assets are assets that include amounts expected to be recovered or collected more than twelve months after the reporting period. If reclassification is required, both the current and non-current portions of an asset are reclassified.

Held for sale disposal groups as a whole are measured at the lower of their carrying amount and fair value less costs to sell. Held for sale property, plant and equipment are not depreciated. Reclassified non-current financial instruments are not subject to write down to the lower of their carrying amount and fair value less costs to sell.

Liabilities directly associated with the disposal group that will be transferred in the disposal transaction are reclassified and presented separately in the consolidated statements of financial position.

### ***Discontinued operations***

A discontinued operation is a component of the Group that either has been disposed of, or that is classified as held for sale, and: (a) represents a separate major line of business or geographical area of operations; (b) is part of a single co-ordinated plan to dispose of a separate major line of business or geographical area of operations; or (c) is a subsidiary acquired exclusively with a view to resale. Earnings and cash flows of discontinued operations, if any, are disclosed separately from continuing operations with comparatives being re-presented.

### ***Share capital***

Ordinary shares are classified as equity. Incremental costs directly attributable to the issue of new shares are shown in equity as a deduction, net of tax, from the proceeds. Any excess of the fair value of consideration received over the par value of shares issued is recorded as share premium in equity. Additional paid-in capital primarily represents capital contributions made by non-controlling interests in excess of their ownership.

### ***Dividends***

Dividends are recorded as a liability and deducted from equity in the period in which they are declared and approved. Any dividends declared after the reporting period and before the financial statements are authorised for issue are disclosed in the subsequent events note.

### ***Value added tax***

Value added tax (VAT) related to sales is payable to the tax authorities when goods are shipped or services are rendered. Purchase VAT can be offset against sales VAT upon the receipt of a tax invoice from a supplier. Tax legislation allows the settlement of VAT on a net basis. Accordingly, VAT related to sales and purchases unsettled at the reporting date is stated in the consolidated statements of financial position on a net basis separately for each consolidated entity. Recoverable VAT is classified as non-current if its settlement is not expected within one year after the reporting period. Non-current VAT is not discounted.

### ***Loans and borrowings***

Borrowings are carried at amortised cost using the effective interest method.

Borrowing costs directly attributable to the acquisition, construction or production of assets that necessarily take a substantial time to get ready for intended use or sale (qualifying assets) are capitalised as part of the costs of those assets.

The commencement date for capitalisation is when (a) the Group incurs expenditures for the qualifying asset; (b) it incurs borrowing costs; and (c) it undertakes activities that are necessary to prepare the asset for its intended use or sale. Capitalisation of borrowing costs continues up to the date when the assets are substantially ready for their use or sale.

The Group capitalises borrowing costs that could have been avoided if it had not made capital expenditure on qualifying assets. Borrowing costs capitalised are calculated at the Group's average funding cost (the weighted average interest cost is applied to the expenditures on the qualifying assets), except to the extent that funds are borrowed specifically for the purpose of obtaining a qualifying asset. Where this occurs, actual borrowing costs incurred on the specific borrowings less any investment income on the temporary investment of these borrowings are capitalised.

### ***Trade and other payables***

Trade payables are accrued when the counterparty performs its obligations under the contract and are recognised initially at fair value and subsequently carried at amortised cost using the effective interest method.

### ***Provisions for liabilities and charges***

Provisions for liabilities and charges are non-financial liabilities of uncertain timing or amount. They are accrued when the Group has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made. The Group's provisions include site restoration, environment protection and other provisions (Note 36).

### ***Provisions for assets retirement obligations***

Assets retirement obligations are recognised when it is probable that the costs would be incurred and those costs can be measured reliably. Asset retirement obligations include the costs of rehabilitation and costs of liquidation (demolition of buildings, constructions and infrastructure, dismantling of machinery and equipment, transportation of the residual materials, environmental clean-up, monitoring of wastes and land restoration). Provision for the estimated costs of liquidation, rehabilitation and restoration are established and charged to the cost of property, plant and equipment or mine development assets in the reporting period when an obligation arises from the respective land disturbance in the course of mine development or environment pollution, based on the discounted value of estimated future costs. Movements in the provisions for assets retirement obligations, resulting from updated cost estimates, changes to the estimated term of operations and revisions to discount rates are capitalised within property, plant and equipment or mine development assets.

These costs are then depreciated over the lives of the assets to which they relate using the depreciation methods applied to those assets.

Provisions for asset retirement obligations do not include any additional obligations which are expected to arise from future disturbances. The costs are estimated on the basis of a closure and restoration plan. The cost estimates are



calculated annually during the course of the operations to reflect known developments, e.g. updated cost estimates and revised term estimated lives of operations, and are subject to formal reviews on a regular basis. Although the final cost to be incurred is uncertain, the Group estimates its costs based on feasibility and engineering studies using current restoration standards and techniques for conducting restoration and retirement works.

The amortisation or “unwinding” of the discount applied in establishing the net present value of provisions is charged to profit and loss in each reporting period. The amortisation of the discount is disclosed as finance costs.

### ***Financial guarantees***

Financial guarantees are irrevocable contracts that require the Group to make specified payments to reimburse the holder of the guarantee for a loss it incurs because a specified debtor fails to make payment when due in accordance with the terms of a debt instrument. Financial guarantees are initially recognised at their fair value, which is normally evidenced by the amount of fees received. This amount is amortised on a straight line basis over the life of the guarantee. At the end of each reporting period, the guarantees are measured at the higher of (i) the remaining unamortised balance of the amount at initial recognition and (ii) the best estimate of expenditure required to settle the obligation at the end of the reporting period.

### ***Foreign currency translation***

The functional currency of each of the Group’s consolidated entities is the currency of the primary economic environment in which the entity operates. The functional currency of the Company and its Kazakhstan subsidiaries, and the Group’s presentation currency, is the national currency of Kazakhstan, Kazakhstani Tenge. Exchange restrictions and currency controls exist in relation of converting Tenge into other currencies. Currently, Tenge is not freely convertible outside of the Republic of Kazakhstan.

Monetary assets and liabilities are translated into each entity’s functional currency at the official exchange rate at the respective end of the reporting period. Foreign exchange gains and losses resulting from the settlement of the transactions and from the translation of monetary assets and liabilities into each entity’s functional currency at year-end official exchange rates are recognised in profit or loss. Translation at year-end does not apply to non-monetary items that are carried at historic costs.

Loans between Group entities and related foreign exchange gains or losses are eliminated upon consolidation. However, where the loan is between Group entities that have different functional currencies, the foreign exchange gain or loss cannot be eliminated in full and is recognised in the consolidated profit or loss, unless the loan is not expected to be settled in the foreseeable future and thus forms part of the net investment in foreign operation. In such a case, the foreign exchange gain or loss is recognised in other comprehensive income.

The results and financial position of each Group entity are translated into the presentation currency as follows:

- assets and liabilities for each statements of financial position are translated at the closing rate at the end of the respective reporting period;
- income and expenses are translated at average exchange rates (unless this average is not a reasonable approximation of the cumulative effect of the rates prevailing on the transaction dates, in which case income and expenses are translated at the dates of the transactions);
- components of equity are translated at the historic rate;
- all resulting exchange differences are recognised in other comprehensive income.

When control over a foreign operation is lost, the exchange differences recognised previously in other comprehensive income are reclassified to profit or loss for the year as part of the gain or loss on disposal. On partial disposal of a subsidiary without loss of control, the related portion of accumulated currency translation differences is reclassified to non-controlling interest within equity.

At 31 December 2017 the principal rate of exchange used for translating foreign currency balances was USD 1 = Tenge 332.33 (2016: USD 1 = Tenge 333.29; 2015: USD 1 = Tenge 339.47).

### ***Revenue recognition***

Revenues from sales of goods are recognised at the point of transfer of risks and rewards of ownership of the goods. If the Group agrees to transport goods to a specified location, revenue is recognised when the goods are passed to the customer at the destination point.



Sales of services are recognised in the accounting period in which the services are rendered, by reference to the stage of completion of the specific transaction assessed on the basis of the actual service provided as a proportion of the total services to be provided.

Sales are shown net of VAT and discounts. Revenue is measured at the fair value of the consideration received or receivable. When the fair value of goods received in a barter transaction cannot be measured reliably, the revenue is measured at the fair value of the goods or service given up.

Delivery of uranium, tantalum and beryllium products vary depending on the individual terms of a sale contract usually in accordance with the Incoterms classification. Delivery of uranium products occurs: at the date of physical delivery in accordance with Incoterms or at the date of book-transfer to account with convertor specified by customer. Book-transfer operation represents a transaction whereby uranium account balance of the transferor is decreased with simultaneous allocation of uranium to the transferee's uranium account with the same specialised conversion / reconversion entity.

Revenues from sales of electricity, heating power and hot water are recognised by the accrual method at the end of each month for electricity, heating power and hot water supplied during the month based on metering data. Accounting for revenue from sales of electricity, heating power and hot water is split by customer group: households (individuals) and legal entities. Revenue amount is determined based on the tariffs for services approved by the competent authorities and metering data and approved rates of consumption.

Interest income is recognised on a time-proportion basis using the effective interest method.

### ***Employee benefits***

#### *(i) Long-term employee benefits*

The Group entities provide long-term employee benefits to employees in accordance with the provisions of the collective agreement. The agreements provide for financial aid for employees' disability, retirement, funeral aid and other payments to the Group's employees. The entitlement to some benefits is usually conditional on the employee remaining employed until the retirement age and the completion of a minimum service period.

The Group does not have any funded post-employment plans. Liability recognised at each reporting date represents the present value of the plan liabilities. Actuarial gains and losses arising in the year are taken to the profit or loss for the year. For this purpose, actuarial gains and losses comprise both the effects of changes in actuarial assumptions and experience adjustments arising because of differences between the previous actuarial assumptions and what has actually occurred.

Actuarial gains and losses on post-employment obligations such as experience adjustments and the effects of changes in actuarial assumptions recognised in other comprehensive income in the period occurred. Other movements in the present value of the plan liabilities are also recognised in the profit or loss for the year, including current service cost.

The most significant assumptions used in accounting for defined benefit obligations are the discount rate, staff turnover and the mortality assumptions. The discount rate is used to determine the net present value of future liabilities and each year the unwinding of the discount on those liabilities is charged to profit or loss for the year. The mortality assumption is used to project the future stream of benefit payments, which is then discounted to arrive at a net present value of liabilities.

Employee benefits, including financial aid for employees' disability and funeral aid to the Group's employees and other payments, are considered as other long-term employee benefits. The expected cost of these benefits is accrued over the period of employment using the same accounting methodology as used for the defined benefit plan. These obligations are valued annually by independent qualified actuaries.

#### *(ii) Payroll expense and related contributions*

Wages, salaries, contributions to pension and social insurance funds, paid annual leave and sick leave, bonuses, and non-monetary benefits are accrued in the year in which the associated services are rendered by the employees of the Group. In accordance with the legal requirements of the Republic of Kazakhstan, the Group withholds pension contributions from employees' salary and transfers them into the united pension fund. Upon retirement of employees, all pension payments are administered by the united pension fund.

### ***Earnings per share***

Earnings per share are determined by dividing the profit or loss attributable to owners of the Company by the weighted average number of participating shares outstanding during the reporting year.

### ***Segment reporting***

Operating segments are reported in a manner consistent with the internal reporting provided to the Group's chief operating decision maker. The chief operating decision-maker is responsible for allocating resources and assessing performance of the operating segments. Reportable segments whose revenue, result or assets are ten percent or more of all the segments are reported separately.

### ***Changes in presentation of financial statements***

In 2017, the Group has changed its classification of revenue from sales of uranium in the consolidated statements of profit or loss due to change in management's approach to treatment and interpretation of certain transactions made on swap terms. The Group believes that current interpretation more appropriately reflects the commercial substance of swap transactions in the current market. Swap transactions involve simultaneous conclusion of two linked agreements for sales-purchase of natural uranium, in one of which the Group acts as a buyer and in the other as a seller. The Group believes that the change provides reliable and more relevant information. In accordance with IAS 8, the change has been made retrospectively and years 2016 and 2015 have been restated accordingly. More detailed information on swap transactions and restatement of 2016 and 2015 information is disclosed in Note 4.

## **4. Critical Accounting Estimates and Judgements in Applying Accounting Policies**

The Group makes estimates and assumptions that affect the amounts recognised in the financial statements and the carrying amounts of assets and liabilities within the next financial year. Estimates and judgements are continually evaluated and are based on management's experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. Management also makes certain judgements, apart from those involving estimations, in the process of applying the accounting policies. Judgements that have the most significant effect on the amounts recognised in the financial statements and estimates that can cause a significant adjustment to the carrying amount of assets and liabilities within the next financial year include:

### ***Uranium reserves (estimates)***

Uranium reserves are a critical component of the Group's projected cash flow estimates that are used to assess the recoverable values of assets and to determine depreciation and amortisation expense.

### ***GKZ reserves***

Prior to 2017, reserves were estimated based on the results of detailed mine exploration, assessed and approved by the State Reserves Commission (GKZ) of the Kazakhstan Geology Committee. Reserves approved by GKZ are added to the state balance and can be reconsidered by GKZ on the basis of additional exploration. The need for additional exploration occurs when new ore bodies are found during operational exploration at production stage or when detailed exploration evidences presence of uranium reserves that have not been assigned a commercial grade and not added to the state balance. Normally, actual production from uranium deposits is greater or lesser than geological reserves approved by GKZ. Subsurface users cannot independently change reserves volume by grade. Expert conclusion of GKZ is an integral part of a subsurface use contract and serves as a basis for mining plan and working programme. The presence of reserves does not mean that all reserves can be mined economically.

Reserves are removed from GKZ balance annually in the amount of actual production and approved planned losses. The volume of uranium planned for production must agree to the working programme and mine plan. Changes to planned production are prohibited unless mine plan and working programme are revised and appropriately approved. If actual production volumes deviate from approved for less than 20%, no changes are required.

### ***JORC reserves***

In 2017, the Group engaged SRK Consulting (UK) Limited (hereinafter SRK) to assess the Group's reserves and resources in accordance with the Australasian Code for reporting on geological exploration works, mineral resources and ore reserves (2012) (hereinafter JORC Code). Reserves and resources valuation was carried out as of 31 December 2017. SRK has reviewed all of the key information on which the most recent (31 December 2017) reported mineral resource and ore reserve statements for the mining assets of JSC NAC Kazatomprom are based.

SRK has not independently re-calculated mineral resource and ore reserve estimates for the Group's operations but has, rather, reviewed the quantity and quality of the underlying data and the methodologies used to derive and classify the estimates as reported by the Group and made an opinion on these estimates including the tonnes of uranium planned to be exploited in the most up to date LoM (life of mine) plans. Based on this review, SRK has then used this knowledge to derive audited mineral resource and ore reserve statements according to the guidelines and terminology proposed in the JORC Code. SRK's audited resource statements are confined to those areas that both have the potential to be mined economically and which are currently being considered for mining only.

SRK has reviewed the estimation methodology used by JSC NAC Kazatomprom and the geological assumptions made and considers these to be reasonable given the information available. SRK has also undertaken various re-calculations of the remaining resource using actual mining statistics from the Group production reports and has in all cases found no material errors or omissions.

SRK report contains an assessment of the tonnes of uranium which has the potential to be extracted by the existing and planned mining operations (the mineral resource), and also the tonnes of uranium currently planned to be extracted as envisaged by the respective LoM plans (the ore reserve). All of the Group's C1 and C2 reserves, approved by the GKZ, were transferred on the basis of the JORC Code, using reasonable assumptions with respect to:

- estimates of future production, which include proved and forecasted reserves, reserves estimates and expansion commitments;
- estimated future commodity prices based on the current market price and the Group's estimates of the long-term average price;
- future cash costs for production, investment and recovery obligations.

The Group used reserves data according to the SRK report for calculation of impairment of long-term assets and UoP depreciation for each of the Group's mines. When JORC reserves did not materially differ from GKZ data, new reserves did not have a significant impact on the financial statements. A significant decrease in reserves was considered as an indication of potential impairment of specific mine assets, and for such cash-generating unit the Group performed an impairment test as of 31 December 2017.

The Group has applied JORC reserves data for recalculation of depreciation of production assets (liquidation fund assets, capitalised historical costs, and mining infrastructure assets within property, plant and equipment) from 1 January 2017, prospectively. The recalculation of depreciation for periods before 1 January 2017 was not carried out, since the effect of such recalculation was not material and not possible to estimate without applying a hindsight. Additional depreciation of production assets, recognised in 2017, amounted to 753 million Tenge. JORC reserves did not affect the calculation of UoP depreciation for mine development assets, since these assets are depreciated over lesser volumes that are ready for extraction.

Given the fact that resources per C1 and C2 (GKZ) categories were mainly transferred to JORC mineral resources, management believes that with the extension of the subsoil use contracts and actualisation of mine plans, the differences between reserves data according to GKZ and JORC code will be minimised.

#### ***Impairment of non-financial assets (estimates)***

At the end of each reporting period management assesses whether there is any indication of impairment of individual assets (cash-generating units). If any such indication exists, management estimates the recoverable amount, which is determined as the higher of an asset's fair value less costs to sell and its value in use. An impairment loss is recognised for the amount by which carrying amount exceeds recoverable amount. The Group tests goodwill for impairment at least annually.

The recoverable amount is calculated as the higher of an asset's or cash-generating unit's fair value less costs to sell and its value in use. The calculation of value in use requires the Group to make estimates regarding the Group's future cash flows. The estimation of future cash flows involves significant estimates and assumptions regarding commodity prices (uranium and other products), the level of sales, discount rates, growth rates, operating costs and other factors. The impairment review and calculations are based on assumptions that are consistent with the Group's business plans. Due to its subjective nature, these estimates could differ from future actual results of operations and cash flows; any such difference may result in impairment in future periods and would decrease the carrying value of the respective asset.

#### ***Goodwill***

The Group tests goodwill for impairment at least annually. The recoverable amount of cash-generating units is assessed based on calculation of value in use. It also requires management to exercise its judgement in the process of applying the Group's accounting policies. The calculation of value in use requires the application of management's estimates detailed in Note 20.

#### ***Assets related to uranium production***

Assets related to uranium mines include property, plant and equipment, mine development assets, mineral rights, exploration and evaluation assets, investments in associates, investments in joint ventures, and other investments.

At 31 December 2015:

At 31 December 2015, management assessed various factors, including internal and external sources of information, and concluded that there were no indications of impairment of assets related to uranium production at that date.

At 31 December 2016:

At 31 December 2016, decrease of prices for triuranium octoxide (U<sub>3</sub>O<sub>8</sub>) down to USD 18 per pound was considered by management as indication of impairment of assets (cash-generating units) of the Group related to uranium production. Management performed test for impairment for assets (cash-generating units) of the Group related to uranium production for which impairment indications were identified as at 31 December 2016.

For the purpose of impairment test assets are grouped at the lowest levels for which there are separately identifiable cash inflows that are largely independent of the cash inflows from other assets or groups of assets (cash-generating units). The Group identified each mine (contract territory) as a separate cash-generating unit. If several mines are technologically connected with single processing plant (section for processing of pregnant solutions) the Group considers such mines as one cash-generating unit.

Based on the impairment assessment the Group recognised impairment losses for South Moinkum and Uvanascash-generating units as recoverable amounts of these cash-generating units were less than their carrying amounts (Note 13).

Below are principal assumptions used by management for calculation of value in use as at 31 December 2016:

- average annual uranium prices are estimated at the following levels based on the forecast by independent source Ux Consulting LLC published in the fourth quarter of 2016:

	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022-2030</u>
Average price of U <sub>3</sub> O <sub>8</sub> per pound (in USD) . . . . .	20.50	19.80	21.06	23.60	27.25	31.92-56.87

- forecast production and period based on volumes of annual production stipulated by subsurface use contracts;
- operating and capital expenditures after 2021 will increase at the long-term inflation rate of 4-6% per annum;
- discount rate of 9.68-15.47 per annum;
- forecast of long-term exchange rate at Tenge 340 per USD 1.

Presented below is the sensitivity analysis disclosing possible impairment losses at reasonably possible changes of principal assumptions (with all other parameters held constant) for assets (cash-generating units) where impairment indications were identified:

- decrease in average forecast annual uranium prices across the forecast horizon:

<u>% decrease</u>	<u>Impairment loss, million Tenge</u>
10% . . . . .	6,767
20% . . . . .	18,350

- forecast production decrease by 10% would result in impairment loss of Tenge 4,966 million.

At 31 December 2017:

At 31 December 2017, the Group performed an analysis of impairment indications of assets (cash-generating units) related to uranium production. Due to the fact that the actual average uranium price in 2017 was higher than forecasted in 2016 and remained stable, and, in general, there is a positive trend in respect of forecasted prices for future periods, the price factor was not considered by management as an indication of impairment of uranium assets.

At 31 December 2017, management considered other external and internal factors for each uranium mine. As a result, impairment indications were identified for the cash-generating units Uvanas, Kanzhugan, South Moinkum, Karamurun, Semizbay, Irkol, East Mynkuduk and Zarechnoye. Impairment indications included decrease in reserves following change to JORC assessment and other factors, such as field depletion or high production costs.

Management performed impairment test for assets (cash-generating units) of the Group related to uranium production for which impairment indications were identified as at 31 December 2017.

Based on the impairment test the Group recognised impairment losses for Uvanas, Kanzhugan, South Moinkum, Karamurun, Semizbay and Zarechnoye, as recoverable amounts of these cash-generating units were less than their carrying amounts (Note 13).

Below are principal assumptions used by management for calculation of value in use:

- average annual uranium prices are expected at the levels presented below, based on the forecast by an independent source Ux Consulting LLC, published in the fourth quarter of 2017 (Mid Price Midpoint), reduced by 10%:

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023-2030</u>
Average price of U <sub>3</sub> O <sub>8</sub> per pound (in USD) .....	23.45	22.6	22.8	24.6	26.7	31.3-45.6

- forecasted periods and volumes of uranium production correspond to annual production volumes set in the subsurface use contracts; these volumes have been adjusted by management in connection with the plans for production cut and limited to reserves determined in accordance with the JORC code per SRK report;
- operating and capital expenditures for 2018-2022 are consistent with the approved 5-year budget of the Group;
- operating and capital expenditures after 2023 will increase at the long-term inflation rate of 4-6% per annum;
- discount rate is 9.57-12.1 per annum;
- forecast of long-term exchange rate is based on IHS Global Insight.

Presented below is the sensitivity analysis disclosing impairment losses at reasonably possible changes of principal assumptions (with all other parameters held constant) for assets (cash-generating units) where impairment indications were identified:

- decrease in average annual uranium prices over the forecast horizon by:

<u>% decrease</u>	<u>Impairment loss, million Tenge</u>
10% .....	38,368
20% .....	40,549

#### *KazPV projects*

At 31 December 2015-2017, the following indications of impairment of assets (cash-generating units) related to KazPV project were defined by management: less than budgeted production and sales volumes; higher than budgeted production costs; and overall decrease in market prices. Assets related to KazPV project include property, plant and equipment, construction in progress, mine development assets and other non-current assets.

For the purpose of impairment test assets are grouped at the lowest levels for which there are separately identifiable cash inflows that are largely independent of the cash inflows from other assets or groups of assets (cash-generating units). The Group identified three cash-generating units, based on the economic substance rather than the legal structure of the project.

- Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste;
- Production of silicon of solar quality, silicon and photovoltaic slices;
- Production of photovoltaic modules.

Based on the impairment assessment in 2015, the Group recognised impairment losses for two cash-generating units: “Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste” and “Production of silicon of solar quality, silicon and photovoltaic slices”, as recoverable amounts of these cash-generating units were below their carrying amounts. As of 31 December 2016, management assessed deviation from revised operating plans and sales decline as indications of further assets impairment. Based on the assessment performed, taking into account the revised forecast for future volumes and sales prices, the Group fully impaired the assets of the cash-generating unit “Production of silicon of solar quality, silicon and photovoltaic slices”.

At 31 December 2017, the Group reviewed the carrying amounts of KazPV project assets to determine whether there were any indications of further impairment. Based on the calculation of value in use of the cash-generating unit



“Production of photovoltaic modules”, an additional impairment charge of Tenge 1,075 million was recognised in 2017. The discount rate was 12.8%.

The Group also impaired inventory under the KazPV project to the net realisable value (Note 13).

#### *Baiterek SRT*

At 31 December 2016, management concluded that there were the following indications of impairment of Baiterek SRT (service motorship): extension of construction and low probability of obtaining economic benefits from its use and sale. Based on the analysis performed, management fully impaired the carrying value of Baiterek SRT in the amount of Tenge 3,884 million, included in construction in progress within property, plant and equipment. At 31 December 2017, the Group additionally impaired the carrying value of Baiterek SRT (included in construction in progress) for the amount of Tenge 61 million (Note 13).

#### *Evaluation of control, joint control and significant influence (judgements)*

On a regular basis management evaluates control (joint control, significant influence) over subsidiaries, associates and joint ventures. Management applies significant judgement in the evaluation, including:

- determination of availability of power that gives to the Group ability to direct the relevant activities of the investees that significantly affect their returns;
- determination of ability to use its power over the investees to affect the amount of the investor’s returns.

In making judgement management analysed which governing bodies of the investees direct relevant activities as well as the Group’s ability to influence those governing bodies. Thus, despite certain factors that might indicate joint control, management concluded that the Group has control over Appak LLP (Note 41).

As disclosed in Note 25, management also concluded that the Group does not have ability to use its power to exercise control over Uranenergo LLP. Based on reassessment of presence of control, joint control and significant influence performed in 2016, management concluded that the Group has joint control over Uranenergo LLP. Accordingly, the investment was reclassified from investments into associates to investments into joint ventures.

#### *Provision for assets retirement obligations (estimates)*

In accordance with the environmental legislation and the subsurface use contracts, the Group has a legal obligation to remediate damage caused to the environment from its operations and to decommission its mining assets and waste polygons and restore a landfill site after its closure. Provision is made, based on the net present values, for site restoration and retirement costs as soon as the obligation arises from past mining activities.

The provision for mining assets and waste polygons retirement obligation is estimated based on the Group’s interpretation of current environmental legislation in the Republic of Kazakhstan and the Group’s related programme for liquidation of subsurface use consequences on the contracted territory and other operations supported by the feasibility study and engineering researches in accordance with the existing restoration and retirement standards and techniques.

Current asset retirement obligations as of 31 December 2017 were assessed by the independent consultant SRK Consulting based on data provided by the Group. The scope of works, set by the legislation and covered by SRK calculation, included removal of the facilities and infrastructure (production, injection and monitoring wells, technological units of acidification and distribution of solutions (TUZ), pipelines, access roads, technological sites, polygons, buildings and other facilities) and subsequent land rehabilitation.

Provisions for retirement obligations are subject to potential changes in environmental regulatory requirements and the interpretation of the legislation. Provisions for mining assets and waste polygons retirement obligations are recognised when there is a certainty of incurring of such liabilities and when it is possible to measure the amounts reliably.

Significant judgments used in such estimations include the estimate of discount rate and timing of cash flows. Discount rate is applied to the nominal costs the management expects to spend on mining assets retirement and waste polygons restoration in the future. Accordingly, management’s estimates based on current prices are inflated using the expected long-term inflation rate 5.40% in 2017 (2016: 5.13%; 2015: 6.00%), and subsequently discounted using discount rate. The discount rate reflects the current market estimates of the time value of money and those risks specific to the liability not reflected in the best estimate of the costs. The discount rate is based on a risk-free rate determined as interest rates on government bonds with the same maturity as the subsoil use contracts of the Group. The discount rate used by the Group’s companies for calculation of provision as at 31 December 2017 is 9.06% (2016: 7.08%; 2015: 6.70%).



At 31 December 2017, the carrying value of site restoration provision was Tenge 19,939 million (2016: Tenge 14,188 million; 2015: Tenge 14,421 million) (Note 36). At 31 December 2017 the carrying value of environment protection provision was Tenge 2,556 million (2016: Tenge 2,733 million; 2015: Tenge 2,316 million) (Note 36). Management estimates that reasonably possible changes in key assumptions would not lead to significant changes in site restoration provision.

#### *Decommissioning, maintaining and dismantling of reactor BN-350*

In accordance with the legislation on use of nuclear energy, an operating entity is required to oversee and to finance decommissioning of nuclear power facilities, restoration of land and disposal of radioactive waste. Although the Group has a legal title to the nuclear reactor BN-350, management has concluded that the Group does not have a legal or constructive obligation to finance its decommissioning, maintenance and dismantlement. In deriving this conclusion management assessed the following factors:

- Based on legal analysis performed, management has concluded that the current legislation does not have a clear requirement and mechanism for decommissioning, maintenance and dismantlement of the reactor;
- The Kazakhstan government has determined the state authorities that are responsible for decommissioning of the reactor including subsequent recycling of related equipment and materials;
- To date, the activities for decommissioning of the reactor according the closure concept have been financed from the state budget or other sources including various international organisations;
- In accordance with the approved nuclear industry development programme for 2011-2014 with perspective to 2020 (hereafter – “Programme”), the Ministry of Energy of the Republic of Kazakhstan was defined as the government authority responsible for implementation of comprehensive measures for decommissioning of the reactor BN-350 including subsequent utilisation of related equipment and materials. In addition, the Programme defines the state budget as the source of financing of these measures;
- The Group received a letter No. 14-05/4512 dated 20 February 2015 from the Ministry of Energy of the Republic of Kazakhstan (the competent authority), which clarified that for the Group to have a legal obligation to finance the decommissioning of the reactor BN-350, a specific government decree, that determines sources of financing and principal measures for decommissioning, would be required. No such decree has been issued to date;
- In the beginning of 2018, the Group engaged an independent law firm to assess the existence of legal obligations for retirement, decommissioning and liquidation of MAEK-Kazatomprom LLP or its separate production facilities in accordance with the legislation of the Republic of Kazakhstan. According to the legal opinion, the current legislation obliges MAEK-Kazatomprom LLP to prepare a plan for decommissioning the nuclear facility but does not set any requirements for financing the dismantlement of the BN-350 reactor, as well as related premises and equipment.

Accordingly, management has concluded that the Group is not required to recognise a provision in these consolidated financial statements. The Group has disclosed the dismantlement obligation as a contingent liability in the consolidated financial statements (Note 39).

However there is high uncertainty in how the matter will be developed in the future. At each reporting date, management will reassess the existence of the obligation taking into account all available facts. If, in the future, obligation to finance decommissioning of the reactor BN-350 will be transferred to the Group, the Group will be required to recognise provision in full amount.

As disclosed in Note 45, on 25 June 2018, the Group signed an agreement with Samruk-Kazyna JSC for sale of 100% interest in MAEK-Kazatomprom LLP. In accordance with the sales and purchase agreement the Group is responsible for risks and liabilities related to the financial, environmental and other activities of MAEK-Kazatomprom LLP prior to the transfer of ownership, however the Group is not liable for any risks and liabilities, directly or indirectly associated with the BN-350 reactor.

#### *Investments carried at cost (estimates)*

As disclosed in Note 27, in October 2007, the Group invested into Toshiba Nuclear Energy Holdings US, Inc. (TNEH-US) and Toshiba Nuclear Energy Holdings UK Ltd (TNEH-UK), by acquiring 10% Class A ordinary shares for a total amount of USD 540 million (TNEH-US USD 400 million and TNEH-UK USD 140 million). As the Group did not have significant influence over TNEH-US and TNEH-UK and did not participate in financial and operating activities, these investments were classified as available for sale.

Investments in TNEH-US and TNEH-UK were carried at cost, as management could not reliably estimate fair value of these investments. Investees did not published recent financial information on their operations, their shares were not quoted, and their recent trade prices were not publicly accessible.

At the end of each reporting period management assessed whether there was any indication of impairment of investments carried at cost. Management determined there were no impairment indicators at 31 December 2016 and 2015.

The investments in TNEH-US and TNEH-UK were disposed in December 2017 (Note 27).

#### ***Useful lives of property, plant and equipment (estimates)***

The estimation of the useful lives of items of property, plant and equipment is a matter of judgment based on the experience with similar assets. The future economic benefits embodied in the assets are consumed principally through use. However, other factors, such as technical or commercial obsolescence and wear and tear, often result in the diminution of the economic benefits embodied in the assets. Management assesses the remaining useful lives in accordance with the current technical conditions of the assets and estimated period during which the assets are expected to earn benefits for the Group. The following primary factors are considered: (a) the expected usage of the assets; (b) the expected physical wear and tear, which depends on operational factors and maintenance programme; and (c) the technical or commercial obsolescence arising from changes in market conditions.

Majority of property, plant and equipment is depreciated using straight-line method over their estimated useful lives. Management reviews the appropriateness of assets' useful economic lives at least once a year; any changes could affect prospective depreciation rates and asset carrying values.

Had estimated depreciation rates been different by 10% from management's estimates, depreciation for the year ended 31 December 2017 would be higher or lower by Tenge 1,065 million (2016: Tenge 1,029 million; 2015: Tenge 1,118 million).

#### ***Estimated depreciation rates of uranium mining assets***

Property, plant and equipment related to uranium production, mine development assets and mineral rights are depreciated over the respective life of the mine using the unit-of-production method based on mineral reserves. When determining mineral reserves, assumptions that were valid at the time of estimation may change when new information becomes available. Any changes could affect the prospective depreciation rates and asset carrying values.

The calculation of the unit-of-production rate of depreciation could be impacted to the extent that actual production in the future is different from current forecast production, which would generally arise as a result of significant changes in any of the factors or assumptions used in estimating mineral reserves. These factors could include:

- changes in mineral reserves;
- the grade of mineral reserves varying significantly from time to time;
- unforeseen operational issues at mine sites; and
- changes in capital and operating costs, processing and reclamation costs, discount rates and foreign exchange rates that may adversely impact the economic viability of mineral reserves.

Estimates of ore reserves can differ from period to period. This can affect the Group's financial results. Such changes in reserves can affect the depreciation charge, carrying amount of assets and provisions for assets retirement liabilities. As at 31 December 2017 the carrying amount of assets related to uranium production was Tenge 67,041 million (2016: Tenge 63,672 million; 2015: Tenge 65,263 million).

Had estimated reserves been different by 10% from management's estimates, depreciation for the year ended 31 December 2017 would be higher or lower by Tenge 1,209 million (2016: Tenge 1,219 million; 2015: Tenge 1,103 million).

#### ***Tax and transfer pricing legislation (judgements)***

Kazakhstan tax and transfer pricing legislation is subject to varying interpretations (Note 39).

#### ***Swap transactions (judgements)***

The Group sells part of its uranium products on swap terms. In a swap transaction, the Group agrees terms and signs two separate agreements with the same counterparty simultaneously, one for delivery, and another for purchase of the

same volume of uranium for the same price at two different delivery points. Effectively, this results in exchange of own uranium (produced or purchased from the Group's entities) with purchased uranium. Normally, under swap, the Group delivers physical uranium to one destination point, and purchases the same volume of uranium at the third party converter for further resale to end customers. As a result, the Group saves on transportation costs for uranium delivery from Kazakhstan to end customers.

Until 2017 the Group accounted for sales revenue and related costs from swap transactions on a gross basis (i.e. separately sales to the first destination point and subsequent sales from the converter to third parties, as well as costs of own uranium sold and purchased uranium sold, without netting these turnovers). Management believed that accounting on a gross basis reflected the commercial substance of uranium deliveries, each of which was considered as a standalone transaction to fulfil the Group's long- and short-term obligations to unrelated customers, and would have happened on its own without the swap deal in place. In addition, management considered the following factors: the agreements are not legally related, execution under each agreement is not tied to the execution under another agreement, and each agreement is settled in cash separately.

In 2017 management has reconsidered its approach to treatment of and accounting for swap transactions. Despite the fact that swap agreements are not formally related to each other, management concluded that these transactions are in fact linked and would not have occurred on isolated basis, driven by the existing market demand and supply forces. In management's view, supply of the same volume of homogeneous product (uranium) for the same price represents an exchange of products, which should be presented on net basis in the consolidated financial statements, reflecting the economic substance of the transaction. Interpretation of terms and approach to the accounting for swap transactions requires management judgment. Management concluded that presentation of swap transactions on net basis reflects more appropriately their economic substance in the current market conditions. Accordingly, management decided to present revenues and costs from swap transactions in 2017 on net basis and for comparability purposes in 2016 and 2015 as well. This restatement did not affect the balance sheet items as of 31 December 2016 and 2015. The effect of the restatement for 2016 and 2015 is presented below:

<i>In millions Kazakhstani Tenge</i>	<b>2016 Before restatement</b>	<b>Restatement</b>	<b>2016 After restatement</b>
Sales revenue .....	418,901	(24,586)	394,315
Cost of sales .....	(308,468)	24,586	(283,882)
<b>Gross profit</b> .....	<b>110,433</b>	<b>—</b>	<b>110,433</b>
<b>Net profit</b> .....	<b>111,555</b>	<b>—</b>	<b>111,555</b>
<i>In millions Kazakhstani Tenge</i>	<b>2015 Before restatement</b>	<b>Restatement</b>	<b>2015 After restatement</b>
Sales revenue .....	397,766	(13,806)	383,960
Cost of sales .....	(294,404)	13,806	(280,598)
<b>Gross profit</b> .....	<b>103,362</b>	<b>—</b>	<b>103,362</b>
<b>Net profit</b> .....	<b>36,501</b>	<b>—</b>	<b>36,501</b>

In 2017, the Group reduced sales revenue from swap transactions for Tenge 52,241 million, cost of sales for Tenge 47,596 million and the inventory balance for Tenge 4,645 million. Adjustment to inventory was caused by the fact that part of purchased uranium was not sold to third parties as of 31 December 2017, thus inventory cost was adjusted to cost per ton of own uranium.

Besides, in 2017, the Group netted off revenue and expenses from sales of enriched uranium in the amount of Tenge 4,935 million. Management concluded that in this transaction the Group acted as an agent rather than principal, and therefore only commission income of Tenge 27 million was recognised in these consolidated financial statements.

#### ***Recognition of gain from business acquisition (judgement)***

In 2016 the Group and Cameco signed an implementation agreement and, in December 2017, completed the deal on restructuring of JV Inkai LLP. The Group increased its interest in JV Inkai LLP from 40% to 60% and from 1 January 2018 obtained control over the investee. The Group facilitated the signing of the addendum to the subsoil use contract with the competent authority allowing extension of the contract period and an increase in annual production volume. Upon acquisition, in 2018 the Group has recognised a gain (negative goodwill) of Tenge 37,283 million (Note 45). Management assessed whether the acquisition contained an element of transaction with the government as a shareholder requiring the gain or its part to be recognised in equity. Given that the agreement was beneficial for both parties and that there was already an agreement in place where Cameco committed to give up 20% if JV Inkai LLP to

get additional mining rights, management concluded that the gain should be recognised in profit or loss rather than equity. Additional mining rights were granted to JV Inkai LLP only after the normal due process was followed in relation to governmental grants of such rights, rather than being directly contributed by the government outside of the normal course of business.

## **5. Adoption of New or Revised Standards and Interpretations**

The following new standards and interpretations became effective for the Group from 1 January 2017. Adoption of these new standards and interpretations did not have any material impact on the consolidated financial statements.

Disclosure Initiative – Amendments to IAS 7 (issued on 29 January 2016 and effective for the periods beginning on or after 1 January 2017).

Recognition of deferred tax assets for unrealised losses – Amendments to IAS 12 (issued on 19 January 2016 and effective for the periods beginning on or after 1 January 2017). The amendment clarifies the recognition of deferred tax assets for debt instruments' unrealised losses. The company should recognise the tax asset for unrealised losses arising from the discounting of cash flows on debt instruments using market interest rates, even if the company implies to hold the instrument to maturity and after receiving the principal amount, payment of taxes is not expected. The economic benefits associated with the deferred tax asset arise with the ability of the debt instrument holder to receive profit without paying taxes (taking into account the effect of discounting).

Annual improvements to International Financial Reporting Standards, 2014-2016 – Amendments to IFRS 12 (issued on 8 December 2016 and effective for the periods beginning on or after 1 January 2017).

## **6. New Accounting Pronouncements**

Certain new standards and interpretations have been issued that are mandatory for the annual periods beginning on or after 1 January 2018, and which the Group has not adopted earlier.

IFRS 9, Financial Instruments: Classification and Measurement (amended in July 2014 and effective for annual periods beginning on or after 1 January 2018). Key features of the standard are:

- Financial assets are required to be classified into three measurement categories: those to be measured subsequently at amortised cost, those to be measured subsequently at fair value through other comprehensive income and those to be measured subsequently at fair value through profit or loss.
- Classification for debt instruments is driven by the entity's business model for managing the financial assets and whether the contractual cash flows represent only payments of principal and interest. If a debt instrument is held for cash collection and foresee only principal and interest payments, it may be carried at amortised cost. Debt instruments that meet the SPPI requirement that are held in a portfolio where an entity both holds to collect assets' cash flows and sells assets may be classified as FVOCI. Financial assets that do not contain cash flows that are SPPI must be measured at FVPL (for example, derivatives). Embedded derivatives are no longer separated from financial assets but will be included in assessing the SPPI condition.
- Investments in equity instruments are always measured at fair value. However, management can make an irrevocable election to present changes in fair value in other comprehensive income, provided the instrument is not held for trading. If the equity instrument is held for trading, changes in fair value are presented in profit or loss.
- Most of the requirements in IAS 39 for classification and measurement of financial liabilities were carried forward unchanged to IFRS 9. The key change is that an entity will be required to present the effects of changes in own credit risk of financial liabilities designated at fair value through profit or loss in other comprehensive income.
- IFRS 9 introduces a new model for the recognition of impairment losses – the expected credit losses (ECL) model. There is a 'three stage' approach which is based on the change in credit quality of financial assets since initial recognition. In practice, the new rules mean that entities will have to record an immediate loss equal to the 12-month ECL on initial recognition of financial assets that are not credit impaired (or lifetime ECL for trade receivables). Where there has been a significant increase in credit risk, impairment is measured using lifetime ECL rather than 12-month ECL. The model includes operational simplifications for lease and trade receivables.
- Hedge accounting requirements were amended to align accounting more closely with risk management. The standard provides entities with an accounting policy choice between applying the hedge accounting requirements of IFRS 9 and continuing to apply IAS 39 to all hedges because the standard currently does not address accounting for macro hedging.

Based on the analysis of the Group's financial assets, liabilities and existing circumstances as of 31 December 2017, management expects that the adoption of new standard from 1 January 2018 will not have a significant impact on consolidated financial statements.

The new standard requires to disclose additional information and changes in presentation of indicators. It is expected that this will change the nature and scope of information disclosed by the Group in respect of financial instruments, especially in the year of the new standard application.

Applying IFRS 9 Financial Instruments and IFRS 4 Insurance Contracts – Amendments to IFRS 4 (issued on 12 September 2016 and effective depending on the approach chosen. For organisations who chose temporary exemption – annual periods beginning from 1 January 2018 or after that date. For organisations that chose the overlap approach – annual period from which the organisation first implemented IFRS 9. The amendment to IFRS 4 contains additional guidance for the application of IFRS.

IFRS 15, Revenue from Contracts with Customers (issued on 28 May 2014 and effective for the periods beginning on or after 1 January 2018). The new standard introduces the core principle that revenue must be recognised when the goods or services are transferred to the customer, at the transaction price. Any bundled goods or services that are distinct must be separately recognised, and any discounts or rebates on the contract price must generally be allocated to the separate elements. When the consideration varies for any reason, minimum amounts must be recognised if they are not at significant risk of reversal. Costs incurred to secure contracts with customers have to be capitalised and amortised over the period when the benefits of the contract are consumed.

Amendments to IFRS 15, Revenue from Contracts with Customers (issued on 12 April 2016 and effective for annual periods beginning on or after 1 January 2018). The amendments do not change the underlying principles of the Standard but clarify how those principles should be applied. The amendments clarify how to identify a performance obligation (the promise to transfer a good or a service to a customer) in a contract; how to determine whether a company is a principal (the provider of a good or service) or an agent (responsible for arranging for the good or service to be provided); and how to determine whether the revenue from granting a licence should be recognised at a point in time or over time. In addition to the clarifications, the amendments include two additional reliefs to reduce cost and complexity for a company when it first applies the new Standard.

In accordance with the IFRS 15 transitional statements, the Group selected a simplified method to reflect the transition impact to the new standard, as of 1 January 2018, in the consolidated financial statements for the year ended 31 December 2018, which will be the first year of IFRS 15 adoption.

The Group plans to use the practical exemption provided for the simplified transition method. The Group applies IFRS 15 retrospectively, only for outstanding contracts at the date of initial application (1 January 2018).

IFRS 15 adoption has not lead to significant changes in accounting policies, therefore no material adjustments to the consolidated financial statements were noted. Based on the analysis of the Group's regular revenue streams, the terms of individual contracts, the facts and circumstances existing as of 31 December 2017, and taking into account the application of the simplified transition method, management of the Group concluded that the adoption of the new standard from 1 January 2018 does not have a significant impact on the consolidated financial statements.

IFRS 16, Leases (issued in January 2016 and effective for annual periods beginning on or after 1 January 2019). The new standard sets out the principles for the recognition, measurement, presentation and disclosure of leases. All leases result in the lessee obtaining the right to use an asset at the start of the lease and, if lease payments are made over time, also obtaining financing. Accordingly, IFRS 16 eliminates the classification of leases as either operating leases or finance leases as required by IAS 17 and, instead, introduces a single lessee accounting model. Lessees will be required to recognise: (a) assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value; and (b) depreciation of lease assets separately from interest on lease liabilities in the income statement. IFRS 16 substantially carries forward the lessor accounting requirements in IAS 17. Accordingly, a lessor continues to classify its leases as operating leases or finance leases, and to account for those two types of leases differently.

Transfers of Investment Property – Amendments to IAS 40 (issued on 8 December 2016 and effective for annual periods beginning on or after 1 January 2018).

IFRIC 22 – Foreign Currency Transactions and Advance Consideration (issued on 8 December 2016 and effective for annual periods beginning on or after 1 January 2018).



Sale or Contribution of Assets between an Investor and its Associate or Joint Venture – Amendments to IFRS 10 and IAS 28 (issued on 11 September 2014 and effective for annual periods beginning on or after a date to be determined by the IASB). These amendments address an inconsistency between the requirements in IFRS 10 and those in IAS 28 in dealing with the sale or contribution of assets between an investor and its associate or joint venture. The main consequence of the amendments is that a full gain or loss is recognised when a transaction involves a business. A partial gain or loss is recognised when a transaction involves assets that do not constitute a business, even if these assets are held by a subsidiary.

Amendments to IFRS 2, Share-based Payment (issued on 20 June 2016 and effective for annual periods beginning on or after 1 January 2018).

Annual Improvements to IFRSs 2014-2016 cycle (issued on 8 December 2016 and effective for annual periods beginning on or after 1 January 2017 for amendments to IFRS 12, and on or after 1 January 2018 for amendments to IFRS 1 and IAS 28).

IFRS 17 Insurance Contracts (issued on 18 May 2017 and effective for annual periods beginning on or after 1 January 2021).

IFRIC 23 Uncertainty about income tax treatments (issued on 7 June 2017 and effective for annual periods beginning on or after 1 January 2019).

Amendments to IFRS 9 Financial Instruments and IAS 28 (issued on 12 October 2017 and effective for annual periods beginning on or after 1 January 2019).

Annual Improvements to IFRSs 2015-2017 cycle – amendments to IFRS 3, IFRS 11, IAS 12 and IAS 23 (issued on 12 December 2017 and effective for annual periods beginning on or after 1 January 2019).

Plan Amendment, Curtailment or Settlement – Amendments to IAS 19 (issued on 7 February 2018 and effective for annual periods beginning on or after 1 January 2019).

Unless otherwise stated above, it is expected that these new standards and interpretations will not materially affect the Group's consolidated financial statements.

## **7. Segment Information**

Operating segments are components that engage in business activities that may earn revenues or incur expenses, whose operating results are regularly reviewed by the chief operating decision maker (CODM) and for which discrete financial information is available. The CODM is the person or group of persons who allocates resources and assesses the performance for the entity. The CODM has been identified as the Management Board of the Group headed by CEO.

### ***(a) Description of products and services from which each reportable segment derives its revenue***

The Group is a vertically integrated business involved in the production chain of end products – from geological exploration, mining of uranium and nuclear fuel production, to marketing and auxiliary services (transportation and logistics, procurement, research and other). The Group is organised on the basis of three main business segments:

- Uranium – uranium mining and processing from the Group's mines, purchases of uranium from joint ventures and associates, external sales and marketing of produced and purchased uranium. Uranium segment includes the Group's share in net results of joint ventures and associates engaged in uranium production, as well as the Group's HQ (JSC "NAC "Kazatomprom");
- Energy – production and sales of electricity, heating power, industrial, drinking and hot water in Mangistau region. Energy segment sales are made to external parties only. Energy segment comprises results and operations of MAEK-Kazatomprom LLP (Note 41);
- UMP (Ulba Metallurgical Plant JSC) – production and sales of products containing beryllium, tantalum and niobium, hydrofluoric acid and by-products, processing of uranium on tolling basis for the Group's uranium entities and production and marketing of uranium powders and tablets to external market.

The revenues and expenses of some of the Group's subsidiaries, which primarily provide services to uranium segment (drilling, transportation, security, geological, etc.), are not allocated to the results of this operating segment. These Group's businesses are not included within reportable operating segments as their financial results do not meet the quantitative threshold. The results of these and other minor operations are included in "Other" caption.



***(b) Factors that management used to identify the reportable segments***

The Group's segments are strategic business units that focus on different customers. They are managed separately because of the differences in the production processes, the nature of products produced and required marketing and investment strategies.

Segment financial information reviewed by the CODM includes:

- information about income and expenses by business units (segments) based on IFRS figures on a quarterly basis;
- assets and liabilities as well as capital expenditures by segment on a quarterly basis;
- operating data (such as production and inventory volumes) and revenue data (such as sales volumes per type of product, average sales price) are also reviewed by the CODM on a monthly and quarterly basis.

***(c) Measurement of operating segment profit or loss, assets and liabilities***

The CODM evaluates performance of each segment based on gross and net profit. Segment financial information is prepared on the basis of IFRS financial information and measured in a manner consistent with that in these consolidated financial statements.

Revenues from other segments include transfers of raw materials, goods and services from one segment to another, amount is determined based on market prices for similar goods.

**(d) Information about reportable segment profit or loss, assets and liabilities**

Segment information for the reportable segments for the years ended 31 December 2017, 2016 and 2015 is set out below:

In millions of Kazakhstani Tenge	Uranium			Energy			UMP			Other			Eliminations			Total		
	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015
External revenue	205,187	263,246	264,956	59,472	59,070	48,820	32,793	34,903	30,403	39,065	37,096	39,781	—	—	—	336,517	394,315	383,960
Revenues from other segments	416	287	118	—	—	15	4,691	4,074	3,414	41,232	40,073	36,630	(46,339)	(44,434)	(40,177)	—	—	—
Cost of sales	(151,318)	(176,029)	(180,235)	(53,930)	(53,957)	(46,184)	(28,946)	(25,740)	(24,482)	(75,293)	(71,227)	(68,100)	45,623	43,071	38,403	(263,864)	(283,882)	(280,598)
<b>Gross profit</b>	<b>54,285</b>	<b>87,504</b>	<b>84,839</b>	<b>5,542</b>	<b>5,113</b>	<b>2,651</b>	<b>8,538</b>	<b>13,237</b>	<b>9,335</b>	<b>5,004</b>	<b>5,942</b>	<b>8,311</b>	<b>(716)</b>	<b>(1,363)</b>	<b>(1,774)</b>	<b>72,653</b>	<b>110,433</b>	<b>103,362</b>
Impairment losses, net of impairment reversals	(21,888)	(8,616)	(11,360)	(2)	(513)	(76)	(814)	(192)	(330)	(6,349)	(13,446)	(29,712)	1,638	944	10,848	(27,415)	(21,823)	(30,630)
Gain on exercise of put option	107,714	—	—	—	—	—	—	—	—	—	—	—	—	—	—	107,714	—	—
Share of results of associates and joint ventures	40,395	62,170	59,265	(2,090)	(46)	(203)	(150)	(159)	21	5,959	12,832	(6,180)	—	—	—	44,114	74,797	52,903
Net foreign exchange gain / (loss)	2,701	2,347	(40,952)	37	33	(2,571)	34	(243)	8,193	(3,534)	1,569	(18,116)	(6)	(92)	—	(768)	3,614	(53,446)
Finance income	9,799	21,637	23,039	73	202	203	304	482	301	225	374	270	(4,513)	(6,870)	(1,827)	5,888	15,825	21,986
Finance expense	(8,856)	(8,490)	(6,958)	(134)	(155)	(133)	(364)	(365)	(381)	(2,862)	(3,098)	(2,485)	3,149	1,091	1,281	(9,067)	(11,017)	(8,676)
Income tax (expense) / benefit	(16,726)	(15,762)	(9,104)	(175)	(86)	(387)	(1,363)	(2,001)	(2,960)	292	(139)	(593)	510	—	—	(17,462)	(17,988)	(13,044)
<b>Profit / (loss) for the year</b>	<b>146,700</b>	<b>112,502</b>	<b>79,247</b>	<b>340</b>	<b>1,539</b>	<b>(4,409)</b>	<b>1,424</b>	<b>6,505</b>	<b>10,386</b>	<b>(7,753)</b>	<b>(3,865)</b>	<b>(59,022)</b>	<b>(1,557)</b>	<b>(5,126)</b>	<b>10,299</b>	<b>139,154</b>	<b>111,555</b>	<b>36,501</b>
Depreciation and amortisation charge	(11,783)	(11,333)	(13,342)	(2,023)	(1,941)	(1,878)	(1,368)	(1,323)	(1,464)	(4,711)	(4,842)	(4,764)	3,416	3,180	3,257	(16,469)	(16,259)	(18,191)
Investment in associates and joint ventures	144,978	149,523	157,014	2,818	4,432	3,201	5,287	3,268	135	23,481	17,412	5,107	—	—	—	176,564	174,635	165,457
<b>Total reportable segment assets</b>	<b>742,378</b>	<b>630,817</b>	<b>605,914</b>	<b>38,585</b>	<b>36,662</b>	<b>35,676</b>	<b>72,738</b>	<b>74,358</b>	<b>70,091</b>	<b>105,262</b>	<b>93,238</b>	<b>98,833</b>	<b>(23,705)</b>	<b>(18,507)</b>	<b>(17,402)</b>	<b>935,258</b>	<b>816,568</b>	<b>793,112</b>
Assets of disposal groups classified as held for sale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,774	3,463	164
<b>Total assets</b>	<b>742,378</b>	<b>630,817</b>	<b>605,914</b>	<b>38,585</b>	<b>36,662</b>	<b>35,676</b>	<b>72,738</b>	<b>74,358</b>	<b>70,091</b>	<b>105,262</b>	<b>93,238</b>	<b>98,833</b>	<b>(23,705)</b>	<b>(18,507)</b>	<b>(17,402)</b>	<b>938,032</b>	<b>820,031</b>	<b>793,276</b>
<b>Total reportable segment liabilities</b>	<b>232,913</b>	<b>191,088</b>	<b>259,731</b>	<b>18,008</b>	<b>17,171</b>	<b>19,001</b>	<b>9,033</b>	<b>9,698</b>	<b>8,902</b>	<b>82,844</b>	<b>59,747</b>	<b>54,386</b>	<b>(47,285)</b>	<b>(27,469)</b>	<b>(18,149)</b>	<b>295,513</b>	<b>250,235</b>	<b>323,871</b>
Liabilities of disposal groups classified as held for sale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,343	1,966	—
<b>Total liabilities</b>	<b>232,913</b>	<b>191,088</b>	<b>259,731</b>	<b>18,008</b>	<b>17,171</b>	<b>19,001</b>	<b>9,033</b>	<b>9,698</b>	<b>8,902</b>	<b>82,844</b>	<b>59,747</b>	<b>54,386</b>	<b>(47,285)</b>	<b>(27,469)</b>	<b>(18,149)</b>	<b>296,856</b>	<b>252,201</b>	<b>323,871</b>
<b>Capital expenditure</b>	<b>24,262</b>	<b>16,324</b>	<b>13,813</b>	<b>3,770</b>	<b>2,484</b>	<b>2,871</b>	<b>2,507</b>	<b>1,628</b>	<b>1,625</b>	<b>7,688</b>	<b>6,109</b>	<b>17,827</b>	—	—	—	<b>38,227</b>	<b>26,545</b>	<b>36,136</b>

Capital expenditure represents additions to non-current assets other than financial instruments, deferred tax assets, post-employment benefits assets and rights arising under insurance contracts.

*(e) Analysis of revenues by products and services*

The Group's revenues are analysed by products and services in Note 9. Information about finance income and costs is disclosed in Note 17.

*(f) Geographical information*

All the Group's main assets are located in the Republic of Kazakhstan. Distribution of Group's sales between countries on the basis of the customer's country of domicile was as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
China .....	131,635	129,399	120,763
Kazakhstan .....	101,159	99,431	90,812
France .....	22,201	28,423	29,872
USA .....	19,153	45,098	63,785
India .....	16,482	30,202	—
Japan .....	15,064	16,290	23,286
South Korea .....	9,636	14,913	7,801
Germany .....	4,053	11,688	22,862
Other countries .....	17,134	18,871	24,779
<b>Total consolidated revenues</b> .....	<b><u>336,517</u></b>	<b><u>394,315</u></b>	<b><u>383,960</u></b>

*Major customers*

The Group has a group of customers with common ultimate parent that accounts for more than 10% of the Group's consolidated revenue. This revenue in the amount of Tenge 123,754 million (2016: Tenge 123,763 million; 2015: Tenge 116,776 million) is reported under Uranium segment.

**8. Balances and Transactions with Related Parties**

Parties are generally considered to be related if the parties are under common control or if one party has the ability to control the other party or can exercise significant influence or joint control over the other party in making financial and operational decisions. In considering each possible related party relationship, attention of management is directed to the substance of the relationship, not merely the legal form.

Entities under common control include companies under control of Samruk-Kazyna JSC. Transactions with other government owned entities are not disclosed when they are entered into in the ordinary course of business with terms consistently applied to all public and private entities i) when they are not individually significant, ii) if the Group's services are provided on the standard terms available for all customers, or iii) where there is no choice of supplier of such services as electricity transmission services, telecommunications and etc.

At 31 December 2017, the outstanding balances with related parties were as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>Accounts receivable and other assets (Notes 28, 29)</u>	<u>Dividends receivable (Note 29)</u>	<u>Loans given (Note 32)</u>	<u>Accounts payable and other liabilities (Notes 37, 38)</u>
Associates .....	3,189	13,707	20,302	39,196
Joint ventures .....	2,981	—	—	21,989
Entities under common control .....	186	—	—	8,778
Associates of the Parent .....	49	—	—	1,607
Other .....	340	—	—	16,246
<b>Total</b> .....	<b><u>6,745</u></b>	<b><u>13,707</u></b>	<b><u>20,302</u></b>	<b><u>87,816</u></b>

The income and expense items with related parties for the year ended 31 December 2017 were as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Sale of goods and services</b>	<b>Dividends received (Notes 25, 26)</b>	<b>Purchase of goods and services</b>	<b>Dividends to the Parent (Note 34)</b>	<b>Finance income</b>	<b>Finance costs</b>
Associates . . . . .	16,243	21,244	66,026	—	2,621	1,254
Joint ventures . . . . .	13,233	22,942	49,169	—	517	11
Entities under common control . . . . .	17,630	—	44,694	—	—	—
Parent . . . . .	—	—	—	65,849	—	—
Associates of the Parent . . . . .	108	—	193	—	—	—
Other . . . . .	2,428	—	31,449	—	2	—
<b>Total</b> . . . . .	<b>49,642</b>	<b>44,186</b>	<b>191,531</b>	<b>65,849</b>	<b>3,140</b>	<b>1,265</b>

At 31 December 2016, the outstanding balances with related parties were as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Accounts receivable and other assets (Notes 28, 29)</b>	<b>Dividends receivable (Note 29)</b>	<b>Loans given (Note 32)</b>	<b>Accounts payable and other liabilities (Notes 37, 38)</b>
Associates . . . . .	3,308	5,916	19,151	31,991
Joint ventures . . . . .	2,036	—	13	16,704
Entities under common control . . . . .	278	—	—	8,312
Associates of the Parent . . . . .	14	—	—	624
Other . . . . .	274	—	—	64
<b>Total</b> . . . . .	<b>5,910</b>	<b>5,916</b>	<b>19,164</b>	<b>57,695</b>

The income and expense items with related parties for the year ended 31 December 2016 were as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Sale of goods and services</b>	<b>Dividends received (Notes 25, 26)</b>	<b>Purchase of goods and services</b>	<b>Dividends to the Parent (Note 34)</b>	<b>Finance income</b>	<b>Finance costs</b>
Associates . . . . .	15,829	48,286	80,508	—	1,868	1,683
Joint ventures . . . . .	13,694	21,066	51,878	—	291	—
Entities under common control . . . . .	18,611	—	45,749	—	—	—
Parent . . . . .	—	—	—	12,031	—	—
Associates of the Parent . . . . .	98	—	5,837	—	—	—
Other . . . . .	1,987	—	10	—	844	173
<b>Total</b> . . . . .	<b>50,219</b>	<b>69,352</b>	<b>183,982</b>	<b>12,031</b>	<b>3,003</b>	<b>1,856</b>

At 31 December 2015, the outstanding balances with related parties were as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Accounts receivable and other assets (Notes 28, 29)</b>	<b>Dividends receivable (Note 29)</b>	<b>Loans given (Note 32)</b>	<b>Accounts payable and other liabilities (Notes 37, 38)</b>
Associates . . . . .	4,428	6,257	18,033	38,868
Joint ventures . . . . .	1,251	2,512	2,435	26,516
Entities under common control . . . . .	602	—	—	8,487
Other . . . . .	186	—	13,100	2,100
<b>Total</b> . . . . .	<b>6,467</b>	<b>8,769</b>	<b>33,568</b>	<b>75,971</b>

The income and expense items with related parties for the year ended 31 December 2015 were as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Sale of goods and services</b>	<b>Dividends received (Notes 25, 26)</b>	<b>Purchase of goods and services</b>	<b>Dividends to the Parent (Note 34)</b>	<b>Finance income</b>	<b>Finance costs</b>
Associates . . . . .	23,368	33,825	87,856	—	7,622	103
Joint ventures . . . . .	12,570	7,267	51,574	—	550	—
Entities under common control . . . . .	16,353	—	36,857	—	—	—
Parent . . . . .	—	—	—	2,323	—	—
Other . . . . .	1,386	—	1,880	—	5,478	—
<b>Total</b> . . . . .	<b>53,677</b>	<b>41,092</b>	<b>178,167</b>	<b>2,323</b>	<b>13,650</b>	<b>103</b>

In 2016, the Group and SGHK LLP established a joint venture JV Budenovskoe LLP with 51% and 49% share, respectively. In 2017, the Group made an additional contribution to the charter capital of JV Budenovskoe LLP in the form of an asset, the right to subsoil use. At the contribution date, the asset was valued at Tenge 11,686 million, accordingly, the Group's additional contribution amounted to Tenge 11,686 million, in proportion to its share. In the consolidated financial statements the Group recognised other income at 49% (i.e. non-Group's interest) of the estimated value of the subsoil use right in the amount of Tenge 5,726 million (Note 14). The Group does not have unpaid contributions to the charter capital of JV Budenovskoe LLP.

Other related parties include Baiken-U LLP. Relationship with Baiken-U LLP cannot be considered as a related party of the Group in accordance with IAS 24 'Related Party Disclosures', but management believes that the disclosure of balances and transactions with Baiken-U LLP is useful for understanding of the consolidated financial statements (Note 39).

The terms and conditions of outstanding balances with related parties are not significantly different from those with non-related parties.

Key management compensation is presented below:

<i>In millions of Kazakhstani Tenge</i>	<b>2017</b>		<b>2016</b>		<b>2015</b>	
	<b>Expense</b>	<b>Accrued liability</b>	<b>Expense</b>	<b>Accrued liability</b>	<b>Expense</b>	<b>Accrued liability</b>
<i>Short-term benefits</i>						
Salaries and bonuses . . . . .	660	43	503	29	198	13
<b>Total</b> . . . . .	<b>660</b>	<b>43</b>	<b>503</b>	<b>29</b>	<b>198</b>	<b>13</b>

## 9. Revenue

<i>In millions of Kazakhstani Tenge</i>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Sales of uranium products . . . . .	207,788	268,101	268,832
Sales of utilities . . . . .	57,922	57,555	47,809
Sales of beryllium products . . . . .	13,224	13,359	9,312
Sales of tantalum products . . . . .	12,871	11,749	12,051
Sales of purchased goods . . . . .	11,655	10,461	10,886
Drilling services . . . . .	9,950	10,532	12,841
Sales of other services . . . . .	8,119	8,159	9,059
Sales of materials and other goods . . . . .	7,199	6,521	3,071
Transportation services . . . . .	5,555	5,148	5,092
Research and development . . . . .	748	443	135
Sales of photovoltaic cells . . . . .	381	26	1,909
Sales of metallurgical silicon . . . . .	—	17	552
Other . . . . .	1,105	2,244	2,411
<b>Total revenue</b> . . . . .	<b>336,517</b>	<b>394,315</b>	<b>383,960</b>

Sales of uranium products include sales of triuranium octoxide (U<sub>3</sub>O<sub>8</sub>) in the amount of Tenge 204,462 million and other products (tablets, powders and etc.) in the amount of Tenge 3,326 million.

## 10. Cost of Sales

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Materials and supplies	182,950	204,881	197,112
Wages and salaries	31,889	30,620	29,512
Depreciation and amortisation	15,558	15,113	16,779
Processing and other services	14,796	15,845	17,290
Taxes other than income tax	10,552	9,511	12,469
Transportation expenses	2,570	2,558	1,850
Maintenance and repair	2,393	2,358	1,805
Utilities	1,477	1,541	1,808
Rent expenses	238	306	335
Research and development	53	54	90
Other	1,388	1,095	1,548
<b>Total cost of sales</b>	<b><u>263,864</u></b>	<b><u>283,882</u></b>	<b><u>280,598</u></b>

## 11. Distribution Expenses

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Shipping, transportation and storing	2,868	4,301	2,248
Wages and salaries	693	624	715
Commissions	242	314	418
Materials and supplies	173	235	76
Rent	89	132	161
Depreciation and amortisation	74	88	90
Other	719	620	408
<b>Total distribution expenses</b>	<b><u>4,858</u></b>	<b><u>6,314</u></b>	<b><u>4,116</u></b>

## 12. General and Administrative Expenses

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Wages and salaries	17,870	16,718	15,089
Consulting and information services	3,164	4,147	2,370
Impairment of receivables on uranium repackaging	2,990	—	—
Rent	1,099	1,083	934
Taxes other than income tax	1,089	877	754
Depreciation and amortisation	771	827	924
Corporate events	640	176	153
Business trip expenses	599	647	485
Maintenance and repair	504	511	327
Training expenses	372	349	264
Materials and supplies	252	280	386
Communication	230	143	236
Tax fines and penalties	184	1,443	666
Security	146	134	139
Utilities	146	130	185
Impairment of accounts receivable	113	474	800
Bank charges	91	117	194
Other employee benefits	83	(119)	131
Stationery	58	59	62
Insurance	56	58	35
Entertainment expenses	52	53	46
Research expenses	32	89	695
Other	1,733	2,681	780
<b>Total general and administrative expenses</b>	<b><u>32,274</u></b>	<b><u>30,877</u></b>	<b><u>25,655</u></b>



### 13. Impairment Losses

The Group recognised reversal of previously recognised impairments for the following assets:

<i>In millions of Kazakhstani Tenge</i>	Note	2017	2016	2015
Inventories . . . . .	30	424	85	83
Property, plant and equipment . . . . .	21	41	51	1
Other receivables . . . . .		—	1	—
Other . . . . .		78	47	2
<b>Total reversal of impairment of assets . . . . .</b>		<b>543</b>	<b>184</b>	<b>86</b>

The total impairment losses recognised by the Group were as follows:

<i>In millions of Kazakhstani Tenge</i>	Note	2017	2016	2015
Investments in associates . . . . .	25	6,556	—	—
Inventories . . . . .	30	5,125	2,060	1,789
Mine development assets . . . . .	22	4,954	1,393	375
Term deposits . . . . .	27	3,391	—	—
VAT recoverable . . . . .		3,136	1,581	—
Property, plant and equipment . . . . .	21	2,663	12,286	20,783
Intangible assets . . . . .	20	1,599	110	368
Other non-current assets . . . . .	29	498	4,577	6,641
Investments in joint ventures . . . . .	26	32	—	53
Other receivables . . . . .		4	—	—
Mineral rights . . . . .	23	—	—	707
<b>Total impairment losses . . . . .</b>		<b>27,958</b>	<b>22,007</b>	<b>30,716</b>

At 31 December 2017: impairment losses were recognised for the following cash-generating units (assets):

<i>In millions of Kazakhstani Tenge</i>	Property, plant and equipment	Mine development assets	Other non-current assets	VAT recoverable	Inventories write down to net realisable value	Intangible assets	Total
Karamurun . . . . .	—	698	—	—	—	—	698
Uvanas . . . . .	—	10	—	—	557	—	567
Kanzhugan . . . . .	—	4,246	—	—	—	—	4,246
South Moinkum . . . . .	—	—	—	—	639	—	639
Central Moinkum . . . . .	—	—	—	—	677	—	677
Production of silicon of solar quality, silicon slices and photovoltaic slices . . . . .	—	—	—	1,534	253	—	1,787
Production of photovoltaic modules . . . . .	1,075	—	—	—	806	—	1,881
Long-term deposit at Kazinvestbank JSC (Note 29) . . . . .	—	—	337	—	—	—	337
Baiterek SRT . . . . .	61	—	—	—	—	—	61
JV Zarechnoe LLP (Note 25) . . . . .	—	—	6,556	—	—	—	6,556
Goodwill of TTK LLP (Note 20) . . . . .	—	—	—	—	—	1,515	1,515
Deposits at bank RBK JSC (Note 27) . . . . .	—	—	3,391	—	—	—	3,391
Other . . . . .	1,527	—	197	1,602	2,193	84	5,603
<b>Total impairment losses . . . . .</b>	<b>2,663</b>	<b>4,954</b>	<b>10,481</b>	<b>3,136</b>	<b>5,125</b>	<b>1,599</b>	<b>27,958</b>

*South Moinkum, Uvanas, Kanzhugan, Karamurun, Zarechnoe, Semizbay*

Management considered decrease in reserves under JORC and other circumstances as indications of impairment of these cash-generating units (Note 4). The recoverable amount of the cash-generating units was determined as value of use. The recoverable amount of Karamurun mine is Tenge 2,706 million, Uvanas and Kanzhugan mines is nil. The applied discount rate was 12.1%.

*Production of photovoltaic modules*

Deviation from revised plans and further decrease in sales were considered by management as indications of further impairment of the cash-generating unit which was fully impaired in 2016. The recoverable amount of the cash-generating unit was nil and determined as value in use. The applied discount rate was 12.8%.

At 31 December 2016: impairment losses were recognised for the following cash-generating units (assets):

<i>In millions of Kazakhstani Tenge</i>	<b>Property, plant and equipment</b>	<b>Mine development assets</b>	<b>Other non-current assets</b>	<b>VAT recoverable</b>	<b>Inventories write down to net realisable value</b>	<b>Intangible assets</b>	<b>Total</b>
South Moinkum .....	667	1,381	—	—	—	—	2,048
Uvanas .....	—	12	—	—	—	—	12
Production of silicon of solar quality, silicon slices and photovoltaic slices .....	7,091	—	—	1,581	738	—	9,410
Long-term deposit at Kazinvestbank JSC (Note 29) .....	—	—	4,189	—	—	—	4,189
Baiterek SRT .....	3,884	—	—	—	—	—	3,884
Other .....	644	—	388	—	1,322	110	2,464
<b>Total impairment losses .....</b>	<b>12,286</b>	<b>1,393</b>	<b>4,577</b>	<b>1,581</b>	<b>2,060</b>	<b>110</b>	<b>22,007</b>

*South Moinkum and Uvanas*

Decrease of uranium prices in 2016 was considered by management as an indication of impairment of these cash-generating units. The recoverable amount of the cash-generating units was nil and determined as value in use. The applied discount rate was 10.46%.

*Production of silicon of solar quality, silicon and photovoltaic slices*

Deviation from revised plans and further decrease in sales were considered by management as indications of further impairment of the cash-generating unit which was partially impaired in 2015. The recoverable amount of the cash-generating unit was nil and determined as value in use. The applied discount rate was 12.35%.

*Baiterek SRT*

At 31 December 2016, management concluded that there were the following indications of impairment of Baiterek SRT (service motorship): extension of construction and low probability of obtaining economic benefits from its use and sale. Based on the analysis performed, management fully impaired the carrying value of Baiterek SRT in amount of Tenge 3,884 million.

At 31 December 2015: impairment losses were recognised for the following cash-generating units (assets):

<i>In millions of Kazakhstani Tenge</i>	<b>Property, plant and equipment</b>	<b>Other non-current assets</b>	<b>Inventories write down to net realisable value</b>	<b>Mineral rights</b>	<b>Mine development assets</b>	<b>Intangible assets</b>	<b>Total</b>
Production of silicon of solar quality, silicon slices and photovoltaic slices .....	15,748	5,479	514	—	—	—	21,741
Ore enrichment, hydro-metallurgical production of rare metals concentrates, chemical production of rare metals .....	3,476	589	360	—	—	—	4,425
Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste .....	658	499	682	707	375	368	3,289
Other .....	901	127	233	—	—	—	1,261
<b>Total impairment losses .....</b>	<b>20,783</b>	<b>6,694</b>	<b>1,789</b>	<b>707</b>	<b>375</b>	<b>368</b>	<b>30,716</b>

#### *Production of silicon of solar quality, silicon and photovoltaic slices*

Less than budgeted production and sales volumes, higher than budgeted production costs and overall decrease in market prices were considered by management as indications of impairment. Recoverable amount of the cash-generating unit (Tenge 5,128 million) was determined as value in use. The applied discount rate was 15.45%.

#### *Ore enrichment, hydro-metallurgical production of rare metals concentrates, chemical production of rare metals*

Uncertainties in future prospects of the project, higher than budgeted costs and overall decrease in market prices were considered by management as indications of impairment. Recoverable amount of the cash-generating unit (Tenge 231 million) was determined as value in use.

#### *Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste*

Less than budgeted production and sales volumes, higher than budgeted production costs and overall decrease in market prices were considered by management as indications of impairment. Recoverable amount of the cash-generating unit (Tenge 49 million) was determined as value in use. The applied discount rate was 11.11%.

### 14. Other Income

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Gain on exercise of put option (Note 27) . . . . .	107,714	—	—
Gain on transfer of subsoil use right to charter capital (Note 8) . . . . .	5,726	—	—
Fines and penalties . . . . .	1,041	—	918
Gain on disposal of property, plant and equipment . . . . .	425	—	—
Gain on disposal of non-current assets . . . . .	113	224	101
Property received free of charge . . . . .	46	165	279
Gain on disposal of joint ventures . . . . .	—	268	—
Other . . . . .	46	118	54
<b>Total other income . . . . .</b>	<b><u>115,111</u></b>	<b><u>775</u></b>	<b><u>1,352</u></b>

### 15. Other Expenses

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Social expenses . . . . .	2,996	3,573	2,970
Non-recoverable VAT . . . . .	1,629	533	392
Loss on disposal of non-current assets . . . . .	791	—	—
Loss on suspension of production . . . . .	717	846	627
EXPO organisation expenses . . . . .	131	—	—
Depreciation and amortisation . . . . .	66	231	398
Loss on disposal of long-term assets . . . . .	—	—	2,710
Loss on disposal of property, plant and equipment . . . . .	—	268	—
Other fines and penalties . . . . .	—	84	65
Other . . . . .	438	625	373
<b>Total other expenses . . . . .</b>	<b><u>6,768</u></b>	<b><u>6,160</u></b>	<b><u>7,535</u></b>

### *Net foreign exchange (loss) / gain*

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Foreign exchange (loss) / gain on financing activities, net . . . . .	(1,811)	2,341	(88,631)
Foreign exchange gain on operating activities, net . . . . .	1,043	1,273	35,185
<b>Total foreign exchange (loss) / gain, net . . . . .</b>	<b><u>(768)</u></b>	<b><u>3,614</u></b>	<b><u>(53,446)</u></b>

EXPO organisation expenses relate to the Group's share in financing of the international specialised exhibition Astana EXPO-2017. The expenses incurred by the Group in the amount of Tenge 862 million were partially offset by compensation received from the partners (Cameco Kazakhstan LLP, Uranium One Inc., Areva) in the amount of Tenge 731 million. In addition, the Group incurred expenses for organisation of EXPO of Tenge 295 million included in general and administrative expenses (Note 12).

## 16. Personnel Costs

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Wages and salaries . . . . .	55,666	53,861	50,921
Social tax and social contributions . . . . .	6,163	5,739	5,376
<b>Total personnel costs . . . . .</b>	<b><u>61,829</u></b>	<b><u>59,600</u></b>	<b><u>56,297</u></b>

## 17. Finance Income and Costs

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Finance income</b>			
Interest income . . . . .	4,553	5,290	2,899
Gain from remeasurement of financial assets . . . . .	1,115	1,640	11,509
Gain from remeasurement of financial liabilities . . . . .	80	1,314	113
Dividend income . . . . .	—	7,308	7,050
Other . . . . .	140	273	415
<b>Total finance income . . . . .</b>	<b><u>5,888</u></b>	<b><u>15,825</u></b>	<b><u>21,986</u></b>
<b>Finance costs</b>			
Interest expense on loans and borrowings . . . . .	5,514	6,278	6,136
Unwinding of discount on provisions . . . . .	1,267	1,100	1,075
Loss from remeasurement of financial assets . . . . .	1,223	2,673	560
Loss on conversion of foreign currency . . . . .	294	349	187
Unwinding of discount on other financial liabilities . . . . .	285	288	261
Dividend expense on preference shares . . . . .	53	53	53
Other . . . . .	431	276	404
<b>Total finance costs . . . . .</b>	<b><u>9,067</u></b>	<b><u>11,017</u></b>	<b><u>8,676</u></b>

Gain and loss from remeasurement of financial assets and liabilities mainly relates to loans given and accounts payables containing an indexation clause which is linked to currencies other than Tenge.

## 18. Income Tax Expense

### (a) Components of income tax expense

Income tax expense recorded in profit or loss comprises the following:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Current income tax . . . . .	20,299	20,224	14,133
Deferred income tax . . . . .	(2,837)	(2,236)	(1,089)
<b>Total income tax expense . . . . .</b>	<b><u>17,462</u></b>	<b><u>17,988</u></b>	<b><u>13,044</u></b>

### (b) Reconciliation between the tax expense and profit or loss multiplied by applicable tax rate

The income tax rate applicable to the majority of the Group's profits in 2017, 2016 and 2015 is 20%.

A reconciliation between the expected and the actual taxation charge is provided below:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Profit before tax</b> .....	<b>156,616</b>	<b>129,543</b>	<b>49,545</b>
Theoretical tax charge at statutory tax rate of 20% .....	31,323	25,909	9,909
Tax effect of items which are not deductible or assessable for taxation purposes:			
Income which is exempt from taxation .....	(253)	(2,280)	(1,422)
Unrecognised deferred tax asset on impairment losses .....	2,331	2,447	6,084
Disposal of investments .....	(21,543)	—	—
Non-deductible expenses .....	8,086	1,532	5,561
Transfer pricing adjustment .....	509	693	542
Elimination of unrecognised profits in finished goods .....	106	(8)	(414)
Share of results of associates .....	(4,401)	(7,612)	(7,765)
Share of results of joint ventures .....	(4,421)	(7,347)	(2,816)
Utilisation of previously unrecognised tax losses .....	(789)	(780)	(194)
Current period tax losses for which no deferred tax asset is recognised .....	188	676	2,478
Excess profit tax .....	5,609	—	—
Prior periods adjustments .....	717	4,758	1,081
<b>Income tax expense</b> .....	<b><u>17,462</u></b>	<b><u>17,988</u></b>	<b><u>13,044</u></b>

Prior period adjustments in 2016 included corporate income tax of Tenge 2,512 million based on the results of the transfer pricing inspection for 2008, Tenge 522 million based on the results of the complex tax audit for 2009-2012 utilising provision for corporate income tax accrued in 2015 (Note 39), and correction of corporate income tax of Tenge 1,538 million for 2013-2015. Prior period adjustments in 2015 mainly include accrual of corporate income tax and excess profit tax for Tenge 856 million based on the results of the appeal.

The excess profit tax in 2017 arises from the transfer of subsoil use right to the charter capital of JV Budenovskoe LLP (Note 8).

Disposal of investments in 2017 relates to non-taxable gain from exercise of put option in the amount of Tenge 107,714 million (Note 27).

As at 31 December 2017, 2016 and 2015, the Group did not recognise deferred tax asset on impairment losses as management did not consider it probable that future taxable profit would be available against which the deduction could be utilised.

(c) *Deferred taxes analysed by type of temporary difference*

Differences between IFRS and statutory taxation regulations in Kazakhstan give rise to temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and their tax bases. The tax effect of the movements in these temporary differences is detailed below at 20%.

<i>In millions of Kazakhstani Tenge</i>	<b>1 January 2017</b>	<b>Credited / (charged) to profit or loss</b>	<b>31 December 2017</b>
<b>Tax effect of deductible / (taxable) temporary differences</b>			
Property, plant and equipment and intangible assets . . . . .	(6,412)	678	(5,734)
Accounts receivable . . . . .	854	(156)	698
Loans and borrowings . . . . .	(311)	146	(165)
Accounts payable . . . . .	(192)	192	—
Provisions . . . . .	961	179	1,140
Accrued liabilities . . . . .	799	91	890
Tax losses carried forward . . . . .	1,270	(3)	1,267
Taxes . . . . .	768	(254)	514
Other assets . . . . .	1,709	1,946	3,655
Other liabilities . . . . .	110	18	128
	<b>(444)</b>	<b>2,837</b>	<b>2,393</b>
<b>Recognised deferred tax asset . . . . .</b>	<b>4,299</b>	<b>2,537</b>	<b>6,836</b>
<b>Recognised deferred tax liabilities . . . . .</b>	<b>(4,743)</b>	<b>300</b>	<b>(4,443)</b>

Management estimates that deferred tax assets of Tenge 3,105 million in 2017 (2016: Tenge 3,085 million; 2015: Tenge 3,862 million) and deferred tax liabilities of Tenge 5,734 million in 2017 (2016: Tenge 6,412 million; 2015: Tenge 6,296 million) are recoverable after more than twelve months after the end of the reporting period. Investments in subsidiaries, associates and joint ventures will be recovered primarily through dividends. Dividends from subsidiaries, associates and joint ventures are not taxable, accordingly the Group did not recognise deferred tax on undistributed earnings from investments.

The tax effect of the movements in the temporary differences for the year ended 31 December 2016 is:

<i>In millions of Kazakhstani Tenge</i>	<b>1 January 2016</b>	<b>Credited / (charged) to profit or loss</b>	<b>31 December 2016</b>
<b>Tax effect of deductible / (taxable) temporary differences</b>			
Property, plant and equipment and intangible assets . . . . .	(6,296)	(116)	(6,412)
Accounts receivable . . . . .	817	37	854
Loans and borrowings . . . . .	(162)	(149)	(311)
Accounts payable . . . . .	—	(192)	(192)
Provisions . . . . .	964	(3)	961
Accrued liabilities . . . . .	684	115	799
Tax losses carried forward . . . . .	2,081	(811)	1,270
Taxes . . . . .	650	118	768
Other assets . . . . .	(1,523)	3,232	1,709
Other liabilities . . . . .	105	5	110
	<b>(2,680)</b>	<b>2,236</b>	<b>(444)</b>
<b>Recognised deferred tax asset . . . . .</b>	<b>1,829</b>	<b>2,470</b>	<b>4,299</b>
<b>Recognised deferred tax liabilities . . . . .</b>	<b>(4,509)</b>	<b>(234)</b>	<b>(4,743)</b>



The tax effect of the movements in the temporary differences for the year ended 31 December 2015 is:

<i>In millions of Kazakhstani Tenge</i>	<u>1 January 2015</u>	<u>Credited / (charged) to profit or loss</u>	<u>31 December 2015</u>
<b>Tax effect of deductible / (taxable) temporary differences</b>			
Property, plant and equipment and intangible assets . . . . .	(5,812)	(484)	(6,296)
Accounts receivable . . . . .	489	328	817
Loans and borrowings . . . . .	(73)	(89)	(162)
Provisions . . . . .	702	262	964
Accrued liabilities . . . . .	643	41	684
Tax losses carried forward . . . . .	209	1,872	2,081
Taxes . . . . .	1,151	(501)	650
Other assets . . . . .	(1,219)	(304)	(1,523)
Other liabilities . . . . .	141	(36)	105
	<u>(3,769)</u>	<u>1,089</u>	<u>(2,680)</u>
<b>Recognised deferred tax asset . . . . .</b>	<b>835</b>	<b>994</b>	<b>1,829</b>
<b>Recognised deferred tax liabilities . . . . .</b>	<b>(4,604)</b>	<b>95</b>	<b>(4,509)</b>

In the context of the Group's current structure, tax losses and current tax assets of different Group companies may not be offset against current tax liabilities and taxable profits of other Group companies and, accordingly, taxes may accrue even where there is a consolidated tax loss. Therefore, deferred tax assets and liabilities are offset only when they relate to the same taxable entity.

The Group has unrecognised deferred tax assets in respect of unused tax loss carry forwards of Tenge 4,002 million in 2017 (2016: Tenge 4,603 million; 2015: Tenge 4,707 million) and impairment losses in amount of Tenge 10,862 million in 2017 (2016: Tenge 8,531 million; 2015: Tenge 6,084 million).

The tax loss carry forwards expire as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
2018-2022 . . . . .	—	—	193
2023 . . . . .	—	715	1,302
2024 . . . . .	660	734	734
2025 . . . . .	2,478	2,478	2,478
2026 . . . . .	676	676	—
2027 . . . . .	188	—	—
<b>Total unrecognised deferred tax asset on tax losses . . . . .</b>	<b><u>4,002</u></b>	<b><u>4,603</u></b>	<b><u>4,707</u></b>

## 19. Earnings per Share

Basic earnings per share are calculated by dividing the profit or loss attributable to owners of the Company by the weighted average number of ordinary shares in issue during the year, excluding treasury shares. The Company has no dilutive potential ordinary shares; therefore, the diluted earnings per share equal the basic earnings per share. Earnings per share from continuing operations are calculated as follows:

	<u>2017</u>	<u>2016</u>	<u>2015</u>
Profit for the year attributable to owners of the Company (in millions of Kazakhstani Tenge) . . . . .	138,527	108,795	38,442
Weighted average number of ordinary shares (in thousands) . . . . .	<u>36,962</u>	<u>36,715</u>	<u>36,692</u>
<b>Basic and diluted earnings per share, in Tenge . . . . .</b>	<b><u>3,748</u></b>	<b><u>2,963</u></b>	<b><u>1,048</u></b>

## 20. Intangible Assets

<i>In millions of Kazakhstani Tenge</i>	<u>Licences and patents</u>	<u>Software</u>	<u>Goodwill</u>	<u>Other</u>	<u>Total</u>
<b>At 1 January 2015</b>					
Cost . . . . .	99	1,507	10,110	1,540	13,256
Accumulated amortisation and impairment . . . . .	(48)	(606)	(4,944)	(368)	(5,966)
<b>Carrying value . . . . .</b>	<b>51</b>	<b>901</b>	<b>5,166</b>	<b>1,172</b>	<b>7,290</b>
Additions . . . . .	426	131	—	72	629
Amortisation charge . . . . .	(42)	(235)	—	(104)	(381)
Impairment . . . . .	(368)	—	—	—	(368)
Transfers from / (to) property, plant and equipment (Note 21) . . . . .	1	138	—	(8)	131
Transfers to assets held for sale . . . . .	—	(9)	—	(119)	(128)
<b>At 31 December 2015</b>					
Cost . . . . .	525	1,756	10,110	1,461	13,852
Accumulated amortisation and impairment . . . . .	(457)	(830)	(4,944)	(448)	(6,679)
<b>Carrying value . . . . .</b>	<b>68</b>	<b>926</b>	<b>5,166</b>	<b>1,013</b>	<b>7,173</b>
Additions . . . . .	415	65	—	17	497
Amortisation charge . . . . .	(20)	(281)	—	(59)	(360)
Impairment . . . . .	—	(110)	—	—	(110)
Transfers from property, plant and equipment (Note 21) . . . . .	—	—	—	6	6
Transfers to assets held for sale . . . . .	—	—	—	(89)	(89)
<b>At 31 December 2016</b>					
Cost . . . . .	939	1,772	10,110	1,393	14,214
Accumulated amortisation and impairment . . . . .	(476)	(1,172)	(4,944)	(505)	(7,097)
<b>Carrying value . . . . .</b>	<b>463</b>	<b>600</b>	<b>5,166</b>	<b>888</b>	<b>7,117</b>
Additions . . . . .	788	161	1,515	2	2,466
Additions under finance leases . . . . .	136	—	—	—	136
Disposals . . . . .	—	(42)	—	(103)	(145)
Amortisation charge . . . . .	(396)	(215)	—	(82)	(693)
Impairment . . . . .	—	—	(1,515)	(84)	(1,599)
Recovery of impairment . . . . .	—	13	—	—	13
Loss of control over subsidiary . . . . .	—	—	—	(12)	(12)
Transfers from / (to) property, plant and equipment (Note 21) . . . . .	—	750	—	(36)	714
Transfers from assets held for sale . . . . .	—	—	—	12	12
<b>At 31 December 2017</b>					
Cost . . . . .	1,851	2,371	11,625	944	16,791
Accumulated amortisation and impairment . . . . .	(860)	(1,104)	(6,459)	(359)	(8,782)
<b>Carrying value . . . . .</b>	<b>991</b>	<b>1,267</b>	<b>5,166</b>	<b>585</b>	<b>8,009</b>

Significant part of other intangible assets is comprised of cost of production technology development project.

### **Goodwill impairment test**

#### *(i) Central Mynkuduk*

At 31 December 2017, 2016 and 2015, all goodwill is attributable to one cash-generating unit related to subsurface use operations at Central Mynkuduk mine. Recoverable amount was determined as value in use based on forecast cash flows over the term of subsurface use contract (Note 1). Forecast cash flows are based on the approved volume of proven reserves, estimated volumes of production and life of a mine approved by management, and the discount rate of 12.1% in 2017 (2016: 10.46%; 2015: 11.94%). Production volumes are consistent with those agreed with the competent authority and SRK report (Note 4) and are based on the production capacity of the cash-generating unit. Key assumptions used in calculations include forecast prices and period direct costs. Sales prices used in developing forecast cash flows were determined using an independent official source Ux Consulting LLC published in the fourth quarter of 2017. Direct costs are based on approved budgets for 2018-2022 and growth of 4% thereafter which approximates long-term average growth rates. Estimated value in use significantly exceeds carrying amount of the cash-generating unit therefore even reasonably possible changes in key assumptions would not lead to impairment losses.

#### *(ii) MKS Transshipment Base*

In December 2017, the Group purchased from MKS Company LLP an operating unit for reloading and storage of contaminated chemical cargo in Shieli (hereinafter referred to as the MKS Transshipment Base). The acquisition of the

MKS Transshipment Base was connected with the need to transfer the existing transshipment base outside Shieli settlement, as well as with the Group's plans to increase the transshipment volume in the region. The cost of acquisition of the MKS Transshipment Base was Tenge 4,276 million.

When making an investment decision to acquire the MKS Transshipment Base, the Group's management examined an option of constructing a new transshipment base. Management concluded that the cost of constructing a new transshipment facility would be substantially higher than the cost of acquiring the MKS Transshipment Base, mainly due to the need to build a railway track connecting section.

In assessing the return on investment of the MKS Transshipment Base, management used cash flow models based on the Group's long-term development plans. The transshipment volumes are based on mine development plans of the Group, its joint ventures and associated companies. Mine development plans are based on the assessment of mineral reserves, carried out in accordance with the requirements of Kazakhstan legislation. According to the assessment, management concluded that the acquisition cost of MKS Transshipment Base is fully recoverable over its useful life.

Management concluded that the MKS Transshipment Base represents a business rather than a group of assets, and therefore, its acquisition should be accounted for as a business acquisition in accordance with IFRS 3. The Group accounted for the acquisition of the MKS Transshipment Base as follows (according to IFRS 3):

- Acquired identifiable assets, liabilities and contingent liabilities are recorded at fair value at the date of the acquisition;
- The difference between the acquisition cost and the fair value of net assets acquired is attributable to goodwill.

The Group did not incur significant costs related to the acquisition transaction.

Details of the assets and liabilities acquired and goodwill arising are as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Provisional fair value</b>
Property, plant and equipment . . . . .	2,761
<b>Fair value of identifiable net assets</b> . . . . .	<b>2,761</b>
Less: non-controlling interest . . . . .	—
Goodwill arising from the acquisition . . . . .	1,515
<b>Total purchase consideration</b> . . . . .	<b>4,276</b>
Less: non-cash consideration . . . . .	(4,276)
<b>Outflow of cash and cash equivalents on acquisition</b> . . . . .	<b>—</b>

The provisional fair value of the acquired assets was determined based on the valuation performed by an independent professional appraiser. The goodwill is primarily attributable to the expectation of significant synergies from operations of the MKS Transshipment Base with the Group's mining entities.

Under IFRS, the Group should test goodwill for impairment at least once a year. For the purposes of the impairment test, the MKS Transshipment base was identified as a separate cash-generating unit.

The revenues of the MKS Transshipment Base are mainly formed by transshipment services to the Group, joint ventures and associates. Accordingly, for the impairment test purposes, transshipment volumes are based on the production volumes used in the impairment models of the corresponding uranium mines of the Group. For impairment test purposes as at 31 December 2017, the Group considered the results of reserves assessment performed by SRK in accordance with the requirements of the JORC Code (2012) (Note 4).

The results of the independent assessment of proven and probable reserves differed from the assessment of mineral resources and mine plans that were used at the time of the acquisition decision.

As a result, there has been a change in estimate since the purchase of the base and the Group's long-term development plans are now not taken into account for the purposes of the assessment. Accordingly, for the impairment test purposes at 31 December 2017, the Group revised production volumes of uranium mines and related transshipment volumes of the MKS Transshipment Base. The recoverable amount of the MKS Transshipment Base was estimated at Tenge 2,491 million. Accordingly, the goodwill was impaired for Tenge 1,515 million and related property plant and equipment for Tenge 270 million. Impairment is recognised immediately as an expense and is not subsequently reversed.

## 21. Property, Plant and Equipment

Movements in the carrying amount of property, plant and equipment were as follows:

<i>In millions of Kazakhstani Tenge</i>	Land	Buildings	Machinery and equipment	Vehicles	Other	Construction in progress	Total
<b>At 1 January 2015</b>							
Cost	325	83,240	67,602	13,119	5,096	44,182	213,564
Accumulated depreciation and impairment	—	(19,139)	(32,254)	(6,834)	(2,616)	(5,203)	(66,046)
<b>Carrying amount</b>	<b>325</b>	<b>64,101</b>	<b>35,348</b>	<b>6,285</b>	<b>2,480</b>	<b>38,979</b>	<b>147,518</b>
Additions	40	237	2,797	927	346	19,996	24,343
Transfers	—	13,739	3,717	37	49	(17,542)	—
Depreciation charge	—	(4,262)	(5,950)	(1,063)	(580)	—	(11,855)
Impairment loss (Notes 4, 13)	—	(2,012)	(2,161)	—	(5)	(16,605)	(20,783)
Reversal of impairment losses recognised in prior periods	—	—	—	—	1	—	1
Disposals	(13)	(2,134)	(231)	(43)	(130)	(246)	(2,797)
Transfer to mine development assets (Note 22)	—	—	—	—	—	(5,677)	(5,677)
Transfer from inventories	—	1	49	—	8	226	284
Transfers from / (to) intangible assets (Note 20)	—	—	30	—	—	(161)	(131)
Transfers to non-current assets held for sale	—	(66)	—	—	—	—	(66)
Changes in estimates	—	(447)	—	—	—	—	(447)
Translation to presentation currency	—	—	—	14	7	—	21
<b>At 31 December 2015</b>							
Cost	352	94,847	73,526	13,813	4,987	38,047	225,572
Accumulated depreciation and impairment	—	(25,690)	(39,927)	(7,656)	(2,811)	(19,077)	(95,161)
<b>Carrying amount</b>	<b>352</b>	<b>69,157</b>	<b>33,599</b>	<b>6,157</b>	<b>2,176</b>	<b>18,970</b>	<b>130,411</b>
Additions	18	369	2,189	1,255	607	7,226	11,664
Transfers	1	2,078	2,624	42	91	(4,836)	—
Depreciation charge	—	(4,517)	(5,667)	(1,073)	(524)	—	(11,781)
Impairment loss (Notes 4, 13)	—	(1,920)	(747)	(5)	(63)	(9,551)	(12,286)
Reversal of impairment losses recognised in prior periods	—	—	21	—	22	8	51
Disposals	(4)	(42)	(80)	(38)	(32)	(72)	(268)
Disposal of subsidiaries	(6)	(135)	(9)	(19)	(6)	(1)	(176)
Transfer from / (to) inventories	—	—	8	—	(9)	(59)	(60)
Transfers to intangible assets (Note 20)	—	—	—	—	—	(6)	(6)
Transfers to non-current assets held for sale	—	(32)	(7)	(22)	(4)	(479)	(544)
Changes in estimates	—	334	—	—	—	—	334
Translation to presentation currency	—	—	—	(3)	(1)	—	(4)
<b>At 31 December 2016</b>							
Cost	361	96,011	75,678	14,005	5,434	39,812	231,301
Accumulated depreciation and impairment	—	(30,719)	(43,747)	(7,711)	(3,177)	(28,612)	(113,966)
<b>Carrying amount</b>	<b>361</b>	<b>65,292</b>	<b>31,931</b>	<b>6,294</b>	<b>2,257</b>	<b>11,200</b>	<b>117,335</b>
Additions	9	3,470	3,211	1,190	629	12,211	20,720
Transfers	—	2,716	3,163	240	95	(6,214)	—
Depreciation charge	—	(4,636)	(5,237)	(1,149)	(502)	—	(11,524)
Impairment loss (Notes 4, 13)	—	(1,624)	(289)	(33)	(6)	(711)	(2,663)
Reversal of impairment losses recognised in prior periods	—	—	20	1	7	13	41
Disposals	(10)	(274)	(63)	(18)	(19)	(48)	(432)
Transfer from / (to) inventories	—	—	10	—	—	(29)	(19)
Transfers from / (to) intangible assets (Note 20)	—	—	36	—	—	(750)	(714)
Transfers from / (to) non-current assets held for sale	—	2	(1)	(7)	—	—	(6)
Changes in estimates	—	(566)	—	—	—	—	(566)
Translation to presentation currency	—	—	—	2	1	—	3
<b>At 31 December 2017</b>							
Cost	360	100,308	81,301	15,699	6,015	49,519	253,202
Accumulated depreciation and impairment	—	(35,928)	(48,520)	(9,179)	(3,553)	(33,847)	(131,027)
<b>Carrying amount</b>	<b>360</b>	<b>64,380</b>	<b>32,781</b>	<b>6,520</b>	<b>2,462</b>	<b>15,672</b>	<b>122,175</b>

As a result of the impairment test in 2017, the Group recognised impairment loss on property, plant and equipment in the amount of Tenge 2,663 million (2016: Tenge 12,286 million; 2015: Tenge 20,783 million), including impairment of construction in progress in the amount of Tenge 711 million (2016: Tenge 9,551 million; 2015: Tenge 16,605 million). In 2016, impairment of construction in progress mainly consisted of impairment of equipment under installation in the amount of Tenge 4,909 million related to the Production of silicon of solar quality, silicon slices and photovoltaic slices cash-generating units and impairment of Baiterek SRT in the amount of Tenge 3,884 million. In 2015, impairment of construction in progress in the amount of Tenge 15,747 million related to Production of silicon of solar quality, silicon slices and photovoltaic slices cash generating unit (Note 13).

Depreciation expense of Tenge 10,231 million in 2017 (2016: Tenge 10,302 million; 2015: Tenge 10,057 million) was charged to cost of sales, Tenge 74 million (2016: Tenge 87 million; 2015: Tenge 90 million) to distribution expenses, Tenge 476 million (2016: Tenge 571 million; 2015: Tenge 657 million) to administrative expenses and Tenge 66 million (2016: Tenge 231 million; 2015: Tenge 398 million) to other expenses. The remaining depreciation expense in the amount of Tenge 677 million in 2017 (2016: Tenge 590 million; 2015: Tenge 653 million) is included to finished goods, work-in-process and other lines.

At 31 December 2017, construction in progress included construction of desalination plants of MAEK-Kazatomprom LLP of Tenge 6,845 million, overhaul of units and equipment of MAEK-Kazatomprom LLP of Tenge 1,120 million, technical modernisation of UMP JSC of Tenge 1,912 million, technological road to Zhalpak field of Tenge 1,751 million and IT projects of JSC NAC Kazatomprom of Tenge 1,969 million.

IT projects of JSC NAC Kazatomprom include capitalised costs of Digital Mine project of Tenge 1,018 million and SAP ERP implementation of Tenge 951 million. Implementation of the Digital Mine is planned at one of the Group's entities in 2018. In 2019, the Group plans to replicate the system at all other mining entities. In 2017, under SAP ERP implementation project, the Group developed design solutions for target business processes and carried out preparatory work for testing the system. In 2018, the Group will continue implementation and automation of target business processes on the basis of SAP ERP at the corporate centre and four subsidiaries.

At 31 December 2016, construction in progress mainly includes modernisation of production facilities at MAEK-Kazatomprom LLP in amount of Tenge 7,573 million (2015: Tenge 6,989 million). At 31 December 2015, construction in progress includes infrastructure in construction, assembly and installation stage at Mynkuduk, Central lot, automobile roads, construction and reconstruction of production facilities related to KazPV project and desalination equipment. In 2015, significant additions to construction in progress included facilities at Central Mynkuduk, automobile roads and desalination equipment.

At 31 December 2017, the Group had contractual capital expenditure commitments in respect of property, plant and equipment totalling Tenge 1,890 million (2016: Tenge 5,383 million; 2015: Tenge 766 million).

Borrowing costs capitalised in the reporting period were Tenge 212 million in 2017 (2016: Tenge 631 million; 2015: Tenge 437 million). The average capitalisation rate in 2017 was 3.22% (2016: 4.32%; 2015: 4.22%).

As at 31 December 2017, the gross carrying value of fully depreciated property, plant and equipment still in use was Tenge 10,582 million (2016: Tenge 9,474 million; 2015: Tenge 5,897 million).

Depreciation and amortisation accrued on long-term assets for the years ended 31 December are as following:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Property, plant and equipment . . . . .	11,524	11,781	11,855
Mine development assets . . . . .	11,023	10,705	9,219
Intangible assets . . . . .	693	360	381
Mineral rights . . . . .	191	300	139
<b>Total accrued depreciation and amortisation . . . . .</b>	<b><u>23,431</u></b>	<b><u>23,146</u></b>	<b><u>21,594</u></b>

Depreciation and amortisation charged to profit or loss for the years ended 31 December are as following:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Cost of sales .....	15,558	15,113	16,779
General and administrative expenses .....	771	827	924
Distribution expenses .....	74	88	90
Other expenses .....	66	231	398
<b>Total depreciation and amortisation charged to profit or loss ..</b>	<b><u>16,469</u></b>	<b><u>16,259</u></b>	<b><u>18,191</u></b>

## 22. Mine Development Assets

<i>In millions of Kazakhstani Tenge</i>	<u>Field preparation</u>	<u>Site restoration costs</u>	<u>Ion exchange resin</u>	<u>Total</u>
<b>At 1 January 2015</b>				
Cost .....	36,777	7,371	3,453	47,601
Accumulated depreciation and impairment .....	(13,440)	(736)	(802)	(14,978)
<b>Carrying amount .....</b>	<b><u>23,337</u></b>	<b><u>6,635</u></b>	<b><u>2,651</u></b>	<b><u>32,623</u></b>
Additions .....	8,815	—	—	8,815
Transfers from property, plant and equipment (Note 21) .....	5,677	—	—	5,677
Transfers from exploration and evaluation assets (Note 24) .....	—	—	129	129
Transfers from inventory .....	334	—	783	1,117
Depreciation charge .....	(8,364)	(479)	(376)	(9,219)
Impairment loss .....	(167)	(208)	—	(375)
Changes in accounting estimates .....	—	(189)	—	(189)
<b>At 31 December 2015</b>				
Cost .....	51,603	7,182	4,365	63,150
Accumulated depreciation and impairment .....	(21,971)	(1,423)	(1,178)	(24,572)
<b>Carrying amount .....</b>	<b><u>29,632</u></b>	<b><u>5,759</u></b>	<b><u>3,187</u></b>	<b><u>38,578</u></b>
Additions .....	11,284	—	—	11,284
Transfers from exploration and evaluation assets (Note 24) .....	2,920	691	255	3,866
Transfers from inventory .....	591	—	267	858
Depreciation charge .....	(9,915)	(502)	(288)	(10,705)
Impairment loss .....	(1,393)	—	—	(1,393)
Reversal of impairment losses recognised in prior periods .....	1	1	—	2
Changes in accounting estimates .....	—	(808)	—	(808)
<b>At 31 December 2016</b>				
Cost .....	66,298	7,062	4,887	78,247
Accumulated depreciation and impairment .....	(33,178)	(1,921)	(1,466)	(36,565)
<b>Carrying amount .....</b>	<b><u>33,120</u></b>	<b><u>5,141</u></b>	<b><u>3,421</u></b>	<b><u>41,682</u></b>
Additions .....	11,308	—	—	11,308
Transfers to exploration and evaluation assets (Note 24) .....	—	—	(32)	(32)
Transfers from inventory .....	896	—	764	1,660
Depreciation charge .....	(10,052)	(726)	(245)	(11,023)
Impairment loss .....	(4,955)	—	—	(4,955)
Reversal of impairment losses recognised in prior periods .....	39	5	—	44
Changes in accounting estimates .....	—	4,846	—	4,846
<b>At 31 December 2017</b>				
Cost .....	65,843	11,728	5,359	82,930
Accumulated depreciation and impairment .....	(35,487)	(2,462)	(1,451)	(39,400)
<b>Carrying amount .....</b>	<b><u>30,356</u></b>	<b><u>9,266</u></b>	<b><u>3,908</u></b>	<b><u>43,530</u></b>



The site restoration costs are capitalised when the Group recognises provision for site restoration. The carrying value of the provision and site restoration assets is reassessed at each reporting period end (Notes 4 and 36).

### 23. Mineral Rights

*In millions of Kazakhstani Tenge*

<b>At 1 January 2015</b>	
Cost .....	8,784
Accumulated amortisation and impairment .....	(6,159)
<b>Carrying amount</b> .....	<b>2,625</b>
Additions .....	288
Amortisation charge .....	(139)
Impairment .....	(707)
<b>At 31 December 2015</b>	
Cost .....	9,072
Accumulated amortisation and impairment .....	(7,005)
<b>Carrying amount</b> .....	<b>2,067</b>
Transfers from exploration and evaluation assets (Note 24) .....	524
Amortisation charge .....	(300)
<b>At 31 December 2016</b>	
Cost .....	9,593
Accumulated amortisation and impairment .....	(7,302)
<b>Carrying amount</b> .....	<b>2,291</b>
Additions .....	90
Amortisation charge .....	(191)
Change in accounting estimate .....	(186)
<b>At 31 December 2017</b>	
Cost .....	9,183
Accumulated amortisation and impairment .....	(7,179)
<b>Carrying amount</b> .....	<b>2,004</b>

### 24. Exploration and Evaluation Assets

*In millions of Kazakhstani Tenge*

	<u>Tangible assets</u>	<u>Intangible assets</u>	<u>Total</u>
<b>Carrying value</b>			
<b>At 1 January 2015</b> .....	<b>7,461</b>	<b>1,256</b>	<b>8,717</b>
Additions .....	2,059	2	2,061
Transfers to mine development assets (Note 22) .....	(129)	—	(129)
Transfers from non-current assets held for sale .....	—	8	8
Transfers from inventory .....	274	—	274
Proceeds from test production .....	(2,388)	(5)	(2,393)
<b>At 31 December 2015</b> .....	<b>7,277</b>	<b>1,261</b>	<b>8,538</b>
Additions .....	3,085	15	3,100
Transfers to mine development assets (Note 22) .....	(3,866)	—	(3,866)
Transfers to mineral rights (Note 23) .....	—	(524)	(524)
Transfers to non-current assets held for sale .....	(1,967)	(25)	(1,992)
Proceeds from test production .....	(1,422)	(3)	(1,425)
Changes in accounting estimates .....	(360)	—	(360)
<b>At 31 December 2016</b> .....	<b>2,747</b>	<b>724</b>	<b>3,471</b>
Additions .....	3,626	17	3,643
Disposals .....	(83)	(24)	(107)
Transfers from mine development assets (Note 22) .....	32	—	32
Proceeds from test production .....	(1,644)	—	(1,644)
Changes in accounting estimates .....	—	213	213
<b>At 31 December 2017</b> .....	<b>4,678</b>	<b>930</b>	<b>5,608</b>

## 25. Investments in Associates

The table below summarises the movements in the carrying amount of the Group's investment in associates:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Carrying value at 1 January	107,773	121,938	96,708
Contributions to charter capital	—	7	2,046
Share of results of associates	22,007	38,058	38,823
Dividends received from associates	(21,244)	(48,286)	(33,825)
Disposals	—	(69)	—
Classified as joint ventures	—	(3,216)	—
Effect of translation to presentation currency	(234)	(659)	18,186
Impairment	(6,556)	—	—
<b>Carrying value at 31 December</b>	<b><u>101,746</u></b>	<b><u>107,773</u></b>	<b><u>121,938</u></b>

The Group's interests in its principal associates were as follows:

	Country of incorporation	Principal activities	2017		2016		2015	
			% ownership interest held / % of voting rights	In millions of Tenge	% ownership interest held / % of voting rights	In millions of Tenge	% ownership interest held / % of voting rights	In millions of Tenge
JV KATKO LLP	Kazakhstan	Extraction, processing and export of uranium products	49%	38,504	49.00%	39,843	49.00%	48,781
JV Inkai LLP	Kazakhstan	Extraction, processing and export of uranium products	40%	40,389	40.00%	37,686	40.00%	40,512
JV South Mining Chemical Company LLP	Kazakhstan	Extraction, processing and export of uranium products	30%	5,029	30.00%	8,258	30.00%	10,435
JV Zarechnoe JSC	Kazakhstan	Extraction, processing and export of uranium products	49.98%	1,947	49.98%	8,692	49.98%	7,555
Kaustik JSC	Kazakhstan	Supply of caustic soda	40%	3,775	40.00%	3,462	40.00%	3,888
JV Betpak Dala LLP	Kazakhstan	Extraction, processing and export of uranium products	30%	1,949	30.00%	2,316	30.00%	3,038
JV Khorasan-U LLP	Kazakhstan	Extraction, processing and export of uranium products	33.98%	5,259	33.98%	4,418	33.98%	2,851
JV SKZ Kazatomprom LLP	Kazakhstan	Production of sulphuric acid	9.89%	720	9.89%	737	9.89%	680
JV Rosburmash LLP	Kazakhstan	Geological exploration	49%	553	49.00%	459	49.00%	504
Kyzylkum LLP	Kazakhstan	Extraction, processing and export of uranium products	30%	3,621	30.00%	1,902	30.00%	421
Uranenergo LLP	Kazakhstan	Transfer and distribution of electricity, grid operations	—	—	—	—	55.45%	3,201
JV IFASTAR	France	Nuclear fuel cycle project feasibility study	—	—	—	—	49.00%	—

	Country of incorporation	Principal activities	2017		2016		2015	
			% ownership interest held / % of voting rights	In millions of Tenge	% ownership interest held / % of voting rights	In millions of Tenge	% ownership interest held / % of voting rights	In millions of Tenge
PKF Ulba Electro LLP	Kazakhstan	Design on engineering systems and networks	—	—	—	—	30.00%	72
<b>Total investments in associates</b>				<b>101,746</b>		<b>107,773</b>		<b>121,938</b>

All of the above associates are accounted for using the equity method.

In 2015, the Group's interest in SKZ Kazatomprom LLP decreased from 22% to 9.89%, however management assessed that JSC NAC Kazatomprom retained significant influence over the entity, since it retained a right to appoint one of five Supervisory Board members.

In 2016, the Group increased its interest in Uranenergo LLP and reassessed presence of control, joint control and significant influence over the investee. As the result of this assessment, management concluded that the Group has joint control over Uranenergo LLP. Accordingly, the investment was reclassified from investments into associates to investments into joint ventures (Note 26).

In 2016, JV IFASTAR and PKF Ulba Electro LLP were liquidated.

During 2016 and 2017, JV Betpak Dala LLP did not carry out operating activities. According to the participants' decision, the entity is planned for liquidation in 2018.

Summarised financial information for 2017 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associates' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

<i>In millions of Kazakhstani Tenge</i>	JV Betpak	Kyzylkum	JV KATKO	JV Inkai	JV South Mining	JV Zarechnoe	JV Khorasan-U	Other	Total
	Data LLP	LLP	LLP	LLP	Chemical Company LLP	JSC	LLP		
Current assets	6,519	7,877	39,270	28,850	27,585	7,935	19,391	6,306	143,733
Including cash	1,623	132	1,359	1,036	1,254	684	2,106	575	8,769
Non-current assets	—	29,700	62,572	130,998	36,450	15,663	23,986	26,755	326,124
<b>Total assets</b>	<b>6,519</b>	<b>37,577</b>	<b>101,842</b>	<b>159,848</b>	<b>64,035</b>	<b>23,598</b>	<b>43,377</b>	<b>33,061</b>	<b>469,857</b>
Current liabilities	(21)	(3,072)	(15,152)	(43,551)	(42,686)	(5,679)	(26,862)	(6,948)	(143,971)
Including financial liabilities net of trade and other accounts payable and provisions	—	—	(360)	(38,955)	(4,625)	(2,813)	(17,499)	(1,611)	(65,863)
Non-current liabilities	—	(22,269)	(7,875)	(11,720)	(2,562)	(876)	(892)	(15,807)	(62,001)
Including financial liabilities net of trade and other accounts payable and provisions	—	(21,179)	—	(45)	—	—	—	(14,614)	(35,838)
<i>Incl. loan from the Company</i>	—	(21,179)	—	—	—	—	—	—	(21,179)
<b>Total liabilities</b>	<b>(21)</b>	<b>(25,341)</b>	<b>(23,027)</b>	<b>(55,271)</b>	<b>(45,248)</b>	<b>(6,555)</b>	<b>(27,754)</b>	<b>(22,755)</b>	<b>(205,972)</b>
<b>Net assets</b>	<b>6,498</b>	<b>12,236</b>	<b>78,815</b>	<b>104,577</b>	<b>18,787</b>	<b>17,043</b>	<b>15,623</b>	<b>10,306</b>	<b>263,885</b>
Group's share of net assets of associates	1,949	3,671	38,620	41,831	5,636	8,518	5,308	1,644	107,177
Unrealised profit in the Group	—	—	(184)	(1,442)	(607)	(57)	(49)	—	(2,339)
Impairment	—	—	—	—	—	(6,556)	—	—	(6,556)
Other movements	—	(50)	—	—	—	42	—	(1,034)	(1,042)
Goodwill	—	—	68	—	—	—	—	4,438	4,506
<b>Carrying value of investments in associates</b>	<b>1,949</b>	<b>3,621</b>	<b>38,504</b>	<b>40,389</b>	<b>5,029</b>	<b>1,947</b>	<b>5,259</b>	<b>5,048</b>	<b>101,746</b>
Total revenue	—	17,604	65,426	37,449	51,181	14,657	28,138	19,749	234,204
Depreciation and amortisation	—	(734)	(14,331)	(9,597)	(7,458)	(3,510)	(4,418)	(1,892)	(41,940)
Finance income	22	58	511	64	159	25	134	83	1,056
Finance costs	—	(2,234)	(1,211)	(177)	(167)	(97)	(81)	(1,514)	(5,481)
Foreign exchange gain / (loss)	—	182	(311)	70	(19)	142	132	112	308
Impairment	—	—	—	(612)	—	27	6	54	(525)
Income tax	(1)	(1,697)	(6,246)	(2,728)	(5,086)	(260)	(421)	(109)	(16,548)
Profit / (loss) for the year	(1,221)	5,685	19,148	9,036	18,724	797	1,741	1,413	55,323
<b>Total comprehensive income / (loss)</b>	<b>(1,221)</b>	<b>5,685</b>	<b>19,148</b>	<b>9,036</b>	<b>18,724</b>	<b>797</b>	<b>1,741</b>	<b>1,413</b>	<b>55,323</b>
Other	—	—	112	(678)	177	502	250	—	363
Dividends received	—	—	10,834	—	9,023	1,089	—	298	21,244

Summarised financial information for 2016 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associates' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

	JV Betpak Data LLP	Kyzylkum LLP	JV KATKO LLP	JV Inkai LLP	JV South Mining Chemical Company LLP	JV Zarechnoe JSC	JV Khorasan-U LLP	Other	Total
<i>In millions of Kazakhstani Tenge</i>									
Current assets	7,792	3,815	35,413	31,441	21,375	8,178	16,653	5,133	129,800
Including cash	1,207	582	12,758	10,036	1,160	781	1,561	47	28,132
Non-current assets	1	28,308	66,976	137,885	38,150	14,376	20,592	25,948	332,236
<b>Total assets</b>	<b>7,793</b>	<b>32,123</b>	<b>102,389</b>	<b>169,326</b>	<b>59,525</b>	<b>22,554</b>	<b>37,245</b>	<b>31,081</b>	<b>462,036</b>
Current liabilities	(74)	(5,260)	(11,672)	(59,732)	(27,201)	(3,280)	(22,167)	(7,365)	(136,751)
Including financial liabilities net of trade and other accounts payable and provisions	—	(4,019)	(171)	(55,909)	(4,725)	(1,282)	(17,483)	(1,894)	(85,483)
Non-current liabilities	—	(20,311)	(8,940)	(13,469)	(2,183)	(850)	(1,195)	(15,611)	(62,559)
Including financial liabilities net of trade and other accounts payable and provisions	—	(19,151)	(165)	(215)	(51)	(92)	(73)	(14,766)	(34,513)
<i>Incl. Loan from the Company</i>	—	(19,151)	—	—	—	—	—	—	(19,151)
<b>Total liabilities</b>	<b>(74)</b>	<b>(25,571)</b>	<b>(20,612)</b>	<b>(73,201)</b>	<b>(29,384)</b>	<b>(4,130)</b>	<b>(23,362)</b>	<b>(22,976)</b>	<b>(199,310)</b>
<b>Net assets</b>	<b>7,719</b>	<b>6,552</b>	<b>81,777</b>	<b>96,125</b>	<b>30,141</b>	<b>18,424</b>	<b>13,883</b>	<b>8,105</b>	<b>262,726</b>
Group's share of net assets of associates	2,316	1,965	40,071	38,450	9,042	9,209	4,717	672	106,442
Unrealised profit in the Group	—	—	(296)	(764)	(784)	(559)	(299)	—	(2,702)
Other movements	—	(64)	—	—	—	—	—	—	(64)
Goodwill	—	—	68	—	—	42	—	3,987	4,097
<b>Carrying value of investments in associates</b>	<b>2,316</b>	<b>1,901</b>	<b>39,843</b>	<b>37,686</b>	<b>8,258</b>	<b>8,692</b>	<b>4,418</b>	<b>4,659</b>	<b>107,773</b>
Total revenue	214	15,983	87,105	48,781	69,802	17,764	29,876	18,294	287,819
Depreciation and amortisation	(13)	(668)	(15,051)	(10,476)	(7,835)	(3,709)	(3,674)	(2,062)	(43,488)
Finance income	55	459	155	275	26	187	111	134	1,402
Finance costs	—	(1,865)	(944)	(9)	(168)	(174)	(1,126)	(1,599)	(5,885)
Foreign exchange gain / (loss)	17	(129)	728	(311)	(226)	287	188	77	631
Impairment	—	—	—	—	—	(4)	(6)	10	—
Income tax benefit / (expense)	30	(1,601)	(8,500)	(5,589)	(7,956)	(1,096)	(1,292)	(19)	(26,023)
Profit / (loss) for the year	(113)	4,935	34,117	17,373	30,077	3,631	4,233	128	94,381
<b>Total comprehensive income / (loss)</b>	<b>(113)</b>	<b>4,935</b>	<b>34,117</b>	<b>15,727</b>	<b>30,077</b>	<b>3,631</b>	<b>4,233</b>	<b>128</b>	<b>92,735</b>
Other	—	—	(296)	1,896	(784)	(212)	129	—	733
Dividends received	689	—	25,359	11,013	10,416	466	—	343	48,286

Summarised financial information for 2015 in respect of each of the Group's material associates is set out below. The summarised financial information below represents amounts shown in the associate's financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

<i>In millions of Kazakhstani Tenge</i>	JV Betpak Dala LLP	Kyzylkum LLP	JV KATKO LLP	JV Inkai LLP	JV South Mining Chemical Company LLP	Zarechnoe JSC	JV Khorasan-U LLP	Other	Total
Current assets	33,971	13,370	54,690	37,432	34,840	10,833	18,494	6,671	210,301
Including cash	1,231	467	13,843	12,404	8,394	2,186	4,342	446	43,313
Non-current assets	105	29,165	66,893	141,047	34,653	13,517	18,205	34,472	338,057
<b>Total assets</b>	<b>34,076</b>	<b>42,535</b>	<b>121,583</b>	<b>178,479</b>	<b>69,493</b>	<b>24,350</b>	<b>36,699</b>	<b>41,143</b>	<b>548,358</b>
Current liabilities	(23,948)	(8,304)	(13,155)	(58,448)	(32,207)	(7,744)	(26,506)	(7,616)	(177,928)
Including financial liabilities net of trade and other accounts payable and provisions	—	(7,062)	(174)	(53,464)	(27,332)	(4,054)	(17,465)	(2,479)	(112,030)
Non-current liabilities	—	(32,614)	(9,015)	(13,560)	(2,502)	(880)	(544)	(16,444)	(75,559)
Including financial liabilities net of trade and other accounts payable and provisions	—	(32,126)	(332)	(383)	(150)	(211)	(148)	(15,765)	(49,115)
<i>Incl. loan from the Company</i>	—	(18,033)	—	—	—	—	—	—	(18,033)
<b>Total liabilities</b>	<b>(23,948)</b>	<b>(40,918)</b>	<b>(22,170)</b>	<b>(72,008)</b>	<b>(34,709)</b>	<b>(8,624)</b>	<b>(27,050)</b>	<b>(24,060)</b>	<b>(253,487)</b>
<b>Net assets</b>	<b>10,128</b>	<b>1,617</b>	<b>99,413</b>	<b>106,471</b>	<b>34,784</b>	<b>15,726</b>	<b>9,649</b>	<b>17,083</b>	<b>294,871</b>
Group's share of net assets of associates	3,038	485	48,713	42,589	10,435	7,860	3,279	5,761	122,160
Unrealised profit in the Group	—	—	—	(2,077)	—	(347)	(428)	—	(2,852)
Other movements	—	(64)	—	—	—	—	—	—	(64)
Goodwill	—	—	68	—	—	42	—	2,584	2,694
<b>Carrying value of investments in associates</b>	<b>3,038</b>	<b>421</b>	<b>48,781</b>	<b>40,512</b>	<b>10,435</b>	<b>7,555</b>	<b>2,851</b>	<b>8,345</b>	<b>121,938</b>
Total revenue	10,119	8,397	90,329	46,392	66,367	17,516	25,864	16,765	281,749
Depreciation and amortisation	(1,260)	(540)	(15,583)	(7,798)	(4,927)	(4,165)	(3,121)	(1,654)	(39,048)
Finance income	136	187	62	98	—	9	—	63	555
Finance costs	(31)	(8,095)	(1,153)	(205)	(164)	(237)	(90)	(224)	(10,199)
Foreign exchange gain / (loss)	757	(7,515)	14,513	(1,743)	5,761	(251)	2,411	(773)	13,160
Impairment	—	—	—	(2,225)	—	(10)	271	(6)	(1,970)
Income tax (expense) / benefit	(896)	1,203	(14,350)	(7,228)	(8,751)	(1,331)	(2,601)	(257)	(34,211)
Total profit / (loss) for the year	2,295	(12,555)	50,517	12,610	35,445	1,864	10,352	(3,787)	96,741
<b>Total comprehensive income / (loss)</b>	<b>2,295</b>	<b>(12,555)</b>	<b>50,517</b>	<b>58,076</b>	<b>35,445</b>	<b>1,864</b>	<b>10,352</b>	<b>(3,787)</b>	<b>142,207</b>
Other	—	—	1,102	(1,223)	(198)	(347)	(665)	—	(1,331)
Dividends received	12,522	—	20,812	400	—	—	—	91	33,825



## 26. Investments in Joint Ventures

The table below summarises the movements in the carrying amount of the Group's investment in joint ventures:

<i>In millions of Kazakhstani Tenge</i>	2017	2016	2015
Carrying value at 1 January	66,862	43,519	37,529
Contributions to charter capital	8,413	4,640	73
Share of results of joint ventures	22,107	36,739	14,080
Share of other comprehensive income / (loss) of joint ventures	44	(216)	159
Dividends received from joint ventures	(22,942)	(21,066)	(7,267)
Impairment of investments in joint ventures	(32)	—	(53)
Classified as joint ventures (Note 25)	—	3,216	—
Disposals	—	(76)	—
Effect of translation to presentation currency	366	106	(1,002)
<b>Carrying value at 31 December</b>	<b>74,818</b>	<b>66,862</b>	<b>43,519</b>

The Group's interests in its principal joint ventures were as follows:

	Country of incorporation	Principal activity	2017		2016		2015	
			% ownership interest held	In millions of Tenge	% ownership interest held	In millions of Tenge	% ownership interest held	In millions of Tenge
JV Akbastau JSC	Kazakhstan	Extraction, processing and export of uranium products	50.00%	17,887	50.00%	19,398	50%	18,601
Karatau LLP	Kazakhstan	Extraction, processing and export of uranium products	50.00%	14,637	50.00%	15,791	50%	15,490
Semizbay-U LLP	Kazakhstan	Extraction, processing and export of uranium products	51.00%	10,037	51.00%	11,218	51%	9,331
Ulba TVS LLP	Kazakhstan	Construction of heat assembly units plant and production, marketing and sale of heat assembly units	51.00%	5,287	51.00%	3,223	51%	63
Uranenergo LLP	Kazakhstan	Transfer and distribution of electricity, grid operations	58.90%	2,818	58.02%	4,432	—	—
KazPerOxide LLP	Kazakhstan	Sale of hydrogen peroxide	—	—	—	—	50%	26
JV UKR TVS CJSC	Ukraine	Production of nuclear fuel	33.33%	21	33.33%	21	33.33%	8
SKZ-U LLP	Kazakhstan	Production of sulphuric acid	49.00%	1,625	49.00%	289	49%	—
TsOU JSC	Russia	Production of advanced uranium products	50.00%	16,787	50.00%	12,445	50%	—
Kazatomprom-Sorbent LLP	Kazakhstan	Supply of ion exchange resin	—	—	51.00%	—	51%	—
KAS GmbH	Germany	Development and implementation of high technology and innovative projects	—	—	50.00%	—	50%	—
Ulba Conversion LLP	Kazakhstan	Construction and operation of conversion plant in Kazakhstan	50.96%	—	50.96%	45	50.96%	—
KRKAS JSC	Kazakhstan	Design and technical documentation of nuclear reactors and nuclear stations	—	—	50.00%	—	50%	—
Yingtian Ulba Shine Metal Materials Co., Ltd JSC	China	Beryllium rolls production	—	—	50.00%	—	50%	—
JV Budenovskoe LLP	Kazakhstan	Extraction, processing and export of uranium products	51%	5,719	51.00%	—	—	—
<b>Total investments in joint ventures</b>				<b>74,818</b>		<b>66,862</b>		<b>43,519</b>

Summarised financial information on respect of the Group's material joint ventures is set out below. The summarised financial information below represents amounts shown in the joint ventures' financial statements prepared in accordance with IFRS, adjusted by the Group for equity accounting purposes.

	Karatau LLP			Akbastau JSC			Semizbay-U LLP			TsOU JSC			Other			Total		
	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2016	2015	
<i>In millions of Kazakhstani Tenge</i>																		
Current assets	14,306	13,785	19,072	18,326	26,232	29,507	11,921	11,845	9,083	13,179	16,228	8,634	18,166	14,768	9,982	75,898	82,858	76,278
Including cash	743	3,965	1,009	3,027	16,793	12,374	177	359	569	12,239	7,455	49	7,299	6,219	5,888	23,485	34,791	19,889
Non-current assets	26,108	24,689	25,583	21,503	19,527	20,149	15,104	20,804	21,998	124,690	115,798	100,930	46,225	35,615	26,966	233,630	216,433	195,626
<b>Total assets</b>	<b>40,414</b>	<b>38,474</b>	<b>44,655</b>	<b>39,829</b>	<b>45,759</b>	<b>49,656</b>	<b>27,025</b>	<b>32,649</b>	<b>31,081</b>	<b>137,869</b>	<b>132,026</b>	<b>109,564</b>	<b>64,391</b>	<b>50,383</b>	<b>36,948</b>	<b>309,528</b>	<b>299,291</b>	<b>271,904</b>
Current liabilities	(9,132)	(2,753)	(8,873)	(2,199)	(1,411)	(8,019)	(12,088)	(15,413)	(15,570)	(23,381)	(18,180)	(121,512)	(7,597)	(9,363)	(9,380)	(54,397)	(47,120)	(163,354)
Including financial liabilities net of trade and other accounts payable and provisions	(4,470)	—	(4,303)	—	—	—	(9,497)	(12,217)	(13,430)	(6,050)	(5,157)	(113,554)	(4,590)	(5,921)	(7,509)	(24,607)	(23,295)	(138,796)
Non-current liabilities	(829)	(835)	(1,239)	(1,156)	(1,388)	(1,454)	(2,883)	(2,866)	(5,264)	(80,914)	(88,957)	—	(19,936)	(24,440)	(30,646)	(105,718)	(118,486)	(38,603)
Including financial liabilities net of trade and other accounts payable and provisions	—	—	—	—	—	—	(47)	(258)	(1,716)	(80,914)	(88,957)	—	(19,926)	(24,425)	(30,638)	(100,887)	(113,640)	(32,354)
<b>Total liabilities</b>	<b>(9,961)</b>	<b>(3,588)</b>	<b>(10,112)</b>	<b>(3,355)</b>	<b>(2,799)</b>	<b>(9,473)</b>	<b>(14,971)</b>	<b>(18,279)</b>	<b>(20,834)</b>	<b>(104,295)</b>	<b>(107,137)</b>	<b>(121,512)</b>	<b>(27,533)</b>	<b>(33,803)</b>	<b>(40,026)</b>	<b>(160,115)</b>	<b>(165,606)</b>	<b>(201,957)</b>
<b>Net assets</b>	<b>30,453</b>	<b>34,886</b>	<b>34,543</b>	<b>36,474</b>	<b>42,960</b>	<b>40,183</b>	<b>12,054</b>	<b>14,370</b>	<b>10,247</b>	<b>33,574</b>	<b>24,889</b>	<b>(11,948)</b>	<b>36,858</b>	<b>16,580</b>	<b>(3,078)</b>	<b>149,413</b>	<b>133,685</b>	<b>69,947</b>
Group's share of net assets of joint ventures	15,227	17,443	17,271	18,237	21,480	20,091	6,147	7,328	5,226	16,787	12,444	(5,974)	19,243	9,110	(1,511)	75,641	67,805	35,103
Share in accumulated unrecognised losses	—	—	—	—	—	—	—	—	—	—	1	5,974	(2,376)	293	1,613	(2,376)	294	7,587
Goodwill	—	—	—	—	—	—	4,105	4,105	4,105	—	—	—	(1,397)	(1,393)	71	2,708	2,712	4,176
Impairment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	(76)	—	—	(76)
Unrealised profit in the Group	(590)	(1,652)	(1,781)	(350)	(2,082)	(1,490)	(215)	(215)	—	—	—	—	—	—	—	(1,155)	(3,949)	(3,271)
<b>Carrying value of investments in joint ventures</b>	<b>14,637</b>	<b>15,791</b>	<b>15,490</b>	<b>17,887</b>	<b>19,398</b>	<b>18,601</b>	<b>10,037</b>	<b>11,218</b>	<b>9,331</b>	<b>16,787</b>	<b>12,445</b>	<b>—</b>	<b>15,470</b>	<b>8,010</b>	<b>97</b>	<b>74,818</b>	<b>66,862</b>	<b>43,519</b>
Total revenue	43,615	48,720	49,829	31,939	40,534	36,065	20,789	24,388	25,149	58,495	65,951	37,528	16,055	18,442	12,705	170,893	198,035	161,276
Depreciation and amortisation	(4,630)	(4,414)	(4,706)	(3,422)	(3,870)	(2,660)	(4,557)	(3,827)	(3,461)	(2)	(2)	(2)	(1,248)	(1,129)	(794)	(13,859)	(13,242)	(11,623)
Finance income	72	73	371	523	380	104	67	48	36	193	120	828	264	176	43	1,119	797	1,382
Finance costs	(107)	(232)	(559)	(128)	(170)	(91)	(742)	(1,062)	(1,344)	(4,721)	(5,594)	(4,359)	(665)	(764)	(572)	(6,363)	(7,822)	(6,925)
Foreign exchange gain / (loss)	(100)	(443)	(769)	(172)	(201)	2,559	(81)	489	(4,596)	4,655	19,441	(22,017)	103	463	(16,348)	4,405	19,749	(41,171)
Impairment	(97)	(116)	—	—	(284)	—	(3,639)	(122)	187	—	—	—	(4,134)	—	—	(7,870)	(522)	187
Income tax	(5,593)	(6,580)	(6,344)	(3,865)	(5,491)	(4,623)	330	(1,304)	(777)	5	(9,264)	1,906	(171)	(1,388)	(2456)	(9,294)	(24,027)	(12,294)
Profit / (loss) for the year	19,289	23,723	23,379	15,045	21,531	18,753	(1,725)	4,115	1,278	7,892	36,622	(14,353)	(1,150)	3,564	(10,329)	39,351	89,555	18,728
Other	1,062	129	(1,647)	1,732	(592)	(1,296)	—	(215)	—	—	—	—	—	—	—	2,794	(678)	(2,943)
Dividends received	11,861	11,689	3,271	10,766	9,377	3,996	315	—	—	—	—	—	—	—	—	22,942	21,066	7,267

The above joint ventures are accounted using the equity method in the consolidated financial statements.

In 2017, Kazakhstan-Russian Company Nuclear Stations JSC (KRKAS JSC), Kazatomprom-Sorbent LLP and KAS GmbH were liquidated.

The Group implements jointly with the Chinese company China General Nuclear Power Corporation (CGNPC) the project on construction of the fuel assembly plant (TVS) for Chinese nuclear power plants with the capacity of 200 tons per annum per enriched uranium. In December 2015, the subsidiaries of JSC NAC Kazatomprom and CGNPC established a joint venture Ulba-TVS LLP (UMP JSC – 51%, CGNPC-URC – 49%), an operating entity responsible for construction and further operation of the plant. Areva NP (from 2018 – Framatome) was selected as the main supplier of fuel production technology. Current works include preparation of construction design and estimate documentation and manufacturing of the main technological equipment for the TVS production line. After construction and installation works are completed, certification of the fuel assembly line will commence. Commissioning of the TVS plant is planned in 2019.

## 27. Other Investments

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Investment available-for-sale</b>			
Baiken-U LLP .....	1,022	1,022	1,022
Toshiba Nuclear Energy Holdings (US) Inc. ....	—	48,892	48,892
Toshiba Nuclear Energy Holdings (UK) Ltd. ....	—	17,112	17,112
Other .....	704	15	15
<b>Total other investments</b> .....	<u><b>1,726</b></u>	<u><b>67,041</b></u>	<u><b>67,041</b></u>

### *Investments in Toshiba Nuclear Energy Holdings (US) Inc and Toshiba Nuclear Energy Holdings (UK) Ltd*

In October 2007, the Group invested into Toshiba Nuclear Energy Holdings US, Inc. (TNEH-US) and Toshiba Nuclear Energy Holdings UK Ltd (TNEH-UK), by acquiring 10% Class A ordinary shares for a total amount of USD 540,000 thousand (TNEH-US USD 400,000 thousand and TNEH-UK USD 140,000 thousand).

Simultaneously with the acquisition of the interest in TNEH-US and TNEH-UK, the Group entered into a put option agreement (the “Put Option”) with Toshiba Corporation, the parent company of TNEH-US and TNEH-UK. At the end of 2012 the Group and Toshiba Corporation signed an agreement that extended the Group’s right to exercise the Put Option from 1 October 2017 until 28 February 2018. The Put Option gave the Group a right to sell its shares in TNEH-US and TNEH-UK to Toshiba Corporation for 100% of the original price paid, which equals to USD 540,000 thousand for the first 67% of shares, and for 90% of the original price paid for the remaining 33% of shares, resulting in the price of the Put Option to be equal to USD 522,180 thousand.

Simultaneously with the acquisition of the interest in TNEH-US and TNEH-UK, the Company entered into a call option agreement (the “Call Option”). The Call Option provided Toshiba Corporation with the right to demand from the Group the sale of its TNEH-UK and TNEH-US shares if the Committee on Foreign Investment in the United States, a US government entity, decides that the Company is no longer a strategic partner. In such case, the fair value of the Group’s shares would have been determined by an independent international appraiser. The Call Option was not exercised by Toshiba Corporation at the date of the Put Option exercise.

Since the acquisition of interest in TNEH-US and TNEH-UK till September 2017, the Group received dividends from TNEH US and TNEH UK for the total amount of USD 101 million.

On 29 March 2017, Westinghouse Electric Company LLC (a subsidiary of TNEH-US and TNEH-UK) filed for bankruptcy for protection against creditors, asset restructuring and subsequent sale on competitive basis in order to settle its debts to creditors. On 2 October 2017, the Group delivered a written Put Exercise notice to Toshiba Corporation of its exercise of the put right in accordance with the put option agreement. During October-November 2017, according to the Kazakhstan legislation, the Group received necessary corporate approvals for exercise of the put option right, sale of shares in TNEH-US and TNEH-UK and withdrawal from the shareholders list. On 25 December 2017, the Group entered into a share transfer agreement with Toshiba Corporation, whereby the Group transferred the right and the title to all its shares in TNEH-US and TNEH-UK to Toshiba Corporation, and received cash payment of USD 522,180 thousand (Tenge 173,719 million).

The Group recognised gain from exercise of put option of Tenge 107,714 million for the difference between the consideration received and the carrying amount of the investments accounted at cost. Starting from 25 December 2017, the Group is no longer a shareholder of TNEH-US and TNEH-UK.

### Baiken-U LLP

Investment in Baiken-U LLP represents 5% interest in equity of the investee. Management could not reliably estimate the fair value of the Group's investment in Baiken-U LLP. The investment is carried at cost because investee's shares are not quoted and recent trade prices are not publicly accessible. The Group does not plan to dispose this investment.

### Other

Other investments include bonds issued by Special Financial Company DSFK LLP (DSFK) with the carrying value of Tenge 598 million. These bonds were received as a result of restructuring of the Group's deposits held at the bank RBK JSC of Tenge 3,989 million. Bonds mature in 15 years from the issue date and carry annualised interest rate of 0.01%. The bonds are partially secured by the guarantee issued by the parent company of DSFK for the period of 5 years. The bonds were recognised by the Group at the fair value, estimated by the Group's parent company, based on the value of the guarantee and the discount rate of 13% per annum. The Group recognised an impairment loss on term deposits of Tenge 3,391 million (Note 13) due to suspension of the bank license by the National Bank of the Republic of Kazakhstan.

Other investments also include 9.95% interest in EAL with the carrying value of Tenge 91 million, which was acquired with the acquisition of PSIL in 2017 (Note 39).

## 28. Accounts Receivable

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Other receivables	141	—	—
Non-current trade receivables	—	—	36
Provision for impairment of other receivables	(1)	—	—
<b>Total non-current accounts receivable</b>	<b><u>140</u></b>	<b><u>—</u></b>	<b><u>36</u></b>
Trade accounts receivable	53,217	64,524	103,406
Trade accounts receivable from related parties	5,997	5,096	5,507
<b>Total gross trade accounts receivable</b>	<b>59,214</b>	<b>69,620</b>	<b>108,913</b>
Provision for impairment of trade receivables	(1,246)	(1,697)	(1,379)
Provision for impairment of trade receivables from related parties	(52)	(64)	(350)
<b>Total current net trade accounts receivable</b>	<b><u>57,916</u></b>	<b><u>67,859</u></b>	<b><u>107,184</u></b>
Other accounts receivable	595	510	778
Other accounts receivable from related parties	7	19	4
<b>Total gross other accounts receivable</b>	<b>602</b>	<b>529</b>	<b>782</b>
Provision for impairment of other receivables	(433)	(467)	(454)
<b>Total net other accounts receivable</b>	<b><u>169</u></b>	<b><u>62</u></b>	<b><u>328</u></b>
<b>Total current accounts receivable</b>	<b><u>58,085</u></b>	<b><u>67,921</u></b>	<b><u>107,512</u></b>

Information on the Group's exposure to credit and currency risks and provision for impairment for accounts receivable is disclosed in Note 42.

## 29. Other Assets

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Non-current</b>			
Advances for non-current assets	10,430	5,450	857
Long-term inventories	7,349	7,149	6,398
Restricted cash	4,377	3,470	7,032
Loans to employees	898	839	1,174
Prepaid expenses	674	694	620
Advances to related parties	397	345	578
VAT recoverable	—	1,570	1,712
Dividends receivable from related parties	—	—	1,256
<b>Total other non-current assets</b>	<b><u>24,125</u></b>	<b><u>19,517</u></b>	<b><u>19,627</u></b>

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Current</b>			
Dividends receivable from related parties . . . . .	13,707	5,916	7,513
Advances for goods and services . . . . .	2,813	2,948	2,824
Due from employees . . . . .	414	451	471
Advances to related parties for goods and services . . . . .	396	498	728
Prepaid expenses . . . . .	355	373	336
Prepaid taxes other than income tax . . . . .	291	185	228
Restricted cash . . . . .	242	82	5
Prepaid insurance . . . . .	162	335	434
Other receivables from related parties . . . . .	—	16	—
Other . . . . .	16	27	18
<b>Total other current assets . . . . .</b>	<b><u>18,396</u></b>	<b><u>10,831</u></b>	<b><u>12,557</u></b>

Financial assets within other current and non-current assets include restricted cash, loans to employees and dividends receivable. Other current and non-current assets are non-financial assets. Non-current inventories include stock of enriched uranium which is held by the Group since inception for future use after commissioning of new facilities for production of uranium pellets. Management does not plan to use these inventories in operational activity during the year after the reporting date.

In accordance with the terms of its subsurface use contracts, the Group transfers cash to long-term bank deposits to finance site restoration activities. As at 31 December 2017 the balance of restricted cash on the long-term bank deposits related to financing of future site restoration activities amounted to Tenge 4,377 million (2016: Tenge 3,467 million; 2015: Tenge 6,888 million).

In 2016, the Group recognised impairment of long-term deposit of Tenge 4,189 million held at Kazinvestbank JSC (Note 13). Pursuant to the decision dated 26 December 2016, the National Bank of the Republic of Kazakhstan revoked the banking license of Kazinvestbank JSC.

### 30. Inventories

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Finished goods and goods for resale . . . . .	140,533	88,595	70,636
Work-in-process . . . . .	17,563	15,908	12,922
Raw materials . . . . .	14,520	14,476	13,354
Fuel . . . . .	889	656	506
Spare parts . . . . .	819	730	826
Materials in processing . . . . .	762	1,440	1,907
Other materials . . . . .	2,842	2,522	2,188
Provision for obsolescence and write-down to net realisable value . . . . .	(8,253)	(4,232)	(2,647)
<b>Total inventories . . . . .</b>	<b><u>169,675</u></b>	<b><u>120,095</u></b>	<b><u>99,692</u></b>

Movements in the provision for obsolescence are as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Balance at 1 January . . . . .	(4,232)	(2,647)	(1,713)
Accrual of provision during the year . . . . .	(5,125)	(2,060)	(1,789)
Reversal of provision during the year . . . . .	424	85	83
Inventory write off during the year . . . . .	680	378	777
Transfer to assets held for sale . . . . .	—	2	—
Translation to presentation currency . . . . .	—	10	(5)
<b>Balance at 31 December . . . . .</b>	<b><u>(8,253)</u></b>	<b><u>(4,232)</u></b>	<b><u>(2,647)</u></b>

### 31. Term Deposits

<i>In millions of Kazakhstani Tenge</i>	<b>Currency</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
<b>Non-current</b>				
Tsesna Bank JSC .....	Tenge	—	15	15
Bank CentreCredit JSC .....	US Dollar	—	—	1,019
Tsesna Bank JSC .....	US Dollar	—	—	1,468
ATF Bank JSC .....	US Dollar	—	—	679
Kazkommertsbank JSC / BTA Bank JSC .....	Tenge	—	—	1
<b>Total non-current term deposits .....</b>		<b>—</b>	<b>15</b>	<b>3,182</b>
<b>Current</b>				
Bank CentreCredit JSC .....	US Dollar	3,166	2,868	—
Tsesna Bank JSC .....	US Dollar	2,426	15,360	—
ATF Bank JSC .....	US Dollar	1,994	25,597	—
Tsesna Bank JSC .....	Tenge	240	48	48
Sberbank JSC .....	Russian Rouble	173	70	93
ATF Bank JSC .....	Tenge	135	532	2
Nurbank JSC .....	Tenge	108	100	—
Bank CentreCredit JSC .....	Tenge	92	1,102	269
SB Alfa Bank JSC .....	Russian Rouble	69	5	—
Fortebank JSC .....	Tenge	59	58	—
Eurasian Bank JSC .....	Tenge	10	82	80
Bank RBK JSC .....	US Dollar	—	4,833	—
Halyk Bank Kazakhstan JSC .....	US Dollar	—	3,666	4,243
Eurasian Bank JSC .....	US Dollar	—	1,911	560
Halyk Bank Kazakhstan JSC .....	Tenge	—	175	50
Sberbank JSC .....	US Dollar	—	69	68
Kazkommertsbank JSC .....	US Dollar	—	—	3,395
Bank RBK JSC .....	Tenge	—	—	208
SB Alfa Bank JSC .....	Tenge	—	—	4
<b>Total current term deposits .....</b>		<b>8,472</b>	<b>56,476</b>	<b>9,020</b>

Interest rates on term deposits held by the Group as at 31 December 2017 vary from 0.01% to 10.5% per annum (2016: from 0% to 18% per annum; 2015: from 0% to 17% per annum). Information on the Group's exposure to interest rate risk and sensitivity analysis of relevant financial assets and financial liabilities is disclosed in Note 42.

### 32. Loans to Related Parties

<i>In millions of Kazakhstani Tenge</i>	<b>2017</b>	<b>2016</b>	<b>2015</b>
<b>Non-current</b>			
Kyzylkum LLP .....	20,302	19,151	18,033
Baiken-U LLP .....	—	—	13,100
Semizbay-U LLP .....	—	—	1,211
<b>Total non-current loans to related parties .....</b>	<b>20,302</b>	<b>19,151</b>	<b>32,344</b>
<b>Current</b>			
Semizbay-U LLP .....	—	—	1,211
JV KRKAS JSC .....	—	13	13
<b>Total current loans to related parties .....</b>	<b>—</b>	<b>13</b>	<b>1,224</b>

The weighted average annual interest rate on loans to related parties in 2017 was 8.5% (2016: 8.47%; 2015: 8.43%)

In 2010, the Group provided an interest-bearing long-term loan to Kyzylkum LLP with maturity to 2024. The loan is collateralised by the property of Kyzylkum LLP. JV Khorasan-U LLP is a co-lender of the loan to Kyzylkum LLP.

In September and December 2010, the Group provided an interest-bearing long-term loan to Baiken-U LLP with maturity to 2022. The loan is collateralised by the property of Baiken-U LLP. However, in September 2016, Baiken-U LLP made an early repayment of the loan in full amount.



In September 2012, the Group provided a five-year loan to Semizbay-U LLP. This loan was secured by property of Semizbay-U LLP. The loan was being paid starting from 2014, and in 2016, Semizbay-U LLP made an early repayment of the loan in full amount.

### 33. Cash and Cash Equivalents

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Current bank accounts .....	234,845	62,323	53,246
Demand deposits .....	5,053	12,685	2,570
Cash in hand .....	38	44	53
<b>Total cash and cash equivalents .....</b>	<b><u>239,936</u></b>	<b><u>75,052</u></b>	<b><u>55,869</u></b>

### 34. Share Capital

At 31 December 2017 the total number of authorised and paid ordinary shares is 37,050,944 (2016: 36,784,961; 2015: 36,692,361).

All shares of the Company are owned by Samruk-Kazyna JSC (Note 1), which solely and ultimately decides on dividend distribution. Each ordinary share carries one vote.

On 22 February 2017, the National Bank registered an increase in the Company's common shares by 265,983 shares with par value of Tenge 1,000 per share for the total amount of Tenge 266 million. On 17 May 2017, the declared shares were placed (paid).

In March 2015, the Company registered an issue of 92,600 additional ordinary shares with par value of Tenge 1,000 in total amount of 93 million Tenge. At 31 December 2015 these shares were not paid by the Parent. During 2016, the parent company contributed to the Company 100% of Kazakhstan Nuclear Electric Stations JSC valued at Tenge 93 million as a payment of 92,600 shares (Note 41).

Dividends declared and paid during the year were as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Dividends payable at 1 January .....	—	—	—
Dividends declared during the year .....	65,849	12,031	2,323
Dividends paid during the year .....	(65,849)	(12,031)	2,323
<b>Dividends payable at 31 December .....</b>	<b><u>—</u></b>	<b><u>—</u></b>	<b><u>—</u></b>
<b>Dividends per share declared during the year, in Tenge .....</b>	<b><u>1,790</u></b>	<b><u>328</u></b>	<b><u>63</u></b>

### 35. Loans and Borrowings

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Non-current</b>			
Bank loans .....	38,557	76,861	119,481
Non-bank loans .....	353	323	295
<b>Non-current loans and borrowings .....</b>	<b><u>38,910</u></b>	<b><u>77,184</u></b>	<b><u>119,776</u></b>
<b>Current</b>			
Bank loans .....	82,374	50,581	52,845
<b>Total current loans and borrowings .....</b>	<b><u>82,374</u></b>	<b><u>50,581</u></b>	<b><u>52,845</u></b>

During 2015-2017 the Group obtained short term bank loans for the purpose of replenishment of working capital.

On 20 May 2010, the Group issued USD 500,000 thousand (Tenge 73,510 million) of unsecured 6.25% bonds due in 2015. Bonds coupon was payable semi-annually in arrears on 20 November and 20 May starting from 20 November 2010. Bonds were issued and traded on London Stock Exchange and Kazakhstan Stock Exchange. On 20 May 2015, the Group repaid bonds for USD 500,000 thousand.

On 19 January 2015, the Group signed an agreement for unsecured syndicated loan with five banks for the total amount of USD 450 million. The purpose of the syndicated loan was to refinance bonds issued in 2010 and repaid in 2015. The loan is repayable by equal instalments starting from September 2015 till June 2019. Covenants of the loan include restriction on significant sale and leaseback and factoring transactions by the Group as well as significant mergers,

splits, amalgamations and corporate restructuring, significant acquisition and establishment of entities, except for allowed under the agreement. The Group is also required to maintain ratio of financial liabilities to EBITDA of not more than 3.5 to 1 and ratio of financial liabilities to equity of not more than 1 to 1.

Information about the Group's loans and borrowings is presented as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>Currency</u>	<u>Maturity</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Bank loans</b>					
Syndicated loan	US Dollar	2019	55,126	92,127	131,353
Societe Generale	US Dollar	2018	23,319	—	—
The Bank of Tokyo-Mitsubishi UFJ. Ltd	Euro	2024	16,977	17,178	20,440
Citibank Kazakhstan JSC	US Dollar	2018	9,816	—	—
Kazkommertsbank JSC	Tenge	2020	4,233	4,233	4,233
Natixis Bank	US Dollar	2022	3,420	4,330	5,323
Citibank Kazakhstan JSC	Euro	2018	3,344	—	—
Fortebank JSC	US Dollar	2018	3,335	—	—
Halyk Bank JSC	Tenge	2018	1,361	—	—
Citibank Kazakhstan JSC	US Dollar	2017	—	7,736	—
Alfa-Bank JSC	US Dollar	2016	—	1,838	1,743
Citibank Kazakhstan JSC	US Dollar	2016	—	—	1,311
Kazkommertsbank JSC	Tenge	2016	—	—	7,923
<b>Total bank loans</b>			<b>120,931</b>	<b>127,442</b>	<b>172,326</b>
<b>Non-bank loans</b>					
Kozhema-Katko-Demeu	Tenge	2024	353	323	295
<b>Total non-bank loans</b>			<b>353</b>	<b>323</b>	<b>295</b>

In 2017, the Group's weighted average interest rate on fixed interest rate loans was 6.29% (2016: 5.39%;2015: 4.97%) and on floating interest rate loans was 3.47% (2016: 2.81%; 2015: 2.44%).

#### **Reconciliation of debt**

The table below shows an analysis of the debt amount and changes in the Group's liabilities arising from financing activities for each of the periods presented:

<i>In millions Kazakhstani Tenge</i>	<u>Loans and borrowings</u>	<u>Financial lease liabilities</u>	<u>Total</u>
<b>Debt at 1 January 2015</b>	<b>137,072</b>	—	<b>137,072</b>
Proceeds from loans and borrowings	163,851	—	163,851
Repayment of loans and borrowings	(215,676)	—	(215,676)
Interest accrued	6,136	—	6,136
Interest paid	(6,127)	—	(6,127)
Foreign currency translation	86,908	—	86,908
Other non-cash changes	457	—	457
<b>Debt at 31 December 2015</b>	<b>172,621</b>	—	<b>172,621</b>
Proceeds from loans and borrowings	10,072	—	10,072
Repayment of loans and borrowings	(53,430)	(23)	(53,453)
Interest accrued	6,253	4	6,257
Interest paid	(5,460)	(4)	(5,464)
Foreign currency translation	(2,340)	—	(2,340)
Other non-cash changes	49	187	236
<b>Debt at 31 December 2016</b>	<b>127,765</b>	<b>164</b>	<b>127,929</b>
Proceeds from loans and borrowings	52,793	—	52,793
Repayment of loans and borrowings	(61,410)	(69)	(61,479)
Interest accrued	4,944	17	4,961
Interest paid	(4,414)	(16)	(4,430)
Foreign currency translation	1,810	—	1,810
Other non-cash changes	(204)	323	119
<b>Debt at 31 December 2017</b>	<b>121,284</b>	<b>419</b>	<b>121,703</b>

The Group's loan agreements with banks include covenants, pursuant to which the Group must comply with applicable laws and regulations, cannot create or permit any security over its assets or dispose assets, unless allowed by the loan agreements, and must obtain the lenders' approval for any acquisitions, mergers and disposals. The Group may also sell uranium for non-military purposes only to customers residing in countries which signed the Nuclear Non-Proliferation Treaty and are members of the International Agency on Nuclear Energy. In addition, the Group must maintain certain key financial covenants based on the Group's consolidated financial information, such as the debt to equity ratio and debt to EBITDA ratio. Management believes that the Group complies with all applicable covenants as of 31 December 2017, 31 December 2016 and 31 December 2015.

### 36. Provisions

<i>In millions of Kazakhstani Tenge</i>	<b>Compensation for occupational diseases</b>	<b>Environment protection</b>	<b>Site restoration</b>	<b>Other</b>	<b>Total</b>
<b>At 1 January 2015</b>					
Non-current .....	568	2,576	13,732	26	16,902
Current .....	98	—	—	—	98
<b>Total .....</b>	<b>666</b>	<b>2,576</b>	<b>13,732</b>	<b>26</b>	<b>17,000</b>
Provision for the year .....	—	—	22	1	23
Unwinding of discount .....	42	162	870	1	1,075
Provision used .....	(95)	—	—	—	(95)
Change in estimates .....	(94)	(422)	(214)	—	(730)
Effect of translation .....	—	—	11	—	11
<b>At 31 December 2015</b>					
Non-current .....	419	2,316	14,420	28	17,183
Current .....	100	—	1	—	101
<b>Total .....</b>	<b>519</b>	<b>2,316</b>	<b>14,421</b>	<b>28</b>	<b>17,284</b>
Provision for the year .....	7	—	150	2	159
Unwinding of discount .....	35	155	909	1	1,100
Disposals .....	—	—	(25)	—	(25)
Provision used .....	(95)	—	—	—	(95)
Change in estimates .....	—	262	(1,268)	—	(1,006)
Effect of translation .....	—	—	1	—	1
<b>At 31 December 2016</b>					
Non-current .....	369	2,733	14,187	31	17,320
Current .....	97	—	1	—	98
<b>Total .....</b>	<b>466</b>	<b>2,733</b>	<b>14,188</b>	<b>31</b>	<b>17,418</b>
Provision for the year .....	(58)	96	—	3	41
Unwinding of discount .....	32	185	1,049	1	1,267
Recovered .....	—	—	(8)	—	(8)
Disposals .....	—	—	(175)	—	(175)
Provision used .....	(93)	(1)	—	—	(94)
Change in estimates .....	—	(457)	4,885	—	4,428
<b>At 31 December 2017</b>					
Non-current .....	254	2,460	19,939	35	22,688
Current .....	93	96	—	—	189
<b>Total .....</b>	<b>347</b>	<b>2,556</b>	<b>19,939</b>	<b>35</b>	<b>22,877</b>

#### *Provision for compensation for occupational diseases*

In accordance with Articles 939, 943 and 944 of the Civil Code of the Republic of Kazakhstan, the Group is required to pay compensation for occupational diseases and disability arising during the period of employment, or during retirement as a result of disease or disability occurring due to former work conditions.

In determining the amount of the provision, the Group management bases their estimates on the number of persons currently entitled to the compensation, the estimated duration of payments and the average annual payments to various categories of employees based on their relative salaries extrapolated for the estimated future rates of disease and

disability during the expected lifetime of current and former employees. As at 31 December 2017, the undiscounted amount of the estimate is Tenge 607 million (2016: Tenge 766 million; 2015: Tenge 852 million). This estimate has been recognised at present value using a discount rate of 9.06% (2016: 7.08%; 2015: 6.70%), being a risk free rate as the future cash flows reflect risks specific to the liability, and inflation rate of 5.4% (2016: 5.13%; 2015: 6%).

#### *Provision for environmental protection*

The Group, pursuant to the legislation of the Republic of Kazakhstan on environmental protection, is required to dispose radioactive waste and to decommission and dispose polluted property, plant and equipment. As at 31 December 2017, the undiscounted value of the estimated costs to comply with this legislation was Tenge 64,826 million (2016: Tenge 58,176 million; 2015: Tenge 57,134 million). A substantial part of environmental protection expenses pertains to years 2068-2073. In view of the long-term nature of reclamation liabilities, there is uncertainty concerning the actual amount of expenses that will be incurred. In computing the provision for environmental protection the Group used a discount rate of 9.06% in 2017 (2016: 7.08%; 2015: 6.70%), being a risk free rate as the future cash flows reflect risks specific to the liability, and inflation rate of 5.4% in 2017 (2016: 5.13%; 2015: 6%).

When determining the amount of the environmental provision, Group management used assumptions and assessments based on the experience of decommissioning and clean-up work of a similar nature carried out in 2000-2016, and considered the input provided by both in-house engineers and professional advisors based on their best interpretation of the current environmental legislation.

#### *Provision for restoration of mine sites*

The Group estimates the site restoration costs for each mine operated by the Group. The undiscounted estimated cost of reclamation activities in 2017 is Tenge 40,939 million (2016: Tenge 23,589 million; 2015: Tenge 26,972 million). The amount of provision for asset retirement obligations was calculated using current prices (the prices effective at the reporting date) for expenditures to be incurred and then inflated using the forecast inflation rate effective for the period until the settlement of obligations (5.13% for the period 2018-2038). The present value at 31 December 2017 has been estimated using a discount rate of 9.06% (2016: 7.08%; 2015: 6.70%), which is a risk free nominal rate as the future cash outflows reflect risk specific to the liability.

In view of the long-term nature of reclamation liabilities, there is uncertainty concerning the actual amount of expenses that will be incurred in performing site restoration activities for each mine (Note 4).

Changes in estimates occur due to annual revision of costs for site liquidation including newly drilled wells, sand traps and other facilities subject to subsequent liquidation.

In accordance with the terms of the subsurface use agreements the Group places cash in long-term bank deposits to finance future site restoration activities. As at 31 December 2017, the accumulated transfers to restricted deposits amounted to Tenge 8,903 million (2016: Tenge 7,656 million; 2015: Tenge 6,888 million).

Key assumptions, in addition to the discount rate noted above, which serve as the basis for determining the carrying value of the provision for reclamation of mine sites provision are as follows:

- there is a high probability that the Group will proceed to development and production stages for its fields which are currently under exploration. The Group publicly announced about the plans to increase number of uranium mines as a part of the Group's long-term plan. The strategic plan was approved by the Government of Kazakhstan. These facts set out a constructive obligation for the Group to recognise the site restoration provision for all mining and exploration licenses;
- the expected term for future cash outflows for the mine sites is based on the life of the mines. A substantial part of expenditures is expected to occur in 2019-2034, at the end of the life of the mine; and
- forecasted inflation rate is 5.4% per annum in 2017 (2016: 5.13%; 2015: 6%).

### 37. Accounts Payable

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Trade accounts payable .....	573	574	585
<b>Total non-current financial accounts payable .....</b>	<b>573</b>	<b>574</b>	<b>585</b>
Other accounts payable .....	9	7	—
<b>Total non-current other accounts payable .....</b>	<b>9</b>	<b>7</b>	<b>—</b>
<b>Total non-current accounts payable .....</b>	<b>582</b>	<b>581</b>	<b>585</b>
Trade accounts payable to related parties .....	83,712	54,964	71,826
Trade accounts payable .....	24,979	18,308	29,094
<b>Total current financial accounts payable .....</b>	<b>108,691</b>	<b>73,272</b>	<b>100,920</b>
Other accounts payable to related parties .....	—	74	14
Other accounts payable .....	3,951	1,308	688
<b>Total current other accounts payable .....</b>	<b>3,951</b>	<b>1,382</b>	<b>702</b>
<b>Total current accounts payable .....</b>	<b>112,642</b>	<b>74,654</b>	<b>101,622</b>

The Group's exposure to currency and liquidity risk related to trade and other payables is disclosed in Note 42.

### 38. Other Liabilities

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Non-current</b>			
Advances received (Note 39) .....	3,261	—	30
Historical costs liabilities .....	1,749	2,453	3,224
Advances received from related parties .....	1,450	1,579	1,698
Deferred income .....	856	723	546
Preferred shares .....	265	265	265
Issued financial guarantees .....	96	179	378
Other .....	34	—	—
<b>Total non-current other liabilities .....</b>	<b>7,711</b>	<b>5,199</b>	<b>6,141</b>
<b>Current</b>			
Accrued unused vacation payments and bonuses .....	4,460	4,020	3,447
Advances received from related parties .....	2,654	1,078	2,426
Wages and salaries payable .....	2,620	1,892	2,049
Advances received .....	2,120	2,220	1,483
Social contributions payable .....	963	872	850
Historical costs liabilities .....	818	874	909
Dividends payable to other participants .....	253	255	245
Deferred income .....	102	90	75
Other liabilities to related parties .....	—	—	7
Other .....	359	488	1,297
<b>Total current other liabilities .....</b>	<b>14,349</b>	<b>11,789</b>	<b>12,788</b>

In accordance with the terms of the subsurface use contracts the Group is required to reimburse the historical costs related to the geological research and other costs incurred by the Republic of Kazakhstan for exploration of the contractual territories before the transfer of subsurface use rights to the Group. In accordance with tax legislation, the historical costs are to be reimbursed to the Government via quarterly payments over a 10 year period, beginning from the date of commercial extraction of uranium. The liability represents the discounted cash flow of estimated future payments. The discount rate applied for historical costs denominated in USD was 3.3% and 7% for historical costs denominated in Tenge.

### 39. Contingencies and Commitments

#### *Legal proceedings*

From time to time and in the normal course of business, claims against the Group may be received. On the basis of its own estimates, management is of the opinion that no material losses will be incurred in respect of claims.

## *Tax legislation*

The tax environment in the Republic of Kazakhstan is subject to change and inconsistent application and interpretations. In particular, existing subsurface use contracts do not have tax stability from 1 January 2009 and tax liabilities are computed under common regime. This could result in unfavourable changes to subsurface users' tax positions, including those of the Group. Non-compliance with Kazakhstani law and regulations as interpreted by the Kazakhstani authorities may lead to the assessment of additional taxes, penalties and interest.

Kazakhstani tax legislation and practice is in a state of continuous development, and therefore is subject to varying interpretations and frequent changes, which may be retroactive. Tax periods remain open to retroactive review by the tax authorities for five years.

The Group management believes that its interpretation of the relevant legislation is appropriate and the Group's tax position will be sustained. Detailed information on pending tax disputes and assessments is presented below in this Note. In the opinion of the Group management, no material losses will be incurred in respect of existing and potential tax claims in excess of provision that have been made in these consolidated financial statements.

### *(a) Transfer pricing legislation*

Under law on transfer pricing international transactions are subject to state control. This law prescribes Kazakhstani companies to maintain and, if required, to provide economic rationale and method of the determination of prices used in international transactions, including existence of the documentation supporting the prices and differentials. Additionally, differentials could not be applied to the international transactions with companies registered in off-shore countries. In case of deviation of transaction price from market price the tax authorities have the right to adjust taxable items and to impose additional taxes, fines and interest penalties.

Regardless of the inherent risks that the tax authorities may question transfer pricing policy of the Group related to the new law on transfer pricing, the management of the Group believes that it will be able to sustain its position in case if transfer pricing policy of the Group will be challenged by the tax authorities. From 1 January 2009 the Group self-assesses additional income tax to reflect market prices. The amount of recognised liability in 2017 is Tenge 509 million (2016: Tenge 693 million; 2015: Tenge 542 million) (Note 18).

In July 2015, a documentary thematic inspection on state control over transfer pricing for 2008 was completed at the Company. As a result of the inspection, the Group received report and notice of payment of additional corporate income tax and penalties for the total amount of Tenge 3,302 million, including corporate income tax for Tenge 2,512 million and penalty of Tenge 790 million. The Group did not agree with the notice and filed an appeal. In connection with the unsuccessful appeal, as of 31 December 2016 the Group recognised the whole amount of assessments of Tenge 2,512 million within income tax expense (Note 18) and the penalty in the amount of Tenge 996 million within general and administrative expenses (Note 12). The amount of taxes and penalties was paid to the budget in full.

### *(b) Complex tax inspections of the Group entities*

In accordance with the order of Astana City tax department of 13 February 2014, JSC NAC Kazatomprom was subject to complex tax inspection covering tax liabilities for all taxes and other mandatory payments for 2009-2012. Based on the results of tax inspection the Company was issued a notice of additional assessments for total amount of Tenge 3,035 million, including taxes of Tenge 1,735 million (including corporate income tax of Tenge 980 million, excess profit tax of Tenge 155 million, property tax of Tenge 77 million, mineral extraction tax of Tenge 234 million, commercial discovery bonus of Tenge 288 million, and other taxes of Tenge 1 million), penalties of Tenge 339 million, and administrative fine of Tenge 961 million. The Company appealed this decision of tax authorities during 2015-2016. In June 2016, the Company received the decision of Appeal Collegiate of Astana City Court to dismiss the appeal and decided not to appeal to the Supreme Court. The Group recognised liability in the amount of Tenge 1,598 for these assessments including taxes, penalty and interest. The amount of taxes, fines and penalties was paid to the budget in full.

In 2014, tax authorities completed complex tax inspection of Appak LLP covering tax liabilities for all taxes and other mandatory payments for 2010-2012. Based on the results of the tax inspection, Appak LLP was issued a notice of additional assessments, which were appealed by the entity. As of 31 December 2015, Appak LLP recognised tax liability of Tenge 1,274 million, and in 2016 accrued penalty of Tenge 183 million (Note 12). The amount of taxes, fines and penalties was paid to the budget in full.

In 2014, tax authorities completed complex tax inspection of JV KATKO LLP, the Group's associate, for 2009-2012. Based on the results of tax inspection, the entity was issued a notice of additional taxes, fines and penalties, which was



subsequently appealed by the entity during 2014-2017. As of 31 December 2015, JV KATKO LLP recognised tax liability of Tenge 6,035 million. In March 2017, JV KATKO LLP paid Tenge 4,700 million of tax charges and in June additionally Tenge 630 million of penalty. Administrative fines of Tenge 1,800 were paid in August 2017.

In response to the decision by the State Revenue Committee Ministry of Finance of the Republic of Kazakhstan (tax authorities) issued on 12 September 2018 concerning additional assessments of mineral extraction tax (MET) for 3-4 quarters of 2013 and 2014-2017, JV Katko LLP submitted correcting declarations and paid MET in the amount of Tenge 2,149 million and penalties of Tenge 724 million.

### ***Privatisation***

In accordance with the Government Decree of the Republic of Kazakhstan No. 1141 dated 30 December 2015, the Company is to sell and liquidate subsidiaries and affiliated organisations in accordance with the approved list. The privatisation plan involves the transfer to a competitive environment of organisations that do not correspond to the core activities of the Company in order to optimise its assets structure and to enhance its corporate governance.

According to the privatisation plan, in March 2017, the Group sold its interest in JV KT Rare Metals Company LLP. The Group believes that there is high probability of Kyzyltu sale during 2018. Accordingly, the Group recognised assets and liabilities of Kyzyltu disposal group as held for sale. In 2018, the Group plans to search for potential investors to transfer to the competitive environment Kaustik JSC and KazPV project entities: Astana Solar LLP, Kazakhstan Solar Silicon LLP and MK KazSilicon LLP.

### ***Insurance***

The Kazakhstani insurance industry is in development, and many forms of insurance protection common in other countries are not available yet. The Group does not have full insurance coverage for its manufacturing plants, including damages caused by the cease of production or obligations incurred to third parties in connection with damages caused to the property or the environment resulting from accidents or operations.

### ***Environmental obligations***

As at the reporting date management concluded that the Group has no legal or constructive obligation to finance decommissioning, maintenance and dismantlement of the reactor BN-350 (including UPN unit) (Notes 4 and 45).

### ***Guarantees***

Guarantees are irrevocable assurances that the Group will make payments in the event that another party cannot meet its obligations. The maximum exposure to credit risk under financial guarantees, provided to secure financing of certain related parties, at 31 December 2017 is Tenge 14,732 million (2016: Tenge 21,649 million; 2015: Tenge 67,479 million).

### ***Compliance with covenants***

The Group is subject to certain covenants related primarily to its loans and borrowings (Note 35). Non-compliance with covenants may result in negative consequences for the Group including increase in cost of borrowing. Management believes that the Group complies with all applicable covenants as of 31 December 2017, 31 December 2016 and 31 December 2015.

### ***Subsurface use commitments***

The Group has capital commitments under subsurface use contracts annual minimum working programmes in the amount of Tenge 4,927 million in 2017 (2016: Tenge 5,622 million; 2015: Tenge 5,978 million).

### ***Memoranda with South Kazakhstan and Kyzylorda municipalities***

In December 2014, the Group signed memoranda with South Kazakhstan and Kyzylorda municipalities for cooperation under social and economic development of the region for 2015-2016. In accordance with these memoranda the Group transfers social facilities owned by the Group to public ownership and provides financing of Tenge 3.6 billion in 2015-2016. Memoranda also envisaged financing of construction of three social facilities for the total amount of Tenge 3.2 billion and business centre in Shymkent in 2015-2016. In 2015, the social facilities were transferred to public ownership free of charge together with funds for maintenance in the total amount of Tenge 1.6 billion. In accordance with the memoranda, in 2016 the Group transferred Tenge 3.1 billion, including Tenge 800 million for construction works, Tenge 1.5 billion for maintenance of fixed assets, and 800 million for financing. As of 31 December 2016, the Group has fully fulfilled the terms of the memoranda.

## ***Significant transactions***

### *(a) Agreement with Cameco*

In 2016, the Group and Cameco Corporation (Canada) which owned 60% of interest in JV Inkai LLP (Note 25) signed a restructuring agreement. The agreement stipulates further development of joint projects at JV Inkai LLP for next 30 years, including prolongation of subsoil use contract term and increase of the Group's interest in JV Inkai LLP from 40% to 60%. The agreement also stipulates the terms of establishment of joint affinage production.

In December 2017, the Group and Cameco completed restructuring of JV Inkai LLP. Under the terms of the sales agreement, effective 1 January 2018 the Group increases its interest in JV Inkai LLP from 40% to 60% and obtains control over the investee (Note 45). In addition, according to the sales agreement and the addendum to the subsoil use contract signed on 30 November 2017, the competent authority approved extension of the subsoil use contract until 2045 and increase in production to 4,000 tons of uranium per year.

### *(b) Agreement with Uranium One Inc.*

In October 2016, the Russian Corporation Rosatom, the Ministry of Energy of the Republic of Kazakhstan and the Group signed a memorandum of understanding and enhanced strategic cooperation in the area of nuclear fuel cycle. Under the memorandum, the Group and Uranium One Inc., an entity of the uranium producing division of Rosatom Corporation, signed an agreement on further development of Karatau LLP. In accordance with the Agreement, Uranium One Inc. made an advance payment to the Group in the amount of USD 10 million (Note 38).

The Group and Uranium One Inc hold 50% interest each in Karatau LLP and Akbastau JSC (Note 26). The investments are currently accounted for in these consolidated financial statements using equity method. In 2018, the Group and Uranium One Inc. signed a number of agreements related to Karatau LLP and JV Akbastau JSC (Note 45). As a result, these joint ventures were classified as joint operations under the IFRS 11. The Group ceased recognition of investments in joint ventures and recognised its share in joint operations by proportionate consolidation of entities' assets, liabilities, revenue and expenses.

### *(c) Agreement with Areva*

In April 2017, JSC NAC Kazatomprom and Areva signed an agreement on further development of JV KATKO LLP on the basis of South Tortkuduk mine.

### *(d) Corporate claims*

In 2006, JSC NAC Kazatomprom sold 95% and 40% of interest in Baiken-U LLP and Kyzylykum LLP respectively, as a result, the Group lost control over these entities. In 2014, the Group initiated a claim in the British Virgin Islands against the following defendants: Power System International Limited (hereinafter referred to as PSIL), Swinton Investment and Finance S.A. and certain individuals, for recognition of its rights for shares in an offshore based entity that owns interests in Baiken-U LLP and Kyzylykum LLP. On 28 September 2017, as a result of negotiations, the parties signed an amicable agreement, under which the defendants transferred to the Group 99.91% of shares in PSIL, which in its turn holds an indirect interest in Kazakhstani uranium mining entities Baiken-U LLP (Note 27) and Kyzylykum LLP (Note 25). The remaining 0.09% shares in PSIL were also transferred to the Group by Nynco Limited in accordance with the order of the High Justice Court of Wales and England. Thus, from October 2017 the Group is the sole shareholder of PSIL, registered in the British Virgin Islands. The Group appointed its representative as the sole director of PSIL.

The acquisition of PSIL was accounted for as an acquisition of asset on the balance of PSIL in the form of an investment representing 9.95% interest in the offshore company EAL, which holds shares in Baiken-U LLP and Kyzylykum LLP. The investment in EAL was recognised at cost of Tenge 91 million (Note 27).

After conclusion of the amicable agreement and transfer of ownership over PSIL to JSC NAC Kazatomprom, the legal proceedings in the British Virgin Islands were terminated. Meanwhile, the Group is engaged in the second stage of the project aimed at return of previously withdrawn assets. In particular, the Group negotiates with the Japanese partners to restore the Group's interests in Baiken-U LLP, Kyzylykum LLP and JV Khorasan-U LLP. These consolidated financial statements do not provide full disclosure of the matter including potential contingencies that have confidential nature. Disclosure of such information may seriously prejudice the position of the Group in negotiation process with the involved parties.

As at 31 December 2017, Kyzylykum LLP and JV Khorasan-U LLP are recognised as investments in associates (Note 25) and Baiken-U LLP as other investment (Note 27). Currently, the resolution of this matter is in progress. Management believes that the Group does not have any material liabilities or contingent liabilities related to this matter.

On 3 September 2018, JSC NAC Kazatomprom, PSIL, Marubeni Corporation, Energy Asia Holdings Ltd (EAHL) and Energy Asia (BVI) Limited (EAL) signed a settlement deed agreement. According to the agreement, upon the satisfaction of conditions precedents, each of the parties automatically and without need of any further action by any party, discharge in full any and all claims, which they may have against each and any their respective associates. The agreement also envisages increases in (recovery of) the Group's underlying interests in JV Khorasan-U LLP, Baiken-U LLP and Kyzylkum LLP.

#### 40. Non-controlling Interest

The following table provides information about each significant subsidiary that has non-controlling interest that is material to the Group at 31 December 2017:

<u>Name</u>	<u>Country of incorporation and principal place of business</u>	<u>Ownership rights held by non-controlling interest</u>	<u>Profit or loss attributable to non-controlling interest</u>	<u>Accumulated non-controlling interest</u>
Ulba Metallurgical Plant JSC . . . .	Kazakhstan	9.82%	155	6,369
Appak LLP . . . . .	Kazakhstan	35%	620	7,121
<b>Total . . . . .</b>			<b><u>775</u></b>	<b><u>13,490</u></b>

The following table provides information about each significant subsidiary that has non-controlling interest that is material to the Group at 31 December 2016:

<u>Name</u>	<u>Country of incorporation and principal place of business</u>	<u>Ownership rights held by non-controlling interest</u>	<u>Profit or loss attributable to non-controlling interest</u>	<u>Accumulated non-controlling interest</u>
Ulba Metallurgical Plant JSC . . . .	Kazakhstan	9.82%	644	6,405
Appak LLP . . . . .	Kazakhstan	35%	2,761	6,501
JV SARECO LLP . . . . .	Kazakhstan	49%	(608)	(1,673)
<b>Total . . . . .</b>			<b><u>2,797</u></b>	<b><u>11,233</u></b>

The following table provides information about each significant subsidiary that has non-controlling interest that is material to the Group at 31 December 2015:

<u>Name</u>	<u>Country of incorporation and principal place of business</u>	<u>Ownership rights held by non-controlling interest</u>	<u>Profit or loss attributable to non-controlling interest</u>	<u>Accumulated non-controlling interest</u>
Ulba Metallurgical Plant JSC . . . .	Kazakhstan	9.82%	1,017	6,008
Appak LLP . . . . .	Kazakhstan	35%	280	3,829
JV SARECO LLP . . . . .	Kazakhstan	49%	(3,104)	(1,065)
<b>Total . . . . .</b>			<b><u>(1,807)</u></b>	<b><u>8,772</u></b>

The summarised financial information of these subsidiaries is as follows:

<i>In millions of Kazakhstani Tenge</i>	Ulba Metallurgical Plant JSC			Appak LLP			JV SARECO LLP		
	2017	2016	2015	2017	2016	2015	2017	2016	2015
Current assets	38,798	41,855	37,707	16,212	21,652	18,257	—	186	604
Non-current assets	37,008	35,578	35,454	14,367	14,542	14,244	—	227	281
Current liabilities	(3,510)	(4,076)	(3,123)	(8,643)	(15,811)	(20,132)	—	(3,827)	(3,058)
Non-current liabilities	(5,523)	(5,622)	(5,779)	(1,579)	(1,813)	(1,434)	—	—	—
Equity, incl.	66,773	67,735	64,258	20,357	18,570	10,934	—	(3,414)	(2,173)
Equity attributable to the Group	60,404	61,330	58,250	13,236	12,069	7,105	—	(1,741)	(1,108)
Non-controlling interest	6,369	6,405	6,008	7,121	6,501	3,829	—	(1,673)	(1,065)
Revenue	37,484	38,977	33,817	16,718	22,303	19,818	—	34	47
Depreciation and amortisation	(1,301)	(1,246)	(1,347)	(2,316)	(2,300)	(2,410)	—	(57)	(8)
Finance income	277	427	224	269	2,306	589	—	—	—
Finance expense	(336)	(310)	(304)	(617)	(577)	(7,254)	—	(126)	(96)
Income tax expense	(1,363)	(2,001)	(2,960)	(1,586)	(2,752)	(1,360)	—	—	(58)
Net foreign exchange gain/(loss)	34	(243)	8,193	(181)	(34)	1,988	—	(6)	(1,050)
Impairment (loss)/reversal	(858)	(247)	(367)	(118)	(207)	(34)	—	(141)	(1,137)
<b>Profit / (loss) for the year</b>	<b>1,464</b>	<b>6,657</b>	<b>10,883</b>	<b>1,770</b>	<b>7,884</b>	<b>840</b>	<b>—</b>	<b>(1,241)</b>	<b>(6,334)</b>
Profit attributable to the owners of the Company	1,309	6,013	9,866	1,150	5,123	546	—	(633)	(3,230)
Profit attributable to non-controlling interest	155	644	1,017	620	2,761	294	—	(608)	(3,104)
<b>Profit / (loss) for the year</b>	<b>1,464</b>	<b>6,657</b>	<b>10,883</b>	<b>1,770</b>	<b>7,884</b>	<b>840</b>	<b>—</b>	<b>(1,241)</b>	<b>(6,334)</b>
Other comprehensive income / (loss)	(34)	32	106	17	4	(40)	—	—	—
<b>Total comprehensive income / (loss) for the year</b>	<b>1,430</b>	<b>6,689</b>	<b>10,989</b>	<b>1,787</b>	<b>7,888</b>	<b>800</b>	<b>—</b>	<b>(1,241)</b>	<b>(6,334)</b>
Net cash inflow / (outflow) from:									
- operating activities	2,775	7,015	6,060	(2,679)	4,512	6,050	—	7	(404)
- investing activities	314	(4,046)	(9,055)	(2,377)	(1,795)	(1,688)	—	9	21
- financing activities	(2,204)	(2,945)	(268)	3,437	(247)	(3,716)	—	—	374
<b>Net cash inflow / (outflow)</b>	<b>885</b>	<b>24</b>	<b>(3,263)</b>	<b>(1,619)</b>	<b>2,470</b>	<b>646</b>	<b>—</b>	<b>16</b>	<b>(9)</b>

#### 41. Principal Subsidiaries

These consolidated financial statements include the following subsidiaries:

	Principal activity	Ownership		
		2017	2016	2015
MAEK-Kazatomprom LLP	Production, transfer and sales of electric power and heat, production and sales of potable, technical and distilled water, transportation of sea water and gas	100%	100%	100%
Kazatomprom-Damu LLP (Kazatomprom-Demeu LLP)	Consulting services on the Group's investment activity	90%	90%	90%
KAP-Technology JSC (Bailanys-NAK LLP)	Communication services	100%	100%	100%
Korgan Kazatomprom LLP	Security services	100%	100%	100%
Appak LLP	Exploration, extraction and initial processing of uranium ore	65%	65%	65%
Ulba Metallurgical Plant JSC	Production and processing of uranium materials, production of rare metals and semiconductor materials	90.18%	90.18%	90.18%
Volkovgeologiya JSC	Exploration and research of uranium reserves, drilling services, monitoring of radiation level and environment conditions	90%	90%	90%

	<u>Principal activity</u>	<u>Ownership</u>		
		<u>2017</u>	<u>2016</u>	<u>2015</u>
High Technology Institute LLP	Research, project, development and engineering consulting services	100%	100%	100%
Kyzyltu LLP	Exploration, extraction and processing of molybdenum-copper ores with uranium content	76%	76%	76%
JV SARECO LLP	Ore enrichment, hydro-metallurgical production of rare metals concentrates, chemical production of rare metals	100%	51%	51%
MK KazSilicon LLP	Production and sale of metallurgical and polycrystalline silicon, recycling of silicon production waste	100%	100%	100%
Kazakhstan Solar Silicon LLP	Production of silicon of solar quality, silicon slices and photovoltaic slices	100%	100%	100%
Astana Solar LLP	Production of photovoltaic modules	100%	100%	100%
JV KT Rare Metals Company LLP	Project feasibility works for exploration of rare metals	—	51%	51%
DP Ortalyk LLP	Production services, processing to chemical uranium concentrate and mine development services	100%	100%	100%
RU-6 LLP	Exploration, production and preliminary processing of uranium ore	100%	100%	100%
Kazatomprom-SaUran LLP	Exploration, production and preliminary processing of uranium ore	100%	100%	100%
Geotechnoservice LLP	Development of mining works plans, mining projects, geophysical research	100%	100%	100%
Trade and Transportation Company LLP	Procurement and transportation services	99.9999%	99.9998%	99.9998%
Kazakhstan Nuclear Electric Stations JSC	Implementation of project on construction and operation of nuclear electric station	100%	100%	—
Kazakatom TH AG	Marketing function for sale of uranium, investment and administration of finances, goods and rights	100%	100%	—
Power System International Limited (PSIL)	Commercial and investment activity	100%	—	—
Remmontazhservice LLP	Field piping, repairs, production of non-standard equipment and maintenance	—	—	100%
Kutkarushi Tau-ken LLP	Firefighting services	—	—	100%
Ecoenergomash LLP	Production of vertical wind power station for complex renewable power supply systems	—	—	100%
Kazakhstan Nuclear University LLP	Education services	—	—	100%
TGHP LLP	Exploration, production and preliminary processing of uranium ore	—	—	100%
Stepnoe RU LLP	Exploration, production and preliminary processing of uranium ore	—	—	100%

In 2016, the Company established a subsidiary Kazakatom TH AG in Switzerland. The share capital of Kazakatom TH AG of Tenge 339 million was fully paid, of which Tenge 270 million was paid in 2017.

All other subsidiaries are incorporated and operate in Kazakhstan.

During 2016, the Parent increased the share capital of the Company by contribution of the subsidiary Kazakhstan Nuclear Electric Stations JSC valued at Tenge 93 million (Note 34).

In 2016, Ecoenergomash LLP and Kazakhstan Nuclear University LLP merged with High Technology Institute LLP; TGHP LLP, Stepnoe RU LLP and Remmontazhservice LLP merged with Kazatomprom SaUran LLP; Kutkarushi Tau-ken LLP was liquidated.

## 42. Financial Risk Management

Accounting policies and disclosures in respect of financial instruments are applied to the following classes of financial instruments:

<i>In millions of Kazakhstani Tenge</i>	<b>Note</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
<b>Financial assets</b>				
Other investments . . . . .	27	1,726	67,041	67,041
Trade accounts receivable . . . . .	28	57,916	67,859	107,220
Other accounts receivable . . . . .	28	309	62	328
Restricted cash . . . . .	29	4,619	3,552	7,037
Dividends receivable from related parties . . . . .	29	13,707	5,916	8,769
Loans to employees . . . . .	29	898	839	1,174
Term deposits . . . . .	31	8,472	56,491	12,202
Loans to related parties . . . . .	32	20,302	19,164	33,568
Current bank accounts . . . . .	33	234,845	62,323	53,246
Demand deposits . . . . .	33	5,053	12,685	2,570
Cash in hand . . . . .	33	38	44	53
<b>Total financial assets . . . . .</b>		<b>347,885</b>	<b>295,976</b>	<b>293,208</b>
<b>Financial liabilities</b>				
Bank loans . . . . .	35	120,931	127,442	172,326
Non-bank loans . . . . .	35	353	323	295
Trade accounts payable . . . . .	37	109,264	73,846	101,505
Other accounts payable . . . . .	37	3,960	1,389	702
Finance lease liabilities . . . . .		419	164	—
Historical costs liabilities . . . . .	38	2,567	3,327	4,133
Issued financial guarantees . . . . .	38	96	179	378
Preferred shares . . . . .	38	265	265	265
Dividends payable to other participants . . . . .	38	253	255	245
<b>Total financial liabilities . . . . .</b>		<b>238,108</b>	<b>207,190</b>	<b>279,849</b>

The risk management function within the Group is carried out in respect of financial risks, operational risks and legal risks. Financial risk comprises of market risk (including currency risk, interest rate risk and other price risk), credit risk and liquidity risk. The primary objectives of the financial risk management function are to establish risk limits, and then ensure that exposure to risks stays within these limits. Risk management policies and systems are regularly analysed for the need of revision due to changes in market conditions and the Group operations. The Group sets standards and training and management procedures to create streamlined and effective system of controls where all employees understand their roles and responsibilities. The operational and legal risk management functions are intended to ensure proper functioning of internal policies and procedures, in order to minimise operational and legal risks.

This note presents information about the Group's exposure to each of the above risks, the Group's objectives, policies and processes for measuring and managing risk, and the Group's policy for management of capital. Further quantitative disclosures are included throughout these consolidated financial statements.

The Board of Directors has overall responsibility for the establishment and oversight of the Group's risk management framework. The Management Board has established a Risk Management Committee, which is responsible for developing and monitoring the Group's risk management policies. The committee reports regularly to the Management Board and the Board of Directors on its activities.

### **Credit risk**

The Group takes on exposure to credit risk, which is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. Exposure to credit risk arises as a result of the Group's sales of products on credit terms and other transactions with counterparties giving rise to financial assets. Financial assets, which potentially expose the Group to credit risk, consist mainly of trade and other receivables, cash and cash equivalents, term deposits and loans to employees and related parties.

The Group's maximum exposure to credit risk by class of assets is reflected in the carrying amounts of financial assets in the statements of financial position.



The credit risk on cash and cash equivalents and term deposits is limited, except those disclosed in Notes 27 and 29, because the counterparties are banks with high credit ratings assigned by international credit rating agencies.

The table below shows credit ratings of banks where the Group had accounts as at 31 December 2017:

<i>In millions of Kazakhstani Tenge</i>	<b>Rated Standard &amp; Poor's B</b>	<b>Rated Standard &amp; Poor's C</b>	<b>Other</b>	<b>Total</b>
Restricted cash .....	3,451	3	1,165	4,619
Term deposits .....	8,472	—	—	8,472
Current bank accounts .....	230,035	2,793	2,017	234,845
Demand deposits .....	5,008	45	—	5,053
<b>Total</b> .....	<b>246,966</b>	<b>2,841</b>	<b>3,182</b>	<b>252,989</b>

The table below shows credit ratings of banks where the Group had accounts as at 31 December 2016:

<i>In millions of Kazakhstani Tenge</i>	<b>Rated Standard &amp; Poor's B</b>	<b>Rated Standard &amp; Poor's C</b>	<b>Other</b>	<b>Total</b>
Restricted cash .....	3,547	5	—	3,552
Term deposits .....	56,491	—	—	56,491
Current bank accounts .....	43,340	17,017	1,966	62,323
Demand deposits .....	2,184	10,501	—	12,685
<b>Total</b> .....	<b>105,562</b>	<b>27,523</b>	<b>1,966</b>	<b>135,051</b>

The table below shows credit ratings of banks where the Group had accounts as at 31 December 2015:

<i>In millions of Kazakhstani Tenge</i>	<b>Rated Standard &amp; Poor's B</b>	<b>Rated Standard &amp; Poor's C</b>	<b>Other</b>	<b>Total</b>
Restricted cash .....	7,037	—	—	7,037
Term deposits .....	12,202	—	—	12,202
Current bank accounts .....	49,755	—	3,491	53,246
Demand deposits .....	2,570	—	—	2,570
<b>Total</b> .....	<b>71,564</b>	<b>—</b>	<b>3,491</b>	<b>75,055</b>

The Group's exposure to credit risk in respect of trade accounts receivable is influenced mainly by the individual characteristics of each customer. The demographics of the Group's customer base, including the default risk of the industry and country, in which customers operate, has less of an influence on credit risk. The Group is exposed to concentrations of credit risk. Approximately 54% of the Group's revenue for 2017 (29% of trade receivables as of 31 December 2017) is attributable to sales transactions with seven main customers (2016: 51% of Group's revenues (49% of trade receivables); 2015: 54% of Group's revenues (77% of trade receivables)). The Group defines counterparties as having similar characteristics if they are related entities.

The Group applies a credit policy under which each new customer is analysed individually for creditworthiness before the Group's standard payment and delivery terms and conditions are offered.

The Group does not require collateral in respect of trade and other receivables.

The maximum exposure to credit risk for trade receivables at the reporting date by geographic region was:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
China .....	17,570	24,600	37,789
European Union .....	18,394	10,650	22,403
Kazakhstan .....	16,128	9,334	10,556
USA .....	3,702	13,727	24,744
Japan .....	1,421	3,622	8,829
Russia .....	243	128	602
Canada .....	—	1,690	—
Other .....	458	4,108	2,297
<b>Total</b> .....	<b><u>57,916</u></b>	<b><u>67,859</u></b>	<b><u>107,220</u></b>

The most significant clients of the Group in 2017 are China Nuclear Energy Industry Corporation, Urangesellschaft mbH, CNNC International (HK) Limited, CGNPC Uranium Resources Company Limited, HOKKAIDO Electric Power Company Inc., CAMECO Europe Ltd, A&R Merchants Inc (2016: China Nuclear Energy Industry Corporation, TradeTech Energy LLC, Exelon Generation Company LLC, Electricite de France, Urangesellschaft mbH; 2015: China Nuclear Energy Industry Corporation, TradeTech Energy LLC, Exelon Generation Company LLC, Electricite de France, and Urangesellschaft mbH). As at 31 December 2017 the aggregate balance receivable from these customers was Tenge 39,751 million (2016: Tenge 42,366 million; 2015: Tenge 79,950 million).

The average credit period on sales of goods is 30 days. No interest is charged on receivables for the first 30 days from the date of the invoice. Thereafter, interest is charged on the outstanding balance at the refinancing rate set by the National Bank of the Republic of Kazakhstan, which is 10.25% in 2017 (2016: 5.5%; 2015: 5.5%). Allowances against doubtful debts are recognised against trade receivables between 30 days and 120 days and over 120 days based on estimated irrecoverable amounts determined by reference to past default experience of the counterparty and an analysis of the counterparty's current financial position.

As at reporting date, the ageing of the trade receivables was as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>		<u>2016</u>		<u>2015</u>	
	<u>Trade accounts receivable</u>	<u>Other accounts receivable</u>	<u>Trade accounts receivable</u>	<u>Other accounts receivable</u>	<u>Trade accounts receivable</u>	<u>Other accounts receivable</u>
<b>Not past due and not impaired</b> .....	<b>55,844</b>	<b>169</b>	<b>66,551</b>	<b>62</b>	<b>105,320</b>	<b>328</b>
<b>Past due but nor impaired</b>						
Past due for 0-30 days .....	582	—	784	—	998	—
Past due for 31-120 days .....	1,326	—	346	—	762	—
Past due for more than 120 days .....	164	—	178	—	140	—
<b>Total past due but not impaired</b> .....	<b><u>2,072</u></b>	<b><u>—</u></b>	<b><u>1,308</u></b>	<b><u>—</u></b>	<b><u>1,900</u></b>	<b><u>—</u></b>
<b>Past due and impaired</b>						
Past due for more than 120 days .....	1,298	433	1,761	467	1,729	454
<b>Total past due and impaired</b> .....	<b><u>1,298</u></b>	<b><u>433</u></b>	<b><u>1,761</u></b>	<b><u>467</u></b>	<b><u>1,729</u></b>	<b><u>454</u></b>
Provision for impairment .....	(1,298)	(433)	(1,761)	(467)	(1,729)	(454)
<b>Total</b> .....	<b><u>57,916</u></b>	<b><u>169</u></b>	<b><u>67,859</u></b>	<b><u>62</u></b>	<b><u>107,220</u></b>	<b><u>328</u></b>

Balances not past due and not impaired relate to a number of independent customers for whom there is no recent history of delay in payments. The provision for impairment is recognised for receivables with delays in collection. During the reporting period, the movement on the provision for doubtful debts was as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>Trade accounts receivable</u>	<u>Other accounts receivable</u>
<b>Provision at 1 January 2015</b> .....	<b>1,328</b>	<b>380</b>
Provision for the year .....	633	77
Reversal .....	(11)	—
Amounts written-off .....	(222)	(3)
Translation to presentation currency .....	1	—
<b>Provision at 31 December 2015</b> .....	<b>1,729</b>	<b>454</b>
Provision for the year .....	410	59
Reversal .....	(172)	—
Amounts written-off .....	(206)	(45)
Translation to presentation currency .....	—	(1)
<b>Provision at 31 December 2016</b> .....	<b>1,761</b>	<b>467</b>
Provision for the year .....	66	4
Reversal .....	(13)	(1)
Amounts written-off .....	(516)	(37)
<b>Provision at 31 December 2017</b> .....	<b>1,298</b>	<b>433</b>

Credit risk exposure in respect of loans to related parties (Note 32) and loans to employees (Note 29) arises from possibility of non-repayment of provided funds. For loans to joint ventures and associates and employees the Group manages the credit risk by requirement to provide collateral in lieu of borrowers' property. Borrowers do not have a credit rating.

#### **Liquidity risk**

Liquidity risk is the risk that an entity will encounter difficulty in meeting obligations associated with financial liabilities. The Group is exposed to daily calls on its available cash resources. Liquidity risk is managed by the corporate finance and treasury department of the Group. Management monitors monthly rolling forecasts of the Group's cash flows.

The Group seeks to maintain a stable funding base primarily consisting of borrowing, trade and other payables and debt securities. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities as they fall due, under both normal and stressful conditions, without incurring unacceptable losses or risking damage to the Group's reputation. The Group invests the funds in diversified portfolios of liquid assets, in order to be able to respond quickly and smoothly to unforeseen liquidity requirements.

Typically the Group ensures that it has sufficient cash on demand to meet expected operational expense of financial obligations which excludes the potential impact of extreme circumstances that cannot reasonably be predicted, such as natural disasters.

Below is a summary of the Group's undrawn borrowing facilities and available cash and cash equivalents, including term deposits, which are the important instruments in managing the liquidity risk:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Current deposits .....	13,525	69,161	11,590
Current bank accounts .....	234,845	62,323	53,246
Undrawn borrowing facilities .....	35,177	44,758	54,807
<b>Total</b> .....	<b>283,547</b>	<b>176,242</b>	<b>119,643</b>

The table below shows liabilities at the reporting date by their remaining contractual maturity. The amounts disclosed in the maturity table are the contractual undiscounted cash flows. Such undiscounted cash flows differ from the amount included in the statements of financial position because the statement of financial position amount is based on discounted cash flows.

When the amount payable is not fixed, the amount disclosed is determined by reference to the conditions existing at the end of the reporting period. Foreign currency payments are translated using the spot exchange rate at the end of the reporting period.

The following are the contractual maturities of financial liabilities at 31 December 2017:

<i>In millions of Kazakhstani Tenge</i>	Carrying value	Contractual cash flows	On demand and less than 1 month	From 1 to 3 months	From 3 months to 1 year	From 1 to 5 years	Over 5 years
Bank loans	120,931	136,644	32,823	12,886	48,982	38,046	3,907
Non-bank loans	353	353	—	—	—	—	353
Trade accounts payable	109,264	109,264	—	108,691	—	573	—
Other accounts payable	3,960	3,960	—	3,951	—	9	—
Historical costs liabilities	2,567	2,803	—	204	614	1,985	—
Finance lease liabilities	419	462	—	22	120	320	—
Issued financial guarantees	96	14,732	—	14,732	—	—	—
Preferred shares	265	265	—	—	265	—	—
Dividends payable to other participants	253	253	—	253	—	—	—
<b>Total</b>	<b>238,108</b>	<b>268,736</b>	<b>32,823</b>	<b>140,739</b>	<b>49,981</b>	<b>40,933</b>	<b>4,260</b>

The following are the contractual maturities of financial liabilities at 31 December 2016:

<i>In millions of Kazakhstani Tenge</i>	Carrying value	Contractual cash flows	On demand and less than 1 month	From 1 to 3 months	From 3 months to 1 year	From 1 to 5 years	Over 5 years
Bank loans	127,442	137,222	368	16,917	37,040	77,380	5,517
Non-bank loans	323	323	—	—	—	—	323
Trade accounts payable	73,846	73,846	—	73,272	—	574	—
Other accounts payable	1,389	1,389	—	1,382	—	7	—
Historical costs liabilities	3,327	3,815	—	136	737	2,942	—
Finance lease liabilities	164	164	—	44	—	120	—
Issued financial guarantees	179	21,649	—	—	—	21,649	—
Preferred shares	265	265	—	—	265	—	—
Dividends payable to other participants	255	255	—	255	—	—	—
<b>Total</b>	<b>207,190</b>	<b>238,928</b>	<b>368</b>	<b>92,006</b>	<b>38,042</b>	<b>102,672</b>	<b>5,840</b>

The following are the contractual maturities of financial liabilities at 31 December 2015:

<i>In millions of Kazakhstani Tenge</i>	Carrying value	Contractual cash flows	On demand and less than 1 month	From 1 to 3 months	From 3 months to 1 year	From 1 to 5 years	Over 5 years
Bank loans	172,326	186,736	486	13,693	44,063	120,620	7,874
Non-bank loans	295	295	—	—	—	—	295
Trade accounts payable	101,505	101,505	—	100,920	—	585	—
Other accounts payable	702	702	—	702	—	—	—
Historical costs liabilities	4,133	4,758	—	190	831	3,234	503
Issued financial guarantees	1,665	67,479	—	1,287	—	66,192	—
Preferred shares	265	265	—	—	—	—	265
Dividends payable to other participants	245	245	245	—	—	—	—
<b>Total</b>	<b>281,136</b>	<b>361,985</b>	<b>731</b>	<b>116,792</b>	<b>44,894</b>	<b>190,631</b>	<b>8,937</b>

Maximum contractual cash outflows under guarantees are disclosed in Note 39.

### **Market risk**

The Group takes on exposure to market risks. Market risk is the risk that changes in market prices will have a negative impact on the Group's income or the value of its financial instrument holdings. Market risks arise from open positions

in (a) foreign currencies, (b) interest bearing assets and liabilities and (c) equity products, all of which are exposed to general and specific market movements. The objective of market risk management is to monitor and control market risk exposures within acceptable limits, while optimising the return on investments. Management sets limits on the value of risk that may be accepted, which is monitored on a daily basis. However, the use of this approach does not prevent losses outside of these limits in the event of more significant market movements.

Sensitivities to market risks included below are based on a change in a factor while holding all other factors constant. In practice this is unlikely to occur and changes in some of the factors may be correlated – for example, changes in interest rate and changes in foreign currency rates.

#### *Currency risk*

The Group is exposed to currency risk on sales, purchases and borrowings denominated in currencies other than the functional currency. Borrowings are denominated in currencies that match the cash flows generated by operating entities in the Group. Therefore, in most cases, economic hedging is achieved without derivatives. In respect of other monetary assets and liabilities denominated in foreign currencies, the Group ensures that its net exposure is kept to an acceptable level by planning future expenses taking into consideration the currency of payment. The Group is mainly exposed to the risk of USD currency fluctuations. The Group's exposure to currency risk was as follows:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<b>Denominated in US Dollars</b>			
Trade accounts receivable . . . . .	46,474	58,376	96,261
Other account receivables . . . . .	—	—	216
Loans to related parties* . . . . .	20,302	19,151	31,133
Current bank accounts . . . . .	212,119	43,577	44,621
Demand deposits . . . . .	1,937	11,978	1,020
Term deposits . . . . .	7,586	54,304	11,432
<b>Total assets</b> . . . . .	<b><u>288,418</u></b>	<b><u>187,386</u></b>	<b><u>184,683</u></b>
Bank loans . . . . .	(95,016)	(106,031)	(139,730)
Trade accounts payable . . . . .	(14,410)	(11,487)	(11,937)
Historical costs liabilities . . . . .	(1,125)	(2,813)	(4,133)
<b>Total liabilities</b> . . . . .	<b><u>(110,551)</u></b>	<b><u>(120,331)</u></b>	<b><u>(155,800)</u></b>
<b>Net exposure to currency risk</b> . . . . .	<b><u>177,867</u></b>	<b><u>67,055</u></b>	<b><u>28,883</u></b>

\* – loans to related parties are denominated in Tenge, but are subject to indexation for changes in USD/Tenge exchange rate.

A 10% weakening and 10% strengthening of Tenge against USD as at 31 December 2017 (2016: 13% weakening and 13% strengthening; 2015: 60% strengthening and 20% weakening) would increase/(decrease) equity and profit or loss by the amounts shown below.

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
US Dollar strengthening by 10% (2016: 13%; 2015: 60%) . . . . .	14,230	6,974	13,864
US Dollar weakening by 10% (2016: 13%; 2015: 20%) . . . . .	(14,230)	(6,974)	(4,621)

Movements of Tenge against USD above represent reasonably possible changes in market risk estimated by analysing annual standard deviations based on the historical market data for 2017.

#### *Price risk on the uranium products*

The Group is exposed to the effect of fluctuations in the price of uranium, which is quoted in USD on the international markets. The Group prepares an annual budget based on future uranium prices.

Uranium prices historically fluctuate and are affected by numerous factors outside of the Group's control, including, but not limited to:

- demand for uranium used as fuel by nuclear power stations;
- depleting levels of secondary sources such as recycling and blended down highly enriched stocks available to close the gap of the excess demand over supply;
- impact of regulations by the International Agency on Nuclear Energy;
- other factors related specifically to uranium industry.

At the end of the reporting period there was no significant impact of commodity price risk on the Group's financial assets and financial liabilities, except for impairment of uranium producing assets in amount of Tenge 14,059 million in 2017 (2016: Tenge 2,060 million) (Note 13).

#### *Interest rate risk*

Changes in interest rates impact loans and borrowings by changing either their fair value (fixed rate debt) or their future cash flows (floating rate debt). At the time of raising new loans or borrowings management uses its judgment to decide whether it believes that a fixed or a floating rate would be more favourable to the Group over the expected period until maturity. As at 31 December 2017 approximately 21% (2016: 18%; 2015: 20%) of the Groups borrowings have a fixed interest rate.

At the reporting date, the interest rate profile of the Group's interest-bearing financial instruments was:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
<i>Fixed rate instruments</i>			
Restricted cash .....	4,619	3,552	7,037
Term deposits .....	8,472	56,491	12,202
Loans to related parties .....	20,302	19,164	33,568
Demand deposits .....	5,053	12,685	2,570
Bank loans .....	(25,906)	(23,249)	(34,339)
Non-bank loans .....	(353)	(323)	(295)
<b>Net position .....</b>	<b><u>12,187</u></b>	<b><u>68,320</u></b>	<b><u>20,743</u></b>
<i>Floating rate instruments</i>			
Bank loans .....	<u>(95,025)</u>	<u>(104,193)</u>	<u>(137,987)</u>

#### *Fair value sensitivity analysis for fixed rate instruments*

The Group does not account for any fixed rate financial assets and financial liabilities at fair value through profit or loss. Therefore a change in interest rates at the reporting date would not affect profit or loss. However, fixed rate financial assets and financial liabilities are exposed to fair value risk from change in interest rates. Reasonably possible changes in interest rates do not significantly affect fair values of those financial assets and financial liabilities.

#### *Future cash flows sensitivity analysis for floating rate instruments*

An increase (decrease) in interest rates of 70 (8) basis points in 2017 (2016: increase of 60 and decrease of 8 basis points; 2015: increase of 50 and decrease of 12 basis points) at the reporting date would have decreased (increased) equity and profit or loss by the amounts shown below. These amounts represent management's assessment of reasonably possible changes in the interest rates based upon current interest rates and the current economic environment. This analysis assumes that all other variables, in particular foreign currency rates, remain constant and that balances due were outstanding for the year.

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Increase of 70 basis points (2017), 60 basis points (2016), 50 basis points (2015) .....	(528)	(500)	(552)
Decrease of 8 basis points (2017), 8 basis points (2016), 12 basis points (2015) .....	60	67	132

#### *Fair values versus carrying amounts*

With the exception of instruments specified in the following table, the Group believes that the carrying value of financial assets and financial liabilities are recognised in the consolidated financial statements approximate their fair value due to their short-term nature:

<i>In millions of Kazakhstani Tenge</i>	<u>2017</u>		<u>2016</u>		<u>2015</u>	
	<u>Carrying value</u>	<u>Fair value</u>	<u>Carrying value</u>	<u>Fair value</u>	<u>Carrying value</u>	<u>Fair value</u>
<b>Financial liabilities</b>						
Bank loans .....	120,931	112,028	127,442	118,005	172,326	165,435
Non-bank loans .....	353	198	323	165	295	140
Historical costs liabilities .....	2,567	2,019	3,327	2,321	4,133	3,720
<b>Total .....</b>	<b><u>123,851</u></b>	<b><u>114,245</u></b>	<b><u>131,092</u></b>	<b><u>120,491</u></b>	<b><u>176,754</u></b>	<b><u>169,295</u></b>



In assessing fair values, management used the following major methods and assumptions: (a) for interest free financial liabilities and financial liabilities with fixed interest rate, financial liabilities were discounted at effective interest rate which approximates the market rate; (b) for financial liabilities with floating interest rate, the fair value is not materially different from the carrying amount because the effect of the time value of money is immaterial.

### ***Capital management***

The Group's policy is to maintain a strong capital base so as to safeguard the Group's ability to continue as a going concern, to maintain investor, creditor and market confidence, to provide returns for shareholder, to maintain an optimal capital structure to reduce the cost of capital, and to sustain future development of the business. Capital includes all capital and reserves of the Group as recorded in the consolidated statements of financial position. The Group monitors the following indicators:

- financial stability, or measures of loan management, determining the degree of borrowing funds utilisation;
- profitability, determining cumulative effects of liquidity, asset and capital management as a result of business activities.

The Group's internal quantitative capital management targets are similar to externally imposed requirements.

The Group's shareholder approved the policy on borrowings and financial sustainability management, which is aimed to manage financial risks by adopting common principles and rules of debt management and financial sustainability for non-financial organisations.

In order to evaluate the financial stability of the Group, the following key financial ratios are used, which have not changed since 2015:

- the debt to equity ratio of not greater than 1;
- the debt ratio to earnings before interest, taxes, depreciation and amortisation (Debt/EBITDA) of not greater than 3.5.

The Group has complied with all externally imposed capital requirements during 2017, 2016 and 2015, including covenants (Note 35).

### **43. Fair Value Disclosures**

Fair value measurements are analysed by level in the fair value hierarchy as follows: (i) level one are measurements at quoted prices (unadjusted) in active markets for identical assets or liabilities, (ii) level two measurements are valuations techniques with all material inputs observable for the asset or liability, either directly (that is, as prices) or indirectly (that is, derived from prices), and (iii) level three measurements are valuations not based on observable market data (that is, unobservable inputs). Management applies judgement in categorising financial instruments using the fair value hierarchy. If a fair value measurement uses observable inputs that require significant adjustment, that measurement is a Level 3 measurement. The significance of a valuation input is assessed against the fair value measurement in its entirety.

#### *Assets and liabilities not measured at fair value but for which fair value is disclosed*

Estimates of all assets and liabilities not measured at fair value but for which fair value is disclosed, except bonds, are level 3 of the fair value hierarchy.

The fair values in level 3 of the fair value hierarchy were estimated using the discounted cash flows valuation technique. The fair value of floating rate instruments that are not quoted in an active market was estimated to be equal to their carrying amount. The fair value of unquoted fixed interest rate instruments was estimated based on estimated future cash flows expected to be received discounted at current interest rates for new instruments with similar credit risks and remaining maturities.

#### *Financial assets carried at amortised cost*

The fair value of floating rate instruments is normally their carrying amount. Estimate of all financial assets carried at amortised cost is level 3 measurement. The estimated fair value of fixed interest rate instruments is based on estimated future cash flows expected to be received discounted at current interest rates for new instruments with similar credit risks and remaining maturities. Discount rates used depend on the credit risk of the counterparty.

#### *Liabilities carried at amortised cost*

Fair values of other liabilities were determined using valuation techniques. The estimated fair value of fixed interest rate instruments with stated maturities were estimated based on expected cash flows discounted at current interest rates for new instruments with similar credit risks and remaining maturities. The fair value of liabilities repayable on demand or after a notice period (“demandable liabilities”) is estimated as the amount payable on demand, discounted from the first date on which the amount could be required to be paid. The discount rates used ranged from 3.3% p.a. to 6.3% p.a. depending on the length and currency of the liability.

#### **44. Presentation of Financial Instruments by Measurement Category**

For the purposes of measurement under IAS 39 Financial Instruments: Recognition and Measurement, the Group classifies financial assets into the following categories: (a) loans and receivables; (b) available-for-sale financial assets; (c) financial assets held to maturity and (d) financial assets at fair value through profit or loss. Financial assets at fair value through profit or loss have two sub-categories: (i) assets designated as such upon initial recognition, and (ii) those classified as held for trading. All of the Group’s financial assets fall in the loans and receivables category except other investments. Other investments fall into available-for-sale measurement category.

All of the Group’s financial liabilities were classified in other financial liabilities category.

#### **45. Events After the Reporting Period**

##### ***JV Inkai LLP***

In December 2017, the Group and Cameco completed the deal on restructuring of JV Inkai LLP. In accordance with the terms of the sales agreement, the Group increased its interest in JV Inkai LLP from 40% to 60% and from 1 January 2018 obtained control over the investee (Note 39).

The Group obtained control through its ability to cast a majority of votes in the general meeting of shareholders and the supervisory board when making decisions over the relevant activities of the investee. The subsidiary will increase the Group’s share on the market of uranium production and is expected to improve the profitability of operations through increased production and sales.

The acquisition-date fair value of the total purchase consideration and its components are as follows:

##### *In millions of Kazakhstani Tenge*

Cash consideration paid .....	11
Liabilities from pre-existing relationships .....	(21,271)
<b>Total consideration transferred .....</b>	<b>(21,260)</b>
Fair value of the investment in associate prior to the acquisition .....	77,850
<b>Total purchase consideration and fair value of previously held interest in the acquiree .....</b>	<b><u>56,590</u></b>

The consideration transferred by the Group is based on the book value of the share in the charter capital. The Group facilitated the signing of the addendum to the subsoil use contract with the competent authority allowing extension of the contract period and increase in annual production volume.

The difference between the consideration transferred and the net fair value of the acquiree’s identifiable assets, and liabilities assumed and contingent liabilities led to recognition of ‘negative goodwill’, as presented in the table below, which is recognised immediately in profit or loss for the period less deferred tax (as ‘excess of the net fair value of the acquiree’s identifiable assets, liabilities and contingent liabilities over the cost of the business combination’).

Details of the assets and liabilities acquired and negative goodwill arising as of 1 January 2018 are as follows:

<i>In millions of Kazakhstani Tenge</i>	<b>Fair value</b>
Cash and cash equivalents	1,036
Accounts receivable	19,063
Inventories	5,579
Prepaid income tax	2,313
Mineral rights	159,934
Property, plant and equipment	32,671
Mine development assets	43,582
Other assets	4,830
Borrowings	(38,955)
Accounts payable	(4,596)
Deferred tax liabilities	(32,162)
Other liabilities	<u>(1,390)</u>
Fair value of identifiable net assets acquired (before elimination of intra-group balances)	191,905
Less: elimination of intra-group balances	<u>(21,271)</u>
<b>Fair value of identifiable net assets acquired</b>	<b>170,634</b>
Less: non-controlling interest	(76,761)
Less: negative goodwill arising from the acquisition	<u>(37,283)</u>
<b>Total purchase consideration and previously held interest in the acquiree</b>	<b><u>56,590</u></b>

The valuation of identifiable assets and liabilities was performed by an independent professional appraiser.

Based on the valuation the assets value increased by Tenge 109,160 million, mainly due to valuation of the subsoil use (mineral) right, as a result of which the carrying value increased from Tenge 6,185 million to Tenge 159,934 million. The value of property, plant and equipment and mine preparation works decreased by Tenge 27,151 million and Tenge 15,485 million, respectively.

The non-controlling interest represents a share in the net assets of the acquiree attributable to owners of the non-controlling interest. The non-controlling interest was determined based on proportionate share of the acquiree's net assets' fair value.

The deferred tax in the amount of KZT 21,832 million was calculated on the excess of the fair value over the carrying value.

As of 1 January 2018, the Group had payable to JV Inkai LLP in the amount of Tenge 18,846 million under uranium purchase agreement, advances received in the amount of Tenge 524 million, long-term advances received for the road use right in the amount of Tenge 2,701 million, and receivables in the amount of Tenge 800 million under supply contracts.

#### ***Karatau LLP, JV Akbastau JSC***

The Group and Uranium One Inc each hold a 50% interest in Karatau LLP and JV Akbastau JSC. In 2018, the Group and Uranium One Inc signed a number of agreements that formalised their obligation to purchase all production of the investees at equitable terms, as well as to provide financing to the joint arrangement in proportion to their shares. Both parties have direct rights to the assets and obligations for the liabilities of the investees, accordingly starting from 2018 the entities have been classified as joint operations. The Group recognised its direct right in joint assets, liabilities, income and expenses in proportion to its 50% ownership interest, these items are consolidated in the Group's financial statements on line by a line basis. Until 2018 investments in Karatau LLP (50% interest) and JV Akbastau JSC (50% interest) were accounted for using equity method.

Transfer of Karatau LLP and JV Akbastau JSC from classification as a joint venture to joint operations was accounted for as a business combination. Accordingly, acquired assets and liabilities are recognised using the acquisition method under IFRS 3.

The acquisition-date fair value of the total purchase consideration and its components are as follows:

<i>In millions of Kazakhstani Tenge</i>	
Cash consideration paid . . . . .	—
Liabilities from pre-existing relationships . . . . .	(8,538)
<b>Total consideration transferred . . . . .</b>	<b>(8,538)</b>
Investments in the joint ventures prior to the acquisition . . . . .	32,523
<b>Total purchase consideration and previously held interest in the joint ventures . . . .</b>	<b><u>23,985</u></b>

The Group is currently assessing the fair value of the identifiable assets acquired and the liabilities and contingent liabilities assumed in the acquisition of the entity under IFRS 3 Business Combinations. The valuation is being performed by an independent professional appraiser and has not been completed as of the date of these financial statements.

The difference between the consideration transferred and the net fair value of the acquiree's identifiable assets, and liabilities assumed and contingent liabilities led to recognition of 'negative goodwill', as presented in the table below, which is recognised immediately in profit or loss for the period less deferred tax (as 'excess of the net fair value of the acquiree's identifiable assets, liabilities and contingent liabilities over the cost of the business combination').

As at the date of financial statements, no information on fair values was available, presented below is the information on the acquired assets, liabilities assumed (proportionate 50% share) and arising negative goodwill based on the carrying (provisional) values:

<i>In millions of Kazakhstani Tenge</i>	<b>Carrying value</b>
Cash and cash equivalents . . . . .	1,885
Accounts receivable . . . . .	10,901
Inventories . . . . .	2,922
Mineral rights . . . . .	156
Property, plant and equipment . . . . .	9,773
Mine development assets . . . . .	12,407
Other assets . . . . .	2,078
Borrowings . . . . .	(2,235)
Accounts payable . . . . .	(2,867)
Other liabilities . . . . .	<u>(1,557)</u>
Carrying value of identifiable net assets acquired (before elimination of intra-group balances) . . . . .	33,463
Less: elimination of intra-group balances . . . . .	<u>(8,538)</u>
<b>Carrying value of identifiable net assets acquired . . . . .</b>	<b>24,925</b>
Negative goodwill arising from the acquisition . . . . .	<u>(940)</u>
<b>Total purchase consideration and previously held interest in the joint ventures . . .</b>	<b><u>23,985</u></b>

#### **MAEK-Kazatomprom LLP**

On 25 June 2018, the Group signed an agreement with Samruk-Kazyna JSC for sale of 100% interest in MAEK-Kazatomprom LLP. On 3 July 2018, the government signed a decree on alienation of the strategic object. As of 30 June 2018 all assets and liabilities of MAEK-Kazatomprom LLP were included into the disposal group. Since the operations of MAEK-Kazatomprom LLP represent a separate major line of business, this disposal group is presented in 2018 as a discontinued operation.

The selling price for 100% interest in MAEK-Kazatomprom LLP is Tenge 17,853 million. In accordance with the sales and purchase agreement the Group is responsible for risks and liabilities related to the financial, environmental and other activities of MAEK-Kazatomprom LLP prior to the transfer of ownership, however the Group is not liable for any risks and liabilities, directly or indirectly associated with the BN-350 reactor. Currently, the Group and the Shareholder are considering the possibility of transfer of 100% interest in MAEK-Kazatomprom LLP under trust management to the Group.

*Sales contract with Yellow Cake plc*

On 10 May 2018, the Group and Yellow Cake plc signed a framework agreement relating to the sale and purchase of  $U_3O_8$ , including the initial delivery of 3,100 tons in July 2018 and an option to purchase additional quantities in each of the delivery years 2019 through 2027, inclusive. The Group has an option to purchase from Yellow Cake plc certain repurchase quantity of  $U_3O_8$  when the uranium spot price exceeds certain threshold (above USD 37.5 per pound of  $U_3O_8$ ).

**ANNEX A**  
**COMPETENT PERSON'S REPORT**



# COMPETENT PERSONS' REPORT ON THE MINERAL ASSETS OF JOINT STOCK COMPANY NATIONAL ATOMIC COMPANY KAZATOMPROM, REPUBLIC OF KAZAKHSTAN

Prepared For  
Joint Stock Company National Atomic Company  
“Kazatomprom”



Report Prepared by

 **srk** consulting

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UK7274

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<b>Project Number:</b>	UK7274	
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<b>Commercial Client</b>		
Legal Entity:	Joint Stock Company National Atomic Company Kazatomprom	
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# COMPETENT PERSONS' REPORT ON THE MINERAL ASSETS OF JOINT STOCK COMPANY NATIONAL ATOMIC COMPANY KAZATOMPROM, REPUBLIC OF KAZAKHSTAN

## – EXECUTIVE SUMMARY

### 1 INTRODUCTION

#### 1.1 Background

SRK Consulting (UK) Limited (“**SRK**”) has been appointed by Joint Stock Company National Atomic Company Kazatomprom (“**Kazatomprom**”, “**KAP**”, the “**Company**”) to prepare a Competent Persons Report (“**CPR**”), pursuant to the Requirements (defined in Section 1.2 below) on its uranium mineral mining and exploration assets (the “**Mineral Assets**”) located in the Republic of Kazakhstan (“**Kazakhstan**”).

Kazatomprom is a joint stock company incorporated under the laws of Kazakhstan on 21 February 1997 which operates as Kazakhstan’s national operator for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The Company by measure of attributable production is the largest producer of natural uranium globally as well as being the second lowest cost producer as reported by Ux Consulting Company (“**UxC**”). For the 12 month period ended 31 December 2017 the Company together with its subsidiaries (the “**Group**”) represented approximately 20% of total global uranium primary production and approximately 40% of global in-situ leach recovery (“**ISR**”) uranium production.

This scope of this CPR is limited to the mining and processing operations of the Company’s Uranium Segment, specifically all key activities relating to the extraction of uranium and production of the final saleable product in the form of U<sub>3</sub>O<sub>8</sub>. The Mineral Assets are located in three (Shu-Sarysu; Syrdarya; and North Kazakhstan) of the six uranium geological provinces of Kazakhstan. The licence areas covering a total of 2,059.27km<sup>2</sup> which includes 30 deposits/blocks comprising: 26 Producing Properties; one Development Property; two Advanced Exploration Properties; and two Exploration Properties. In addition the Company’s “**Exploration Programme**” covers a further six Exploration Properties located in three regions in which the Company is active. The Mineral Assets are largely held through 14 subsidiaries, Joint Venture and Associate companies (the “**Mining Subsidiaries**” - Table ES 1) which in conjunction with the Company are directly responsible for uranium mining and downstream processing activities. 13 of the Mining Subsidiaries include Producing Properties while one Mining Subsidiary only includes Exploration Properties.

**Table ES 1 Mineral Assets salient statistics**

Mining Subsidiary	Equity Interest (%)	Geological Region	Deposits /Prdn Units (No)	Contracts (No)	Licence Area (km <sup>2</sup> )	Discovery (year)	Prdn Start (year)	LoMp <sup>(1)</sup> Depletion (year)	Prdn (tU)
<b>Operating Properties</b>									
Kazatomprom-SaUran LLP <sup>(2)</sup>	100.00	Shu-Sarysu	5	5	252.90	1963	1997	2040	2,050
Ortalyk LLP <sup>(2)</sup>	100.00	Shu-Sarysu	2	2	186.40	1964	2007	2032	1,974
RU-6 LLP <sup>(2)</sup>	100.00	Syrdarya	2	1	59.58	1979	1997	2031	987



Mining Subsidiary	Equity Interest (%)	Geological Region	Deposits /Prdn Units (No)	Contracts (No)	Licence Area (km <sup>2</sup> )	Discovery (year)	Prdn Start (year)	LoMp <sup>(1)</sup> Depletion (year)	Prdn (tU)
Appak LLP	65.00	Shu-Sarysu	1	1	133.46	1976	2008	2036	1,000
JV Inkai LLP <sup>(3)</sup>	60.00	Shu-Sarysu	3	1	139.00	1976	2008	2052	4,000
Semizbai-U LLP	51.00	Syrdarya; Northern Kazakhstan	2	2	71.20	1973	2008	2041	1,201
JV Akbastau JSC	50.00	Shu-Sarysu	3	2	2.71	1976	2009	2039	1,931
Karatau LLP	50.00	Shu-Sarysu	1	1	17.28	1979	2007	2033	3,200
JV Zarechnoye JSC	49.98	Syrdarya	1	1	38.00	1977	2007	2023	837
JV Katco LLP	49.00	Shu-Sarysu	2	1	45.73	1976	2001	2033	4,013
JV Khorassan-U LLP <sup>(4)</sup>	50.00	Syrdarya	1	1	70.80	1972	2008	2036	2,990
JV SMCC LLP	30.00	Shu-Sarysu	2	2	116.91	1976	2004	2036	3,080
Baiken-U LLP <sup>(4)</sup>	52.50	Shu-Sarysu	1	1	350.00	1972	2009	2032	2,030
<b>Subtotal</b>			<b>26</b>	<b>21</b>	<b>1,483.97</b>	<b>1963</b>	<b>1997</b>	<b>2052</b>	<b>28,372</b>
<b>Advanced Exploration Properties</b>									
Kazatomprom	100.00	Shu-Sarysu	2	2	424.00	1976	2015	n/a	n/a
<b>Exploration Properties<sup>(5)</sup></b>									
Budenovskoye LLP	51.00	Shu-Sarysu; Syrdarya; Northern Kazakhstan	2	1	151.30	1976	2017	n/a	n/a
<b>Grand Total</b>			<b>30</b>	<b>24</b>	<b>2,059.27</b>	<b>1963</b>	<b>1997</b>	<b>2052</b>	<b>28,372</b>

<sup>(1)</sup> Life-of-Mine plan ("LoMp"): date of depletion of Ore Reserves; maximum production in the current LoMps for the Mineral Assets.

<sup>(2)</sup> As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

<sup>(3)</sup> For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

<sup>(4)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

<sup>(5)</sup> The Exploration Properties noted only include details for Block 6 Budenovskoye and Block 7 Budenovskoye and do not include details for a further 9 Exploration Properties referenced in Section 8 (Main Report) and Section 13.3.7 (Main Report).

As at the Effective Date of the CPR, the Company reported:

- Aggregated Ore Reserves (Table ES 2) as at 1 July 2018 of 884.7Mt grading 0.060%U and containing 531.6ktU and total Mineral Resources of 1,241.3Mt grading 0.054%U and containing 674.0ktU;
- Attributable Ore Reserves as at 1 July 2018 of 535.3Mt grading 0.058%U and containing 312.3ktU and attributable Mineral Resources of 889.7Mt grading 0.051%U and containing 453.5ktU;
- Environmental Closure Liabilities comprising:
  - aggregated liabilities of US\$321.8m gross and US\$267.0m net of Liquidation Fund provisions (US\$54.7m) as at 30 June 2018,
  - attributable liabilities of US\$205.4m gross and US\$168.8m net of Liquidation Fund (US\$36.6m) provisions as at 30 June 2018;
- Life-of-Mine plans for the Mineral Assets which assume:
  - aggregated production of 467.3ktU, sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lb U<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$4.9bn,
  - attributable production of 271.9ktU, sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$2.9bn; and
- For the 12 month period ended 31 December 2017:
  - aggregated production of 23.3ktU, sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and all in sustaining cash costs ("AISC") of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$260.9m,
  - attributable production of 12.1ktU, sales of 30.5MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lb U<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$130.5m;and
- For the 6 month period ended 30 June 2018:



- aggregated production of 10.9ktU, sales of 23.3MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.99/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$15.00/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$93.4m,
- attributable production of 5.8ktU, sales of 13.0MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.28/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$51.2m.

Forecast sales from the Mining Subsidiaries which are attributable to the Company are assumed to be to the Company and not from the Company to any third parties. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

**Table ES 2 Aggregated Mineral Resources and Ore Reserves as at 1 July 2018 for the Mineral Assets**

Mining Subsidiary	Deposits (No)	Ore Reserves			Mineral Resources		
		(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Operating Properties</b>							
Kazatomprom-SaUran LLP	5	74.3	0.041	30.6	75.9	0.041	31.4
Ortalyk LLP	2	64.5	0.045	29.0	109.1	0.040	43.3
RU-6 LLP	2	20.9	0.076	15.9	20.9	0.076	15.9
Appak LLP	1	54.8	0.035	19.2	54.8	0.035	19.2
JV Inkai LLP	3	264.8	0.054	143.3	264.9	0.054	143.4
Semizbai-U LLP	2	60.1	0.046	27.9	60.1	0.046	27.9
JV Akbastau JSC	3	49.6	0.089	43.9	49.6	0.089	43.9
Karatau LLP	1	59.3	0.081	48.1	59.3	0.081	48.1
JV Zarechnoye JSC	1	8.0	0.060	4.8	12.2	0.056	6.9
JV Katco LLP	2	57.6	0.104	59.9	57.6	0.104	59.9
JV Khorassan-U LLP	1	40.0	0.107	42.6	40.0	0.107	42.6
JV SMCC LLP	2	110.8	0.040	44.0	110.8	0.040	44.0
Baiken-U LLP	1	20.0	0.112	22.4	20.0	0.112	22.4
<b>Subtotal</b>	<b>26</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>935.2</b>	<b>0.059</b>	<b>548.8</b>
<b>Advanced Exploration Properties</b>							
Kazatomprom	2	n/a	n/a	n/a	306.1	0.041	125.1
<b>Grand Total</b>	<b>30</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

This CPR presents the following key technical information as at the Effective Date (defined below):

- Mineral Resources and Ore Reserve statements (the “**2018 Statements**”) for the Mineral Assets reported in accordance with the terms and definitions of the JORC Code (defined below);
- The Life-of-Mine plans (“**LoMp**”) for the Mineral Assets inclusive of all technical and economic parameters (“**TEPs**”) including assumed production, sales volumes, sales revenue, operating and capital expenditure relating to depletion of the Ore Reserves from 1 July 2018;
- The “**Environmental and Social Liabilities**” for the Mineral Assets inclusive of all mine closure related expenditures and retrenchment costs; and
- The “**Exploration Programme**” for the Mineral Assets specifically relating to the Advanced Exploration Properties and the Exploration Properties.

For the avoidance of doubt, this CPR is limited to the Mineral Assets and specifically excludes all assets and liabilities relating to the Group’s activities external to the Mineral Assets as defined herein. Furthermore, this CPR does not include a valuation of the Mineral Assets. Certain units of measurements and technical terms defined in the JORC Code (defined below under Section 1.2) are defined in the glossaries, abbreviations and units included at the end of this CPR.

## 1.2 Requirement, Reporting Standard and Reliance

The CPR will be published in a “**Registration Document**” to be published by the Company and a “**Prospectus**” in support of the “**Global Offering**” of: the ordinary shares (the “**Shares**”) of the Company on the “**AIX Limited**” being the stock exchange of the Astana International Financial Centre (“**AIX**”); and global depository receipts (“**GDRs**”) on the “**Main Market**” of the

London Stock Exchange (the “**LSE**”), market operated by the London Stock Exchange Group plc.

### **Requirement**

SRK has been informed that this CPR will be included in the Registration Document to be published by the Company, and the Prospectus published by the Company in connection with its proposed listing on the “**Official List**” of the United Kingdom Listing Authority (“**UKLA**”) and admission (the “**Admission**”) to trading on the Main Market of the LSE, a market operated by the London Stock Exchange Group plc. The Registration Document will be published by the Company on 15 October 2018, and the Prospectus is expected to be published on or around 31 October 2018 (each a “**Publication Date**”).

The CPR has been prepared in compliance with the following requirements which together comprise the “**Requirements**”:

- The “**Prospectus Rules**” and the “**Listing Rules**” published by the Financial Conduct Authority (“**FCA**”) from time to time and governed by the UKLA, specifically under Part VI of the Financial Services and Markets Act 2000 of the United Kingdom (the “**FSMA**”);
- The “**Prospectus Directive**” (2003/71/EC) including any relevant implementing measure in each EEA Relevant Member State, specifically and the “**Prospectus Regulations**” (809/2004) published by the FCA from time to time and governed by the UKLA; and
- The “*ESMA update of the CESR recommendations: The consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive*”, published on 20 March 2013: specifically paragraphs 131 to 133, section 1b – mineral companies, Appendix I – Acceptable Internationally Recognised Mining Standards, and Appendix II – Mining Competent Persons’ Report – recommended content, hereinafter and collectively referred to as the “**CESR Recommendations**”.

### **Reporting Standard**

The reporting standard adopted for the reporting of the Mineral Resource and Ore Reserve statements included in the CPR is the “*The 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia*” (the “**JORC Code**”). The JORC Code is a reporting code which has been aligned with the Committee for Mineral Reserves International Reporting Standards (“**CRIRSCO**”) reporting template. Accordingly, SRK considers the JORC Code to be an internationally recognised reporting standard that is adopted worldwide for market-related reporting and financial investments.

### **Reliance**

The CPR is addressed to and may be relied on by the Directors of the Company, and the “**Advisors**” (Credit Suisse Securities (Europe) Limited and J.P. Morgan Securities plc), specifically in respect of compliance with the Requirements, the Reporting Standard and as appropriate Prospectus Rule 5.5.4R(2)(f). Accordingly SRK has confirmed in writing (the “**Consent Letter**”), dated on the Publication Date, that it:

- Accepts reliance as regards the CPR for any benefit of the Company and its Advisors;
- Consents to the inclusion of the CPR, and to the inclusion of any extracts from the CPR in the Prospectus;
- Confirms that all information contained in the Prospectus which is extracted from the CPR or based upon information contained in the CPR has been reviewed by SRK and that such

information as presented is accurate, balanced, complete and not inconsistent with the CPR in accordance with Prospectus Rule 5.5.4R(2)(f); and

- Takes responsibility for the CPR and declares that it has taken all reasonable care to ensure that the information contained in the CPR is, to the best of its knowledge, in accordance with the facts and contains no omission likely to affect its import.

SRK believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in this CPR. The preparation of a CPR is a complex process and does not lend itself to partial analysis or summary.

SRK has no obligation or undertaking to advise any person of any development in relation to Mineral Assets which comes to its attention after the date of this CPR or to review, revise or update the CPR or opinion in respect of any such development occurring after the date of this CPR.

### 1.3 Effective date, Base Technical Information Date and Publication Date

The effective date of the CPR is 30 September 2018 (the “**Effective Date**”). The 2018 Statements, the LoMps, the TEPs, the Environmental and Social Liabilities and the Exploration Programme reflect:

- SRK’s review and modification of the Company’s 1 January 2018 estimates reported in accordance with the State Commission of Kazakhstan on Mineral Reserves (the “**GKZ System**”) to derive audited Mineral Resource and Ore Reserve statements as at 1 July 2018 for the Mineral Assets and reported in accordance with the terms and definitions of the JORC Code;
- Detailed schedules of activities and expenditures relating to the derivation and support of the Technical and Economic Parameters as included in the Life-of-mine plans for the Mineral Assets;
- SRK’s determination of mine closure costs for all historical, current and planned infrastructure relating to the Mineral Assets and inclusive retrenchment costs comprising the Environmental and Social Liabilities reported herein; and
- Supporting details for the Company’s Exploration Programme including schedules of activities and expenditures to support the planned forecasts as reported herein.

The Base Technical Information Date is defined as 1 July 2018 which is co-incident with the reporting date for the 2018 Statements. The Publication Date of the CPR is assumed to be consistent with the Publication Date of the Registration Document, being 15 October 2018, and the Publication Date of the Prospectus, expected to be on or around 31 October 2018. As advised by the Company, as at the Publication Date of the Registration Document and the Prospectus no material change has occurred as of the Effective Date of the CPR inclusive of: the 2018 Statements; the LoMp and accompanying TEPs; the Environmental and Social Liabilities; and the Work Programme as outlined herein.

### 1.4 Verification and Validation

This CPR is dependent upon technical, financial and legal input from the Company. SRK has conducted a review and assessment of all material technical issues likely to influence: the 2018 Statements; the LoMp and accompanying TEPs; the Environmental and Social Liabilities; and the Exploration Programme. The review comprised:

- Inspection visits to Mineral Assets uranium extraction and processing operations during

October 2017 and July 2018;

- Enquiry of technical, financial and legal representatives of the Company both during site visits and during subsequent head office discussions held at various times from 1 October 2017 through 31 August 2018;
- Assessment of the Technico Economicheskiye Obosnovaniye (“**TEO**”) and other supporting technical, environmental, mineral tenure, mining contracts and other documents relating to the Mineral Assets;
- Review of historical information for the Financial 12 month period ending 31 December 2015, 2016, 2017 and six month period ending 30 June 2018;
- Reliance on the Company for: macro-economic parameters including consumer price inflation and exchange rates of local currencies reported against the United States Dollar (“**US\$**”); and input-commodity price forecasts for key consumables, notably acid and other mining and processing related consumables; and
- Reliance on UXc for the annual real terms (1 July 2018) commodity price forecasts as reported in the Section 3.2 (Main Report) of this CPR and utilised to compile the TEPs reported in Section 13.4 (Main Report) of this CPR and to assess the economic viability of the Ore Reserves as reported in the 2018 Statements.

SRK confirms that it has performed all necessary validation and verification procedures deemed necessary and/or appropriate by SRK in order to place an appropriate level of reliance on such technical information.

SRK considers that with respect to all material technical-economic matters, it has undertaken all necessary investigations to ensure compliance with the JORC Code.

In consideration of all legal aspects relating to the Mineral Assets, SRK has placed reliance on the representations by the Company that the following are correct as at the Effective Date of the CPR and remain correct until the date of the Prospectus:

- That save as disclosed in the Prospectus, the Directors of the Company are not aware of any legal proceedings that may have an influence on the rights to explore for minerals in respect of the Mineral Assets;
- That the Group is the legal owner of all relevant mineral and surface rights as reported in the Prospectus; and
- That save as expressly mentioned in the Risk Factors or Additional Information section of the main body of the Prospectus, no significant legal issue exists which would affect the likely viability of the Mineral Assets and/or the estimation and classification of the Mineral Resources and Ore Reserves, the LoMps, the Environmental and Social Liabilities and the Exploration Programme as reported herein.

## **1.5 Limitations, Reliance on Information, Declaration, Consent and Cautionary Statements**

SRK notes that this CPR has been prepared in accordance with the Requirements as defined herein. For the avoidance of doubt SRK notes that the contents of this CPR including the technical opinion as expressed herein must be read in association with the Limitations, Reliance on Information, Declaration, Consent and Cautionary Statements as reported in Section 1.5 (Main Section) of this CPR.

Save as set out in Section 1.2.3 (Main Report) of this CPR and for the responsibility arising under Prospectus Rule 5.5.4R(2)(f) to any person and to the extent there provided, to the fullest extent permitted by law SRK does not assume any responsibility and will not accept any liability

to any other person for any loss suffered by any such other person as a result of, arising out of, or in connection with this CPR or statements contained therein, required by and given solely for the purpose of complying with item 23.1 of Annex 1 to the Prospectus Directive, consenting to its inclusion in the Prospectus.

SRK has given and has not withdrawn its written consent to the inclusion of this CPR as set out in “Annex A: Competent Persons’ Report” of the Prospectus and references to this CPR in each case and its name in the form and context in which they are included, and has authorised the contents of its report and context in which they are respectively included and has authorised the contents of its report for the purposes of paragraph 5.5.4R(2)(f) of the Prospectus Rules and item 23.1 of Annex 1 of the Prospectus Directive.

This CPR uses the terms “*Mineral Resource*”, “*Measured Mineral Resource*”, “*Indicated Mineral Resource*” and “*Inferred Mineral Resource*”. United States investors and shareholders in the Company are advised that while such terms are recognised and permitted under JORC Code and Listing Rules, the U.S. Securities and Exchange Commission (“**SEC**”) does not recognise them and strictly prohibits companies from including such terms in SEC filings.

## 1.6 Responsibility Statement

In compliance with paragraph 5.5.4R(2)(f) of the Prospectus Rules and item 23.1 of Annex 1 of the Prospectus Directive SRK accepts responsibility for the information provided in the Competent Persons’ Report attached as Annex A to this Prospectus. The CPR has been prepared in compliance with the Prospectus Rules and the Listing Rules published by the FCA from time to time, the Prospectus Directive, and the European Securities and Markets Authority update of the Committee of European Securities Regulators recommendations for the consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive. Having taken all reasonable care to ensure that such is the case, SRK declares that the information contained in the CPR is, to the best of the knowledge of SRK, in accordance with the facts and contains no omission likely to affect its import. SRK has given and has not withdrawn its written consent to the inclusion of the CPR in this Prospectus and references to the CPR and SRK in in the form and context in which they are included in this Prospectus.

The scope of the CPR is limited to the uranium mining assets as reported therein, and specifically excludes all other assets of the Group as discussed in the Prospectus.

## 1.7 Indemnities Provided by the Company

The Company has provided the following indemnities to SRK:

- The Company has agreed that, to the extent permitted by law, it will indemnify SRK and its employees and officers in respect of any liability suffered or incurred as a result of or in connection with the preparation of this report albeit that this indemnity will not apply in respect of any material negligence, wilful misconduct or breach of law. The Company has also agreed to indemnify SRK and its employees and officers for time incurred and any costs in relation to any inquiry or proceeding initiated by any person except to the extent SRK or its employees and officers have been materially negligent or acted with wilful misconduct or in breach of law in which case SRK shall bear such costs; and
- In order to assist SRK in the preparation of this CPR the Company may be required to receive and process information or documents containing personal information in relation to SRK’s project personnel. The Company has agreed to comply strictly with the provisions of the Data Protection Act 1998 of the United Kingdom (“**DPA 1998**”) and all regulations and statutory instruments arising from the DPA 1998, and the Company will indemnify and keep



indemnified SRK in respect of all and any claims and costs caused by breaches of the DPA 1998.

## 1.8 Qualifications of Consultants and Competent Persons

SRK is an associate company of the international group holding company SRK Consulting (Global) Limited (the “**SRK Group**”). The SRK Group comprises some 1,400 professional staff offering expertise in a wide range of resource and engineering disciplines with 45 offices located in 20 countries.

The SRK Group’s independence is ensured by the fact that it holds no equity in any project. This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgment issues. The SRK Group has a demonstrated track record in undertaking independent assessments of resources and reserves, project evaluations and audits, CPR and independent feasibility studies on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs.

This CPR has been prepared by a team of consultants sourced from the SRK Group’s office in the United Kingdom (“**UK**”), Russian Federation (“**Russia**”), the United States of America (the “**United States**”) and Kazakhstan over a twelve month period. These consultants are specialists in the fields of geology, resource and reserve estimation and reporting, ISR Uranium operations, hydrogeology and hydrology, infrastructure, environmental management and life of mine planning.

The Competent Person who has overall responsibility for the CPR, Mineral Resources and Ore Reserves as reported herein is Dr Mike Armitage, C.Eng, C. Geol, FGS, MIMM, PhD. He is a Chartered Geologist which is a Recognised Professional Organisation (“**RPO**”) included in a list promulgated by the Australian Securities Exchange (“**ASX**”) from time to time. He is a full time employee of SRK, a corporate consultant and has over 35 years’ experience in the mining and metals industry and also has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Mike Armitage has been responsible for the reporting of Mineral Resources and Ore Reserves on various properties internationally during the past 35 years.

The Competent Person who has responsibility for the LoMp and Financial Modelling as reported herein is Dr Iestyn Humphreys, FMIMM, AIME, PhD who is a Corporate Consultant, and Practice Leader with SRK. He is a Fellow of the IMMM which is a RPO included in a list promulgated by the ASX from time to time. Iestyn Humphreys has 28 years’ experience in the mining and metals industry and also has been involved in the preparation of Competent Persons’ Reports comprising technical evaluations of various mineral assets internationally during the past five years which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code.

## 2 THE MINERAL ASSETS

### 2.1 Introduction

The following section presents summary background information with respect to the Company and the Mineral Assets.



## 2.2 Kazatomprom

The Company is a joint stock company incorporated under the laws of Kazakhstan on 21 February 1997 initially as Open Joint Stock Company Kazatomprom, with registration number 41031-1901-AO and its registered office at 10 D. Kunayev Street, 010000, Astana, Kazakhstan. The principal legislation under which the Company operates is the Law of the Republic of Kazakhstan No.415-II “*On Joint Stock Company*” dated 13 May 2013 (as amended) and the Law of the Republic of Kazakhstan No. 413-IV “*On State Property*” dated 1 March 2011 (as amended).

The Company’s status as a national company in Kazakhstan allows the Group to benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government of Kazakhstan (“**GoK**”) rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including exploration, development and production of all natural uranium in Kazakhstan.

For the 12 month period ended 31 December 2017 the Group represented approximately 20% of total global uranium primary production and approximately 40% of global ISR uranium production.

In 2018 the Company adopted a new strategy, focusing on five key considerations: (i) refocus on core mining operations; (ii) optimise mining, processing and sales volumes based on market conditions; (iii) create value through enhanced sales and marketing capabilities; (iv) implement best-practice business processes; and (v) develop industry leader corporate culture.

The Company’s strategy is underpinned by maintaining: its predominance as the largest global producer of natural uranium; preferred producer status in Kazakhstan; diversified global customer base; and low-cost of production within the uranium mining sector.

The Group’s principal assets are:

- Subsoil Use Agreements granting the Group extraction rights (through the Company and the Mining Subsidiaries) with respect to uranium deposits located in the Shu-Sarysu, Syrdarya and Northern Kazakhstan uranium mining provinces, which for 1 July 2018 reported:
  - aggregated Proved and Probable Ore Reserves of 884.7Mt grading 0.060%U (531.6ktU); and Measured, Indicated and Inferred Mineral Resources of 1,241.3Mt grading 0.054%U (674.0ktU),
  - attributable Proved and Probable Ore Reserves of 535.3Mt grading 0.058%U (312.3ktU); and Measured, Indicated and Inferred Mineral Resources of 889.7Mt grading 0.051%U (453.5ktU);
- 14 Mining Subsidiaries (Table ES 3) of which 13 include operating mines while one is an exploration property (Budenovskoye LLP). Assuming that the Transactions (defined below) are implemented, the Mining Subsidiaries classifications comprise: six subsidiaries; one Joint Venture; four Joint Operations; and three associates. For the 12 month period ended 31 December 2017 the Mining Subsidiaries reported:
  - aggregated production of 23.3ktU, sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$260.9m,
  - attributable production of 12.1ktU, sales of 30.7MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.00/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.08/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$131.5m;

- A uranium and rare metals processing facility, Ulba Metallurgic Plant JSC (“**UMP**”), which comprises facilities for fuel pellet production, with annual Uranium Metal Content Equivalent (“**UME**”) capacity of 3,728 tonnes of U<sub>3</sub>O<sub>8</sub>, 317t of UO<sub>2</sub> powder manufactured from UF<sub>6</sub>, 155t of UO<sub>2</sub> powder manufactured from scrap and 108t of fuel pellets, and 626.9t, 141.9t and 25.2t of beryllium, tantalum and niobium rare metal products, respectively;
- A uranium trading subsidiary, Trade House KazakAtom AG (“**THK**”), based in Zug, Switzerland;
- Complementary ancillary businesses, including:
  - two sulphuric acid plants with combined annual production capacity of 680kt of sulphuric acid; and
- A geology and geotechnology company, Volkovgeologia JSC (100%), which is primarily engaged in prospecting, exploration and analysis of uranium deposits on behalf of the Group.

With effect from 1 January 2018, the Company increased its equity interest in its joint venture with Cameco, JV Inkai LLP, from 40% to 60%, and, by the end of 31 December 2018, the Company through a various transactions (the “**Transactions**”) intends to increase its equity interest in JV Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and its equity interest in Khorasan-U LLP, a joint venture with RosAtom and Marubeni Corporation, from approximately 34% to 50%. Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases. Notwithstanding the above, and in alignment with that reported in the Registration Document and the Prospectus, Section 7.5 presents attributable Mineral Resources and Ore Reserves as at 1 July 2018 on a pre-Transaction basis.

**Table ES 3 Mining Subsidiary Classification<sup>(1)</sup>**

Classification	Mining Subsidiary	Equity Interest (%)
Subsidiary	Kazatomprom-SaUran LLP	100.00
	Ortalyk LLP	100.00
	RU-6 LLP	100.00
	Appak LLP	65.00
	JV Inkai LLP	60.00
	Baiken-U LLP	52.50
Joint Venture	Semizbai-U LLP	51.00
Joint Operation	Budenovskoye LLP	51.00
	JV Akbastau JSC	50.00
	Karatau LLP	50.00
Associates	JV Zarechnoye JSC	49.98
	JV Katco LLP	49.00
	JV Khorassan-U LLP	50.00
	JV SMCC LLP	30.00

<sup>(1)</sup> As of 30 June 2018, the Company’s interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

## 2.3 Location, Tenure and Environmental Setting

The Mineral Assets are located in three of the six uranium geological provinces of Kazakhstan, have a combined total licence areas of 2,059.27km<sup>2</sup> (Shu-Sarysu at 1,469.69km<sup>2</sup>; Syrdarya at 545.58km<sup>2</sup>; and North Kazakhstan at 44.00km<sup>2</sup>) and include 30 deposits/blocks categorised as: 26 Producing Properties (“**PP**”); one Development Property (“**DP**”); two Advanced Exploration Properties (“**AEP**”); and two Exploration Properties (“**EP**”). In addition the Company’s Exploration Programme covers a further six EPs located in three regions in which the Company is active. The Mineral Assets are largely held through 14 Mining Subsidiaries (Table ES 4) which in conjunction with the Company are directly responsible for uranium mining and downstream processing activities. Thirteen of the Mining Subsidiaries include Producing Properties while one Mining Subsidiary includes only Exploration Properties (Budenovskoye

## LLP)

Historical development of the Mineral Assets dates from initial discovery in 1963 with the latest deposit discovered in 1982. Initial production commenced at Kazatomprom-SaUran LLP and RU-6 LLP in 1997.

**Table ES 4 Mineral Assets development stage, equity interest and tenure key dates and area**

Mining Subsidiary/Deposit	Uranium Province	Stage	Equity Interest	Tenure key dates and area						
				Expiry (year)	(years)	Discovery (year)	Op. Start (year)	LoMp Depletion <sup>(1)</sup> (date)	(years)	Area (km <sup>2</sup> )
<b>Production</b>										
<b>Kazatomprom-SaUran LLP<sup>(2)</sup></b>			<b>100.00</b>							
Uvanas	Shu-Sarysu	PP		2022	4.5	1963	1997	2020	2.5	84.48
Eastern Mynkuduk	Shu-Sarysu	PP		2022	4.5	1973	1997	2026	8.5	28.97
Kanzhugan	Shu-Sarysu	PP		2022	4.5	1972	1997	2040	22.5	60.83
South Moinkum (Southern part)	Shu-Sarysu	PP		2019	1.5	1976	2001	2020	2.5	17.40
Central Moinkum	Shu-Sarysu	PP		2039	21.5	1974	2014	2040	22.5	61.22
<b>Total</b>					<b>21.5</b>	<b>1963</b>	<b>1997</b>	<b>2040</b>	<b>22.5</b>	<b>252.90</b>
<b>Ortalyk LLP<sup>(2)</sup></b>			<b>100.00</b>							
Zhalpak	Shu-Sarysu	DP		2022	4.5	1964	2018	2020	2.5	145.80
Central Mynkuduk	Shu-Sarysu	PP		2033	14.5	1976	2007	2032	14.5	40.60
<b>Total</b>					<b>14.5</b>	<b>1964</b>	<b>2007</b>	<b>2032</b>	<b>14.5</b>	<b>186.40</b>
<b>RU-6 LLP<sup>(2)</sup></b>			<b>100.00</b>							
Northern Karamurun	Syrdarya	PP		2022	4.5	1979	1997	2031	13.5	59.58
Southern Karamurun	Syrdarya	PP								
<b>Total</b>					<b>4.5</b>	<b>1979</b>	<b>1997</b>	<b>2031</b>	<b>13.5</b>	<b>59.58</b>
<b>Appak LLP</b>			<b>65.00</b>							
Western Mynkuduk	Shu-Sarysu	PP		2035	17.5	1976	2008	2036	18.5	133.46
<b>JV Inkai LLP<sup>(3)</sup></b>			<b>60.00</b>							
Blocks 1, Inkai (a)	Shu-Sarysu	PP		2045	27.5	1976	2008	2047	29.5	139.00
Blocks 1, Inkai (b)	Shu-Sarysu	PP		2045	27.5	1976	2008	2046	28.5	
Blocks 1, Inkai (c)	Shu-Sarysu	PP		2045	27.5	1976	2015	2052	34.5	
<b>Total</b>					<b>27.5</b>	<b>1976</b>	<b>2008</b>	<b>2052</b>	<b>34.5</b>	<b>139.00</b>
<b>Semizbai-U LLP</b>			<b>51.00</b>							
Semizbai	Northern Kazakhstan	PP		2031	13.5	1973	2009	2040	22.5	27.20
Irkol	Syrdarya	PP		2030	12.5	1976	2008	2041	23.5	44.00
<b>Total</b>					<b>13.5</b>	<b>1973</b>	<b>2008</b>	<b>2041</b>	<b>23.5</b>	<b>71.20</b>
<b>JV Akbastau JSC</b>			<b>50.00</b>							
Block 1 Budenovskoye	Shu-Sarysu	PP		2037	19.5	1976	2009	2037	19.5	1.586
Block 3 Budenovskoye	Shu-Sarysu	PP		2038	20.5	1976	2009	2039	21.5	1.123
Block 4 Budenovskoye	Shu-Sarysu	PP			20.5	1976	2009	2039	21.5	
<b>Total</b>					<b>20.5</b>	<b>1976</b>	<b>2009</b>	<b>2039</b>	<b>21.5</b>	<b>2.71</b>
<b>Karatau LLP</b>			<b>50.00</b>							
Block 2, Budenovskoye	Shu-Sarysu	PP		2032	14.5	1979	2007	2033	15.5	17.28
<b>JV Zarechnoye JSC</b>			<b>49.98</b>							
Zarechnoye	Syrdarya	PP		2028	10.5	1977	2007	2023	5.5	38.00
<b>JV Katco LLP</b>			<b>49.00</b>							
Southern Moinkum (Northern part)	Shu-Sarysu	PP		2039	21.5	1976	2001	2025	7.5	15.92
Tortkuduk	Shu-Sarysu	PP		2039	21.5	1976	2007	2033	15.5	29.81
<b>Total</b>					<b>21.5</b>	<b>1976</b>	<b>2001</b>	<b>2033</b>	<b>15.5</b>	<b>45.73</b>
<b>JV Khorassan-U LLP<sup>(4)</sup></b>			<b>50.00</b>							
Block Kharassan 1, North Kharassan	Syrdarya	PP		2058	40.5	1972	2008	2036	18.5	70.80
<b>JV SMCC LLP</b>			<b>30.00</b>							
Akdala	Shu-Sarysu	PP		2026	8.5	1982	2004	2025	7.5	37.54
Block 4, Inkai	Shu-Sarysu	PP		2029	11.5	1976	2007	2036	18.5	79.37
<b>Total</b>					<b>11.5</b>	<b>1976</b>	<b>2004</b>	<b>2036</b>	<b>18.5</b>	<b>116.91</b>
<b>Baiken-U LLP<sup>(4)</sup></b>			<b>52.50</b>							
Block Kharassan 2, North Kharassan	Syrdarya	PP		2055	37.5	1972	2009	2032	14.5	350.00
<b>Exploration</b>										
<b>Kazatomprom</b>			<b>100.00</b>							
Block 2 Inkai	Shu-Sarysu	AEP		2022	4.5	1976	2008	n/a	n/a	183.2
Block 3 Inkai	Shu-Sarysu	AEP		2022	4.5	1976	2015	n/a	n/a	240.8
<b>Total</b>					<b>4.5</b>	<b>1976</b>	<b>2008</b>			<b>424.00</b>
<b>Budenovskoye LLP<sup>(5)</sup></b>			<b>51.00</b>							
Block 6 Budenovskoye	Shu-Sarysu	EP		2022	4.5	1976	2017	n/a	n/a	151.30
Block 7 Budenovskoye	Shu-Sarysu	EP		2022	4.5	1976	2017			
<b>Total</b>					<b>4.5</b>	<b>1976</b>	<b>2017</b>			<b>151.30</b>
<b>Grand Total</b>										<b>2,059.27</b>

(1) LoMp: date of depletion of Ore Reserves in the current Life of Mine plans for the Mineral Assets.

(2) As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

(3) For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

(4) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

(5) The Exploration Properties noted only include details for Block 6 Budenovskoye and Block 7 Budenovskoye and do not include details for a further 9 Exploration Properties referenced in Section 8 and Section 13.3.7.

In addition to the producing 13 Mining Subsidiaries, the Company either directly or through other subsidiaries holds contracts with the GoK to undertake exploration at several assets including:

- Budenovskoye 6 and 7, Togusken and East Zhalpak which are all located in the Shu-Sarysu Basin and have been explored since 2013, 2015 and 2017 respectively;
- Akkum which is located in the Syrdarya Basin where exploration started in 2017; and
- Inkai 2 and Inkai 3 which were formally part of JV Inkai LLP, and are located in the Shu-Sarysu Basin, but which were given up by this JV in H1 2018 and which the Company now has contracts in place to explore in its own right.

The Company's Mineral Assets are located in four (Figure ES 1) of the principal administrative provinces Kazakhstan: Kyzylorda Province (Shieli and Zhanakorgan districts); South Kazakhstan Province (Sozak district); and North-Kazakhstan Province (Ualikhanovsky district); and Amkola Province (Enbekshilder district). Uranium deposits in Kazakhstan are grouped into six uranium provinces (Figure ES 2).

With the exception of the Semizbai deposit located in Northern Kazakhstan which straddles the North-Kazakhstan Province and the Amkola Province, the Company's deposits are located in the south of Kazakhstan within the Shu-Sarysu (23) and Syrdarya (6) uranium provinces.

All mines are in terrain that is both sparsely vegetated and sparsely populated. The natural vegetation at the mine sites ranges from desert, through open shrubland to steppe. Only six mines are within 10km of human settlements, all of which are small towns or villages. In all regions the climate is continental, with hot summers and cold winters and low rainfall (300mm or less). The main feature in Syrdarya Basin is the perennial Syrdarya River, which has a vast catchment outside of Kazakhstan and originates in the Kyrgyzstan highlands. Habitats in the Syrdarya Basin range from tugai forest in the riparian zone along parts of the river, through shrubland and grassland near the river, to desert (Kyzylkum desert). The main land use in the basin other than uranium mining is agriculture. Livestock farming occurs near the Mineral Assets in the basin and crop cultivation is undertaken near the Karamurun deposits.

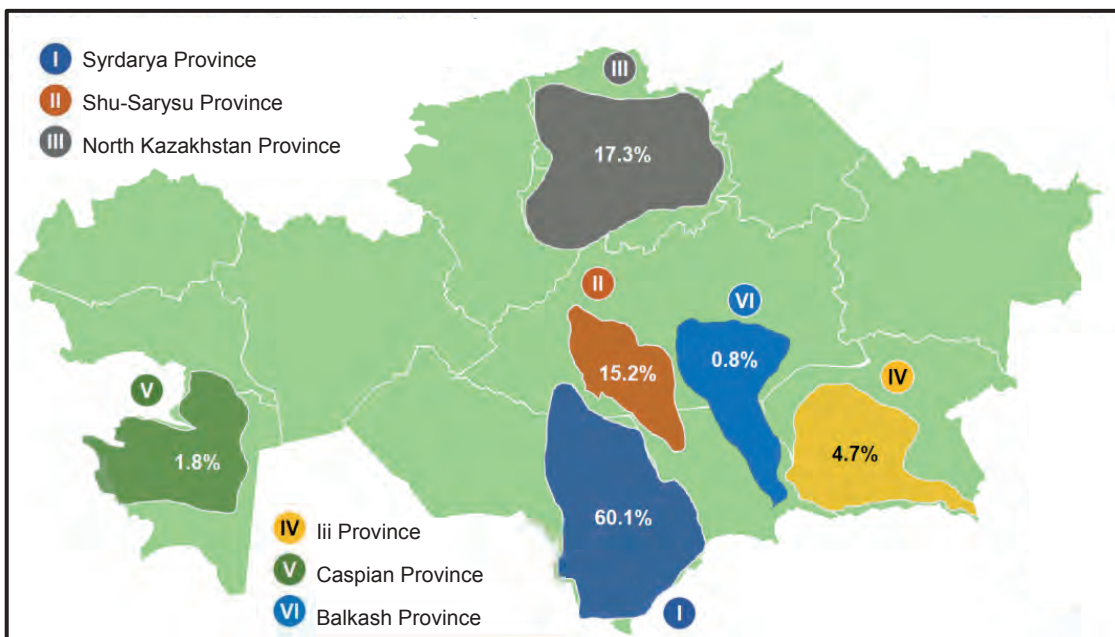
Rainfall is lowest in the Shu-Sarysu basin (140mm or less) and consequently desert habitats prevail (Moinkum and Betpak-Dala deserts). The main land use in this basin other than uranium mining is nomadic livestock grazing. Steppe grassland predominates in Semizbai depression in the region of the Semizbai deposits. The main occupation of the local population is livestock grazing and grain farming.



**Figure ES 1: Kazakhstan Country Map and location of the Mineral Assets mining and processing operations**



**Figure ES 2: Kazakhstan Uranium Provinces indicating distribution of GKZ System ‘reserve’ uranium content distribution**



**2.4 Historical Statistics**

Table ES 5 presents the historical production and economic statistics for the Mineral Assets for the Mining Subsidiaries reported on both an aggregated and attributable basis for the 12 month periods ended 31 December for 2015, 2016 and 2017 and for the six month period ended 30 June 2018.

**Table ES 5 Mineral Assets historical summary statistics (2015 through H2 2018)**

Statistic	Units	Aggregated (100%)				Attributable			
		2015	2016	2017	2018H1	2015	2016	2017	2018H1
<b>Production</b>									
Mined	(Mt)	44.22	45.79	43.12	20.07	25.88	26.59	24.39	11.56
Grade	(%U)	0.061	0.061	0.061	0.061	0.056	0.056	0.056	0.056
Content	(tU)	26,778	27,817	26,354	12,325	14,488	14,802	13,633	6,479
Final Product	(tU)	23,607	24,586	23,321	10,905	12,766	13,096	12,094	5,771
Recovery	(%)	88.16	88.38	88.49	88.48	88.11	88.47	88.71	89.07
<b>Sales</b>									
Final Product	(tU)	22,529	23,566	23,164	8,961	11,945	13,146	13,264	5,484
	(MlbU)	49.67	51.93	51.07	19.76	26.33	28.98	29.24	12.09
	(MlbU <sub>3</sub> O <sub>8</sub> )	58.57	61.24	60.22	23.30	31.05	29.98	30.53	12.96
<b>Macro Economics</b>									
Exchange Rate	(US\$:KZT)	222	342	326	326	222	342	326	326
<b>Commodity Price</b>									
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.32	25.72	21.31	21.18	39.61	26.57	21.53	21.13
	(%)	2.39	2.56	2.51	2.10	1.82	1.92	1.92	1.47
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.38	25.06	20.78	20.73	38.89	26.06	21.12	20.82
<b>Financial</b>									
Sales Revenue	(US\$m)	2,248.2	1,534.9	1,251.3	483.0	1,207.6	781.4	644.7	269.9
Opex	(US\$m)	(902.5)	(615.7)	(624.3)	(256.1)	(542.0)	(366.4)	(366.9)	(158.4)
EBITDA	(US\$m)	1,345.7	919.2	627.0	226.9	665.6	415.0	277.8	111.5
Capex	(US\$m)	(298.8)	(213.5)	(260.9)	(93.4)	(156.8)	(107.6)	(130.5)	(51.2)
<b>Unit Costs</b>									
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.41	10.05	10.37	10.99	17.45	12.22	12.02	12.22
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.57	8.20	8.31	8.82	14.34	10.07	9.74	9.92
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	20.29	13.42	14.51	15.00	22.19	15.67	16.09	16.28

### 3 TECHNICAL OPINION

#### 3.1 Introduction

The following section includes discussion and comment on the key technical outcomes pertaining to review of the Mineral Assets completed by SRK in authoring this CPR. Specifically this section focuses on the: commodity prices and macro-economic assumptions; Mineral Resources and Ore Reserves; Environmental and Social; Life-of-Mine plans and Technical Economic Parameters; the Exploration Programme; and Risks and Opportunities.

#### 3.2 Commodity Prices and Macro-Economics

The Company has mandated a commodity market specialist, UxC to provide an overview and analysis of the uranium market and specifically to provide to SRK annual schedules of the benchmark spot market price for U<sub>3</sub>O<sub>8</sub>, which is reproduced and expressly relied upon herein. The spot price assumptions have been incorporated into the LoMp analysis reported herein and details relating to basis of the price assumptions including demand-supply-price analysis for both historical and the LoMp periods are included in the section captioned “*Uranium Industry and Market Overview*” contained in the Registration Document and the Prospectus.

The pricing forecasts (spot price forecast) as developed by UxC is developed from UxC’s U-PRICE™ econometric model to account for key factors influencing the uranium market, which include UxC Requirements Model (“**URM**”) Base Case Demand, Market Outlook & Perception, Primary Production (Base Case), Secondary Supplies, Separative Work Units (“**SWU**” – Enrichment Services) Market Developments and Exchange Rates. During periods of oversupply, the spot price has a history of trending lower as available inventories are offered at a discount to the market. Likewise, in periods of projected undersupply, the spot price has a history of strengthening to incentivise bringing more primary production online to meet higher demand levels.

The real terms (1 July 2018) US\$ price is forecast to increase from US\$26.09/lbU<sub>3</sub>O<sub>8</sub> in 2018 to US\$31.08/lbU<sub>3</sub>O<sub>8</sub> in 2025. UxC Base Case Demand growth is relatively flat during this period, but cuts to existing production and depletion of some existing mines, along with the drawdown of secondary supplies in the period, contribute to higher prices. Further, many long-term legacy contracts will end in the early 2020s, forcing some utilities to purchase greater quantities of uranium to meet forward reactor requirements.



For the period 2025 through 2027 period, the spot price is forecast to increase more sharply to US\$35.75/lbU<sub>3</sub>O<sub>8</sub> due to stronger demand growth from China combined with declining primary production as two major uranium projects – Rössing and Cigar Lake – are expected to end production. Secondary supplies are expected to meet only 17% to 20% of annual demand in the period. The spot price is forecast to continue to trend higher beyond 2027, albeit at a slower rate, as new primary production is expected to fill the widening gap between supply and demand, especially as secondary supplies drop to only 12% of annual demand by 2030. From 2027 through 2035, the constant U.S. dollar midpoint price is forecast to increase by 22% to US\$43.53/lbU<sub>3</sub>O<sub>8</sub> and thereafter remain at this level.

The key outcomes from the market outlook assessment provided by UxC are:

- An assumed consumer price inflation rate of 2.00% per annum for the United States dollar (US\$); and
- In real (1 July 2018) terms mid-point prices of US\$26.09/lbU<sub>3</sub>O<sub>8</sub>, US\$29.03/lbU<sub>3</sub>O<sub>8</sub> and US\$37.75/lbU<sub>3</sub>O<sub>8</sub> for 2018, 2022 and 2030 respectively.

Table ES 6 and Table ES 7 presents the annual pricing assumptions in 1 July 2018 real terms where the assumed unit conversions comprise: 2,204.62262 lbs in one metric tonne; and U to U<sub>3</sub>O<sub>8</sub> mass conversion of 1.17925. The exchange rate between the United States Dollar (“US\$”) and Kazakhstan Tenge (“KZT”) is 340 which is assumed to remain constant in real terms. Historical pricing for the uranium spot market is included in Figure ES 3.

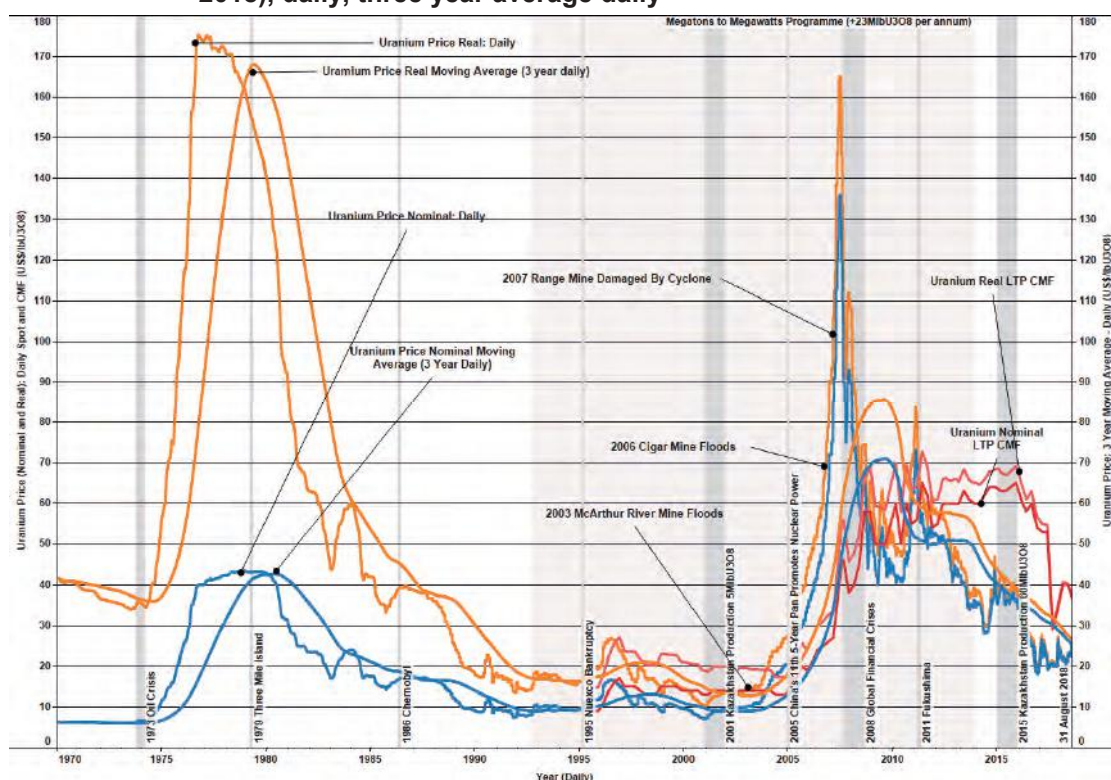
**Table ES 6 Commodity Pricing Assumptions (1 July 2018 real terms): 2018 through 2030**

Price Assumption	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
	(US\$/lbU)	30.76	32.80	33.98	34.45	34.23	34.32	35.27	36.66	39.29	42.16	42.95	44.18	44.52
	(US\$/kg)	67.82	72.31	74.90	75.96	75.47	75.66	77.75	80.81	86.62	92.95	94.70	97.41	98.14
Exchange Rate	(KZT to 1 US\$)	340	340	340	340	340	340	340	340	340	340	340	340	340
	(KZT/lbU)	10,459	11,151	11,552	11,715	11,639	11,668	11,991	12,463	13,358	14,335	14,605	15,022	15,135
	(KZT/kgU)	23,058	24,584	25,467	25,826	25,659	25,724	26,435	27,476	29,450	31,604	32,198	33,118	33,368

**Table ES 7 Commodity Pricing Assumptions (1 July 2018 real terms): 2031 through 2035**

Price Assumption	Units	2031	2032	2033	2034	2035
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
	(US\$/lbU)	46.65	48.98	51.18	51.39	51.33
	(US\$/kg)	102.84	107.99	112.83	113.29	113.17
Exchange Rate	(KZT to 1 US\$)	340	340	340	340	340
	(KZT/lbU)	15,861	16,655	17,401	17,472	17,453
	(KZT/kgU)	34,967	36,717	38,363	38,519	38,477

**Figure ES 3: Historical Uranium Spot Market Prices (nominal and real 1 September 2018), daily, three year average daily**



### 3.3 Mineral Resources and Ore Reserves

SRK has not independently re-calculated Mineral Resource and Ore Reserve estimates for the Company's operations but has, rather, reviewed the quantity and quality of the underlying data and the methodologies used to derive and classify the estimates as reported by the Company and made an opinion on these estimates including the tonnes, grade and quality of the uranium bearing sandstones planned to be exploited in the current LoMps, based on this review. SRK has then used this knowledge to derive audited Mineral Resource and Ore Reserve statements reported in accordance with the terms and definitions of the JORC Code.

The Mineral Resource and Ore Reserve statements as included herein are reported in accordance with the terms and definitions of the JORC Code and are valid as at 1 July 2018. The differences between these estimates and those reported in accordance with the GKZ System in January 2018 and by the Company in July 2018 are a result of:

- The removal of material which is sterilised by surface infrastructure or which, following the design process, are no longer planned to be exploited by the Company;
- Technical work undertaken by the Company during the first six months of 2018 which has enabled more of the reported Mineral Resources to be reported as Ore Reserves;
- The preparation of updated LoM Plans by the Company; and
- Depletion during the first six months of 2018.

It should, however, be noted that work is ongoing by the Company and so, in addition to normal changes in Mineral Resources and Ore Reserves as a result of depletion, these may also change during the remainder of 2018 as this work is completed. Notably:

- The Company continues to undertake exploration at several of its operations which may enable the reporting of additional Mineral Resources to those presented in this letter;

- The Company may undertake further technical work on several of its operations which will enable it to convert more of its currently reported Mineral Resources as Ore Reserves; and
- The Company may negotiate changes to its contracts with the GoK and so the stated Ore Reserves may change to reflect these.

The Competent Person who has overall responsibility for the Mineral Resources and Ore Reserves as reported herein is Dr Mike Armitage, C.Eng, C. Geol, FGS, MIMM, PhD. He is a full time employee of SRK, a corporate consultant and has over 35 years' experience in the mining and metals industry and also has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Mike Armitage has been responsible for the reporting of Mineral Resources and Ore Reserves on various properties internationally during the past 35 years.

### 3.3.1 Mineral Resources

As at the Effective Date of the CPR, the total Mineral Resources (Table ES 8; Table ES 9) reported by SRK in this CPR for the Mining Subsidiaries totals 1,241.3Mt grading 0.054%U and containing 674.0ktU comprising:

- Measured and Indicated Mineral Resources totalling 1,237.1Mt grading 0.054%U and containing 671.9ktU comprising
  - Measured Mineral Resources totalling 508.1Mt grading 0.062%U and containing 314.7ktU;
  - Indicated Mineral Resources totalling 729.0Mt grading 0.049%U and containing 357.2ktU; and
- Inferred Mineral Resources totalling 4.2Mt grading 0.049%U and containing 2.0ktU.

On an attributable basis (Table ES 10) the total Mineral Resources reported by SRK in this CPR for the Mining Subsidiaries totalled 889.7Mt grading 0.051%U and containing 453.5ktU comprising:

- Measured and Indicated Mineral Resources totalling 887.7Mt grading 0.051%U and containing 452.5ktU comprising
  - Measured Mineral Resources totalling 349.5Mt grading 0.059%U and containing 204.9ktU;
  - Indicated Mineral Resources totals 538.1Mt grading 0.046%U and containing 247.6ktU; and
- Inferred Mineral Resources totalling 2.1Mt grading 0.049%U and containing 1.0ktU.

In all instances SRK notes that:

- The Mineral Resource statements have an effective date of 1 July 2018;
- The Mineral Resources statements as reported herein are reported in accordance with the terms and definitions of the JORC Code;
- The Mineral Resources have been assessed with regards to economic potential assuming appropriate modifying factors and cut-off-grade determinations as reported in Table 7-11 included in the Main Report of this CPR and assuming a 30% premium in respect of the Long Term Prices which are utilised to support the reporting of Ore Reserves; and
- The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves.

As commented above, SRK has re-classified the resource estimates in accordance with the

terms and definitions proposed in the JORC Code. Definitions for the different categories used by this reporting code are given in the glossary provided. In doing this, SRK has typically reported those blocks classified as B or C1 by the Company in accordance with the GKZ System as Measured and those blocks classified as C2 by the Company as Indicated.

In the cases where production blocks delineated by production drilling have been consistently different (+/-20%) to the original resource, even where there was not a systematic bias, SRK has classified the C1 mineralisation as Indicated and only that part of the C1 which has been delineated by production drilling as Measured.

Notwithstanding the above, in the cases where the drilling undertaken as part of the production process has consistently delineated less resource than originally estimated (notably at Zarechnoye), SRK has reduced the estimated resource by a factor reflecting this and where the reconciliation has been poor or variable SRK has re-reported blocks classed as C1 by the Company as Indicated and C2 by the Company as Inferred. In the case of Zarechnoye, SRK applied a factor of 0.7.

SRK has not attempted to optimise the Company's LoMps. Consequently, SRK's audited Mineral Resource statements are confined to those areas that both have the potential to be mined economically and which are currently being considered for mining only. They also reflect the quantity of in-situ uranium planned to be extracted and do not take account of metallurgical recovery both as part of the in-situ leaching process and within the plant itself which typically varies between 80% and 90%.

**Table ES 8 SRK Audited Mineral Resource Statement (Measured and Indicated) as at 1 July 2018 by Mining Subsidiary and Regional sub-division**

Entity/Deposit	Measured Mineral Resources			Indicated Mineral Resources			Measured + Indicated Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	-	-	-	-	-	-	-	-	-
Eastern Mynkuduk	15.6	0.030	4.7	6.9	0.030	2.1	22.6	0.030	6.8
Kanzhugan	3.5	0.042	1.5	27.6	0.038	10.5	31.1	0.038	12.0
South Moinkum (Southern part)	0.1	0.039	0.1	1.6	0.048	0.8	1.8	0.047	0.8
Central Moinkum	0.7	0.056	0.4	19.8	0.058	11.5	20.5	0.058	11.9
<b>Total</b>	<b>20.0</b>	<b>0.033</b>	<b>6.6</b>	<b>55.9</b>	<b>0.044</b>	<b>24.8</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>									
Zhalpak	0.6	0.045	0.3	44.3	0.032	14.2	44.9	0.032	14.5
Central Mynkuduk	49.4	0.047	23.2	14.7	0.038	5.6	64.1	0.045	28.8
<b>Total</b>	<b>50.0</b>	<b>0.047</b>	<b>23.5</b>	<b>59.0</b>	<b>0.033</b>	<b>19.8</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>									
Northern Karamurun	6.3	0.069	4.3	2.3	0.050	1.1	8.6	0.064	5.5
Southern Karamurun	7.1	0.081	5.7	5.3	0.089	4.7	12.4	0.084	10.4
<b>Total</b>	<b>13.4</b>	<b>0.075</b>	<b>10.1</b>	<b>7.5</b>	<b>0.077</b>	<b>5.8</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>									
Western Mynkuduk	13.4	0.032	4.3	41.4	0.036	14.9	54.8	0.035	19.2
<b>JV Inkai LLP</b>									
Block 1 Inkai (a)	36.4	0.076	27.6	9.8	0.061	6.0	46.1	0.073	33.6
Block 1 Inkai (b)	32.8	0.051	16.7	88.1	0.053	46.7	120.9	0.052	63.4
Block 1 Inkai (c)	80.7	0.047	37.9	17.3	0.049	8.5	98.0	0.047	46.4
<b>Total</b>	<b>149.8</b>	<b>0.055</b>	<b>82.3</b>	<b>115.1</b>	<b>0.053</b>	<b>61.1</b>	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>
<b>Semizbai-U LLP</b>									
Semizbai	17.3	0.057	9.9	2.5	0.053	1.3	19.8	0.056	11.2
Irkol	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>39.5</b>	<b>0.048</b>	<b>19.0</b>	<b>20.6</b>	<b>0.043</b>	<b>8.9</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	9.8	0.107	10.5	5.3	0.088	4.6	15.1	0.100	15.1
Block 3 Budenovskoye	21.0	0.071	14.9	6.7	0.100	6.7	27.7	0.078	21.7
Block 4 Budenovskoye	2.5	0.141	3.5	4.2	0.084	3.6	6.7	0.105	7.1
<b>Total</b>	<b>33.4</b>	<b>0.087</b>	<b>29.0</b>	<b>16.2</b>	<b>0.092</b>	<b>14.9</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>									
Block 2 Budenovskoye	31.8	0.097	30.8	27.5	0.063	17.3	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.6	0.060	2.2	4.4	0.060	2.7	8.0	0.060	4.8
<b>JV Katco LLP</b>									
Southern Moinkum (Northern part)	10.0	0.063	6.3	5.5	0.057	3.1	15.5	0.061	9.4
Tortkuduk	20.0	0.122	24.4	22.1	0.118	26.1	42.1	0.120	50.5
<b>Total</b>	<b>29.9</b>	<b>0.102</b>	<b>30.7</b>	<b>27.7</b>	<b>0.106</b>	<b>29.3</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	13.0	0.106	13.8	27.0	0.107	28.9	40.0	0.107	42.6
<b>JV SMCC LLP</b>									
Akdala	7.3	0.057	4.2	2.9	0.057	1.7	10.2	0.057	5.8

Entity/Deposit	Measured Mineral Resources			Indicated Mineral Resources			Measured + Indicated Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
Block 4, Inkai	11.5	0.045	5.2	89.2	0.037	33.0	100.6	0.038	38.2
<b>Total</b>	<b>18.8</b>	<b>0.050</b>	<b>9.3</b>	<b>92.1</b>	<b>0.038</b>	<b>34.6</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	11.3	0.114	12.9	8.7	0.109	9.5	20.0	0.112	22.4
<b>Kazatomprom</b>									
Block 2 Inkai	-	-	-	133.8	0.031	42.0	133.8	0.031	42.0
Block 3 Inkai	80.3	0.050	40.4	92.1	0.046	42.7	172.3	0.048	83.1
<b>Total</b>	<b>80.3</b>	<b>0.050</b>	<b>40.4</b>	<b>225.9</b>	<b>0.038</b>	<b>84.7</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>	<b>508.1</b>	<b>0.062</b>	<b>314.7</b>	<b>729.0</b>	<b>0.049</b>	<b>357.2</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>
<b>Regional</b>									
Shu-Sarysu	427.4	0.060	256.9	660.7	0.046	301.5	1,088.1	0.051	558.3
Syrdarya	58.6	0.083	48.8	50.2	0.096	48.2	108.8	0.089	96.9
Northern Kazakhstan	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>508.1</b>	<b>0.062</b>	<b>314.7</b>	<b>729.0</b>	<b>0.049</b>	<b>357.2</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>

**Table ES 9 SRK Audited Mineral Resource Statement (Inferred and Total) as at 1 July 2018 by Mining Subsidiary**

Mining Subsidiary /Deposit	Inferred Mineral resources			Total Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>						
Uvanas	-	-	-	-	-	-
Eastern Mynkuduk	-	-	-	22.6	0.030	6.8
Kanzhugan	-	-	-	31.1	0.038	12.0
South Moinkum (Southern part)	-	-	-	1.8	0.047	0.8
Central Moinkum	-	-	-	20.5	0.058	11.9
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>						
Zhalpak	-	-	-	44.9	0.032	14.5
Central Mynkuduk	-	-	-	64.1	0.045	28.8
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>						
Northern Karamurun	-	-	-	8.6	0.064	5.5
Southern Karamurun	-	-	-	12.4	0.084	10.4
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>						
Western Mynkuduk	-	-	-	54.8	0.035	19.2
<b>JV Inkai LLP</b>						
Blocks 1, Inkai (a)	-	-	-	46.1	0.073	33.6
Blocks 1, Inkai (b)	-	-	-	120.9	0.052	63.4
Blocks 1, Inkai (c)	-	-	-	98.0	0.047	46.4
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>
<b>Semizbai-U LLP</b>						
Semizbai	-	-	-	19.8	0.056	11.2
Irkol	-	-	-	40.2	0.041	16.7
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>						
Block 1 Budenovskoye	-	-	-	15.1	0.100	15.1
Block 3 Budenovskoye	-	-	-	27.7	0.078	21.7
Block 4 Budenovskoye	-	-	-	6.7	0.105	7.1
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>						
Block 2, Budenovskoye	-	-	-	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>						
Zarechnoye	4.2	0.049	2.0	12.2	0.056	6.9
<b>JV Katco LLP</b>						
Southern Moinkum (Northern part)	-	-	-	15.5	0.061	9.4
Tortkuduk	-	-	-	42.1	0.120	50.5
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>						
Block Kharassan 1, North Kharassan	-	-	-	40.0	0.107	42.6
<b>JV SMCC LLP</b>						
Akdala	-	-	-	10.2	0.057	5.8
Block 4, Inkai	-	-	-	100.6	0.038	38.2
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>						
Block Kharassan 2, North Kharassan	-	-	-	20.0	0.112	22.4
<b>Kazatomprom</b>						
Block 2 Inkai	-	-	-	133.8	0.031	42.0
Block 3 Inkai	-	-	-	172.3	0.048	83.1
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>	<b>4.2</b>	<b>0.049</b>	<b>2.0</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>
<b>Regional</b>						
Shu-Sarysu	-	-	-	1,088.1	0.051	558.3
Syrdarya	4.2	0.049	2.0	112.9	0.088	99.0
Northern Kazakhstan	-	-	-	40.2	0.041	16.7
<b>Total</b>	<b>4.2</b>	<b>0.049</b>	<b>2.0</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>



**Table ES 10 SRK Audited Mineral Resource Statement (Attributable) as at 1 July 2018 by Mining Subsidiary**

Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Measured + Indicated (Mt) (%U) (ktU)			Attributable Total Mineral Resources (Mt) (%U) (ktU)		
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>							
Uvanas		Shu-Sarysu	-	-	-	-	-	-
Eastern Mynkuduk		Shu-Sarysu	22.6	0.030	6.8	22.6	0.030	6.8
Kanzhugan		Shu-Sarysu	31.1	0.038	12.0	31.1	0.038	12.0
South Moinkum (Southern part)		Shu-Sarysu	1.8	0.047	0.8	1.8	0.047	0.8
Central Moinkum		Shu-Sarysu	20.5	0.058	11.9	20.5	0.058	11.9
<b>Total</b>			<b>75.9</b>	<b>0.041</b>	<b>31.4</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>	<b>100.00</b>							
Zhalpak		Shu-Sarysu	44.9	0.032	14.5	44.9	0.032	14.5
Central Mynkuduk		Shu-Sarysu	64.1	0.045	28.8	64.1	0.045	28.8
<b>Total</b>			<b>109.1</b>	<b>0.040</b>	<b>43.3</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>	<b>100.00</b>							
Northern Karamurun		Syrdarya	8.6	0.064	5.5	8.6	0.064	5.5
Southern Karamurun		Syrdarya	12.4	0.084	10.4	12.4	0.084	10.4
<b>Total</b>			<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>							
Western Mynkuduk		Shu-Sarysu	35.6	0.035	12.5	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>							
Blocks 1, Inkai (a)		Shu-Sarysu	27.7	0.073	20.2	27.7	0.073	20.2
Blocks 1, Inkai (b)		Shu-Sarysu	72.5	0.052	38.0	72.5	0.052	38.0
Blocks 1, Inkai (c)		Shu-Sarysu	58.8	0.047	27.8	58.8	0.047	27.8
<b>Total</b>			<b>159.0</b>	<b>0.054</b>	<b>86.0</b>	<b>159.0</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>							
Semizbai		Northern Kazakhstan	10.1	0.056	5.7	10.1	0.056	5.7
Irkol		Syrdarya	20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>			<b>30.6</b>	<b>0.046</b>	<b>14.2</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>
<b>JV Akbastau JSC</b>	<b>50.00</b>							
Block 1 Budenovskoye		Shu-Sarysu	7.5	0.100	7.6	7.5	0.100	7.6
Block 3 Budenovskoye		Shu-Sarysu	13.9	0.078	10.8	13.9	0.078	10.8
Block 4 Budenovskoye		Shu-Sarysu	3.4	0.105	3.5	3.4	0.105	3.5
<b>Total</b>			<b>24.8</b>	<b>0.089</b>	<b>21.9</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>							
Block 2, Budenovskoye		Shu-Sarysu	29.6	0.081	24.1	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>							
Zarechnoye <sup>(1)</sup>		Syrdarya	4.0	0.060	2.4	6.1	0.056	3.4
<b>JV Katco LLP</b>	<b>49.00</b>							
Southern Moinkum (Northern part)		Shu-Sarysu	7.6	0.061	4.6	7.6	0.061	4.6
Tortkuduk		Shu-Sarysu	20.6	0.120	24.7	20.6	0.120	24.7
<b>Total</b>			<b>28.2</b>	<b>0.104</b>	<b>29.4</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>50.00</b>							
Block Kharassan 1, North Kharassan		Syrdarya	20.0	0.107	21.3	20.0	0.107	21.3
<b>JV SMCC LLP</b>	<b>30.00</b>							
Akdala		Shu-Sarysu	3.1	0.057	1.7	3.1	0.057	1.7
Block 4, Inkai		Shu-Sarysu	30.2	0.038	11.4	30.2	0.038	11.4
<b>Total</b>			<b>33.2</b>	<b>0.040</b>	<b>13.2</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>52.50</b>							
Block Kharassan 2, North Kharassan		Syrdarya	10.5	0.112	11.7	10.5	0.112	11.7
<b>Kazatomprom</b>	<b>100.00</b>							
Block 2 Inkai		Shu-Sarysu	133.8	0.031	42.0	133.8	0.031	42.0
Block 3 Inkai		Shu-Sarysu	172.3	0.048	83.1	172.3	0.048	83.1
<b>Total</b>			<b>306.1</b>	<b>0.041</b>	<b>125.1</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>			<b>887.7</b>	<b>0.051</b>	<b>452.5</b>	<b>889.7</b>	<b>0.051</b>	<b>453.5</b>
<b>Regional</b>								
Shu-Sarysu			801.6	0.048	386.9	801.6	0.048	386.9
Syrdarya			65.5	0.087	57.1	67.6	0.086	58.1
Northern Kazakhstan			20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>			<b>887.7</b>	<b>0.051</b>	<b>452.5</b>	<b>889.7</b>	<b>0.051</b>	<b>453.5</b>

<sup>(1)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

### 3.3.2 Ore Reserves

As at the Effective Date of the CPR, the total Ore Reserves (Table ES 11) reported by SRK in this CPR for the Mining Subsidiaries totals 884.7Mt grading 0.060%U and containing 531.6ktU comprising:

- Proved Ore Reserves totalling 427.4Mt grading 0.064%U and containing 274.1ktU; and
- Probable Ore Reserves totalling 457.3Mt grading 0.056%U and containing 257.6ktU.

On an attributable basis (Table ES 12) the total Ore Reserves reported by SRK in this CPR for the Mining Subsidiaries totals 535.3Mt grading 0.058%U and containing 312.3ktU comprising:

- Proved Ore Reserves totalling 268.8Mt grading 0.061%U and containing 164.3ktU; and



- Probable Ore Reserves totalling 266.4Mt grading 0.056%U and containing 148.0ktU.

In all instances SRK notes that:

- The Ore Reserve statements have an effective date of 1 July 2018;
- The Ore Reserve statements as reported herein are reported in accordance with the terms and definitions of the JORC Code (2012); and
- The principal technical and economic inputs relied on for reporting the Ore Reserves have been assessed for each of the Mining Subsidiaries and are reported in in Table 7-11 (Main Report) where the forecast uranium price is assumed to increase from US\$26.09/lbU<sub>3</sub>O<sub>8</sub> to US\$43.53/lbU<sub>3</sub>O<sub>8</sub> by 2035.

**Table ES 11 SRK Audited Ore Reserve Statement (Proved and Probable) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100%)**

Entity/Deposit	Proved Ore Reserve			Probable Ore Reserve			Total Ore Reserves		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	-	-	-	-	-	-	-	-	-
Eastern Mynkuduk	15.6	0.030	4.7	6.9	0.030	2.1	22.6	0.030	6.8
Kanzhugan	3.5	0.042	1.5	27.6	0.038	10.5	31.1	0.038	12.0
South Moinkum (Southern part)	0.0	0.039	0.0	0.08	0.048	0.04	0.1	0.047	0.04
Central Moinkum	0.7	0.056	0.4	19.8	0.058	11.5	20.5	0.058	11.9
<b>Total</b>	<b>19.8</b>	<b>0.033</b>	<b>6.6</b>	<b>54.4</b>	<b>0.044</b>	<b>24.1</b>	<b>74.3</b>	<b>0.041</b>	<b>30.6</b>
<b>Ortalyk LLP</b>									
Zhalpak	0.4	0.045	0.2	-	-	-	0.4	0.045	0.2
Central Mynkuduk	49.4	0.047	23.2	14.7	0.038	5.6	64.1	0.045	28.8
<b>Total</b>	<b>49.8</b>	<b>0.047</b>	<b>23.4</b>	<b>14.7</b>	<b>0.038</b>	<b>5.6</b>	<b>64.5</b>	<b>0.045</b>	<b>29.0</b>
<b>RU-6 LLP</b>									
Northern Karamurun	6.3	0.069	4.3	2.3	0.050	1.1	8.6	0.064	5.5
Southern Karamurun	7.1	0.081	5.7	5.3	0.089	4.7	12.4	0.084	10.4
<b>Total</b>	<b>13.4</b>	<b>0.075</b>	<b>10.1</b>	<b>7.5</b>	<b>0.077</b>	<b>5.8</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>									
Western Mynkuduk	13.4	0.032	4.3	41.4	0.036	14.9	54.8	0.035	19.2
<b>JV Inkai LLP</b>									
Block 1 Inkai (a)	36.3	0.076	27.6	9.7	0.061	5.9	46.0	0.073	33.5
Block 1 Inkai (b)	32.8	0.051	16.7	88.1	0.053	46.7	120.9	0.052	63.4
Block 1 Inkai (c)	80.7	0.047	37.9	17.3	0.049	8.5	98.0	0.047	46.4
<b>Total</b>	<b>149.8</b>	<b>0.055</b>	<b>82.2</b>	<b>115.1</b>	<b>0.053</b>	<b>61.1</b>	<b>264.8</b>	<b>0.054</b>	<b>143.3</b>
<b>Semizbai-U LLP</b>									
Semizbai	17.3	0.057	9.9	2.5	0.053	1.3	19.8	0.056	11.2
Irkol	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>39.5</b>	<b>0.048</b>	<b>19.0</b>	<b>20.6</b>	<b>0.043</b>	<b>8.9</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	9.8	0.107	10.5	5.3	0.088	4.6	15.1	0.100	15.1
Block 3 Budenovskoye	21.0	0.071	14.9	6.7	0.100	6.7	27.7	0.078	21.7
Block 4 Budenovskoye	2.5	0.141	3.5	4.2	0.084	3.6	6.7	0.105	7.1
<b>Total</b>	<b>33.4</b>	<b>0.087</b>	<b>29.0</b>	<b>16.2</b>	<b>0.092</b>	<b>14.9</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>									
Block 2 Budenovskoye	31.8	0.097	30.8	27.5	0.063	17.3	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.6	0.060	2.2	4.4	0.060	2.7	8.0	0.060	4.8
<b>JV Katco LLP</b>									
Southern Moinkum (Northern part)	10.0	0.063	6.3	5.5	0.057	3.1	15.5	0.061	9.4
Tortkuduk	20.0	0.122	24.4	22.1	0.118	26.1	42.1	0.120	50.5
<b>Total</b>	<b>29.9</b>	<b>0.102</b>	<b>30.7</b>	<b>27.7</b>	<b>0.106</b>	<b>29.3</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	13.0	0.106	13.8	27.0	0.107	28.9	40.0	0.107	42.6
<b>JV SMCC LLP</b>									
Akdala	7.3	0.057	4.2	2.9	0.057	1.7	10.2	0.057	5.8
Block 4, Inkai	11.5	0.045	5.2	89.2	0.037	33.0	100.6	0.038	38.2
<b>Total</b>	<b>18.8</b>	<b>0.050</b>	<b>9.3</b>	<b>92.1</b>	<b>0.038</b>	<b>34.6</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	11.3	0.114	12.9	8.7	0.109	9.5	20.0	0.112	22.4
<b>Kazatomprom</b>									
Block 2 Inkai	-	-	-	-	-	-	-	-	-
Block 3 Inkai	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Total</b>	<b>427.4</b>	<b>0.064</b>	<b>274.1</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>
<b>Regional</b>									
Shu-Sarysu	346.7	0.062	216.2	389.0	0.052	201.8	735.7	0.057	418.0
Syrdarya	58.6	0.083	48.8	50.2	0.096	48.2	108.8	0.089	96.9
Northern Kazakhstan	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>427.4</b>	<b>0.064</b>	<b>274.1</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>

**Table ES 12 SRK Audited Ore Reserve Statement (Attributable) as at 1 July 2018 by Mining Subsidiary**

Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Ore Reserves		
			(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>				
Uvanas		Shu-Sarysu	-	-	-
Eastern Mynkuduk		Shu-Sarysu	22.6	0.030	6.8
Kanzhugan		Shu-Sarysu	31.1	0.038	12.0
South Moinkum (Southern part)		Shu-Sarysu	0.1	0.047	0.04
Central Moinkum		Shu-Sarysu	20.5	0.058	11.9
<b>Total</b>			<b>74.3</b>	<b>0.041</b>	<b>30.6</b>
<b>Ortalyk LLP</b>	<b>100.00</b>				
Zhalpak		Shu-Sarysu	0.4	0.045	0.2
Central Mynkuduk		Shu-Sarysu	64.1	0.045	28.8
<b>Total</b>			<b>64.5</b>	<b>0.045</b>	<b>29.0</b>
<b>RU-6 LLP</b>	<b>100.00</b>				
Northern Karamurun		Syrdarya	8.6	0.064	5.5
Southern Karamurun		Syrdarya	12.4	0.084	10.4
<b>Total</b>			<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>				
Western Mynkuduk		Shu-Sarysu	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>				
Blocks 1, Inkai (a)		Shu-Sarysu	27.6	0.073	20.1
Blocks 1, Inkai (b)		Shu-Sarysu	72.5	0.052	38.0
Blocks 1, Inkai (c)		Shu-Sarysu	58.8	0.047	27.8
<b>Total</b>			<b>158.9</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>				
Semizbai		Northern Kazakhstan	10.1	0.056	5.7
Irkol		Syrdarya	20.5	0.041	8.5
<b>Total</b>			<b>30.6</b>	<b>0.046</b>	<b>14.2</b>
<b>JV Akbastau JSC</b>	<b>50.00</b>				
Block 1 Budenovskoye		Shu-Sarysu	7.5	0.100	7.6
Block 3 Budenovskoye		Shu-Sarysu	13.9	0.078	10.8
Block 4 Budenovskoye		Shu-Sarysu	3.4	0.105	3.5
<b>Total</b>			<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>				
Block 2, Budenovskoye		Shu-Sarysu	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>				
Zarechnoye <sup>(1)</sup>		Syrdarya	4.0	0.060	2.4
<b>JV Katco LLP</b>	<b>49.00</b>				
Southern Moinkum (Northern part)		Shu-Sarysu	7.6	0.061	4.6
Tortkuduk		Shu-Sarysu	20.6	0.120	24.7
<b>Total</b>			<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>50.00</b>				
Block Kharassan 1, North Kharassan		Syrdarya	20.0	0.107	21.3
<b>JV SMCC LLP</b>	<b>30.00</b>				
Akdala		Shu-Sarysu	3.1	0.057	1.7
Block 4, Inkai		Shu-Sarysu	30.2	0.038	11.4
<b>Total</b>			<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>52.50</b>				
Block Kharassan 2, North Kharassan		Syrdarya	10.5	0.112	11.7
<b>Kazatomprom</b>	<b>100.00</b>				
Block 2 Inkai		Shu-Sarysu	-	-	-
Block 3 Inkai		Shu-Sarysu	-	-	-
<b>Total</b>			<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Total</b>			<b>535.3</b>	<b>0.058</b>	<b>312.3</b>
<b>Regional</b>					
Shu-Sarysu			449.2	0.055	246.7
Syrdarya			65.5	0.087	57.1
Northern Kazakhstan			20.5	0.041	8.5
<b>Total</b>			<b>535.3</b>	<b>0.058</b>	<b>312.3</b>

<sup>(1)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

### 3.4 Environmental and Social Management

SRK has completed a detailed review of the Environmental Management Systems as implemented at the Group's mining operations as well as the basis of determination of the Company's Environmental and Social Liabilities.

#### 3.4.1 Environmental Management

The Mineral Assets are strictly regulated by government, frequently inspected by state authorities and regularly audited by the Company's Health, Safety and Environment ("HSE") department. The operations have the required primary approvals to operate and certified HSE management systems. Non-conformances identified in inspections and audits are acknowledged and addressed promptly and there is evidence of continuous improvement in

HSE management.

Most of the Mineral Assets are remote from human settlements. This combined with the approach to HSE management, minimises the potential for negative impacts on the environment and people. Surface disturbance, groundwater contamination and transport and handling of hazardous substances are the primary means by which the operations could have negative impacts.

The Company's corporate oversight of the operations involves a frank understanding on HSE performance in the organisation. The Group is open to opportunities for improvement and this is reflected in initiatives like the KAP 20 Project on implementation of target operational model of complex safety management. The internal annual and quarterly corporate reports on HSE performance are reviewed by the board of directors and are shared with all of the Mining Subsidiaries so that the various operations can see the performance of their sister companies and learn from their experiences.

The operations have a positive socio-economic impact through employment of large numbers of people and various social investments.

At the Group's operations, occupational health and safety and radiation protection are clearly of high priority. Staff receive training on an ongoing basis, are required to use full personal protective equipment provided by the company and have ready access to emergency wash stations. Procedures are followed to minimise staff exposures to ionising radiation and doses received are monitored. SRK understands that the annual effective doses received by most Group A personnel (personnel exposed to ionising radiation) is less than 5mSv/year and no doses exceed the applicable annual dose limit legal limit is 20mSv/year in a calendar year.

SRK identified refinements that can be made to the Environmental, Safety and Health System ("ESHS") management at the mines. These refinements are outlined below and the Company has developed action plans to address the findings and recommendations:

- **Contextual Understanding:** the Mining Subsidiaries have insufficient understanding of environmental and social context and do not use the full potential of monitoring data to demonstrate and ensure minimal impacts on sensitive receptors, individually and cumulatively. Currently, the impact assessment and monitoring undertaken is focused on regulatory compliance and the regulatory regime is not geared to a receptor-based approach (and hence risk-based approach). A shift to a receptor-based approach will require more study of water, habitats and land use in the vicinity of the mines, refinement of impact predictions, and improvements to monitoring of and reporting on impacts. Sensitive receptors requiring more attention are water resources, habitats and land users beyond the sites of the operations;
- **Stakeholder Engagement:** the Group's operations engage with local communities but this engagement is not fully aligned with international best practice. Currently, the stakeholder engagement and grievance management is taking place using a number of mainly passive techniques (public hearings required by law, meetings with the local Akim, newspaper articles, open days and responses to formal grievances made to the Akim, regulatory authorities or direct to management). These processes are not formally integrated into management systems and, in some cases, not documented. The Mining Subsidiaries have not undertaken social baseline studies that define how people are using land and water around the mines and do not each have community stakeholder database and stakeholder engagement plan. Grievance procedures are not framed in the context of good international practice and documented. SRK recommends that these weaknesses are addressed;

- **Decontaminated metal waste stewardship:** the Mining Subsidiaries need to improve their understanding of the capacity and adequacy of metal Low Level Radioactive Waste (“**LLRW**”) decontamination services. An independent company provides metal LLRW decontamination services to the Mining Subsidiaries. The capacity of this company to handle the quantity of metal LLRW waste that will be produced by the mines at closure needs to be assessed. The company should also be audited by the Company to check that the standard of the operation and effectiveness of the decontamination;
- **Refinement of closure plans:** The Mining Subsidiaries have established closure plans and cost estimates, in the form of liquidation programs required by local legislation and the Mining Contracts for the Mineral Assets. A review of the closure plans by SRK however identified a number of weaknesses comprising: no-systematic updating of estimates on an annual basis with certain estimates relying on dated historical data and assumptions; and a degree of inconsistency of approach both with respect to scope and application of unit rates. Environmental and Social Liabilities as reported herein have been prepared based on development of a costing template in which updated and standardised unit rates were established by the Company and following a review by SRK applied to update both the Asset Retirement Obligations (“**ARO**”) and the LoMp closure costs. Furthermore as a matter of good practice, the Company needs to continue to update and refine its closure cost estimates (including the official liquidation estimates linked to the Mining Contracts).

The ARO and LoMp closure cost estimates in the CPR are on average about 40% and 130% higher respectively than in the liquidation estimates prepared under the Mining Contracts, respectively. The estimates prepared for the CPR are classified as conceptual closure estimates by SRK because they are not based on detailed engineering designs. A contingency of 10% has been applied to these estimates. In accordance with Good International Industry Practice (“**GIIP**”), the mines will need to increase the level of detail in closure plans and level of confidence in the closure cost estimates as they approach closure; and

- **Capacity of the corporate HSE Department:** The team in the corporate health, safety and environment department is effective but is stretched and will need to be increased to address and implement the findings as reported herein. The increase is also required to meet the Company’s current HSE aspirations, process the increasing volume HSE data being collected by the Mining Subsidiaries.

### 3.4.2 Environmental and Social Liabilities

The total Environmental Liabilities for the Mineral Assets (Table ES 13) reported on an aggregated basis comprise:

- Life-of-Mine plan closure costs totalling KZT109.4bn (US\$321.8m); and
- Asset Retirement closure costs (included within the LoMp closure costs) totalling KZT66.2bn (US\$194.8m).

The Environmental Liabilities as reported herein are inclusive of a 10% contingency, however it is clear that further work is required in order to develop the closure cost estimate to a minimum of PFS level and to specifically address the accompanying risks as highlighted in Section 3.7 (Executive Summary) of this CPR.

Table ES 13 below summarises information regarding closure liabilities of the Mineral Assets, namely:

- ARO: Asset Retirement Obligations closure costs estimate as of 30 June 2018;
- LoMp: Closure cost estimates (costs incurred at the end of Life of Mine);

- Liquidation Fund closing balance as at 30 June 2018;
- Liquidation Fund LoMp Contributions: future contributions to the liquidation funds from the LoM plans;
- Liquidation Fund Surplus/(Deficit): Expected liquidation fund Surplus/Deficit compared to LoM closure estimates; and
- Retrenchment: Expected retrenchment costs based on the LoMps.

As at 30 June 2018 the closing balances of the liquidation funds for the Mining Subsidiaries reported KZT18.6bn (US\$54.7m). Future contributions as defined by the individual Mining Contracts necessitates expenditure of a further KZT42.2bn (US\$124.2m) which results in a closing balance of the liquidation fund on closure of KZT60.8bn (US\$179.0m). Overall this indicates a shortfall of KZT48.5bn (US\$142.8m).

In addition the total retrenchment expenditures relating to the LoMps are noted at KZT2.8bn (US\$8.1m).

**Table ES 13 Mineral Assets Environmental and Social Closure Costs**

Company	Operations/Deposits	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
		(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)
<b>Kazatomprom-SaUran LLP</b>								
	Uvanas	2,288.3	2,291.7	1,406.2	175.6	1,581.9	(709.8)	9.3
	Eastern Mynkuduk	3,954.0	4,390.5	1,086.3	1,032.4	2,118.7	(2,271.8)	41.3
	Kanzhugan	3,273.4	5,590.2	1,832.6	7,206.6	9,039.2	3,449.0	73.4
	South Moinkum (Southern part)	1,940.3	2,009.2	61.7	20.6	82.3	(1,926.9)	15.4
	Central Moinkum	1,177.1	4,309.0	37.9	2,528.3	2,566.3	(1,742.8)	30.3
	<b>Subtotal</b>	<b>12,633.1</b>	<b>18,590.7</b>	<b>4,424.8</b>	<b>10,963.5</b>	<b>15,388.4</b>	<b>(3,202.3)</b>	<b>169.7</b>
<b>Ortalyk LLP</b>								
	Zhalpak	-	-	9.1	80.6	89.7	89.7	20.8
	Central Mynkuduk	3,734.1	4,841.1	950.6	2,618.3	3,568.9	(1,272.2)	203.6
	<b>Subtotal</b>	<b>3,734.1</b>	<b>4,841.1</b>	<b>959.7</b>	<b>2,699.0</b>	<b>3,658.7</b>	<b>(1,182.5)</b>	<b>224.4</b>
<b>RU-6 LLP</b>								
	Northern Karamurun	2,351.2	3,906.3	-	1,302.5	1,302.5	(2,603.8)	70.0
	Southern Karamurun	4,097.7	5,073.1	1,461.2	1,302.5	2,763.7	(2,309.3)	70.0
	<b>Subtotal</b>	<b>6,448.9</b>	<b>8,979.4</b>	<b>1,461.2</b>	<b>2,605.1</b>	<b>4,066.3</b>	<b>(4,913.1)</b>	<b>140.1</b>
<b>Appak LLP</b>								
	Western Mynkuduk	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
<b>JV Inkai LLP</b>								
	Block 1 Inkai (a), (b), (c)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
<b>Semizbai-U LLP</b>								
	Semizbai	2,549.6	6,125.7	419.1	1,625.6	2,044.7	(4,081.0)	35.0
	Irkol	2,513.8	3,693.4	526.4	2,094.2	2,620.7	(1,072.7)	47.6
	<b>Subtotal</b>	<b>5,063.4</b>	<b>9,819.1</b>	<b>945.5</b>	<b>3,719.9</b>	<b>4,665.4</b>	<b>(5,153.7)</b>	<b>82.7</b>
<b>Akbastau LLP</b>								
	Budenovskoye, Block 1	960.5	2,411.4	-	971.8	971.8	(1,439.7)	-
	Budenovskoye, Blocks 3 and 4	2,441.6	4,845.4	862.5	1,952.6	2,815.1	(2,030.3)	20.9
	<b>Subtotal</b>	<b>3,402.0</b>	<b>7,256.8</b>	<b>862.5</b>	<b>2,924.4</b>	<b>3,786.9</b>	<b>(3,469.9)</b>	<b>20.9</b>
<b>Karatau LLP</b>								
	Budenovskoye, Block 2	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
<b>JV Zarechnoye</b>								
	Zarechnoye	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
<b>Katco LLP</b>								
	Southern Moinkum and Tortkuduk	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
<b>JV Khorasan LLP</b>								
	Block Kharassan 1, North Kharassan	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
<b>JV SMCC LLP</b>								
	Akdala	3,186.8	4,361.7	881.1	45.0	926.1	(3,435.6)	129.7
	Southern Inkai 4	4,725.7	9,740.3	1,192.1	3,428.6	4,620.7	(5,119.6)	196.3
	<b>Subtotal</b>	<b>7,912.6</b>	<b>14,102.0</b>	<b>2,073.2</b>	<b>3,473.6</b>	<b>5,546.8</b>	<b>(8,555.2)</b>	<b>326.0</b>
<b>Baiken-U LLP</b>								
	Block Kharassan 2, North Kharassan	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>		<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>

### 3.5 Life-of-Mine plan and Technical and Economic Parameters

This section includes discussion and comment on the TEPs as established by the Company in developing its LoMps. Specifically, details are provided in respect of the: Mining Subsidiaries and Company's equity interests; Life of Mine planning process; and Technical-Economic Parameters.

- In conjunction with the Company, SRK has developed post-tax pre-finance cashflow models based on the following key inputs:

- Final products produced at each site or an independent/Company related refinery,
- Mass balance determinations from in-situ grades through, pregnant leach solution (“PLS”) concentration, PLS processing and refining to final product;
- All LoMp production is sourced from Proved and Probable Ore Reserves, unless explicitly stated otherwise;
- All TEPs are presented at the Mining Subsidiary Level and reported on a 100% basis, that is to say not on an equity attributable basis to the Company, unless explicitly stated otherwise; and
- All revenues and expenditures are reported in real terms as at the Effective Date (1 July 2018) and are provided in annual increments along with LoMp totals, with the exception of 2018 which reflects the six month period ending 31 December 2018.

### 3.5.1 LoM Planning Process

The LoMp projections as developed by the Company and reported herein incorporate the 18 month budget parameters (H2 2018 and 2019) and any adjustments deemed necessary for the following three years (2020 to 2022), thereafter relying on the application of unit rates until depletion of the Ore Reserves. The resulting projections rely on development of key parameters per deposit which incorporate annual projections for:

- Assumed production of Uranium quantity (tonnes of U) in the final site products, generally reflecting that projected in the first five years thereafter generally aligned with the contract terms;
- PLS uranium concentrations (mgU/l);
- Production (Injection) well pumping rates (m<sup>3</sup>/h);
- Number of Production (Injection) wells in operation;
- Determination of extraction wells, observation wells, exploration wells, and re-drilled (damaged) wells, through application of appropriate ratios;
- Determination of wells require to be constructed, largely based on historical norms which essentially reflect the well design configurations (hexagonal or row);
- Determination of operating expenditures based on activity-element details, where unit rates are determined from historical and planned performance for: labour, power, consumables (acid, reagents etc), water, consumable transportation costs, overheads and other costs are developed; and
- Establishing development and sustaining capital requirements whereby well construction is largely based on well numbers, depths and unit rates per unit length (metres) drilled, and provisions for longer term sustaining costs. Any specific capital items for development/expansion are typically defined within the first five years and account for expansion and or extension of services into new wellfield areas.

### 3.5.2 Production Flexibility

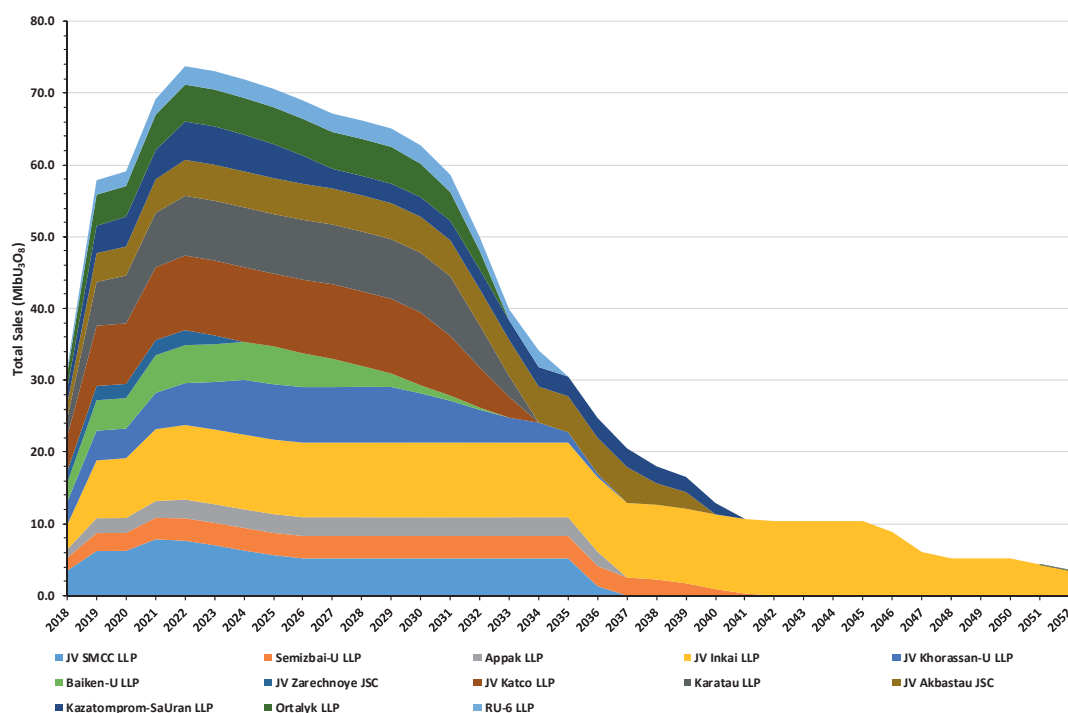
For all existing mining operations, reported production is limited to that stipulated in the relevant Mining Contracts. During 2017 the Company re-assessed its short term production plans in accordance with anticipated market conditions and reduced production by approximately 20%. The current LoMp as developed by the Company assumes that the reduction is planned to be unwound between H2 2018 and 2020, thereafter returning to full capacity (e.g. Appak LLP). Total production of uranium (tU) at the Mining Subsidiaries is therefore expected to increase to 28ktU by 2021 thereafter declining to 22ktU by 2031 and to 8ktU by 2037 as the number of



operating subsidiaries reduce from 13 in 2021 to 4 by 2037 and the impact of production tails are noted.

The Company’s annual sales profiles (Figure ES 4) reflect the current LoMp generated in support of the overall Ore Reserve statement dated 1 July 2018. Current annual sales at 54.9MlbU<sub>3</sub>O<sub>8</sub> (H1 2018 actual and H2 2018 forecast) is planned to increase to 73.7MlbU<sub>3</sub>O<sub>8</sub> by 2022 through a combination of a reversal of historical production cuts by 2021 and planned expansions at certain of the Mining Subsidiaries (JV Inkai LLP, JV Khorassan-U LLP, Baiken- U LLP and Karatau LLP). The decline in production beyond 2022 is largely as a result of depletion of Ore Reserves at the various deposits. By 2031 annual sales drop below 60MlbU<sub>3</sub>O<sub>8</sub> and continue to decline sharply to 10MlbU<sub>3</sub>O<sub>8</sub> by 2042 when only JV Inkai LLP remains as the sole operating Mining Subsidiary.

**Figure ES 4: Mining Subsidiary Aggregated (100%) Annual sales of Uranium Concentrate (U<sub>3</sub>O<sub>8</sub>)**



The opportunity to expand or maintain production at a strategic level (e.g. 60MlbU<sub>3</sub>O<sub>8</sub>) is dependent upon realising the opportunities noted in the Section13.3.2 (Main Report) of this CPR. These opportunities are subject to completion of further exploration and as appropriate further technical studies to both validate the optimal production scenario as well as ensure that the resulting forecasts are technically feasible and economically viable. This aside, SRK notes that owing to the relative simplicity of the nature of the mining operations and assuming that all necessary regulatory approvals are achieved, the process of establishing a revised strategic plan, subject to prevailing market assumptions, is relatively straight forward and not as complex as normally experience elsewhere in the mining and metals sector.

The key opportunities to arrest the production decline beyond 2031 and maintain sales of U<sub>3</sub>O<sub>8</sub> in the 40Mlb to 60Mlb range is dependent upon a combination of:

- **Re-assessing the production rates at existing Mining Subsidiaries:** To date the Company has completed various high level conceptual studies at several of the Mining Subsidiaries deposits and these have identified the potential to increase production (See Section 13.3.2 of the Main Report). The combined impact of these increases would be to

expand production levels from the current profiles to 29ktU in 2021, 33ktU in 2022, reducing thereafter to 31ktU by 2026. These increases whilst subject to further technical studies, are largely possible given: the relative simplicity of the ISR mining operations and the expansion of the production well footprint within the mining areas; and where necessary through additional capital programmes expansion of existing processing and refining capacities;

- **Completion of Feasibility Studies in respect of advanced exploration properties:** Properties for which Mineral Resources have been defined but for which insufficient technical work has been completed to support the declaration of Ore Reserves: specifically at Zhalpak (currently reporting total Mineral Resources of 44.9Mt, grading 0.032%U for 14.5ktU content); and Block 2 Inkai and Block 3 Inkai (currently reporting total Mineral Resources of 306.1Mt grading 0.041%U for content of 125.1ktU); and
- **Completion of further exploration activities specifically in respect of:** the Company's existing mining operations where potential exists for re-assessing and extending the boundaries of known mineralisation; and the Company's broader regional exploration programme as outlined by the planned US\$173.4m programme over the next 10 years (see Section 8 of the Main Report of this CPR and Section 3.6 of the Executive Summary of this CPR).

To this end the Company is currently undertaking various technical studies to advance the conceptual studies to Pre-feasibility and Feasibility study status with a view to developing appropriately detailed plans to support any planned expansions in production capacity. The decision to implement such plans are obviously dependent on market conditions and furthermore securing the necessary approvals from the Competent Authority and State Bodies to amend existing Mining Contracts.

### 3.5.3 Sales Revenue

The current sales contracts between the Company, its Joint Venture partners and the subsidiary companies are subject to various sales contracts whereby the attributable sales price assumptions are subject to various adjustments. These adjustments are incorporated into the various governing agreements and are defined in accordance with the GoK uranium concentrate pricing regulations (effective 3 February 2011), where by the saleable product is purchased by the JV partners at a commercial price equal to the uranium spot price, less a subsidiary specific price discount (maximum allowable). The Company has informed SRK that the specific price discounts as incorporated into each JV agreement is both confidential and as such may not be publically disclosed. Accordingly in conjunction with the Company SRK has determined the weighted average price discount based on a combination of the LoMp sales forecasts and the UxC price forecast.

Table ES 14 and Table ES 15 provide the discounted sales revenue price assumptions for each of the Mining Subsidiaries.

**Table ES 14 Mining Subsidiary Revenue discounts and sales pricing assumptions (US\$/lbU<sub>3</sub>O<sub>8</sub>): 2018 through 2030**

Price Assumption	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
<b>JV Companies</b>														
Price Discount	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
JV Companies	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.17	26.84	27.80	28.19	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
<b>Wholly Owned</b>														
Price Discount	(%)	-	-	-	-	-	-	-	-	-	-	-	-	-
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75

**Table ES 15 Mining Subsidiary Revenue discounts and sales pricing assumptions (US\$/lbU<sub>3</sub>O<sub>8</sub>): 2031 through 2035**

Price Assumption	Units	2031	2032	2033	2034	2035
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
<b>JV Companies</b>						
Price Discount	(%)	3.50	3.50	3.50	3.50	3.50
JV Companies	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01
<b>Wholly Owned</b>						
Price Discount	(%)	-	-	-	-	-
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53

### 3.5.4 Cash Cost Reporting

The determination of cash costs in the metals and mining sector varies both within and between commodity focus companies. Furthermore, it would appear that with respect to reporting standards, that defined by the World Gold Council (“WGC”) and published (June 2013) (“WGC 2013”) in its guidance noted on “all-in sustaining costs” and “all-in costs” metrics would appear to be the most comprehensive. This was an advance from the cash cost reporting methodology introduced in 1996 which focused solely on the mining and processing costs incurred. In contrast WGC 2013 focuses on costs incurred in the complete mining lifecycle from exploration to closure. With respect to the uranium sector, comparative assessment of the approach adopted by mining companies yield varying interpretations with no explicit reporting of adherence to any specific standard. Accordingly, and in conjunction with the Company, SRK has determined both historical and forecast cash costs which is largely based on the WGC guidance inclusive of certain modifications (exclusion of Mineral Extraction Tax to establish the variant C1 (exc MET); and exclusion of the contributions to the environmental closure fund and ultimate closure costs from the AISC) as advised by the Company. To this end the following definitions have been adopted:

- C1 comprising all direct cash expenditures required to secure the sales volumes and sales revenues as determined and include, mining, processing, general and administration, Mineral Extraction Tax, Reimbursable Services, Distribution, Toll Refining and Retrenchment costs;
- C1 cash costs excluding Mineral Extraction Tax (“C1 (exc MET)”); and
- AISC comprising the C1 cash costs as well as the production well construction costs and sustaining costs.

For clarification, these costs specifically to do not include any significant non-cash items and as such being presented on a cash basis and cannot be directly compared with any historical cash costs or AISC as derived either by the Company or other competitors operating in the uranium sector. Furthermore, SRK notes that both historical and forecast unit cash costs as reported herein are expressed per tonne of U<sub>3</sub>O<sub>8</sub> sold with the primary variance between both produced and sold being largely attributable to movement in Work-in-Progress (“WIP”) as determined by the change in closing balances between the reporting periods. For certain Mining Subsidiaries the variance between that which is produced and that which is sold in respect of tonnes of U in the final product is not significant and accordingly reporting on either an as produced or as sold basis is not considered significant, specifically when considering forecast data. This aside, SRK notes that certain of the Mining Subsidiaries have due to various market conditions, not sold all that was produced historically, thereby resulting in increased product stockpiles. This is specifically the case for SaUran, and in this specific instance the unit of cash cost reporting adopted is on an as produced U<sub>3</sub>O<sub>8</sub> basis.

### 3.5.5 Technical Economic Parameters

The LoMps as reported herein are limited to the depletion Ore Reserves and have been

developed in combination with the Company with reliance on:

- The detailed two-year budgets (2018 and 2019) developed by the Mining Subsidiaries at a deposit level of detail;
- An assessment of key technical and economic parameters with focus on identifying any significant departure from historical performance, specifically from 2015 through H2 2018;
- The five year capital expenditure programmes and supporting details for specific expansions and mine area extensions as noted in Section 13.3.5 (Main Section) of this CPR; and
- A review of supporting Feasibility Studies and other technical studies completed in respect of key expansion projects.

The current LoMp assumes depletion of all Ore Reserves by 2052 with uranium production reflecting the combined impact of a reversal of the impacts of planned historical cuts and future expansions/extensions at the Mining Subsidiaries. Total annual production of uranium is therefore expected to increase to 28ktU by 2021 thereafter declining to 22ktU by 2031 and to 8ktU by 2037 as the number of operating subsidiaries reduce from 13 in 2021 to 4 by 2037 and the impact of production tails are noted.

LoMps for the Mineral Assets which assumes the following TEPs (Table ES 16):

- Aggregated production of 467.3ktU, sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$4.9bn; and
- Attributable production of 271.9ktU, sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$2.9bn.

**Table ES 16 LoMp Salient Technical Economic Parameters**

Mining Subsidiary	Production (ktU)	Sales (MlbU <sub>3</sub> O <sub>8</sub> )	Cash Costs C1 (US\$/lbU <sub>3</sub> O <sub>8</sub> )	AISC (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Capital Expenditure (US\$m)
<b>Operating Properties</b>					
Kazatomprom-SaUran LLP	27.1	74.6	18.57	24.30	456.4
Ortalyk LLP	25.8	67.9	11.04	13.10	166.2
RU-6 LLP	14.3	38.3	16.88	21.98	217.4
Appak LLP	17.3	46.0	15.19	18.60	186.3
JV Inkai LLP	121.8	317.9	9.06	13.03	1,309.7
Semizbai-U LLP	24.2	64.0	15.66	19.41	265.7
JV Akbastau JSC	38.1	100.4	6.56	8.92	256.9
Karatau LLP	43.3	114.8	5.63	7.98	313.2
JV Zarechnoye JSC	3.8	11.0	13.99	17.96	52.2
JV Katco LLP	53.9	141.5	8.83	12.50	707.2
JV Khorassan-U LLP	38.1	100.7	10.55	14.09	373.8
JV SMCC LLP	39.6	103.8	9.01	11.80	334.6
Baiken-U LLP	20.1	53.0	9.89	14.18	241.7
<b>Total</b>	<b>467.3</b>	<b>1,233.8</b>	<b>10.21</b>	<b>13.74</b>	<b>4,881.3</b>
<b>Attributable</b>	<b>271.9</b>	<b>725.8</b>	<b>10.79</b>	<b>14.43</b>	<b>2,924.2</b>

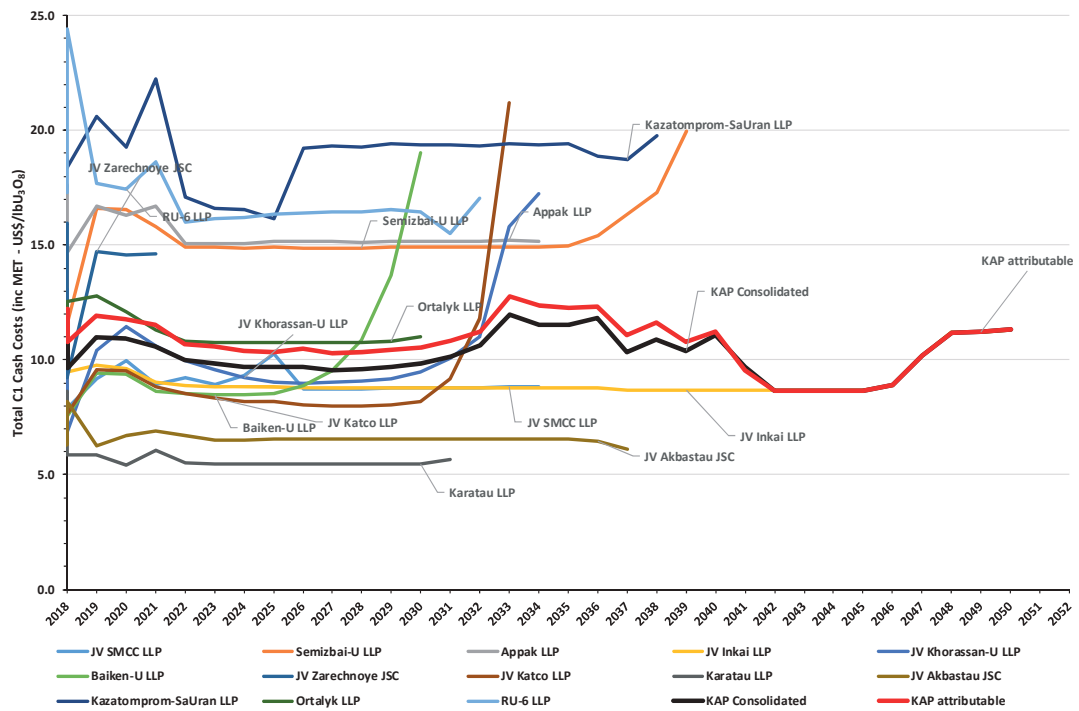
In addition to the above TEPs the Company also incurs further expenditures arising from unallocated costs relating to the provision of services from Kyzylkum LLP to JV-Khorassan LLP. On an aggregate basis this totals KZT16.9bn which is expended from H2 2018 through 2036 inclusive as noted in Table 13-115 and Table 13-116 of the Main Report which in US\$ amounts to US\$49.6m. The Company's equity interest in Kyzylkum LLP is 50% with 30% held by Uranium One and 20% by Energy Asia Holdings Ltd ("EAHL").

C1 unit cash costs (Figure ES 5) per unit of sales are expected to range in the US\$9.00/lbU<sub>3</sub>O<sub>8</sub> to US\$11.00/lbU<sub>3</sub>O<sub>8</sub> over the next ten years in real terms (1 July 2018) with corresponding values for C1 (excluding MET) being US\$7.00/lbU<sub>3</sub>O<sub>8</sub> to US\$9.00/lbU<sub>3</sub>O<sub>8</sub> and for AISC (Figure ES 6) being US\$13.00/lbU<sub>3</sub>O<sub>8</sub> to US\$16.00/lbU<sub>3</sub>O<sub>8</sub>.

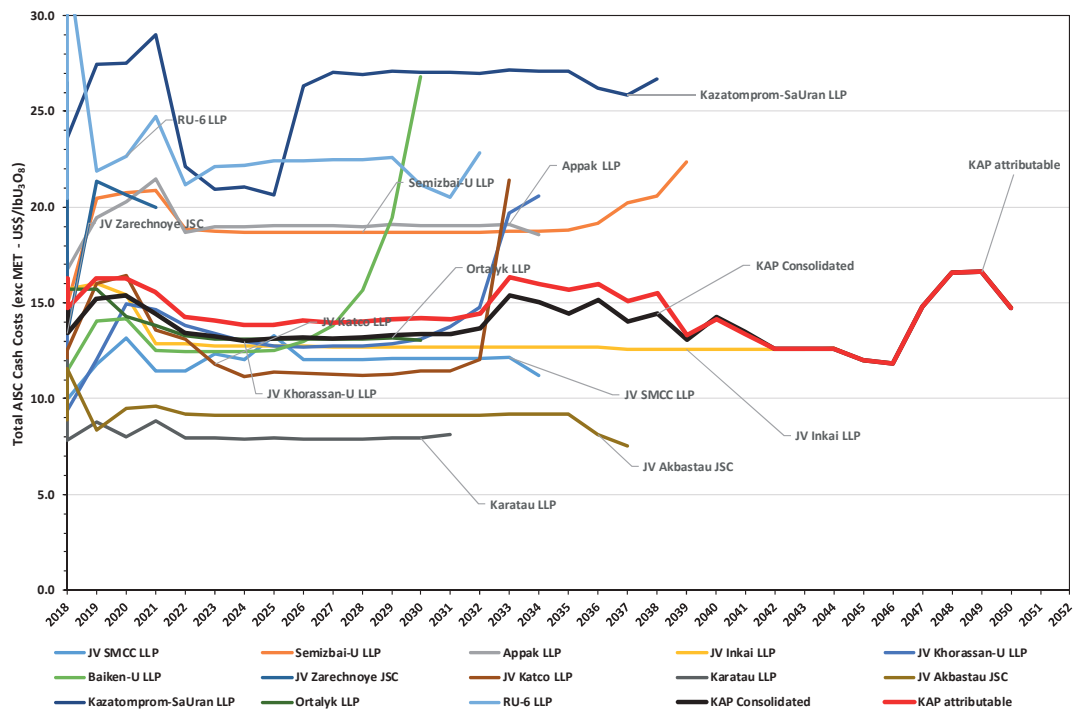
The planned increases in production and associated capital expenditures are noted in Section 13.3.5 of the Main Report and comprise some KZT84.06bn expended from H2 2018 through 2022. In order to sustain production over the LoMp period other capital expenditures comprise both allocations for well construction which ranges from KZT60bn to KZT80bn over the next ten

years thereafter reducing in line with production (Figure ES 7) and general infrastructure related sustaining capital which ranges from KZT12bn to KZT15bn over the next ten year period.

**Figure ES 5: Total Cash Costs C1 (Including MET – US\$/lbU<sub>3</sub>O<sub>8</sub>)**



**Figure ES 6: All in Sustaining Costs C1 (US\$/lbU<sub>3</sub>O<sub>8</sub>)**



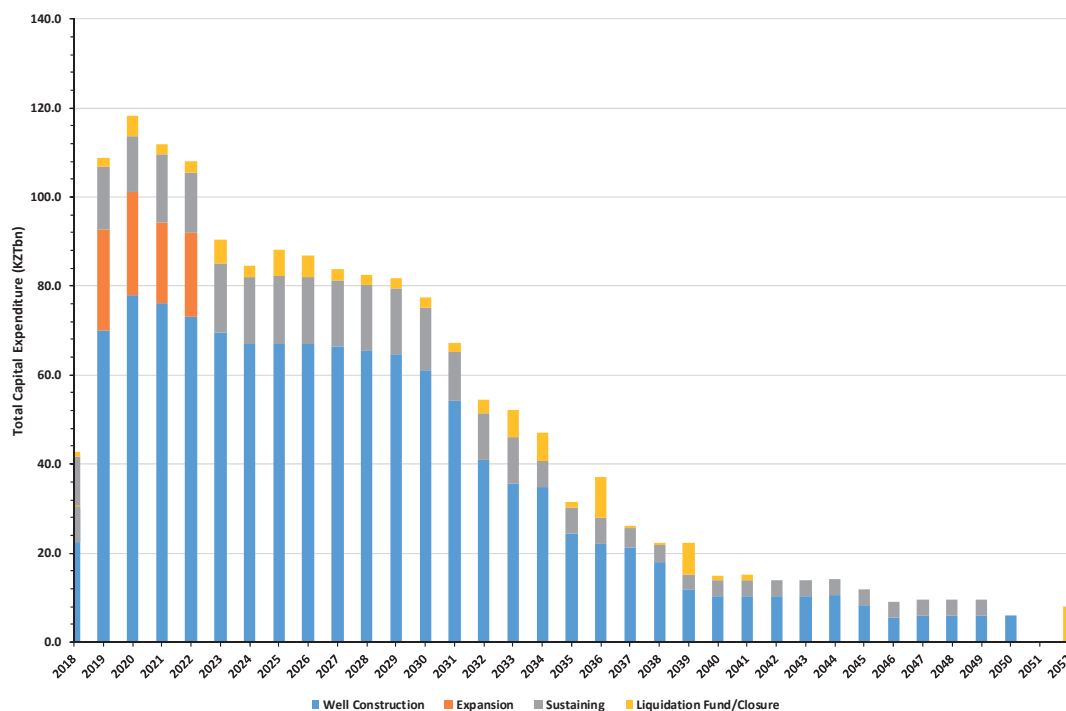
**Figure ES 7: Capital Expenditure element contribution (KZTbn)**

Table ES 17 through Table ES 20 presents a summary of the attributable annual LoMp schedules of all technical and economic parameters consolidated from the details provided in each of the Mining Subsidiaries.

**Table ES 17 Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2018H2 through 2025)**

Statistic	Units	Total	2018H2	2019	2020	2021	2022	2023	2024	2025
<b>Production</b>										
Mined	(Mt)	529.45	12.02	25.56	25.64	32.31	32.35	31.44	30.64	28.75
Grade	(%U)	0.058	0.059	0.059	0.058	0.058	0.058	0.059	0.060	0.061
Content	(tU)	309,475	7,049	14,961	14,961	18,785	18,889	18,538	18,325	17,667
Final Product	(tU)	271,861	6,236	13,218	13,214	16,584	16,678	16,397	16,222	15,629
Recovery	(%)	87.8	88.5	88.4	88.3	88.3	88.3	88.5	88.5	88.5
<b>Sales</b>										
Final Product	(tU)	279,170	6,984	13,058	13,361	15,396	16,671	16,592	16,382	16,107
	(MlbU)	615.47	15.40	28.79	29.46	33.94	36.75	36.58	36.12	35.51
	(MlbU <sub>3</sub> O <sub>8</sub> )	725.79	18.16	33.95	34.73	40.03	43.34	43.14	42.59	41.87
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	35.37	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08
	(%)	3.67	4.15	3.45	3.46	2.52	2.45	2.44	2.45	2.46
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	34.07	25.00	26.85	27.82	28.48	28.32	28.39	29.17	30.32
<b>Financial</b>										
Sales Revenue	(US\$m)	24,729.1	454.0	911.5	966.2	1,139.9	1,227.3	1,224.7	1,242.5	1,269.6
Opex	(US\$m)	(7,832)	(192.2)	(401.4)	(404.3)	(461.4)	(463.9)	(456.3)	(443.0)	(433.5)
EBITDA	(US\$m)	16,896.9	261.7	510.2	561.8	678.6	763.4	768.4	799.6	836.1
Capex	(US\$m)	(2,924.2)	(74.9)	(190.8)	(201.6)	(192.4)	(187.1)	(159.5)	(152.0)	(154.5)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.79	10.59	11.82	11.64	11.53	10.70	10.58	10.40	10.35
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.47	8.45	9.34	9.18	9.03	8.41	8.29	8.18	8.13
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.43	14.48	16.14	16.11	15.57	14.28	14.07	13.86	13.86

**Table ES 18 Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2026 through 2034)**

Statistic	Units	2026	2027	2028	2029	2030	2031	2032	2033	2034
<b>Production</b>										
Mined	(Mt)	28.00	27.35	27.14	26.94	25.90	24.32	19.96	16.68	15.58
Grade	(%U)	0.062	0.062	0.062	0.062	0.061	0.060	0.058	0.056	0.054
Content	(tU)	17,354	17,047	16,814	16,583	15,856	14,636	11,622	9,368	8,340
Final Product	(tU)	15,349	15,075	14,869	14,664	14,018	12,919	10,214	8,194	7,270
Recovery	(%)	88.4	88.4	88.4	88.4	88.4	88.3	87.9	87.5	87.2
<b>Sales</b>										
Final Product	(tU)	15,668	15,079	14,889	14,659	14,102	13,170	11,137	8,636	7,703
	(MlbU)	34.54	33.24	32.82	32.32	31.09	29.04	24.55	19.04	16.98
	(MlbU <sub>3</sub> O <sub>8</sub> )	40.73	39.20	38.71	38.11	36.66	34.24	28.95	22.45	20.03
<b>Macro Economics</b>										



Statistic	Units	2026	2027	2028	2029	2030	2031	2032	2033	2034
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	33.32	35.75	36.43	37.47	37.75	39.56	41.54	43.40	43.58
	(%)	2.50	2.57	2.56	2.54	2.55	2.57	2.62	2.84	2.62
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	32.48	34.84	35.49	36.51	36.79	38.54	40.45	42.17	42.44
<b>Financial</b>										
Sales Revenue	(KZTm)	1,323.1	1,365.7	1,373.9	1,391.5	1,348.7	1,319.7	1,171.2	946.8	849.9
Opex	(KZTm)	(426.9)	(402.7)	(400.0)	(397.7)	(387.3)	(371.2)	(325.4)	(286.5)	(248.0)
EBITDA	(KZTm)	896.3	963.0	974.0	993.8	961.4	948.5	845.8	660.3	601.8
Capex	(KZTm)	(158.0)	(149.8)	(147.9)	(146.7)	(137.4)	(118.0)	(100.7)	(89.6)	(90.1)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.48	10.27	10.33	10.44	10.56	10.84	11.24	12.76	12.38
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.20	8.02	8.07	8.14	8.25	8.48	8.72	10.04	9.48
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.08	13.98	14.04	14.17	14.20	14.17	14.46	16.33	16.02

**Table ES 19 Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2035 through 2043)**

Statistic	Units	2035	2036	2037	2038	2039	2040	2041	2042	2043
<b>Production</b>										
Mined	(Mt)	14.60	11.11	9.67	8.97	7.42	5.78	5.24	5.15	5.15
Grade	(%U)	0.051	0.055	0.056	0.055	0.054	0.054	0.055	0.055	0.055
Content	(tU)	7,508	6,063	5,379	4,902	4,030	3,092	2,862	2,824	2,824
Final Product	(tU)	6,528	5,233	4,621	4,198	3,444	2,637	2,434	2,400	2,400
Recovery	(%)	86.9	86.3	85.9	85.6	85.5	85.3	85.1	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	6,556	5,710	4,857	4,327	4,000	3,192	2,458	2,400	2,400
	(MlbU)	14.45	12.59	10.71	9.54	8.82	7.04	5.42	5.29	5.29
	(MlbU <sub>3</sub> O <sub>8</sub> )	17.04	14.84	12.63	11.25	10.40	8.30	6.39	6.24	6.24
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	2.94	2.85	2.78	2.77	2.78	2.83	3.50	3.50	3.50
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.25	42.29	42.32	42.32	42.32	42.30	42.01	42.01	42.01
<b>Financial</b>										
Sales Revenue	(US\$m)	720.1	627.7	534.4	476.1	440.1	351.0	268.4	262.1	262.1
Opex	(US\$m)	(209.0)	(182.9)	(139.9)	(130.7)	(112.0)	(93.1)	(61.0)	(54.1)	(54.0)
EBITDA	(US\$m)	511.1	444.8	394.5	345.4	328.2	257.9	207.4	208.0	208.1
Capex	(US\$m)	(60.8)	(66.8)	(52.1)	(44.9)	(37.3)	(21.7)	(26.2)	(24.5)	(24.5)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.26	12.32	11.08	11.62	10.76	11.22	9.55	8.67	8.66
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.70	9.47	8.69	9.18	8.62	8.46	7.71	7.07	7.07
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.70	16.01	15.10	15.52	13.32	14.17	13.39	12.60	12.59

**Table ES 20 Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2044 through 2052)**

Statistic	Units	2044	2045	2046	2047	2048	2049	2050	2051	2052
<b>Production</b>										
Mined	(Mt)	5.18	5.25	3.88	2.42	2.11	2.11	2.11	1.61	1.07
Grade	(%U)	0.055	0.054	0.054	0.049	0.047	0.047	0.047	0.047	0.047
Content	(tU)	2,824	2,824	2,094	1,182	1,000	1,000	1,000	765	508
Final Product	(tU)	2,400	2,400	1,780	1,005	850	850	850	650	432
Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	2,401	2,399	2,049	1,406	1,201	1,199	1,200	1,003	819
	(MlbU)	5.29	5.29	4.52	3.10	2.65	2.64	2.65	2.21	1.81
	(MlbU <sub>3</sub> O <sub>8</sub> )	6.24	6.24	5.33	3.66	3.12	3.12	3.12	2.61	2.13
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	3.50	3.50	10.54	26.53	31.65	31.65	31.65	34.66	35.67
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01	38.94	31.98	29.75	29.75	29.75	28.44	28.00
<b>Financial</b>										
Sales Revenue	(US\$m)	262.2	262.0	207.4	116.9	92.9	92.8	92.8	74.2	59.6
Opex	(US\$m)	(54.1)	(54.1)	(43.9)	(28.4)	(24.7)	(24.8)	(25.0)	(20.6)	(18.3)
EBITDA	(US\$m)	208.2	207.9	163.5	88.5	68.1	68.0	67.8	53.6	41.3
Capex	(US\$m)	(24.8)	(20.7)	(14.6)	(12.8)	(11.9)	(11.9)	(7.6)	-	(9.6)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.66	8.67	8.24	7.76	7.92	7.94	8.02	7.89	8.61
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.07	7.07	6.53	6.26	6.55	6.56	6.55	6.78	7.53
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.63	11.99	10.99	11.27	11.75	11.77	10.45	7.89	8.61

### 3.6 Exploration Programme

The Exploration Properties are located in the same two geological basins which host the majority of the deposits currently being mined and are generally contiguous to existing operations. Further, the geology and geometry of the prospects is similar to those currently being exploited. Notably, they are roll front deposits with snaking geometries in plan view hosted by shallow dipping sandstones at depths of between 200m and 800m.

The approach taken to explore these prospects follows the same consistent approach. The

preliminary exploration phase comprises wide spaced vertical drilling (typically along sections initially spaced 3,200m apart and then spaced 800m apart and at a spacing of 100m along sections) to locate the roll fronts. This is then followed up by an advanced exploration and evaluation phase during which much closer spaced vertical drilling is undertaken (typically on sections 400m apart and at a spacing of 50m along sections), aimed at delineating the geometry of the roll fronts and concentrations of uranium within these to the point where resource estimates can be produced. This close spaced drilling is undertaken alongside associated technical work to determine the technical and economic viability of the prospects.

The preliminary exploration phase typically takes three years and the advanced exploration another five years all of which culminates in the production of the resource estimate and a TEO Konditsii which is then used by the Company to make a decision on whether or not to proceed to pilot production.

The deposits currently being explored by the Company include:

- **Budenovskoye 6 and 7, Togusken and East Zhalpak** which are all located in the Shu-Sarysu Basin and have been explored since 2013, 2015 and 2017 respectively;
- **Akkum** which is located in the Syrdarya Basin where exploration started in 2017; and
- **Inkai 2 and Inkai 3** which were formally part of JV Inkai LLP, and are located in the Shu-Sarysu Basin, but which were relinquished by JV Inkai LLP in H1 2018 and simultaneously acquired by the Company which now has contracts in place to explore these deposits in its own right.

Of the above, Inkai 2 and 3 are at the most advanced stage of exploration and, as commented in Section 7 (Main Report) of this CPR, this has enabled the reporting of Mineral Resources for these two projects. Block 6 Budenovskoye 6 and Block 7 Budenovskoye are also at an advanced stage of exploration, and it is expected that the material classified in accordance with the GKZ System as C2 will most likely be reported for the first time in 2019, while Togusken, East Zhalpak and Akkum are at a preliminary exploration stage.

The Company has developed a detailed exploration programme which is focused on various projects as detailed in Section 8 of the CPR. The expenditures are separately defined to the TEPs as reflected in the LoMps (i.e. not included in the LoMps) and assumed to total expenditure of KZT58.9bn (US\$173.4m) over a period of 10.5 years as reported in Table ES 21.

**Table ES 21 Mining Subsidiary related Exploration Expenditures**

Region	Total (KZTm)	2018 (KZTm)	2019 (KZTm)	2020 (KZTm)	2021 (KZTm)	2022 (KZTm)	2023 (KZTm)	2024 (KZTm)	2025 (KZTm)	2026 (KZTm)	2027 (KZTm)	2028 (KZTm)
<b>Shu-Sarysu Basin</b>												
Togusken	53.0	53.0	-	-	-	-	-	-	-	-	-	-
East Zhalpak	2,154.5	696.1	1,331.8	126.6	-	-	-	-	-	-	-	-
Western (SHSURP)	5,198.2	-	-	50.0	1,498.2	1,150.0	1,150.0	1,150.0	200.0	-	-	-
Inkai-Mynkuduk (SHSURP)	3,597.6	-	50.0	587.0	920.0	920.0	920.6	200.0	-	-	-	-
Sarysu-Baktykarynskaya (SHSURP)	4,260.2	-	-	-	-	50.0	1,150.0	950.0	950.0	960.2	200.0	-
Block 6; Block 7 Budenovskoye	14,179.0	2,003.3	4,898.2	6,660.1	617.4	-	-	-	-	-	-	-
Inkai 2	5,847.0	-	596.3	2,071.4	2,030.8	1,148.5	-	-	-	-	-	-
Inkai 3	3,922.0	-	-	439.4	1,377.0	1,315.2	790.4	-	-	-	-	-
<b>Subtotal</b>	<b>39,211.5</b>	<b>2,752.4</b>	<b>6,876.4</b>	<b>9,934.5</b>	<b>6,443.4</b>	<b>4,583.7</b>	<b>4,011.0</b>	<b>2,300.0</b>	<b>1,150.0</b>	<b>960.2</b>	<b>200.0</b>	<b>-</b>
<b>Syrdarya Basin</b>												
Batteries-Yanykurganskaya (SDURP)	1,966.3	526.6	1,353.0	86.7	-	-	-	-	-	-	-	-
Prishimkentskaya (SDURP)	4,619.0	-	-	50.0	1,250.0	1,600.0	1,519.0	200.0	-	-	-	-
East Kyzylkum (SDURP)	5,100.0	-	-	-	-	-	50.0	1,500.0	1,180.0	1,180.0	990.0	200.0
<b>Subtotal</b>	<b>11,685.3</b>	<b>526.6</b>	<b>1,353.0</b>	<b>136.7</b>	<b>1,250.0</b>	<b>1,600.0</b>	<b>1,569.0</b>	<b>1,700.0</b>	<b>1,180.0</b>	<b>1,180.0</b>	<b>990.0</b>	<b>200.0</b>
<b>North Kazakhstan</b>												
<b>Subtotal</b>	<b>8,060.0</b>	<b>-</b>	<b>-</b>	<b>110.0</b>	<b>1,750.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>200.0</b>	<b>-</b>	<b>-</b>
<b>Total</b>	<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>	<b>200.0</b>

### 3.7 Risks and Opportunities

The key risks relating to the Mineral Assets are:

- **The risk relating to the limited availability of computerised geological and mine planning technologies at the Mining Subsidiaries.** Specifically, SRK notes that Feasibility Studies are largely completed in support of the initial application for the Mining Contract or where regulatory approvals are required for updating of the Mining Contract. Furthermore whilst updates and changes to such studies occur periodically, the present LoMps are largely focused on one or two year detailed plans with extensions thereafter based on a combination of that included in the original historical studies, the conditions of the Mining Contract and unit rates and norms derived from historical statistics and modified as considered appropriate. Whilst the geological, hydrogeological and other physical characteristics may not change significantly in certain deposits, the lack of integrated geological modelling and mine planning, in a computerised environment limits the ability of technical practitioners at the Mining Subsidiaries to:
  - Rapidly assess and update geological models and mine plans in response to changed physical and economic criteria,
  - Incorporate constraints and or variances in spatial changes relating to physical characteristics in the geological modelling and mine planning process,
  - Routinely update Mineral Resource and Ore Reserve statements in response to changed assumptions, specifically with respect to reporting in accordance with the Reporting Standards,
  - Assess the impact of strategic options to maximise mineral asset value;
- **The risk that changes in technical and economic parameters result in the Ore Reserves as reported herein becoming un-economic in changed circumstances:**
  - Specifically should the spot uranium price net of any applicable price discounts fall below US\$20.00/lbU<sub>3</sub>O<sub>8</sub>,
  - In the event that key commodity input costs are subject to higher than inflationary pressures, notably in respect of sulphuric acid costs which is a key variable operating cost component;
- **The risk that the Company's current monopoly with respect to exploration, development and operation of uranium Mineral Assets ceases due to:**
  - Changes in regulatory practice/policy,
  - Changes in national legislation;
- **The risk that the Company due to continued weakened commodity prices is unable to provide sufficient contributions to the liquidation funds in order to meet its environmental liability obligation;**
- **The risk that further changes in environmental and social policy and or legislation requires adherence to more stringent closure criteria** thereby increasing the closure cost liabilities as reported herein; and
- **The risk that further technical work planned to be completed by the Company indicates that the closure liabilities as reported herein, specifically the contingencies applied are understated** for the LoMp closure costs.

The production and economic forecasts presented in this report relate to the Company's existing mining operations only and, further, to the Ore Reserves reported for these as given in Section 3.3.2 (Executive Summary) of this report. They take no account of the potential the Company has to increase the amount of uranium it produces annually by expanding production at its existing operations (above that of any expansions already incorporated into the forward looking projections), to extend the lives of its existing operations by ongoing exploration at, and

in the vicinity of, these operations and the likelihood that it will continue to bring new operations into production for some time to come. In SRK's opinion, this is the key opportunity open to the Company and is a function of the active exploration and development programme the Company has in place, its position as the national atomic company of Kazakhstan with responsibility for uranium mining in Kazakhstan and the preferential rights it has with the Government of Kazakhstan to obtain uranium subsoil use rights through direct negotiations, as opposed to through a tender process.

The Company recognises this opportunity and has allocated a significant budget to continue to explore several projects which are at various stages in the exploration cycle and progress these to the development stage if justified. SRK has reviewed the most advanced of these projects, expects resource estimates for these to start to be produced from next year and fully expects that these will be developed into uranium mines in due course.

The key opportunities relating to the Mineral Assets are:

- **The opportunity to increase the Mineral Resources as reported herein through completion of the Exploration Programme**, specifically:
  - To delineate maiden Mineral Resources at the Company's Exploration Properties, specifically Block 6 Budenovskoye and Block 7 Budenovskoye,
  - To upgrade the current Mineral Resource classification at Block 2 Inkai and Block 3 Inkai,
  - To extend the regional exploration programmes within Kazakhstan given the opportunity offered by the Company's present monopoly with respect to exploration of uranium deposits;
- **To increase the Company's Ore Reserve base through advancement of further technical studies as outlined in this CPR** specifically in respect of Zhalpak, Block 2 Inkai and Block 3 Inkai; and
- **Maintain U<sub>3</sub>O<sub>8</sub> sales at the Mining Subsidiaries at levels ranging from 40Mlb U<sub>3</sub>O<sub>8</sub> to 60Mlb U<sub>3</sub>O<sub>8</sub> post 2032**, through completion of:
  - the Company's planned regional and deposit specific exploration programme,
  - further technical studies which support increased production at existing operations and advancement of exploration properties with delineated Mineral Resources to Feasibility Study and ultimately project development stages;

## 4 CONCLUSIONS

### 4.1 Introduction

The CPR is addressed to and may be relied upon by the Company, the Directors of the Company and the Advisors in support of the Listing, specifically in respect of compliance with the Requirements, the Reporting Standard and as appropriate Prospectus Rule 5.5.4R(2)(f).

SRK believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in this CPR. The preparation of a CPR is a complex process and does not lend itself to partial analysis or summary.

SRK has no obligation or undertaking to advise any person of any development in relation to Mineral Assets which comes to its attention after the date of this CPR or to review, revise or update the CPR or opinion in respect of any such development occurring after the date of this CPR.

## 4.2 Work Completed

The work completed by SRK in preparing this report has enabled it to present:

- Mineral Resource and Ore Reserve estimates for all of the Company's operating uranium mines, Development Projects and Advanced Exploration Properties;
- A review of the Company's Exploration Programme and the potential in the Company's Exploration Properties;
- An assessment of the Environmental and Social practices relating to the Mineral Assets specifically:
  - the regulatory framework in which the Company operates.
  - the key features of the HSE management systems in effect at the operations.
  - the potential ESHS risks at each of the operations.
  - the asset retirement obligations and closure liabilities associated with the operations and the conformance of the operations to international standards in respect of environmental and social impact management;
- An assessment of the TEPs as incorporated into the LoMps for the Mineral Assets through development of detailed post-tax pre-finance cashflow models which deplete the Ore Reserves as reported herein; and
- A summary of the key risks and opportunities as they relate to the Mineral Assets.

## 4.3 Key Outcomes

As at the Effective Date of the CPR, the Company reported:

- **Mineral Resources and Ore Reserves** reported as at 1 July 2018 in accordance with the terms and definitions of the JORC Code and comprising:
  - aggregated Ore Reserves (Table ES 22) of 884.7Mt grading 0.060%U and containing 531.6ktU and total Mineral Resources of 1,241.3Mt grading 0.054%U and containing 674.0ktU;
  - attributable Ore Reserves of 535.3Mt grading 0.058%U and containing 312.3ktU and total Mineral Resources of 889.7Mt grading 0.051%U and containing 453.5ktU;
- **Environmental and Social Liabilities** for the Mineral Assets (Table ES 23) and reported on a 100% basis comprising: Life-of-Mine plan closure costs totalling KZT109.4bn (US\$321.8m); and Asset Retirement Obligation costs (included within the LoMp closure costs) totalling KZT66.2bn (US\$194.8m) and comprising:
  - aggregated liabilities of US\$321.8m gross and US\$267.0m net of Liquidation Fund provisions (US\$54.7m) as at 30 June 2018,
  - attributable liabilities of US\$205.4m gross and US\$168.8m net of Liquidation Fund provisions (US\$36.6m) as at 30 June 2018.

As at 30 June 2018 the closing balances of the liquidation funds for the Mining Subsidiaries reported KZT18.6bn (US\$54.7m). Future contributions as defined by the individual Mining Contracts necessitates expenditure of a further KZT42.2bn (US\$124.2m) which results in a closing balance of the liquidation fund on closure of KZT60.8bn (US\$179.0m). Overall this indicates a shortfall of KZT48.5bn (US\$142.8m). In addition, the total retrenchment expenditures relating to the LoMps are noted at KZT2.8bn (US\$8.1m).

The Environmental Liabilities as reported herein are inclusive of a 10% contingency, however it is clear that further work is required in order to develop the closure cost estimate to a minimum of PFS level and to specifically address the accompanying risks as highlighted

in Section 14 (Main Report) of this CPR;

- **Life-of-Mine plans** for the Mineral Assets which assumes the following TEPs (Table ES 24):
  - aggregated production of 467.3ktU, sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lb U<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$4.9bn,
  - attributable production of 271.9ktU, sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$2.9bn,
  - Other cash expenditures arising from unallocated costs relating to the provision of services from Kyzylkum LLP to JV-Khorassan LLP. On an aggregate basis this totals KZT16.9bn which is expended from H2 2018 through 2036 inclusive which in US\$ amounts to US\$49.6m. The Company's equity interest in Kyzylkum LLP is 50% with 30% held by Uranium One and 20% by EAHL; and
- **An extensive Exploration Programme** to conduct further technical work in respect of some 11 prospects located in three key geological regions of Kazakhstan: namely Shu–Sarysu, Syrdarya and North–Kazakhstan. The Company forecasts expenditure of approximately KZT59.0bn (US\$173.4m; Table ES 25) over a 10.5 year period with some 66% of expenditures focused on the Shu–Sarysu region and approximately 20% in the Syrdarya region.

**Table ES 22 Aggregated Mineral Resources and Ore Reserves as at 1 July 2018 for the Mineral Assets**

Mining Subsidiary	Ore Reserves			Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Operating Properties</b>						
Kazatomprom-SaUran LLP	74.3	0.041	30.6	75.9	0.041	31.4
Ortalyk LLP	64.5	0.045	29.0	109.1	0.040	43.3
RU-6 LLP	20.9	0.076	15.9	20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	54.8	0.035	19.2
JV Inkai LLP	264.8	0.054	143.3	264.9	0.054	143.4
Semizbai-U LLP	60.1	0.046	27.9	60.1	0.046	27.9
JV Akbastau JSC	49.6	0.089	43.9	49.6	0.089	43.9
Karatau LLP	59.3	0.081	48.1	59.3	0.081	48.1
JV Zarechnoye JSC	8.0	0.060	4.8	12.2	0.056	6.9
JV Katco LLP	57.6	0.104	59.9	57.6	0.104	59.9
JV Khorassan-U LLP	40.0	0.107	42.6	40.0	0.107	42.6
JV SMCC LLP	110.8	0.040	44.0	110.8	0.040	44.0
Baikent-U LLP	20.0	0.112	22.4	20.0	0.112	22.4
<b>Subtotal</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>935.2</b>	<b>0.059</b>	<b>548.8</b>
<b>Advanced Exploration Properties</b>						
Kazatomprom	n/a	n/a	n/a	306.1	0.041	125.1
<b>Grand Total</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>
<b>Attributable</b>	<b>535.3</b>	<b>0.058</b>	<b>312.3</b>	<b>889.7</b>	<b>0.051</b>	<b>453.5</b>

**Table ES 23 Mining Subsidiary Environmental Liabilities: Aggregated and Attributable**

Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
<b>Aggregated (100%)</b>								
Kazatomprom-SaUran LLP	(KZTm)	12,633.1	18,590.7	4,424.8	10,963.5	15,388.4	(3,202.3)	169.7
Ortalyk LLP	(KZTm)	3,734.1	4,841.1	959.7	2,699.0	3,658.7	(1,182.5)	224.4
RU-6 LLP	(KZTm)	6,448.9	8,979.4	1,461.2	2,605.1	4,066.3	(4,913.1)	140.1
Appak LLP	(KZTm)	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
JV Inkai LLP	(KZTm)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
Semizbai-U LLP	(KZTm)	5,063.4	9,819.1	945.5	3,719.9	4,665.4	(5,153.7)	82.7
JV Akbastau JSC	(KZTm)	3,402.0	7,256.8	862.5	2,924.4	3,786.9	(3,469.9)	20.9
Karatau LLP	(KZTm)	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
JV Zarechnoye JSC	(KZTm)	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
JV Katco LLP	(KZTm)	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
JV Khorassan-U LLP	(KZTm)	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
JV SMCC LLP	(KZTm)	7,912.6	14,102.0	2,073.2	3,473.6	5,546.8	(8,555.2)	326.0
Baikent-U LLP	(KZTm)	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>	<b>(KZTm)</b>	<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>
<b>Attributable</b>	<b>(KZTm)</b>	<b>43,933.1</b>	<b>69,835.1</b>	<b>12,435.3</b>	<b>29,087.9</b>	<b>41,523.1</b>	<b>(28,312.0)</b>	<b>1,645.5</b>
<b>100%</b>								
Kazatomprom-SaUran LLP	(US\$m)	37.2	54.7	13.0	32.2	45.3	(9.4)	0.5
Ortalyk LLP	(US\$m)	11.0	14.2	2.8	7.9	10.8	(3.5)	0.7
RU-6 LLP	(US\$m)	19.0	26.4	4.3	7.7	12.0	(14.5)	0.4
Appak LLP	(US\$m)	8.0	16.5	2.3	9.0	11.3	(5.2)	0.3
JV Inkai LLP	(US\$m)	16.5	24.5	0.6	-	0.6	(23.9)	1.4
Semizbai-U LLP	(US\$m)	14.9	28.9	2.8	10.9	13.7	(15.2)	0.2



Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
JV Akbastau JSC	(US\$m)	10.0	21.3	2.5	8.6	11.1	(10.2)	0.1
Karatau LLP	(US\$m)	11.4	20.6	2.1	8.8	10.9	(9.7)	1.0
JV Zarechnoye JSC	(US\$m)	4.0	8.8	0.2	0.2	0.4	(8.4)	0.4
JV Katco LLP	(US\$m)	27.3	35.8	13.5	8.9	22.4	(13.4)	1.3
JV Khorassan-U LLP	(US\$m)	5.6	16.7	1.7	12.4	14.1	(2.5)	0.1
JV Khorassan-U LLP	(US\$m)	23.3	41.5	6.1	10.2	16.3	(25.2)	1.0
Baikén-U LLP	(US\$m)	6.7	11.8	2.8	7.3	10.1	(1.7)	0.9
<b>Total</b>	<b>(US\$m)</b>	<b>194.8</b>	<b>321.8</b>	<b>54.7</b>	<b>124.2</b>	<b>179.0</b>	<b>(142.8)</b>	<b>8.1</b>
<b>Attributable</b>	<b>(US\$m)</b>	<b>129.2</b>	<b>205.4</b>	<b>36.6</b>	<b>85.6</b>	<b>122.1</b>	<b>(83.3)</b>	<b>4.8</b>

**Table ES 24 LoMp Salient Technical Economic Parameters**

Mining Subsidiary	Production (ktU)	Sales (MibU <sub>3</sub> O <sub>5</sub> )	Cash Costs C1 (US\$/lbU <sub>3</sub> O <sub>5</sub> )	AISC (US\$/lbU <sub>3</sub> O <sub>5</sub> )	Capital Expenditure (US\$m)
<b>Operating Properties</b>					
Kazatomprom-SaUran LLP	27.1	74.6	18.57	24.30	456.4
Ortalyk LLP	25.8	67.9	11.04	13.10	166.2
RU-6 LLP	14.3	38.3	16.88	21.98	217.4
Appak LLP	17.3	46.0	15.19	18.60	186.3
JV Inkai LLP	121.8	317.9	9.06	13.03	1,309.7
Semizbai-U LLP	24.2	64.0	15.66	19.41	265.7
JV Akbastau JSC	38.1	100.4	6.56	8.92	256.9
Karatau LLP	43.3	114.8	5.63	7.98	313.2
JV Zarechnoye JSC	3.8	11.0	13.99	17.96	52.2
JV Katco LLP	53.9	141.5	8.83	12.50	707.2
JV Khorassan-U LLP	38.1	100.7	10.55	14.09	373.8
JV SMCC LLP	39.6	103.8	9.01	11.80	334.6
Baikén-U LLP	20.1	53.0	9.89	14.18	241.7
<b>Total</b>	<b>467.3</b>	<b>1,233.8</b>	<b>10.21</b>	<b>13.74</b>	<b>4,881.3</b>
<b>Attributable</b>	<b>271.9</b>	<b>725.8</b>	<b>10.79</b>	<b>14.43</b>	<b>2,924.2</b>

**Table ES 25 Exploration Programme**

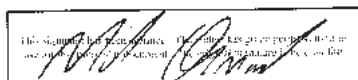
Region	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Exploration Programme</b>													
Shu-Sarysu	(KZTm)	39,211.5	2,752.4	6,876.4	9,934.5	6,443.4	4,583.7	4,011.0	2,300.0	1,150.0	960.2	200.0	-
Syrdarya	(KZTm)	11,685.3	526.6	1,353.0	136.7	1,250.0	1,600.0	1,569.0	1,700.0	1,180.0	1,180.0	990.0	200.0
North - Kazakhstan	(KZTm)	8,060.0	-	-	110.0	1,750.0	1,500.0	1,500.0	1,500.0	1,500.0	200.0	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>	<b>200.0</b>
<b>Exploration Programme</b>													
Shu-Sarysu	(US\$m)	115.3	8.1	20.2	29.2	19.0	13.5	11.8	6.8	3.4	2.8	0.6	-
Syrdarya	(US\$m)	34.4	1.5	4.0	0.4	3.7	4.7	4.6	5.0	3.5	3.5	2.9	0.6
North - Kazakhstan	(US\$m)	23.7	-	-	0.3	5.1	4.4	4.4	4.4	4.4	0.6	-	-
<b>Total</b>	<b>(US\$m)</b>	<b>173.4</b>	<b>9.6</b>	<b>24.2</b>	<b>29.9</b>	<b>27.8</b>	<b>22.6</b>	<b>20.8</b>	<b>16.2</b>	<b>11.3</b>	<b>6.9</b>	<b>3.5</b>	<b>0.6</b>

#### 4.4 Closing Statement

The observations, comments and conclusions presented in this report represent SRK's opinion as of 30 September 2018 and are based on a review of documentation provided by the Company, site visits to the operations, site visits to all of the operating mines, and discussions with the Company's management and representatives.

SRK cannot accept any liability, either direct or consequential for the validity of information that has been accepted in good faith.

**For and behalf of SRK Consulting (UK) Limited**



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# COMPETENT PERSONS' REPORT ON THE MINERAL ASSETS OF JOINT STOCK COMPANY NATIONAL ATOMIC COMPANY KAZATOMPROM, REPUBLIC OF KAZAKHSTAN

## 1 INTRODUCTION

### 1.1 Background

SRK Consulting (UK) Limited (“**SRK**”) has been appointed by Joint Stock Company National Atomic Company Kazatomprom (“**Kazatomprom**”, “**KAP**”, or the “**Company**”) to prepare a Competent Persons Report (“**CPR**”), pursuant to the Requirements (defined in Section 1.2.1 below) on its uranium mineral mining and exploration assets (the “**Mineral Assets**”) located in the Republic of Kazakhstan (“**Kazakhstan**”).

Kazatomprom is a joint stock company incorporated under the laws of Kazakhstan on 21 February 19997 which operates as Kazakhstan’s national operator for the export and import of uranium and its compounds, nuclear power plant fuel, special equipment and technologies, as well as rare metals. The Company by measure of attributable production is the largest producer of natural uranium globally as well as reporting as the second lowest cost producer as reported by Ux Consulting Company (“**UxC**”). For the 12 month period ended 31 December 2017 the Company together with its subsidiaries (the “**Group**”) represented approximately 20% of total global uranium primary production and approximately 40% of global in-situ leach recovery (“**ISR**”) uranium production.

The Group operates through a complex structure of subsidiaries, Joint Venture and Associate companies comprising three key segments: the “**Uranium Segment**”; the “**UMP Segment**”; and the “**Other Segment**”. The Uranium Segment, includes uranium mining and processing operations from the Group’s mines, the Group’s purchases of uranium from the Group’s joint ventures and associates engaged in uranium production, and external sales and marketing of uranium products, in each case other than production and sales of UO<sub>2</sub> powder and fuel pellets.

This scope of this CPR is limited to the mining and processing operations of the Uranium Segment, specifically all key activities relating to the extraction of uranium and production of the final saleable product in the form of U<sub>3</sub>O<sub>8</sub>. The Mineral Assets are located in three (Shu-Sarysu; Syrdarya; and North Kazakhstan) of the six uranium geological provinces of Kazakhstan covering a total licence area of 2,059.27km<sup>2</sup> which includes 30 deposits/blocks categorised as: 26 Producing Properties (“**PP**”); one Development Property (“**DP**”); two Advanced Exploration Properties (“**AEP**”); and two Exploration Properties (“**EP**”) based on the classifications as reported in Section (1.2.2). In addition the Company’s “**Exploration Programme**” covers a further six EPs located in three regions in which the Company is active. The Mineral Assets are largely held through 14 subsidiaries, Joint Venture and Associate companies (the “**Mining Subsidiaries**” - Table 1-1) which in conjunction with the Company are directly responsible for uranium mining and downstream processing activities. Thirteen of the Mining Subsidiaries include Producing Properties while one Mining Subsidiary only includes Exploration Properties (Budenovskoye LLP).

The Company’s status as a national company in Kazakhstan allows the Group to benefit from

certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the Government of Kazakhstan (“GoK”) rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including exploration, development and production of all natural uranium in Kazakhstan.

**Table 1-1: Mineral Assets salient statistics**

Mining Subsidiary	Equity Interest (%)	Geological Region	Deposits /Prdn Units (No)	Contracts (No)	Licence Area (km <sup>2</sup> )	Discovery (year)	Prdn Start (year)	LoMp <sup>(1)</sup> Depletion (year)	Prdn (tU)
<b>Operating Properties</b>									
Kazatomprom-SaUran LLP <sup>(2)</sup>	100.00	Shu-Sarysu	5	5	252.90	1963	1997	2040	2,050
Ortalyk LLP <sup>(2)</sup>	100.00	Shu-Sarysu	2	2	186.40	1964	2007	2032	1,974
RU-6 LLP <sup>(2)</sup>	100.00	Syrdarya	2	1	59.58	1979	1997	2031	987
Appak LLP	65.00	Shu-Sarysu	1	1	133.46	1976	2008	2036	1,000
JV Inkai LLP <sup>(3)</sup>	60.00	Shu-Sarysu	3	1	139.00	1976	2008	2052	4,000
Semizbai-U LLP	51.00	Syrdarya; Northern Kazakhstan	2	2	71.20	1973	2008	2041	1,201
JV Akbastau JSC	50.00	Shu-Sarysu	3	2	2.71	1976	2009	2039	1,931
Karatau LLP	50.00	Shu-Sarysu	1	1	17.28	1979	2007	2033	3,200
JV Zarechnoye JSC	49.98	Syrdarya	1	1	38.00	1977	2007	2023	837
JV Katco LLP	49.00	Shu-Sarysu	2	1	45.73	1976	2001	2033	4,013
JV Khorassan-U LLP <sup>(4)</sup>	50.00	Syrdarya	1	1	70.80	1972	2008	2036	2,990
JV SMCC LLP	30.00	Shu-Sarysu	2	2	116.91	1976	2004	2036	3,080
Baiken-U LLP <sup>(4)</sup>	52.50	Shu-Sarysu	1	1	350.00	1972	2009	2032	2,030
<b>Subtotal</b>			<b>26</b>	<b>21</b>	<b>1,483.97</b>	<b>1963</b>	<b>1997</b>	<b>2052</b>	<b>28,372</b>
<b>Advanced Exploration Properties</b>									
Kazatomprom	100.00	Shu-Sarysu	2	2	424.00	1976	2015	n/a	n/a
<b>Exploration Properties<sup>(5)</sup></b>									
Budenovskoye LLP	51.00	Shu-Sarysu	2	1	151.30	1976	2017	n/a	n/a
<b>Grand Total</b>			<b>30</b>	<b>24</b>	<b>2,059.27</b>	<b>1963</b>	<b>1997</b>	<b>2052</b>	<b>28,372</b>

<sup>(1)</sup> LoMp: date of depletion of Ore Reserves; maximum production in the current Life of Mine plans for the Mineral Assets.

<sup>(2)</sup> As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

<sup>(3)</sup> For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

<sup>(4)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

<sup>(5)</sup> The Exploration Properties noted only include details for Block 6 Budenovskoye and Block 7 Budenovskoye and do not include details for a further 9 Exploration Properties referenced in Section 8 and Section 13.3.7.

As at the Effective Date of the CPR, the Company reported:

- Aggregated Ore Reserves (Table 1-2) as at 1 July 2018 of 884.7Mt grading 0.060%U and containing 531.6ktU and total Mineral Resources of 1,241.3Mt grading 0.054%U and containing 674.0ktU;
- Attributable Ore Reserves as at 1 July 2018 of 535.3Mt grading 0.058%U and containing 312.3ktU and total Mineral Resources of 889.7Mt grading 0.051%U and containing 453.5ktU;
- Environmental Closure Liabilities comprising:
  - aggregated liabilities of US\$321.8m gross and US\$267.0m net of Liquidation Fund provisions (US\$54.7m) as at 30 June 2018,
  - attributable liabilities of US\$205.4m gross and US\$168.8m net of Liquidation Fund provisions (US\$36.6m) as at 30 June 2018;
- Life-of-Mine plans for the Mineral Assets which assume:
  - aggregated production of 467.3ktU, sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$4.9bn,
  - attributable production of 271.9ktU, sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and all in sustaining cash costs (“AISC”) of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$2.9bn; and

- For the 12 month period ended 31 December 2017:
  - aggregated production of 23.3ktU, sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$260.9m,
  - attributable production of 12.1ktU, sales of 30.5MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$130.5m; and
- For the 6 month period ended 30 June 2018:
  - aggregated production of 10.9ktU, sales of 23.3MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.99/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$15.00/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$93.4m,
  - attributable production of 5.8ktU, sales of 13.0MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.28/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$51.2m.

Forecast sales from the Mining Subsidiaries which are reported herein as attributable to the Company are assumed to be to the Company and not from the Company to any third parties. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been sold directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

**Table 1-2: Aggregated Mineral Resources and Ore Reserves as at 1 July 2018 for the Mineral Assets**

Mining Subsidiary	Deposits (No)	Ore Reserves (Mt)	(%U)	(ktU)	Mineral Resources (Mt)	(%U)	(ktU)
<b>Operating Properties</b>							
Kazatomprom-SaUran LLP	5	74.3	0.041	30.6	75.9	0.041	31.4
Ortalyk LLP	2	64.5	0.045	29.0	109.1	0.040	43.3
RU-6 LLP	2	20.9	0.076	15.9	20.9	0.076	15.9
Appak LLP	1	54.8	0.035	19.2	54.8	0.035	19.2
JV Inkai LLP	3	264.8	0.054	143.3	264.9	0.054	143.4
Semizbai-U LLP	2	60.1	0.046	27.9	60.1	0.046	27.9
JV Akbastau JSC	3	49.6	0.089	43.9	49.6	0.089	43.9
Karatau LLP	1	59.3	0.081	48.1	59.3	0.081	48.1
JV Zarechnoye JSC	1	8.0	0.060	4.8	12.2	0.056	6.9
JV Katco LLP	2	57.6	0.104	59.9	57.6	0.104	59.9
JV Khorassan-U LLP	1	40.0	0.107	42.6	40.0	0.107	42.6
JV SMCC LLP	2	110.8	0.040	44.0	110.8	0.040	44.0
Baiken-U LLP	1	20.0	0.112	22.4	20.0	0.112	22.4
<b>Subtotal</b>	<b>26</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>935.2</b>	<b>0.059</b>	<b>548.8</b>
<b>Advanced Exploration Properties</b>							
Kazatomprom	2	n/a	n/a	n/a	306.1	0.041	125.1
<b>Grand Total</b>	<b>30</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

This CPR presents the following key technical information as at the Effective Date (defined below):

- Mineral Resources and Ore Reserve statements (the “**2018 Statements**”) for the Mineral Assets reported as at 1 July 2018 and in accordance with the terms and definitions of the JORC Code (defined below);
- The Life-of-Mine plans (“**LoMp**”) for the Mineral Assets inclusive of all technical and economic parameters (“**TEPs**”) including assumed production, sales volumes, sales revenue, operating and capital expenditure relating to depletion of the Ore Reserves from 1 July 2018;
- The “**Environmental and Social Liabilities**” for the Mineral Assets inclusive of all mine closure related expenditures and retrenchment costs; and
- The Exploration Programme for the Mineral Assets specifically relating to the Advanced Exploration Properties and the Exploration Properties.

For the avoidance of doubt, this CPR is limited to the Mineral Assets and specifically excludes all assets and liabilities relating to the Group’s activities external to the Mineral Assets as defined herein. Furthermore, this CPR does not include a valuation of the Mineral Assets.

Certain units of measurements and technical terms defined in the JORC Code (defined below under Section 1.2.2) are defined in the glossaries, abbreviations and units included at the end of this CPR.

## 1.2 Requirement, Reporting Standard, Reliance and Responsibility Statement

The CPR will be published in a “**Prospectus**” in support of the “**Global Offering**” of: the ordinary shares (the “**Shares**”) of the Company on the “**AIX Limited**” being the stock exchange of the Astana International Financial Centre (“**AIX**”); and global depositary receipts (“**GDRs**”) on the “**Main Market**” of the London Stock Exchange (the “**LSE**”), market operated by the London Stock Exchange Group plc.

### 1.2.1 Requirement

SRK has been informed that this CPR will be included in the Prospectus published by the Company in connection with its proposed listing on the “**Official List**” of the United Kingdom Listing Authority (“**UKLA**”) and admission (the “**Admission**”) to trading on the Main Market of the LSE, a market operated by the London Stock Exchange Group plc. The Registration Document will be published by the Company on 15 October 2018, and the Prospectus is expected to be published on or around 31 October 2018, hereinafter the (reach a “**Publication Date**”).

The CPR has been prepared in compliance with the following requirements which together comprise the “**Requirements**”:

- The “**Prospectus Rules**” and the “**Listing Rules**” published by the Financial Conduct Authority (“**FCA**”) from time to time and governed by the UKLA, specifically under Part VI of the Financial Services and Markets Act 2000 of the United Kingdom (the “**FSMA**”);
- The “**Prospectus Directive**” (2003/71/EC) including any relevant implementing measure in each EEA Relevant Member State, specifically and the “**Prospectus Regulations**” (809/2004) published by the FCA from time to time and governed by the UKLA; and
- The “*ESMA update of the CESR recommendations: The consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive*”, published on 20 March 2013: specifically paragraphs 131 to 133, section 1b – mineral companies, Appendix I – Acceptable Internationally Recognised Mining Standards, and Appendix II – Mining Competent Persons’ Report – recommended content, hereinafter and collectively referred to as the “**CESR Recommendations**”.

With respect of paragraphs 132(a)-(e) of the CESR Recommendations SRK notes the following:

- For compliance with Paragraph 132 (a) details relating to Mineral Resources and Ore Reserves reported in accordance with the JORC Code are included in Section 7 Mineral Resources And Ore Reserves;
- For compliance with Paragraph 132 (b) details relating to the anticipated mine life see Section 13 Life Of Mine Plans and exploration potential see Section 8 Exploration Potential;
- For compliance with Paragraph 132 (c) details relating to the duration and main terms of licences or concessions and legal, economic and environmental conditions the reader is referred to: Section 2 Mineral Asset Summary; Section 4.3 Status of the Company’s Agreements; and Section 12 Environmental And Social Management;
- For compliance with Paragraph 132 (d) details relating to current and anticipated progress of mineral exploration, extraction and processing including a discussion on the accessibility of the deposits are included in: Section 7 Mineral Resources And Ore Reserves; Section 8 Exploration Potential; Section 9 Hydrogeology And Geochemistry; Section 10 In-Situ



Uranium Extraction And Recovery; and Section 2 Mineral Asset Summary; and

- For compliance with Paragraph 132 (e) details relating to exceptional factors are included in: Section 9 Hydrogeology And Geochemistry; Section 12 Environmental And Social Management; and Section 14 Risks And Opportunities.

In respect of compliance with Appendix II of the CESR Recommendations, specifically the recommended content for the Competent Persons' Reports SRK respectfully highlights the following:

- **Scope of the CPR:** The primary focus of the CPR is with respect to the provision of independently audited and current: Mineral Resources and Ore Reserves; Life-of-Mine plans; Environmental and Social Liabilities; and Exploration Programmes for the Mineral Assets as reported herein.
- **Compliance Cross Reference:**
  - item (i) Legal and Geological Overview of the Mineral Assets including (1) and (2) as referenced in Section 2 Mineral Asset Summary, Section 4 Mining Title And Law, Section 6 Geology of the CPR.
  - Item (ii) Geological Overview as referenced in Section 6 Geology and Section 9 Hydrogeology And Geochemistry of the CPR,
  - Item (iii) Mineral Resources and Ore Reserves including: (1) covered in Section 7 Mineral Resources And Ore Reserves; (2) covered in Section 1.4 Verification, Validation and Reliance and Section 7 Mineral Resources And Ore Reserves; (3) Section 7.3.8 SRK Audited Mineral Resource Statements; (4 and 5) Table 7-10 and Table 7-11; (6) Section 7.3 Resource Estimation and Reporting; (7) Section 1.4 Verification, Validation and Reliance; (8 a) Section 10 In-Situ Uranium Extraction And Recovery; (8 b) Section 3 Commodity Prices And Macro Economics; 8 (c and d) Section 13.4 Technical-Economic Parameters.
  - Item (iv) Valuation of Ore Reserves. This CPR does not include a Valuation of Ore Reserves, and for the avoidance of doubt does neither include a valuation of the Mineral Assets. Notwithstanding this statement, the CPR provides sufficient information as reported in Section 3 Commodity Prices And Macro Economics; Section 13.4 Technical-Economic Parameters and in conjunction with the references in Section 13.3.8 Common Assumptions to derive a valuation of the Ore Reserves as reported herein.
  - Item (v) Environmental, Social and Facilities: (1) covered in Section 12.6 Closure Planning and Cost Estimates (Liquidation); (2) covered in Section 12.4.6 Regulatory Compliance, Section 12.3 Legal and Regulatory Framework, Section 12.7 Conformance with International Standards; (3) Section 12.4.4 Environmental Impact Management Measures
  - Item (vi) Historic Production/Expenditures covered in Section 2 Mineral Asset Summary, Section 10.3 Historical and Forecast Production Statistics and Section 13.4 Technical-Economic Parameters
  - Item (vii) Infrastructure covered in Section 10.2 Mining and Processing Operations and Section 11 Project Infrastructure, Table 13-11 Mining Subsidiary Human Resources historical statistics, Section 12.4 Health, Safety and Environmental Management Systems
  - Item (viii) Maps etc covered in Section 2 Mineral Asset Summary, and Section 6 Geology
  - Item (ix) Special Factors covered in Section 9 Hydrogeology And Geochemistry; Section 12 Environmental And Social Management; and Section 14 Risks And Opportunities.



## 1.2.2 Reporting Standard

The reporting standard adopted for the reporting of the Mineral Resource and Ore Reserve statements included in the CPR is the *“The 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia”* (the **“JORC Code”**). The JORC Code is a reporting code which has been aligned with the Committee for Mineral Reserves International Reporting Standards (**“CRIRSCO”**) reporting template. Accordingly, SRK considers the JORC Code to be an internationally recognised reporting standard that is adopted worldwide for market-related reporting and financial investments.

The Mineral Assets as reported are classified into various groupings reflecting the development stage at the Effective Date of this CPR. These development stage groupings comprise:

- **Producing Property (“PP”)**: mineral assets for which current ore Reserves are declared and mining and processing operations have been commissioned and are in production.
- **Development Property (“DP”)**: mineral assets for which Ore Reserves have been declared and are essentially supported by a minimum of a pre-feasibility study which on a multi-disciplinary basis demonstrates that the consideration is technically feasible and economically viable;
- **Pre-Development Property (“PDP”)**: mineral assets for which Mineral Resources have been defined but where a decision to proceed with development has not been made;
- **Advanced Exploration Property (“AEP”)**: mineral assets for which only Mineral Resources have been declared; and
- **Exploration Property (“EP”)**: mineral assets for which no Mineral Resources have been declared.

## 1.2.3 Reliance

The CPR is addressed to and may be relied on by the Directors of the Company, and the **“Advisors”**), specifically in respect of compliance with the Requirements, the Reporting Standard and as appropriate Prospectus Rule 5.5.4R(2)(f). Accordingly, SRK has confirmed in writing (the **“Consent Letter”**), dated on the Publication Date which confirms:

- Reliance as regards the CPR for any benefit of the Company and its Advisors;
- Consent to the inclusion of the CPR, and to the inclusion of any extracts from the CPR in the Prospectus;
- Confirmation that all information contained in the Prospectus which is extracted from the CPR or based upon information contained in the CPR has been reviewed by SRK and that such information as presented is accurate, balanced, complete and not inconsistent with the CPR in accordance with Prospectus Rule 5.5.4R(2)(f); and
- Responsibility for the CPR and declares that it has taken all reasonable care to ensure that the information contained in the CPR is, to the best of its knowledge, in accordance with the facts and contains no omission likely to affect its import.

SRK believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in this CPR. The preparation of a CPR is a complex process and does not lend itself to partial analysis or summary.

SRK has no obligation or undertaking to advise any person of any development in relation to

Mineral Assets which comes to its attention after the date of this CPR or to review, revise or update the CPR or opinion in respect of any such development occurring after the date of this CPR.

### 1.3 Effective Date, Base Technical Information Date and Publication Date

The effective date of the CPR is 30 September 2018 (the “**Effective Date**”). The 2018 Statements, the LoMps, the TEPs, the Environmental and Social Liabilities and the Exploration Programme reflect:

- SRK’s review and modification of the Company’s 1 January 2018 estimates reported in accordance with the State Commission of Kazakhstan on Mineral Reserves (the “**GKZ System**”) to derive audited Mineral Resource and Ore Reserve statements for the Mineral Assets and reported in accordance with the terms and definitions of the JORC Code;
- Detailed schedules of activities and expenditures relating to the derivation and support of the Technical and Economic Parameters as included in the Life-of-mine plans for the Mineral Assets;
- SRK’s determination of mine closure costs for all historical, current and planned infrastructure relating to the Mineral Assets and inclusive retrenchment costs comprising the Environmental and Social Liabilities reported herein; and
- Supporting details for the Company’s Exploration Programme including schedules of activities and expenditures to support the planned forecasts as reported herein.

The Base Technical Information Date is defined as 1 July 2018 which is co-incident with the reporting date for the 2018 Statements. The Publication Date of the Registration Document will be 15 October 2018, and the Publication Date of the CPR is expected to be on or around 31 October 2018. As advised by the Company, as at the Publication Date of the Registration Document and the Prospectus no material change has occurred as of the Effective Date of the CPR inclusive of: the 2018 Statements; the LoMp and accompanying TEPs; the Environmental and Social Liabilities; and the Work Programme as outlined herein.

### 1.4 Verification, Validation and Reliance

This CPR is dependent upon technical, financial and legal input from the Company. SRK has conducted a review and assessment of all material technical issues likely to influence: the 2018 Statements; the LoMp and accompanying TEPs; the Environmental and Social Liabilities; and the Exploration Programme. The review comprised:

- Inspection visits to Mineral Assets uranium extraction and processing operations during October 2017 and July 2018;
- Enquiry of technical, financial and legal representatives of the Company both during site visits and during subsequent head office discussions held at various times from 1 October 2017 through 31 August 2018;
- Assessment of the Technico Economicheskiye Obosnovaniye (“**TEO**”) and other supporting technical, environmental, mineral tenure, mining contracts and other documents relating to the Mineral Assets;
- Review of historical information for the 12 month Financial periods ending 31 December 2015, 2016, 2017 and 6 month period ending 30 June 2018;
- Reliance on the Company for: macro-economic parameters including consumer price inflation and exchange rates of local currencies reported against the United States Dollar (“**US\$**”); and input-commodity price forecasts for key consumables, notably acid and other mining and processing related consumables; and

- Reliance on UXc for the annual real terms (1 July 2018) commodity price forecasts as reported in Section 3.2 of this CPR and utilised to compile the TEPs reported in Section 13.4 of this CPR and to assess the economic viability of the Ore Reserves as reported in the 2018 Statements.

SRK confirms that it has performed all necessary validation and verification procedures deemed necessary and/or appropriate by SRK in order to place an appropriate level of reliance on such technical information.

The Mineral Resource statements included in this CPR are reported in accordance with JORC Code. SRK considers that with respect to all material technical-economic matters, it has undertaken all necessary investigations to ensure compliance with the JORC Code.

In consideration of all legal aspects relating to the Mineral Assets, SRK has placed reliance on the representations by the Company that the following are correct as at the Effective Date of the CPR and remain correct until the date of the Prospectus:

- That save as disclosed in the Prospectus, the Directors of the Company are not aware of any legal proceedings that may have an influence on the rights to explore for minerals in respect of the Mineral Assets;
- That the Group is the legal owner of all relevant mineral and surface rights as reported in the Prospectus; and
- That save as expressly mentioned in the Risk Factors or Additional Information section of the main body of the Prospectus, no significant legal issue exists which would affect the likely viability of the Mineral Assets and/or the estimation and classification of the Mineral Resources and Ore Reserves, the LoMps, the Environmental and Social Liabilities and the Exploration Programme as reported herein.

## **1.5 Limitations, Responsibility Statement, Reliance on Information, Declarations, Consent and Copyright**

### **1.5.1 Limitations**

Save as set out in Section 1.2.3 above and for the responsibility arising under Prospectus Rule 5.5.4R(2)(f) to any person and to the extent there provided, to the fullest extent permitted by law SRK does not assume any responsibility and will not accept any liability to any other person for any loss suffered by any such other person as a result of, arising out of, or in connection with this CPR or statements contained therein, required by and given solely for the purpose of complying with item 23.1 of Annex 1 to the Prospectus Directive, consenting to its inclusion in the Prospectus.

The Company has confirmed in writing to SRK that, to its knowledge, the information provided by the Company (when provided) was complete and not incorrect or misleading in any material respect. SRK has no reason to believe that any material facts have been withheld and the Company has confirmed to SRK that it believes it has provided all material information.

The achievability of the projections as reported in this CPR, are neither warranted nor guaranteed by SRK, specifically the: TEPs including assumed production, sales volumes, sales revenue, operating and capital expenditure relating to depletion of the Ore Reserves from 1 July 2018; the Environmental and Social Liabilities; and the Exploration Programme. The projections as presented and discussed herein have been proposed by the Company's management and adjusted where appropriate by SRK to reflect its opinion but cannot be assured. Notably, for example, they are necessarily based on economic and market assumptions, many of which are beyond the control of the Company.

Future cashflows and profits derived from any projections reflected by the TEPs in the LoMps, the Environmental and Social Liabilities or the Exploration Programme are inherently uncertain and actual results may be significantly more or less favourable.

Unless otherwise expressly stated all the opinions and conclusions expressed in this report are those of SRK. It should also be noted that this report reflects SRK's review of information generated, and/or technical work completed, by others. As a result of this, the projections presented here may not directly reflect that previously presented by the Company or in public announcements made by the Company as they also incorporate judgements made by SRK not necessarily incorporated into the Company's assessments.

This CPR specifically excludes all aspects of legal issues, marketing, commercial and financing matters, insurance, land titles and usage agreements, and any other agreements and/or contracts that the Company may have entered into.

### **1.5.2 Responsibility Statement**

In compliance with paragraph 5.5.4R(2)(f) of the Prospectus Rules and item 23.1 of Annex 1 of the Prospectus Directive SRK accepts responsibility for the information provided in the Competent Persons' Report attached as Annex A to this Prospectus. The CPR has been prepared in compliance with the Prospectus Rules and the Listing Rules published by the FCA from time to time, the Prospectus Directive, and the European Securities and Markets Authority update of the Committee of European Securities Regulators recommendations for the consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive. Having taken all reasonable care to ensure that such is the case, SRK declares that the information contained in the CPR is, to the best of the knowledge of SRK, in accordance with the facts and contains no omission likely to affect its import. SRK has given and has not withdrawn its written consent to the inclusion of the CPR in this Prospectus and references to the CPR and SRK in in the form and context in which they are included in this Prospectus.

The scope of the CPR is limited to the uranium mining assets as reported therein, and specifically excludes all other assets of the Group as discussed in the Prospectus.

### **1.5.3 Reliance on Information**

SRK believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in this CPR. The preparation of a CPR is a complex process and does not lend itself to partial analysis or summary.

SRK's opinions given in this document with respect to the 2018 Statements, the LoMps and accompanying TEPs, the Environmental and Social Liabilities and the Exploration Programme are effective at 30 September 2018 and are based on information provided by the Company throughout the course of SRK's investigations, which in turn reflects various technical-economic conditions prevailing at the date of this report and the Company's expectations regarding the uranium market, uranium prices and exchange rates as at the date of this report. These and the underlying TEPs, comprising projections of production, sales, sales revenue, operating and capital expenditures can change significantly over relatively short periods of time. Should these change materially the 2018 Statements, the LoMps and accompanying TEPs, the Environmental and Social Liabilities and the Exploration Programme could be materially different in these changed circumstances.

Whilst SRK has exercised all due care in reviewing the supplied information, SRK does not

accept responsibility for finding any errors or omissions contained therein and disclaims liability for any consequences of such errors or omissions.

This CPR includes technical information, which requires subsequent calculations to derive subtotals, totals and weighted averages. Such calculations may involve a degree of rounding and consequently introduce an error. Where such errors occur, SRK does not consider them to be material.

This CPR uses the terms “*Mineral Resource*”, “*Measured Mineral Resource*”, “*Indicated Mineral Resource*” and “*Inferred Mineral Resource*”. U.S. investors and shareholders in the Company are advised that while such terms are recognised and permitted under JORC Code and Listing Rules, the U.S. Securities and Exchange Commission (“**SEC**”) does not recognise them and strictly prohibits companies from including such terms in SEC filings.

#### 1.5.4 Declarations

SRK will receive a fee for the preparation of this CPR in accordance with normal professional consulting practice. This fee is not contingent on the outcome of any transaction and SRK will receive no other benefit for the preparation of this report. SRK does not have any pecuniary or other interests that could reasonably be regarded as capable of affecting its ability to provide an unbiased opinion in relation to the following aspects pertaining to the Mineral Assets:

- Mineral Resource and Ore Reserve statements dated 1 July 2018;
- Life-of-Mine plans, specifically the projections of the technical and economic parameters as reported therein;
- Environmental and Social Liabilities; and
- Exploration Programme.

Neither SRK, the Competent Persons (as identified under Section 1.7, below) who are responsible for authoring this CPR, nor any Directors of SRK have at the date of this report, nor have had within the previous two years, any shareholding in the Company, the Mineral Assets or the Advisors of the Company, or any other economic or beneficial interest (present or contingent) in any of the assets being reported on. SRK is not a group, holding or associated company of the Company. None of SRK’s partners or officers are officers or proposed officers of any group, holding or associated company of the Company. Further, no Competent Person involved in the preparation of this CPR is an officer, employee or proposed officer of the Company or any group, holding or associated company of the Company. Consequently, SRK, the Competent Persons and the Directors of SRK consider themselves to be independent of the Company, its directors, senior management and Advisors.

In this CPR, SRK provides assurances to the Board of Directors of the Company, in compliance with the Requirements and specifically the Reporting Standard that the Mineral Resources and Work Programme as provided to SRK by the Company and reviewed and, where appropriate, modified by SRK are reasonable, given the information currently available.

#### 1.5.5 Consent

SRK has given and has not withdrawn its written consent to the inclusion of this CPR as set out in “*Annex A: Competent Persons’ Report*” of the Prospectus and references to this CPR in each case and its name in the form and context in which they are included, and has authorised the contents of its report and context in which they are respectively included and has authorised the contents of its report for the purposes of paragraph 5.5.4R(2)(f) of the Prospectus Rules and item 23.1 of Annex 1 of the Prospectus Directive.



### 1.5.6 Copyright

Except where SRK has agreed otherwise (including pursuant to an agreement between SRK and the Company dated 3 October 2017 or any subsequent agreement (each, the “**KAP Agreement**”)):

- neither the whole nor any part of this report nor any reference thereto may be included by any party other than the Company, any of its direct and indirect subsidiaries, the Company’s shareholder JSC Sovereign Wealth Fund Samruk-Kazyna or a competent state authority in Kazakhstan or any other relevant jurisdiction, as may be applicable (together, the “**Recipients**”), in any other document without the prior written consent of SRK save that in the case that the report is not included in full in any other document, the Recipient shall present a draft of any document produced by it that may incorporate a part of this report to SRK for review so that SRK may ensure that this is presented in a manner which accurately and reasonably reflects any results or conclusions contained in this report; and
- copyright of all text and other matters in this document, including the manner of presentation, is the exclusive property of SRK. It is an offence to publish this document or any part of the document under a different cover, or to reproduce and/or use, without written consent (whether granted by virtue of a KAP Agreement or otherwise), any technical procedure and/or technique contained in this document. The intellectual property reflected in the contents resides with SRK and shall not be used for any activity that does not involve SRK, without the written consent of SRK.

Neither the whole nor any part of this report nor any reference thereto may be included in any other document without the prior written consent of SRK regarding the form and context in which it appears.

### 1.6 Indemnities Provided by the Company

The Company has provided the following indemnities to SRK:

- The Company has agreed that, to the extent permitted by law, it will indemnify SRK and its employees and officers in respect of any liability suffered or incurred as a result of or in connection with the preparation of this report albeit that this indemnity will not apply in respect of any material negligence, wilful misconduct or breach of law. The Company has also agreed to indemnify SRK and its employees and officers for time incurred and any costs in relation to any inquiry or proceeding initiated by any person except to the extent SRK or its employees and officers have been materially negligent or acted with wilful misconduct or in breach of law in which case SRK shall bear such costs; and
- In order to assist SRK in the preparation of this CPR the Company may be required to receive and process information or documents containing personal information in relation to SRK’s project personnel. The Company has agreed to comply strictly with the provisions of the Data Protection Act 1998 of the United Kingdom (“**DPA 1998**”) and all regulations and statutory instruments arising from the DPA 1998, and the Company will indemnify and keep indemnified SRK in respect of all and any claims and costs caused by breaches of the DPA 1998.

### 1.7 Statement of Qualification

SRK is an associate company of the international group holding company SRK Consulting (Global) Limited (the “**SRK Group**”). The SRK Group comprises some 1,400 professional staff offering expertise in a wide range of resource and engineering disciplines with 45 offices located in 20 countries.

The SRK Group’s independence is ensured by the fact that it holds no equity in any project.



This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgment issues. The SRK Group has a demonstrated track record in undertaking independent assessments of resources and reserves, project evaluations and audits, CPR and independent feasibility studies on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs.

This CPR has been prepared by a team of consultants sourced from the SRK Group's office in the United Kingdom (“**UK**”), Russian Federation (“**Russia**”), the United States of America (the “**United States**”) and Kazakhstan over a twelve month period. These consultants are specialists in the fields of geology, resource and reserve estimation and reporting, ISR Uranium operations, hydrogeology and hydrology, infrastructure, environmental management and life of mine planning.

The individuals listed in Table 1-3 have provided the material input to this CPR, have extensive experience in the mining industry and are members in good standing of appropriate professional institutions.

**Table 1-3: SRK Project Team**

Responsible Discipline	Consultant	Designation	Registration, Membership, Qualification	Years' Experience
Mineral Resources, Ore Reserves	Dr Mike Armitage	Corporate	C.Eng, C. Geol, FGS, MIMMM	35
Mineral Resources	Liubov Egorova	Principal	MAusIMM, BSc	14
LoMp and Financial Modelling	Dr Iestyn Humphreys	Corporate	FIMMM, AIME, PhD	28
LoMp and Financial Modelling	Nick Fox	Principal	FGS, Prof Grad MIMMM, MICAEW, ACA, MSc	22
Geochemistry	Dr Rob Howell	Corporate	Eur. Geol. C. Chem MRSC, C.Geol., FGS, FIMMM, PhD	31
Hydrogeology	Dr Vladimir Ugorets	Principal	NGWA, MSHA, PhD	40
Environment	Jane Joughin	Corporate	PNS, IAIA, MSc	33

The Competent Person who has overall responsibility for the CPR, Mineral Resources and Ore Reserves as reported herein is Dr Mike Armitage, C.Eng, C. Geol, FGS, MIMM, PhD. He is a Chartered Geologist which is a Recognised Professional Organisation (“**RPO**”) included in a list promulgated by the Australian Securities Exchange (“**ASX**”) from time to time. He is a full time employee of SRK, a corporate consultant and has over 35 years' experience in the mining and metals industry and also has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Mike Armitage has been responsible for the reporting of Mineral Resources and Ore Reserves on various properties internationally during the past 35 years.

The Competent Person who has responsibility for the LoMp and Financial Modelling as reported herein is Dr Iestyn Humphreys, FMIMM, AIME, PhD who is a Corporate Consultant, and Practice Leader with SRK. He is a Fellow of the IMMM which is a RPO included in a list promulgated by the ASX from time to time. Iestyn Humphreys has 28 years' experience in the mining and metals industry and also has been involved in the preparation of Competent Persons' Reports comprising technical evaluations of various mineral assets internationally during the past five years which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code.

## 1.8 Report Format

The Mineral Assets comprise uranium deposits which with respect to geology, extraction and processing are considered to be largely similar in all material respects. As such this CPR is structured on a discipline basis where all Mineral Assets are presented in aggregate within key discipline areas, notably: Section 2 Mineral Asset Summary; Section 3 Commodity Prices And Macro Economics; Section 4 Mining Title And Law; Section 5 Overview Of The Uranium

Occurrence And Isr Mining; Section 6 Geology; Section 7 Mineral Resources And Ore Reserves; Section 8 Exploration Potential; 9 Hydrogeology And Geochemistry; Section 10 In-Situ Uranium Extraction And Recovery; Section 11 Project Infrastructure; Section 12 Environmental And Social Management; Section 13 Life Of Mine Plans; Section 14 Risks And Opportunities and Section 15 Conclusions.

## 2 MINERAL ASSET SUMMARY

### 2.1 Introduction

The following section includes contextual background to the Company and its historical development and the Mineral Assets with specific focus on geographic location, mineral tenure, historical production statistics and summary technical details pertaining to the Group's Mineral Resources and Ore Reserves, Life-of-Mine plans, Exploration Programme, and Environmental and Social Liabilities.

Forecast sales from the Mining Subsidiaries which are reported herein as attributable to the Company are assumed to be to the Company and not from the Company to any third parties. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been sold directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

### 2.2 The Company

#### *Introduction*

The Company is a joint stock company incorporated under the laws of Kazakhstan on 21 February 1997 initially as Open Joint Stock Company Kazatomprom, with registration number 41031-1901-AO and its registered office at 10 D. Kunayev Street, 010000, Astana, Kazakhstan. The principal legislation under which the Company operates is the Law of the Republic of Kazakhstan No.415-II "On Joint Stock Company" dated 13 May 2013 (as amended) and the Law of the Republic of Kazakhstan No. 413-IV "On State Property" dated 1 March 2011 (as amended).

The Company's status as a national company in Kazakhstan allows the Group to benefit from certain privileges, including, among other things, obtaining subsoil use agreements through direct negotiation with the GoK rather than through a tender process which would otherwise be required. This effectively grants the Group priority access to such opportunities, including exploration, development and production of all natural uranium in Kazakhstan.

For the 12 month period ended 31 December 2017 the Group represented approximately 20% of total global uranium primary production and approximately 40% of global ISR uranium production.

#### *Strategy*

In 2018 the Company adopted a new strategy, focusing on five key considerations: (i) refocus on core mining operations, (ii) optimise mining, processing and sales volumes based on market conditions, (iii) create value through enhanced sales and marketing capabilities, (iv) implement best-practice business processes and (v) develop industry leader corporate culture.

The Company's strategy is underpinned by maintaining: its predominance as the largest global producer or natural uranium; preferred producer status in Kazakhstan; diversified global customer base; and low-cost of production within the uranium mining sector.

- **World's largest uranium producer:** Kazakhstan is the largest uranium producing country in the world by a significant margin, accounting for more than 39% of the global uranium

supply in the year ended 31 December 2017 (UxC Report). In addition, due to their geological characteristics, the majority of uranium deposits in Kazakhstan are ISR conducive, as such Kazakhstan accounts for approximately two-thirds of the total global 'reserves' suitable for ISR extraction (UxC Report).

In 2017, the Group was the largest uranium producing company globally, with its attributable production accounting for 20% of the total global uranium production. The Group has maintained its share in the global uranium production at the level of at least 20% during each year since 2011. The Group operates an extensive diversified asset portfolio comprising 30 deposits managed by 14 Mining Subsidiaries across Kazakhstan;

- **Preferred producer status:** The Company has priority access to exploration, development and production of all natural uranium in Kazakhstan;
- **Global customer base:** The Group supplies uranium to eight out of the 10 largest operators of nuclear generation capacity globally. Chinese customers accounted for approximately 58% of the Group's uranium sales volumes in 2017, while European customers, other customers from the Asia-Pacific region, and the United States accounted for approximately 20%, 19% and 3%, respectively, of the Group's uranium sales volumes in 2017; and
- **Low-cost producer:** According to UxC, the Company's average costs are consistently in the first quartile of the global uranium production cost curve and the Group ranks the second lowest of all global uranium producers (second only to its joint venture partner Uranium One) in terms of cash costs. The Group's reported attributable weighted average C1 cash costs were C1 US\$17.45/lbU<sub>3</sub>O<sub>8</sub>, US\$12.22/lbU<sub>3</sub>O<sub>8</sub>, US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC were US\$22.19/lbU<sub>3</sub>O<sub>8</sub>, US\$15.67/lbU<sub>3</sub>O<sub>8</sub>, US\$16.09/lbU<sub>3</sub>O<sub>8</sub> and US\$16.28/lbU<sub>3</sub>O<sub>8</sub> for the years ended 31 December 2015, 2016 and 2017 and the six months ended 30 June 2018.

### **Principal Assets**

The Group's principal assets are:

- Subsoil Use Agreements granting the Group extraction rights (through the Company and the Mining Subsidiaries) with respect to uranium deposits located in the Shu-Sarysu, Syrdarya and Northern Kazakhstan uranium mining provinces, which for 1 July 2018 reported:
  - Aggregated Proved and Probable Ore Reserves of 884.7Mt grading 0.060%U (531.6ktU); and Measured, Indicated and Inferred Mineral Resources of 1,241.3Mt grading 0.054%U (674.0ktU),
  - Attributable Proved and Probable Ore Reserves of 535.3Mt grading 0.058%U (312.3ktU); and Measured, Indicated and Inferred Mineral Resources of 889.7Mt grading 0.051%U (453.5ktU);
- 14 Mining Subsidiaries of which 13 include operating mines. Assuming that the Transactions (defined below) are implemented, the Mining Subsidiaries classifications comprise: six subsidiaries; one Joint Venture; four Joint Operations; and three associates. For the 12 month period ended 31 December 2017 the Mining Subsidiaries reported:
  - aggregated statistics comprising production of 23.3ktU, sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$260.9m,
  - attributable statistics comprising production of 12.1ktU, sales of 30.5MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$130.5m;

- A uranium and rare metals processing facility, Ulba Metallurgic Plant JSC (“**UMP**”), which comprises facilities for fuel pellet production, with annual UME capacity of 3,728 tonnes of  $U_3O_8$ , 317t of  $UO_2$  powder manufactured from  $UF_6$ , 155t of  $UO_2$  powder manufactured from scrap and 108t of fuel pellets, and 626.9t, 141.9t and 25.2t of beryllium, tantalum and niobium rare metal products, respectively;
- A uranium trading subsidiary, Trade House KazakAtom AG (“**THK**”), based in Zug, Switzerland;
- Complementary ancillary businesses, including:
  - two sulphuric acid plants with combined annual production capacity of 680kt of sulphuric acid; and
- A geology and geotechnology company, Volkovgeologia JSC (100%), which is engaged in:
  - prospecting, exploring and analysing uranium deposits;
  - drilling and constructing exploratory and production wells;
  - maintaining drilling works for environmental protection purposes, including analysis of radioactive elements in rocks and ground waters;
  - preparing projects for exploration, feasibility studies and exploration reports;
  - conducting radioecological surveys and environmental impact assessments of the ISR method; and
  - digitising and maintaining historical exploration data.

### **Corporate Structure**

The Company’s interests are largely structured through the following three principal business segments:

- **Uranium Segment:** This includes uranium mining and processing operations from the Group’s mines, the Group’s purchases of uranium from the Group’s joint ventures and associates engaged in uranium production, and external sales and marketing of uranium products, in each case other than production and sales of  $UO_2$  powder and fuel pellets. The Uranium Segment includes the Group’s share in net results of its JVs and Associates engaged in uranium production, as well as results of the Company as the head office of the Group;
- **UMP Segment:** This includes production and sales of products containing beryllium, tantalum and niobium, hydrofluoric acid and by-products. This segment is also engaged in processing of uranium raw materials under tolling arrangements and production of  $UO_2$  powder and fuel pellets; and
- **Other Segment:** This includes revenue and expenses of the Group’s subsidiaries that are primarily engaged in providing supporting services to the Uranium segment, such as drilling, transportation and security services, among others.

A historical Energy Segment relating to production and sales of electricity, heat, industrial, drinking and hot water, distillate in the Mangistau region was discontinued with effect from 3 July 2018.

The Company’s interest are held through numerous wholly owned subsidiaries, joint ventures, joint operations, associates and equity investments defined as follows:

- **Subsidiaries** are entities that the Group controls by having (i) the power to direct their relevant activities that significantly affect their returns, (ii) exposure, or rights, to variable returns from its involvement with these entities, and (iii) the ability to use its power over these entities to affect the amount of the Group’s returns. The existence and effect of substantive

rights, including substantive potential voting rights, are considered when assessing whether the Group has power over another entity;

- **Joint ventures** are entities that are under the joint control of the Group acting collectively with other parties, and decisions over the relevant activities of such entity require unanimous consent of all parties sharing control. The Group's interests in joint ventures are accounted for using the equity method;
- **Joint operations** are entities in respect of which the Group has joint control and has rights to their assets, and revenues and has obligations relating to their expenses as well as financial obligations in proportion to the Group's holding share therein. The Group's joint operations, being JV Akbastau JSC and Karatau LLP, are consolidated as joint operations since 1 January 2018;
- **Associates** are entities over which the Group has, directly or indirectly, significant influence, but not sole or joint control, which is typical for a shareholding of between 20% and 50% of the voting rights. The Group's investments in associates are accounted for using the equity method of accounting; and
- **Equity investments** are entities in which the Group has less than 20% of the voting rights. Equity investments are recognised at fair value as other investments in the Company's consolidated International Financial Reporting Standards ("IFRS") financial statements.

With effect from 1 January 2018, the Company increased its equity interest in its joint venture with Cameco, JV Inkai LLP, from 40% to 60%, and, by the end of 31 December 2018, the Company through a various transactions (the "**Transactions**") intends to increase its equity interest in Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and its equity interest in JV Khorassan-U LLP, a joint venture with RosAtom and Marubeni Corporation, from approximately 34% to 50%. Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases. Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases. Notwithstanding the above, and in alignment with that reported in the Registration Document and the Prospectus, Section 7.5 presents attributable Mineral Resources and Ore Reserves as at 1 July 2018 on a pre-Transaction basis.

**Table 2-1: Mining Subsidiary Classification<sup>(1)</sup>**

Classification	Mining Subsidiary	Equity Interest (%)
<b>Subsidiary</b>	Kazatomprom-SaUran LLP	100.00
	Ortalyk LLP	100.00
	RU-6 LLP	100.00
	Appak LLP	65.00
	JV Inkai LLP	60.00
	Baiken-U LLP	52.50
<b>Joint Venture</b>	Semizbai-U LLP	51.00
<b>Joint Operation</b>	Budenovskoye LLP	51.00
	JV Akbastau JSC	50.00
	Karatau LLP	50.00
<b>Associates</b>	JV Zarechnoye JSC	49.98
	JV Katco LLP	49.00
	JV Khorassan-U LLP	50.00
	JV SMCC LLP	30.00

<sup>(1)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

### **History and Development**

Kazakhstan has been a key supplier of nuclear fuel raw materials for over 60 years. The original processing facilities, now owned by UMP commenced operations in 1949, and have been involved in manufacturing of uranium products since 1954. In 1996, JV Katco LLP and JV Inkai



LLP, (which were subsequently transferred to the Company), were launched as joint ventures with Areva (now Orano S.A: “**Orano**”) and Cameco Corporation (“**Cameco**”), respectively.

The Company was formed in 1997 by order of the President of Kazakhstan as the National Operator of Kazakhstan’s nuclear fuel industry. Table 2-2 presents the Company’s historical activity milestones since inception in 1997.

**Table 2-2: Company’s Historical Activity Milestones**

Year	Activity
1997	The Company is established, and the Group believes it ranked 13 <sup>th</sup> in the global uranium production industry in terms of uranium extraction volume. The Company acquires its interest in JV Inkai LLP, the joint venture between the Group and Cameco.
2000	The Group became the sixth largest uranium producer globally in terms of uranium extraction volume, according to the Nuclear Energy Agency (the “NEA”), the International Atomic Energy Agency (the “IAEA”) and the Red Book, and launched tantalum and non-military grade beryllium production.
2002	The Group expands its uranium export geography by adding U.S. and European destinations, and enters the Chinese and South Korean markets.
2003	The Group believes it became the second largest beryllium producer globally (with 29% of global output) and fourth largest tantalum producer, both in terms of extraction volume.
2007	The Company’s credit rating are assigned for the first time.
2010	The Group becomes number one uranium producer globally, according to according to the NEA and IAEA, the Red Book.
2012	The Group commissions a sulphuric acid plant with an annual capacity of 500 thousand tonnes.
2013	The Group gains access to uranium enrichment facilities of JSC Urals Electrochemical Integrated Plant (“UEIP”) and the International Uranium Enrichment Centre (“UEC”) with an annual capacity of 2.5 million and 60 thousand separative work units, respectively, through equity participation.
2015	The Group enters into a strategic agreement with CGNPC on commercial terms for the design and construction of a fuel assembly plant and the joint development of uranium deposits in Kazakhstan. The Group’s subsidiary UMP becomes the operator of the low-grade uranium bank created under the auspices of the International Atomic Energy Agency (“IAEA”).
2016	The Group’s asset restructuring program is adopted.
2017	The Group’s Switzerland-based trading house, THK, launches its operations.

## 2.3 Mineral Assets

The Mineral Assets are located in three of the six uranium geological provinces of Kazakhstan, have a combined total licence area of 2,059.27km<sup>2</sup> (Shu-Sarysu at 1,469.69km<sup>2</sup>; Syrdarya at 545.58km<sup>2</sup>; and North Kazakhstan at 44.00km<sup>2</sup>) and includes 30 deposits/blocks categorised as: 26 PP; one DP; two AEP; and two EP. In addition the Company’s Exploration Programme covers a further six EPs located in three regions in which the Company is active. The Mineral Assets are largely held through 14 Mining Subsidiaries (Table 2-3) which in conjunction with the Company are directly responsible for uranium mining and downstream processing activities.

Historical development of the Mineral Assets dates from initial discovery in 1963 with the latest deposit discovered in 1982. Initial production commenced at Kazatomprom-SaUran LLP and RU-6 LLP in 1997.

**Table 2-3: Mineral Assets development stage, equity interest and tenure key dates and area**

Mining Subsidiary/Deposit	Uranium Province	Stage	Equity Interest	Tenure key dates and area						
				Expiry (year)	Expiry (years)	Discovery (year)	Op. Start (year)	LoMp Depletion <sup>(1)</sup> (date)	Area (km <sup>2</sup> )	
<b>Production</b>										
<b>Kazatomprom-SaUran LLP<sup>(2)</sup></b>			<b>100.00</b>							
Uvanas	Shu-Sarysu	PP		2022	4.5	1963	1997	2020	2.5	84.48
Eastern Mynkuduk	Shu-Sarysu	PP		2022	4.5	1973	1997	2026	8.5	28.97
Kanzhugan	Shu-Sarysu	PP		2022	4.5	1972	1997	2040	22.5	60.83
South Moinkum (Southern part)	Shu-Sarysu	PP		2019	1.5	1976	2001	2020	2.5	17.40
Central Moinkum	Shu-Sarysu	PP		2039	21.5	1974	2014	2040	22.5	61.22
<b>Total</b>					<b>21.5</b>	<b>1963</b>	<b>1997</b>	<b>2040</b>	<b>22.5</b>	<b>252.90</b>
<b>Ortalyk LLP<sup>(2)</sup></b>			<b>100.00</b>							
Zhalpak	Shu-Sarysu	DP		2022	4.5	1964	2018	2020	2.5	145.80
Central Mynkuduk	Shu-Sarysu	PP		2033	14.5	1976	2007	2032	14.5	40.60
<b>Total</b>					<b>14.5</b>	<b>1964</b>	<b>2007</b>	<b>2032</b>	<b>14.5</b>	<b>186.40</b>
<b>RU-6 LLP<sup>(2)</sup></b>			<b>100.00</b>							
Northern Karamurun	Syrdarya	PP		2022	4.5	1979	1997	2031	13.5	59.58
Southern Karamurun	Syrdarya	PP								
<b>Total</b>					<b>4.5</b>	<b>1979</b>	<b>1997</b>	<b>2031</b>	<b>13.5</b>	<b>59.58</b>
<b>Appak LLP</b>			<b>65.00</b>							
Western Mynkuduk	Shu-Sarysu	PP		2035	17.5	1976	2008	2036	18.5	133.46
<b>JV Inkai LLP<sup>(3)</sup></b>			<b>60.00</b>							
Blocks 1, Inkai (a)	Shu-Sarysu	PP		2045	27.5	1976	2008	2047	29.5	139.00
Blocks 1, Inkai (b)	Shu-Sarysu	PP		2045	27.5	1976	2008	2046	28.5	
Blocks 1, Inkai (c)	Shu-Sarysu	PP		2045	27.5	1976	2015	2052	34.5	
<b>Total</b>					<b>27.5</b>	<b>1976</b>	<b>2008</b>	<b>2052</b>	<b>34.5</b>	<b>139.00</b>
<b>Semizbai-U LLP</b>			<b>51.00</b>							
Semizbai	Northern Kazakhstan	PP		2031	13.5	1973	2009	2040	22.5	27.20
Irkol	Syrdarya	PP		2030	12.5	1976	2008	2041	23.5	44.00



Mining Subsidiary/Deposit	Uranium Province	Stage	Equity Interest	Expiry (year)	Tenure key dates and area					Area (km <sup>2</sup> )
					Expiry (years)	Discovery (year)	Op. Start (year)	LoMp Depletion <sup>(1)</sup> (date)	LoMp Depletion <sup>(1)</sup> (years)	
<b>Total</b>					<b>13.5</b>	<b>1973</b>	<b>2008</b>	<b>2041</b>	<b>23.5</b>	<b>71.20</b>
<b>JV Akbastau JSC</b>			<b>50.00</b>							
Block 1 Budenovskoye	Shu-Sarysu	PP		2037	19.5	1976	2009	2037	19.5	1.586
Block 3 Budenovskoye	Shu-Sarysu	PP		2038	20.5	1976	2009	2039	21.5	1.123
Block 4 Budenovskoye	Shu-Sarysu	PP			20.5	1976	2009	2039	21.5	
<b>Total</b>					<b>20.5</b>	<b>1976</b>	<b>2009</b>	<b>2039</b>	<b>21.5</b>	<b>2.71</b>
<b>Karatau LLP</b>			<b>50.00</b>							
Block 2, Budenovskoye	Shu-Sarysu	PP		2032	14.5	1979	2007	2033	15.5	17.28
<b>JV Zarechnoye JSC</b>			<b>49.98</b>							
Zarechnoye	Syrdarya	PP		2028	10.5	1977	2007	2023	5.5	38.00
<b>JV Katco LLP</b>			<b>49.00</b>							
Southern Moinkum (Northern part)	Shu-Sarysu	PP		2039	21.5	1976	2001	2025	7.5	15.92
Tortkuduk	Shu-Sarysu	PP		2039	21.5	1976	2007	2033	15.5	29.81
<b>Total</b>					<b>21.5</b>	<b>1976</b>	<b>2001</b>	<b>2033</b>	<b>15.5</b>	<b>45.73</b>
<b>JV Khorassan-U LLP<sup>(4)</sup></b>			<b>50.00</b>							
Block Kharassan 1, North Kharassan	Syrdarya	PP		2058	40.5	1972	2008	2036	18.5	70.80
<b>JV SMCC LLP</b>			<b>30.00</b>							
Akdala	Shu-Sarysu	PP		2026	8.5	1982	2004	2025	7.5	37.54
Block 4, Inkai	Shu-Sarysu	PP		2029	11.5	1976	2007	2036	18.5	79.37
<b>Total</b>					<b>11.5</b>	<b>1976</b>	<b>2004</b>	<b>2036</b>	<b>18.5</b>	<b>116.91</b>
<b>Baiken-U LLP<sup>(4)</sup></b>			<b>52.50</b>							
Block Kharassan 2, North Kharassan	Syrdarya	PP		2055	37.5	1972	2009	2032	14.5	350.00
<b>Exploration</b>										
<b>Kazatomprom</b>			<b>100.00</b>							
Block 2 Inkai	Shu-Sarysu	AEP		2022	4.5	1976	2008	n/a	n/a	183.2
Block 3 Inkai	Shu-Sarysu	AEP		2022	4.5	1976	2015	n/a	n/a	240.8
<b>Total</b>					<b>4.5</b>	<b>1976</b>	<b>2008</b>			<b>424.00</b>
<b>Budenovskoye LLP<sup>(5)</sup></b>			<b>51.00</b>							
Block 6 Budenovskoye	Shu-Sarysu	EP		2022	4.5	1976	2017	n/a	n/a	151.30
Block 7 Budenovskoye	Shu-Sarysu	EP		2022	4.5	1976	2017			
<b>Total</b>					<b>4.5</b>	<b>1976</b>	<b>2017</b>			<b>151.30</b>
<b>Grand Total</b>										<b>2,059.27</b>

(1) LoMp: date of depletion of Ore Reserves in the current Life of Mine plans for the Mineral Assets.

(2) As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

(3) For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

(4) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

(5) The Exploration Properties noted only include details for Block 6 Budenovskoye and Block 7 Budenovskoye and do not include details for a further 9 Exploration Properties referenced in Section 8 and Section 13.3.7.

The Company either directly or through other subsidiaries also holds contracts with the GoK to undertake exploration at several assets including:

- Budenovskoye 6 and 7, Togusken and East Zhalspak which are all located in the Shu-Sarysu Basin and have been explored since 2013, 2015 and 2017 respectively;
- Akkum which is located in the Syrdarya Basin where exploration started in 2017; and
- Inkai 2 and Inkai 3 which were formally part of JV Inkai LLP, and are located in the Shu-Sarysu Basin, but which were given up by JV Inkai LLP in H1 2018 and which the Company now has contracts in place to explore in its own right.

### 2.3.1 Location, Access and Infrastructure

The Company's Mineral Assets are located in four (Figure 2-1) of the principal administrative provinces of Kazakhstan: Kyzylorda Province (Shieli and Zhanakorgan districts); South Kazakhstan Province (Sozak district); and North-Kazakhstan Province (Ualikhanovsky district); and Amkola Province (Enbekshilder district). Uranium deposits in Kazakhstan are grouped into six uranium provinces (Figure 2-2).

With the exception of the Semizbai deposit located in Northern Kazakhstan, which straddles the North-Kazakhstan Province and the Amkola Province, the Company's deposits are located in the south of Kazakhstan within the Shu-Sarysu (23) and Syrdarya (6) uranium provinces. In administrative terms these southern provinces belong to the South Kazakhstan Province and

Kyzlorda Province and the deposits themselves are confined to the northern or southern limb of the Karatau Rise (Figure 2-3).

Table 2-4 presents details relating to the proximity of the Mineral Assets to population centres grouped by administrative provinces and geographic areas.

All of the deposits are located in terrain that is both sparsely vegetated and sparsely populated. The natural vegetation at the mine sites ranges from desert, through open shrubland to steppe. Only six mines are within 10km of human settlements. The settlements that are within 10km of some mines are very small, comprising villages and small towns with populations below 7,000. Topographically, the majority of the deposits are located within the Syrdarya River basin and Shu-Sarysu River basin. The basins are separated by the Karatau Mountains that run from the northwest to the southeast:

- The **Syrdarya River Basin** is approximately 150m to 185m above sea level and is characterised by an aeolian-alluvial plain rising to the foothills of the Karatau Mountains to the northeast.

The climate in the Syrdarya River Basin is sharply continental, with hot summers, cold winters and high diurnal variations in temperature. The air temperature averages +26°C in summer (maximum +46°C in July) and -9°C in winter (the minimum is -38°C in January). Precipitation does not exceed 200mm per year. The winds blow predominantly of the northern and north-easterly directions almost continuously. The wind speed is usually 8m/s to 12m/s with gusts up to 24m/s; and

- The Shu River divides the **Shu-Sarysu River Basin** into northern and southern parts. The sandy Moinkum desert extends over the southern part and features small sand dunes and salt pans. The Betpak-Dala clay desert extends over the northern part and continues for some 200km northwards of the Shu-River. The climate of the Shu-Sarysu River Basin is an extreme continental climate. The air temperature averages +23°C in summer (maximum +40°C in July) and -15°C in winter (the minimum is -35°C in January). Precipitation does not exceed 140mm per year. The winds blow predominantly from the northern and north-easterly directions and almost continuously. Strong winds prevail, averaging 3.8m/s to 4.6m/s. Dust storms are common.

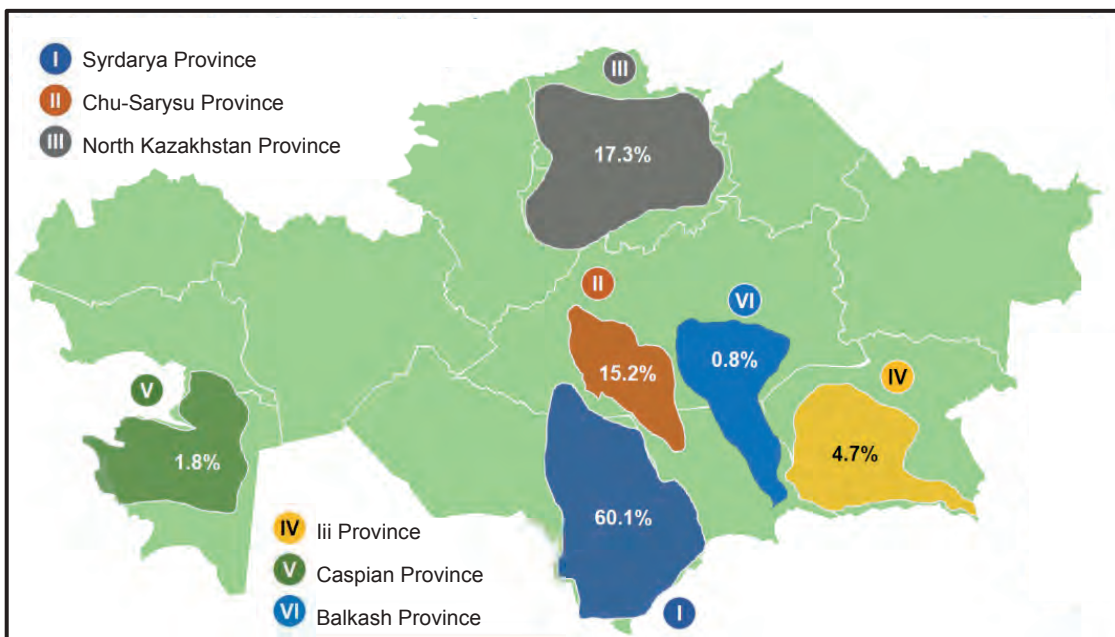
The Semizbai deposit is located in north Kazakhstan, 300km north of Astana and less than 200km from the Russian border. The mine site straddles two provinces, the Akmola Province and the North Kazakhstan Province and approximately 75% of the deposit area and over 80% of uranium reserves are in the Ualikhanovsky district of the North Kazakhstan Province, and the remainder in the Enbekshilder district of the Akmola Province. The deposit is situated in the Semizbai depression on the north-eastern edge of the Kazakh highland. The relief of the area is largely flat with a gentle slope to the north and east with elevation ranging from 90m to 140m.

The climate at Semizbai is sharply continental with hot summers, severe winters, and large temperature fluctuations during the day. The average monthly temperature is +18°C to 22°C (maximum +35°C) in summer and -17°C to 20°C (minimum -44°C) in winter). Average annual precipitation is around 300mm, most of which falls as rainfall in summer. Strong winds are frequent.

**Figure 2-1: Kazakhstan Country Map and location of the Mineral Assets mining and processing operations**

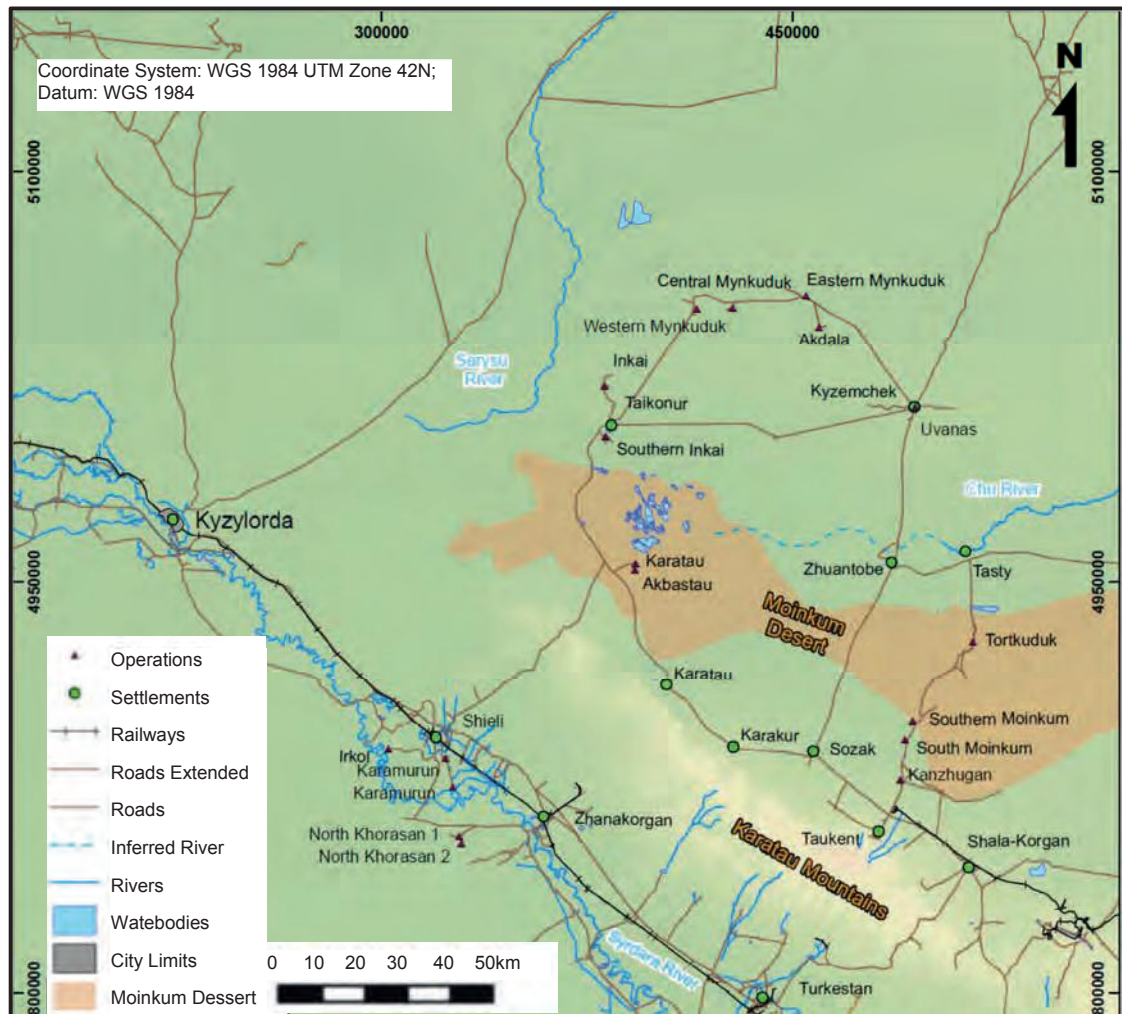


**Figure 2-2: Kazakhstan Uranium Provinces indicating distribution of GKZ System 'reserve' uranium content distribution**





**Figure 2-3: Regional location of Mineral Assets in the Shu-Sarysu Province and the Syrdarya Province**



**Table 2-4: Geographic and administrative location of the Mineral Assets**

Province and district	Geographic area	Mining Subsidiary	Deposit name	Nearest settlements (distance from mine)
Kyzylorda Province (Shieli and Zhanakorgan districts)	Syrdarya depression	Semizbai-U LLP	Irkol	Kyzylkainy (9km), Ortakshyl (9.5km) and Zhanaturmys (13km)
		RU-6 LLP	Northern Karamurun Southern Karamurun	22nd intersection (1.5km), Avangard (2.6km from North Karamurun deposit), Gigant (3.8km) and Aktam (8.5km)
		JV Khorassan LLP	Block Kharassan 1, North Kharassan	Baykenzhe (7km)
		Baiken-U LLP	Block Kharassan 2, North Kharassan	Baykenzhe (10km) and Belibay (13km)
South Kazakhstan Province (Sozak district)	Syrdarya depression	JV Zarechnoye JSC	Zarechnoye	Koksaray (62km)
	Shu-Sarysu basin (south of Shu River)	JV Akbastau LLP	Block 1, Block 3 and Block 4 Budenovskoye	Aksumbe (40km) Karatau (60km)
		Karatau LLP	Block 2 Budenovskoye	Aksumbe (45km)
		JV Katco LLP	Tortkuduk	Tasty (20km)
			Southern Moinkum (Northern part)	Taukent (50km), Tasty (50km)
		Kazatomprom-SaUran LLP	Kanzhugan	Taukent (20km)
	Shu-Sarysu basin (north of Shu River)	JV Inkai LLP	Block Inkai (a), (b) and (c)	Taikonur (6km)
			Block 4, Inkai	Taikonur (12km)
			Akdala	Kyzemshek (35km)
		Ortalyk LLP <sup>(1)</sup>	Central Mynkuduk	Taikonur (70km)
Appak LLP		Western Mynkuduk	Taikonur (60km)	

Province and district	Geographic area	Mining Subsidiary	Deposit name	Nearest settlements (distance from mine)
		Kazatomprom-SaUran LLP	Uvanas	Kyzemshek (2km), Zhuantobe (60km) and Tasty (80km)
			Eastern Mynkuduk	Kyzemshek (60km)
			Zhalpak (exploration and trial mining site)*	Kyzemshek (85km), Tasty and Zhuantobe (120km)
North-Kazakhstan Province (Ualikhanovsky district) Amkola Province (Enbekshilder district)	Semizbai depression	Semizbai-U LLP	Semizbai	Kairat and Zhas-karait villages (50km), Bestobe (60km) Stepnogorsk city (150km)

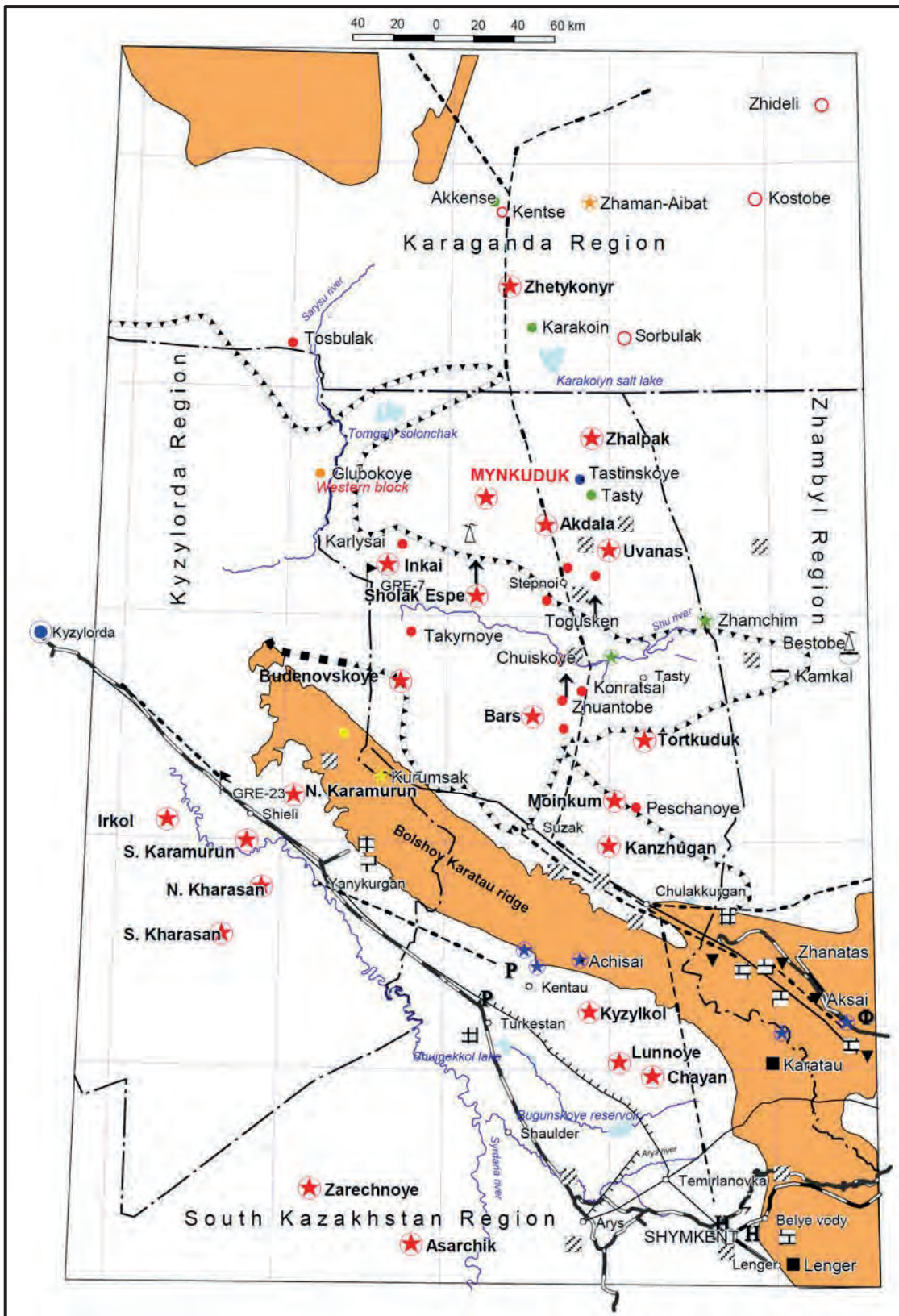
(1) Ortalyk LLP is the holder of the mining contract for the Zhalpak deposit. Kazatomprom-SaUran LLP undertaking the trial mining operations at the Zhalpak deposit under contract to Ortalyk LLP. The environmental permit for the trial mining has been issued to the Kazatomprom-SaUran LLP, as the operator of trial mining. Full-scale mining at the Zhalpak deposit will commence is scheduled for 2022 if the trial is successful.

The Mineral Assets are generally accessible via a well-developed railway and tarred road network with the last sections of access normally comprise as dirt roads (Figure 2-4; Figure 2-5). The transportation of goods to and from the ISR operations is mostly undertaken by Trade and Transport Company LLP, a subsidiary of the Company. This company assists with both rail and road transport and also maintains 500km of private roads used for transportation.

On-site infrastructure is extensive and well maintained with the majority having become operational after 2005 with modern installations. Certain of the older installations were commissioned 30 to 40 years ago and appear weathered, notably: Uvanas and Eastern Mynkuduk (dating to 1978), Kanzhugan (1982) and North Karamurun and South Karamurun (dating to 1981). Key installations at the Group's operations comprise:

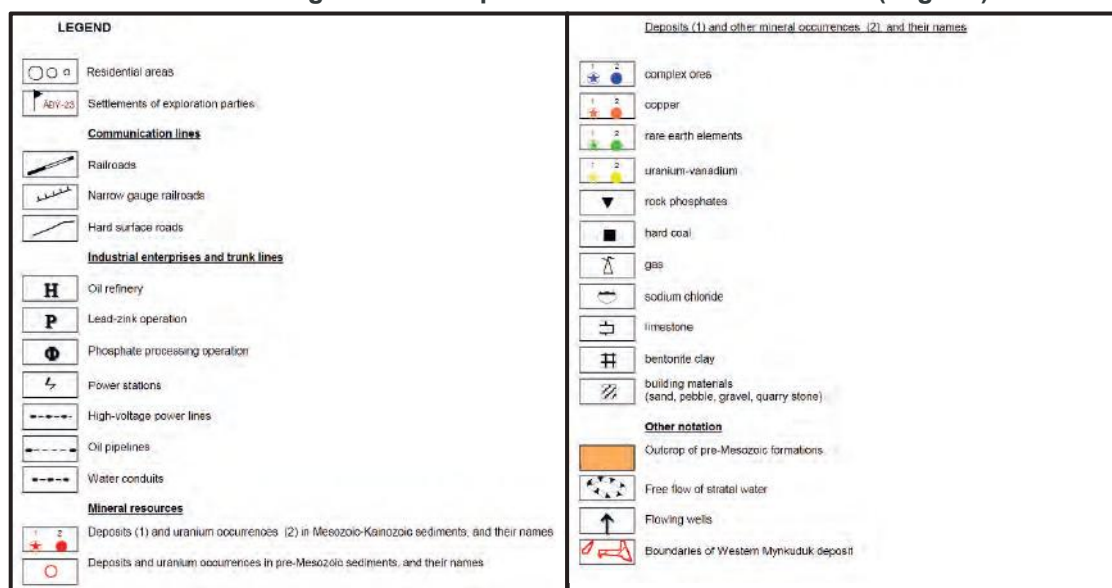
- External power supply connected to the national grid via 110kV and 220kV transmission lines and local substations;
- Wellfields standard infrastructure at all operations comprise: power distribution lines; pregnant leach solution (“**PLS**”) pipelines; portable cabins; access roads; mobile drill rigs; and drill slimes settling ponds;
- Wellfields supporting infrastructure comprising: acid tanks; PLS setting ponds; and drill slimes storage facilities; and
- Processing and Refining plants comprising: fencing and security; process plant and product storage; acid storage tanks; hydrogen peroxide tanks; potable and technical water supply; settling ponds (PLS, barren solution, process slimes, sewage, effluent); office and staff facilities; and other ancillary infrastructure.

**Figure 2-4: Regional location map for Shu-Sarysu and Syrdarya uranium provinces, indicating the main deposits and basic infrastructure (Legend shown in Figure 2-5)**





**Figure 2-5: Location map for Shu-Sarysu and Syrdarya uranium provinces, indicating the main deposits and basic infrastructure (Legend)**



### 2.3.2 Historical Production Statistics

SRK has collated the historical production and economic statistics for the Mineral Assets for the Mining Subsidiaries reported on both an aggregated and attributable basis for the 12 month period ended 31 December for 2015, 2016 and 2017 and for the six month period ended 30 June 2018.

Table 2-5 provides the historical summary statistics which indicates the following:

- For the 12 month period ended 31 December 2017:
  - aggregated production of 23.3ktU, sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$260.9m,
  - attributable production of 12.1ktU, sales of 30.5MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lb U<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$130.5m;and
- For the 6 month period ended 30 June 2018:
  - aggregated production of 10.9ktU, sales of 23.3MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$10.99/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$15.00/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$93.4m,
  - attributable production of 5.8ktU, sales of 13.0MlbU<sub>3</sub>O<sub>8</sub> at reported C1 cash costs of US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.28/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$51.2m.

Table 2-6 presents the aggregated and attributable production for the Mineral Assets reported at a deposit level for the Mining Subsidiaries which indicates:

- aggregated production of 23,607tU (2015), 24,586tU (2016), 23,321tU (2017) and 10,905tU (H1 2018); and
- attributable production of 12,766 (2015), 13,096tU (2016), 12,094tU (2017) and 5,771tU (H1 2018).

Table 2-7 presents the sales volumes, C1 cash costs and the AISC for the Mining Subsidiaries and Table 2-8 presents the capital expenditure items in KZT for the Mining Subsidiaries for the 12 month periods ended 31 December for 2015, 2016 and 2017 and for the six month period ended 30 June 2018.

**Table 2-5: Mineral Assets historical summary statistics (2015 through H2 2018)**

Statistic	Units	Aggregated				Attributable			
		2015	2016	2017	2018H1	2015	2016	2017	H1 2018
<b>Production</b>									
Mined	(Mt)	44.22	45.79	43.12	20.07	25.88	26.59	24.39	11.56
Grade	(%U)	0.061	0.061	0.061	0.061	0.056	0.056	0.056	0.056
Content	(tU)	26,778	27,817	26,354	12,325	14,488	14,802	13,633	6,479
Final Product	(tU)	23,607	24,586	23,321	10,905	12,766	13,096	12,094	5,771
Recovery	(%)	88.16	88.38	88.49	88.48	88.11	88.47	88.71	89.07
<b>Sales</b>									
Final Product	(tU)	22,529	23,566	23,164	8,961	11,945	13,146	13,264	5,484
	(MlbU)	49.67	51.93	51.07	19.76	26.33	28.98	29.24	12.09
	(MlbU <sub>3</sub> O <sub>8</sub> )	58.57	61.24	60.22	23.30	31.05	29.98	30.53	12.96
<b>Macro Economics</b>									
Exchange Rate	(US\$:KZT)	222	342	326	326	222	342	326	326
<b>Commodity Price</b>									
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.32	25.72	21.31	21.18	39.61	26.57	21.53	21.13
	(%)	2.39	2.56	2.51	2.10	1.82	1.92	1.92	1.47
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.38	25.06	20.78	20.73	38.89	26.06	21.12	20.82
<b>Financial</b>									
Sales Revenue	(US\$m)	2,248.2	1,534.9	1,251.3	483.0	1,207.6	781.4	644.7	269.9
Opex	(US\$m)	(902.5)	(615.7)	(624.3)	(256.1)	(542.0)	(366.4)	(366.9)	(158.4)
EBITDA	(US\$m)	1,345.7	919.2	627.0	226.9	665.6	415.0	277.8	111.5
Capex	(US\$m)	(298.8)	(213.5)	(260.9)	(93.4)	(156.8)	(107.6)	(130.5)	(51.2)
<b>Unit Costs</b>									
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.41	10.05	10.37	10.99	17.45	12.22	12.02	12.22
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.57	8.20	8.31	8.82	14.34	10.07	9.74	9.92
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	20.29	13.42	14.51	15.00	22.19	15.67	16.09	16.28

**Table 2-6: Mineral Assets historical production statistics (2015 through H2 2018)**

Mining Subsidiary/Deposit	Aggregated Production				Equity Interest				Attributable Production			
	2015	2016	2017	H1 2018	2015	2016	2017	H1 2018	2015	2016	2017	H1 2018
	(tU)	(tU)	(tU)	(tU)	(%)	(%)	(%)	(%)	(tU)	(tU)	(tU)	(tU)
<b>Kazatomprom-SaUran LLP</b>												
Uvanas	288	197	78	28	100.00	100.00	100.00	100.00	288	197	78	28
Eastern Mynkuduk	1,053	1,025	896	419	100.00	100.00	100.00	100.00	1,053	1,025	896	419
Kanzhugan	537	543	470	194	100.00	100.00	100.00	100.00	537	543	470	194
South Moinkum (Southern part)	268	188	79	11	100.00	100.00	100.00	100.00	268	188	79	11
Central Moinkum	68	50	67	106	100.00	100.00	100.00	100.00	68	50	67	106
<b>Total</b>	<b>2,214</b>	<b>2,003</b>	<b>1,590</b>	<b>759</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>2,214</b>	<b>2,003</b>	<b>1,590</b>	<b>759</b>
<b>Ortalyk LLP</b>												
Zhalpak	-	-	-	28	100.00	100.00	100.00	100.00	-	-	-	28
Central Mynkuduk	1,770	1,953	1,898	810	100.00	100.00	100.00	100.00	1,770	1,953	1,898	810
<b>Total</b>	<b>1,770</b>	<b>1,953</b>	<b>1,898</b>	<b>837</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>1,770</b>	<b>1,953</b>	<b>1,898</b>	<b>837</b>
<b>RU-6 LLP</b>												
Northern Karamurun	438	531	340	211	100.00	100.00	100.00	100.00	438	531	340	211
Southern Karamurun	517	484	378	214	100.00	100.00	100.00	100.00	517	484	378	214
<b>Total</b>	<b>956</b>	<b>1,015</b>	<b>718</b>	<b>426</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>956</b>	<b>1,015</b>	<b>718</b>	<b>426</b>
<b>Appak LLP</b>												
Western Mynkuduk	880	1,004	901	439	65.00	65.00	65.00	65.00	572	653	585	285
<b>JV Inkai LLP<sup>(1)</sup></b>												
Blocks 1, Inkai (a)	1,031	885	641	397	48.55	48.49	45.70	50.88	452	387	277	202
Blocks 1, Inkai (b)	1,387	1,528	1,473	877	48.55	48.49	45.70	50.88	607	669	636	446
Blocks 1, Inkai (c)	-	-	88	40	48.55	48.49	45.70	50.88	-	-	38	21
<b>Total</b>	<b>2,418</b>	<b>2,413</b>	<b>2,202</b>	<b>1,315</b>	<b>48.55</b>	<b>48.49</b>	<b>45.70</b>	<b>50.88</b>	<b>1,059</b>	<b>1,057</b>	<b>951</b>	<b>669</b>
<b>Semizbai-U LLP</b>												
Semizbai	440	542	450	177	51.00	51.00	51.00	51.00	224	276	230	90
Irkol	781	700	678	280	51.00	51.00	51.00	51.00	398	357	346	143
<b>Total</b>	<b>1,221</b>	<b>1,242</b>	<b>1,128</b>	<b>457</b>	<b>51.00</b>	<b>51.00</b>	<b>51.00</b>	<b>51.00</b>	<b>623</b>	<b>633</b>	<b>575</b>	<b>233</b>
<b>JV Akbastau JSC</b>												
Block 1 Budenovskoye	739	750	722	327	50.00	50.00	50.00	50.00	370	375	361	163
Block 3 Budenovskoye	480	626	875	332	50.00	50.00	50.00	50.00	240	313	438	166
Block 4 Budenovskoye	411	401	343	130	50.00	50.00	50.00	50.00	206	201	172	65
<b>Total</b>	<b>1,630</b>	<b>1,778</b>	<b>1,941</b>	<b>789</b>	<b>50.00</b>	<b>50.00</b>	<b>50.00</b>	<b>50.00</b>	<b>815</b>	<b>889</b>	<b>970</b>	<b>394</b>
<b>Karatau LLP</b>												
Block 2, Budenovskoye	2,064	2,108	2,359	937	50.00	50.00	50.00	50.00	1,032	1,054	1,180	468
<b>JV Zarechnoye JSC</b>												
Zarechnoye	800	817	802	398	49.98	49.98	49.98	49.98	400	408	401	199
<b>JV Katco LLP</b>												
Southern Moinkum (Northern part)	1,682	1,518	1,473	728	49.00	49.00	49.00	49.00	824	744	722	357
Tortkuduk	2,325	2,485	2,046	945	49.00	49.00	49.00	49.00	1,139	1,218	1,003	463
<b>Total</b>	<b>4,007</b>	<b>4,003</b>	<b>3,519</b>	<b>1,673</b>	<b>49.00</b>	<b>49.00</b>	<b>49.00</b>	<b>49.00</b>	<b>1,963</b>	<b>1,961</b>	<b>1,724</b>	<b>820</b>
<b>JV Khorassan-U LLP<sup>(2)</sup></b>												
Block Kharassan 1, North Kharassan	1,095	1,354	1,564	757	33.98	33.98	33.98	33.98	372	460	531	257
<b>JV SMCC LLP</b>												
Akdala	1,042	1,000	900	435	30.00	30.00	30.00	30.00	313	300	270	131
Block 4, Inkai	2,007	2,058	2,037	836	30.00	30.00	30.00	30.00	602	617	611	251
<b>Total</b>	<b>3,049</b>	<b>3,058</b>	<b>2,937</b>	<b>1,271</b>	<b>30.00</b>	<b>30.00</b>	<b>30.00</b>	<b>30.00</b>	<b>915</b>	<b>917</b>	<b>881</b>	<b>381</b>
<b>Baiken-U LLP<sup>(2)</sup></b>												
Block Kharassan 2, North Kharassan	1,503	1,838	1,762	849	5.00	5.00	5.00	5.00	75	92	88	42
<b>Grand Total</b>	<b>23,607</b>	<b>24,586</b>	<b>23,321</b>	<b>10,905</b>					<b>12,766</b>	<b>13,096</b>	<b>12,094</b>	<b>5,771</b>

(1) For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

(2) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving

effect to such increases.

**Table 2-7: Mineral Assets historical sales and cash costs (2015 through H2 2018)**

Mining Subsidiary	Units	2015	2016	2017	H1 2018
<b>Sales</b>					
Kazatomprom-SaUran LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	4.67	3.78	2.97	2.40
Ortalyk LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	3.64	3.09	4.86	2.31
RU-6 LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	2.75	1.62	1.86	1.02
Appak LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	2.18	2.50	2.51	0.42
JV Inkai LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	5.31	6.38	5.93	2.16
Semizbai-U LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	3.12	3.17	2.94	1.35
JV Akbastau JSC	(MlbU <sub>3</sub> O <sub>8</sub> )	4.13	4.75	5.06	1.56
Karatau LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	5.30	5.30	6.18	1.36
JV Zarechnoye JSC	(MlbU <sub>3</sub> O <sub>8</sub> )	2.21	2.21	2.21	0.64
JV Katco LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	10.86	10.55	9.31	3.90
JV Khorassan-U LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	2.88	3.72	3.96	1.68
JV SMCC LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	7.90	8.80	7.53	2.76
Baiken-U LLP	(MlbU <sub>3</sub> O <sub>8</sub> )	3.63	5.40	4.89	1.75
<b>Aggregated</b>	<b>(MlbU<sub>3</sub>O<sub>8</sub>)</b>	<b>58.57</b>	<b>61.24</b>	<b>60.22</b>	<b>23.30</b>
<b>C1 Cash Costs</b>					
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	22.91	17.42	22.23	18.68
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	24.62	20.24	12.25	10.81
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.80	23.11	18.33	17.29
Appak LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.77	12.80	12.77	17.62
JV Inkai LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.22	6.93	7.74	9.05
Semizbai-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.96	13.32	14.16	14.56
JV Akbastau JSC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.01	5.58	5.69	6.31
Karatau LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.68	7.11	6.54	8.65
JV Zarechnoye JSC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.34	12.42	13.93	15.96
JV Katco LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.95	6.46	7.55	7.63
JV Khorassan-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.71	9.86	10.78	13.06
JV SMCC LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.97	7.73	8.02	9.23
Baiken-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.27	7.82	9.34	7.56
<b>Aggregated</b>	<b>(US\$/lbU<sub>3</sub>O<sub>8</sub>)</b>	<b>15.41</b>	<b>10.05</b>	<b>10.37</b>	<b>10.99</b>
<b>All in Sustaining Costs</b>					
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.94	19.98	26.97	23.21
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.24	23.49	14.20	14.54
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.26	29.80	23.26	20.48
Appak LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.95	15.78	15.52	20.28
JV Inkai LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.42	11.76	14.64	15.29
Semizbai-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	24.52	16.64	17.12	17.29
JV Akbastau JSC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.04	7.37	9.08	8.88
Karatau LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.96	9.08	9.97	12.01
JV Zarechnoye JSC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.17	16.93	19.37	26.51
JV Katco LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.73	10.15	11.87	11.91
JV Khorassan-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.12	13.72	16.08	17.69
JV SMCC LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.48	10.08	10.76	11.18
Baiken-U LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.21	11.60	14.00	11.67
<b>Aggregated</b>	<b>(US\$/lbU<sub>3</sub>O<sub>8</sub>)</b>	<b>20.29</b>	<b>13.42</b>	<b>14.51</b>	<b>15.00</b>

**Table 2-8: Mineral Assets historical capital expenditure (2015 through H2 2018)**

Mining Subsidiary	Units	2015	2016	2017	H1 2018
<b>Well Construction</b>					
Kazatomprom-SaUran LLP	(KZTm)	3,455.2	3,942.9	5,196.5	3,324.1
Ortalyk LLP	(KZTm)	2,364.1	2,943.7	2,555.5	795.6
RU-6 LLP	(KZTm)	2,805.9	3,250.1	2,453.3	921.3
Appak LLP	(KZTm)	2,199.7	2,375.1	2,045.7	224.0
JV Inkai LLP	(KZTm)	4,221.4	4,008.5	5,258.5	2,808.9
Semizbai-U LLP	(KZTm)	2,475.2	2,608.9	2,364.4	1,158.0
JV Akbastau JSC	(KZTm)	2,687.1	2,640.8	3,103.4	921.5
Karatau LLP	(KZTm)	3,108.5	3,098.4	4,368.9	891.7
JV Zarechnoye JSC	(KZTm)	3,552.8	2,884.7	3,386.0	2,018.6
JV Katco LLP	(KZTm)	10,708.2	10,537.8	10,251.9	3,577.8
JV Khorassan-U LLP	(KZTm)	2,824.2	4,217.4	6,582.4	2,453.8
JV SMCC LLP	(KZTm)	3,998.9	3,967.1	3,961.9	1,548.5
Baiken-U LLP	(KZTm)	2,613.0	4,302.6	4,389.5	1,589.5
<b>Aggregated</b>	<b>(KZTm)</b>	<b>47,014.3</b>	<b>50,778.0</b>	<b>55,917.8</b>	<b>22,233.3</b>
<b>Expansion</b>					
Kazatomprom-SaUran LLP	(KZTm)	430.1	603.5	1,184.9	229.7
Ortalyk LLP	(KZTm)	559.3	490.7	542.8	2,012.9
RU-6 LLP	(KZTm)	527.7	438.6	540.5	141.1
Appak LLP	(KZTm)	313.3	166.2	208.7	136.0
JV Inkai LLP	(KZTm)	4,275.9	6,529.1	8,077.0	1,581.9
Semizbai-U LLP	(KZTm)	690.4	985.9	469.8	39.0
JV Akbastau JSC	(KZTm)	85.9	262.4	2,485.9	393.4
Karatau LLP	(KZTm)	742.5	458.9	2,558.2	601.4
JV Zarechnoye JSC	(KZTm)	290.9	517.3	534.5	177.6
JV Katco LLP	(KZTm)	3,247.6	2,778.6	2,865.9	1,865.2
JV Khorassan-U LLP	(KZTm)	-	680.4	253.6	76.2
JV SMCC LLP	(KZTm)	3,920.2	3,102.9	2,761.4	210.0
Baiken-U LLP	(KZTm)	1,377.7	2,673.9	3,051.3	757.4
<b>Aggregated</b>	<b>(KZTm)</b>	<b>16,461.5</b>	<b>19,688.4</b>	<b>25,534.6</b>	<b>8,221.8</b>
<b>Liquidation Fund/Closure</b>					
Kazatomprom-SaUran LLP	(KZTm)	1,212.3	410.3	639.0	(693.2)
Ortalyk LLP	(KZTm)	140.7	109.4	168.9	26.7
RU-6 LLP	(KZTm)	155.6	136.0	282.5	(243.5)
Appak LLP	(KZTm)	98.7	113.8	86.5	(0.0)
JV Inkai LLP	(KZTm)	-	-	-	5.1
Semizbai-U LLP	(KZTm)	105.5	133.9	136.7	36.8

Mining Subsidiary	Units	2015	2016	2017	H1 2018
JV Akbastau JSC	(KZTm)	89.6	136.9	143.9	1.0
Karatau LLP	(KZTm)	90.7	94.6	98.5	0.2
JV Zarechnoye JSC	(KZTm)	9.5	10.2	10.9	2.9
JV Katco LLP	(KZTm)	693.1	761.1	768.4	787.6
JV Khorassan-U LLP	(KZTm)	66.8	272.4	182.5	4.3
JV SMCC LLP	(KZTm)	138.0	87.7	858.4	108.0
Baiken-U LLP	(KZTm)	122.9	225.4	232.7	9.0
<b>Aggregated</b>	<b>(KZTm)</b>	<b>2,923.4</b>	<b>2,491.8</b>	<b>3,609.1</b>	<b>44.8</b>
<b>Total Capital Expenditure</b>					
Kazatomprom-SaUran LLP	(KZTm)	5,097.7	4,956.8	7,020.4	2,860.6
Ortalyk LLP	(KZTm)	3,064.1	3,543.8	3,267.2	2,835.2
RU-6 LLP	(KZTm)	3,489.3	3,824.8	3,276.3	818.9
Appak LLP	(KZTm)	2,611.8	2,655.1	2,340.9	360.0
JV Inkai LLP	(KZTm)	8,497.2	10,537.6	13,335.5	4,395.9
Semizbai-U LLP	(KZTm)	3,271.2	3,728.8	2,970.9	1,233.8
JV Akbastau JSC	(KZTm)	2,862.7	3,040.2	5,733.2	1,315.8
Karatau LLP	(KZTm)	3,941.6	3,651.8	7,025.6	1,493.3
JV Zarechnoye JSC	(KZTm)	3,853.2	3,412.2	3,931.5	2,199.1
JV Katco LLP	(KZTm)	14,648.8	14,077.5	13,886.3	6,230.5
JV Khorassan-U LLP	(KZTm)	2,891.0	5,170.2	7,018.4	2,534.3
JV SMCC LLP	(KZTm)	8,057.1	7,157.7	7,581.8	1,866.5
Baiken-U LLP	(KZTm)	4,113.6	7,201.9	7,673.5	2,355.8
<b>Aggregated</b>	<b>(KZTm)</b>	<b>66,399.2</b>	<b>72,958.2</b>	<b>85,061.4</b>	<b>30,499.9</b>

### 2.3.3 Mineral Resources and Ore Reserves, Environmental and Social Liabilities, LoMp TEPs and Exploration Programme

As at the Effective Date of the CPR, the Company reported:

- Aggregated Ore Reserves (Table 2-9) of 884.7Mt grading 0.060%U and containing 531.6ktU and total Mineral Resources of 1,241.3Mt grading 0.054%U and containing 674.0ktU;
- Attributable Ore Reserves of 535.3Mt grading 0.058%U and containing 312.3ktU and total Mineral Resources of 889.7Mt grading 0.051%U and containing 453.5ktU;
- Environmental and Social Liabilities (Table 2-10) comprising:
  - aggregated liabilities of US\$321.8m gross and US\$267.0m net of Liquidation Fund provisions (US\$54.7m) as at 30 June 2018,
  - attributable liabilities of US\$205.4m gross and US\$168.8m net of Liquidation Fund provisions (US\$36.6m) as at 30 June 2018;
- Life-of-Mine plans for the Mineral Assets which assumes the following TEPs (Table 2-11):
  - aggregated statistics comprising production of 467.3ktU, sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$4.9bn,
  - attributable statistics comprising production of 271.9ktU, sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> at C1 cash costs of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditures of US\$2.9bn;
  - The total unallocated cash expenditures as reported on a 100% basis totals KZT16.9bn which is expended from H2 2018 through 2036 inclusive as noted in Table 13-115 and Table 13-116 which in US\$ amounts to US\$49.6m. The Company's equity interest in Kyzykum LLP is 50% with 30% held by Uranium One and 20% by Energy Asia Holdings Ltd ("EAHL"); and
- An extensive Exploration Programme to conduct further technical work in respect of some 11 prospects located in three key geological regions of Kazakhstan: namely Shu–Sarysu, Syrdarya and North–Kazakhstan. The Company projects expenditure of approximately KZT59.0bn (US\$173.4m; Table 2-12) over a 10.5 year period with some 66% of expenditures focused on the Shu-Sarysu region and approximately 20% in the Syrdarya region.

**Table 2-9: Aggregated Mineral Resources and Ore Reserves as at 1 July 2018 for the Mineral Assets**

Mining Subsidiary	Ore Reserves			Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Operating Properties</b>						
Kazatomprom-SaUran LLP	74.3	0.041	30.6	75.9	0.041	31.4
Ortalyk LLP	64.5	0.045	29.0	109.1	0.040	43.3
RU-6 LLP	20.9	0.076	15.9	20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	54.8	0.035	19.2
JV Inkai LLP	264.8	0.054	143.3	264.9	0.054	143.4
Semizbai-U LLP	60.1	0.046	27.9	60.1	0.046	27.9
JV Akbastau JSC	49.6	0.089	43.9	49.6	0.089	43.9
Karatau LLP	59.3	0.081	48.1	59.3	0.081	48.1
JV Zarechnoye JSC	8.0	0.060	4.8	12.2	0.056	6.9
JV Katco LLP	57.6	0.104	59.9	57.6	0.104	59.9
JV Khorassan-U LLP	40.0	0.107	42.6	40.0	0.107	42.6
JV SMCC LLP	110.8	0.040	44.0	110.8	0.040	44.0
Baiken-U LLP	20.0	0.112	22.4	20.0	0.112	22.4
<b>Subtotal</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>935.2</b>	<b>0.059</b>	<b>548.8</b>
<b>Advanced Exploration Properties</b>						
Kazatomprom	n/a	n/a	n/a	306.1	0.041	125.1
<b>Grand Total</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

The total Environmental Liabilities for the Mineral Assets (Table 2-10) reported on a 100% basis comprise:

- Life-of-Mine plan closure costs totalling KZT109.4bn (US\$321.8m); and
- Asset Retirement closure costs (included within the LoMp closure costs) totalling KZT66.2bn (US\$194.8m).

As at 30 June 2018 the closing balances of the liquidation funds for the Mining Subsidiaries reported KZT18.6bn (US\$54.7m). Future contributions as defined by the individual Mining Contracts necessitates expenditure of a further KZT42.2bn (US\$124.2m) which results in a closing balance of the liquidation fund on closure of KZT60.8bn (US\$179.0m). Overall this indicates a shortfall of KZT48.5bn (US\$142.8m). In addition, the total retrenchment expenditures relating to the LoMps are noted at KZT2.8bn (US\$8.1m).

The Environmental Liabilities as reported herein are inclusive of a 10% contingency, however it is clear that further work is required in order to develop the closure cost estimate to a minimum of PFS level and to specifically address the accompanying risks as highlighted in Section 14 of this CPR.

**Table 2-10: Mining Subsidiary Environmental Liabilities: 100% and Attributable**

Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
<b>100%</b>								
Kazatomprom-SaUran LLP	(KZTm)	12,633.1	18,590.7	4,424.8	10,963.5	15,388.4	(3,202.3)	169.7
Ortalyk LLP	(KZTm)	3,734.1	4,841.1	959.7	2,699.0	3,658.7	(1,182.5)	224.4
RU-6 LLP	(KZTm)	6,448.9	8,979.4	1,461.2	2,605.1	4,066.3	(4,913.1)	140.1
Appak LLP	(KZTm)	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
JV Inkai LLP	(KZTm)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
Semizbai-U LLP	(KZTm)	5,063.4	9,819.1	945.5	3,719.9	4,665.4	(5,153.7)	82.7
JV Akbastau JSC	(KZTm)	3,402.0	7,256.8	862.5	2,924.4	3,786.9	(3,469.9)	20.9
Karatau LLP	(KZTm)	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
JV Zarechnoye JSC	(KZTm)	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
JV Katco LLP	(KZTm)	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
JV Khorassan-U LLP	(KZTm)	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
JV SMCC LLP	(KZTm)	7,912.6	14,102.0	2,073.2	3,473.6	5,546.8	(8,555.2)	326.0
Baiken-U LLP	(KZTm)	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>	<b>(KZTm)</b>	<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>
<b>Attributable</b>								
	<b>(KZTm)</b>	<b>43,933.1</b>	<b>69,835.1</b>	<b>12,435.3</b>	<b>29,087.9</b>	<b>41,523.1</b>	<b>(28,312.0)</b>	<b>1,645.5</b>
<b>100%</b>								
Kazatomprom-SaUran LLP	(US\$m)	37.2	54.7	13.0	32.2	45.3	(9.4)	0.5
Ortalyk LLP	(US\$m)	11.0	14.2	2.8	7.9	10.8	(3.5)	0.7
RU-6 LLP	(US\$m)	19.0	26.4	4.3	7.7	12.0	(14.5)	0.4
Appak LLP	(US\$m)	8.0	16.5	2.3	9.0	11.3	(5.2)	0.3
JV Inkai LLP	(US\$m)	16.5	24.5	0.6	-	0.6	(23.9)	1.4
Semizbai-U LLP	(US\$m)	14.9	28.9	2.8	10.9	13.7	(15.2)	0.2
JV Akbastau JSC	(US\$m)	10.0	21.3	2.5	8.6	11.1	(10.2)	0.1
Karatau LLP	(US\$m)	11.4	20.6	2.1	8.8	10.9	(9.7)	1.0
JV Zarechnoye JSC	(US\$m)	4.0	8.8	0.2	0.2	0.4	(8.4)	0.4
JV Katco LLP	(US\$m)	27.3	35.8	13.5	8.9	22.4	(13.4)	1.3
JV Khorassan-U LLP	(US\$m)	5.6	16.7	1.7	12.4	14.1	(2.5)	0.1
JV Khorassan-U LLP	(US\$m)	23.3	41.5	6.1	10.2	16.3	(25.2)	1.0
Baiken-U LLP	(US\$m)	6.7	11.8	2.8	7.3	10.1	(1.7)	0.9



Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
<b>Total</b>	<b>(US\$m)</b>	<b>194.8</b>	<b>321.8</b>	<b>54.7</b>	<b>124.2</b>	<b>179.0</b>	<b>(142.8)</b>	<b>8.1</b>
<b>Attributable</b>	<b>(US\$m)</b>	<b>129.2</b>	<b>205.4</b>	<b>36.6</b>	<b>85.6</b>	<b>122.1</b>	<b>(83.3)</b>	<b>4.8</b>

**Table 2-11: LoMp Salient Technical Economic Parameters**

Mining Subsidiary	Production (ktU)	Sales (MlbU <sub>3</sub> O <sub>8</sub> )	Cash Costs C1 (US\$/lbU <sub>3</sub> O <sub>8</sub> )	AISC (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Capital Expenditure (US\$m)
<b>Operating Properties</b>					
Kazatomprom-SaUran LLP	27.1	74.6	18.57	24.30	456.4
Ortalyk LLP	25.8	67.9	11.04	13.10	166.2
RU-6 LLP	14.3	38.3	16.88	21.98	217.4
Appak LLP	17.3	46.0	15.19	18.60	186.3
JV Inkai LLP	121.8	317.9	9.06	13.03	1,309.7
Semizbai-U LLP	24.2	64.0	15.66	19.41	265.7
JV Akbastau JSC	38.1	100.4	6.56	8.92	256.9
Karatau LLP	43.3	114.8	5.63	7.98	313.2
JV Zarechnoye JSC	3.8	11.0	13.99	17.96	52.2
JV Katco LLP	53.9	141.5	8.83	12.50	707.2
JV Khorassan-U LLP	38.1	100.7	10.55	14.09	373.8
JV SMCC LLP	39.6	103.8	9.01	11.80	334.6
Baiken-U LLP	20.1	53.0	9.89	14.18	241.7
<b>Total</b>	<b>467.3</b>	<b>1,233.8</b>	<b>10.21</b>	<b>13.74</b>	<b>4,881.3</b>
<b>Attributable</b>	<b>271.9</b>	<b>725.8</b>	<b>10.79</b>	<b>14.43</b>	<b>2,924.2</b>

**Table 2-12: Exploration Programme**

Region	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Exploration Programme</b>													
Shu-Sarysu	(KZTm)	39,211.5	2,752.4	6,876.4	9,934.5	6,443.4	4,583.7	4,011.0	2,300.0	1,150.0	960.2	200.0	-
Syrdarya	(KZTm)	11,685.3	526.6	1,353.0	136.7	1,250.0	1,600.0	1,569.0	1,700.0	1,180.0	1,180.0	990.0	200.0
North - Kazakhstan	(KZTm)	8,060.0	-	-	110.0	1,750.0	1,500.0	1,500.0	1,500.0	1,500.0	200.0	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>	<b>200.0</b>
<b>Exploration Programme</b>													
Shu-Sarysu	(US\$m)	115.3	8.1	20.2	29.2	19.0	13.5	11.8	6.8	3.4	2.8	0.6	-
Syrdarya	(US\$m)	34.4	1.5	4.0	0.4	3.7	4.7	4.6	5.0	3.5	3.5	2.9	0.6
North - Kazakhstan	(US\$m)	23.7	-	-	0.3	5.1	4.4	4.4	4.4	4.4	0.6	-	-
<b>Total</b>	<b>(US\$m)</b>	<b>173.4</b>	<b>9.6</b>	<b>24.2</b>	<b>29.9</b>	<b>27.8</b>	<b>22.6</b>	<b>20.8</b>	<b>16.2</b>	<b>11.3</b>	<b>6.9</b>	<b>3.5</b>	<b>0.6</b>

## 3 COMMODITY PRICES AND MACRO ECONOMICS

### 3.1 Introduction

The following section includes discussion and comment on the commodity prices and macro-economic assumptions as relied on for the purpose of reporting the Mineral Resources and Ore Reserves statements, the LoMp TEPs, the Environmental and Social Liabilities and the Exploration Programme as reported herein.

### 3.2 Commodity Prices

The Company has mandated a commodity market specialist, UxC, to provide an overview and analysis of the uranium market and specifically to provide to SRK annual schedules of the benchmark spot market price for U<sub>3</sub>O<sub>8</sub>, which is reproduced and expressly relied upon herein. The spot price assumptions have been incorporated into the LoMp analysis reported herein and details relating to basis of the price assumptions including demand-supply-price analysis for both historical and the LoMp periods are included in the section captioned “*Uranium Industry and Market Overview*” contained in the Registration Document and the Prospectus.

It is however important to note the uranium is not traded in meaningful quantities on a commodity exchange and electric power generation companies purchase the majority of their uranium products under long-term contracts with suppliers and meet the rest of their requirements on the spot market. Furthermore, the market structure is typified by:

- Demand which is directly linked to the level of electricity generated by nuclear power plants. In 2017 global uranium consumption was noted at 172.8MlbsU<sub>3</sub>O<sub>8</sub>;
- Supply is constrained by two primary sources namely: primary production from operating mines; and secondary supply which includes other sources including, excess inventories, uranium sourced from defence stockpiles, decommissioning of nuclear weapons, re-



enriched uranium tails and reprocessing of used reactor fuel. Mine production is dominated by a limited number of companies and in 2017 was estimated at 154.5MlbsU<sub>3</sub>O<sub>8</sub> compared with 2016 at 161.9MlbsU<sub>3</sub>O<sub>8</sub>: four countries supply some 78% of estimated world production, Kazakhstan (40%), Canada (22%), Australia (10%) and Niger (6%); and over 66% of global mine production is attributed to five key producers with the Company representing 19.4% in 2017; and

- During 2017 the spot market price for U<sub>3</sub>O<sub>8</sub> ranged from a low of US\$19.25/lbU<sub>3</sub>O<sub>8</sub> to a high of US\$26.50/lbU<sub>3</sub>O<sub>8</sub> with an annual average of US\$21.98/lbU<sub>3</sub>O<sub>8</sub> and a year-end close of US\$23.75/lbU<sub>3</sub>O<sub>8</sub>. For the eight month period ending 31 August 2018, the spot market price for U<sub>3</sub>O<sub>8</sub> ranged from a low of US\$20.50/lbU<sub>3</sub>O<sub>8</sub> to a high of US\$26.20/lbU<sub>3</sub>O<sub>8</sub> with an average of US\$22.72/lbU<sub>3</sub>O<sub>8</sub> and a period close of US\$26.09/lbU<sub>3</sub>O<sub>8</sub>.

The pricing forecasts (spot price forecast) as developed by UxC is derived using UxC's U-PRICE™ econometric model which accounts for key factors influencing the uranium market, including UxC Requirements Model ("URM") Base Case Demand, Market Outlook & Perception, Primary Production (Base Case), Secondary Supplies, Separative Work Units ("SWU" – Enrichment Services) Market Developments and Exchange Rates. During periods of oversupply, the spot price has a history of trending lower as available inventories are offered at a discount to the market. Likewise, in periods of projected undersupply, the spot price has a history of strengthening to incentivize bringing more primary production online to meet higher demand levels.

The real terms (1 July 2018) US\$ price is forecast to increase from US\$26.09/lbU<sub>3</sub>O<sub>8</sub> in 2018 to US\$31.08/lbU<sub>3</sub>O<sub>8</sub> in 2025. UxC Base Case Demand growth is relatively flat during this period, but cuts to existing production and depletion of some existing mines, along with the drawdown of secondary supplies in the period, contribute to higher prices. Further, many long-term legacy contracts will end in the early 2020s, forcing some utilities to purchase greater quantities of uranium to meet forward reactor requirements.

For the 2025 through 2027 period, the spot price is forecast to increase more sharply to US\$35.75/lbU<sub>3</sub>O<sub>8</sub> due to stronger demand growth from China combined with declining primary production as two major uranium projects – Rössing and Cigar Lake – are expected to end production. Secondary supplies are expected to meet only 17% to 20% of annual demand in the period. The spot price is forecast to continue to trend higher beyond 2027, albeit at a slower rate, as new primary production is expected to fill the widening gap between supply and demand, especially as secondary supplies drop to only 12% of annual demand by 2030. From 2027 through 2035, the constant U.S. dollar midpoint is forecast to increase by 22% to US\$43.53/lbU<sub>3</sub>O<sub>8</sub> and remain at this level thereafter.

The general approach adopted by commodity market specialists is to establish demand-supply-price (nominal) relationships and based on demand and supply forecasts determine pricing assumptions accordingly. The key outcomes from the market outlook assessment provided by UxC are:

- An assumed consumer price inflation rate of 2.00% per annum for the United States dollar (US\$); and
- In real (1 July 2018) terms mid-point prices of US\$26.09/lbU<sub>3</sub>O<sub>8</sub>, US\$29.03/lbU<sub>3</sub>O<sub>8</sub> and US\$37.75/lbU<sub>3</sub>O<sub>8</sub> for 2018, 2022 and 2030 respectively.

Table 3-1 and Table 3-2 present the annual pricing assumptions in 1 July 2018 real terms where the assumed unit conversions comprise: 2,204.62262 lbs in one metric tonne; and U to U<sub>3</sub>O<sub>8</sub> mass conversion of 1.17925. The exchange rate between the US\$ and KZT is 340 which is

assumed to remain constant in real terms. Historical pricing for the uranium spot market is included in Table 3-3 and Figure 3-1.

**Table 3-1: Commodity Pricing Assumptions (1 July 2018 real terms): 2018 through 2030**

Price Assumption	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
	(US\$/lbU)	30.76	32.80	33.98	34.45	34.23	34.32	35.27	36.66	39.29	42.16	42.95	44.18	44.52
	(US\$/kg)	67.82	72.31	74.90	75.96	75.47	75.66	77.75	80.81	86.62	92.95	94.70	97.41	98.14
Exchange Rate	(KZT to 1 US\$)	340	340	340	340	340	340	340	340	340	340	340	340	340
	(KZT/lbU)	10,459	11,151	11,552	11,715	11,639	11,668	11,991	12,463	13,358	14,335	14,605	15,022	15,135
	(KZT/kgU)	23,058	24,584	25,467	25,826	25,659	25,724	26,435	27,476	29,450	31,604	32,198	33,118	33,368

**Table 3-2: Commodity Pricing Assumptions (1 July 2018 real terms): 2031 through 2035**

Price Assumption	Units	2031	2032	2033	2034	2035
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
	(US\$/lbU)	46.65	48.98	51.18	51.39	51.33
	(US\$/kg)	102.84	107.99	112.83	113.29	113.17
Exchange Rate	(KZT to 1 US\$)	340	340	340	340	340
	(KZT/lbU)	15,861	16,655	17,401	17,472	17,453
	(KZT/kgU)	34,967	36,717	38,363	38,519	38,477

**Table 3-3: Historical Spot Market Uranium Prices<sup>(1)</sup>**

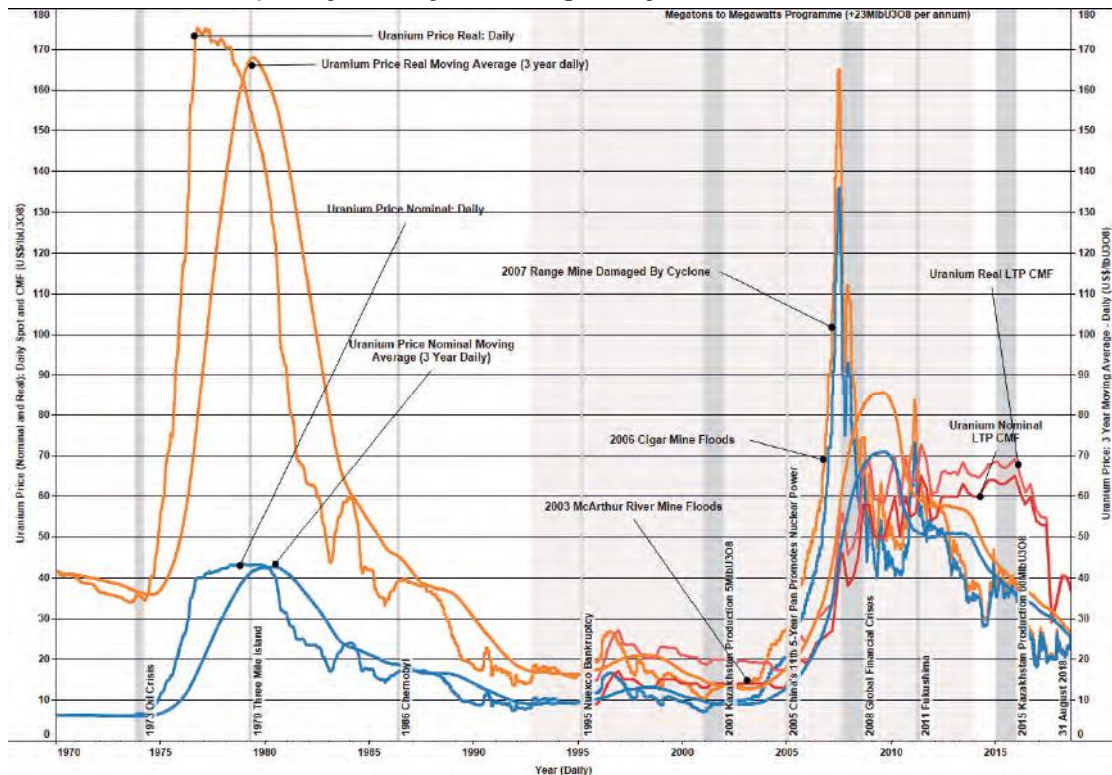
Period	Spot Market Uranium Price						
	Min (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Max (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Average (US\$/lbU <sub>3</sub> O <sub>8</sub> )	3YMAV (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Nominal Close (US\$/lbU <sub>3</sub> O <sub>8</sub> )	Real Close (US\$/lbU <sub>3</sub> O <sub>8</sub> )	LTP Real <sup>(3)</sup> (US\$/lbU <sub>3</sub> O <sub>8</sub> )
2000	7.10	9.60	8.38	8.38	7.10	10.31	18.88
2001	7.10	9.60	8.62	8.50	9.60	13.73	20.02
2002	9.60	10.20	9.84	8.95	10.20	14.24	19.55
2003	10.10	14.50	11.25	9.52	14.50	19.88	19.19
2004	14.50	20.70	18.12	11.96	20.70	27.48	19.03
2005	20.70	36.25	27.39	16.65	36.25	46.54	25.25
2006	36.25	72.00	47.55	26.08	72.00	90.14	32.97
2007	72.00	136.00	98.19	47.81	90.00	108.25	46.51
2008	44.00	90.00	63.68	59.20	53.00	63.69	66.50
2009	40.00	54.00	46.47	63.97	44.50	52.06	66.29
2010	40.50	62.50	46.30	63.66	62.50	72.04	63.78
2011	49.00	73.00	57.10	53.39	52.50	58.77	60.82
2012	40.75	52.50	48.88	49.69	43.75	48.14	66.02
2013	34.00	44.00	38.60	47.72	34.50	37.40	65.04
2014	28.00	44.00	33.45	44.51	35.50	38.19	68.50
2015	34.25	39.50	36.87	39.45	34.25	36.58	68.00
2016	18.00	34.85	26.58	33.88	20.25	21.19	56.16
2017	19.25	26.50	21.98	29.72	23.75	24.34	36.89
2018 <sup>(1)</sup>	20.50	26.20	22.72	27.04	26.00	25.92	38.67

<sup>(1)</sup> Real terms defined as 1 September 2018 money terms.

<sup>(2)</sup> Historical data to 31 August 2018.

<sup>(3)</sup> Historical Long Term Price derived from median of Consensus Market Forecasts.

**Figure 3-1: Historical Uranium Spot Market Prices (nominal and real 1 September 2018), daily, three year average daily**



### 3.3 Macro-Economic Assumptions

Historical data for the exchange rate between the KZT and the US\$ and consumer price inflation (“CPI”) is provided in Table 3-4, Figure 3-2, Figure 3-3 and Figure 3-4.

For the 12-month period ended 31 December 2017 the historical exchange rate of the KZT against the US\$ has ranged from a low of 311KZT to a high of 346KZT with an average of 326KZT and a year-end close of 326KZT. For the eight-month period ended 31 August 2018 the historical exchange rate of the KZT against the US\$ has ranged from a minimum of 319KZT to a maximum of 364KZT with an average of 333KZT and a period end close of 364KZT.

For the 12-month period ended 31 December 2017 the year on year CPI for Kazakhstan and the United States was noted as 7.52% and 2.11% respectively. For the 6-month period ended 30 June 2018 the year on year CPI for Kazakhstan and the United States was noted as 6.06% and 2.87% respectively.

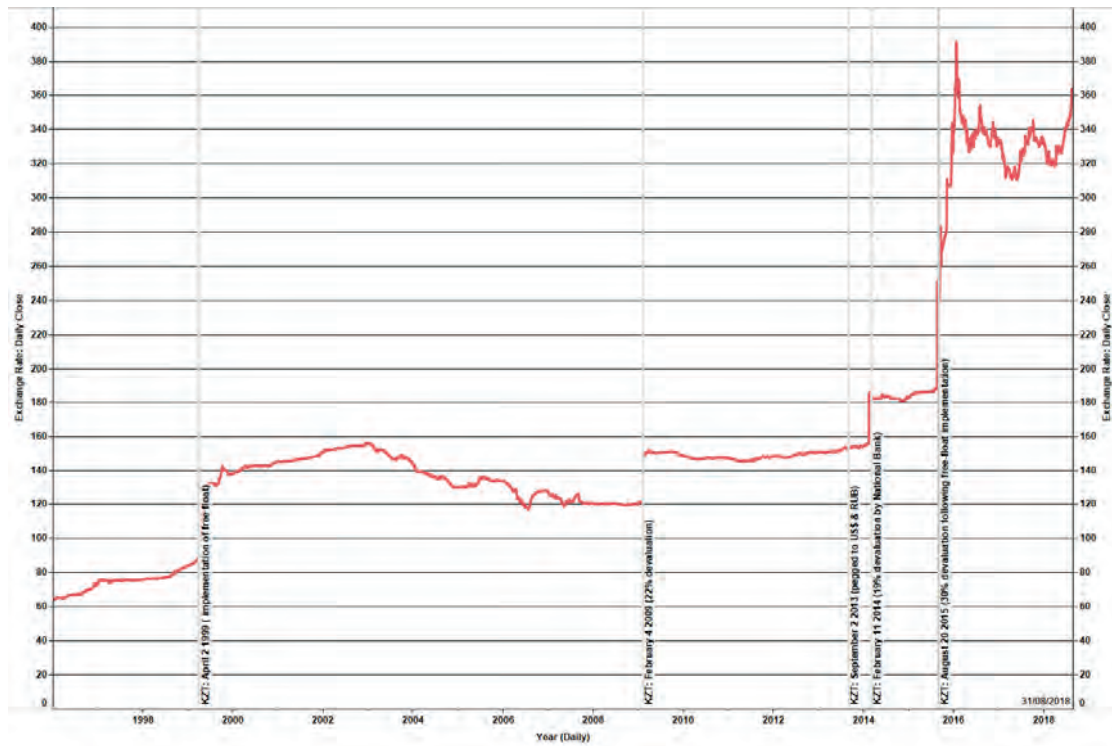
**Table 3-4: Historical Macro-Economics**

Year	End of Year (KZ to 1 US\$)	Average (KZ to 1 US\$)	CPI (YoY%)	
			KZ	US
2000	146	142	9.78	3.39
2001	151	147	6.42	1.55
2002	156	153	6.58	2.38
2003	143	149	6.74	1.88
2004	130	136	6.92	3.26
2005	134	133	7.38	3.42
2006	127	126	8.36	2.54
2007	121	123	18.77	4.08
2008	121	120	9.47	0.09
2009	148	148	6.20	2.72
2010	147	147	7.75	1.50
2011	148	147	7.36	2.96
2012	150	149	5.96	1.74
2013	154	152	4.78	1.50
2014	183	179	7.42	0.76
2015	341	223	13.61	0.73
2016	334	342	8.40	2.07
2017	333	326	7.52	2.11
2018	364 <sup>(1)</sup>	333 <sup>(1)</sup>	6.06 <sup>(2)</sup>	2.87 <sup>(2)</sup>

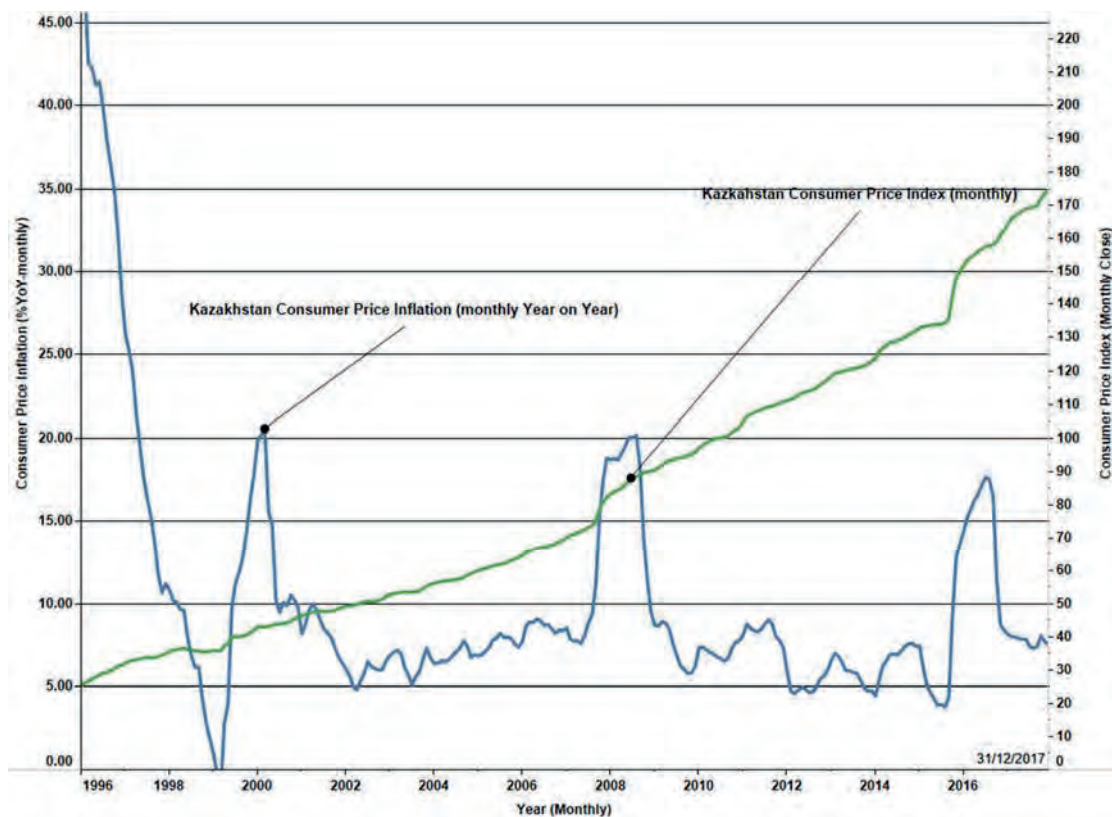
<sup>(1)</sup> Historical data through to 31 August 2018.

(2) Historical data to 30 June 2018.

**Figure 3-2: Historical Exchange Rates against the US\$ (daily close) to 31 August 2018**

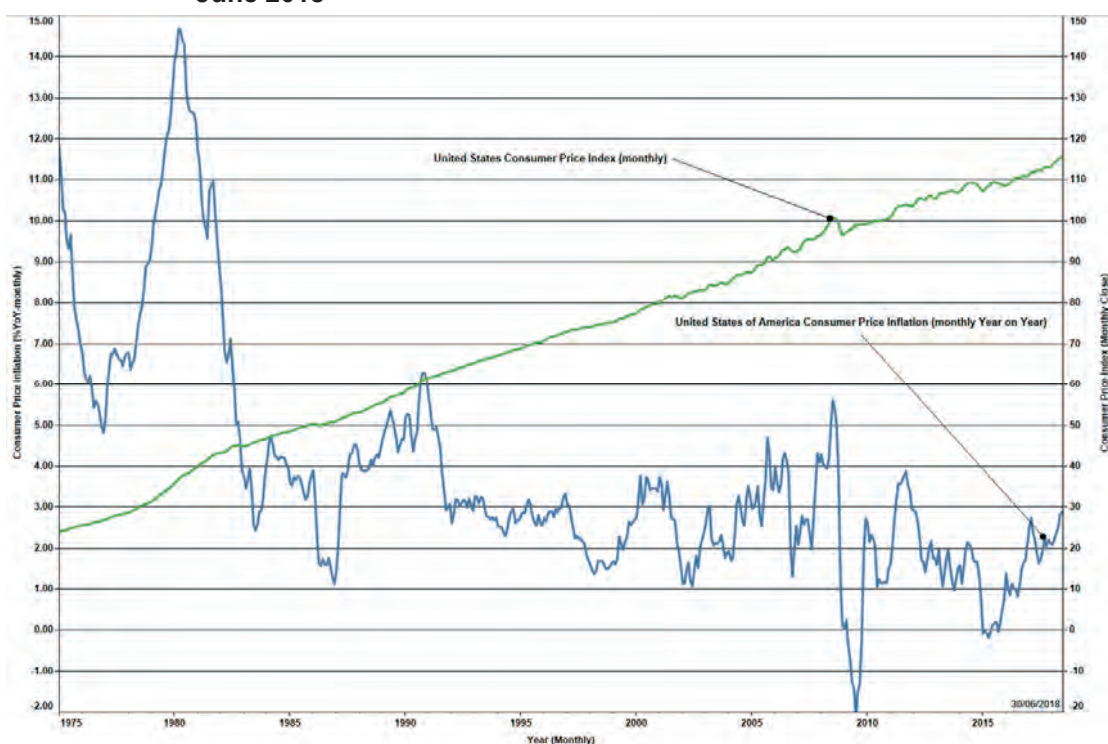


**Figure 3-3: Historical Consumer Price Index and Inflation for Kazakhstan to 30 June 2018**





**Figure 3-4: Historical Consumer Price Index and Inflation for the United States to 30 June 2018**



## 4 MINING TITLE AND LAW

### 4.1 Introduction

SRK has not reviewed the rights of the Company to mine from a legal perspective. Consequently, SRK has relied on advice by the Company to the effect that the Company will be entitled to mine all material reported here and that all necessary statutory mining authorisations and permits are in place. SRK's review has rather been restricted to confirming that the stated Mineral Resources and Ore Reserves in this document are within the licences and also on reviewing the technical commitments attached to these licences. Notwithstanding this, this section of the report includes a summary of the mining law in Kazakhstan as it impacts on the Company's assets.

### 4.2 Legislation

#### 4.2.1 Introduction

The Constitution of Kazakhstan vests ownership of mineral resources in the state. The Constitution states that land may be privately owned, but subsurface natural resources are state property. The main legislative act governing extractive activities (including mining) is the Law on Subsoil and Subsoil Use (first enacted in 1996; last amendment: May, 2018), (the "**Subsoil Law**"). This legislation was recently replaced by the new code on subsoil and use of subsoil (the "**Subsoil Code**": Section 4.4) adopted on 27 December 2017 and becoming effective in June 2018.

The "**Competent Authority**" regulating solid minerals mining currently is the Ministry of Energy. Among other responsibilities and rights, this Competent Authority grants the right for subsoil usage and awards the contracts. The award of contract can be granted either through tender or direct negotiations without holding a tender.

When transferring subsoil use rights to third parties, such as in cases of alienation based on

civil law transactions, it is necessary to fulfil certain legal requirements. In particular, the investor must obtain a prior consent from the Competent Authority for such transaction as specified by law. In addition, a prospective investor must keep in mind that the state may exercise its right of pre-emption. A prospective investor should plan in advance the terms of the transaction, since the process of obtaining consent and refusal of the state of pre-emption is durable.

Contracts for geological exploration are valid for 6 years and may be extended in the event of a commercial discovery for a period as required for additional surveys. The contracts for exploitation (Mining Contract) may be granted for up to 45 years and are considered on a case-by-case basis.

Subsoil use rights may be held by Kazakhstani and foreign individuals and legal entities. The rights and obligations of co-holders of the subsoil use right and the procedure for running common business are defined in the contract and in the joint operations agreement. The contracts require mandatory equity participation of a national company and that the relevant share of such local company in the charter capital should be at least 50%.

The subsoil use rights can be granted for the following activities:

- State geological studies of the subsoil resources;
- Geological exploration;
- Production (mining);
- Geological exploration and production combined; and
- Construction and/or operation of underground facilities not associated with mining.

Subsoil use contracts may be terminated by the Competent Authority if a subsoil user is not compliant with contractual obligations, including, but not limited to, regular payment of royalties and taxes to the government and full compliance to the mining, environmental, safety and health requirements.

The Subsoil Law guarantees protection of subsoil user's rights. Any amendments and additions to the legislation that might have adverse effects on commercial activities do not apply to the contracts concluded prior to such amendment and or additions. The governmental guarantees are not applicable in certain areas, including environmental safety, healthcare, defence, national security, taxation and customs control.

#### **4.2.2 Exploration**

In order to start exploration activities, a subsoil user is required to obtain subsoil user rights on the basis of signing the exploration contract.

The Competent Authority issues a geological allotment, which is an integral part of the contract and which defines both graphically and by description the subsoil area where a subsoil user has the right to perform exploration works.

An Exploration Work Programme is a mandatory part of the contract and requires prior approval from the authorised state agency for subsoil studies and use. This must include a financial summary, reflecting costs of exploration activities and other relevant expenditures and should be prepared for a period of up to 6 years.

An exploration project is subject to the following mandatory expert examinations:

- State environmental examination and approval;
- State industrial safety approval; and
- State sanitary approval.



In the event of a commercial discovery during the exploration stage, a subsoil user is obliged to notify the Competent Authority. Further, the Competent Authority shall issue a permit for transferring the project to a more advanced stage – the Project for Appraisal Works stage.

The Project for Appraisal Works document (which may comprise a pilot production project or a test production project) identifies the mining and geological conditions of the deposit, technological parameters and the economic feasibility of the deposit development. It must contain a financial section reflecting financial provisions for mineral resources and reserves estimation study for the entire appraisal period.

Similarly, the Project for Appraisal Works document is a subject to the following mandatory expert examinations:

- State environmental examination and approval;
- State industrial safety approval; and
- State sanitary approval.

A subsoil user that has discovered and appraised a deposit under an exploration contract shall have a pre-emptive right over any other interested parties to be granted a subsoil use right for production by means of direct negotiations without going through a tender procedure.

#### 4.2.3 Mining

Prior to signing and registering a Mining Contract, the winner of a tender or a contractual party who is to enter into contractual negotiations with the state shall ensure the preparation of project documentation as prescribed in the legislation.

The project documentation for a mining contract comprises the following key documents:

- A work programme;
- A Commercial Deposit Development Project; and
- A Feasibility Study (“**FS**” or TEO).

A Commercial Deposit Development Project must address the mining and production time schedule; technical aspects and solutions ensuring constant productivity rates of the mine; measures ensuring compliance with the requirements of rational and integrated use of subsoil resources, work safety, protection of the environment; reclamation of disturbed soils, as well as information on the financing of the planned activities with a breakdown by years.

A draft contract, together with a work programme, shall be, prior to its signing, subject to agreement with the authorised agency for subsoil studies and use. The project documentation must be agreed and approved by the local authorities. Relevant approvals include the following:

- State environmental examination and approval;
- State industrial safety approval;
- State sanitary approval; and
- Approval for the rational and integrated use of subsoil resources.

The draft Feasibility Study document (when ready) must also undergo a mandatory economic expert examination.

A Mining Contract is finally signed between the subsoil user and Competent Authorities when all the above procedures are complete and all required approvals are obtained.

#### 4.2.4 Environmental Regulations

According to Article 109 (Environmental basis for performing subsoil (extractive) operations) of the Subsoil Law, a subsoil user must obtain all required approvals of project documentation

from relevant authorities, including obtaining required environmental permits.

A subsoil user must submit all project documentation as noted earlier. The project documentation must include an Environmental Impact Assessment of the proposed activities, an Environmental Emissions Permit and must also address environmental protection/mitigation measures to reduce, avoid or control potential adverse effects on environment.

Environmental regulations as defined in the new Subsoil Code are described in Articles 6 (Environmental safety of subsoil use) and 52 (Environmental safety of subsoil operations) of the Subsoil Code, subsoil use shall be carried out in environmentally safe manner with appropriate measures taken to prevent pollution of the subsoil and minimize adverse impact on the environment. Subsoil operations including forecasting, planning and design of industrial and other facilities shall comply with environmental legislation of Kazakhstan Republic. Environmental state/condition of subsoil is ensured by regulating of maximum permissible emissions, limiting or prohibiting of subsoil operations or it's particular types. Based on requirements of the Subsoil Code, subsoil use is prohibited without positive conclusion of the state environmental expertise or without approval of the authorized body responsible for environmental protection.

#### **4.2.5 Mine closure**

According to the Article 111 (Liquidation and Conservation of Subsoil Use Objects) of the Subsoil Law, after termination of the subsoil use operations (or termination of a Mining Contract) or the depletion of mineral resources, a subsoil user, in line with the project documentation and working programme shall immediately proceed to works, associated with remediation/liquidation or conservation of the mine complex.

The liquidation or conservation works are carried out on the basis of liquidation or conservation plan (mine closure and remediation plan) that meets the following criteria:

- That it has been developed by a licensed design company;
- That it was developed according to the rules of liquidation and conservation of subsoil use objects;
- That the closure plan has been approved by a subsoil user; and that
- The closure plan has been agreed with, and approved by, the relevant authorities controlling environmental protection, study and use of subsoil resources, industrial safety, sanitary-epidemiological service, and land resources management.

The liquidation is financed by the liquidation fund which is accumulated by the subsoil user on a special deposit account in any bank in Kazakhstan, to eliminate the negative impacts as a result of subsoil use operations (mine operations). In the event of there being insufficient funds accumulated for remediation and clean-up, the subsoil user must cover the remaining costs and be fully responsible for mine closure and remediation.

Mine closure regulations as defined in the new Subsoil Code are described in Article 54 (General provisions on liquidation of subsoil use consequences) of the Subsoil Code. After termination of the subsoil use operations (or termination of mining contract) or the depletion of Ore Reserves, a subsoil user shall carry out remediation/liquidation of consequences of the subsoil use operations on subsoil plot provided.

#### **4.2.6 Land Use Regulations**

According to Article 68.5 of the Subsoil Law, a signed subsoil resources use contract is the basis for registration of the land plot. The land plot is registered with a regional executive body except for cases of forced expropriation of land plots (land use right) for the state needs in

compliance with land legislation of Kazakhstan, specifically the Land Use Code.

Article 84.1 of Land Use Code states that land can be forcibly expropriated for state needs in exceptional cases when it is impossible to meet these needs in any other way. The law does however provide compensation mechanisms for such cases.

If the land is owned by third parties the subsoil user has to make provisions to obtain rights to use land plot. The termination of the subsoil use right shall constitute an unconditional ground for terminating the land use right to the land plot allocated for the purposes of subsoil use.

Land use regulations as defined in the Subsoil Code are described in Article 167.2 of the Subsoil Code.

### 4.3 Status of the Company's Agreements

The table below summarises status and details of the Company's Mining Contracts. Each Mining Contract has a validity term which can be changed (i.e. exploration/mining terms). In case changes are required to a Mining Contract then an additional agreement is signed between the Company and the Competent Authority (i.e. changes to a mining term, mining lease area or production requirements).

**Table 4-1: Status of the Company's mining contracts details**

Mining Subsidiary/Deposit	Contract No	Date of issue	Most Recent Amendment	License Area (km <sup>2</sup> )	Expiry (year)	Production Requirement (tU)
<b>Operating Properties</b>						
<b>Kazatomprom-SaUran LLP<sup>(1)</sup></b>						
Uvanas	73	27/11/1996	01/11/2013	84.48	2022	Varies
Eastern Mynkuduk	74	27/11/1996	02/11/2017	28.97	2022	1,000
Kanzhugan	75	27/11/1996	01/11/2013	60.83	2022	550
South Moinkum (Southern part)	543	26/09/2000	01/11/2013	17.40	2019	Varies
Central Moinkum	3609-TPI	31/05/2010	24/03/2016	61.22	2039	550
<b>Subtotal</b>				<b>252.90</b>		
<b>Ortalyk LLP<sup>(1)</sup></b>						
Zhalpak	3610-TPI	31/05/2010	19/10/2017	145.80	2022	Exploration Stage
Central Mynkuduk	1796	08/07/2005	19/10/2017	40.60	2032	2,000
<b>Subtotal</b>				<b>186.40</b>		
<b>RU-6 LLP<sup>(1)</sup></b>						
Northern Karamurun	76	27/11/1996	01/11/2013	59.58	2022	1,000
Southern Karamurun						
<b>Appak LLP</b>						
Western Mynkuduk	1797	08/07/2005	29/12/2016	133.46	2035	1,000
<b>JV Inkai LLP</b>						
Blocks 1, Inkai (a)						
Blocks 1, Inkai (b)	507	13/07/2000	30/11/2017	139.00	2045	4,000
Blocks 1, Inkai (c)						
<b>Semizbai-U LLP</b>						
Semizbai	2060	02/06/2006	28/05/2015	27.20	2031	500
Irkol	1801	08/07/2005	28/05/2015	44.00	2030	700
<b>Subtotal</b>				<b>71.20</b>		
<b>JSC Akbastau LLP</b>						
Block 1 Budenovskoye	2488	20/11/2007	30/04/2015	1.59	2037	731
Block 3 Budenovskoye	2487	20/11/2007	20/03/2015	1.12	2038	1,200
Block 4 Budenovskoye						
<b>Subtotal</b>				<b>2.71</b>		
<b>Karatau LLP</b>						
Block 2, Budenovskoye	1798	08/07/2005	09/06/2017	17.28	2032	3,200
<b>JV Zarechnoye JSC</b>						
Zarechnoye	996	23/09/2002	29/12/2016	38.00	2028	1,000
<b>JV Katco LLP</b>						
Southern Moinkum (Northern part)	414	03/03/2000	17/05/2011	15.92	2039	2,000
Tortkuduk				29.81	2039	2,000
<b>Subtotal</b>				<b>45.73</b>		
<b>JV Khorassan LLP</b>						
Block Kharassan 1, North Kharassan	1799	08/07/2005	17/10/2014	70.80	2058	3,000
<b>JV SMCC LLP</b>						
Akdala	647	28/03/2001	29/12/2016	37.54	2026	1,000
Block 4, Inkai	1800	08/07/2005	29/12/2016	79.37	2029	2,000
<b>Subtotal</b>				<b>116.91</b>		
<b>Baiken-U LLP</b>						
	1964	01/03/2006	04/03/2015	350.00	2055	2,000
<b>Advanced Exploration Properties</b>						
<b>JSC NAC Kazatomprom</b>						
Block 2 Inkai	4614-TPI-ME	25/06/2018	n/a	183.20	2022	Exploration Stage
Block 3 Inkai	4615-TPI-ME	25/06/2018	n/a	240.80	2022	Exploration Stage
<b>Subtotal</b>				<b>424.00</b>		
<b>Exploration Properties</b>						
Budenovskoye LLP	4198-TPI-ME	14/10/2015	12/06/2017	151.30	2022	Exploration Stage
<b>Grand Total</b>				<b>2,059.27</b>		

<sup>(1)</sup> As of the date of this Prospectus, the Company was the registered subsoil user with respect to the deposit developed by Kazatomprom-SaUran LLP and RU-6 LLP; the Company intends to transfer the rights under the relevant subsoil use contracts to Kazatomprom-SaUran LLP and RU-6 LLP by the end of 2018.

#### 4.4 Recent changes to Legislation

Kazakhstan has recently revised its mining legislation with the aim of boosting mineral exploration and improving control over environmental protection. The new code (the “**Subsoil Code**”) was implemented on 27 June 2018.

The Subsoil Code has for the first time introduced a rule under which licences for exploration of solid subsoil resources can be granted to the first applicant (provided no one else has applied for the same deposit), while retaining the pre-existing procedure under which subsoil use rights are granted on the basis of a tender (albeit that it should be noted that the Company has preferential rights to uranium licences within Kazakhstan). The Subsoil Code has also significantly simplified the application process for the obtainment of subsoil use rights. Under the Subsoil Code, subsoil use agreements and licences may be granted to local or foreign legal entities or individuals. Transfers of subsoil use rights are only permitted after consent of the Competent Authority has been obtained. The transfer of a subsoil use right (a share in the subsoil use right) is prohibited (i) under the contract for the exploration of solid minerals in the first year of its operation; (ii) under the contract for geological study of subsurface resources; and (iii) under the contract for uranium mining.

Notwithstanding the above, in general, the content of subsoil use agreements under the Subsoil Code is practically the same as that under previous Subsoil Law and in respect of the subsoil use agreements concluded before the Subsoil Code entered into force, the latter outlines the general rules:

- Subsoil use permits, licences and subsoil use agreements concluded before the Subsoil Code entered into force, as well as the legal acts of executive state bodies of Kazakhstan connected to them, shall remain in effect;
- Subsoil use agreements concluded before the Subsoil Code entered into force, can be amended by agreement between the parties (i.e. the subsoil user and the Competent Authority), or in cases prescribed in the contracts or in the laws; and
- Amendments and supplements to the laws of Kazakhstan, which worsen the results of the entrepreneurial activity of a subsoil user under its subsoil use agreements, do not apply to the contracts concluded before the introduction of such amendments.

The Subsoil Code also sets forth a limited list of grounds based on which the contract may be amended by way of executing a supplementary (amendment) agreement. Such amendments relate to the information on the subsoil user, extension of exploration and/or production periods, transfer of the rights under the contract, or changes in the contract area. In case of changing (extending) the subsoil use agreement’s term, the subsoil user shall enter into a new contract according to the terms and conditions of the model contract, if the original contract was entered into prior to the Subsoil Code enactment and does not conform to the model contract.

In addition to changes in the mining law, Kazakhstan continues to implement new legislation relating to climate change and transitioning to a green economy. The Law on Supporting the Use of Renewable Sources of Energy (No 165-4 2009), which aimed to facilitate the reduction in greenhouse gas emission and increase the share in renewable energy relative to fossil fuels, has recently been supplemented by the introduction of the Law on Transition to a Green Economy (in force 1 July 2016). This law provides for amendments and additions to existing laws of Kazakhstan aimed to improve efficient use of resources and waste treatment/recycling. In particular, the law introduces a more precise regulation of removal and storage of waste, and

changes to regulation of water resources in terms of quality management, consumption and wastewater disposal. While neither of these laws aim to penalise mining or the fossil fuel industry specifically, they illustrate a growing trend in more stringent environmental requirements across sectors and the potential introduction of costly emission controls in the future.

## 5 OVERVIEW OF THE URANIUM OCCURRENCE AND ISR MINING

### 5.1 Introduction

The following section provides summary background aspects which are common to the Mineral Assets with respect to uranium occurrence and regional geology and In Situ Leach Recovery (“ISR”) Mining.

### 5.2 Uranium Occurrence and Geology

Uranium is a naturally occurring element with an average concentration of 2.8ppm in the Earth’s crust. It is more abundant than gold, silver or mercury, about the same as tin and slightly less abundant than cobalt, lead or molybdenum. In the last 60 years, uranium has become one of the world’s most important energy elements.

Uranium deposits worldwide are grouped into 15 major types based on their geological setting (Table 5-1). The majority of economic deposits are either unconformity-related (30%) or sandstone deposits (30%) and over two-thirds of the world’s production of uranium from mines is from Kazakhstan, Canada and Australia. Most deposits in Kazakhstan are sandstone hosted while most Canadian deposits are unconformity-related, and most Australian deposits are either unconformity-related or iron oxide breccia complexes. The primary ore mineral is usually uraninite (UO<sub>2</sub>) or pitchblende and while most uranium mines exploit only uranium, some uranium is also recovered as a by-product of copper (Olympic Dam), gold (Witwatersrand) or phosphate deposits (Morocco and Florida).

**Table 5-1: Uranium Deposit Types**

Deposit Type	Host Rock	Deposit examples and occurrence
Intrusive	Alaskite, granite, pegmatite and monzonites	Rössing and Husab (Republic of Namibia: “ <b>Namibia</b> ”), Kvanefjeld (Greenland), Bancroft area (Canada), and Palabora (Republic of South Africa: “ <b>South Africa</b> ”))
Granite-related	Veins in granite, deposits in adjacent metasediments and disseminated mineralisation in granite	Jachymov deposit (Czech Republic), various ore bodies in Europe, Canada and Commonwealth of Australia (“ <b>Australia</b> ”)
Polymetallic iron-oxide breccia complex	Hematite-rich granite breccia complex	Olympic Dam (Australia)
Volcanic-related	Occur in and near volcanic calderas, in acid to intermediate volcanic rocks, and are related to faults and shear zones	Peoples’ Republic of China (“ <b>China</b> ”) (Xiangshan), Kazakhstan, Mongolia (Dornod and Gurvanbulag), Russian Federation (“ <b>Russia</b> ”) (Streltsovka caldera, the major occurrence), Republic of Peru and Mexico.
Metasomite	Disseminated uranium in structurally deformed rocks that were affected by sodium and/or potassium metasomatism	Elkon district (Russia), the Lagoa Real-Caetite district (Federative Republic of Brazil), Novokonstantinovskoye and those near Zheltye Vody (Ukraine), Valhalla and Skal (Australia), Michelin (Canada) and Lianshanguan (China).
Metamorphite	Occur in metasediments and/or metavolcanics unrelated to granite.	Forstau (Republic of Austria), Shinkolobwe deposit (Democratic Republic of Congo), Rozna (Czech Republic), Jaduguda (Republic of India), Kokshetau District (Kazakhstan) and Port Radium (Canada).
Proteozoic unconformity	Faulted and brecciated metasedimentary rocks below major Proterozoic unconformities	(1) Canada: Athabasca Basin (Cigar Lake and McArthur River), Saskatchewan (Key Lake, Cluff Lake, Rabbit Lake, McClean Lake, McArthur River and Cigar Lake deposits) and Thelon Basin, Northwest Territories; (2) Australia: Alligator Rivers region (Ranger, Jabiruka, Koongarra and Nabarlek), Northern Territories and Rudall River area (Kintyre), Western Australia.
Collapse breccia pipe	Permeable sandstone breccias in circular, vertical collapse structures filled with coarse fragments and a fine matrix of the penetrated sediments	Grand Canyon (United States of America: the “ <b>United States</b> ”), notably in the Arizona Strip
Sandstone	Sandstone with interbedded impermeable shale/mudstone often occurring immediately above and below the mineralised sandstone.	Mineral Assets, Basal channel deposits - Dalur and Khiagda (Russia), and Beverley and Honeymoon (South Australia). Tabular deposits - Akouta, Arlit, and Imouraren (Republic of Niger), Hamr-Stráž pod Ralskem (Czech Republic) and those of the Colorado Plateau (United States)
Palaeo-quartz-pebble conglomerate	Archaean-early Palaeoproterozoic quartz-pebble conglomerates that unconformably overlie granitic and metamorphic basement.	Witwatersrand in South Africa, Elliot Lake in Canada
Surficial	Tertiary to recent near surface sediments (e.g. calcretes) and soils from uranium-rich basement	Yeelirrie Lake Way, Centipede, Thatcher Soak, and Lake Maitland deposits in Western Australia; Langer Heinrich and Trekkopje in Namibia

Deposit Type	Host Rock	Deposit examples and occurrence
Lignite-coal	Lignite or coal mixed with mineral detritus (silt, clay), and in immediately adjacent carbonaceous mud and silt/sandstone beds.	North and South Dakota (United States), Mulga Rock (Western Australia), Springbok Flats (South Africa), Nizhneylyiskoye (Kazakhstan), and Freital (Federal Republic of Germany)
Carbonate	Limestone or dolomite, often related to karsts, fractures, faults and folds	Strata-bound Tummalapalle (India), Mailuu-Suu (Kyrgyz Republic) and Bentou-Sanbaqi (China)
Phosphate	Uranium in fine-grained apatite	USA (Florida and Idaho), Kingdom of Morocco, Hashemite Kingdom of Jordan and other Middle Eastern countries
Black shale	Synsedimentary disseminated uranium adsorbed onto organic material and clays	Alum shale in Kingdom of Sweden, the Rudnoye and Zapadno-Kokpatasskaya deposits in Uzbekistan, the Chatanooga shale in the United States, deposits in the Guangxi Autonomous Region, China, and the Gera-Ronneburg deposit, Germany.

### 5.2.1 Sandstone Hosted Uranium Deposits

Sandstone hosted uranium deposits account for approximately 30% of annual global production, largely through ISR mining. Most of this production has come from deposits in the western United States, Niger and Kazakhstan. Such deposits form where uranium-bearing oxidised groundwaters moving through sandstone aquifers react with reducing materials and are precipitated. The locations of ore zones and the sizes of mineral deposits depend, among other factors, on the abundance and reactive nature of the reductant.

The nature and abundance of organic material in the ore-bearing sedimentary sequence is generally considered to be of critical importance in the formation of sandstone hosted uranium deposits. In sandstones rich in organic material (containing debris of fossil plants or layers of authigenic, or in-situ generated, organic material) the organic matter either reduces uranium directly with bacteria as a catalyst or through the production of biogenic hydrogen sulphide. In sandstones relatively poor in organic material, it has been proposed that the reduction is caused either by hydrogen sulphide, (biogenic as well as non-biogenic) produced from the interaction of oxidised groundwater with pyrite in the sandstone aquifer (thiosulphate produced initially by oxidation of pyrite breaks down to form reduced sulphur), or from the introduction of reduced fluids/gases (hydrogen sulphide, hydrocarbons or both) along favourable structures.

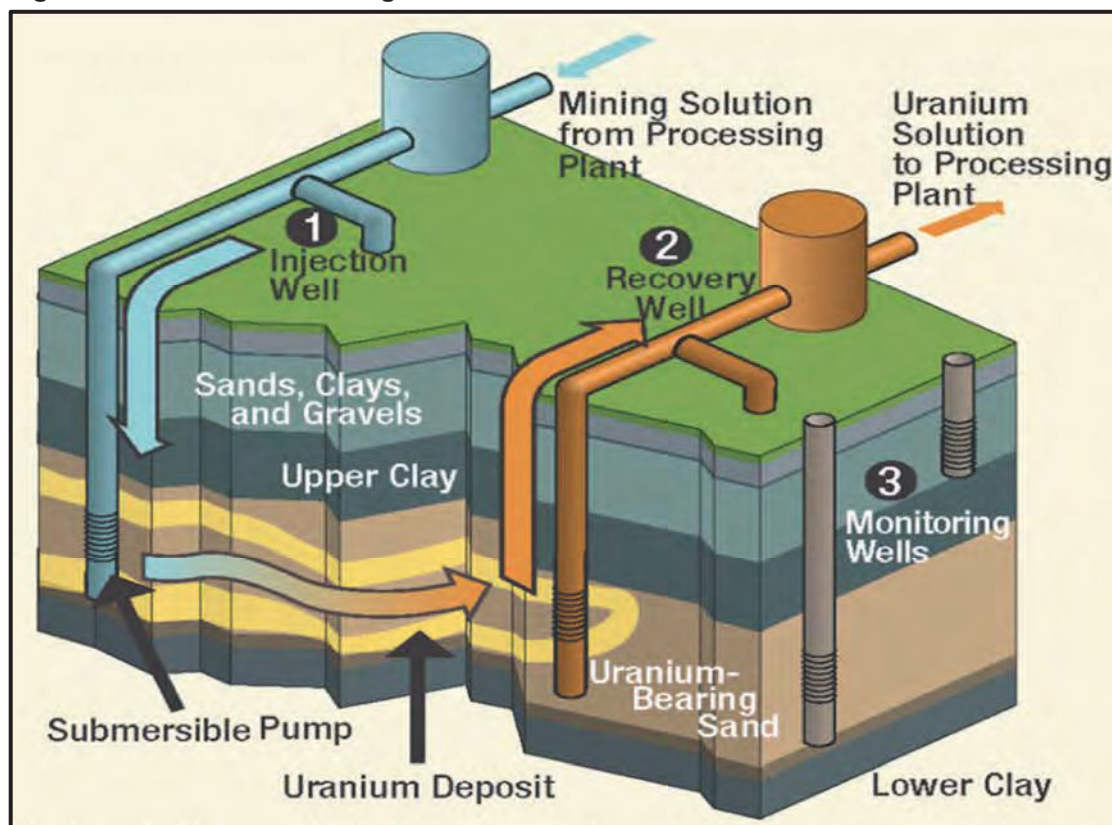
The specific deposits being mined by the Company were formed by the lateral movement of groundwater bearing oxidised uranium minerals through the aquifer, with precipitation of the minerals occurring when the oxygen content decreased, along extensive oxidation-reduction interfaces. The uranium minerals are usually uraninite (oxide) or coffinite (silicate) and they typically occur as coatings on individual sand grains.

## 5.3 In-Situ Recovery Mining

### 5.3.1 Background

Conventional mining involves removing the ore from the ground (whether underground or from an open pit) and treating it on surface to recover the minerals being sought. In Situ Leach Recovery (“ISR”) mining, also known as In Situ Leaching (“ISL”) or solution mining, however, involves leaving the ore where it is in the ground, and recovering the minerals or elements from it by dissolving them in a solution pumped down drillholes (injection wells) drilled from surface and then pumping the pregnant solution back to the surface through additional drillholes (extraction wells) where the minerals or elements of interest can then be recovered from this solution. In addition to this being a low cost method of extraction, there is relatively little surface disturbance and no tailings or waste rock are generated. Figure 5-1 below presents a schematic picture of a typical ISR operation.



**Figure 5-1: Schematic Diagram of ISR Wellfield**

The orebody and the host rocks do however need to be permeable to the liquids used, and constrained such that the solutions do not contaminate groundwater. Techniques for ISR have now evolved to the point where it is a controllable, safe, and environmentally benign method of mining which operates under strict operational and regulatory controls.

Primary uranium production totalled 155MlbU<sub>3</sub>O<sub>8</sub> in 2017, which was down nearly 5% from 162Mlb U<sub>3</sub>O<sub>8</sub> in 2016. As a percentage of total marketable uranium supply in 2017, primary production accounted for roughly 75%, with secondary sources making up the remaining 25%. The top ten primary producers accounted for 88% of world mined production in 2017. On a regional basis, Kazakhstan accounted for 61MlbU<sub>3</sub>O<sub>8</sub> from 16 ISR projects, or 40% of 2017 global production, as the world's largest uranium-producing country.

### 5.3.2 Technology

ISR uranium mining was first tried on an experimental basis in Wyoming, USA, during the early 1960s and the first commercial mine began operating in 1974. Today virtually all uranium production in Kazakhstan and Uzbekistan, and most in the United States comes from ISR mining.

As commented above, uranium deposits suitable for ISR occur in permeable sandstones which are over and underlain by impermeable strata, and which are below the water table. They may either be flat, or "roll front" C-shaped deposits in cross section, within a permeable sedimentary layer.

Uranium ISR uses the native groundwater in the orebody which is fortified with a complexing agent and in most cases an oxidant. It is then pumped through the underground orebody to recover the minerals in it by leaching. Once the pregnant solution is returned to the surface, the uranium is recovered in much the same way as at other uranium operations.

The Company's ISR mines generally do not employ an oxidant but use higher acid

concentrations in the circulating solutions. This is in contrast to the ISR mines in the United States which use an alkali leach due to the presence of significant quantities of acid-consuming minerals such as gypsum and limestone in the host aquifers. Any more than a few percent carbonate minerals means that alkali leach must be used in preference to the more efficient acid leach. Acid leaching gives higher uranium recovery and operating costs are about half those of alkaline leach.

Whether using acid or alkali leaching, the fortified groundwater is pumped into the aquifer via a series of injection wells where it migrates through the aquifer leaching the uranium bearing host sand on its way to strategically placed extraction wells where submersible pumps pump the liquid to the surface for processing.

The layout of ISR wellfields varies greatly depending on the local conditions such as permeability, sand thickness, deposit type, ore grade and distribution. Whatever the type of pattern used, there is a mixture of injection wells, to introduce the leach solution to the orebody, and extraction wells with submersible pumps used to deliver pregnant solution to the processing plant.

The submersible pumps initially extract native groundwater from the host aquifer prior to the addition of the leaching solution. The leach liquors pass through the ore to oxidise and dissolve the uranium minerals in situ. The pregnant solution from the production wells is then pumped to the treatment plant where the uranium is recovered.

After recovery of the uranium, the barren solution is re-fortified with oxidant or acid before being returned to the wellfield via the injection wells. However, a small flow (about 0.5%) is bled off to maintain a pressure gradient in the wellfield. This waste water contains various dissolved ions such as chloride, sulphate, sodium, radium, arsenic and iron from the orebody and is reinjected into approved disposal wells in a depleted portion of the orebody. This bleed of process solution ensures that there is a steady flow into the wellfield from the surrounding aquifer, and serves to restrict the flow of mining solutions away from the mining area.

### 5.3.3 ISR in Kazakhstan

Kazakhstan, and specifically the Company, is the world leader in ISR mining. Initial tests using ISR commenced in Kazakhstan in 1970.

All except one of the Company's operating mines (Semizbai) are in the Shu-Sarysu and Syrdarya provinces in the central south of the country. Mines in the Steпноye area have been operating since 1978, some in the Tsentralnoye area since 1982. Mines in the Western (No.6) area of the Syrdarya basin/district have operated since 1985. Mining is typically at depths of 100m to 700m, though some orebodies extend to 800m.

The uranium at the Company's operations typically occurs in sandstone aquifers as coatings on the sand grains at a depth of generally between 100m and 700m. Uranium is largely insoluble in the native groundwater which is not potable due to naturally high concentrations of radionuclides and dissolved solids. Using a grid of injection and production wells, a mining solution containing sulphuric acid is circulated through the orebody to dissolve the uranium. The uranium-bearing solution (generally containing less than 0.1%U) is then pumped to a surface processing facility where the uranium is removed using ion exchange resin/polymer. The liquid is re-oxidised and re-injected into the orebody. The uranium is stripped from the resin/polymer, precipitated with hydrogen peroxide or ammonia/sodium hydroxide and then dried to form the final product, U<sub>3</sub>O<sub>8</sub>. This process is repeated to remove as much uranium as is economically feasible. The Company's operations typically use between 35kg and 155kg of sulphuric acid per kgU, although a small number of operations fall outside this range.

This is a closed loop recirculation system since the water from the production well is reintroduced in the injection wells. Slightly less water is injected than is pumped to the surface to ensure that fluids are confined to the ore zones intended for extraction. Monitor wells are installed above, below and around the target zones to check that mining fluids do not move outside a permitted mining area.

At the Company's operations, rows of injection wells are typically installed interleaved with rows of extraction wells. This pattern has a relatively low installation cost and is simple to install. Where the mineralisation occurs in narrower channels, however, closer spaced patterns are employed to recover the uranium at a faster rate (per unit area) than the alternating line patterns.

Whichever pattern type is used, the wellfields (usually a production unit that feeds to a single header house) are progressively established and de-commissioned over the orebody as uranium is depleted. A series of monitor wells are situated around each mineralised zone to detect any movement of mining fluids outside the mining area. The wells are cased to ensure that solutions only flow to and from the ore zone and do not affect any overlying aquifers.

ISR uranium production in Kazakhstan requires large quantities of sulphuric acid due to relatively high levels of carbonate in the orebodies. This was a significant constraint on production between 2007 and 2010 in response to which the Company, along other mining companies and two acid producers, KazZinc JSC and Kazakhmys, set up a coordinating council to regulate acid supplies and infrastructure. Since then acid supply has been sufficient and new acid plant capacity has been established.

## **6 GEOLOGY**

### **6.1 Introduction**

The following section includes discussion and comment on the regional and deposit specific geology relating to the Mineral Assets.

### **6.2 Shu-Sarysu Basin**

#### **6.2.1 Regional Geology**

The Mesozoic-Cenozoic sediments of the Shu-Sarysu Basin extend over more than 1,000km from the foothills of the Tien-Shan mountains to the south and south-east, to the plains of the Aral Sea depression in the north-west. The width of the Shu-Sarysu depression is 250km (Figure 6-1).

The territory of the Shu-Sarysu Basin is a large epicaleleldian structural trough characterised by a three-level structure. In vertical section, the following stratigraphic levels are identified: the lower level (folded Caledonian basement), the middle level (intermediate semi-platform or lithified sedimentary layer) and the upper level (Mesozoic-Cenozoic platform cover).

Mesozoic-Cenozoic sediments are split into three units: Jurassic pre-platform unit; Cretaceous-Paleogene platform unit and Neogene-Quaternary platform-suborogenic unit (Figure 6-2; Figure 6-3).

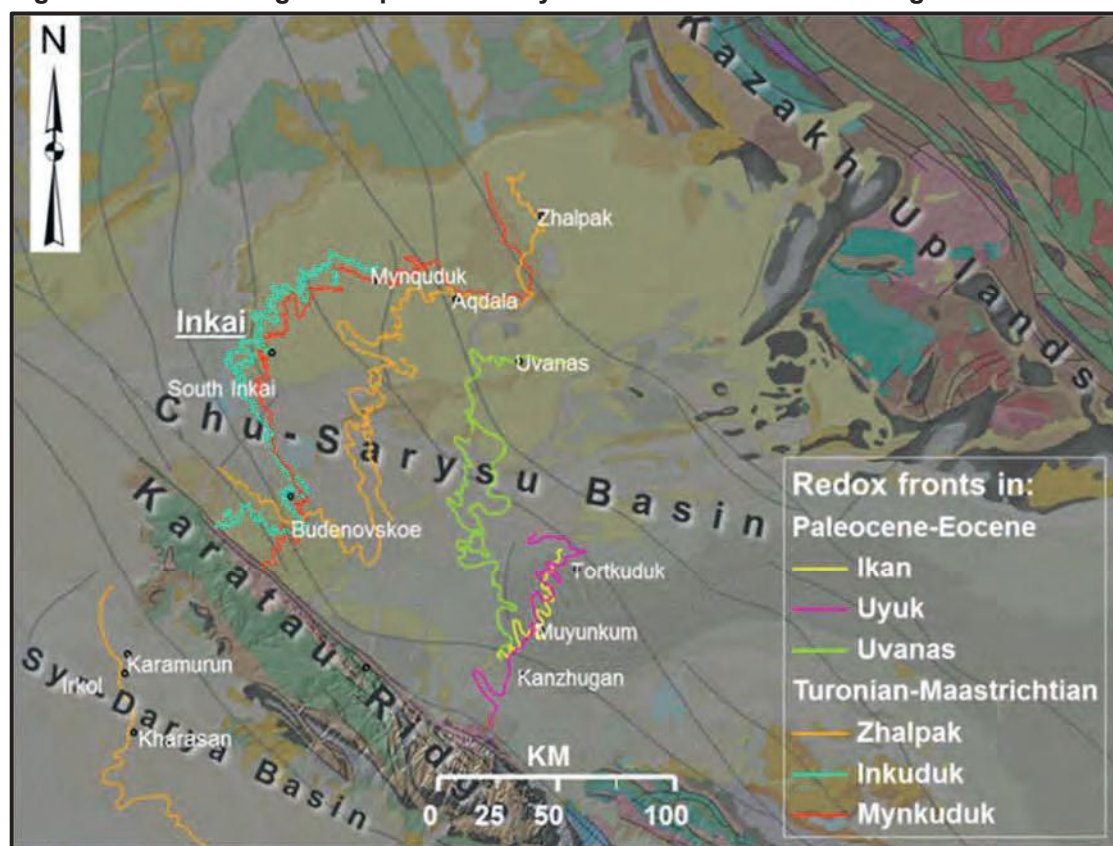
Sediments of the Jurassic pre-platform unit are found in the wall sections of the basin where they are enclosed in grabens among rocks of the intermediate structural level and have a common planation surface with these rocks, so structurally they are more related to the intermediate level. These sediments are represented by a complex unit of proluvial-lacustrine-alluvial rocks that contain coals in the lower part of the section. The total thickness of the Jurassic sediments in the Lower Sarysu trough is over 400m.

The Cretaceous-Paleogene platform unit is represented by continental terrigenous strata of the Late Cretaceous period and continental and marine terrigenous strata of the Palaeocene and Eocene period.

The Late Cretaceous sediments lie unconformably on the deeply eroded Palaeocene-Eocene surface and are represented by only continental formations.

According to the drilling data, at the section bottom, in the surface depressions of the Middle Paleozoic rocks, there are uneroded relicts of reddish dense clays with inclusions of quartz pebbles and gravels and siliceous rocks with intercalations of sand clay sandstones of various grain sizes. Usually, their thickness is not in excess of 15m. Based on their analogy with similar Kyzylkum formations, these rocks are nominally assigned to the Cenomanian Formation (K2sm).

**Figure 6-1: Geological Map of Shu-Sarysu Basin and Its Surroundings<sup>(1)</sup>**



<sup>(1)</sup> "Inikai Operation South Kazakhstan Oblast, Republic of Kazakhstan National Instrument 43-101 Technical Report" published on 25 January 2018.

The Cretaceous-Paleogene (ore-bearing) unit is subdivided into three independent formations: Mynkuduk (early Turonian), Inkuduk (late Turonian-Coniacian-Santonian) and Zhaltapak (Campanian-Maastricht to the Early Paleocene) formations.

Each of these formations forms a large rhythm-stratigraphic cycle arranged as according to a near view plan: coarse-grained sandy and pebble-gravel-sandy sediments of typically grey colour predominate in the lower part, while the upper part is mainly occupied by relatively fine-grained often clayey (usually epigenetic) strata of predominantly red colour.

The age of the formations has been mainly determined on the basis of a spore-pollen analysis using geological-stratigraphic correlation sections of the Mynkuduk deposit.

The Mynkuduk Formation (K2t1mk) was defined in 1973 at the deposit of the same name. It is represented by a layer of grey-coloured and variegated alluvial and lacustrine-alluvial sediments accumulated in the Turonian River System which generally extends from the south-



east to the north-west.

In the vertical section of the formation, there are clear changes in lithological-facial units from bottom up:

- rod-channel sands of various grain sizes with gravel and pebble;
- floodplain deposits of medium-grained sands; and
- medium and fine-grained sands with clay layers of floodplain-oxbow facies.

The thickness of the Mynkuduk Formation in the area ranges from 70m to 90m, and it is one of the main ore-bearing formations at the Mynkuduk deposit.

The Inkuduk Formation (K2t2-st) has a distinct erosion boundary and lies on the Turonian sediments. It has a coarse-grained composition and a low degree of material grading. Three sub-formations (cycles) were identified in its section, ranging from gravel-pebble sediments to fine and medium-grained sands with clay layers and lenses.

The thickness of the lower sub-formation ranges from 30m to 35m, of the middle sub-formation - from 55m to 60m and of the upper sub-formation - from 25m to 35m.

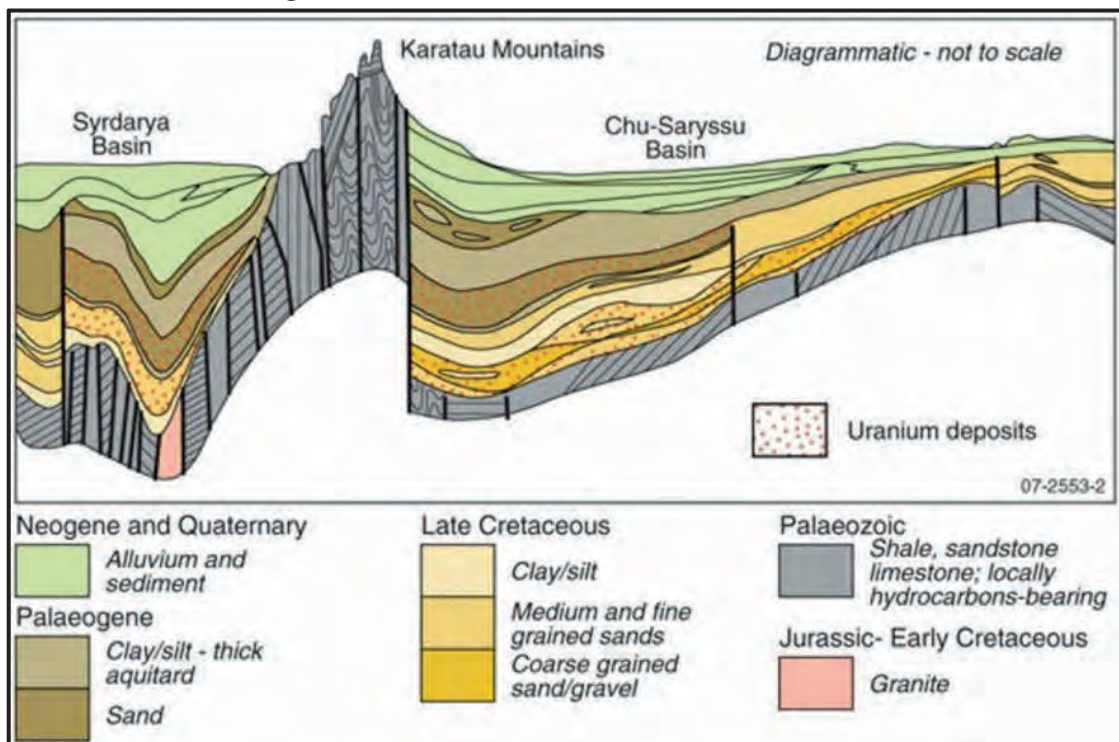
Sediments of the lower sub-formation are represented by grey and green-grey gravel-pebble varieties that naturally change in the upper part of the section into more graded sands of medium and various grain sizes.

At the base of the middle sub-formation, green-grey sands of various grain sizes with gravel and pebble also predominate, changing into medium and fine-grained sands with clay layers.

Sediments of the upper sub-formation have a more uniform lithological composition and are mainly composed of medium-grained sands with a small portion of inequigranular sands and inequigranular sands with gravel (up to 10% of the total thickness). Primary grey colours predominate in this sub-formation.

The Inkuduk Formation underwent a regional “gley” reduction processes due to which its strata are mostly represented by green permeable rocks with relict mottled colours typical for clay intercalations. A portion of grey-coloured rocks in the formation composition increases toward south-west, and the overall thickness of the formation increases to 150m in the same direction, in the axial part of the Suzak Trough. Inkuduk is an ore-bearing formation at the mine site.

**Figure 6-2: Schematic Cross-section of the Shu-Sarysu Basin and Syrdarya Basin – Looking West<sup>(1)</sup>**



<sup>(1)</sup> "Inkai Operation South Kazakhstan Oblast, Republic of Kazakhstan National Instrument 43-101 Technical Report" published on 25 January 2018.



**Figure 6-3: Schematic Stratigraphic Column for the Shu-Sarysu Basin<sup>(1)</sup>**

System	Series	Subseries	Stage	Formation horizon notation	Lithologic column	Deposits	Description of rocks										
								System	Series	Subseries	Stage	Formation horizon notation					
Neogene	Pliocene			Togauken	N <sup>1</sup> - N <sup>3</sup>	20-300	Taky sand, sandy loam, and loam; alluvial sand, loam, and gravel										
							Pebblestone, gravelstone with interlayers of pale and brown clays										
							Brown and pale clays with interlayers of pale and rusty yellow inequigranular sands, limestone, and marlstone										
							Pinkish pale, brown, variegated calcareous and sandy clays; polymictic inequigranular sand; interlayers, lenses, and nodules of calcareous sandstone; bones of vertebrals										
							Oligocene	Upper	Boipaqdala	P <sup>1</sup> - N <sup>1</sup>	10-50	Red-brown and brick red calcareous sandy clay; interlayers and lenses of clayey silt and sand (commonly at the base); ostracode complex is identified					
												Dark gray, up to black clay with horizontal bedding and fish remains					
							Paleogene	Eocene	Upper	Inymak	P <sup>2</sup> - P <sup>3</sup>	20-130	Bluish green clay giving way to silt and sand toward basin margins				
													Gray-green and green bedded clays with fish remains and pelecypod shells; medium- and fine-grained sands in the east; interlayers of opoka-like clay at the base; basal pattum layer with quartz and colophane gravel and remains of shark teeth and bones				
													Middle	Ikan	P <sup>4</sup> - P <sup>5</sup>	5-80	Gray and yellow sands, coarse- and medium-grained at the roof and bottom and medium-to-fine-grained in the middle part; siltstone, clay, and calcareous sandstone interlayers; coalified plant remains and sulfide disseminations
																	Gray and greenish gray silt, silty sandstone, and sand; gray and black clays
Lower	Uyuk	P <sup>6</sup> - P <sup>7</sup>	5-55	Gray, yellow, and whitish sands with interlayers of gray and black clays and sandstone grading into gray and greenish gray clays; coalified plant remains and pyrite disseminations													
				Gray sand with cherry hue grading into brick red clay; less abundant black and variegated sands													
Paleocene		Uvesas (Kanzhugan)	P <sup>8</sup>	5-70	Green, variegated, and black (humified) clay, silt, and silty sandstone grading into medium- and coarse-grained sand; Greenish pale, gray, and yellow medium- and less frequent coarse- and fine-grained sands with interlayers of green, gray, and variegated clays and clayey sand												
					Gray, whitish yellow inequigranular and medium-grained sands with fragments of coalified wood; interlayers of dark gray, up to black clay												
Cretaceous	Upper	Sambanian-Mastrotician	Zhalpak	K <sup>2</sup> st - P <sup>1</sup>	30-90	Inequigranular and medium-grained sand, sandstone with carbonate cement as interlayers; clay and pattum in the upper part; prevalent initial coloration is red or variegated; superimposed coloration is green, yellow, or whitish											
						Gray, greenish-whitish, yellow, inequigranular and medium-grained, quartz-feldspar, with gravel and sporadic pebbles, coalified plant detritus; interlayers of gray and dark gray clays and sandstone with carbonate cement											
						Variegated, green, pink, and yellow inequigranular sand, gravel, and sandy clay with gravel											
						Variegated inequigranular sand with gravel and pebbles; gray sandy clay in the upper part of the unit											
						Sand and gravel; gravel and pebbles at the base; clayey sand and sandy clay in the upper part											
						Coniacian	Inkuduk	K <sup>1</sup> st - st	40-170	Inkai	Light gray, greenish gray, yellow medium-grained and inequigranular quartz-feldspar sands; interlayers of gray and green clays in the middle and upper parts and sandstone with carbonate cement						
											Light gray and less frequent greenish gray and pink medium-grained and inequigranular sands with gravel and pebbles in the lower part; interlayers of gray and varicolored clays						
						Turonian	Mynkuduk	K <sup>1</sup> st	20-80	Mynkuduk	Variegated sandy clay with pebbles and gravel; sand interlayers						
											Sand, sandstone, siltstone, black coaly clay, and conglomerate						
						Lower	Albian	Tantlay	K <sup>2</sup> ab	10-30	Tantlay	Gray, dark gray, black, occasionally variegated conglomerate, gravelstone, sandstone, marlstone, siltstone, mudstone with lignite seams; less abundant sand and clay					
Permian basement rocks: folded red and grey-colored argillites, sandstones																	

<sup>(1)</sup> "Inkai Operation South Kazakhstan Oblast, Republic of Kazakhstan National Instrument 43-101 Technical Report" published on 25 January 2018.

The Zhalpak Formation (K2km-P11gp) lies on the Inkuduk Formation with sporadic gaps. It is split into two sub-formations; the lower grey-coloured and the upper variegated sub-formations. There is a geochemical boundary between the variegated and grey-coloured parts of the formation which corresponds to the standing groundwater level of the Danian-Early Paleocene period.

Sediments of the variegated part of the formation are mainly represented by medium and fine-

grained sands of green-yellow-brown-red hues and tints. The upper part of the formation is composed of red-brown carbonatised clays that represent a regional boundary separating saline Cretaceous waters from fresh Paleogene waters. The thickness of variegated sub-formation varies between 20m and 60m.

Grey medium-grained cross-bedded feldspar-quartz sands with pebble and gravel are developed in the grey-coloured part of the formation. They often contain carbonised detritus with iron disulphides.

### ***Paleogene***

Paleogene sediments are represented by continental (Paleocene) and marine (Eocene) strata. There are four formations within the Palaeogenic unit (from the bottom upwards): Uvanas, Uyuk, Ikan and Intymak.

The Uvanas Formation (P12uv) was discovered in 1970, where it hosts mineralisation. It is present throughout the entire area of the Inkai deposit at depths from 170m to 300m, and within the Suzak Trough at the Budenovskoye deposit it is located at depth of about 450m. The thickness of this formation increases in the same direction from a few meters to 80m.

The Uyuk Formation (P12-P21uk) is ubiquitous and is mainly represented by intermittent bedded grey and green-grey clay. Coastal-marine sandy-clay sediments were only preserved only in the southern part of the area. Thickness of the Uyuk Formation ranges from a few meters to 60m.

The Ikan Formation (P22ik) composition (grey-green clay, sometimes opoka-like) is very close to the underlying Uyuk Formation which is why it is often impossible to separate these two formations within the profile. In axial parts of the Suzak Trough, where the thickness of the Ikan Formation reaches 50m, its composition is complemented with fine-grained water-bearing sand. The Uyuk and Ikan formations are mineralised at the Kanzhugan and Moinkum deposits.

The Intymak Formation (P22-3im) is represented by deep marine green-grey to blue-green intermittent bedded or massive (less often) clay with thicknesses of 80m to 150m. This formation is the upper regional aquifuge for Eocene – Late Cretaceous aquifer system.

### ***Late Oligocene – Quaternary unit (barren)***

A late Oligocene – Quaternary unit, overlies the late Eocene formations with signs of erosion and an angular unconformity. The unit contains three subunits: a Late Oligocene – Early Miocene suborogenic subunit; a Late Oligocene – Quaternary orogenic sub-unit and a Quaternary platform sub-unit. The unit is characterised by complex formational composition and frequent non-depositional hiatus, which played a role in development of mineralisation-controlling infiltration processes in Cretaceous-Palaeogenic formations.

The suborogenic subunit is represented by Betpakdala Suite and Togusken Series sediments. The Betpakdala Suite (P33-N11bt) contains two layers: the lower one with red beds and the upper one is variegated. The lower layer overlies Palaeogenic and Cretaceous formations with signs of erosion degradation and is composed of brick-red and brown-red carbonate clays, silt, pink and brown sands. The upper layer differs from the lower layer one in heterogeneous lithological composition (clays, sands and gravel), variegated dirty-yellow, brown and pale colours, poor rounding and grading of material. The overall thickness of the suite in the Suzak Trough reaches 200m, but reduces towards the north and eventually pinches out entirely.

The Togusken Series (N12 -N21tg) is represented by ubiquitous yellow, rusty-brown inequigranular quartz sands with bands of gritstone, sandstone and clay. Its thickness across the Betpak-Dala Plateau generally does not exceed 12m and it is considered to have formed

under fluvial conditions with origins located in the Kazakh folded area.

The Late Pliocene – Quaternary orogenic subunit (N2+Q) is composed of pebble-gravel deposits, gritstone and conglomerates of alluvial plain of Karatau ridge and its thickness ranges from a few meters to 40m.

#### ***Quaternary unit***

Quaternary sediments form shallow cover at the Betpak-Dala Plateau, infill valleys of Sarysu and Shu rivers, arid grasslands, takyr and salt basins and form sand massifs of Muyunkum, Samen-Kum, etc. Most widespread are alluvial sands, sandy loam, loam, gravel rock, aeolian sand, silt and clay. The total Quaternary thickness varies from less than a meter to 20m.

### **6.2.2 Deposit Geology**

Cretaceous-Palaeogenic formations host all major economic uranium deposits of the Shu-Sarysu Basin.

The primary commercial mineral in the area is stratified-infiltration uranium, associated with regional zones of stratal oxidation, which is currently the main economic type. Formations of the Bolshoi Karatau Mountains folded basement were found to contain deposits and occurrences of gold, silver, copper, lead, tin, barite, phosphates, marble, etc.

### **6.2.3 Deposit Mineralisation**

The Uvanas, Moinkum, Kanzhugan deposits, together with a number of other occurrences are associated with regional zone of stratal oxidation in permeable Palaeocene-Eocene deposits. Uranium mineralisation is formed along a geochemical barrier between epigenetic oxidised and primary grey-coloured rocks and the uranium content of the ores typically varies from 0.010%U to 0.100%U.

The Zhalpak and Akdala deposits are genetically and spatially associated with attenuation of a regional zone of stratal oxidation in Upper Cretaceous Zhalpak formation. Mineralisation is located at depths from 80m to 200m; apart from uranium, there are elevated concentrations of rhenium of up to 1.5g/t.

The Inkai deposit connects to the Mynkuduk deposit in the south-west and stretches towards the south up to the boundary with the Budenovskoye deposit. Economic uranium-bearing mineralisation was found in Mynkuduk and Inkuduk formations and is controlled by a regional NS-striking zone of stratal oxidation. Mineralisation is located at depths of 340m to 530m.

The Budenovskoye deposit is the southern extension of Inkai and stretches towards the south up to the Main Karatau Fault. Economic uranium ore bodies were identified within the Upper Cretaceous Mynkuduk and Inkuduk formations. Mineralisation is controlled by a regional zone of stratal oxidation with the base of mineralisation located at depths from 290m to 750m.

### **6.2.4 Deposit Summaries**

#### ***Akdala***

The Akdala deposit comprises seven orebodies which are divided into two levels: the lower corresponds to the Mynkuduk and Inkuduk horizons and the upper to the Zhalpak horizons. The orebodies are consistent along strike but their width is quite variable: the thickness varying 2m to 5m at the flanks and 5m to 10m in the central part of the roll. The total strike length of the orebodies varies from 0.9km (orebody 9) to 9.6km (orebodies 1, 2, 3), and the width varies between 25m and 700m (orebody 1). The main orebody (orebody 1) has been explored using a 200m by 50m to 25m grid up to C1 category. A portion of Orebody 2 has also been drilled using a 100m by 25m grid for C1 category. The remaining portions of the deposit have been drilled using 800m by 25m or 400m by 50m grids to define C2 category. The average thickness

varies from 3m to 10m, the average productive unit being 6m for C1 and 4m for C2. The average uranium grade averages 0.058%U.

### **Western Mynkuduk**

Western Mynkuduk comprises eight orebodies which correspond to the Mynkuduk and Inkuduk horizons companion sediments. In plan view all the orebodies are presented by twisty narrow bands of different thickness and shape. The lenses extend along strike for between 3km and 25km, have widths of 25m to 500m, and thickness of between 7m and 23m.

The largest orebodies are 13, 14 and 17, the remaining ore bodies represent 25% of the total resources of the deposit.

The main drilling grid for C1 category was 200m by 50m to 25m for C1 and 800m by 100m to 50m for C2 with some infill areas to 400m by 100m to 50m.

The average equilibrium coefficient is 0.83 and is dependent on the thickness of the mineralisation. The uranium grade of the resource varies from 0.025%U to 0.045%U, the average thickness varies from 5.7m to 7.3m and the average productivity varies from 2.9kg/m<sup>2</sup> for the C1 Category to 3.3kg/m<sup>2</sup> for the C2 category. The geological structure of West Mynkuduk deposit is presented on Figure 6-4.

### **Central Mynkuduk**

Central Mynkuduk comprises 2 main orebodies and one minor one which correspond to Mynkuduk and Inkuduk horizons of Turonian-konyak-santonian sediments. In plan view all of the orebodies are presented by twisty narrow bands of different thickness and shape. The lenses extend along strike for between 8km and 26km, have widths between 50m and 800m, and thicknesses of between 0.9m and 27m.

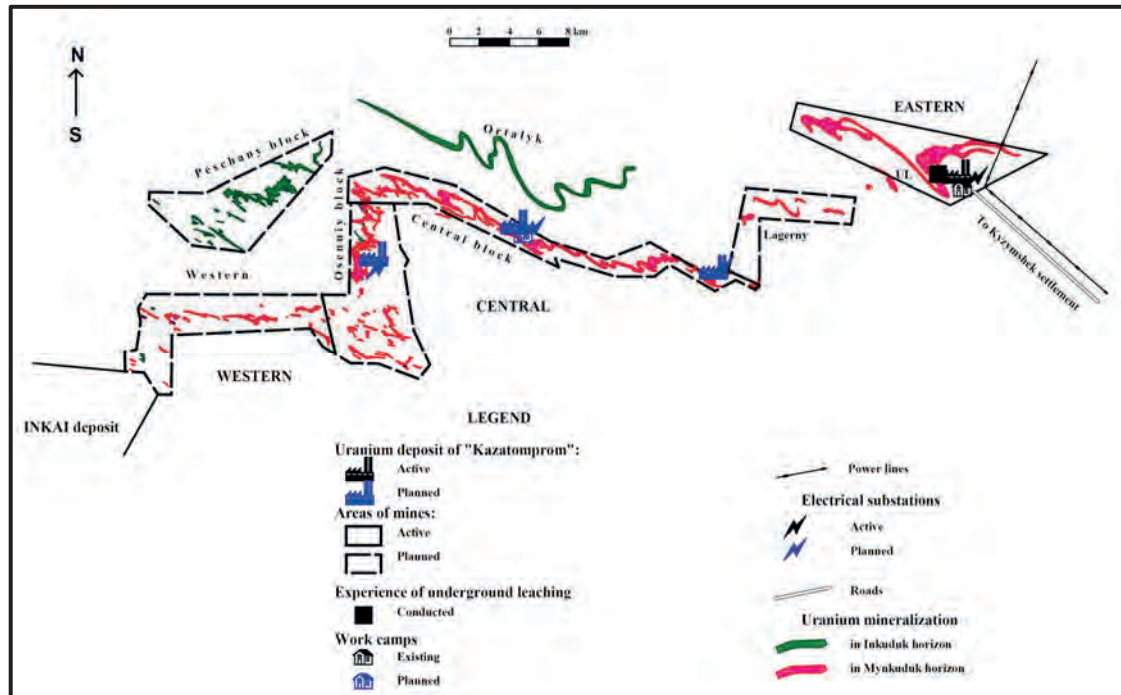
The largest orebody is number 10 and the remaining 35% of the total resource is within orebody 18. The drill spacing for C1 was 200m by 50m to 25m for C1 and 800m by 100m to 50m for C2.

The average equilibrium coefficient is 0.81, while in centre part of the roll of the orebody 10 it is equal to 0.97. The uranium grade in the resource block varies from 0.038%U to 0.047%U, the average thickness varies from 5.6m to 7.6m and the average productivity varies from 5.2kg/m<sup>2</sup> (C1) to 2.9kg/m<sup>2</sup> (C2).

The geological structure of Central Mynkuduk part of Mynkuduk deposit is presented on Figure 6-4.



Figure 6-4: Mynkuduk mineralisation map



### ***Inkai***

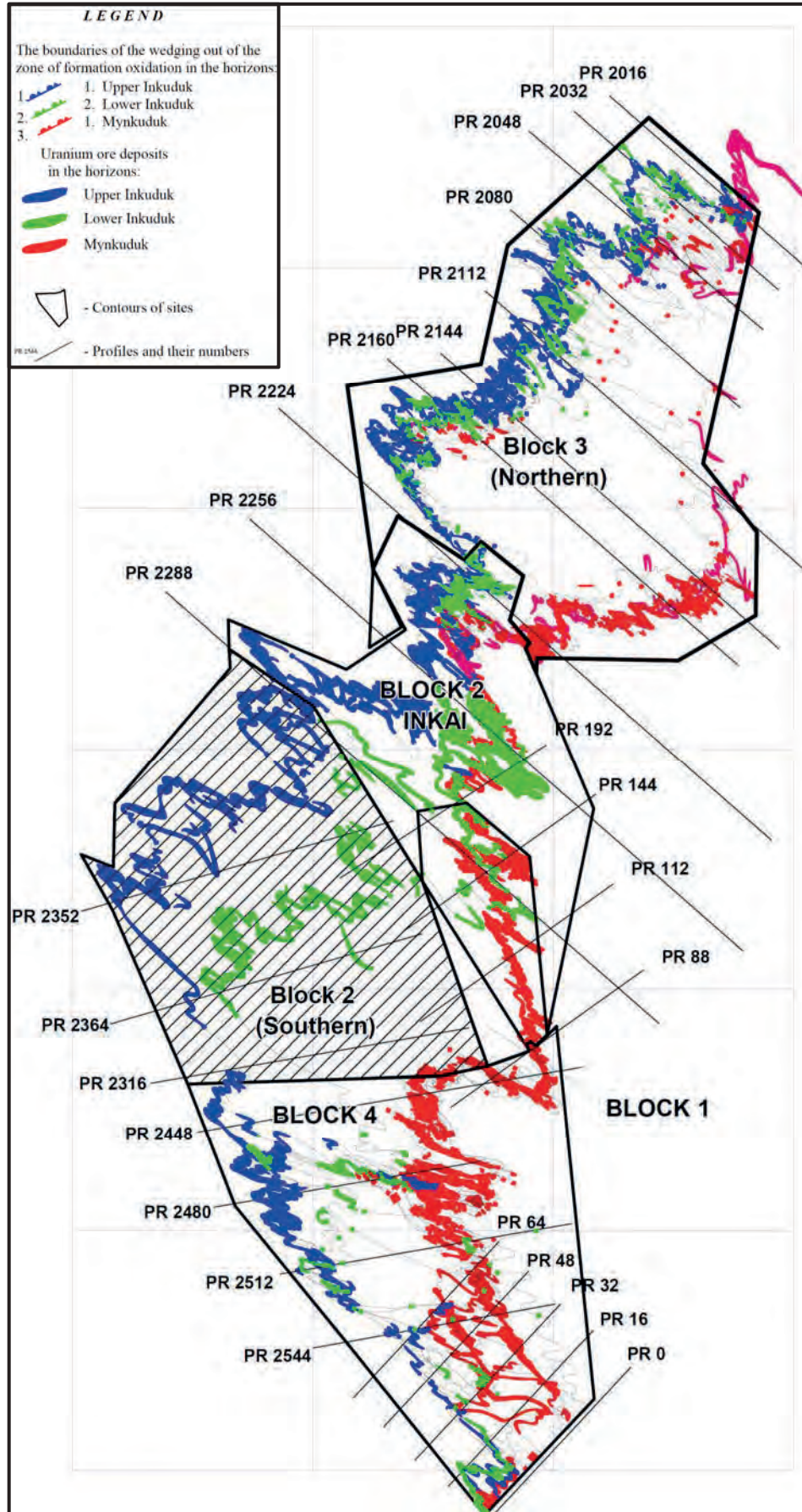
Inkai is the largest uranium deposit of a hydrogenous type in the Shu-Sarysu uranium province. The nearest uranium deposits are Budenovskoye (50km), Sholak-Espe (60km), Mynkuduk (extension of Site 3 to the north-east), Akdala (100km), Zhalspak (140km), Uvanas (160km), Kanzhugan and Moinkum (250km).

The orebodies at Inkai are spatially confined to the geological boundary of the stratal oxidation zone, and their limits in plan and in section were defined based on the gamma logging data (Figure 6-5).

Each of the discovered orebodies is located within one ore-bearing horizon and corresponds to one hypsometric level.

Orebodies consist of several morphological elements - the main rolls with distinct flexures and limbs whose proportions vary from equal values to the 10-fold prevalence of one or another morphological element. In addition, there is a wide presence of conjugated flexure-limb elements of the ore bodies (“winged sacks”) whose thickness ranges from 20m to 25m. During the development of ore-controlling oxidation, there appear satellite and residual bodies that are usually located in the “rear” of the main rolls and are separated from them by not insignificant (dozens and hundreds of meters) barren intervals.

**Figure 6-5: Ore mineralisation at the Inkai deposit**





In plan view, all orebodies are shaped like winding ribbons that differ only in length and width and are spatially interconnected with the main structural-morphological types of pinch-out of the stratal oxidation zone.

In cross-sections, morphological structure of the ore bodies is represented by a diverse combination of roll elements generally in the form of irregular rolls which are usually asymmetrical, deformed and laminated, or a combination of several contiguous rolls associated with residual and satellite bodies.

Inkai 1 comprises two main ore bodies and Inkai 2 six ore bodies which correspond to Mynkuduk and Inkuduk horizons of Turonian-Konyak-Santonian sediments. In plan view all the orebodies are presented by twisty narrow bands of different thickness and shape. Orebody 2 is considered to be the most simple in structure, ore body 10a and 1 – complex and 1,3,10, 12, 12 – very complex.

Inkai 1 and Inkai 2 were explored using 100m by 50m grid for B category, 200m by 50m – for C1 and 800m by 50m grid for C2.

Parameters of uranium mineralisation in the resource blocks vary in a wide range: uranium grade - from 0.026%U to 0.063%U, thickness - from 5m to 7.5m.

Inkai 3 lies to the north of Inkai 2 and to the southwest of the Mynkuduk deposit and extends for some 25km and varies in width from 10km to 17km. The mineralisation at Inkai 3 is mainly localised in three Upper Cretaceous sub-formations: Lower Mynkuduk (from 400m to 480m deep), Lower Inkuduk (from 320m to 390m deep) and Middle Yakutuk (from 290m to 350m deep).

Parameters of uranium mineralisation in the resource blocks vary over a wide range: uranium grade - from 0.027%U to 0.070%U, averaging 0.044%U and thickness - from 2.55m to 10.61m, averaging 6.21m.

Ore content was estimated based on the results of prospecting and exploration works. Drill spacing at Inkai 3 was 800m by 100m to 50m for C2 category and 200m by 50m for C1 category.

The geological structure of Inkai 4 is very similar to Inkai 3. The uranium grade ranges from 0.023%U to 0.123%U, with an average of 0.043%U and a thickness from 2.5m to 10.6m, with an average of 6.2m.

The orebodies are characterised by an extremely uneven distribution of size classes both in cross section and throughout the site area. Size fractions of 0.5mm to 0.25mm and 0.25mm to 0.10mm predominate in the composition of mineral sands and amount to 44% to 62%. The proportion of a clay-siltstone fraction (less than 0.05mm) varies from 10% to 25% (15% on average). Ores are of a silicate type. Minerals which are insoluble or hardly soluble in acids predominate in the composition of mineralised sands (up to 98%).

Inkai 4 is referred to Group 2 in terms of geological structure complexity. The drill spacing was 800m by 100m to 50m for C2 category and 200m by 400m to 50m for C1 category. A total of 453 boreholes were drilled at the site, including 149 core holes.

### ***Uvanas***

The Uvanas deposit is located in the northern part of the ore district within the Uvanas-Kanzhugan metallogenic zone (Figure 6-6).

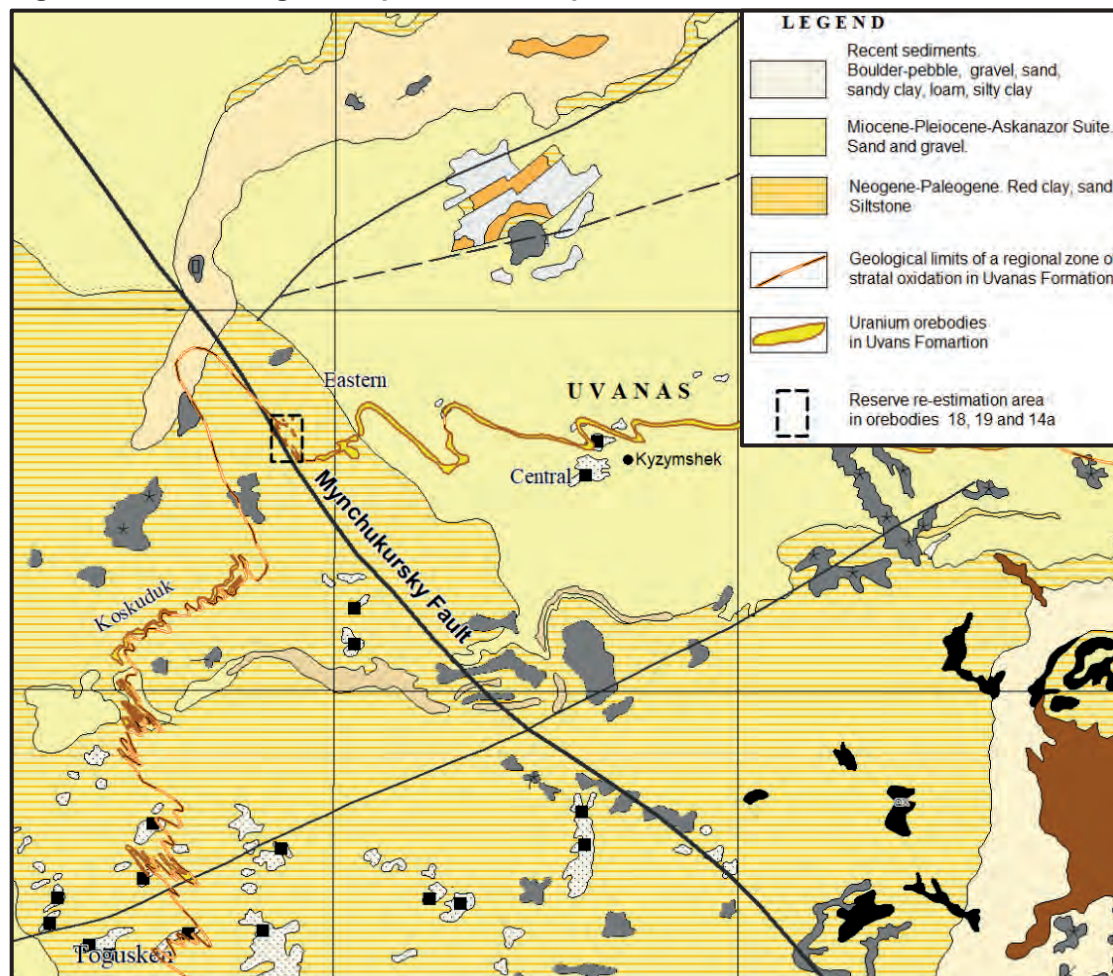
The general position of the Uvanas formation in the Mesozoic-Cenozoic section and its structural features are characterised by a gradual increase in its thickness from east to west and from north to south. At the east site of the Uvanas deposit, the thickness of the formation varies from 4m to 8m, whilst in the West site it ranges from 26m to 30m. The maximum

thickness of up to 52m was observed at the Koskuduk site (South-Western flank), and at the Togusken site the thickness further increases to 60m.

The Uvanas ore-bearing formation has a shallow dip not exceeding 6° to 7° on average. Steeper dips are only observed within the West and South-West sites (Koskuduk site and Togusken site adjoining from the south). In a zone adjoining the Mynchukursky fault from the east, the dip angle is not in excess of 1°.

In plan, mineralisation is shaped like winding ribbons that follow the geological boundary of the stratal oxidation zone.

**Figure 6-6: Geological map of Uvanas deposit area**



The main part of Uvanas deposit was explored between 1973 and 1975 by drilling on a 200m by 50m to 25m grid.

As of 1 January 1976, the total delineated length of a near-latitudinal ore-bearing zone was 37.1km, of which 25.4km was drilled on 200m by 50m to 25m grid. The remaining mineralised zone of 11.7km long was explored on a 800m by 50m to 25m grid. The Koskuduk site was explored on a 800m by 50m to 25m drilling grid along its entire length (11km along strike).

Continuity of uranium mineralisation was confirmed within the largest orebodies. The largest and morphologically simplest orebodies are located in the eastern part of the West site as well as at the Central and Eastern sites of the deposit. Uranium mineralisation appears to be more complex in the western part of the West site and at the Koskuduk site.

The width of orebodies in the strata of productive formation ranges from 25m to 35m to 400m. The depth of the roof of the ore-bearing permeable formation within the latitudinal ore zone

increases from east to west from 82m to 126m. The deposit is characterised by a horizontal or sub-horizontal bedding of the ore-bearing formation and the absence of the clearly visible post-ore dislocations.

Throughout the entire area explored to the C1 category, competent impervious clay strata with continuous sand “windows” localised in some areas (up to 4.6% of the latitudinal zone area) are developed at the base of the Uvanas formation.

The ore-bearing formation is characterized by high water content: specific well yields vary between 0.049l/s to 0.3l/s at the East site and 0.96l/s to 1.75l/s at the Koskuduk site. Permeability coefficients range from 4m/day to 5.3m/day in the east to 11.6m/day to 13.1m/day in the west.

Water is predominantly of sulphate-chloride sodium chemistry, with salinity varying from 5g/l at the East site to 3.1g/l to 1.22g/l at the Koskuduk site.

The main uranium mineral is coffinite (up to 95% of the total uranium mineralisation). Ores are considered non-carbonate and the CO<sub>2</sub> content in CaCO<sub>3</sub> equivalent does not exceed 0.1% to 0.4%.

### **Zhalpak**

Zhalpak is located at the north-eastern part of Shu-Sarysu Basin. The mineralisation is confined to the sub-meridian front of stratal oxidation within the Zhalpak Horizon. In general the deposit has a simple geometry and good continuity.

Two main zones have been identified, the lower zone is confined to Mynkuduk and Inkuduk horizons, while the upper zone occurs within the Zhalpak Horizon. The uranium mineralisation is controlled by stratal oxidation and the mineralisation is primarily located at the bottom of Zhalpak Horizon. High grade mineralisation is localised at the beginning of stratal oxidation pinching out (detachment from bottom confining layer). The upper part of stratal oxidation within the productive horizon is not mineralised. The host rock is a grey-coloured gravel-sandstone with rare grey-coloured clayey interlayering. Mineralised host rock has higher grade of carbonised detritus (up to 0.5% of organic carbon) and a higher concentration of heavy minerals.

There are three types of mineralisation present; namely dark-grey highly graded sandstone hosted mineralisation with high carbon content in which uranium is confined to organic material and sand clasts; grey and light grey sandstone with high uranium grades which are enriched in pyrite, have no organic carbon and where the uranium is confined to sulphides and sand clasts; and low grade light greyish sandstones in which the uranium is uniformly distributed. The uranium mineralisation occurs as coffinite.

In plan view the mineralisation occurs in continuous north-west striking snaky bands related to the zone of stratal oxidation and has been modelled using a 0.010%U cut-off. In section view, the mineralisation occurs as blanket-like bodies along lower border of stratal oxidation or sub-roll (pocket-like) bodies, or a combination of both. In total 8 separate orebodies have been identified within three areas: namely Central (orebodies 1,2,3,4 and 5), Northern (orebodies 6 and 7) and Southern (orebody 8). Orebody 2 is the largest, the average grade is 0.032%U of uranium and some 60% of the mineralisation is classified as C1 and the remainder as C2.

### **Tortkuduk and Southern Moinkum**

Tortkuduk and Southern Moinkum are both part of the Moinkum deposit and are situated between the Karatau Ridge in the south and lower reaches of Shu River in the north.

At Southern Moinkum, the mineralisation occurs within the Uyuksky and Kanzhugansky

horizons. Southern Moinkum comprises 30% of the total resources of the deposit of which 62% are within Orebody 10 and 29% within Orebody 12. The deposit was originally explored on a 800m to 200m by 50m grid which was then infilled to 200m to 100m by 50m at the evaluation stage. The individual orebodies extend for between 1,300m to 15km along strike and vary in width up to 1.6km.

The Tortkuduk deposit is split in two areas, North and South. The depth of the mineralisation in the North Area is between 250m and 350m and it occurs within the Uyuksky and Ikansky horizons which are separated by clay horizons between 5m and 20m thick. In the South Area, the mineralisation occurs in the same horizons but the geology is more complex, the mineralisation is deeper (varying between 350m and 500m) and the individual orebodies extend for up to 10km along strike and are up to 1,500m wide.

The exploration grid at Tortkuduk is similar to Southern Moinkum.

### ***Kanzhugan***

Kanzhugan is situated in the south of the Shu-Sarysu province and is also part of the Moinkum Deposit. The main uranium bearing horizons are Uyuksky (which contains some 67% of the resource) and Kanzhugansky.

The deposit was mainly explored using a 200m to 100m by 50m grid and the main orebodies extend along strike for between 2.2km and 5.1km and have an average width of between 200m and 780m. The average thickness of the uranium bearing sands changes from 45m to 50m to 25mm to 30m, and the depth changes from 210m to 220m to 250m to 270m, moving from south to north.

### ***Eastern Mynkuduk***

Eastern Mynkuduk occurs in the upper north-east limb of the West-Shu-Sarysu Basin and the mineralization is confined to the Inkuduk and Mynkuduksky horizons.

The individual orebodies extend for up to 15km to 20km along strike and are up to 400m to 500m wide. The thickness of the orebodies is 2m to 10m in the limbs and between 20m and 25m in the centre of the rolls. The depth of the mineralization varies from 175m to 240m within the Inkuduk Horizon and from 205m to 340m within the Mynkuduksky Horizon.

There are two main uranium orebodies, Orebody 1 and Orebody 2. Ore body 1 is an asymmetric roll while Orebody 2 has a linear shape and joins up with Orebody 2 in the north-west.

### ***Budenovskoye***

Budenovskoye is situated to the south of Inkai and extends southeast from there to the Karatau Ridge. In total the mineralization extends from North to South for some 51km though in plan view it forms complex winding rolls and limbs. The deposit is divided into 4 blocks. Blocks 1, 3 and 4 are owned by Akbastau LLP and Block 2 by Karatau LLP

The mineralization occurs primarily in the Mynkuduksky and Inkuduksky horizons, however within each of the areas either both or only one horizon could be mineralized. The orebodies in most cases comprise rolls of different shapes and forms. The thickness in the main part of the roll is about 20m but this decreases to 5m at the limbs.

The depth of mineralization is quite deep and varies from between 520m to 670m in Block 1, to 580m to 700m in Block 2, to 670m to 705m in Block 3 and to 560m to 680m in Block 4.

The exploration grid in each case was 200m by 50m for the C1 category and 400 by 100m to 50m for the C2 category.



## 6.3 Syrdarya Basin

### 6.3.1 Regional Geology

The geological location of the Kharassan, Irkol, Karamurun and Zarechnoye ore fields is determined by their positions within the main structures of the region which are represented by the Bolshoi Karatau horst-anticlinal uplift and the conjugated north-eastern wall of the Syrdarya Basin (Figure 6-7). These large-scale long-existent structures play a predominant role in the geological setting of the region and influenced the spatial position of facial, lithological and primary geochemical zones during accumulation of the Upper Cretaceous sediments but had a lower impact on sedimentation of the Paleogene and Neogene formations.

The current geological-structural setting of the region is the result of orogenic processes that took place in the Late Pliocene-Quaternary period.

There are two structural levels in the deposit area: 1) complex folded formations of Pre-Mesozoic basement and 2) loose-lithified sediments of Mesozoic-Cenozoic (upper) sedimentary cover which includes structural units of a recent (Cretaceous-Paleogene) platform cover and the Neogene-Quaternary epi-platform orogenic area. Jurassic rocks are developed at the bottom of the platform cover in the fault zone. The crystalline basement rocks in the deposit area do not outcrop and are located at depths of between 1km and 3km.

All of the deposit area is covered by a complex of Neogene-Quaternary sediments with thickness ranging from 10m to 200m.

Metamorphosed and intensively dislocated basement formations belong to the geosynclinal stage of the region development. Basement rocks outcrop at the ground surface on the mountain edges of the Bolshoi Karatau uplift.

At the base of the lower structural level, there are metamorphic and carbonate-terrigenous formations of the Lower-Middle Proterozoic age, Upper Proterozoic effusives of the acidic and basic composition and terrigenous marine sediments of the Vendian age. The upper section of the basement is represented by Cambrian carbonaceous-siliceous formations, Ordovician flyshoid and terrigenous sediments, terrigenous-molasse and carbonate sediments of the Devonian and Lower Carbonic periods. Precambrian formations contain intrusions of granites, granosyenites, diorites and gabbro-diabases. Middle and Late Paleozoic strata are intruded by dykes of diorite porphyrites and syenite-porphyrines. Basement rocks are subject to complex dislocations, such as upthrows, reverse faults, over-thrusts and folds.

Loose rocks of the sedimentary cover have a double-level structure and are split into lower and upper structural levels. Upper Cretaceous, Paleogene, Neogene, and Quaternary sediments are found in the sedimentary cover section.

#### ***Lower structural level***

The lower structural level is represented by the Upper Cretaceous, Paleogene and Lower Neogene sediments formed in the platform conditions within a relatively stable tectonic environment.

Cretaceous sediments of the Cenomanian suite unconformably overlay basement rocks. Cenomanian sediments are represented by intercalation of red siltstones with lenses of sand (thickness varies between 0m and 400m). The Turonian section is represented by siltstones, clay sandstones and clays (75m thick). The Coniacian sediments are represented by sandstones with siltstones lenses (thickness varies between 34m and 64m).

The Santonian sediments which host ore in some deposits in the Syrdarya region are represented predominantly by green sand sediments.

The Campanian sediments which also host ore in some deposits are characterised by alluvial sedimentation and represented by yellow and brown sands.

The Maastricht sediments, the last ore hosting sediments in the region, are subdivided in two levels. The lower level is represented by grey sand sediments. The upper level consists predominantly of red siltstones and clay sediments.

Paleogene sediments which overlay unconformably Cretaceous strata are represented by a large transgressive cycle which was formed in the sea basin conditions. The rocks are represented (from bottom upwards) by carboniferous sediments, siltstones, gypsum and limestones which were formed in the arid climate conditions. The upper Eocene section is represented by clays, calcareous clays and siltstones with the total thickness of about 300m. Miocene sediments which overlay unconformably Eocene clays are represented by red siltstones. The total thickness of the Eocene section varies between 120m and 130m.

#### ***Upper structural level***

Formations of the upper structural level are represented by Quaternary sediments and accumulations.

The upper Pliocene sediments overlay unconformably the Miocene formations and are represented by siltstone and clay with the average thickness of 160m.

Quaternary strata are developed throughout the area and represented by sand with the thickness of between 100m and 120m.

### **6.3.2 Deposit Geology**

Late Cretaceous sediments contain all main commercial uranium deposits within the Karamurun uranium ore district which occur in the Turonian, Coniacian, Santonian, Campanian and Maastricht sediments. Selenium ores and a number of rare and trace elements (rhenium, scandium, vanadium, yttrium, etc.) were found at all targets within the epigenetic zones.

The North Karamurun selenium-uranium deposit and South Karamurun uranium deposit are localised in the Campanian-Maastricht formation; the Irkol uranium deposits are localised in the Turonian, Coniacian and Santonian sediments; and the North and South Kharassan selenium-uranium deposits are localised in the Santonian, Campanian and Maastricht sediments. The Zarechnoye selenium-uranium deposits were discovered in the Karatau uranium ore district, in the Campanian sediments.

### **6.3.3 Mineralisation**

All of the uranium deposits in the Syrdaryia Basin belong to the bedded-infiltration geological-industrial type of uranium deposits, with mineralisation confined to the permeable aquifers in which oxidising ore-controlling epigenetic zones are developed.

Uranium mineralisation is controlled by the border of roll front zones of feathering out of layered oxidising zones, in narrow winding ribbon-like configurations from about 50m to 200m to 1,600m. Beside the layered oxidising zones, the mineralisation is also controlled by rock permeability along the contour of mineralization and along strike.

The uranium ore minerals comprise coffenite, nasturine and sometimes carnotite, the selenium minerals – mostly by selenium itself.

Ore-hosting rocks and ores in the Santonian, Campanian and Maastrichtian sediments are mostly composed of insoluble minerals (quartz, siliceous debris) and weakly soluble minerals (feldspars).

There are practically no deleterious impurities in ores that would complicate the in-situ leaching process, except for clay minerals with montmorillonite predominating.



Fine-grained mineralisation is advantageous for the ISR process. Predominance of hexavalent uranium in ore minerals is also favourable for uranium in-situ leaching.

The amount of siltstone-clay particles of less than 0.05mm size varies in mineralised zones between 8% and 25% and slightly increases toward the base of the Maastricht productive zone, which is fairly consistent with the sedimentation rhythm.

Figure 6-7: Geological Map of the Region



### 6.3.4 Individual Deposit Summaries

#### Zarechnoye

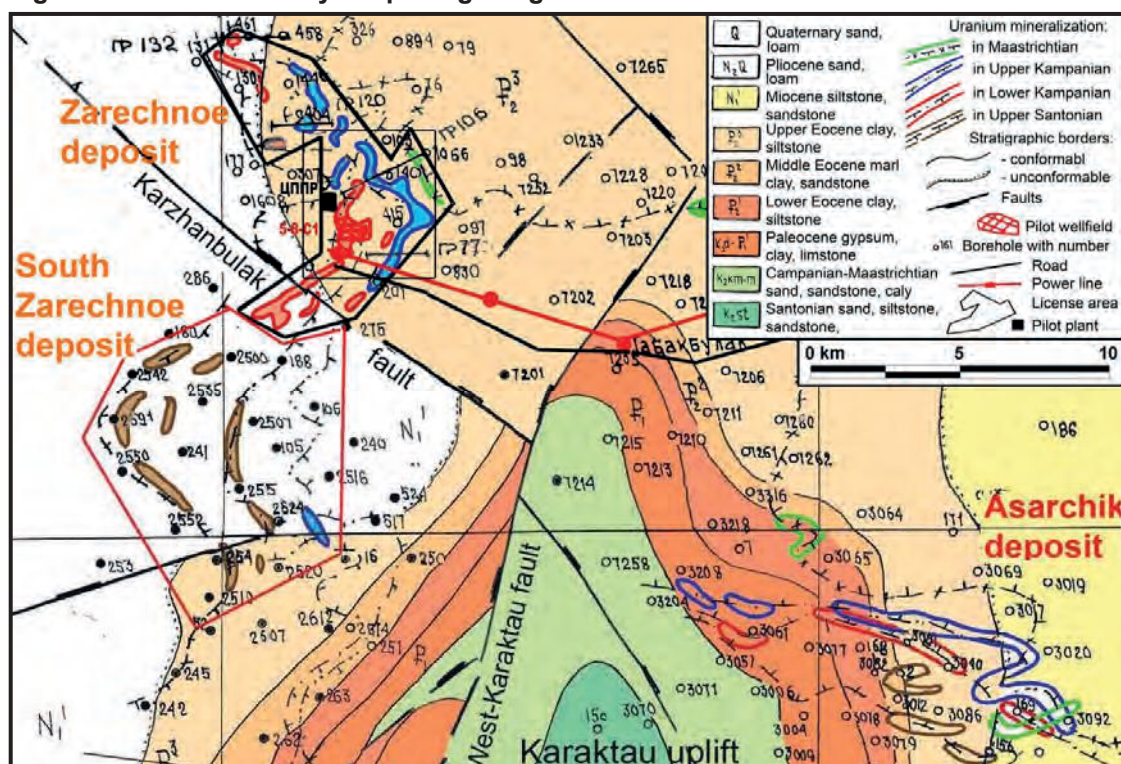
Zarechnoye comprises 9 orebodies hosted by Campanian sediments. In plan all the orebodies are presented by twisty narrow bands of different thicknesses and shapes. The lenses extend along strike for some 500m to 15km and vary in width from 50m to 1,200m. The central part of the roll has a thickness of between 1m and 12m. The parameters of mineralisation are quite

consistent along the strike while across the strike but can vary significantly across strike.

The largest orebodies are 2, 3, 5 and 8, the remaining orebodies represent 12% of the total resources of the deposit. 76.2 % of the resource block of the deposit correspond to the complexity 2A for uranium roll deposits, and the remaining to complexity 3G. About 75% of the resources for 3G complexity blocks have been classified as C2 category. 95% of 2A blocks classified as C1 category. The equilibrium coefficient carried from the centre part to the limb from 0.77 to 0.62. The uranium grade in the resource block varied from 0.029%U to 0.076%U, the average thickness varies from 2.5m to 9.9m and the average productivity varies from 1.9kg/m<sup>2</sup> to 8.5kg/m<sup>2</sup>.

The geological structure of Zarechnoye deposit is presented in Figure 6-8. The standard drilling grid for the deposits was 400m by 200m to 50m for C2 category and 200m by 50m for C1 category.

**Figure 6-8: Zarechnoye deposit geological structure**



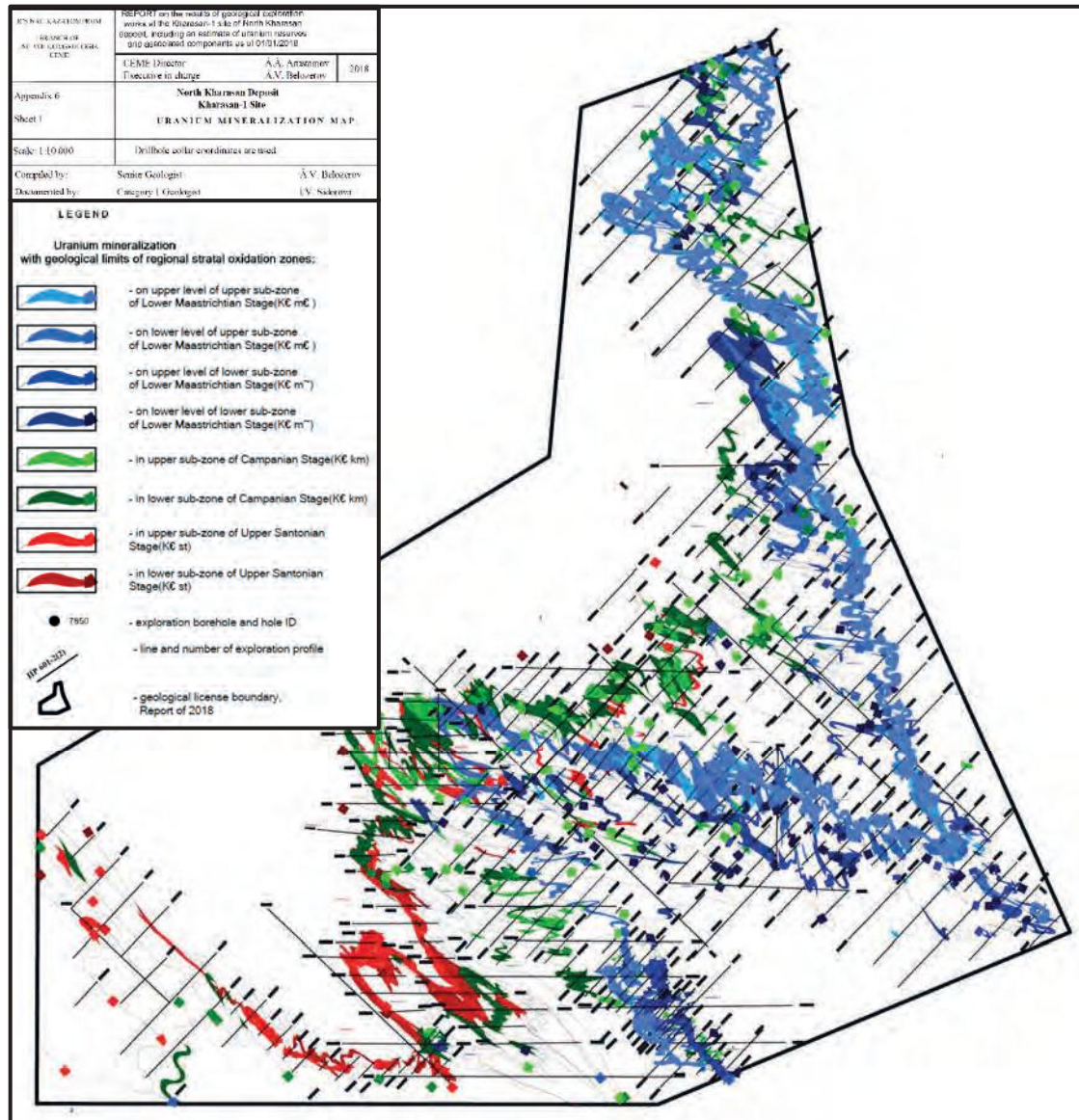
**North Kharassan-1**

The North Kharassan-1 deposit comprises 8 orebodies (Figure 6-9) which are hosted by Upper Cretaceous Santonian, Companion and Maastrichtian sediments. Orebodies 1, 2, 8 and 10 are classified as large bodies and 3, 5, 7, 17 as small. In plan view all the orebodies are presented by twisty bands of different thickness and shape. The deposit corresponds to 2A roll-shape deposits complexity. The C1 category was assigned to 60% of the large orebodies and to 40% of the area for the small orebodies. The remaining was classified as C2.

The accepted drilling grid for the deposits constituted 800m to 400m by 100m to 50m for C2 category and 200m by 50m for C1 category.



**Figure 6-9: Ore mineralisation at North Kharassan-1**



**North Kharassan-2**

The North Kharassan-2 deposit comprises two orebodies which largely occur within Maastrichtian sediments with only a small portion in the Campanian sediments. In plan view all the orebodies are presented by twisty bands of different thickness and shape. The deposit corresponds to 2A roll-shape deposit complexity.

The C1 category is assigned to central and north-western limb of the redox front. The average thickness for C1 ore blocks varies from 3.0m to 3.9m and the uranium grade from 0.053%U to 0.128%U and the average productivity from 3.18kg/m<sup>2</sup> to 6.79kg/m<sup>2</sup>. C2 category is in most cases assigned to rear area and north-western limb. The average thickness for C2 category ore blocks is between 1.4m and 4.3m with the uranium grade varying from 0.053%U to 0.128%U and an average productivity 2.08 kg/m<sup>2</sup> to 8.84kg/m<sup>2</sup>. The equilibrium coefficients varies from the centre part to the limbs from 0.75 to 0.7.

The accepted drilling grid for the deposits was 800m to 400 by 100m to 50m for C2 category and 200m by 50m for C1 category.

### ***Irkol***

The Irkol deposit occurs within the Karamurun Arch and Karamurun Downfold which complicates the Syrdaria Basin. It comprises 5 formations which correspond predominantly to Campanian and Turonian sediments. Three of the formations (1, 2 and 4) comprise 92% of the resources. 83% of the resources correspond to the central part of the roll. The equilibrium coefficient varies considerable between 0.6 and 0.85 and is 0.8 on average. In plan view all the orebodies are presented by continuous bands of different thickness and shape. The deposit corresponds to 2A roll-shape deposits complexity. The average uranium grade is 0.048%U.

The accepted drilling grid for the deposits was 400m to 200m by 50m for C2 category and 200m to 100m by 50m for C1 category and 100m by 50m to 25m for B.

### ***Northern Karamurun***

Some 86% of the North Karamurun resources correspond to upper Campanian sediments and comprise 6 formations. The second formation comprises some 70% of the resources. The orebodies are presented by multilayers which have a complex connection with each other including echelon-like rolls and layers. In plan the orebodies have a varying shapes and sizes. The average thickness of orebodies varies between 1m and 10m and have an average grade of between 0.01%U and 0.04%U and a relative productivity 0.7kg/m<sup>2</sup> to 32kg/m<sup>2</sup>. The ore hosting rocks are medium and fine-grained. The equilibrium parameter varies across the deposit and is associated with uranium migration in the North-West direction, the average equilibrium coefficient being 0.8. The accepted drilling grid for the deposits was 400m to 200m by 50m for C2 category and 200m to 100m by 50m for C1 category. The C1 category was assigned to 90% of the resources.

### ***Southern Karamurun***

Southern Karamurun is located in the northwest of the Karamurun mineralisation region. Geologically, the South Karamurun deposit is similar to the North Karamurun deposit. There are six uranium mineralisation bodies, and they are primarily located within the Maastrichtian upper and lower sub-horizons with only a minor amount hosted by Campanian sediments. The mineralisation occurs as lenses, sub-bands, rolls and their combinations. Some 70% of the mineralisation occurs as coffinite and the remainder as pitchblende and carnotite. The average depth of mineralisation is between 400m and 700m and uranium grades vary between 0.01%U and 0.30%U and productivity is 2.5kg/m<sup>2</sup> to 8kg/m<sup>2</sup> for the exploitation blocks.

The accepted drilling grid for the deposit was 400m by 100m to 50m for C2 category, 200m to 100m by 50m for C1 category and 100m by 50m to 25m for B. The B category was assigned for 8% of the resources, C1 category was assigned to 49%, the rest is reported as C2 category.

## **6.4 Northern Kazakhstan**

### **6.4.1 Regional Geology**

Semizbai is a complex exogenic-epigenetic style deposit with paleo-epigenetic uranium mineralisation which formed due to multistage infiltration processes. The deposit is located at the Northern side of the Ishkeolmes anticlinorium which belongs to the North-Eastern part of the Kazakh Craton that submerges under the Mesozoic-Cenozoic sedimentary cover of Western Siberian plate of the Ural-Siberian epi-Paleozoic platform.

The mineralisation occurs within the Semizbai erosional-tectonic basin, which is an embedded paleovalley of sub-lateral orientation infilled with Mesozoic-Cenozoic sediments of alluvial-proluvial origin. The basin is 40km in length and between 3km to 6km wide and the sedimentary formation thickness varies between 50m at the upper valley (western part) and to

180m at the lower valley (eastern part). The difference in altitude between the western and eastern parts is 200m.

The basement of the paleovalley comprises Zhaman-Koitas Ordovician-Devonian age granite along with a limited amount of Mid-Ordovician igneous-sedimentary rocks. This basement is faulted by two main fault sets, northeast-southwest northwest-southeast striking respectively and it is at the junctions of these fault sets that anomalies of gold, molybdenum and uranium are observed.

The upper part of granite is intensively jointed and this extends for some 10m to 30m in the northern part of the paleovalley and for between 20m and 50m at the southern end. The granite jointing is assumed to be a significant conductor of supergene water solutions and that faulting does not significantly interfere with sedimentary rocks of the paleovalley. Mesozoic-Cenozoic sediments within the basin are sub-horizontal/shallowly dipping to the east and toward the basin axis. Faults offset sedimentary units between 10s'cm to 25m.

The uranium mineralisation is controlled by two factors. Notably, there is a tendency for the mineralisation to be associated with organic-enriched rocks facial-geochemical zones within alluvial grey-coloured rocks. In addition, there is intra-formational alteration of oxidation-reduction origin. The mineralisation is also affected by alteration epigenetic alterations, such as oxidation and reduction processes, claying, limonisation, gleysation, sulphidation, bleaching and carbonatisation. Carbonatisation is the most significant alteration related to ISR production due to formation of almost impermeable formations. Carbonatised formations are present almost through the whole deposit, but mostly at the bottom of lower mineralised horizon.

The Mesozoic-Cenozoic sediments of the paleovalley are split into three levels: lower, middle and upper. The thickest is a lower level comprised of Semizbai suite (Upper Jurassic-Lower Cretaceous). The Middle level is present with pokurskaya suite (Low-Upper Cretaceous) and lyullinvorskaya suite (Eocene). Upper level is Quaternary sediments. The uranium mineralisation is hosted in river sediments of Semizbai suite divided into Lower-Semizbai and Upper-Semizbai units.

The Lower-Semizbai is split into three horizons (bottom-upwards): conglomerate (sm11), sandstone (sm12) and clay (sm13). The thickness of the Lower-Semizbai horizons varies between 20m and 60m from western side to the eastern side of the paleovalley. The Upper Semizbai is split into three horizons (bottom-upwards): silt-sandstone (sm21), silt-clay (sm22) and sandstone-clay (sm23). Upper-Semizbai suite rests erosively on Lower-Semizbai suite.

#### 6.4.2 Deposit Geology

The Semizbai deposit consists of two mineralised zones, the Southern mineralised zone that hosts five sites and the Northern mineralised zone that hosts one site. Most of the mineralisation is related to the Lower-Semizbai unit within Southern mineralised zone, where mineralisation located within a 17.8km long and 0.4km to 1.7km wide zone and at a depth of between 25m and 100m. The mineralisation is present within two units Upper-Semizbai and Lower-Semizbai, in the sm11, sm12 and sm21 horizons. The mineralisation occurs in flattened discontinuous stratiform bodies with irregular uranium distribution which are sub-laterally elongated and form band-like and lenses-shaped bodies. The uranium grades vary between 0.020%U and 0.088%U with an average grade 0.057%U, productivity between 1.90kgU/m<sup>2</sup> to 9.13kgU/m<sup>2</sup>.

About 80% of mineralisation is classified as C1 category and the remaining 20% is C2 category and the accepted drilling grid at the deposit was 100m by 100m or 200m by 50m for C2 and 100m by 50m for C1 category.

## 7 MINERAL RESOURCES AND ORE RESERVES

### 7.1 Introduction

This section of the report gives SRK's understanding of the underlying estimates reported by the Company in accordance with the GKZ System, the work done to derive these and SRK's view regarding the tonnes and grade of rock which has the potential to be exploited by the existing and planned ISR operations (Mineral Resource) and also the quantity of material mined (Ore Reserves) as noted in the respective LoMps.

SRK has not independently re-calculated Mineral Resource and Ore Reserve estimates for the Company's operations but has, rather, reviewed the quantity and quality of the underlying data and the methodologies used to derive and classify the estimates as reported by the Company and made an opinion on these estimates including the tonnes, grade and quality of the uranium bearing sandstones planned to be exploited in the current LoMps, based on this review. SRK has then used this knowledge to derive audited Mineral Resource and Ore Reserve statements reported in accordance with the terms and definitions of the JORC Code.

This section presents both the Company's existing estimates according to GKZ System terminology and guidelines and reported as at 1 January 2018 and SRK's audited Mineral Resource and Ore Reserve statements reported as at 1 July 2018.

### 7.2 Quantity and Quality of Data

#### 7.2.1 Drilling

The uranium mineralisation being exploited by the Company has been explored by drilling only. The drilling was typically undertaken during several stages of exploration and comprised both core and conventional mud rotary drilling. The mud drilling was used in most cases to drill to the hangingwall of the mineralisation horizon which was then cored. The mud drilling diameter varied between 118mm and 132mm, and the core drilling diameter between 93mm and 112mm. In general, for all deposits (which are categorised in the second complexity according to the Kazakh guidelines), the exploration drilling grid was 200m to 400 by 50m for the C2 category and 100m to 200m by 50m for the C1 category.

The targeted core recovery was not less than 70% for mineralisation intervals and 50% for the host rock.

#### 7.2.2 Geological Logging

All core samples were systematically logged primarily for grain size, clay content, texture, structure and mineralisation.

#### 7.2.3 Downhole Logging

The drillholes are geophysically and radiometrically logged with various down-hole instruments to determine indirectly the uranium content in the rocks and other parameters.

The geophysical parameters measured include gamma radioactivity (measured as  $\mu\text{R/hr}$ ), resistivity, self-potential ("SP"), prompt-fission neutron logging (control holes only), caliper log, thermal log and deviation survey.

##### ***Gamma logging***

The uranium grade is predominantly estimated from downhole gamma-logging which is an internationally accepted standard procedure for the determination of uranium grade. Correction factors are then applied to reflect the following:

- Thorium and potassium correction;



- Moisture;
- Radon release;
- Disequilibrium; and
- Ore density.

The thorium and potassium content are determined from core assay at the first stage of exploration. Radon release is determined from specific tests. Disequilibrium between radium and uranium is determined from the core sampling data based on the representative selection of the samples. The ore density is determined from standard measurements carried out on the core.

#### ***Lithology logging***

Resistivity and self-potential logging is used to help determine the lithology of the host rocks. The three main lithologies that can be determined in this way being clays/siltstones, fine-medium grained sandstones and coarse sandstones/gravels.

The quality of the resistivity and self-potential logging is determined from re-logging of the same holes and the control holes.

#### **7.2.4 Core Sampling**

The sampling of the core was performed only for those intervals where the core recovery is above 70% and the gamma intensity based on downhole logging is above 40MkRh/h.

The core is split in half and sampled using 0.1m to 1.0m intervals. The sampling intervals are selected based on lithology and the results of hand spectral logging.

#### **7.2.5 Assaying**

The core is usually split in two halves. The first half is used for uranium and radium determination. All samples are analysed for uranium content using X-ray spectral fluorescent analyses. A selection of samples are analysed for radium using gamma-ray in complex with X-ray spectral analyses of uranium and thorium.

The remaining half core is used to help interpret the gamma-logs, for density measurements, moisture determination, for chemical control analyses, selenium grade determination, and to measure the physical properties of the host rocks (density, granulometry), and for geotechnical information.

#### **7.2.6 Quality control procedures**

The quality of gamma logging data is determined based on the systematic re-logging of the holes and the results of logging based on control holes which are set up at each deposit. The quality of the uranium grade determination from gamma data can only be measured by comparing to assay results or to prompt-fission neutron logging data. The results of comparison are analysed for potential systematic and random error. The systematic error is calculated using the following criteria: average squared error for the thickness and grade determinations should be within 25cm for thickness 25% for the uranium grade.

The quality of the uranium and radium grade obtained using X-ray spectral fluorescent analyses is determined using control re-assay of the samples in the same laboratory (internal control), analyses of the samples using wet chemistry techniques in an external laboratory (between-method control) and analyses of the sample using same analytical method in the arbitrage laboratory (external control). The control analyses are undertaken using industry standards which determine the amount of samples (not less than 30 samples for each grade class).

The quality of determination of filtration coefficient from electric logging data is determined by

comparing to hydrogeological pumping results.

### 7.2.7 Data verification

SRK has reviewed the reports which provide the details of exploration process for each of the deposits, the exploration process being in general the same for all of these, and considers that the selected method of exploration is effective and sufficient for all of the deposits at the Mineral Assets as reported herein.

### 7.2.8 SRK comments

While the technique of estimating the uranium grade from gamma logging data has been well developed and applied, the challenge when using this technique is the derivation of the various correction factors required to be applied when calculating the uranium grade from gamma data. For most of the parameters, such as thorium and potassium content and density, such approach is quite acceptable as these parameters have a low variability. On the other hand, radon release and disequilibrium have a high variability, notably in this case within the deposits of Syrdarya and Shu-Sarysu provinces (between 0.4 and 1.55), and the behaviour of these coefficients is therefore quite complex. While work to determine the relationship between the disequilibrium rate and lithology and mineralisation has been carried out, the Company has typically used an average correction factor for radon release and disequilibrium either for the whole deposit or for areas of the deposit.

In SRK's opinion, the use of an average in this manner can result in the underestimation (more common) or overestimation of the uranium grade in certain areas of the deposit and so while on average the assumed uranium grades will be reliable it does mean that variations exist which have not been modelled and this results in some blocks experiencing lower extraction factors than envisaged and some higher (sometimes exceeding 100%).

Notwithstanding the above comment on variations within individual deposits, overall SRK considers that the exploration approach followed by the Company has been appropriate and specifically aimed at collecting the data appropriate to the estimation of uranium resources and that sufficient data of sufficient quality has been collected to support the resource estimates as derived by the Company and as presented here.

## 7.3 Resource Estimation and Reporting

### 7.3.1 Company's Estimation Methodology

Resource estimation is undertaken using the accepted standard in-country polygonal approach based on sections and plans. The practice of 3D modelling is not currently widely used in Kazakhstan. The mine planning and reconciliation performed is also undertaken using these polygon estimates.

### 7.3.2 Parameters Estimated

The key parameters that are estimated for each polygon are:

- **Filtration:** Unique filtration parameters are typically developed for each lithology within each deposit based on resistivity and self-potential logging;
- **Clay content:** The clay content is also determined based on resistivity and self-potential logging;
- **Uranium grade:** The uranium grade is determined from the gamma logging data. The correction factors which are used to convert gamma logging data into uranium grade, and to account for equilibrium effects, radon content etc are determined via correlation with actual assay data. Unique factors are developed for each host rock and each deposit; and

- **Density:** The host rock density is determined from determinations undertaken on core material. In general, during the exploration stage some several hundred samples are collected from different lithological intervals and a different density is calculated for each lithology.

### 7.3.3 Polygon/Block Construction

In general, the resource polygons/blocks are delineated as hard boundaries using the following criteria:

#### ***For the Shu-Sarysu Basin:***

- The blocks are delineated within the same water-bearing horizon taking into account the local confining layer;
- The thickness of any diluting interval should not exceed 6m for C1 but is not limited for C2;
- The minimum grade should be 0.01%U;
- The minimum grade\*thickness accumulation value is 0.04%Um to 0.08%Um (deposit specific);
- The minimum Filtration Ratio is 1m/day;
- The minimum ore/waste factor is 0.75; and
- The maximum clay content is 30%.

#### ***For the Syrdarya Basin:***

- The blocks are delineated within the same water-bearing horizon taking into account the local confining layer;
- The thickness of the diluting interval should not exceed 8m;
- The minimum grade should be 0.01%U;
- The minimum grade\*thickness value is 0.06%Um;
- The minimum Filtration Ratio is 1m/day;
- The minimum ore/waste factor is 0.8; and
- The maximum clay content is 20%.

For both basins, the individual blocks/polygons are derived based on uranium grade, filtration parameter and clay content, the minimum size for a C1 category polygon being 30,000m<sup>3</sup>. Intersections which do not meet the above criteria are included to ensure continuity but are limited such that the minimum ore/waste factor is honoured. In addition, all of the intersections included in an individual block/polygon should:

- Have similar structural and morphological characteristics;
- Correspondence to the same part of the geological structure (fold limb for example);
- Have similar filtration characteristics; and
- Be on a regular intersection grid.

The extent of each polygon is then limited to:

- one quarter of the drilling grid in case where the neighbouring intersection is barren; and
- one half of the drilling grid in case where the neighbouring intersection is low grade.

### 7.3.4 Grade and Tonnage Estimation

After delineation of the polygons/blocks, each is allocated a thickness and uranium grade calculated as an arithmetical mean of all of the intersections within the polygon that honour the

criteria. The area of the polygons is then in most cases estimated using GIS software (Mapinfo, ArcGIS). After that, the specific productivity of each area is calculated by multiplying the average grade, average thickness and density. The metal content of each block is then estimated by multiplying the specific productivity of an area by an ore/waste factor.

### 7.3.5 Company's Reporting Approach

The Company reports its estimates using the GKZ System and the most up to date complete statements (the “**GKZ System Statements**”) available as at the date of this report are those derived for the annual 8GR reports produced earlier this year which give the status as of 1 January 2018. The completion of 8GR reports is a statutory requirement. These estimates were produced using classical Kazakh techniques and are essentially based on calculations made in previous years adjusted for mining during 2017. This section therefore comments primarily on the GKZ System Statements.

The A and B categories are the highest confidence in the GKZ System categories and are only used where the stated tonnage and grade estimates are considered to be known to a very high degree of accuracy. The C1 and C2 categories are lower confidence categories, with C2 denoting the least level of confidence of the four categories. All of these categories are considered by the Company to be appropriate for use in supporting mining plans and feasibility studies.

The actual resource classification assigned to each resource block takes into account the exploration grid and the complexity of the deposit. The complexity is determined using the characteristics of the deposits which is a reflection of the ore/waste factor, the grade variability and the thickness variability.

According to the industry standard the complexity can vary from 1 to 4 (4 being most complex). All of the deposits of the Syrdarya and Shu-Sarysu basins, except for Zarechnoye have been classified as complexity 2 while the Zarechnoye deposit after the start of production was downgraded to a complexity of 3.

In the case of the Company, blocks are rarely assigned to the A or B category and so the vast majority of the resources reported by the Company are in the C1 and C2 categories, the typical drilling grid used to support a C2 classification being 400m to 800m by 50m to 100m and that for C1 being 200m by 50m.

### 7.3.6 The Company's GKZ System Statements

Table 7-1 below summarises SRK's understanding of the resource statements prepared by the Company to reflect the status of its assets as of 1 January 2018. The information used to derive this was sourced from the 8GR reports which the Company is required to submit to the GoK on an annual basis. Typically, the Company reports the contained U (not U<sub>3</sub>O<sub>8</sub> as is typically used in Europe and the United States for example) and not tonnes and grade. SRK notes that all of the estimates given below reflect the resource remaining at each asset on an aggregated basis and not just the portion attributable to the Company.

**Table 7-1: Company's GKZ System Statement (Aggregated basis) as at 1 January 2018 (tonnes contained U)**

Reporting Region	Mining Subsidiary	Deposit	A+B	C1 (tU)	C2 (tU)	Total (tU)
Shu-Sarysu Basin	JV SMCC LLP	Akdala	-	4,467	1,810	6,278
	JV SMCC LLP	Block 4 Inkai	-	5,582	33,511	39,093
	Appak LLP	Western Mynkuduk	-	4,581	15,104	19,685
	JV Inkai LLP	Block 1 Inkai (a, b, c)	741	84,202	59,990	144,933
	JV Katco LLP	Southern Moinkum (Northern part)	-	7,009	3,245	10,254
	JV Katco LLP	Tortkuduk	-	25,133	26,363	51,496
	Karatau LLP	Block 2, Budenovskoye	-	31,396	17,771	49,166
	JV Akbastau JSC	Block 1, Budenovskoye	-	10,858	4,636	15,494
	JV Akbastau JSC	Block 3, Budenovskoye	-	15,329	6,722	22,051

Reporting Region	Mining Subsidiary	Deposit	A+B	C1 (tU)	C2 (tU)	Total (tU)
	JV Akbastau JSC	Block 4,Budenovskoye	-	3,671	3,554	7,225
	Kazatomprom-SaUran LLP	Uvanas	-	-	-	-
	Kazatomprom-SaUran LLP	Eastern Mynkuduk	-	5,682	2,571	8,252
	Kazatomprom-SaUran LLP	Kanzhugan	-	11,423	5,189	16,612
	Kazatomprom-SaUran LLP	South Moinkum (Southern part)	-	-	1,143	1,143
	Kazatomprom-SaUran LLP	Central Moinkum	-	4,795	7,207	12,001
	Ortalyk LLP	Zhalpak	-	8,269	6,249	14,518
	Ortalyk LLP	Central Mynkuduk	-	24,065	5,608	29,673
<b>Sub-total</b>			<b>741</b>	<b>246,460</b>	<b>200,672</b>	<b>447,873</b>
	Semizbai-U LLP	Irkol	-	9,399	12,753	22,152
	JV Khorassan-U LLP	Block Kharassan 1, North Kharassan	-	8,658	17,461	26,119
	Baiken-U LLP	Block Kharassan 2, North Kharassan	-	11,660	9,011	20,671
	JV Zarechnoye JSC	Zarechnoye	115	7,483	2,926	10,524
	RU-6 LLP	Northern Karamurun	-	6,597	1,248	7,845
	RU-6 LLP	Southern Karamurun	-	6,020	5,045	11,065
<b>Sub-total</b>			<b>115</b>	<b>49,816</b>	<b>48,444</b>	<b>98,375</b>
Northern Kazakhstan	Semizbai-U LLP	Semizbai	-	10,073	2,938	13,010
<b>Sub-total</b>			<b>-</b>	<b>10,073</b>	<b>2,938</b>	<b>13,010</b>
<b>Total</b>			<b>856</b>	<b>306,349</b>	<b>252,054</b>	<b>559,259</b>

### 7.3.7 SRK Comments

SRK has reviewed the estimation methodology used by the Company to derive the above estimates and the geological assumptions made and considers these to be reasonable given the information available. SRK has also undertaken various re-calculations of the remaining resource using actual mining statistics from TO-25 reports, 8GR reports and resource depletion reports and has in all cases found no material errors or omissions. Given this, SRK considers the resource estimates reported by the Company to be a reasonable reflection of the total quantity and quality of material demonstrated to be present at the assets as of 1 January 2018 and to have been reported appropriately using the GKZ System.

### 7.3.8 SRK Audited Mineral Resource Statements

The tables below present SRK's audited Mineral Resource statements. SRK has re-classified the resource estimates in accordance with the terms and definitions proposed in the JORC Code. Definitions for the different categories used by this reporting code are given in the glossary provided. In doing this, SRK has typically reported those blocks classified as B or C1 by the Company as Measured and those blocks classified as C2 by the Company as Indicated.

It should be noted that these statements cover all of the operating Mineral Assets and also Inkai 2 and Inkai 3 which are exploration projects. The limits of the Inkai 1, 2 and 3 orebodies were re-drawn earlier this year and the new Inkai 1 orebody actually comprises the previous Inkai 1 plus parts of Inkai 2 and Inkai 3 which were retained by the Inkai JV while the new Inkai 2 and 3 orebodies comprise those parts of Inkai 2 and 3 that were given back to the GoK and which the Company has since been given a contract to explore in its own right (given which the Mineral Resources reported for these are 100% attributable to the Company). These are the only two exploration projects which are sufficiently advanced in terms of drilling to enable the reporting of Mineral Resources and the Mineral Resources for these are given separately from Inkai 1 which continues to be worked by Inkai JV LLP. Note that the Mineral Resources for Inkai 2 and 3 are not included in Table 7-1 above as the contract to explore these had not been signed when these estimates were produced by the Company in January 2018.

In those cases where production blocks delineated by production drilling have been consistently different ( $\pm 20\%$ ) to the original resource, even where there was not a systematic bias, SRK has classified the C1 mineralisation as Indicated and only that part of the C1 which has been delineated by production drilling as Measured.

Notwithstanding the above, in the cases where the drilling undertaken as part of the production process has consistently delineated less resource than originally estimated (notably at Zarechnoye), SRK has reduced the estimated resource by a factor reflecting this and where the reconciliation has been poor or variable SRK has re-reported blocks classed as C1 by the



Company as Indicated and C2 by the Company as Inferred. In the case of Zarechnoye, SRK applied a factor of 0.7.

In addition to the above, SRK has taken production during the first six months into account such that these are now valid as at 1 July 2018.

SRK's audited Mineral Resource statements are reported inclusive of those Mineral Resources converted to Ore Reserves. The audited Ore Reserve is therefore a sub set of the Mineral Resource and should not therefore be considered as additional to this.

SRK has not attempted to optimise the Company's LoMps. Consequently, SRK's audited Mineral Resource statements are confined to those areas that both have the potential to be mined economically and which are currently being considered for mining only. They also reflect the quantity of in-situ uranium planned to be extracted and do not take account of metallurgical recovery both as part of the in-situ leaching process and within the plant itself which typically varies between 80% and 90%.

All of the estimates given below are the total available at each Mineral Asset and not just the portion attributable to Company unless specified otherwise.

- Table 7-2 presents the SRK Audited Mineral Resource Statements for all deposits located in the Shu-Sarysu Basin;
- Table 7-3 presents the SRK Audited Mineral Resource Statements for all deposits located in the Shu-Syrdarya Basin;
- Table 7-4 presents the SRK Audited Mineral Resource Statements for all deposits located in Northern Kazakhstan;
- Table 7-5 presents the SRK Audited Mineral Resource Statements summarised by geographical region;
- Table 7-6 presents the SRK Audited Measured and Indicated Mineral Resource Statements by Mining Subsidiary;
- Table 7-7 presents the SRK Audited Inferred and Total Mineral Resource Statements by Mining Subsidiary; and
- Table 7-8 presents the SRK Audited Measured + Indicated Mineral Resources and the Total Mineral Resource Statements by Mining Subsidiary

**Table 7-2: SRK Audited Shu-Sarysu Basin Mineral Resource Statement as at 1 July 2018 (Aggregated, 100% basis)**

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Akdala</b>	Measured	7.3	0.057	4.2
	Indicated	2.9	0.057	1.7
	<b>Subtotal</b>	<b>10.2</b>	<b>0.057</b>	<b>5.8</b>
	Inferred	-	-	-
	<b>Total</b>	<b>10.2</b>	<b>0.057</b>	<b>5.8</b>
<b>Block 4 Inkai</b>	Measured	11.5	0.045	5.2
	Indicated	89.2	0.037	33.0
	<b>Subtotal</b>	<b>100.6</b>	<b>0.038</b>	<b>38.2</b>
	Inferred	-	-	-
	<b>Total</b>	<b>100.6</b>	<b>0.038</b>	<b>38.2</b>
<b>Western Mynkuduk</b>	Measured	13.4	0.032	4.3
	Indicated	41.4	0.036	14.9
	<b>Subtotal</b>	<b>54.8</b>	<b>0.035</b>	<b>19.2</b>
	Inferred	-	-	-
	<b>Total</b>	<b>54.8</b>	<b>0.035</b>	<b>19.2</b>
<b>Block 1 Inkai (a), (b) and (c)</b>	Measured	149.8	0.055	82.3
	Indicated	115.1	0.053	61.1
	<b>Subtotal</b>	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>
	Inferred	-	-	-
	<b>Total</b>	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Block 2 Inkai and Block 3 Inkai</b>				
	Measured	80.3	0.050	40.4
	Indicated	225.9	0.038	84.7
	<b>Subtotal</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
	Inferred	-	-	-
	<b>Total</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Southern Moinkum (Southern Part)</b>				
	Measured	10.0	0.063	6.3
	Indicated	5.5	0.057	3.1
	<b>Subtotal</b>	<b>15.5</b>	<b>0.061</b>	<b>9.4</b>
	Inferred	-	-	-
	<b>Total</b>	<b>15.5</b>	<b>0.061</b>	<b>9.4</b>
<b>Tortkuduk</b>				
	Measured	20.0	0.122	24.4
	Indicated	22.1	0.118	26.1
	<b>Subtotal</b>	<b>42.1</b>	<b>0.120</b>	<b>50.5</b>
	Inferred	-	-	-
	<b>Total</b>	<b>42.1</b>	<b>0.120</b>	<b>50.5</b>
<b>Block 2 Budenovskoye</b>				
	Measured	31.8	0.097	30.8
	Indicated	27.5	0.063	17.3
	<b>Subtotal</b>	<b>59.3</b>	<b>0.081</b>	<b>48.1</b>
	Inferred	-	-	-
	<b>Total</b>	<b>59.3</b>	<b>0.081</b>	<b>48.1</b>
<b>Block 1, 3 and 4 Budenovskoye</b>				
	Measured	33.4	0.087	29.0
	Indicated	16.2	0.092	14.9
	<b>Subtotal</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
	Inferred	-	-	-
	<b>Total</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Eastern Mynkuduk</b>				
	Measured	15.6	0.030	4.7
	Indicated	6.9	0.030	2.1
	<b>Subtotal</b>	<b>22.6</b>	<b>0.030</b>	<b>6.8</b>
	Inferred	-	-	-
	<b>Total</b>	<b>22.6</b>	<b>0.030</b>	<b>6.8</b>
<b>Zhalpak</b>				
	Measured	0.6	0.045	0.3
	Indicated	44.3	0.032	14.2
	<b>Subtotal</b>	<b>44.9</b>	<b>0.032</b>	<b>14.5</b>
	Inferred	-	-	-
	<b>Total</b>	<b>44.9</b>	<b>0.032</b>	<b>14.5</b>
<b>Kanzhugan</b>				
	Measured	3.5	0.042	1.5
	Indicated	27.6	0.038	10.5
	<b>Subtotal</b>	<b>31.1</b>	<b>0.038</b>	<b>12.0</b>
	Inferred	-	-	-
	<b>Total</b>	<b>31.1</b>	<b>0.038</b>	<b>12.0</b>
<b>South Moinkum (Southern Part)</b>				
	Measured	0.1	0.039	0.1
	Indicated	1.6	0.048	0.8
	<b>Subtotal</b>	<b>1.8</b>	<b>0.047</b>	<b>0.8</b>
	Inferred	-	-	-
	<b>Total</b>	<b>1.8</b>	<b>0.047</b>	<b>0.8</b>
<b>Central Moinkum</b>				
	Measured	0.7	0.056	0.4
	Indicated	19.8	0.058	11.5
	<b>Subtotal</b>	<b>20.5</b>	<b>0.058</b>	<b>11.9</b>
	Inferred	-	-	-
	<b>Total</b>	<b>20.5</b>	<b>0.058</b>	<b>11.9</b>
<b>Central Mynkuduk</b>				
	Measured	49.4	0.047	23.2
	Indicated	14.7	0.038	5.6
	<b>Subtotal</b>	<b>64.1</b>	<b>0.045</b>	<b>28.8</b>
	Inferred	-	-	-
	<b>Total</b>	<b>64.1</b>	<b>0.045</b>	<b>28.8</b>
<b>Shu-Sarysu Basin</b>				
	Measured	427.4	0.060	256.9
	Indicated	660.7	0.046	301.5
	<b>Subtotal</b>	<b>1,088.1</b>	<b>0.051</b>	<b>558.3</b>
	Inferred	-	-	-
	<b>Total</b>	<b>1,088.1</b>	<b>0.051</b>	<b>558.3</b>

**Table 7-3: SRK Audited Syrdarya Basin Mineral Resource Statement as at 1 July 2018 (Aggregated, 100% basis)**

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Irkol</b>				
	Measured	22.2	0.041	9.1
	Indicated	18.0	0.042	7.6
	<b>Subtotal</b>	<b>40.2</b>	<b>0.041</b>	<b>16.7</b>
	Inferred	-	-	-
	<b>Total</b>	<b>40.2</b>	<b>0.041</b>	<b>16.7</b>
<b>Block Kharassan 1, North Kharassan</b>				

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
	Measured	13.0	0.106	13.8
	Indicated	27.0	0.107	28.9
	<b>Subtotal</b>	<b>40.0</b>	<b>0.107</b>	<b>42.6</b>
	Inferred	-	-	-
	<b>Total</b>	<b>40.0</b>	<b>0.107</b>	<b>42.6</b>
<b>Block Kharassan 2, North Kharassan</b>				
	Measured	11.3	0.114	12.9
	Indicated	8.7	0.109	9.5
	<b>Subtotal</b>	<b>20.0</b>	<b>0.112</b>	<b>22.4</b>
	Inferred	-	-	-
	<b>Total</b>	<b>20.0</b>	<b>0.112</b>	<b>22.4</b>
<b>Northern Karamurun and Southern Karamurun</b>				
	Measured	13.4	0.075	10.1
	Indicated	7.5	0.077	5.8
	<b>Subtotal</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
	Inferred	-	-	-
	<b>Total</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Zarechnoye</b>				
	Measured	3.6	0.060	2.2
	Indicated	4.4	0.060	2.7
	<b>Subtotal</b>	<b>8.0</b>	<b>0.060</b>	<b>4.8</b>
	Inferred	4.2	0.049	2.0
	<b>Total</b>	<b>12.2</b>	<b>0.056</b>	<b>6.9</b>
<b>Syrdarya Basin</b>				
	Measured	63.4	0.076	48.0
	Indicated	65.7	0.083	54.4
	<b>Subtotal</b>	<b>129.1</b>	<b>0.079</b>	<b>102.4</b>
	Inferred	4.2	0.049	2.0
	<b>Total</b>	<b>133.3</b>	<b>0.078</b>	<b>104.4</b>

**Table 7-4: SRK Audited Northern Kazakhstan Mineral Resource Statement as at 1 July 2018 (Aggregated, 100% basis)**

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Semizbai</b>	Measured	17.3	0.057	9.9
	Indicated	2.5	0.053	1.3
	<b>Subtotal</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
	Inferred	-	-	-
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
<b>Northern Kazakhstan</b>	Measured	17.3	0.057	9.9
	Indicated	2.5	0.053	1.3
	<b>Subtotal</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
	Inferred	-	-	-
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>

**Table 7-5: SRK Audited Mineral Resource Statement as at 1 July 2018 (Aggregated, 100% basis)**

Deposit	Mineral Resource Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Shu-Sarysu Basin</b>	Measured	427.4	0.060	256.9
	Indicated	660.7	0.046	301.5
	<b>Subtotal</b>	<b>1,088.1</b>	<b>0.051</b>	<b>558.3</b>
	Inferred	-	-	-
	<b>Total</b>	<b>1,088.1</b>	<b>0.051</b>	<b>558.3</b>
<b>Syrdarya Basin</b>	Measured	63.4	0.076	48.0
	Indicated	65.7	0.083	54.4
	<b>Subtotal</b>	<b>129.1</b>	<b>0.079</b>	<b>102.4</b>
	Inferred	4.2	0.049	2.0
	<b>Total</b>	<b>133.3</b>	<b>0.078</b>	<b>104.4</b>
<b>Northern Kazakhstan</b>	Measured	17.3	0.057	9.9
	Indicated	2.5	0.053	1.3
	<b>Subtotal</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
	Inferred	-	-	-
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
<b>Mineral Assets</b>	Measured	508.1	0.062	314.7
	Indicated	729.0	0.049	357.2
	<b>Subtotal</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>
	Inferred	4.2	0.049	2.0
	<b>Total</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

**Table 7-6: SRK Audited Mineral Resource Statement (Measured and Indicated) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated, 100% basis)**

Entity/Deposit	Measured Mineral Resources			Indicated Mineral Resources			Measured + Indicated Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	-	-	-	-	-	-	-	-	-
Eastern Mynkuduk	15.6	0.030	4.7	6.9	0.030	2.1	22.6	0.030	6.8
Kanzhugan	3.5	0.042	1.5	27.6	0.038	10.5	31.1	0.038	12.0
South Moinkum (Southern part)	0.1	0.039	0.1	1.6	0.048	0.8	1.8	0.047	0.8
Central Moinkum	0.7	0.056	0.4	19.8	0.058	11.5	20.5	0.058	11.9
<b>Total</b>	<b>20.0</b>	<b>0.033</b>	<b>6.6</b>	<b>55.9</b>	<b>0.044</b>	<b>24.8</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>									
Zhalpak	0.6	0.045	0.3	44.3	0.032	14.2	44.9	0.032	14.5
Central Mynkuduk	49.4	0.047	23.2	14.7	0.038	5.6	64.1	0.045	28.8
<b>Total</b>	<b>50.0</b>	<b>0.047</b>	<b>23.5</b>	<b>59.0</b>	<b>0.033</b>	<b>19.8</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>									
Northern Karamurun	6.3	0.069	4.3	2.3	0.050	1.1	8.6	0.064	5.5
Southern Karamurun	7.1	0.081	5.7	5.3	0.089	4.7	12.4	0.084	10.4
<b>Total</b>	<b>13.4</b>	<b>0.075</b>	<b>10.1</b>	<b>7.5</b>	<b>0.077</b>	<b>5.8</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>									
Western Mynkuduk	13.4	0.032	4.3	41.4	0.036	14.9	54.8	0.035	19.2
<b>JV Inkai LLP</b>									
Block 1 Inkai (a)	36.4	0.076	27.6	9.8	0.061	6.0	46.1	0.073	33.6
Block 1 Inkai (b)	32.8	0.051	16.7	88.1	0.053	46.7	120.9	0.052	63.4
Block 1 Inkai (c)	80.7	0.047	37.9	17.3	0.049	8.5	98.0	0.047	46.4
<b>Total</b>	<b>149.8</b>	<b>0.055</b>	<b>82.3</b>	<b>115.1</b>	<b>0.053</b>	<b>61.1</b>	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>
<b>Semizbai-U LLP</b>									
Semizbai	17.3	0.057	9.9	2.5	0.053	1.3	19.8	0.056	11.2
Irkol	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>39.5</b>	<b>0.048</b>	<b>19.0</b>	<b>20.6</b>	<b>0.043</b>	<b>8.9</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	9.8	0.107	10.5	5.3	0.088	4.6	15.1	0.100	15.1
Block 3 Budenovskoye	21.0	0.071	14.9	6.7	0.100	6.7	27.7	0.078	21.7
Block 4 Budenovskoye	2.5	0.141	3.5	4.2	0.084	3.6	6.7	0.105	7.1
<b>Total</b>	<b>33.4</b>	<b>0.087</b>	<b>29.0</b>	<b>16.2</b>	<b>0.092</b>	<b>14.9</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>									
Block 2 Budenovskoye	31.8	0.097	30.8	27.5	0.063	17.3	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.6	0.060	2.2	4.4	0.060	2.7	8.0	0.060	4.8
<b>JV Katco LLP</b>									
Southern Moinkum (Northern part)	10.0	0.063	6.3	5.5	0.057	3.1	15.5	0.061	9.4
Tortkuduk	20.0	0.122	24.4	22.1	0.118	26.1	42.1	0.120	50.5
<b>Total</b>	<b>29.9</b>	<b>0.102</b>	<b>30.7</b>	<b>27.7</b>	<b>0.106</b>	<b>29.3</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	13.0	0.106	13.8	27.0	0.107	28.9	40.0	0.107	42.6
<b>JV SMCC LLP</b>									
Akdala	7.3	0.057	4.2	2.9	0.057	1.7	10.2	0.057	5.8
Block 4, Inkai	11.5	0.045	5.2	89.2	0.037	33.0	100.6	0.038	38.2
<b>Total</b>	<b>18.8</b>	<b>0.050</b>	<b>9.3</b>	<b>92.1</b>	<b>0.038</b>	<b>34.6</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	11.3	0.114	12.9	8.7	0.109	9.5	20.0	0.112	22.4
<b>Kazatomprom</b>									
Block 2 Inkai	-	-	-	133.8	0.031	42.0	133.8	0.031	42.0
Block 3 Inkai	80.3	0.050	40.4	92.1	0.046	42.7	172.3	0.048	83.1
<b>Total</b>	<b>80.3</b>	<b>0.050</b>	<b>40.4</b>	<b>225.9</b>	<b>0.038</b>	<b>84.7</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>	<b>508.1</b>	<b>0.062</b>	<b>314.7</b>	<b>729.0</b>	<b>0.049</b>	<b>357.2</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>
<b>Regional</b>									
Shu-Sarysu	427.4	0.060	256.9	660.7	0.046	301.5	1,088.1	0.051	558.3
Syrdarya	58.6	0.083	48.8	50.2	0.096	48.2	108.8	0.089	96.9
Northern Kazakhstan	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>508.1</b>	<b>0.062</b>	<b>314.7</b>	<b>729.0</b>	<b>0.049</b>	<b>357.2</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>

**Table 7-7: SRK Audited Mineral Resource Statement (Inferred and Total) as at 1 July 2018 by Mining Subsidiary (Aggregated, 100% basis)**

Mining Subsidiary /Deposit	Inferred Mineral resources			Total Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>						
Uvanas	-	-	-	-	-	-
Eastern Mynkuduk	-	-	-	22.6	0.030	6.8
Kanzhugan	-	-	-	31.1	0.038	12.0
South Moinkum (Southern part)	-	-	-	1.8	0.047	0.8
Central Moinkum	-	-	-	20.5	0.058	11.9
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>						
Zhalpak	-	-	-	44.9	0.032	14.5
Central Mynkuduk	-	-	-	64.1	0.045	28.8
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>						
Northern Karamurun	-	-	-	8.6	0.064	5.5
Southern Karamurun	-	-	-	12.4	0.084	10.4
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>						

Mining Subsidiary /Deposit	Inferred Mineral resources			Total Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
Western Mynkuduk	-	-	-	54.8	0.035	19.2
<b>JV Inkai LLP</b>						
Blocks 1, Inkai (a)	-	-	-	46.1	0.073	33.6
Blocks 1, Inkai (b)	-	-	-	120.9	0.052	63.4
Blocks 1, Inkai (c)	-	-	-	98.0	0.047	46.4
<b>Total</b>	-	-	-	<b>264.9</b>	<b>0.054</b>	<b>143.4</b>
<b>Semizbai-U LLP</b>						
Semizbai	-	-	-	19.8	0.056	11.2
Irkol	-	-	-	40.2	0.041	16.7
<b>Total</b>	-	-	-	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>						
Block 1 Budenovskoye	-	-	-	15.1	0.100	15.1
Block 3 Budenovskoye	-	-	-	27.7	0.078	21.7
Block 4 Budenovskoye	-	-	-	6.7	0.105	7.1
<b>Total</b>	-	-	-	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>						
Block 2, Budenovskoye	-	-	-	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>						
Zarechnoye	4.2	0.049	2.0	12.2	0.056	6.9
<b>JV Katco LLP</b>						
Southern Moinkum (Northern part)	-	-	-	15.5	0.061	9.4
Tortkuduk	-	-	-	42.1	0.120	50.5
<b>Total</b>	-	-	-	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>						
Block Kharassan 1, North Kharassan	-	-	-	40.0	0.107	42.6
<b>JV SMCC LLP</b>						
Akdala	-	-	-	10.2	0.057	5.8
Block 4, Inkai	-	-	-	100.6	0.038	38.2
<b>Total</b>	-	-	-	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>						
Block Kharassan 2, North Kharassan	-	-	-	20.0	0.112	22.4
<b>Kazatomprom</b>						
Block 2 Inkai	-	-	-	133.8	0.031	42.0
Block 3 Inkai	-	-	-	172.3	0.048	83.1
<b>Total</b>	-	-	-	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>	<b>4.2</b>	<b>0.049</b>	<b>2.0</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>
<b>Regional</b>						
Shu-Sarysu	-	-	-	1,088.1	0.051	558.3
Syrdarya	4.2	0.049	2.0	112.9	0.088	99.0
Northern Kazakhstan	-	-	-	40.2	0.041	16.7
<b>Total</b>	<b>4.2</b>	<b>0.049</b>	<b>2.0</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

**Table 7-8: SRK Audited Mineral Resource Statement (Attributable basis) as at 1 July 2018 by Mining Subsidiary**

Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Measured + Indicated			Attributable Total Mineral Resources		
			(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>							
Uvanas		Shu-Sarysu	-	-	-	-	-	-
Eastern Mynkuduk		Shu-Sarysu	22.6	0.030	6.8	22.6	0.030	6.8
Kanzhugan		Shu-Sarysu	31.1	0.038	12.0	31.1	0.038	12.0
South Moinkum (Southern part)		Shu-Sarysu	1.8	0.047	0.8	1.8	0.047	0.8
Central Moinkum		Shu-Sarysu	20.5	0.058	11.9	20.5	0.058	11.9
<b>Total</b>			<b>75.9</b>	<b>0.041</b>	<b>31.4</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>	<b>100.00</b>							
Zhalpak		Shu-Sarysu	44.9	0.032	14.5	44.9	0.032	14.5
Central Mynkuduk		Shu-Sarysu	64.1	0.045	28.8	64.1	0.045	28.8
<b>Total</b>			<b>109.1</b>	<b>0.040</b>	<b>43.3</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>	<b>100.00</b>							
Northern Karamurun		Syrdarya	8.6	0.064	5.5	8.6	0.064	5.5
Southern Karamurun		Syrdarya	12.4	0.084	10.4	12.4	0.084	10.4
<b>Total</b>			<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>							
Western Mynkuduk		Shu-Sarysu	35.6	0.035	12.5	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>							
Blocks 1, Inkai (a)		Shu-Sarysu	27.7	0.073	20.2	27.7	0.073	20.2
Blocks 1, Inkai (b)		Shu-Sarysu	72.5	0.052	38.0	72.5	0.052	38.0
Blocks 1, Inkai (c)		Shu-Sarysu	58.8	0.047	27.8	58.8	0.047	27.8
<b>Total</b>			<b>159.0</b>	<b>0.054</b>	<b>86.0</b>	<b>159.0</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>							
Semizbai		Northern Kazakhstan	10.1	0.056	5.7	10.1	0.056	5.7
Irkol		Syrdarya	20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>			<b>30.6</b>	<b>0.046</b>	<b>14.2</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>
<b>JV Akbastau JSC</b>	<b>50.00</b>							
Block 1 Budenovskoye		Shu-Sarysu	7.5	0.100	7.6	7.5	0.100	7.6
Block 3 Budenovskoye		Shu-Sarysu	13.9	0.078	10.8	13.9	0.078	10.8
Block 4 Budenovskoye		Shu-Sarysu	3.4	0.105	3.5	3.4	0.105	3.5
<b>Total</b>			<b>24.8</b>	<b>0.089</b>	<b>21.9</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>							
Block 2, Budenovskoye		Shu-Sarysu	29.6	0.081	24.1	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>							
Zarechnoye <sup>(9)</sup>		Syrdarya	4.0	0.060	2.4	6.1	0.056	3.4
<b>JV Katco LLP</b>	<b>49.00</b>							
Southern Moinkum (Northern part)		Shu-Sarysu	7.6	0.061	4.6	7.6	0.061	4.6



Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Measured + Indicated			Attributable Total Mineral Resources		
			(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
Tortkuduk		Shu-Sarysu	20.6	0.120	24.7	20.6	0.120	24.7
<b>Total</b>			<b>28.2</b>	<b>0.104</b>	<b>29.4</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>50.00</b>							
Block Kharassan 1, North Kharassan		Syrdarya	20.0	0.107	21.3	20.0	0.107	21.3
<b>JV SMCC LLP</b>	<b>30.00</b>							
Akdala		Shu-Sarysu	3.1	0.057	1.7	3.1	0.057	1.7
Block 4, Inkai		Shu-Sarysu	30.2	0.038	11.4	30.2	0.038	11.4
<b>Total</b>			<b>33.2</b>	<b>0.040</b>	<b>13.2</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>52.50</b>							
Block Kharassan 2, North Kharassan		Syrdarya	10.5	0.112	11.7	10.5	0.112	11.7
<b>Kazatomprom</b>	<b>100.00</b>							
Block 2 Inkai		Shu-Sarysu	133.8	0.031	42.0	133.8	0.031	42.0
Block 3 Inkai		Shu-Sarysu	172.3	0.048	83.1	172.3	0.048	83.1
<b>Total</b>			<b>306.1</b>	<b>0.041</b>	<b>125.1</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>			<b>887.7</b>	<b>0.051</b>	<b>452.5</b>	<b>889.7</b>	<b>0.051</b>	<b>453.5</b>
<b>Regional</b>								
Shu-Sarysu			801.6	0.048	386.9	801.6	0.048	386.9
Syrdarya			65.5	0.087	57.1	67.6	0.086	58.1
Northern Kazakhstan			20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>			<b>887.7</b>	<b>0.051</b>	<b>452.5</b>	<b>889.7</b>	<b>0.051</b>	<b>453.5</b>

(1) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

## 7.4 SRK Audited Ore Reserve Statements

The tables below present SRK's audited Ore Reserve statements which are reported in accordance with the terms and definitions of the JORC Code. Definitions for the different categories used by this reporting code are given in the glossary provided.

It should be noted that these statements cover the operating Mineral Assets only as none of the exploration projects (inclusive of Inkai 2 and 3) are sufficiently advanced in terms of drilling and technical assessment to enable the reporting of Ore Reserves.

These statements reflect the audited Mineral Resource Statements above but have been restricted to mineralisation planned to be exploited according to the LoMps developed by the Company and are supported by the mine project documents which are in turn based on its licence/contract agreements.

Notwithstanding this, in some cases these statements assume mining will continue subsequent to the expiry of the current contract in place with GoK reflecting SRK's understanding that it would be highly unlikely that these would not be extended ahead of the expiry date assuming that the Company has fulfilled all of its contractual requirements to that point.

The Ore Reserve statements reflect the total quantity of in-situ uranium planned to be mined and do not take account of metallurgical recovery both as part of the in-situ leaching process and within the surface processing plants themselves which typically varies between 80% and 90%.

As part of its review process, SRK has compared the planned contractual recovery figures with actual recoveries achieved for each deposit for the depleted blocks which were presented by the Company in its TO-25 reports (these documents give a detailed analysis of the blocks which were extracted during last few years therefore do not represent the whole mining statistics for the deposit). For the deposits where mining had recently been started or have not started yet the recovery statistic is not representative and was not considered (Table 7-9). In general the recovery into solution is close to the predicted figures and most often higher. Actual recoveries higher than 85% to 90% are usually typical for the deposits with long extraction history and could be explained by acid spreading or disequilibrium issues.

**Table 7-9: Planned contractual recovery and historical recovery**

Company	Reporting Region	Deposit	Extraction	
			Historical (%)	Contractual (%)
JV SMCC LLP	Shu-Sarysu Basin	Akdala	102.00	90.00

Company	Reporting Region	Deposit	Extraction	
			Historical (%)	Contractual (%)
JV SMCC LLP	Shu-Sarysu Basin	Block 4, 4	91.00	90.00
Semizbai-U LLP	Syrdarya Basin	Irkol	93.00	90.00
Semizbai-U LLP	Northern Kazakhstan	Semizbai	85.00	85.00
Appak LLP	Shu-Sarysu Basin	Western Mynkuduk	86.00	90.00
JV Inkai LLP	Shu-Sarysu Basin	Inkai 1 (a)	88.00	85.00
JV Inkai LLP	Shu-Sarysu Basin	Inkai 1 (b)	101.00	85.00
JV Inkai LLP	Shu-Sarysu Basin	Inkai 1 (c)	85.00	85.00
JV Khorassan LLP	Syrdarya Basin	Block 1 Kharassan, North Kharassan	117.00	90.00
Baiken-U LLP	Syrdarya Basin	Block 2 Kharassan, North Kharassan	93.00	90.00
JV Zarechnoye JSC	Syrdarya Basin	Zarechnoye	86.00	80.00
JV Katco LLP	Shu-Sarysu Basin	Southern Moinkum (Northern Part)	81.00	90.00
JV Katco LLP	Shu-Sarysu Basin	Tortkuduk	87.00	90.00
Karatau LLP	Shu-Sarysu Basin	Block 2, Budenovskoye	90.00	90.00
JV Akbastau JSC	Shu-Sarysu Basin	Block 1, Budenovskoye	95.00	90.00
JV Akbastau JSC	Shu-Sarysu Basin	Block 3, Budenovskoye	89.00	85.00
JV Akbastau JSC	Shu-Sarysu Basin	Block 4, Budenovskoye	86.60	85.00
Kazatomprom-SaUran LLP	Shu-Sarysu Basin	Uvanas	n/a	100.00
Kazatomprom-SaUran LLP	Shu-Sarysu Basin	Eastern Mynkuduk	91.00	90.00
Kazatomprom-SaUran LLP	Shu-Sarysu Basin	Kanzhugan	100.00	90.00
Kazatomprom-SaUran LLP	Shu-Sarysu Basin	South Moinkum (Southern Part)	79.00	85.00
Kazatomprom-SaUran LLP	Shu-Sarysu Basin	Central Moinkum	85.00	85.00
Ortalyk LLP	Shu-Sarysu Basin	Zhalpak	n/a	90.00
Ortalyk LLP	Shu-Sarysu Basin	Central Mynkuduk	85.00	90.00
RU-6 LLP	Syrdarya Basin	Southern Karamurun	98.00	93.00
RU-6 LLP	Syrdarya Basin	Northern Karamurun	99.00	90.00

Table 7-10 and Table 7-11 provide details relating to the determination of relative cut-off grades for each Mining Subsidiary including operating expenditure, sales price assumptions, price discounts, realised prices, overall recovery factors, Ore Reserve (2P) cut-off grades, Mineral Resource (3R: assuming a 30% price premium) which are juxtaposed against the average grade mined in each of the Mining Subsidiaries over the LoMp. This indicates that the margin expressed by the Ore Reserve average grade over the Ore Reserve cut-off-grade ranges from a low of 20% to a high of 75% at currently assumed average LoMp assumptions.

**Table 7-10: Cut-off Grade analysis: operating expenditure and sales price assumptions**

Mining Subsidiary	Tonnage (Mt)	Operating Expenditure			Sales Price (pre-discount)		
		(KZTm)	(KZT/t)	(US\$/t)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	(US\$/tU <sub>3</sub> O <sub>8</sub> )	(US\$/tU)
Kazatomprom-SaUran LLP	74.3	470,863	6,341	18.65	35.10	77,384	65,622
Ortalyk LLP	64.5	254,891	3,950	11.62	32.80	72,320	61,327
RU-6 LLP	20.9	219,822	10,508	30.91	34.24	75,480	64,007
Appak LLP	54.8	237,793	4,341	12.77	35.46	78,168	66,287
JV Inkai LLP	264.8	978,693	3,695	10.87	38.90	85,763	72,727
Semizbai-U LLP	60.1	340,746	5,673	16.68	36.41	80,275	68,073
JV Akbastau JSC	49.6	223,767	4,513	13.27	36.39	80,223	68,029
Karatau LLP	59.3	222,388	3,752	11.04	33.46	73,773	62,560
JV Zarechnoye JSC	8.0	52,277	6,495	19.10	28.39	62,581	53,068
JV Katco LLP	57.6	424,977	7,377	21.70	33.07	72,910	61,828
JV Khorassan-U LLP	40.0	361,343	9,044	26.60	34.12	75,225	63,791
JV SMCC LLP	110.8	317,910	2,869	8.44	34.33	75,675	64,172
Baiken-U LLP	20.0	176,671	8,839	26.00	31.06	68,482	58,073

**Table 7-11: Cut-off grade analysis: realised price, metallurgical recovery factor, cut-off grades and Ore Reserve average grade**

Mining Subsidiary	Price Discount (%)	Realised Price (US\$/lbU <sub>3</sub> O <sub>8</sub> )	MRF (%)	2P-OCOG (%U)	3R-OCOG (%U)	2PGrade (%U)
Kazatomprom-SaUran LLP	-	35.10	88.09	0.032	0.025	0.041
Ortalyk LLP	-	32.80	88.82	0.021	0.016	0.045
RU-6 LLP	-	34.24	89.85	0.054	0.041	0.076
Appak LLP	3.50	34.22	90.00	0.022	0.017	0.035
JV Inkai LLP	3.50	37.54	85.00	0.018	0.014	0.054
Semizbai-U LLP	3.50	35.14	86.78	0.029	0.023	0.046
JV Akbastau JSC	3.50	35.11	86.73	0.023	0.018	0.089
Karatau LLP	3.50	32.29	90.00	0.020	0.016	0.081
JV Zarechnoye JSC	3.50	27.39	78.80	0.047	0.036	0.060
JV Katco LLP	3.50	31.91	90.00	0.040	0.031	0.104
JV Khorassan-U LLP	3.50	32.93	89.48	0.048	0.037	0.107
JV SMCC LLP	3.50	33.12	90.00	0.015	0.012	0.040
Baiken-U LLP	3.50	29.98	90.00	0.052	0.040	0.112

All of the estimates given below are the total available at each Mineral Asset and not just the portion attributable to Company unless specified otherwise.

- Table 7-12 presents the SRK Audited Ore Reserve Statements for all deposits located in the Shu-Sarysu Basin;

- Table 7-13 presents the SRK Audited Ore Reserve Statements for all deposits located in the Syrdarya Basin;
- Table 7-14 presents the SRK Audited Ore Reserve Statements for all deposits located in Northern Kazakhstan;
- Table 7-15 presents the SRK Audited Ore Reserve Statements summarised by geographical region;
- Table 7-16 presents the SRK Audited Proved and Probable Ore Reserve Statements by Mining Subsidiary; and
- Table 7-17 presents the SRK Audited attributable Ore Reserve Statements by Mining Subsidiary.

**Table 7-12: SRK Audited Shu-Sarysu Basin Ore Reserve Statement as at 1 July 2018 (Aggregated 100% basis)**

Deposit	Ore Reserve Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Akdala</b>	Proved	7.3	0.057	4.2
	Probable	2.9	0.057	1.7
	<b>Total</b>	<b>10.2</b>	<b>0.057</b>	<b>5.8</b>
<b>Block 4, Inkai</b>	Proved	11.5	0.045	5.2
	Probable	89.2	0.037	33.0
	<b>Total</b>	<b>100.6</b>	<b>0.038</b>	<b>38.2</b>
<b>Western Mynkuduk</b>	Proved	13.4	0.032	4.3
	Probable	41.4	0.036	14.9
	<b>Total</b>	<b>54.8</b>	<b>0.035</b>	<b>19.2</b>
<b>Block 1 Inkai (a), (b), (c)</b>	Proved	149.8	0.055	82.2
	Probable	115.1	0.053	61.1
	<b>Total</b>	<b>264.8</b>	<b>0.054</b>	<b>143.3</b>
<b>Block 2 Inkai 2 and Block 3 Inkai</b>	Proved	-	-	-
	Probable	-	-	-
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Southern Moinkum (Northern Part)</b>	Proved	10.0	0.063	6.3
	Probable	5.5	0.057	3.1
	<b>Total</b>	<b>15.5</b>	<b>0.061</b>	<b>9.4</b>
<b>Tortkuduk</b>	Proved	20.0	0.122	24.4
	Probable	22.1	0.118	26.1
	<b>Total</b>	<b>42.1</b>	<b>0.120</b>	<b>50.5</b>
<b>Block 2, Budenovskoye</b>	Proved	31.8	0.097	30.8
	Probable	27.5	0.063	17.3
	<b>Total</b>	<b>59.3</b>	<b>0.081</b>	<b>48.1</b>
<b>Block 1, 3 and 4 Budenovskoye</b>	Proved	33.4	0.087	29.0
	Probable	16.2	0.092	14.9
	<b>Total</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Eastern Mynkuduk</b>	Proved	15.6	0.030	4.7
	Probable	6.9	0.030	2.1
	<b>Total</b>	<b>22.6</b>	<b>0.030</b>	<b>6.8</b>
<b>Zhalpak</b>	Proved	0.4	0.045	0.2
	Probable	-	-	-
	<b>Total</b>	<b>0.4</b>	<b>0.045</b>	<b>0.2</b>
<b>Kanzhugan</b>	Proved	3.5	0.042	1.5
	Probable	27.6	0.038	10.5
	<b>Total</b>	<b>31.1</b>	<b>0.038</b>	<b>12.0</b>
<b>South Moinkum (Southern Part)</b>	Proved	-	-	-
	Probable	0.08	0.048	0.04
	<b>Total</b>	<b>0.1</b>	<b>0.048</b>	<b>0.0</b>
<b>Central Moinkum</b>	Proved	0.7	0.056	0.4
	Probable	19.8	0.058	11.5
	<b>Total</b>	<b>20.5</b>	<b>0.058</b>	<b>11.9</b>
<b>Central Mynkuduk</b>	Proved	49.4	0.047	23.2
	Probable	14.7	0.038	5.6
	<b>Total</b>	<b>64.1</b>	<b>0.045</b>	<b>28.8</b>
<b>Shu-Sarysu Basin</b>	Proved	346.7	0.062	216.2

Deposit	Ore Reserve Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
	Probable	389.0	0.052	201.8
	<b>Total</b>	<b>735.7</b>	<b>0.057</b>	<b>418.0</b>

**Table 7-13: SRK Audited Syrdarya Basin Ore Reserve Statement as at 1 July 2018 (Aggregated 100% basis)**

Deposit	Ore Reserve Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Irkol</b>				
	Proved	22.2	0.041	9.1
	Probable	18.0	0.042	7.6
	<b>Total</b>	<b>40.2</b>	<b>0.041</b>	<b>16.7</b>
<b>Block Kharassan 1, North Kharassan</b>				
	Proved	13.0	0.106	13.8
	Probable	27.0	0.107	28.9
	<b>Total</b>	<b>40.0</b>	<b>0.107</b>	<b>42.6</b>
<b>Block Kharassan 2, North Kharassan</b>				
	Proved	11.3	0.114	12.9
	Probable	8.7	0.109	9.5
	<b>Total</b>	<b>20.0</b>	<b>0.112</b>	<b>22.4</b>
<b>Northern Karamurun and Southern Karamurun</b>				
	Proved	13.4	0.075	10.1
	Probable	7.5	0.077	5.8
	<b>Total</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Zarechnoye</b>				
	Proved	3.6	0.060	2.2
	Probable	4.4	0.060	2.7
	<b>Total</b>	<b>8.0</b>	<b>0.060</b>	<b>4.8</b>
<b>Syrdarya Basin</b>				
	Proved	63.4	0.076	48.0
	Probable	65.7	0.083	54.4
	<b>Total</b>	<b>129.1</b>	<b>0.079</b>	<b>102.4</b>

**Table 7-14: SRK Audited Northern Kazakhstan Ore Reserve Statement as at 1 July 2018 (Aggregated 100% basis)**

Deposit	Ore Reserve Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Semizbai</b>				
	Proved	17.3	0.057	9.9
	Probable	2.5	0.053	1.3
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
<b>Northern Kazakhstan</b>				
	Proved	17.3	0.057	9.9
	Probable	2.5	0.053	1.3
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>

**Table 7-15: SRK Audited Ore Reserve Statement as at 1 July 2018 (Aggregated 100% basis)**

Deposit	Ore Reserve Category	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Shu-Sarysu Basin</b>				
	Proved	346.7	0.062	216.2
	Probable	389.0	0.052	201.8
	<b>Total</b>	<b>735.7</b>	<b>0.057</b>	<b>418.0</b>
<b>Syrdarya Basin</b>				
	Proved	63.4	0.076	48.0
	Probable	65.7	0.083	54.4
	<b>Total</b>	<b>129.1</b>	<b>0.079</b>	<b>102.4</b>
<b>Northern Kazakhstan</b>				
	Proved	17.3	0.057	9.9
	Probable	2.5	0.053	1.3
	<b>Total</b>	<b>19.8</b>	<b>0.056</b>	<b>11.2</b>
<b>Mineral Assets</b>				
	Proved	427.4	0.064	274.1
	Probable	457.3	0.056	257.6
	<b>Total</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>

**Table 7-16: SRK Audited Ore Reserve Statement (Proved and Probable) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100% basis)**

Entity/Deposit	Proved Ore Reserve			Probable Ore Reserve			Total Ore Reserves		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	-	-	-	-	-	-	-	-	-
Eastern Mynkuduk	15.6	0.030	4.7	6.9	0.030	2.1	22.6	0.030	6.8
Kanzhugan	3.5	0.042	1.5	27.6	0.038	10.5	31.1	0.038	12.0
South Moinkum (Southern part)	0.01	0.039	0.003	0.08	0.048	0.04	0.1	0.047	0.04
Central Moinkum	0.7	0.056	0.4	19.8	0.058	11.5	20.5	0.058	11.9
<b>Total</b>	<b>19.8</b>	<b>0.033</b>	<b>6.6</b>	<b>54.4</b>	<b>0.044</b>	<b>24.1</b>	<b>74.3</b>	<b>0.041</b>	<b>30.6</b>

Entity/Deposit	Proved Ore Reserve			Probable Ore Reserve			Total Ore Reserves		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Ortalyk LLP</b>									
Zhalpak	0.4	0.045	0.2	-	-	-	0.4	0.045	0.2
Central Mynkuduk	49.4	0.047	23.2	14.7	0.038	5.6	64.1	0.045	28.8
<b>Total</b>	<b>49.8</b>	<b>0.047</b>	<b>23.4</b>	<b>14.7</b>	<b>0.038</b>	<b>5.6</b>	<b>64.5</b>	<b>0.045</b>	<b>29.0</b>
<b>RU-6 LLP</b>									
Northern Karamurun	6.3	0.069	4.3	2.3	0.050	1.1	8.6	0.064	5.5
Southern Karamurun	7.1	0.081	5.7	5.3	0.089	4.7	12.4	0.084	10.4
<b>Total</b>	<b>13.4</b>	<b>0.075</b>	<b>10.1</b>	<b>7.5</b>	<b>0.077</b>	<b>5.8</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>									
Western Mynkuduk	13.4	0.032	4.3	41.4	0.036	14.9	54.8	0.035	19.2
<b>JV Inkai LLP</b>									
Block 1 Inkai (a)	36.3	0.076	27.6	9.7	0.061	5.9	46.0	0.073	33.5
Block 1 Inkai (b)	32.8	0.051	16.7	88.1	0.053	46.7	120.9	0.052	63.4
Block 1 Inkai (c)	80.7	0.047	37.9	17.3	0.049	8.5	98.0	0.047	46.4
<b>Total</b>	<b>149.8</b>	<b>0.055</b>	<b>82.2</b>	<b>115.1</b>	<b>0.053</b>	<b>61.1</b>	<b>264.8</b>	<b>0.054</b>	<b>143.3</b>
<b>Semizbai-U LLP</b>									
Semizbai	17.3	0.057	9.9	2.5	0.053	1.3	19.8	0.056	11.2
Irkol	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>39.5</b>	<b>0.048</b>	<b>19.0</b>	<b>20.6</b>	<b>0.043</b>	<b>8.9</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	9.8	0.107	10.5	5.3	0.088	4.6	15.1	0.100	15.1
Block 3 Budenovskoye	21.0	0.071	14.9	6.7	0.100	6.7	27.7	0.078	21.7
Block 4 Budenovskoye	2.5	0.141	3.5	4.2	0.084	3.6	6.7	0.105	7.1
<b>Total</b>	<b>33.4</b>	<b>0.087</b>	<b>29.0</b>	<b>16.2</b>	<b>0.092</b>	<b>14.9</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>
<b>Karatau LLP</b>									
Block 2 Budenovskoye	31.8	0.097	30.8	27.5	0.063	17.3	59.3	0.081	48.1
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.6	0.060	2.2	4.4	0.060	2.7	8.0	0.060	4.8
<b>JV Katco LLP</b>									
Southern Moinkum (Northern part)	10.0	0.063	6.3	5.5	0.057	3.1	15.5	0.061	9.4
Tortkuduk	20.0	0.122	24.4	22.1	0.118	26.1	42.1	0.120	50.5
<b>Total</b>	<b>29.9</b>	<b>0.102</b>	<b>30.7</b>	<b>27.7</b>	<b>0.106</b>	<b>29.3</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	13.0	0.106	13.8	27.0	0.107	28.9	40.0	0.107	42.6
<b>JV SMCC LLP</b>									
Akdala	7.3	0.057	4.2	2.9	0.057	1.7	10.2	0.057	5.8
Block 4, Inkai	11.5	0.045	5.2	89.2	0.037	33.0	100.6	0.038	38.2
<b>Total</b>	<b>18.8</b>	<b>0.050</b>	<b>9.3</b>	<b>92.1</b>	<b>0.038</b>	<b>34.6</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	11.3	0.114	12.9	8.7	0.109	9.5	20.0	0.112	22.4
<b>Kazatomprom</b>									
Block 2 Inkai	-	-	-	-	-	-	-	-	-
Block 3 Inkai	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Total</b>	<b>427.4</b>	<b>0.064</b>	<b>274.1</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>
<b>Regional</b>									
Shu-Sarysu	346.7	0.062	216.2	389.0	0.052	201.8	735.7	0.057	418.0
Syrdarya	58.6	0.083	48.8	50.2	0.096	48.2	108.8	0.089	96.9
Northern Kazakhstan	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7
<b>Total</b>	<b>427.4</b>	<b>0.064</b>	<b>274.1</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>

**Table 7-17: SRK Audited Ore Reserve Statement (Attributable) as at 1 July 2018 by Mining Subsidiary**

Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Ore Reserves		
			(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>				
Uvanas		Shu-Sarysu	-	-	-
Eastern Mynkuduk		Shu-Sarysu	22.6	0.030	6.8
Kanzhugan		Shu-Sarysu	31.1	0.038	12.0
South Moinkum (Southern part)		Shu-Sarysu	0.1	0.047	0.04
Central Moinkum		Shu-Sarysu	20.5	0.058	11.9
<b>Total</b>			<b>74.3</b>	<b>0.041</b>	<b>30.6</b>
<b>Ortalyk LLP</b>	<b>100.00</b>				
Zhalpak		Shu-Sarysu	0.4	0.045	0.2
Central Mynkuduk		Shu-Sarysu	64.1	0.045	28.8
<b>Total</b>			<b>64.5</b>	<b>0.045</b>	<b>29.0</b>
<b>RU-6 LLP</b>	<b>100.00</b>				
Northern Karamurun		Syrdarya	8.6	0.064	5.5
Southern Karamurun		Syrdarya	12.4	0.084	10.4
<b>Total</b>			<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>				
Western Mynkuduk		Shu-Sarysu	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>				
Blocks 1, Inkai (a)		Shu-Sarysu	27.6	0.073	20.1
Blocks 1, Inkai (b)		Shu-Sarysu	72.5	0.052	38.0
Blocks 1, Inkai (c)		Shu-Sarysu	58.8	0.047	27.8
<b>Total</b>			<b>158.9</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>				
Semizbai		Northern Kazakhstan	10.1	0.056	5.7
Irkol		Syrdarya	20.5	0.041	8.5
<b>Total</b>			<b>30.6</b>	<b>0.046</b>	<b>14.2</b>
<b>JV Akbastau JSC</b>	<b>50.00</b>				
Block 1 Budenovskoye		Shu-Sarysu	7.5	0.100	7.6



Mining Subsidiary /Deposit	Equity Interest (%)	Uranium Mining Province	Attributable Ore Reserves		
			(Mt)	(%U)	(ktU)
Block 3 Budenovskoye		Shu-Sarysu	13.9	0.078	10.8
Block 4 Budenovskoye		Shu-Sarysu	3.4	0.105	3.5
<b>Total</b>			<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>				
Block 2, Budenovskoye		Shu-Sarysu	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>				
Zarechnoye		Syrdarya	4.0	0.060	2.4
<b>JV Katco LLP</b>	<b>49.00</b>				
Southern Moinkum (Northern part)		Shu-Sarysu	7.6	0.061	4.6
Tortkuduk		Shu-Sarysu	20.6	0.120	24.7
<b>Total</b>			<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>50.00</b>				
Block Kharassan 1, North Kharassan		Syrdarya	20.0	0.107	21.3
<b>JV SMCC LLP</b>	<b>30.00</b>				
Akdala		Shu-Sarysu	3.1	0.057	1.7
Block 4, Inkai		Shu-Sarysu	30.2	0.038	11.4
<b>Total</b>			<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>52.50</b>				
Block Kharassan 2, North Kharassan		Syrdarya	10.5	0.112	11.7
<b>Kazatomprom</b>	<b>100.00</b>				
Block 2 Inkai		Shu-Sarysu	-	-	-
Block 3 Inkai		Shu-Sarysu	-	-	-
<b>Total</b>			<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Total</b>			<b>535.3</b>	<b>0.058</b>	<b>312.3</b>
<b>Regional</b>					
Shu-Sarysu			449.2	0.055	246.7
Syrdarya			65.5	0.087	57.1
Northern Kazakhstan			20.5	0.041	8.5
<b>Total</b>			<b>535.3</b>	<b>0.058</b>	<b>312.3</b>

(1) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

## 7.5 Mineral Resource and Ore Reserve Summary Tables: Pre-Transaction Basis

With effect from 1 January 2018, the Company increased its equity interest in its joint venture with Cameco, JV Inkai LLP, from 40% to 60%, and, by the end of 31 December 2018, the Company through a various transactions intends to increase its equity interest in JV Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and its equity interest in Khorasan-U LLP, a joint venture with RosAtom and Marubeni Corporation, from approximately 34% to 50%. Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases.

Notwithstanding the above statement, SRK notes that the Registration Document and the Prospectus reports attributable Mineral Resources and Ore Reserves as at 1 July 2018 on a pre-transaction basis. Accordingly and for the purpose of ensuring direct comparison with that reported in the Registration Document and the Prospectus the following summary tables are reported below, where:

- Table 7-18 presents the SRK Audited Mineral Resource Statement (Measured and Indicated; Total Mineral Resources) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100% and Attributable Pre-Transaction basis); and
- Table 7-19 presents the SRK Audited Ore Reserve Statement (Proved and Probable) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100% and Attributable Pre-Transaction basis).

**Table 7-18: SRK Audited Mineral Resource Statement (Measured and Indicated; Total Mineral Resources) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100% and Attributable Pre-Transaction basis)<sup>(1)</sup>**

Entity/Deposit	Equity Interest (%)	Measured + Indicated Mineral Resources			Attributable Measured + Indicated			Attributable Total Mineral Resources		
		(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>									
Uvanas		-	-	-	-	-	-	-	-	-
Eastern Mynkuduk		22.6	0.030	6.8	22.6	0.030	6.8	22.6	0.030	6.8
Kanzhugan		31.1	0.038	12.0	31.1	0.038	12.0	31.1	0.038	12.0
South Moinkum (Southern part)		1.8	0.047	0.8	1.8	0.047	0.8	1.8	0.047	0.8

Entity/Deposit	Equity Interest (%)	Measured + Indicated Mineral Resources			Attributable Measured + Indicated			Attributable Total Mineral Resources		
		(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
Central Moinkum		20.5	0.058	11.9	20.5	0.058	11.9	20.5	0.058	11.9
<b>Total</b>		<b>75.9</b>	<b>0.041</b>	<b>31.4</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>	<b>75.9</b>	<b>0.041</b>	<b>31.4</b>
<b>Ortalyk LLP</b>	<b>100.00</b>									
Zhalpak		44.9	0.032	14.5	44.9	0.032	14.5	44.9	0.032	14.5
Central Mynkuduk		64.1	0.045	28.8	64.1	0.045	28.8	64.1	0.045	28.8
<b>Total</b>		<b>109.1</b>	<b>0.040</b>	<b>43.3</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>	<b>109.1</b>	<b>0.040</b>	<b>43.3</b>
<b>RU-6 LLP</b>	<b>100.00</b>									
Northern Karamurun		8.6	0.064	5.5	8.6	0.064	5.5	8.6	0.064	5.5
Southern Karamurun		12.4	0.084	10.4	12.4	0.084	10.4	12.4	0.084	10.4
<b>Total</b>		<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>									
Western Mynkuduk		54.8	0.035	19.2	35.6	0.035	12.5	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>									
Blocks 1, Inkai (a)		46.1	0.073	33.6	27.7	0.073	20.2	27.7	0.073	20.2
Blocks 1, Inkai (b)		120.9	0.052	63.4	72.5	0.052	38.0	72.5	0.052	38.0
Blocks 1, Inkai (c)		98.0	0.047	46.4	58.8	0.047	27.8	58.8	0.047	27.8
<b>Total</b>		<b>264.9</b>	<b>0.054</b>	<b>143.4</b>	<b>159.0</b>	<b>0.054</b>	<b>86.0</b>	<b>159.0</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>									
Semizbai		19.8	0.056	11.2	10.1	0.056	5.7	10.1	0.056	5.7
Irkol		40.2	0.041	16.7	20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>		<b>60.1</b>	<b>0.046</b>	<b>27.9</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>
<b>JV Akbastau JSC</b>	<b>50.00</b>									
Block 1 Budenovskoye		15.1	0.100	15.1	7.5	0.100	7.6	7.5	0.100	7.6
Block 3 Budenovskoye		27.7	0.078	21.7	13.9	0.078	10.8	13.9	0.078	10.8
Block 4 Budenovskoye		6.7	0.105	7.1	3.4	0.105	3.5	3.4	0.105	3.5
<b>Total</b>		<b>49.6</b>	<b>0.089</b>	<b>43.9</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>									
Block 2, Budenovskoye		59.3	0.081	48.1	29.6	0.081	24.1	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>									
Zarechnoye		8.0	0.060	4.8	4.0	0.060	2.4	6.1	0.056	3.4
<b>JV Katco LLP</b>	<b>49.00</b>									
Southern Moinkum (Northern part)		15.5	0.061	9.4	7.6	0.061	4.6	7.6	0.061	4.6
Tortkuduk		42.1	0.120	50.5	20.6	0.120	24.7	20.6	0.120	24.7
<b>Total</b>		<b>57.6</b>	<b>0.104</b>	<b>59.9</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>33.98</b>									
Block Kharassan 1, North Kharassan		40.0	0.107	42.6	13.6	0.107	14.5	13.6	0.107	14.5
<b>JV SMCC LLP</b>	<b>30.00</b>									
Akdala		10.2	0.057	5.8	3.1	0.057	1.7	3.1	0.057	1.7
Block 4, Inkai		100.6	0.038	38.2	30.2	0.038	11.4	30.2	0.038	11.4
<b>Total</b>		<b>110.8</b>	<b>0.040</b>	<b>44.0</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>5.00</b>									
Block Kharassan 2, North Kharassan		20.0	0.112	22.4	1.0	0.112	1.1	1.0	0.112	1.1
<b>Kazatomprom</b>	<b>100.00</b>									
Block 2 Inkai		133.8	0.031	42.0	133.8	0.031	42.0	133.8	0.031	42.0
Block 3 Inkai		172.3	0.048	83.1	172.3	0.048	83.1	172.3	0.048	83.1
<b>Total</b>		<b>306.1</b>	<b>0.041</b>	<b>125.1</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>	<b>306.1</b>	<b>0.041</b>	<b>125.1</b>
<b>Grand Total</b>		<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>	<b>871.8</b>	<b>0.050</b>	<b>435.1</b>	<b>873.9</b>	<b>0.050</b>	<b>436.1</b>
<b>Regional</b>										
Chu-Sarysu		1,088.1	0.051	558.3	801.6	0.048	386.9	801.6	0.048	386.9
Syrdarya		108.8	0.089	96.9	49.6	0.080	39.6	51.7	0.079	40.7
Northern Kazakhstan		40.2	0.041	16.7	20.5	0.041	8.5	20.5	0.041	8.5
<b>Total</b>		<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>	<b>871.8</b>	<b>0.050</b>	<b>435.1</b>	<b>873.9</b>	<b>0.050</b>	<b>436.1</b>

(1) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. The attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this table on a Pre-Transaction basis.

**Table 7-19: SRK Audited Ore Reserve Statement (Proved and Probable) as at 1 July 2018 by Mining Subsidiary and Regional sub-division (Aggregated 100% and Attributable Pre-Transaction basis)<sup>(1)</sup>**

Entity/Deposit	Equity Interest (%)	Aggregated (100%) Ore Reserves			Attributable Ore Reserves		
		(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Kazatomprom-SaUran LLP</b>	<b>100.00</b>						
Uvanas		-	-	-	-	-	-
Eastern Mynkuduk		22.6	0.030	6.8	22.6	0.030	6.8
Kanzhugan		31.1	0.038	12.0	31.1	0.038	12.0
South Moinkum (Southern part)		0.1	0.047	0.4	0.1	0.047	0.4
Central Moinkum		20.5	0.058	11.9	20.5	0.058	11.9
<b>Total</b>		<b>74.3</b>	<b>0.041</b>	<b>30.6</b>	<b>74.3</b>	<b>0.041</b>	<b>30.6</b>
<b>Ortalyk LLP</b>	<b>100.00</b>						
Zhalpak		0.4	0.045	0.2	0.4	0.045	0.2
Central Mynkuduk		64.1	0.045	28.8	64.1	0.045	28.8
<b>Total</b>		<b>64.5</b>	<b>0.045</b>	<b>29.0</b>	<b>64.5</b>	<b>0.045</b>	<b>29.0</b>
<b>RU-6 LLP</b>	<b>100.00</b>						
Northern Karamurun		8.6	0.064	5.5	8.6	0.064	5.5
Southern Karamurun		12.4	0.084	10.4	12.4	0.084	10.4
<b>Total</b>		<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>
<b>Appak LLP</b>	<b>65.00</b>						
Western Mynkuduk		54.8	0.035	19.2	35.6	0.035	12.5
<b>JV Inkai LLP</b>	<b>60.00</b>						
Blocks 1, Inkai (a)		46.0	0.073	33.5	27.6	0.073	20.1
Blocks 1, Inkai (b)		120.9	0.052	63.4	72.5	0.052	38.0
Blocks 1, Inkai (c)		98.0	0.047	46.4	58.8	0.047	27.8
<b>Total</b>		<b>264.8</b>	<b>0.054</b>	<b>143.3</b>	<b>158.9</b>	<b>0.054</b>	<b>86.0</b>
<b>Semizbai-U LLP</b>	<b>51.00</b>						
Semizbai		19.8	0.056	11.2	10.1	0.056	5.7
Irkol		40.2	0.041	16.7	20.5	0.041	8.5
<b>Total</b>		<b>60.1</b>	<b>0.046</b>	<b>27.9</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>

Entity/Deposit	Equity Interest (%)	Aggregated (100%) Ore Reserves			Attributable Ore Reserves		
		(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>JV Akbastau JSC</b>	<b>50.00</b>						
Block 1 Budenovskoye		15.1	0.100	15.1	7.5	0.100	7.6
Block 3 Budenovskoye		27.7	0.078	21.7	13.9	0.078	10.8
Block 4 Budenovskoye		6.7	0.105	7.1	3.4	0.105	3.5
<b>Total</b>		<b>49.6</b>	<b>0.089</b>	<b>43.9</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>
<b>Karatau LLP</b>	<b>50.00</b>						
Block 2, Budenovskoye		59.3	0.081	48.1	29.6	0.081	24.1
<b>JV Zarechnoye JSC</b>	<b>49.98</b>						
Zarechnoye		8.0	0.060	4.8	4.0	0.060	2.4
<b>JV Katco LLP</b>	<b>49.00</b>						
Southern Moinkum (Northern part)		15.5	0.061	9.4	7.6	0.061	4.6
Tortkuduk		42.1	0.120	50.5	20.6	0.120	24.7
<b>Total</b>		<b>57.6</b>	<b>0.104</b>	<b>59.9</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>
<b>JV Khorassan-U LLP</b>	<b>33.98</b>						
Block Kharassan 1, North Kharassan		40.0	0.107	42.6	13.6	0.107	14.5
<b>JV SMCC LLP</b>	<b>30.00</b>						
Akdala		10.2	0.057	5.8	3.1	0.057	1.7
Block 4, Inkai		100.6	0.038	38.2	30.2	0.038	11.4
<b>Total</b>		<b>110.8</b>	<b>0.040</b>	<b>44.0</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>
<b>Baiken-U LLP</b>	<b>5.00</b>						
Block Kharassan 2, North Kharassan		20.0	0.112	22.4	1.0	0.112	1.1
<b>Kazatomprom</b>	<b>100.00</b>						
Block 2 Inkai		-	-	-	-	-	-
Block 3 Inkai		-	-	-	-	-	-
<b>Total</b>		-	-	-	-	-	-
<b>Grand Total</b>		<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>519.4</b>	<b>0.057</b>	<b>294.8</b>
<b>Regional</b>							
Chu-Sarysu		735.7	0.057	418.0	449.2	0.055	246.7
Syrdarya		108.8	0.089	96.9	49.6	0.080	39.6
Northern Kazakhstan		40.2	0.041	16.7	20.5	0.041	8.5
<b>Total</b>		<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>519.4</b>	<b>0.057</b>	<b>294.8</b>

(1) As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. The attributable Mineral Resources and Ore Reserve Statements for JV Khorassan-U LLP and Baiken-U LLP is presented in this table on a Pre-Transaction basis.

## 7.6 Summary Comments

In SRK's opinion the Mineral Resource and Ore Reserve statements as included herein are reported in accordance with the terms and definitions of the JORC Code and are valid as at 1 July 2018.

The differences between these estimates and those reported by the Company in accordance with the GKZ System as at 1 January 2018 and by the Company as at 1 July 2018 are a result of:

- The removal of material which is sterilised by surface infrastructure or which, following the design process, are no longer planned to be exploited by the Company;
- Technical work undertaken by the Company during the first six months of 2018 which has enabled more of the reported Mineral Resources to be reported as Ore Reserves;
- The preparation of updated LoMps by the Company; and
- Production during the first six months of 2018.

It should, however, be noted work is ongoing by the Company and so, in addition to normal changes in Mineral Resources and Ore Reserves as a result of production, these may also change during the remainder of 2018 as this work is completed. Notably:

- The Company continues to undertake exploration at several of its operations which may enable the reporting of additional Mineral Resources to those presented in this CPR;
- The Company may undertake further technical work on several of its operations which will enable it to convert more of its currently reported Mineral Resources as Ore Reserves; and
- The Company may negotiate changes to its contracts with the GoK and so the stated Ore Reserves may change to reflect these.

SRK considers that should the Ore Reserves as presented herein be re-stated in accordance with the reporting requirements of the SEC, specifically Industry Guide 7, such Ore Reserves would not be materially different. SRK however notes that certain terms as used in this letter,

such as “resources” are prohibited when reporting in accordance with Industry Guide 7.

## 8 EXPLORATION POTENTIAL

### 8.1 Introduction

In addition to the operating mines the Company has one Development Project which is currently in pilot production and several Exploration Prospects which are the subject of ongoing exploration, primarily drilling.

All of the exploration work is undertaken by Volkovgeology JSC on behalf of the Company and the drillholes are systematically tested for uranium, thorium and potassium content, granulometry, carbonate content, mineralogy, density and equilibrium.

### 8.2 Development Projects

The Development Project in pilot production is Zhalspak which is located in the Shu-Sarysu Basin and for which SRK has reported a Measured Mineral Resource comprising 0.6Mt grading 0.045%U containing 0.3ktU and an Indicated Mineral Resource comprising 44.3Mt grading 0.032%U and 14.2ktU. The current LoMp and Ore Reserve statement reports a Proved Ore Reserve 0.4Mt grading 0.045%U and containing 0.2ktU.

The Company envisages Zhalspak will continue in pilot production for some two years and, assuming this is successful, will then be ramped up in production over two more years to attain steady state production in 2022.

#### 8.2.1 Advanced Exploration Properties and Exploration Properties

The Exploration Prospects are located in the same two geological basins which host the deposits currently being mined and are generally contiguous to existing operations. Further, the geology and geometry of the prospects is similar to those currently being exploited. Notably, they are roll front deposits with snaking geometries in plan view hosted by shallow dipping sandstones at depths of between 200m and 800m.

The approach taken to explore these prospects follows the same consistent approach. The preliminary exploration phase comprises wide spaced vertical drilling (typically along sections initially spaced 3,200m apart and then spaced 800m apart and at a spacing of 100m along sections) to locate the roll fronts. This is then followed up by an advanced exploration and evaluation phase during which much closer spaced vertical drilling is undertaken (typically on sections 400m apart and at a spacing of 50m along sections), aimed at delineating the geometry of the roll fronts and concentrations of uranium within these to the point where resource estimates can be produced. This close spaced drilling is undertaken alongside associated technical work to determine the technical and economic viability of the prospects.

The preliminary exploration phase typically takes three years and the advanced exploration another five years all of which culminates in the production of the resource estimate and a TEO Konditsii which is then used by the Company to make a decision on whether or not to proceed to pilot production.

The deposits currently being explored by the Company include:

- **Block 6 Budenovskoye and Block 7 Budenovskoye, Togusken and East Zhalspak** which are all located in the Shu-Sarysu Basin and have been explored since 2013, 2015 and 2017 respectively;
- **Akkum** which is located in the Syrdarya Basin where exploration started in 2017; and
- **Block 2 Inkai and Block 3 Inkai** which were formally part of JV Inkai LLP, and are located in the Shu-Sarysu Basin, but which were relinquished by JV Inkai LLP in H1 2018 and

simultaneously acquired by the Company which now has contracts in place to explore these deposits in its own right.

Of the above, Block 2 Inkai and Block 3 Inkai are at the most advanced stage of exploration and, as commented in Section 7, this has enabled the reporting of Mineral Resources for these two projects. Block 6 Budensovskoye and Block 7 Budenovskoye are also at an advanced stage of exploration, and it is expected that the material classified in accordance with the GKZ System as C2 will most likely be reported for the first time in 2019, while Togusken, East Zhalpak and Akkum are still in the preliminary exploration stage.

It should be noted that while the Company's exploration efforts are currently focussed on these six prospects, in addition to the above, both basins contain further potential which the company is in the process of evaluating with a view to commencing additional exploration work in due course as its existing deposits are depleted. Further, as noted earlier in this report, the Company has been granted a preferred status by the GoK in relation to uranium exploration and mining in Kazakhstan.

A brief description of each of the prospects currently being explored is presented below:

- **Block 2 Inkai and Block 3 Inkai** are located adjacent to, and are a continuation of, Block 1 Inkai. Given that the Company only recently signed a contract with the GoK to explore these this work has not yet commenced. Notwithstanding this, the Company has planned a three year exploration programme for each of these aimed at improving the confidence in these and thereby upgrading more of the currently reported Indicated Mineral Resource to the Measured Category. These are material projects which have added significantly to the Company's Mineral Resource base and the signing of a contract to explore these shows the value of the preferred status the Company has in Kazakhstan in relation to uranium exploration and extraction;
- The **Block 6 Budenovskoye and Block 7 Budenovskoye** Exploration Properties are located immediately south of Block 3 Budenovskoye 3 and Block 4 Budenovskoye. Two separate horizons are being explored, one of which, Inkuduk, is located between 600m and 700m below surface and the other, Mynkuduk, is located between 600m and 800m below surface. In total the company has budgeted expenditure of some US\$80m over the next five years (inclusive of 2018) to advance these to the point that a decision could be made on commencing pilot production;
- **Togusken** is located to the northwest of Uvanas and the mineralisation occurs at a relatively shallow level (150m to 200m below surface) and within three layers all of which are being explored. To date some 300 holes have been completed and the preliminary exploration phase is drawing to a close. A report detailing the results of this is being compiled and is due for completion at the end of 2018 at which point a decision will be made on whether or not this should be progressed to the advanced stage of exploration;
- **East Zhalpak** is located to the south of Zhalpak and north of Akdala, the mineralisation is also relatively shallow, some 200m below surface, but is at an earlier stage of exploration than Togusken. Some 180 holes have been completed to date and a similar number are planned and the preliminary exploration report is due for completion at the end of 2019; and
- **Akkum** is the least explored of the active prospects to date. Drilling only commenced in September 2017 and so the preliminary exploration phase is not due to be completed until towards the end of 2020. This prospect is located south of Karamurun and north of Kharassan and the mineralised horizon is some 500m below surface.



### 8.3 Summary Conclusions

In summary, the Company has an active exploration and development programme in place the objective of which is to delineate additional resources and reserves on an ongoing basis and so replace currently reported estimates of such as these are depleted and has a significant exploration budget assigned to facilitate this which is presented later in this report.

SRK has reviewed the exploration prospects currently being explored and is confident that these warrant the exploration planned and that it should be expected that Mineral Resources, and potentially Ore Reserves, will be reported for these in due course on completion of the planned work.

## 9 HYDROGEOLOGY AND GEOCHEMISTRY

### 9.1 Introduction

The following section includes discussion and comment on the hydrogeology and geochemistry of the Mineral Assets, these being key to the in-situ process and therefore the assessment of both technical feasibility and economic viability of the deposits for which Mineral Resources and Ore Reserves are reported herein.

### 9.2 Hydrogeology

All of the deposits reported herein are hosted by permeable sand sediments within deep confined aquifers. The high hydraulic conductivity (and transmissivity) of the ore bearing sands and large available drawdowns allows successful recirculation of lixiviant within orebodies between the injection and recovery wells.

From a hydrogeological viewpoint the deposits can be broadly grouped as follows:

- **Budenovskoye, Inkai, Mynkyduk, Akdala and Zhalpak** are located within an Upper Cretaceous water-bearing complex of the Shu-Sarysu Basin and the horizons containing the mineralisation are located within three major aquifers: Zhalpaksky (Campanian and Maastrichtian), Inkuduksky (Upper Turonian and Santonian), and Mynkuduksky (Lower Turonian);
- **Uvanas, Tortkuduk, Moinkum and Kanzhugan** are also located within the Shu-Sarysu Basin but are associated with a Paleogene (Mid and Lower Eocene) water-bearing complex and hosted within three different major aquifers – Ikansky, Uyuksky, and Kanzhugansky;
- **Irkol, Karamurun, Kharassan and Zarechnoye** are located within an Upper Cretaceous water-bearing complex of the Syrdarya Basin and the horizons containing the mineralisation are located within two major aquifers: Zhalpaksky (Campanian/Maastrichtian) and Inkuduksky (Upper Turonian/Santonian) (albeit that these aquifers are subdivided into five aquifer sub-horizons); and
- **Semizbai** in Northern Kazakhstan is located within the sand sediments of an Upper Jurassic/Lower Cretaceous complex.

The Upper Cretaceous water-bearing complex within both the Shu-Sarysu Basin and the Syrdarya Basin comprises a thick bedded stratum containing several hydraulically connected aquifers. The extent of connection between aquifers varies from place to place depending on the presence, continuity, extent and thickness of local aquitards. The upper aquiclude of 100m to 150m thickness reliably separates the Upper Cretaceous ore hosting rocks and the Middle Eocene aquifers located above the ore zone. Cenomanian argillaceous siltstones up to 30m thickness form a lower aquitard although a saturated sand interlayer has been observed in some areas within this unit in some exploration boreholes.

The Mid and Lower Eocene water-bearing complex contains three aquifers, Ikansky, Uyuksky, and Kanzhugansky. The Uyuksky aquifer, which is situated between the other two, is hydraulically disconnected with the Ikansky aquifer which is above but has hydraulic connection with the Kanzhugansky aquifer below. The upper aquitard of this water-bearing complex comprises Upper Eocene marine clays developed regionally while the rocks underlying the Kanzhugansky aquifer are mostly confined groundwater horizons which are hydraulically disconnected with Kanzhugansky aquifer but have hydraulic connection with fractured bedrock aquifers within the Palaeozoic basement.

The hydrogeological conditions of the uranium deposits have been adequately studied through field investigations and based on the results from numerous ISR pilot tests, pumping tests (both with multiple monitoring wells and from single wells), water level measurements, groundwater sampling, and full-scale mining of uranium since 1997.

### 9.2.1 ISR Mining Analysis

#### *Favourable Factors*

ISR mining with sulphuric acid is ideally suited to the Mineral Assets deposits due to their hydrogeological characteristics. These characteristics include:

- The amenability of the uranium minerals to leaching solutions and their solubility in sulphuric acid. Uraninite, uranophane and coffinite are the most common minerals in the Cretaceous deposits along with variable amount of uranyl phosphate minerals. In the Tertiary deposits uranium-bearing clays, carnotite, tyauamunite and uranyl phosphate minerals are more common. The individual grains are exposed or free with only a minor portion occurring as inclusions in other minerals (typically within illite, kaolinite and calcite). The grain size of the minerals varies but most are less than 1mm in diameter making dissolution likely within the context of ISR passive leaching;
- The good quality of the background groundwater which has typically low Total Dissolved Solids (“TDS”) of (less than 2g/l) with some exceptions such as Zhalpaksky (up to 7.5g/l) and Kanzhugansky (5g/l) and Mynkuduksky (up to 6.2g/l);
- The moderate to high permeability (hydraulic conductivity 1.1m/d to 40.9m/d), and transmissivity (7m<sup>2</sup>/d to 3,900m<sup>2</sup>/d) of the host rocks and abundance of groundwater (specific capacity is 0.1l/s to 18l/s);
- The moderate to high well injectability with average observed injection well rates between 2015 and H1 2018 varying from 0.8m<sup>3</sup>/hr to 4.8m<sup>3</sup>/hr;
- The moderate to high ability to pump PLS with achieved averaged extraction well rates between 2015 and H1 2018 varying from 3.4m<sup>3</sup>/hr to 14.7m<sup>3</sup>/hr;
- The high groundwater pressure within the aquifer sub-horizons (up 43m above ground surface) enabling the implementation of various methods of solution extraction (natural flow and natural flow enhanced by pumping), especially at the beginning of the mining;
- The confined conditions with diffusivity values varying from 1.7x10<sup>4</sup>m<sup>2</sup>/d to 2.9x10<sup>7</sup>m<sup>2</sup>/d;
- The high groundwater temperature of the Upper Cretaceous (to 45°C) and Paleogene (up to 30°C) water-bearing complexes that host the uranium mineralization;
- The homogeneity of stratum, i.e. equal interrelation of permeability and transmissivity of ore and barren interlayer for majority of deposits;
- The low natural groundwater velocity (from 4m/y to 144m/y; from 4m/y to 18m/y for the majority of deposits), allowing acid solutions to remain localised in the stratum within the deposit and limiting the amount and extent of spillage along the groundwater flow path

beyond its boundary;

- The absence of hydraulic connection between the Upper Cretaceous deposits (Zhalpak, Akdala, Mynkuduk, Inkai, Budenovskoye, Irkol, Karamurun, Kharassan, and Zarechnoye) and the overlying Eocene and Pliocene – Quaternary water-bearing complexes which removes the potential for contamination by leach solutions;
- The absence of hydraulic connection between the Eocene deposits (Uvanas, Tortkuduk, Moinkum, and Kanzhugan deposits) and the above ore Pliocene – Quaternary water-bearing complexes which removes the potential for contamination by leach solutions; and
- The presence of a regional aquitard below the deposits, specifically:
  - Palaeozoic siltstone and low permeability sandstone for the Upper Cretaceous ore hosting aquifers; and
  - A 10m to 18m thick regional aquitard below the Kanzhugansky ore hosting aquifer.

### **Complicating Factors**

Notwithstanding the above, there are also several natural factors that complicate ISR process. These factors include:

- The significant depth of the deposits and necessity to drill/install deep injection/extraction wells, most notably at Budenovskoye and the deposits within the Syrdarya Basin generally;
- The presence of carbonate minerals in the uranium bearing sandstones (which can contain up to 6% calcite) and so results in increased acid consumption, notably, for example, at Zarechnoye. In general the Tertiary deposits contain less calcite than the Cretaceous deposits;
- The relatively high clay content of the Tertiary deposits and potential for preg-robbing and the need therefore to use higher acid concentrations;
- The potential for higher organic carbon layers within the Tertiary sandstone that hosts the eastern group of operations which further increases the potential for preg-robbing and so requiring even higher acid concentrations;
- The absence of aquitards immediately above and below the orebodies and, in some cases, the presence of aquifers above the orebody with high hydraulic pressures, notably Zarechnoye;
- The presence of ore bodies in several aquifers and presence of so called “hanging ores”, partly separated between each other by aquitards;
- The presence of artesian high-pressure conditions with static levels above or slightly below ground surface requiring maintenance of the pressure in the injection well at levels of 6Mpa or more and significantly complicating maintenance and repairing of the injection wells;
- The presence of two above-ore water-bearing complexes (Pliocene-Quaternary and Middle Eocene), requiring their hydro isolation during installation of the technological wells (all deposits within the Upper Cretaceous water-bearing complex);
- The absence of the regionally consistent aquiclude separating the Upper Cretaceous water-bearing complex from the Paleocene complex (the thickness of the separating clays and siltstone varies up to 8m in some deposits) and possible impact to Paleocene fresh water aquifers used for the irrigation of agricultural lands (some deposits);
- The presence of sands - “windows” facies replacement in some mineralised zones of impermeable rocks (aquitard) allowing hydraulic connection between production sub-horizons and upper overlying – or lower underlying sub-horizons. Such conditions can

favour leakage of pregnant solutions into these sub-horizons;

- The presence of sub-horizons above or below ore horizons with transmissivity higher than the production horizon. This complicates ISR operation in some of the deposits; and
- The presence of highly permeable coarse sand-gravel sediments immediately below the orebody (Eastern Mynkuduk) which allows PLS to move by a gravity to below the orebody where it is diluted by groundwater.

These factors complicate the ISR mining process and increase costs but do not prevent uranium recovery. Notably the Company is aware of all of these issues and plans its operations accordingly.

### 9.3 Geochemistry

#### 9.3.1 pH and total dissolved solids concentrations

The pH and TDS of the groundwater are the two fundamental physiochemical properties of the groundwater from an ISR perspective. Figure 9-1 presents a graph of pH against TDS for the different geological basins.

The pH ranges from pH7 to pH8 within the Syrdarya Basin, and a similar range is shown for the Semizbai deposit in Northern Kazakhstan. For the Shu-Sarysu Basin the pH range is slightly larger, extending from pH7 up to pH8.8. The pH range reflects circum-neutral conditions and is likely due to the groundwater being in dynamic equilibrium with carbonate minerals phases within the aquifers.

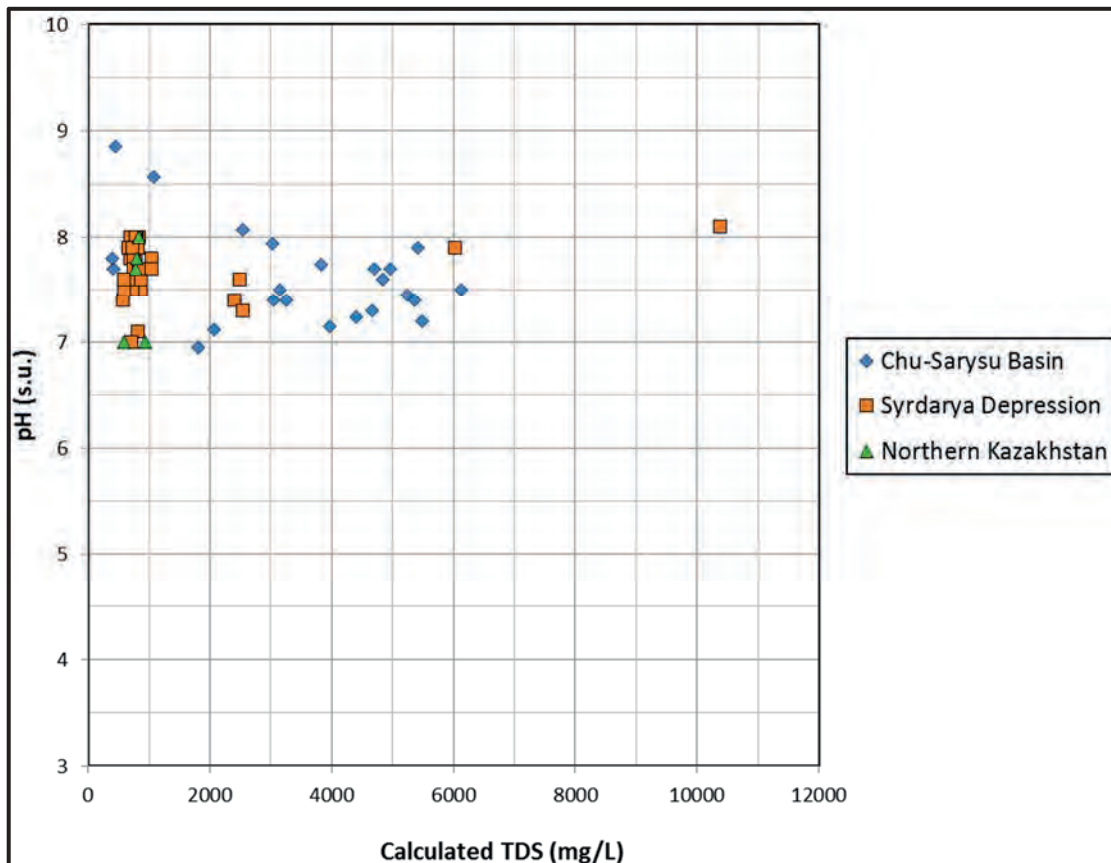
The TDS range of groundwater in the Syrdarya Basin is typically less than 1,000mg/l, although there are several higher TDS concentrations reported for the Zarechnoye deposit (up to over 10,000mg/l in the P<sup>o</sup> unit). TDS concentrations of the Shu-Sarysu Basin have a larger range up to 6,000mg/l, reflecting a generally higher salinity within this basin. Lower salinities are associated with Tortkuduk and Uvanas deposits. Whilst the higher TDS concentrations are typically reported for the Western Mynkuduk and Moinkum aquifers.

#### 9.3.2 pH and alkalinity

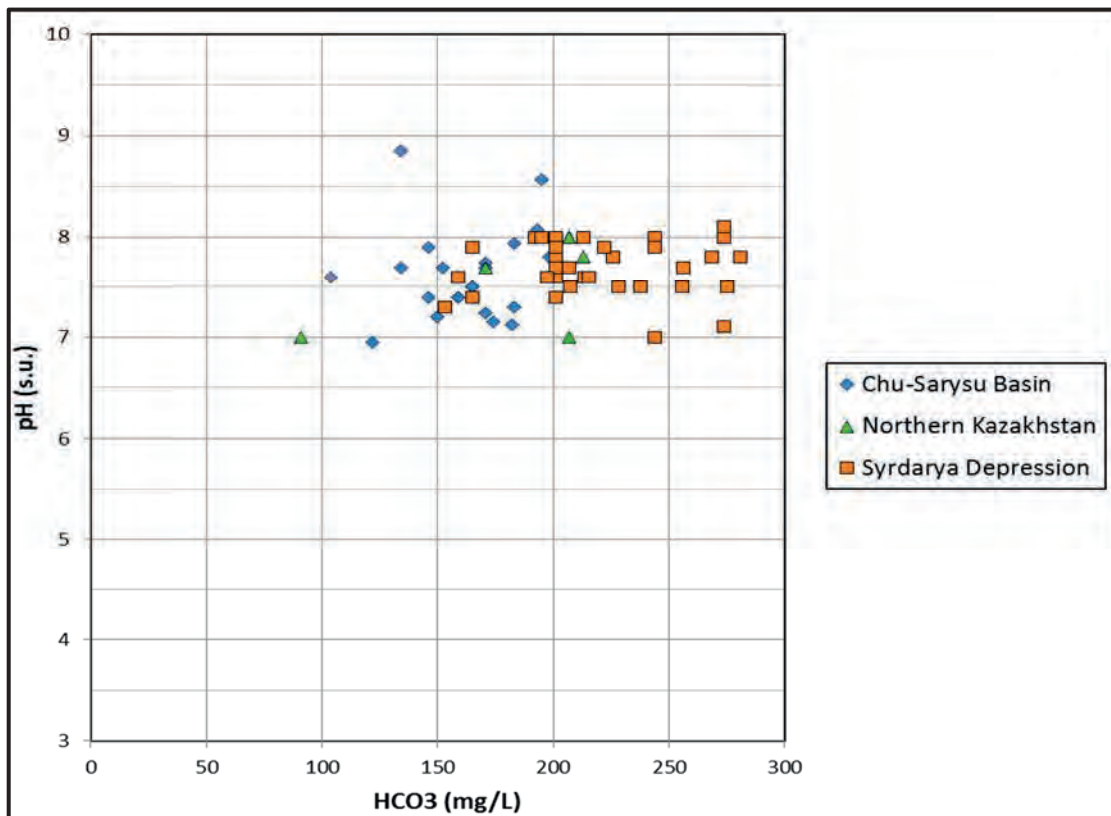
The groundwaters all contain moderate alkalinity concentrations, as shown in Figure 9-2 (a graph of pH against bicarbonate (HCO<sub>3</sub><sup>-</sup>) concentration), with bicarbonate concentrations ranging from around 100mg/l to 280mg/l. The bicarbonate concentrations of the Shu-Sarysu Basin (ranging from 100mg/l to 200mg/l) is generally lower than that of the Syrdarya Basin (ranging from around 150mg/l to 280mg/l).

The natural waters resident within the aquifers therefore contains moderate concentrations of alkalinity to buffer acidity; this bicarbonate alkalinity contributes to acid consumption during operations, and also acts to attenuate acidity migrating within the aquifer, either for PLS losses during operations or as natural attenuation during the post-closure period.

**Figure 9-1: pH against TDS, by basin**



**Figure 9-2: pH against bicarbonate (HCO<sub>3</sub><sup>-</sup>) concentration, by basin**





### 9.3.3 Major ion composition

The major ion composition of the groundwaters are typically presented within Piper plots that allow visual presentation of the proportional concentration of major ions within the water samples. The Piper plots provide information of the hydrochemical facies, indicating the major ion contributions and the minerals/materials that have been contacted and the geochemical interactions of the groundwaters.

The Piper plot shown in Figure 9-3 presents the major ion data for the groundwaters by regional basin. The Piper plots show that with respect to cations, the majority of the groundwaters are sodium dominated, typically with around 60% to 70% sodium cation charge contribution, although some of the Syrdarya Depression groundwaters contain greater than 80% to 90% sodium by charge.

The different basins show greater differences with respect to anion contribution, where the Shu-Sarysu Basin waters are chloride dominated, whilst the Syrdarya Basin and Semizbai/Northern Kazakhstan groundwaters have similar contributions from chloride, alkalinity and sulphate. Overall, the waters of the Shu-Sarysu Basin would be classed as sodium-chloride type waters, whilst the Syrdarya Basin and Semizbai/Northern Kazakhstan would be classed as sodium-bicarbonate-chloride-sulphate type.

**Figure 9-3: Piper plot of major ions, by regional basin**

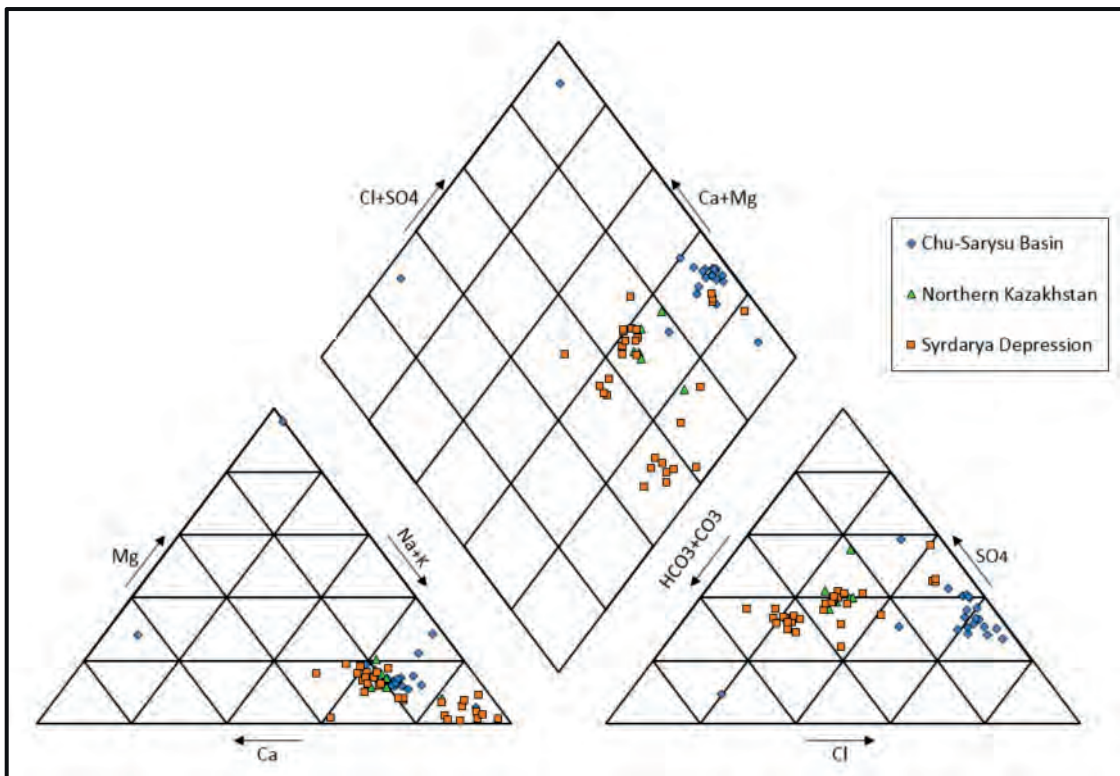


Table 9-1 presents a summary of the hydrogeological characteristics of the mineral deposits and Table 9-2, Table 9-3, Table 9-4 summarise the hydrogeological data collected during the exploration of each deposit.

**Table 9-1: Summary of Hydrogeological Characteristics**

Uranium Deposit		Orebody Water-Bearing Horizons			
		Water-Bearing Complex	Aquifers		Orebody Horizons
Shu-Sarysu Basin	Block 1 Budenovskoye		Upper Cretaceous	Inkuduksky	
	Block 2 Budenovskoye	Inkuduksky		Upper Turonian / Santonian	2
	Block 3 Budenovskoye	Inkuduksky		Upper Turonian / Santonian	2
	Block 4 Budenovskoye	Mynkuduksky		Lower Turonian	1

Uranium Deposit		Orebody Water-Bearing Horizons			
		Water-Bearing Complex	Aquifers	Orebody Horizons	
Syrdarya Basin	Block 1, Inkai	Paleogene	Inkuduksky and Mynkuduksky	Turonian / Santonian	2
	Block 2, Inkai		Inkuduksky and Mynkuduksky	Turonian / Santonian	2
	Block 3, Inkai		Inkuduksky and Mynkuduksky	Turonian / Santonian	3
	Block 4, Inkai		Inkuduksky and Mynkuduksky	Turonian / Santonian	2
	Western Mynkuduk		Inkuduksky and Mynkuduksky	Turonian / Santonian	2
	Central Mynkuduk		Mynkuduksky	Lower Turonian	1
	Eastern Mynkuduk		Mynkuduksky	Lower Turonian	2
	Akdala		Zhalpaksky, Mynkuduksky, Intymaksky (Eocene orebody 7)	Campanian, Low Turonian, Eocene	3
	Zhalpak		Zhalpaksky	Campanian / Maastrichtian	1
	Uvanas		Uvanassky (Kanzhugansky)	Middle Eocene	2
	Tortkuduk		Ikansky and Uyuksky	Middle / Lower Eocene	2
	SouthTortkuduk				
	Southern Moinkum (Northern Part)		Ikansky, Uyuksky, and Kanzhugansky	Middle / Lower Eocene	2
	Central Moinkum				
	South Moinkum (Southern Part)				
	Kanzhugan		Uyuksky and Kanzhugansky	Lower Eocene	2
	Syrdarya Basin		Irkol	Upper Cretaceous	Irkol'sky (Inkuduksky)
Northern Karamurun		Zhalpaksky	Campanian / Maastrichtian		2
Southern Karamurun		Zhalpaksky	Campanian / Maastrichtian		2
Block Kharassan 1, North Kharassan		Kharassansky (Zhalpaksky)	Upper Santonian / Campanian / Maastrichtian		3
Block Kharassan 2, North Kharassan		Kharassansky (Zhalpaksky)	Upper Santonian / Campanian / Maastrichtian		3
Zarechnoye		Inkuduksky	Upper Turonian / Santonian		5
Northern Kazakhstan – Semizbai		Upper Jurassic / Lower Cretaceous	Upper and Lower Semizbaisky		2

**Table 9-2: Summary of Hydrogeological Exploration Data**

Uranium Deposit		Exploration Data							
		Depth to Top of Aquifer		Transmissivity		Hydraulic Conductivity		Diffusivity	
		From (mbgl)	To (mbgl)	Min (m <sup>2</sup> /d)	Max (m <sup>2</sup> /d)	Min (m/d)	Max (m/d)	Min (m <sup>2</sup> /d)	Max (m <sup>2</sup> /d)
Shu-Sarysu Basin	Block 1 Budenovskoye	510	780	178	1,257	1.3	8.8	1.80E+06	1.10E+07
	Block 2 Budenovskoye	550	600	520	551	5.5	5.8	3.50E+05	2.30E+06
	Block 3 Budenovskoye	620	720	178	1,257	1.5	8.7	1.10E+05	1.10E+07
	Block 4 Budenovskoye	540	645	196	657	6.0	11.7	4.10E+06	7.00E+06
	Block 1, Inkai	250	380	623	3,899	9.2	16.1	6.30E+05	2.90E+07
	Block 2, Inkai	300	320	447	1,662	6.1	21.8	ND	ND
	Block 3, Inkai	240	320	48	1,886	2.8	15.5	2.50E+05	1.60E+06
	Block 4, Inkai	300	440	71	832	6.0	16	7.50E+05	1.40E+07
	Western Mynkuduk	210	220	46	1,542	1.6	40.9	1.60E+06	5.20E+06
	Central Mynkuduk	80	360	147	876	2.2	18.2	2.80E+07	4.60E+06
	Eastern Mynkuduk	180	260	90	860	3.7	20.2	ND	ND
	Akdala	63	121	116	286	3.9	7.9	1.00E+06	2.80E+07
	Zhalpak	112	118	193		3.4	14.3	4.20E+06	
	Uvanas	85	115	70	104	6.0	10.5	ND	ND
	Tortkuduk	350	420	8	276	1.1	7.4	1.70E+04	1.20E+07
	SouthTortkuduk								
	Southern Moinkum (Northern Part)	270	480	73	275	1.3	12	ND	ND
Central Moinkum									
South Moinkum (Southern Part)	355	460	73	275	2.2	12	5.00E+04	4.90E+05	
Kanzhugan	170	300	120	430	3.4	12.2	1.00E+06	2.40E+06	
Syrdarya Basin	Irkol	350	500	541	1,317	6.1	14	7.00E+05	6.80E+06
	Northern Karamurun								
	Southern Karamurun	379	635	335	359	8.9	11	4.60E+05	4.40E+06
	Block Kharassan 1, North Kharassan	540	753	253	267	2.6	7.2	4.40E+05	6.60E+06
	Block Kharassan 2, North Kharassan	545	685	250	350	4.0	8	1.00E+06	9.50E+06
Zarechnoye	290	560	270	542	7.3	20.1	3.00E+05	6.00E+06	
Northern Kazakhstan – Semizbai		6	82	7	570	101.3.2	17.2	ND	ND

**Table 9-3: Summary of Hydrogeological Exploration Data (continued)**

Uranium Deposit		Exploration Data						
		Depth to Groundwater		Hydraulic Head		Specific Capacity		Ground Water velocity (m/year)
		From (mbgl)	To (mbgl)	From (m)	To (m)	Min (l/s/m)	Max (l/s/m)	
Shu-Sarysu Basin	Block 1 Budenovskoye	(26.00)	(43.00)	480	450	0.25	0.73	
	Block 2 Budenovskoye	(26.00)	(43.00)	480	580	0.25	0.73	
	Block 3 Budenovskoye	(26.00)	(43.00)	480	450	0.25	0.73	
	Block 4 Budenovskoye	(18.00)	(33.00)	480	580	0.17	0.73	
	Block 1, Inkai	2.00	30.00	250	330	0.69	2.34	4.0
	Block 2, Inkai	18.00	20.00	280	300	0.70	1.75	4.0
	Block 3, Inkai	64.00	(14.00)	180	380	0.36	0.86	
	Block 4, Inkai	(24.00)	(30.00)	325	500	0.08	0.45	
	Western Mynkuduk	50.00	15.00	90	295	0.20	6.20	
	Central Mynkuduk	70.00	64.00	125	310	0.80	1.46	
	Eastern Mynkuduk	75.00	-	100	190	0.32	6.12	7.5
	Akdala	65.00	7.00	9	100	0.38	1.40	
	Zhalpak	55.00	58.00	55	58	0.28	1.20	
	Uvanas	55.00	16.00	31	53	0.30	0.70	4.4
	Tortkuduk							
	SouthTortkuduk	36.00	99.00	280	330	0.05	0.50	17.6
	Southern Moinkum (Northern Part)	near ground surface		270	480	0.01	0.59	44-144
Central Moinkum	10.00	54.00	330	470	0.12	0.71	39-40	

Uranium Deposit		Depth to Groundwater		Hydraulic Head		Exploration Data		Ground Water velocity (m/year)
		From (mbgl)	To (mbgl)	From (m)	To (m)	Specific Capacity Min (l/s/m)	Specific Capacity Max (l/s/m)	
Syrdarya Basin	South Moinkum (Southern Part)							
	Kanzhugan	117.00	(32.00)	50	250	1.40	6.00	24.1-34.4
	Irkol	15.00	1.00	340	490	0.40	1.30	
	Northern Karamurun	7.00	(1.50)	374	632	0.50	0.64	24.1-40.0
	Southern Karamurun							
	Block Kharassan 1, North Kharassan	4.00	(2.00)	580	630	0.29	0.52	
	Block Kharassan 2, North Kharassan	4.00	(3.00)	545	685	0.70	1.80	
Zarechnoye	(10.00)	(15.00)	300	615	0.10	3.30	4.0-12.0	
Northern Kazakhstan – Semizbai		16.00	12.40	4	137	0.30	18.10	

**Table 9-4: Summary of Hydrogeological Exploration Data (continued)**

Uranium Deposit		Exploration Data		
		Total Dissolved Solids		Temperature
		Min (g/l)	Max (g/l)	(°C)
Shu-Sarysu Basin	Block 1 Budenovskoye	1.8	3.9	
	Block 2 Budenovskoye	1.8	2.0	
	Block 3 Budenovskoye	1.8	3.9	35
	Block 4 Budenovskoye	1.7	4.0	
	Block 1, Inkai	1.9	3.6	27.0 to 29.5
	Block 2, Inkai	1.0	3.9	
	Block 3, Inkai	1.2	2.1	27.0 to 29.5
	Block 4, Inkai	3.3	5.4	
	Western Mynkuduk	1.8	6.2	
	Central Mynkuduk	3.2	6.0	
	Eastern Mynkuduk	5.0	6.0	15.0
	Akdala	4.3	5.6	
	Zhalpak	7.3	7.5	
	Uvanas	2.8	5.1	17.0
	Tortkuduk	0.5	0.7	25.0 to 28.0
	SouthTortkuduk			
	Southern Moinkum (Northern Part)	0.4	0.7	21.0 to 30.0
	Central Moinkum	0.3	1.0	22.0 to 29.0
	South Moinkum (Southern Part)			
	Kanzhugan	0.5	1.0	16.0 to 20.0
Irkol	0.6	0.9		
Northern Karamurun	0.7	0.9	38.0 to 45.0	
Southern Karamurun				
Block Kharassan 1, North Kharassan	0.6	0.8	15.0 to 36.0	
Block Kharassan 2, North Kharassan	0.6	0.9	43.0 to 45.0	
Zarechnoye	0.4	0.6	30.0 to 39.0	
Northern Kazakhstan – Semizbai		1.0	4.7	

## 10 IN-SITU URANIUM EXTRACTION AND RECOVERY

### 10.1 Introduction

The following section includes discussion and comment on the in-situ leach uranium extraction and uranium recovery process through to production of the final product undertaken at the Company's mining and processing operations as well as third party refineries.

### 10.2 Mining and Processing Operations

As already mentioned in this report, In Situ Leach Recovery ("ISR"), also known as In Situ Leaching ("ISL") or solution mining, involves leaving the ore where it is in the ground, and recovering the minerals from it by dissolving them and pumping the pregnant solution to the surface where the minerals can be recovered. The orebody needs to be permeable to the liquids used, and located so that they do not contaminate groundwater away from the orebody. Uranium is largely insoluble in the native groundwater which is not potable due to naturally high concentrations of radionuclides and dissolved solids. Using a grid of injection and extraction wells, a mining solution containing an oxidant (sulphuric acid) is circulated through the orebody to dissolve the uranium. The uranium-bearing solution (generally containing less than 0.1% uranium) is then pumped to a surface processing facility where the uranium is removed using ion exchange resin/polymer. The water is re-oxidised and re-injected into the orebody.

The uranium is stripped from the resin/polymer, precipitated with hydrogen peroxide and then dried to form the final product, U<sub>3</sub>O<sub>8</sub>. This process is repeated to remove as much uranium as

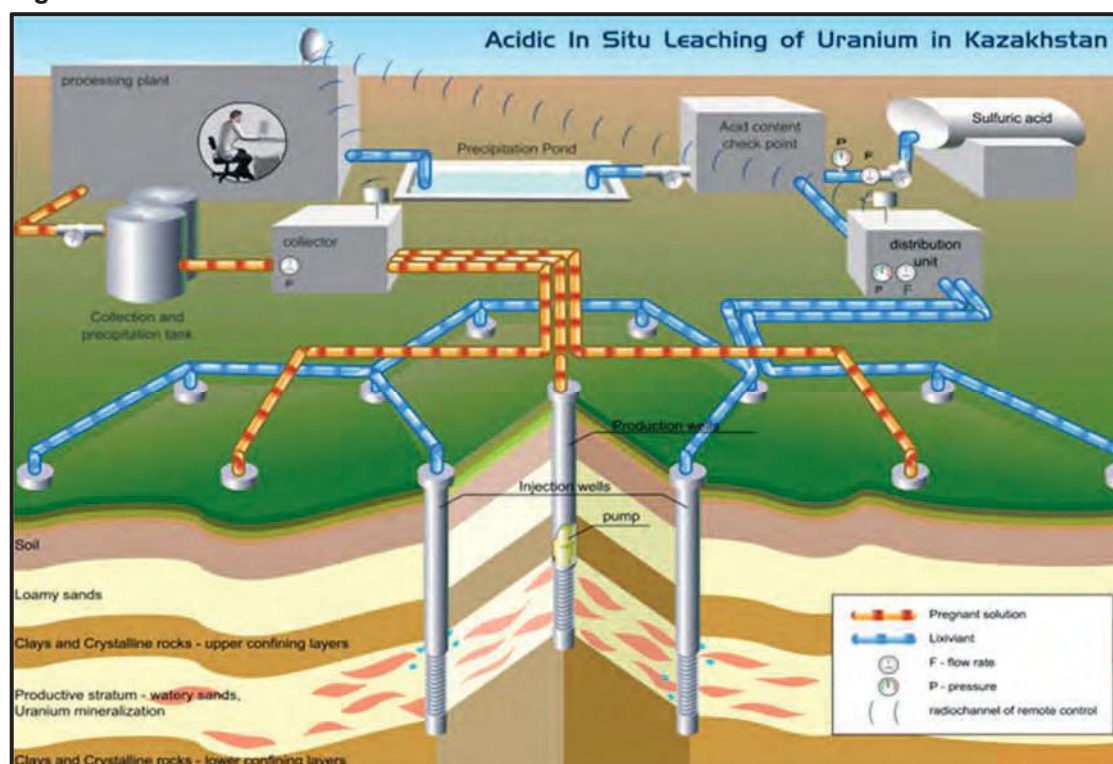
is economically feasible.

This is a closed loop recirculation system since the water from the production well is reintroduced in the injection wells. Slightly less water is injected than is pumped to the surface to ensure that fluids are confined to the ore zones intended for extraction. Monitor wells are installed above, below and around the target zones to check that mining fluids do not move outside a permitted mining area. ISR uranium production in Kazakhstan requires large quantities of sulphuric acid, due to relatively high levels of carbonate in the orebodies. The supply of sulphuric acid was a serious constraint on production between 2007 and 2010. In 2009 the Company with other mining companies and two acid producers, KazZinc JSC and Kazakhmys, set up a coordinating council to regulate acid supplies and infrastructure.

The following summarises the steps for uranium leaching:

- Leaching: The first step is to feed the leaching solution (1% to 2% sulphuric acid solution) through the injection wells (blue-coloured pipelines) into the ore-bearing horizon;
- Through a number of chemical reactions, uranium migrates into the solution;
- A PLS with uranium content of 20mg/l to 175mg/l (historical range between 2015 and H1 2018) is then pumped to the surface through production wells where Uranium-bearing pregnant solution moves through the production wells (red-coloured pipelines) using submersible pumps; and
- The PLS is transferred to the collector unit, where its volume is measured and the solution is pumped to sand ponds for precipitation and subsequently transported to the pregnant solution processing area.

**Figure 10-1: ISR of Uranium**



### 10.2.1 Wellfield design

The design of ISR wellfields varies greatly depending on the local conditions such as permeability, sand thickness, deposit type, ore grade and distribution. Whatever the type of pattern used, there is a mixture of injection wells, to introduce the leach solution to the orebody,

and extraction wells with submersible pumps used to deliver pregnant solution to the processing plant. Wells are typical of normal water bores. Where large sheet-like deposits exist, such as in Kazakhstan, rows of injection wells interleaved with rows of extraction wells can be used cost effectively (Figure 10-2).

This pattern has a relatively low installation cost and is simple to install, however, the time taken to recover the uranium under leach can be extended due to the large distances between the well types (typically 50m to 60m). Typically, in channels narrower than 60m closer spaced patterns were originally employed to recover the uranium at a faster rate (per unit area) than the alternating line patterns and the most common type of pattern employed originally at the Mineral Assets was the hexagonal configuration (Figure 10-2). Over time however the predominant hexagonal configurations were replaced by row cells as these are deemed to be more efficient. The majority of the deposits are currently mined by row configuration wellfields, however some of them continue ISR recovery using the hexagonal configuration. Distances between wells are dictated by narrow and long orebody configurations and determined by geological models and previous site ISR experience. The distances between the wells generally varies as follows:

- **Row configuration:** between rows of the wells (40m to 50m), between pumping wells (30m to 35m) and between injection wells (20m to 25m); and
- **Hexagonal configuration:** between extraction and injection wells (radius of hexagon) from 35m to 45m with the majority at 40m.

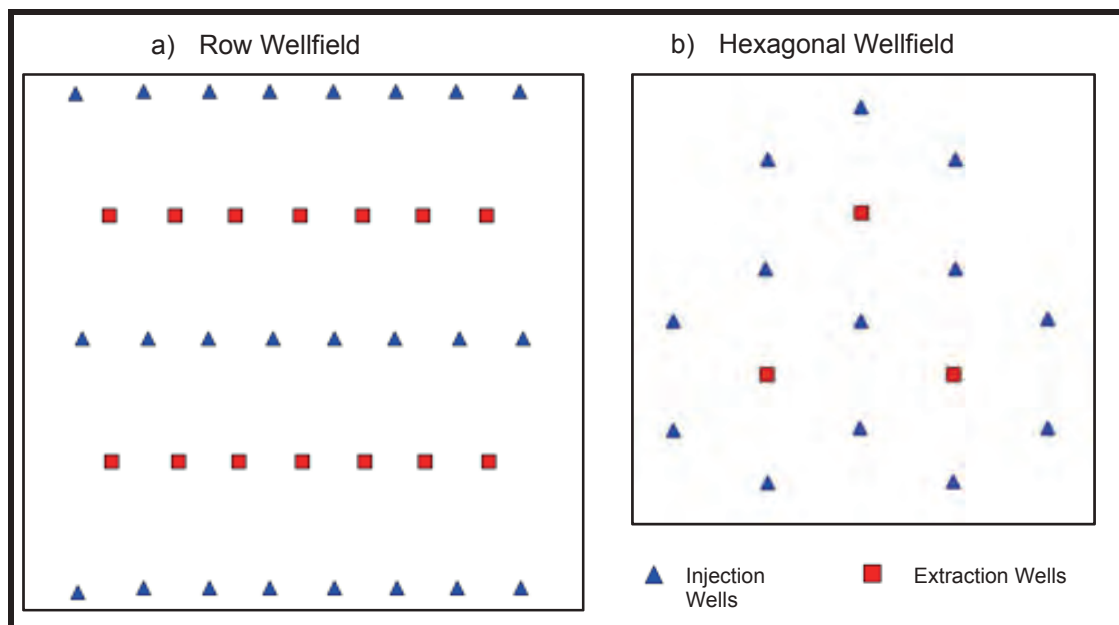
The tighter patterns are generally used effectively in narrower palaeochannel type deposits where flexibility in the installation is needed. The installed costs of these wellfields are generally higher, so to ensure maximum recovery of the uranium. The following secondary measures are also implemented: flow reversals – converting injection wells to extraction wells where required; and infill wells – to increase recovery from higher grade portions of the wellfield.

Whichever pattern type is used, the wellfields (usually a production unit that feeds to a single header house) are progressively established over the orebody as uranium is depleted. A series of monitor wells are situated around each mineralised zone to detect any movement of mining fluids outside the mining area. The wells are cased to ensure that liquors only flow to and from the ore zone and do not affect any overlying aquifers (Figure 10-3). The production life of an individual ISR well pattern is typically one to three years and a significant portion of the uranium is recovered during the first six months of the operation.

The progressive flow through the aquifer also traps clay and silt in the permeable sediments. These can be dislodged to some extent by using higher pressure injection or by reversing the flow between injection and production wells, however, the flow capacity of injection wells is generally always on a downward trend through the life of the well.



**Figure 10-2: Typical Wellfield Layouts as implement at the Mineral Assets**



**Figure 10-3: Central Moinkum Wellfield, SaUran LLP**

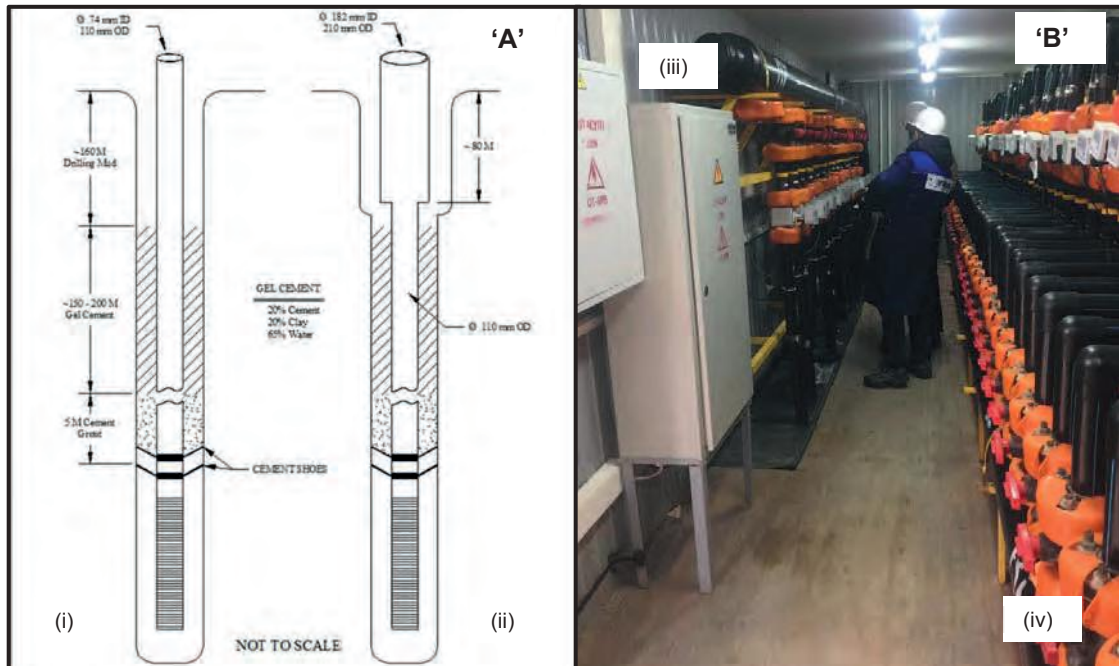


**10.2.2 ISR well construction**

The typical construction of an ISR well is shown in Figure 10-4. The wells are controlled within each leach field in a control point, often housed in a trailer or trailer house (Figure 10-4).

The depths of the wells varies from about 200m (Akdala) to 720m (Block 3 Budenovskoye). The screen interval usually does not exceed 10m to 12m. If the orebody thickness exceeds 12m in the central part of a roll, or the wings of a roll are mined, the two wells with separate screens are used.

**Figure 10-4: 'A' Construction of ISR Wells: i) Injection and Monitoring Wells; ii) Pumping (Extraction) Well and 'B' typical control point for wellfield with injection and monitoring wells (iii) ad extraction wells (iv) fitted with sampling ports**



### 10.2.3 Uranium Recovery

The submersible pumps (Figure 10-5) initially extract native groundwater from the host aquifer prior to the addition of uranium complexing reagents (acid or alkaline) and an oxidant (hydrogen peroxide or oxygen) before injection into the wellfield. The leach liquors pass through the ore to oxidise and dissolve the uranium minerals in situ. Depending on the type of leaching environment used the uranium will be complexed as either a uranyl sulphate, predominantly  $\text{UO}_2(\text{SO}_4)_3^{4-}$ , in acid leach conditions or a uranyl carbonate, predominantly  $\text{UO}_2(\text{CO}_3)_3^{4-}$  in a carbonate leach system. This can then be precipitated with an alkali, e.g. as sodium or magnesium diuranate. In either case the PLS from the production wells is pumped to the treatment plant where the uranium is recovered in a resin/polymer ion exchange ("IX").

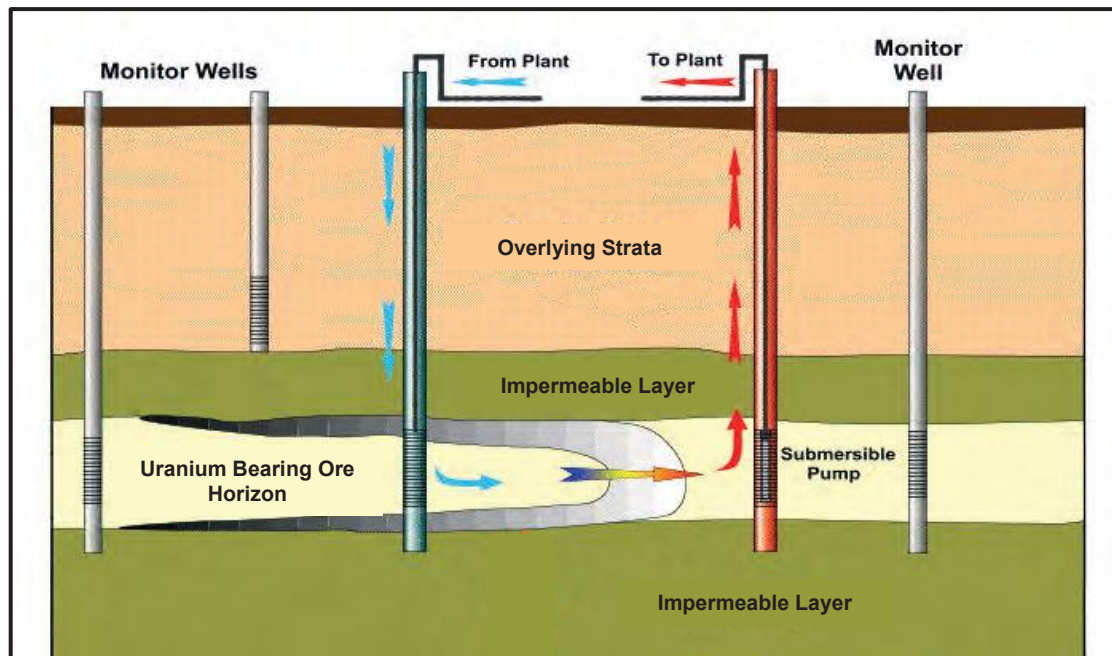
IX is used in the vast majority of ISR operations in Kazakhstan. In terms of operating and capital costs IX is the preferred processing option. In situations where the groundwater has a high concentration of ions that may compete with the uranyl complexes for active resin/polymer sites, such as chloride and nitrates, the use of IX becomes unattractive due to low uranium loadings on the resin/polymer.

The pregnant solution, mined by the ISR method, undergoes further processing once it reaches the surface. The PLS from the well field is pumped through trunk lines to sand trap facilities and is then forwarded to the PLS processing plant. In the processing plant, the solution is first passed through a column filled with ion-exchange resin and as the solution penetrates through the sorbent layer, sorbent uranium saturation occurs.

Once sorbent is saturated with uranium, it is passed on for desorption. Desorption is a process opposite to sorption, and involves the treatment of saturated sorbent with chemical solutions and the conversion of uranium ions into a solution known as "Rich Eluate" or TD. In its turn, the uranium-depleted ion-exchange resin is passed over for regeneration and cleaning for subsequent use in sorption processes. The Rich Eluate received from desorption columns is then accumulated in a reservoir and forwarded for further processing either through a

settlement process which results in a chemical concentrate of natural uranium (commonly known as “**Yellow Cake**” (or “**HKPU**”) because of its yellow colouring) for subsequent production of  $U_3O_8$  on-site or to a third party refinery if the relevant mine does not have the required processing facilities.

**Figure 10-5: Typical well and pump configuration**



Uranium settlement, i.e., the process of solidifying a uranium solution, is performed through feeding specific chemical reagents (such as caustic sodium, ammonia solution, hydrogen peroxide and ammonium carbonate) at specific reactors where it is forwarded from reservoirs. The resulting settled pulp, essentially uraniferous crystals, is collected in a reservoir and forwarded for filtration. Filtration is aimed at removing all liquid from the settled pulp at filtration pumps, where the pulp is periodically fed from reservoirs, through cascading, cleansing and air blowing. The resulting chemical concentrate of natural uranium, or yellow cake, which contains up to 45% to 60% of uranium is forwarded to pipe calcining furnaces where the residual moisture is eliminated from Yellow Cake, resulting in the production of  $U_3O_8$ .

Once at surface the PLS is first filtered through resin beads where the resin beads attract uranium from the solution. Uranium loaded resins are then transported to the processing plants where  $U_3O_8$  is separated from the resin beads and yellowcake is produced. The resin beads can then be returned to the ion exchange facility where they are reused. Bead beds in tanks and in U-shaped vessels are used where the latter enables increased grade through use of high density packed resin in a smaller volume of vessel (Figure 10-7).

At the Mineral Assets the resins/polymers are generally stripped with a nitrate solution in a semi-continuous cycle. The pregnant solution produced by the stripping cycle is then precipitated by the addition of ammonia, hydrogen peroxide, caustic soda or caustic magnesia. Peroxide products can be dried at low temperatures to produce a product containing about 80%  $U_3O_8$ . However ammonium or sodium diuranate products must be dried at high temperatures to convert the product to 100%  $U_3O_8$ . Some operations produce Yellowcake (typically  $U_3O_8$ ); others produce a uranium bearing solution or Uranium loaded resin as shown in Figure 10-8.

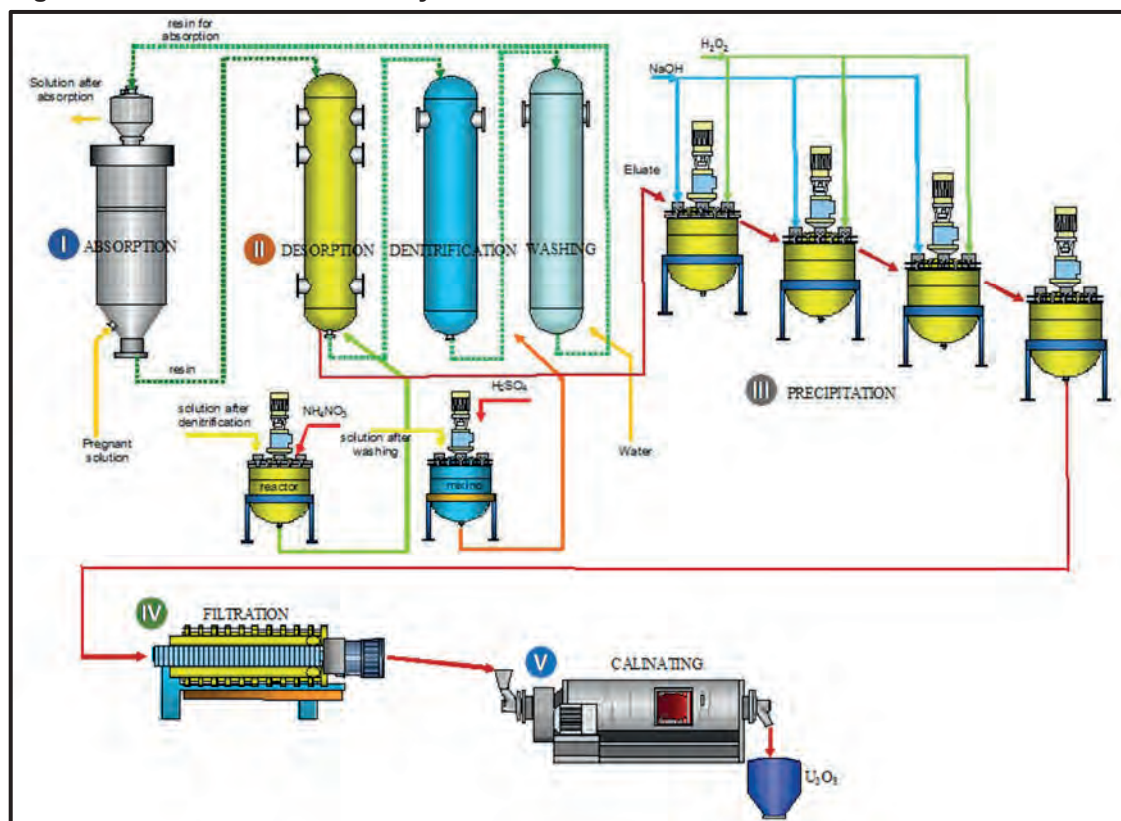
Figure 10-6 presents a schematic of the uranium recovery process flow chart. In Summary:

- The PLS is pumped into absorption columns (I), where ion exchange resins (sorbents) are



- loaded with uranium;
- Uranium-loaded ion exchange resin is sent to desorption (II). Desorption is the opposite of absorption and the procedure includes the processing of loaded resin with chemicals to produce Rich Eluate, which is a solution with uranium content 1,000x higher than in the PLS. The resulting Rich Eluate is sent for further processing. In turn, ion exchange resin with low uranium content is ready for regeneration and flushing stage for reuse in the absorption process;
  - Rich Eluate (Figure 10-8) is then sent to precipitation (III), i.e. transfer of dissolved uranium into the solid form. Precipitation is carried out by adding chemical reagents;
  - The residue is sent to filtration (IV) where the main purpose is to remove the liquid phase from the residue through washing and flushing with air in filter presses. The product output, Yellowcake (Figure 10-8), typically has a moisture content of no more than 20% and uranium content ranging from 45% to 50%, which is then subsequently sent for calcination; and
  - Calcination (V) is carried out in special furnaces designed to obtain uranium oxide ( $U_3O_8$ ) from Yellowcake. The furnace is divided in three zones with different temperatures: the first zone is designed for total moisture removal; and the other two are for decontamination and  $U_3O_8$  production. Temperature at furnace outlet ranges from approximately 800°C to 850°C and the temperature inside the furnace is maintained automatically.

**Figure 10-6: Uranium Recovery Flow Chart**

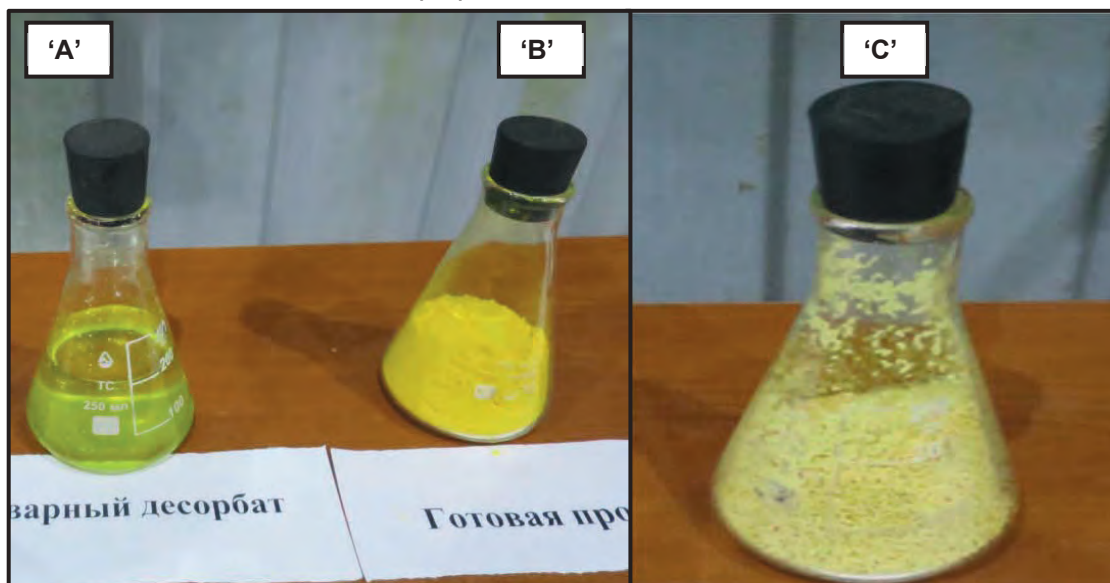


Following unloading from the furnace and cooling,  $U_3O_8$  is automatically placed into special containers. After packaging, samples are taken from each container, after which the containers are weighed, decontaminated, sealed and transported by an automatic loader to the finished product warehouse, where they are shipped to customers. The finished product after processing is  $U_3O_8$  uranium concentrate in accordance with ASTM C 967 (U content of at least 65%) and ST RK 2573 (U content of at least 80%).

**Figure 10-7: Innovative U-shaped column used to improve grade in ion exchange step. Central Moinkum**



**Figure 10-8: Example products showing Uranium bearing eluent ('A'), Yellowcake ('B') and loaded resin ('C')**



In addition to on-site facilities, the Company owns two of the three dedicated processing facilities in Kazakhstan. The dedicated processing facilities are the facility owned and operated by UMP, a processing facility owned and operated by the Company's subsidiary Kazatomprom-Sauran LLP and a third party processing facility owned by Stepnogorsk Mining Chemical Combine (plant) LLP ("SMCCP"). In addition, seven of 26 production sites operated by the Mining Subsidiaries have on-site processing facilities.

Table 10-1 presents a summary of the various process plant inputs, process methodology and the process output for the process plants at the Mining Subsidiaries and at the UMP, SMCCP refineries. Table 10-2 presents a summary of the various products recovered from the



individual deposits processed at the individual Mining Subsidiary's processing and refining operations. As already commented, in some instances, the final product at the site is in the form of rich eluate (also referred to herein as “**Technical Desorbate**” or “**TD**”) or Yellowcake (also referred to herein as HKPU). These products are typically further refined at either other Mining Subsidiary processing and refining facilities or third party refineries to produce uranium concentrate ( $U_3O_8$ ) in accordance with ASTM C967 with U content of at least 65% and ST RK 2573 with U content of at least 80%.

**Table 10-1: Mining Subsidiary and Third Party Refinery details**

Entity	Plant Input	Technological process	Plant Output
<b>Mining Subsidiaries</b>			
Kazatomprom-SaUran LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Liquid-phase extraction employing di-2-ethylhexyl phosphoric acid with trialkylamine and hydrocarbon feed, solid-state re-extraction with 25% ammonium carbon and ammonia liquid, cleansing, filtration, calcining.	$U_3O_8$
Ortalyk LLP	PLS	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	HKPU (Yellow Cake)
RU-6 LLP	PLS	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	HKPU (Yellow Cake)
Appak LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution Neutralisation of Rich Eluate with caustic sodium solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining.	$U_3O_8$
JV Inkai LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Neutralisation of Rich Eluate with ammonia, uranium settlement with hydrogen peroxide, pulp filtration, drying.	$UO_4$
Semizbai-U LLP	PLS	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	Rich eluate/ Yellow Cake
JV Akbastau JSC	PLS	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	TD (Rich Eluate)
Karatau LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from rich eluate with caustic sodium solution. Neutralization of rich eluate with caustic sodium solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining.	TD (Rich Eluate)
JV Zarechnoye JSC	PLS	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	HKPU (Yellow Cake)
JV Katco LLP	TD (Rich Eluate)	Neutralisation of rich eluate with ammonia solution, uranium settlement with ammonia solution, pulp filtration, calcining.	$U_3O_8$
JV Khorassan-U LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant solutions, uranium precipitation from Rich Eluate with caustic sodium solution.	TD (Rich Eluate)/ HKPU (Yellow cake)
JV SMCC LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution Neutralisation of Rich Eluate with caustic sodium solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining.	$U_3O_8$
Baikent-U LLP	PLS, TD (Rich Eluate)	Ion exchange sorption, desorption of uranium from pregnant resin, uranium precipitation from rich eluate with caustic sodium solution. Neutralisation of Rich Eluate with ammonia solution, uranium settlement with hydrogen peroxide, pulp filtration, calcining.	$U_3O_8$
<b>Third Party Refineries</b>			
SMCCP	TD (Rich Eluate) and HKPU (Yellow Cake)	Dissolution of yellow cake with sulphuric acid, extraction with di-2 trialkyl amin, solid-phase re-extraction with ammonium bicarbonate solution, filtration, calcining.	$U_3O_8$
UMP	HKPU (Yellow Cake)	Dissolution of yellow cake with nitric acid, extraction with tributyl phosphate, liquid-phase re-extraction with sulphuric acid solution, neutralization and uranium settlement with ammonia liquid, filtration, calcining.	$U_3O_8$

**Table 10-2: Mining Subsidiary site products<sup>(1)</sup>**

Mining Subsidiary	Deposit	Site Product	Processing /Refining
Kazatomprom-SaUran LLP	Uvanas	$U_3O_8$	final product
	Eastern Mynkuduk	$U_3O_8$	final product
	Kanzhugan	$U_3O_8$	final product
	South Moinkum (Southern part)	$U_3O_8$	final product
	Central Moinkum	$U_3O_8$	final product
Ortalyk LLP	Zhalpak	HKPU	UMP
	Central Mynkuduk	HKPU	UMP
RU-6 LLP	Northern Karamurun	HKPU	UMP
	Southern Karamurun	HKPU	UMP
Appak LLP	Western Mynkuduk	$U_3O_8$	final product
JV Inkai LLP	Block 1 Inkai (a)	$U_3O_8$	final product
	Block 1 Inkai (b)	$U_3O_8$	final product
	Block 1 Inkai (c)	$U_3O_8$	final product
Semizbai-U LLP	Semizbai	TD	SMCCP
	Irkol	HKPU	UMP
JV Akbastau JSC	Block 1 Budenovskoye	TD	Karatau
	Block 3 Budenovskoye	TD	Karatau
	Block 4 Budenovskoye	TD	Karatau

Mining Subsidiary	Deposit	Site Product	Processing /Refining
Karatau LLP	Block 2 Budenovskoye	U <sub>3</sub> O <sub>8</sub>	final product
JV Zarechnoye JSC	Zarechnoye	HKPU	SMCCP
JV Katco LLP	Southern Moinkum (Northern part) Tortkuduk	U <sub>3</sub> O <sub>8</sub> U <sub>3</sub> O <sub>8</sub>	final product final product
JV Khorassan-U LLP	Block Kharassan 1, North Kharassan	TD/HKPU	Baiken-U/SMCCP
JV SMCC LLP	Akdala Block 4 Inkai	U <sub>3</sub> O <sub>8</sub> U <sub>3</sub> O <sub>8</sub>	final product final product
Baiken-U LLP	Block Kharassan 2, North Kharassan	U <sub>3</sub> O <sub>8</sub>	final product

(1) Ulba Metallurgical Plant JSC ("UMP") in which the Company has a 90.2% equity interest and 100% voting interest.

(2) Stepnogorsk Mining Chemical Combine (plant), ("SMCCP").

### 10.3 Historical and Forecast Production Statistics

The following tables present a summary of the historical (2015 through H1 2018) and forecast (H2 2018 through 2022) physical production statistics as reported by the Mining Subsidiaries and where possible at a deposit level. In certain instances, statistics are not necessarily collated at a deposit level and are only reported for the overall Mining Subsidiaries. Furthermore, there are complicating aspects where certain activities within Mining Subsidiaries are centralised and are not always proportioned to the individual deposits. Accordingly, where these instances occur the totals as presented may not reflect the summation on the underlying physical production statistics attributed to each deposit.

The historical and physical production statistics for each reporting period are presented below in the following tables:

- Table 10-3 (production of uranium in the final product measured by tonnes of uranium);
- Table 10-4 (average number of injection wells in operation);
- Table 10-5 (average number of extraction wells in operation);
- Table 10-6 (ratio of injection to extraction wells in operation);
- Table 10-7 (total number of wells constructed: injection, extraction, exploration, observational, replacement);
- Table 10-8 (average well depth drilled measured in metres);
- Table 10-9 (average injection well pumping rate measured in m<sup>3</sup>/h);
- Table 10-10 (average extraction well pumping rate measured in m<sup>3</sup>/h);
- Table 10-11 (volume of pregnant leach solution pumped measured in m<sup>3</sup>);
- Table 10-12 (grade of the pregnant leach solution pumped in mgU/l);
- Table 10-13 (total volume of sulphuric acid consumed in the acidification, leaching and processing activities measured in thousands of tonnes of sulphur);
- Table 10-14 (consumption of sulphuric acid per tonne of uranium produced in the final product);
- Table 10-15 (PLS uranium recovery measured as a %); and
- Table 10-16 (overall uranium recovery from in-situ through to final saleable product).

Furthermore, it is also important to note that the historical statistics in certain instances are in part impacted by the Companies recent production cuts, specifically for 2017, H1 2018 as well as the planned reversal of these over the future periods. Accordingly historical statistics may only be directly comparable with forecast production rates for periods where such cuts are assumed to be reversed.

#### 10.3.1 Uranium Production

Historically the total annual quantum of uranium production, has increased steadily from approximately 800tU in 1997 to 23ktU in 2017 (Table 10-3) with H1 2018 reporting 10.9ktU

(21.8ktU annualised). During 2017 Kazatomprom-SaUran LLP, JV Inkai LLP, JV Katco LLP and JV SMCC LLP were the four largest producers responsible for approximately 45% of total production from the Mining Subsidiaries. By individual deposit the five largest contributors to total production at the Mining Subsidiaries in 2017 collectively reported 10,103ktU representing of 43.3%: Block 2 Budenovskoye (2,359tU; 10.1%); Tortkuduk (2,046tU; 8.8%); Block 4 Inkai (2,037tU; 8.7%); Central Mynkuduk (1,898tU; 8.1%); and Kharassan Block 2 (1,762tU; 7.6%).

A comparison between the actual and planned annual production expressed as a percentage over a five year historical period indicates ranges of between 91% and 108%. This clearly demonstrates that historically planned production has been maintained within a relatively tight margin despite in certain instances reductions in PLS grades resulting in the requirement for an increased number of wells.

**Table 10-3: Production: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (tU)	2016 (tU)	2017 (tU)	H1 2018 (tU)	H2 2018 (tU)	2019 (tU)	2020 (tU)	2021 (tU)	2022 (tU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	288	197	78	28	20	40	20	-	-
Eastern Mynkuduk	1,053	1,025	896	419	400	800	800	1,000	1,000
Kanzhugan	537	543	470	194	220	440	440	550	550
South Moinkum (Southern part)	268	188	79	11	12	15	10	-	-
Central Moinkum	68	50	67	106	90	280	360	500	500
<b>Total</b>	<b>2,214</b>	<b>2,003</b>	<b>1,590</b>	<b>759</b>	<b>742</b>	<b>1,575</b>	<b>1,630</b>	<b>2,050</b>	<b>2,050</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	28	29	98	32	-	-
Central Mynkuduk	1,770	1,953	1,898	810	790	1,579	1,579	1,974	1,974
<b>Total</b>	<b>1,770</b>	<b>1,953</b>	<b>1,898</b>	<b>837</b>	<b>819</b>	<b>1,677</b>	<b>1,611</b>	<b>1,974</b>	<b>1,974</b>
<b>RU-6 LLP</b>									
Northern Karamurun	438	531	340	211	176	340	357	394	396
Southern Karamurun	517	484	378	214	219	450	432	593	591
<b>Total</b>	<b>956</b>	<b>1,015</b>	<b>718</b>	<b>426</b>	<b>395</b>	<b>790</b>	<b>790</b>	<b>987</b>	<b>987</b>
<b>Appak LLP</b>									
Western Mynkuduk	880	1,004	901	439	400	800	800	1,000	1,000
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	1,031	885	641	397	487	1,000	800	1,000	1,000
Blocks 1, Inkai (b)	1,387	1,528	1,473	877	774	1,800	1,800	2,000	2,000
Blocks 1, Inkai (c)	-	-	88	40	66	400	600	1,000	1,000
<b>Total</b>	<b>2,418</b>	<b>2,413</b>	<b>2,202</b>	<b>1,315</b>	<b>1,326</b>	<b>3,200</b>	<b>3,200</b>	<b>4,000</b>	<b>4,000</b>
<b>Semizbai-U LLP</b>									
Semizbai	440	542	450	177	200	400	400	500	500
Irkol	781	700	678	280	280	560	560	701	701
<b>Total</b>	<b>1,221</b>	<b>1,242</b>	<b>1,128</b>	<b>457</b>	<b>480</b>	<b>960</b>	<b>960</b>	<b>1,201</b>	<b>1,201</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	739	750	722	327	292	585	585	731	731
Block 3 Budenovskoye	480	626	875	332	360	720	720	900	900
Block 4 Budenovskoye	411	401	343	130	120	240	240	300	300
<b>Total</b>	<b>1,630</b>	<b>1,778</b>	<b>1,941</b>	<b>789</b>	<b>772</b>	<b>1,545</b>	<b>1,545</b>	<b>1,931</b>	<b>1,931</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	2,064	2,108	2,359	937	1,040	2,560	2,560	3,200	3,200
<b>JV Zarechnoye JSC</b>									
Zarechnoye	800	817	802	398	382	764	764	837	788
<b>JV Katco LLP</b>									
Southern Moinkum	1,682	1,518	1,473	728	766	1,652	1,769	1,772	1,088
Tortkuduk	2,325	2,485	2,046	945	898	1,576	1,471	2,196	2,913
<b>Total</b>	<b>4,007</b>	<b>4,003</b>	<b>3,519</b>	<b>1,673</b>	<b>1,664</b>	<b>3,228</b>	<b>3,240</b>	<b>3,967</b>	<b>4,001</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	1,095	1,354	1,564	757	796	1,591	1,591	1,985	2,280
<b>JV SMCC LLP</b>									
Akdala	1,042	1,000	900	435	400	800	800	1,080	930
Block 4, Inkai	2,007	2,058	2,037	836	800	1,600	1,600	2,000	2,000
<b>Total</b>	<b>3,049</b>	<b>3,058</b>	<b>2,937</b>	<b>1,271</b>	<b>1,200</b>	<b>2,400</b>	<b>2,400</b>	<b>3,080</b>	<b>2,930</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	1,503	1,838	1,762	849	815	1,630	1,630	2,030	2,030
<b>Grand Total</b>	<b>23,607</b>	<b>24,586</b>	<b>23,321</b>	<b>10,905</b>	<b>10,831</b>	<b>22,719</b>	<b>22,722</b>	<b>28,242</b>	<b>28,372</b>

### 10.3.2 Operating and Constructed wells

Table 10-4 and Table 10-5 presents a summary of the number of operating injection and extraction wells respectively for the reported historical and forecast periods. The total average number of wells in operation (measured as the sum of injection and extraction wells) has increased from 23,998 in 2015 to 25,383 in 2016 thereafter reducing to approximately 22,300 in line with the planned reduction in production.

Table 10-6 presents the ratio of average injection to extraction wells in operation which has typically ranged from a low of 2.3 at Budenovskoye to a high of 5.3 at Irkol. Notwithstanding this aspect the total for the Mining Subsidiaries combined remains within a tight range of 3.1 to

3.3 and historical fluctuations appear to reflect a combination of impacts from the planned production cuts and deposits which are either in start-up and/or wind-down mode.

Monitoring wells are about 4% to 5% of the total number of ISR wells with the same design as injection wells are drilled within mining blocks to provide information to control the process of acidification and leaching and are also located at the periphery of the mining blocks and in aquifers above and below productive horizon to control spillage of productive solutions. Typically, extending productive solutions will not exceed extending 50m behind the mining work and they are not found in the aquifers above and below orebody aquifer.

Table 10-7 presents the total number of wells (injection, extraction, observational, exploration and replacement) constructed per reporting period reflecting an annual range of between approximately 7,600 and 8,000 wells from 2015 through 2017 with H2 2018 annualised indicating a significant increase to approximately 9,700 largely in line with replacement wells to reverse the planned production cuts and the planned increase in production at key operations. Table 10-8 provides the average drilled meterage per hole per deposit for the historical and forecast reporting periods which reflects the typical depths of the uraniumiferous horizons ranging from the shallower deposits at Irkol and Semizbai (circa 200m to 240m) to the deeper deposits at Budenovskoye (circa 700m to 730m).

**Table 10-4: Injection wells in operation: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	16	-	-	-	167	168	84	-	-
Eastern Mynkuduk	703	741	724	393	739	762	760	805	805
Kanzhugan	1,000	1,212	1,309	426	674	743	741	1,130	1,130
South Moinkum (Southern part)	596	691	224	42	70	78	52	-	-
Central Moinkum	103	99	66	54	207	472	588	819	819
<b>Total</b>	<b>2,418</b>	<b>2,743</b>	<b>2,324</b>	<b>915</b>	<b>1,857</b>	<b>2,224</b>	<b>2,225</b>	<b>2,753</b>	<b>2,753</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	80	79	146	47	-	-
Central Mynkuduk	1,463	1,460	1,075	1,029	1,210	1,198	1,195	1,685	1,715
<b>Total</b>	<b>1,463</b>	<b>1,460</b>	<b>1,075</b>	<b>1,109</b>	<b>1,289</b>	<b>1,345</b>	<b>1,242</b>	<b>1,685</b>	<b>1,715</b>
<b>RU-6 LLP</b>									
Northern Karamurun	1,031	1,168	1,037	1,045	1,019	990	1,039	1,185	1,191
Southern Karamurun	783	775	573	568	681	706	677	1,128	1,124
<b>Total</b>	<b>1,814</b>	<b>1,943</b>	<b>1,610</b>	<b>1,613</b>	<b>1,699</b>	<b>1,696</b>	<b>1,715</b>	<b>2,313</b>	<b>2,315</b>
<b>Appak LLP</b>									
Western Mynkuduk	1,220	1,287	989	934	1,001	1,026	1,023	1,282	1,282
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	411	364	363	328	444	430	427	535	378
Blocks 1, Inkai (b)	419	410	469	373	513	650	677	755	790
Blocks 1, Inkai (c)	-	-	74	72	63	160	257	430	534
<b>Total</b>	<b>830</b>	<b>774</b>	<b>906</b>	<b>773</b>	<b>1,020</b>	<b>1,240</b>	<b>1,362</b>	<b>1,720</b>	<b>1,702</b>
<b>Semizbai-U LLP</b>									
Semizbai	1,141	873	693	719	676	682	680	827	827
Irkol	1,086	1,038	813	492	590	595	593	781	781
<b>Total</b>	<b>2,227</b>	<b>1,911</b>	<b>1,506</b>	<b>1,211</b>	<b>1,266</b>	<b>1,276</b>	<b>1,273</b>	<b>1,608</b>	<b>1,608</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	280	311	372	409	311	291	290	291	291
Block 3 Budenovskoye	191	250	326	410	370	282	281	282	282
Block 4 Budenovskoye	93	108	134	140	119	139	139	139	139
<b>Total</b>	<b>563</b>	<b>668</b>	<b>832</b>	<b>959</b>	<b>800</b>	<b>712</b>	<b>710</b>	<b>712</b>	<b>712</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	1,038	1,191	1,225	1,226	781	874	772	939	854
<b>JV Zarechnoye JSC</b>									
Zarechnoye	759	736	730	739	776	746	730	812	771
<b>JV Katco LLP</b>									
Southern Moinkum	909	1,160	1,227	1,486	1,598	1,844	1,808	1,282	862
Tortkuduk	1,349	1,343	1,440	1,352	1,272	1,088	1,211	1,550	1,953
<b>Total</b>	<b>2,258</b>	<b>2,503</b>	<b>2,667</b>	<b>2,838</b>	<b>2,870</b>	<b>2,932</b>	<b>3,019</b>	<b>2,831</b>	<b>2,814</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	598	797	976	1,021	998	1,022	1,014	1,261	1,450
<b>JV SMCC LLP</b>									
Akdala	846	872	766	727	577	659	750	916	823
Block 4, Inkai	1,648	1,711	1,859	1,948	1,241	1,254	1,298	1,639	1,639
<b>Total</b>	<b>2,494</b>	<b>2,583</b>	<b>2,626</b>	<b>2,675</b>	<b>1,818</b>	<b>1,913</b>	<b>2,048</b>	<b>2,555</b>	<b>2,462</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	751	905	1,072	1,033	1,083	1,057	1,054	1,292	1,292
<b>Grand Total</b>	<b>18,432</b>	<b>19,501</b>	<b>18,536</b>	<b>17,047</b>	<b>17,258</b>	<b>18,062</b>	<b>18,188</b>	<b>21,764</b>	<b>21,731</b>

**Table 10-5: Extraction wells in operation: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
<b>Kazatomprom-SaUran LLP</b>									

Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
Uvanas	6	-	-	-	52	53	26	-	-
Eastern Mynkuduk	220	232	226	123	231	238	238	251	251
Kanzhugan	291	375	372	115	211	232	232	353	353
South Moinkum (Southern part)	180	143	70	13	22	24	16	-	-
Central Moinkum	35	29	46	17	65	148	184	256	256
<b>Total</b>	<b>732</b>	<b>779</b>	<b>714</b>	<b>268</b>	<b>580</b>	<b>695</b>	<b>695</b>	<b>860</b>	<b>860</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	34	25	46	15	-	-
Central Mynkuduk	406	481	387	372	378	374	373	527	536
<b>Total</b>	<b>406</b>	<b>481</b>	<b>387</b>	<b>406</b>	<b>403</b>	<b>420</b>	<b>388</b>	<b>527</b>	<b>536</b>
<b>RU-6 LLP</b>									
Northern Karamurun	311	341	264	251	275	267	281	320	322
Southern Karamurun	213	186	156	139	200	208	199	332	331
<b>Total</b>	<b>524</b>	<b>527</b>	<b>420</b>	<b>390</b>	<b>476</b>	<b>475</b>	<b>480</b>	<b>652</b>	<b>653</b>
<b>Appak LLP</b>									
Western Mynkuduk	370	349	316	313	303	311	310	389	389
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	174	128	122	110	139	134	133	167	118
Blocks 1, Inkai (b)	169	149	173	169	160	203	212	236	247
Blocks 1, Inkai (c)	-	-	74	27	20	50	80	134	167
<b>Total</b>	<b>343</b>	<b>277</b>	<b>369</b>	<b>306</b>	<b>319</b>	<b>387</b>	<b>426</b>	<b>537</b>	<b>532</b>
<b>Semizbai-U LLP</b>									
Semizbai	318	331	299	305	294	296	296	359	359
Irkol	216	196	198	158	184	186	185	244	244
<b>Total</b>	<b>534</b>	<b>527</b>	<b>497</b>	<b>463</b>	<b>478</b>	<b>482</b>	<b>481</b>	<b>604</b>	<b>604</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	94	101	118	136	97	91	91	91	91
Block 3 Budenovskoye	83	91	103	133	132	101	100	101	101
Block 4 Budenovskoye	35	44	55	49	50	58	58	58	58
<b>Total</b>	<b>212</b>	<b>237</b>	<b>276</b>	<b>318</b>	<b>279</b>	<b>250</b>	<b>249</b>	<b>250</b>	<b>250</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	214	295	363	383	244	273	241	293	267
<b>JV Zarechnoye JSC</b>									
Zarechnoye	221	235	231	231	242	233	228	254	241
<b>JV Katco LLP</b>									
Southern Moinkum	326	394	404	467	499	576	565	401	269
Tortkuduk	401	374	407	374	397	340	379	484	610
<b>Total</b>	<b>727</b>	<b>768</b>	<b>811</b>	<b>841</b>	<b>897</b>	<b>916</b>	<b>943</b>	<b>885</b>	<b>879</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	221	280	335	365	356	365	362	450	518
<b>JV SMCC LLP</b>									
Akdala	282	287	278	232	231	264	300	367	329
Block 4, Inkai	504	525	518	372	414	418	433	546	546
<b>Total</b>	<b>786</b>	<b>812</b>	<b>796</b>	<b>604</b>	<b>645</b>	<b>682</b>	<b>733</b>	<b>913</b>	<b>876</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	276	315	376	369	387	377	376	461	461
<b>Grand Total</b>	<b>5,565</b>	<b>5,882</b>	<b>5,891</b>	<b>5,257</b>	<b>5,609</b>	<b>5,867</b>	<b>5,913</b>	<b>7,075</b>	<b>7,065</b>

**Table 10-6: Ratio of Injection to Extraction wells in operation: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	2.7	-	-	-	3.2	3.2	3.2	-	-
Eastern Mynkuduk	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Kanzhugan	3.4	3.2	3.5	3.7	3.2	3.2	3.2	3.2	3.2
South Moinkum (Southern part)	3.3	4.8	3.2	3.2	3.2	3.2	3.2	-	-
Central Moinkum	2.9	3.4	1.4	3.2	3.2	3.2	3.2	3.2	3.2
<b>Total</b>	<b>3.3</b>	<b>3.5</b>	<b>3.3</b>	<b>3.4</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	2.4	3.2	3.2	3.2	-	-
Central Mynkuduk	3.6	3.0	2.8	2.8	3.2	3.2	3.2	3.2	3.2
<b>Total</b>	<b>3.6</b>	<b>3.0</b>	<b>2.8</b>	<b>2.7</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>
<b>RU-6 LLP</b>									
Northern Karamurun	3.3	3.4	3.9	4.2	3.7	3.7	3.7	3.7	3.7
Southern Karamurun	3.7	4.2	3.7	4.1	3.4	3.4	3.4	3.4	3.4
<b>Total</b>	<b>3.5</b>	<b>3.7</b>	<b>3.8</b>	<b>4.1</b>	<b>3.6</b>	<b>3.6</b>	<b>3.6</b>	<b>3.5</b>	<b>3.5</b>
<b>Appak LLP</b>									
Western Mynkuduk	3.3	3.7	3.1	3.0	3.3	3.3	3.3	3.3	3.3
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	2.4	2.8	3.0	3.0	3.2	3.2	3.2	3.2	3.2
Blocks 1, Inkai (b)	2.5	2.8	2.7	2.2	3.2	3.2	3.2	3.2	3.2
Blocks 1, Inkai (c)	-	-	1.0	2.7	3.2	3.2	3.2	3.2	3.2
<b>Total</b>	<b>2.4</b>	<b>2.8</b>	<b>2.5</b>	<b>2.5</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>
<b>Semizbai-U LLP</b>									
Semizbai	3.6	2.6	2.3	2.4	2.3	2.3	2.3	2.3	2.3
Irkol	5.0	5.3	4.1	3.1	3.2	3.2	3.2	3.2	3.2
<b>Total</b>	<b>4.2</b>	<b>3.6</b>	<b>3.0</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.7</b>	<b>2.7</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	3.0	3.1	3.1	3.0	3.2	3.2	3.2	3.2	3.2
Block 3 Budenovskoye	2.3	2.7	3.2	3.1	2.8	2.8	2.8	2.8	2.8
Block 4 Budenovskoye	2.6	2.4	2.4	2.9	2.4	2.4	2.4	2.4	2.4
<b>Total</b>	<b>2.7</b>	<b>2.8</b>	<b>3.0</b>	<b>3.0</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	4.9	4.0	3.4	3.2	3.2	3.2	3.2	3.2	3.2
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.4	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
<b>JV Katco LLP</b>									
Southern Moinkum	2.8	2.9	3.0	3.2	3.2	3.2	3.2	3.2	3.2
Tortkuduk	3.4	3.6	3.5	3.6	3.2	3.2	3.2	3.2	3.2
<b>Total</b>	<b>3.1</b>	<b>3.3</b>	<b>3.3</b>	<b>3.4</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	2.7	2.8	2.9	2.8	2.8	2.8	2.8	2.8	2.8
<b>JV SMCC LLP</b>									



Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
Akdala	3.0	3.0	2.8	3.1	2.5	2.5	2.5	2.5	2.5
Block 4, Inkai	3.3	3.3	3.6	5.2	3.0	3.0	3.0	3.0	3.0
<b>Total</b>	<b>3.2</b>	<b>3.2</b>	<b>3.3</b>	<b>4.4</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	2.7	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8
<b>Grand Total</b>	<b>3.3</b>	<b>3.3</b>	<b>3.1</b>	<b>3.2</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>

**Table 10-7: Total wells constructed: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (No)	2016 (No)	2017 (No)	H1 2018 (No)	H2 2018 (No)	2019 (No)	2020 (No)	2021 (No)	2022 (No)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	26	4	-	-	-	-	-	-	-
Eastern Mynkuduk	396	412	382	211	200	392	463	481	279
Kanzhugan	473	490	415	319	264	487	487	527	527
South Moinkum (Southern part)	99	46	40	74	54	58	-	-	-
Central Moinkum	-	-	226	249	192	566	566	566	566
<b>Total</b>	<b>994</b>	<b>952</b>	<b>1,063</b>	<b>853</b>	<b>708</b>	<b>1,503</b>	<b>1,516</b>	<b>1,574</b>	<b>1,372</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	-	-	174	-	-	-
Central Mynkuduk	447	516	431	159	162	375	402	642	705
<b>Total</b>	<b>447</b>	<b>516</b>	<b>431</b>	<b>159</b>	<b>162</b>	<b>549</b>	<b>402</b>	<b>642</b>	<b>705</b>
<b>RU-6 LLP</b>									
Northern Karamurun	326	336	79	64	39	77	213	209	209
Southern Karamurun	211	194	304	131	158	315	328	519	517
<b>Total</b>	<b>537</b>	<b>530</b>	<b>383</b>	<b>195</b>	<b>196</b>	<b>392</b>	<b>541</b>	<b>728</b>	<b>726</b>
<b>Appak LLP</b>									
Western Mynkuduk	467	460	380	70	100	298	451	643	552
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	241	282	281	58	135	284	292	226	301
Blocks 1, Inkai (b)	465	353	506	344	259	591	531	575	554
Blocks 1, Inkai (c)	-	-	-	87	114	290	361	323	409
<b>Total</b>	<b>706</b>	<b>635</b>	<b>787</b>	<b>489</b>	<b>507</b>	<b>1,165</b>	<b>1,184</b>	<b>1,124</b>	<b>1,264</b>
<b>Semizbai-U LLP</b>									
Semizbai	100	120	129	125	125	136	145	137	130
Irkol	373	384	354	370	398	389	466	469	465
<b>Total</b>	<b>473</b>	<b>504</b>	<b>482</b>	<b>495</b>	<b>522</b>	<b>525</b>	<b>611</b>	<b>606</b>	<b>595</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	84	76	72	52	36	76	148	150	150
Block 3 Budenovskoye	107	158	114	65	43	121	154	156	156
Block 4 Budenovskoye	37	36	49	29	15	24	28	29	29
<b>Total</b>	<b>228</b>	<b>270</b>	<b>235</b>	<b>146</b>	<b>93</b>	<b>221</b>	<b>330</b>	<b>335</b>	<b>335</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	638	654	631	621	650	641	650	660	660
<b>JV Zarechnoye JSC</b>									
Zarechnoye	543	522	575	323	255	533	525	546	-
<b>JV Katco LLP</b>									
Southern Moinkum	533	471	484	132	265	583	588	495	109
Tortkuduk	498	577	511	217	147	436	482	712	565
<b>Total</b>	<b>1,031</b>	<b>1,048</b>	<b>995</b>	<b>349</b>	<b>412</b>	<b>1,019</b>	<b>1,070</b>	<b>1,207</b>	<b>674</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	532	546	706	280	233	216	478	646	724
<b>JV SMCC LLP</b>									
Akdala	151	149	152	145	151	167	163	170	172
Block 4, Inkai	470	421	406	486	475	432	456	456	490
<b>Total</b>	<b>621</b>	<b>570</b>	<b>557</b>	<b>631</b>	<b>626</b>	<b>599</b>	<b>619</b>	<b>625</b>	<b>662</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	416	476	777	231	219	450	498	498	498
<b>Grand Total</b>	<b>7,633</b>	<b>7,683</b>	<b>8,002</b>	<b>4,842</b>	<b>4,682</b>	<b>8,111</b>	<b>8,875</b>	<b>9,834</b>	<b>8,767</b>

**Table 10-8: Average well depth per constructed well: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (m)	2016 (m)	2017 (m)	H1 2018 (m)	H2 2018 (m)	2019 (m)	2020 (m)	2021 (m)	2022 (m)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	101	98	-	-	-	-	-	-	-
Eastern Mynkuduk	246	255	265	238	233	282	283	283	281
Kanzhugan	290	298	274	246	248	300	300	300	300
South Moinkum (Southern part)	366	337	470	341	310	297	-	-	-
Central Moinkum	-	-	466	403	414	440	440	440	440
<b>Total</b>	<b>275</b>	<b>280</b>	<b>319</b>	<b>298</b>	<b>293</b>	<b>348</b>	<b>347</b>	<b>345</b>	<b>354</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	-	-	151	-	-	-
Central Mynkuduk	365	350	343	332	353	352	352	351	351
<b>Total</b>	<b>365</b>	<b>350</b>	<b>343</b>	<b>332</b>	<b>353</b>	<b>288</b>	<b>352</b>	<b>351</b>	<b>351</b>
<b>RU-6 LLP</b>									
Northern Karamurun	536	518	469	455	468	468	498	507	507
Southern Karamurun	589	660	630	597	637	637	669	669	669
<b>Total</b>	<b>557</b>	<b>570</b>	<b>597</b>	<b>550</b>	<b>604</b>	<b>604</b>	<b>602</b>	<b>623</b>	<b>623</b>
<b>Appak LLP</b>									
Western Mynkuduk	349	316	297	292	308	346	370	380	380
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	520	507	516	513	496	490	475	516	514
Blocks 1, Inkai (b)	354	351	368	337	356	413	389	414	416
Blocks 1, Inkai (c)	-	-	-	332	678	334	310	322	320
<b>Total</b>	<b>411</b>	<b>420</b>	<b>421</b>	<b>357</b>	<b>465</b>	<b>412</b>	<b>386</b>	<b>408</b>	<b>408</b>
<b>Semizbai-U LLP</b>									
Semizbai	641	691	442	216	157	293	237	384	432
Irkol	291	249	205	244	154	313	339	443	322
<b>Total</b>	<b>365</b>	<b>354</b>	<b>268</b>	<b>237</b>	<b>155</b>	<b>308</b>	<b>315</b>	<b>430</b>	<b>346</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	704	704	706	702	710	628	710	710	710

Entity/Deposit	2015 (m)	2016 (m)	2017 (m)	H1 2018 (m)	H2 2018 (m)	2019 (m)	2020 (m)	2021 (m)	2022 (m)
Block 3 Budenovskoye	698	712	728	725	710	720	720	720	720
Block 4 Budenovskoye	682	679	672	675	680	680	680	680	680
<b>Total</b>	<b>698</b>	<b>705</b>	<b>710</b>	<b>707</b>	<b>705</b>	<b>684</b>	<b>712</b>	<b>712</b>	<b>712</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	295	285	457	143	117	411	425	553	550
<b>JV Zarechnoye JSC</b>									
Zarechnoye	524	579	575	524	626	630	580	560	-
<b>JV Katco LLP</b>									
Southern Moinkum	471	477	497	487	503	498	500	500	499
Tortkuduk	353	326	298	296	320	360	349	426	426
<b>Total</b>	<b>414</b>	<b>394</b>	<b>395</b>	<b>368</b>	<b>438</b>	<b>439</b>	<b>432</b>	<b>456</b>	<b>438</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	655	658	655	658	680	680	680	680	680
<b>JV SMCC LLP</b>									
Akdala	138	229	234	89	60	252	356	236	189
Block 4, Inkai	796	636	584	279	235	360	725	637	640
<b>Total</b>	<b>636</b>	<b>530</b>	<b>489</b>	<b>235</b>	<b>193</b>	<b>330</b>	<b>628</b>	<b>528</b>	<b>523</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	641	636	646	649	650	655	650	650	650
<b>Grand Total</b>	<b>449</b>	<b>442</b>	<b>463</b>	<b>351</b>	<b>349</b>	<b>431</b>	<b>465</b>	<b>482</b>	<b>476</b>

### 10.3.3 Injection and extraction pumping rates

Table 10-9 and Table 10-10 presents the historical (2015 through H1 2018) and forecast (H2 2018 through 2022) pumping rates measured in m<sup>3</sup>/h for injection and extraction wells respectively. For injection wells the historical pumping rates range from a lows of 1.0m<sup>3</sup>/h to 1.2m<sup>3</sup>/h (Uvanas and Northern Karamurun) to highs 2.0m<sup>3</sup>/h to 4.0m<sup>3</sup>/h (Eastern Mynkuduk, Inkai and Zarechnoye). For extraction wells the historical pumping rates range from a lows of 2.5m<sup>3</sup>/h to 3.5m<sup>3</sup>/h (Uvanas and Zhalpak) to highs 10.0m<sup>3</sup>/h to 13.0m<sup>3</sup>/h (Inkai and Zarechnoye).

The historical ranges for injection and extraction wells reflect the varying nature of the mining operations, specifically in respect of operating depth, expected PLS grades, number of operating wells and the contractual production rates and recoveries. In certain instances this is also further complicated by either mature deposits which are nearing depletion (Uvanas) or deposits undergoing pilot well testing (Zhalpak). This aside, the historical weighted average range for the mining operations average 2.4m<sup>3</sup>/h to 2.6m<sup>3</sup>/h for injection wells and 7.50m<sup>3</sup>/h to 7.9m<sup>3</sup>/h for extraction wells.

Both pumping and injecting rates depend on hydrogeological parameters as described in Section 9, distances between pumping and injection wells, and their technical conditions (periodically screen clean-up and treatment is required).

The Company measures pumping and injecting rates in the individual ISR wells using industry standard equipment and maintains the balance between total pumping and injection wells per individual mining block.

**Table 10-9: Average injection well pumping rate: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (m <sup>3</sup> /h)	2016 (m <sup>3</sup> /h)	2017 (m <sup>3</sup> /h)	H1 2018 (m <sup>3</sup> /h)	H2 2018 (m <sup>3</sup> /h)	2019 (m <sup>3</sup> /h)	2020 (m <sup>3</sup> /h)	2021 (m <sup>3</sup> /h)	2022 (m <sup>3</sup> /h)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	1.40	1.20	1.30	0.80	1.09	1.09	1.09	-	-
Eastern Mynkuduk	2.84	2.84	2.81	5.67	2.81	2.81	2.81	2.81	2.81
Kanzhugan	2.60	2.50	1.65	2.07	2.50	2.50	2.50	2.50	2.50
South Moinkum (Southern part)	2.60	2.10	2.28	1.63	1.56	1.56	1.56	-	-
Central Moinkum	2.40	2.40	2.10	2.10	2.19	2.19	2.19	2.19	2.19
<b>Total</b>	<b>2.65</b>	<b>2.49</b>	<b>2.09</b>	<b>3.60</b>	<b>2.43</b>	<b>2.40</b>	<b>2.45</b>	<b>2.50</b>	<b>2.50</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	1.40	1.05	1.05	1.05	-	-
Central Mynkuduk	2.30	2.10	1.95	2.30	2.03	2.03	2.03	2.03	2.03
<b>Total</b>	<b>2.30</b>	<b>2.10</b>	<b>1.95</b>	<b>2.24</b>	<b>1.97</b>	<b>1.92</b>	<b>1.99</b>	<b>2.03</b>	<b>2.03</b>
<b>RU-6 LLP</b>									
Northern Karamurun	1.40	1.40	1.21	1.30	1.22	1.22	1.22	1.22	1.22
Southern Karamurun	1.40	1.20	1.44	1.40	1.44	1.44	1.44	1.44	1.44
<b>Total</b>	<b>1.43</b>	<b>1.36</b>	<b>1.34</b>	<b>1.35</b>	<b>1.31</b>	<b>1.31</b>	<b>1.30</b>	<b>1.33</b>	<b>1.33</b>
<b>Appak LLP</b>									
Western Mynkuduk	3.00	3.00	2.62	3.00	2.58	2.58	2.58	2.58	2.58
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	2.50	2.60	2.50	2.97	2.29	2.29	2.29	2.29	2.29
Blocks 1, Inkai (b)	3.00	3.50	3.60	4.98	3.06	3.06	3.06	3.06	3.06
Blocks 1, Inkai (c)	-	-	3.20	2.95	2.27	2.29	2.29	2.29	2.29
<b>Total</b>	<b>2.75</b>	<b>3.08</b>	<b>3.13</b>	<b>3.94</b>	<b>2.68</b>	<b>2.69</b>	<b>2.67</b>	<b>2.63</b>	<b>2.65</b>
<b>Semizbai-U LLP</b>									
Semizbai	1.68	2.07	2.23	2.34	2.22	2.22	2.22	2.22	2.22

Entity/Deposit	2015 (m <sup>3</sup> /h)	2016 (m <sup>3</sup> /h)	2017 (m <sup>3</sup> /h)	H1 2018 (m <sup>3</sup> /h)	H2 2018 (m <sup>3</sup> /h)	2019 (m <sup>3</sup> /h)	2020 (m <sup>3</sup> /h)	2021 (m <sup>3</sup> /h)	2022 (m <sup>3</sup> /h)
Irkol	1.30	1.50	1.80	1.82	2.03	2.03	2.03	2.03	2.03
<b>Total</b>	<b>1.49</b>	<b>1.76</b>	<b>2.00</b>	<b>2.13</b>	<b>2.13</b>	<b>2.13</b>	<b>2.13</b>	<b>2.13</b>	<b>2.13</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	1.73	1.79	1.82	1.40	1.50	1.49	1.49	1.85	1.85
Block 3 Budenovskoye	1.99	3.46	1.87	1.50	1.46	1.78	1.78	2.09	2.09
Block 4 Budenovskoye	3.10	3.46	3.54	2.50	2.75	2.63	2.77	2.43	2.43
<b>Total</b>	<b>2.05</b>	<b>2.68</b>	<b>2.11</b>	<b>1.60</b>	<b>1.67</b>	<b>1.83</b>	<b>1.86</b>	<b>2.06</b>	<b>2.06</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	1.63	1.51	1.49	1.39	2.22	2.53	2.84	3.16	3.47
<b>JV Zarechnoye JSC</b>									
Zarechnoye	3.95	4.14	4.11	3.91	3.75	3.75	3.75	3.75	3.75
<b>JV Katco LLP</b>									
Southern Moinkum	3.21	2.74	2.60	2.42	2.50	2.50	2.50	2.50	2.50
Tortkuduk	2.33	2.56	2.58	2.74	2.79	2.79	2.79	2.80	2.80
<b>Total</b>	<b>2.75</b>	<b>2.65</b>	<b>2.59</b>	<b>2.58</b>	<b>2.64</b>	<b>2.62</b>	<b>2.63</b>	<b>2.67</b>	<b>2.72</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	2.30	2.20	2.20	2.18	2.21	2.14	2.14	2.16	2.16
<b>JV SMCC LLP</b>									
Akdala	2.54	2.42	2.59	2.32	2.80	2.60	2.60	3.00	3.00
Block 4, Inkai	2.53	2.20	1.74	1.61	2.27	2.27	2.27	2.27	2.27
<b>Total</b>	<b>2.53</b>	<b>2.27</b>	<b>1.99</b>	<b>1.80</b>	<b>2.44</b>	<b>2.38</b>	<b>2.39</b>	<b>2.53</b>	<b>2.51</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	2.50	2.50	2.36	2.71	2.18	2.25	2.25	2.25	2.25
<b>Grand Total</b>	<b>2.49</b>	<b>2.47</b>	<b>2.35</b>	<b>2.60</b>	<b>2.42</b>	<b>2.42</b>	<b>2.45</b>	<b>2.49</b>	<b>2.50</b>

**Table 10-10: Average extraction well pumping rate: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (m <sup>3</sup> /h)	2016 (m <sup>3</sup> /h)	2017 (m <sup>3</sup> /h)	H1 2018 (m <sup>3</sup> /h)	H2 2018 (m <sup>3</sup> /h)	2019 (m <sup>3</sup> /h)	2020 (m <sup>3</sup> /h)	2021 (m <sup>3</sup> /h)	2022 (m <sup>3</sup> /h)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	3.60	3.40	3.80	2.50	3.50	3.50	3.50	-	3.60
Eastern Mynkuduk	9.10	9.10	9.00	9.00	9.00	9.00	9.00	9.00	9.10
Kanzhugan	8.00	8.70	8.00	8.00	8.00	8.00	8.00	8.00	8.00
South Moinkum (Southern part)	7.00	9.90	7.00	5.00	5.00	5.00	5.00	-	7.00
Central Moinkum	7.10	8.20	7.00	7.00	7.00	7.00	7.00	7.00	7.10
<b>Total</b>	<b>8.00</b>	<b>9.02</b>	<b>8.15</b>	<b>8.25</b>	<b>7.77</b>	<b>7.69</b>	<b>7.84</b>	<b>7.99</b>	<b>8.00</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	3.30	3.50	3.50	3.50	-	-
Central Mynkuduk	8.50	6.80	5.64	6.20	6.50	6.50	6.50	6.50	8.50
<b>Total</b>	<b>8.50</b>	<b>6.80</b>	<b>5.64</b>	<b>5.96</b>	<b>6.32</b>	<b>6.17</b>	<b>6.39</b>	<b>6.50</b>	<b>8.50</b>
<b>RU-6 LLP</b>									
Northern Karamurun	4.60	4.60	4.70	5.30	4.50	4.50	4.50	4.50	4.60
Southern Karamurun	5.00	5.10	5.30	5.70	4.90	4.90	4.90	4.90	5.00
<b>Total</b>	<b>4.96</b>	<b>5.01</b>	<b>5.15</b>	<b>5.60</b>	<b>4.67</b>	<b>4.67</b>	<b>4.67</b>	<b>4.70</b>	<b>4.96</b>
<b>Appak LLP</b>									
Western Mynkuduk	8.50	8.50	8.56	8.50	8.50	8.50	8.50	8.50	8.50
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	5.70	7.30	7.30	8.85	7.33	7.33	7.33	7.33	5.70
Blocks 1, Inkai (b)	8.00	9.50	10.00	10.99	9.80	9.80	9.80	9.80	8.00
Blocks 1, Inkai (c)	-	-	8.80	7.88	7.33	7.33	7.33	7.33	-
<b>Total</b>	<b>6.83</b>	<b>8.48</b>	<b>8.87</b>	<b>9.95</b>	<b>8.57</b>	<b>8.62</b>	<b>8.56</b>	<b>8.41</b>	<b>6.83</b>
<b>Semizbai-U LLP</b>									
Semizbai	5.69	5.42	5.15	5.40	5.10	5.10	5.10	5.10	5.69
Irkol	6.60	7.70	7.30	5.60	6.50	6.50	6.50	6.50	6.60
<b>Total</b>	<b>6.06</b>	<b>6.27</b>	<b>6.01</b>	<b>5.47</b>	<b>5.64</b>	<b>5.64</b>	<b>5.64</b>	<b>5.67</b>	<b>6.06</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	5.25	5.66	5.90	4.23	4.80	4.77	4.77	5.92	5.25
Block 3 Budenovskoye	4.66	5.66	6.12	4.81	4.10	4.98	5.00	5.84	4.66
Block 4 Budenovskoye	8.21	8.62	8.87	7.13	6.60	6.31	6.65	5.83	8.21
<b>Total</b>	<b>5.52</b>	<b>6.21</b>	<b>6.57</b>	<b>4.92</b>	<b>4.79</b>	<b>5.21</b>	<b>5.30</b>	<b>5.87</b>	<b>5.52</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	7.59	5.85	4.83	4.40	7.10	8.10	9.10	10.10	7.59
<b>JV Zarechnoye JSC</b>									
Zarechnoye	13.57	12.97	12.99	12.50	12.00	12.00	12.00	12.00	13.57
<b>JV Katco LLP</b>									
Southern Moinkum	8.96	8.07	7.90	7.70	8.00	8.00	8.00	8.00	8.96
Tortkuduk	8.15	9.14	9.04	9.69	8.94	8.93	8.93	8.95	8.15
<b>Total</b>	<b>8.53</b>	<b>8.63</b>	<b>8.52</b>	<b>8.71</b>	<b>8.44</b>	<b>8.37</b>	<b>8.40</b>	<b>8.55</b>	<b>8.53</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	6.20	6.30	6.20	6.10	6.20	6.00	6.00	6.05	6.20
<b>JV SMCC LLP</b>									
Akdala	7.60	7.33	7.14	7.28	7.00	6.50	6.50	7.50	7.60
Block 4, Inkai	8.23	7.14	6.23	8.41	7.10	7.10	7.10	7.10	8.23
<b>Total</b>	<b>8.00</b>	<b>7.21</b>	<b>6.55</b>	<b>7.97</b>	<b>7.06</b>	<b>6.87</b>	<b>6.85</b>	<b>7.26</b>	<b>8.00</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	6.60	6.70	6.22	7.60	6.10	6.30	6.30	6.30	6.60
<b>Grand Total</b>	<b>7.91</b>	<b>7.84</b>	<b>7.54</b>	<b>7.83</b>	<b>7.50</b>	<b>7.53</b>	<b>7.61</b>	<b>7.70</b>	<b>7.91</b>

### 10.3.4 Extracted Pregnant Leach Solutions

Table 10-11 and Table 10-12 presents the PLS volumes measured in thousands of cubic metres and grades measured in milli gramme of Uranium per litre.

Total annual volumes pumped for all mining operations range from 0.34Mm<sup>3</sup> to 0.370Mm<sup>3</sup> with the top five operations (Tortkuduk, Inkai Block 3, Southern Moinkum, Zarechnoye and Western Mynkuduk) categorised by total volume pumped representing approximately 40% of the total volume of PLS. Comparisons between annual actual and planned volumes over the past five years indicate a relatively tight variance ranging from 90% to 110%.

The overall uranium concentration in the PLS and its change in time depends on many factors including:

- Uranium ore grade (or orebody productivity) dependent on mineralogy of uranium and gangue phases (neutralization and attenuation), mineral textures and abundance of diagenetic cement within the channel;
- Orebody leachability (parameters L:S, or Grade:Thickness relationship and leaching kinetics);
- ISR cell configuration (radius of cell, ration between injection and pumping wells, distance between them);
- Effective thickness of orebody and hydraulic conductivity;
- Acid concentration in solution (and thus Eh-pH conditions of the leaching solution); and
- Baseline groundwater chemistry, especially alkalinity levels and dissolved oxygen.

Historical PLS grades range from a low range of 20mg/l to 50mg/l (South Moinkum, Zarechnoye, Western Mynkuduk) to a high range of 160mg/l to 175mg/l (Budenovskoye Block 1, Block 2 and Block 3) with the five recorded highest in 2017 including the majority of Budenovskoye Blocks, Inkai 1 (b) and Block 1 Kharassan.

The higher concentrations initially at Budenovskoye can be explained in terms of mineralogy with a high portion of secondary uranyl phosphates that are extremely soluble in acid compared to other deposits. With respect to the lower grades, it is important to note that four of the deposits (Karamurun, Uvanas, Kanzhugan, and South Moinkum) commenced mining operations in 1997 and are at the late stage of uranium recovery and furthermore these are hosted in Miocene-Eocene water channels.

There is some tendency in decreasing uranium concentration in time especially in the deposits where very high initial concentrations were measured and as such could be considered as anomalous. Analysis of historical data on a monthly basis indicates that significant reductions were noted at Block 3, Block 4 and Block 2 Budenovskoye. Where reductions fall below a designated level the PLS grades can be further managed through increased sulphuric acid concentration, albeit at the expense of higher unit cost of production.

Comparisons between annual actual and planned volumes over the past five years indicate a variance ranging from 90% to 120%. Overall the planned production uranium concentration is generally very close to actual achieved concentration.

A notable exception is Semizbai where planned concentration is always higher than actual concentration achieved with Western Mynkuduk, Zarechnoye, Akdala, Central Mynkuduk, South Moinkum, Kanzhugan and Tortkuduk all showing slightly higher planned than achieved uranium concentration. By contrast North Kharassan, Budenovskoye Blocks 1 and 3 and South Tortkuduk all display significantly better achieved than planned uranium concentration.

**Table 10-11: PLS Volume: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (‘000m <sup>3</sup> )	2016 (‘000m <sup>3</sup> )	2017 (‘000m <sup>3</sup> )	H1 2018 (‘000m <sup>3</sup> )	H2 2018 (‘000m <sup>3</sup> )	2019 (‘000m <sup>3</sup> )	2020 (‘000m <sup>3</sup> )	2021 (‘000m <sup>3</sup> )	2022 (‘000m <sup>3</sup> )
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	-	-	-	0.7	0.8	1.5	0.8	-	-
Eastern Mynkuduk	16.8	17.7	17.1	9.3	8.8	18.0	18.0	19.0	19.0
Kanzhugan	20.2	21.5	18.9	7.7	7.1	15.6	15.6	23.7	23.7
South Moinkum (Southern part)	11.1	9.1	4.3	0.6	0.5	1.0	0.7	-	-
Central Moinkum	1.9	2.1	1.6	1.0	1.9	8.7	10.8	15.0	15.0
<b>Total</b>	<b>50.0</b>	<b>50.4</b>	<b>42.0</b>	<b>19.3</b>	<b>19.1</b>	<b>44.8</b>	<b>45.9</b>	<b>57.7</b>	<b>57.7</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	0.4	0.4	1.3	0.4	-	-
Central Mynkuduk	28.7	28.7	20.3	10.2	10.4	20.4	20.4	28.7	29.2
<b>Total</b>	<b>28.7</b>	<b>28.7</b>	<b>20.3</b>	<b>10.6</b>	<b>10.8</b>	<b>21.8</b>	<b>20.9</b>	<b>28.7</b>	<b>29.2</b>
<b>RU-6 LLP</b>									
Northern Karamurun	12.5	13.8	10.9	5.7	5.2	10.1	10.6	12.1	12.2

Entity/Deposit	2015 (‘000m <sup>3</sup> )	2016 (‘000m <sup>3</sup> )	2017 (‘000m <sup>3</sup> )	H1 2018 (‘000m <sup>3</sup> )	H2 2018 (‘000m <sup>3</sup> )	2019 (‘000m <sup>3</sup> )	2020 (‘000m <sup>3</sup> )	2021 (‘000m <sup>3</sup> )	2022 (‘000m <sup>3</sup> )
Southern Karamurun	9.4	8.4	7.3	3.4	4.2	8.5	8.2	13.6	13.6
<b>Total</b>	<b>21.8</b>	<b>22.2</b>	<b>18.2</b>	<b>9.1</b>	<b>9.4</b>	<b>18.7</b>	<b>18.8</b>	<b>25.7</b>	<b>25.8</b>
<b>Appak LLP</b>									
Western Mynkuduk	26.4	25.0	22.7	11.1	10.9	22.2	22.2	27.7	27.7
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	9.5	8.9	7.8	4.0	4.3	8.3	8.2	10.3	7.3
Blocks 1, Inkai (b)	13.1	12.2	14.8	7.4	6.6	16.7	17.5	19.4	20.3
Blocks 1, Inkai (c)	-	-	2.0	0.9	0.6	3.1	5.0	8.3	10.3
<b>Total</b>	<b>22.6</b>	<b>21.1</b>	<b>24.6</b>	<b>12.3</b>	<b>11.6</b>	<b>28.0</b>	<b>30.6</b>	<b>38.0</b>	<b>37.8</b>
<b>Semizbai-U LLP</b>									
Semizbai	17.4	15.8	13.5	7.0	6.3	12.7	12.7	15.4	15.4
Irkol	14.3	12.7	11.7	3.7	5.1	10.1	10.1	13.3	13.3
<b>Total</b>	<b>31.7</b>	<b>28.5</b>	<b>25.2</b>	<b>10.7</b>	<b>11.4</b>	<b>22.8</b>	<b>22.8</b>	<b>28.7</b>	<b>28.7</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	4.2	4.8	5.8	2.5	2.0	3.6	3.6	4.5	4.5
Block 3 Budenovskoye	3.1	4.4	5.6	2.6	2.3	4.2	4.2	4.9	4.9
Block 4 Budenovskoye	2.5	3.3	3.8	1.8	1.4	3.1	3.2	2.8	2.8
<b>Total</b>	<b>9.7</b>	<b>12.5</b>	<b>15.1</b>	<b>6.8</b>	<b>5.7</b>	<b>10.9</b>	<b>11.1</b>	<b>12.3</b>	<b>12.3</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	14.3	15.3	15.4	7.0	7.3	18.6	18.5	24.9	24.9
<b>JV Zarechnoye JSC</b>									
Zarechnoye	25.2	25.7	25.2	12.0	12.3	23.5	23.0	25.6	24.3
<b>JV Katco LLP</b>									
Southern Moinkum	24.5	26.8	26.8	15.0	16.9	38.7	38.0	26.9	18.1
Tortkuduk	27.6	29.0	31.2	15.5	15.1	25.7	28.7	36.6	46.1
<b>Total</b>	<b>52.1</b>	<b>55.8</b>	<b>58.0</b>	<b>30.5</b>	<b>32.0</b>	<b>64.4</b>	<b>66.7</b>	<b>63.5</b>	<b>64.2</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	11.9	15.4	17.5	9.3	9.4	18.4	18.3	22.9	26.3
<b>JV SMCC LLP</b>									
Akdala	18.7	18.4	17.4	7.1	6.8	14.4	16.4	23.1	20.7
Block 4, Inkai	36.3	32.8	28.3	13.2	12.4	24.9	25.9	32.6	32.6
<b>Total</b>	<b>55.1</b>	<b>51.3</b>	<b>45.7</b>	<b>20.3</b>	<b>19.3</b>	<b>39.3</b>	<b>42.3</b>	<b>55.6</b>	<b>53.3</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	15.3	18.9	21.5	11.3	10.0	20.0	20.0	24.4	24.4
<b>Grand Total</b>	<b>364.8</b>	<b>370.7</b>	<b>351.2</b>	<b>170.4</b>	<b>169.1</b>	<b>353.3</b>	<b>361.1</b>	<b>435.7</b>	<b>436.6</b>

**Table 10-12: PLS Grade: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (mgU/l)	2016 (mgU/l)	2017 (mgU/l)	H1 2018 (mgU/l)	H2 2018 (mgU/l)	2019 (mgU/l)	2020 (mgU/l)	2021 (mgU/l)	2022 (mgU/l)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	46.1	42.6	28.0	44.0	28.8	28.8	28.7	-	-
Eastern Mynkuduk	65.7	60.1	55.4	47.8	48.1	47.0	47.0	55.6	55.6
Kanzhugan	28.2	26.9	26.4	26.7	32.8	30.0	30.0	24.7	24.7
South Moinkum (Southern part)	26.3	22.3	19.5	20.9	26.9	15.6	15.6	-	-
Central Moinkum	35.9	23.9	41.4	112.1	49.4	34.0	35.0	35.0	35.0
<b>Total</b>	<b>40.7</b>	<b>37.6</b>	<b>38.1</b>	<b>41.7</b>	<b>41.2</b>	<b>37.2</b>	<b>37.6</b>	<b>37.6</b>	<b>37.6</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	128.8	84.1	76.8	78.0	-	-
Central Mynkuduk	69.9	77.8	89.6	83.6	85.5	87.0	87.0	77.3	76.0
<b>Total</b>	<b>69.9</b>	<b>77.8</b>	<b>89.6</b>	<b>85.4</b>	<b>85.4</b>	<b>86.4</b>	<b>86.8</b>	<b>77.3</b>	<b>76.0</b>
<b>RU-6 LLP</b>									
Northern Karamurun	38.0	39.1	35.9	35.1	35.1	35.1	35.1	34.0	34.0
Southern Karamurun	59.8	58.4	59.6	59.5	55.0	55.0	55.0	45.4	45.4
<b>Total</b>	<b>47.3</b>	<b>46.4</b>	<b>45.4</b>	<b>44.2</b>	<b>43.9</b>	<b>44.2</b>	<b>43.8</b>	<b>40.0</b>	<b>40.0</b>
<b>Appak LLP</b>									
Western Mynkuduk	34.2	41.1	40.6	42.7	38.6	38.0	38.0	38.0	38.0
<b>JV Inkai LLP</b>									
Blocks 1, Inkai (a)	110.5	102.1	84.2	101.2	116.6	124.7	100.2	100.2	141.8
Blocks 1, Inkai (b)	108.3	127.3	101.7	120.7	120.0	111.1	106.3	106.3	101.5
Blocks 1, Inkai (c)	-	-	46.2	47.8	112.4	134.3	124.8	124.8	100.5
<b>Total</b>	<b>109.2</b>	<b>116.7</b>	<b>91.6</b>	<b>109.1</b>	<b>118.4</b>	<b>117.6</b>	<b>107.6</b>	<b>108.7</b>	<b>109.0</b>
<b>Semizbai-U LLP</b>									
Semizbai	26.3	33.2	32.6	27.2	33.0	33.0	33.0	34.0	34.0
Irkol	58.3	60.5	62.8	75.4	57.7	57.7	57.7	55.0	55.0
<b>Total</b>	<b>40.7</b>	<b>45.4</b>	<b>46.6</b>	<b>43.9</b>	<b>44.0</b>	<b>44.0</b>	<b>44.0</b>	<b>43.7</b>	<b>43.7</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	179.0	156.5	126.8	132.0	152.8	165.3	165.4	166.7	166.7
Block 3 Budenovskoye	157.0	144.8	159.7	130.0	161.9	176.5	175.8	188.1	188.1
Block 4 Budenovskoye	165.0	122.5	91.5	75.0	89.3	80.5	76.4	108.9	108.9
<b>Total</b>	<b>168.4</b>	<b>143.4</b>	<b>130.0</b>	<b>116.6</b>	<b>140.9</b>	<b>145.8</b>	<b>143.4</b>	<b>161.9</b>	<b>161.9</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	142.7	143.7	161.0	134.7	146.2	142.1	142.7	132.6	132.6
<b>JV Zarechnoye JSC</b>									
Zarechnoye	33.8	33.9	33.9	35.1	33.2	34.8	35.5	35.0	34.7
<b>JV Katco LLP</b>									
Southern Moinkum	68.2	57.5	55.2	48.9	45.7	43.0	46.8	66.3	60.6
Tortkuduk	84.4	85.9	66.2	61.4	59.9	61.8	51.7	60.3	63.4
<b>Total</b>	<b>76.8</b>	<b>72.3</b>	<b>61.1</b>	<b>55.3</b>	<b>52.4</b>	<b>50.5</b>	<b>48.9</b>	<b>62.8</b>	<b>62.6</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	94.0	92.3	94.2	88.5	86.6	88.0	88.5	88.5	88.5
<b>JV SMCC LLP</b>									
Akdala	56.7	55.3	52.9	62.0	59.8	57.0	50.0	48.0	46.0
Block 4, Inkai	56.2	63.7	73.0	64.3	65.7	65.9	63.5	63.0	63.0
<b>Total</b>	<b>56.4</b>	<b>60.6</b>	<b>65.4</b>	<b>63.5</b>	<b>63.6</b>	<b>62.6</b>	<b>58.2</b>	<b>56.8</b>	<b>56.4</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	99.53	98.71	83.21	75.55	84.18	84.17	84.17	85.77	85.77
<b>Grand Total</b>	<b>65.8</b>	<b>68.0</b>	<b>67.9</b>	<b>65.8</b>	<b>66.5</b>	<b>66.7</b>	<b>65.3</b>	<b>67.3</b>	<b>67.4</b>

### 10.3.5 Sulphuric Acid Consumption

The total sulphuric acid consumption is measured in thousands of tonnes of sulphuric acid for



the historical (2015 through H1 2018) and forecast (H2 2018 through 2022) period is shown in Table 10-13. This includes all acid consumed in the course of acidification, leaching and processing operations. It is however important to note that as certain mining operations provide and/or secure mining and processing services from other Mining Subsidiaries or have centralised services which are not back allocated to the deposits. As such the total acid consumption noted in certain deposits and/or Mining Subsidiaries may be artificially low or high due to the process of not back-allocating the acid consumption to each specific deposit. This aside, the total annual volume consumed for the Mining Subsidiaries remains within a relatively tight range of 1,800ktS to 1,900ktS.

Acid consumption is dependent on a number of factors that can change over time in an aquifer. It can reflect an increase in reactive carbonate or silicate minerals that leads to acid neutralization. It can also indicate reaction in the aqueous phases between groundwater alkalinity and the acidic PLS. This could in turn reflect a change in carbonate content of the sand sediments and is not dependent on uranium concentration.

Table 10-14 presents the total specific sulphuric acid consumption measured as the ratio between sulphuric acid per unit of uranium produced. Analysis of the historical ratios indicates low ranges from 20kgS/kgU to 50 kgS/kgU (Uvanas, Budenovskoye blocks, Akdala) to high ranges from 130kgS/kgU to 220kgS/kgU (Western Mynkuduk, Semizbai and Central Moinkum).

**Table 10-13: Total Sulphuric Acid Consumption: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (ktS)	2016 (ktS)	2017 (ktS)	H1 2018 (ktS)	H2 2018 (ktS)	2019 (ktS)	2020 (ktS)	2021 (ktS)	2022 (ktS)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	6	3	1	0	1	3	6	-	-
Eastern Mynkuduk	79	89	72	29	27	71	81	84	84
Kanzhugan	70	79	62	24	33	68	68	85	85
South Moinkum (Southern part)	23	13	7	3	2	3	2	-	-
Central Moinkum	8	3	15	14	26	82	106	147	147
<b>Total</b>	<b>188</b>	<b>189</b>	<b>159</b>	<b>70</b>	<b>90</b>	<b>229</b>	<b>265</b>	<b>318</b>	<b>318</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	3	3	6	0	-	-
Central Mynkuduk	154	151	145	48	71	143	143	179	179
<b>Total</b>	<b>154</b>	<b>151</b>	<b>145</b>	<b>51</b>	<b>74</b>	<b>149</b>	<b>143</b>	<b>179</b>	<b>179</b>
<b>RU-6 LLP</b>									
<b>Total</b>	<b>120</b>	<b>119</b>	<b>102</b>	<b>51</b>	<b>47</b>	<b>100</b>	<b>100</b>	<b>125</b>	<b>125</b>
<b>Appak LLP</b>									
Western Mynkuduk	134	127	118	27	56	113	113	141	141
<b>Total</b>	<b>113</b>	<b>74</b>	<b>83</b>	<b>51</b>	<b>59</b>	<b>132</b>	<b>131</b>	<b>153</b>	<b>165</b>
<b>Semizbai-U LLP</b>									
Semizbai	84	105	74	31	34	69	66	82	83
Irkol	103	91	88	22	36	73	74	100	93
<b>Total</b>	<b>187</b>	<b>196</b>	<b>162</b>	<b>52</b>	<b>70</b>	<b>142</b>	<b>140</b>	<b>181</b>	<b>176</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	25	24	21	9	22	25	25	37	37
Block 3 Budenovskoye	25	21	29	15	15	30	30	43	43
Block 4 Budenovskoye	19	18	19	5	6	13	12	16	16
<b>Total</b>	<b>68</b>	<b>62</b>	<b>69</b>	<b>29</b>	<b>43</b>	<b>67</b>	<b>67</b>	<b>95</b>	<b>95</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	94	86	95	33	46	110	111	134	134
<b>JV Zarechnoye JSC</b>									
Zarechnoye	138	133	133	47	62	123	123	135	127
<b>JV Katco LLP</b>									
<b>Total</b>	<b>209</b>	<b>208</b>	<b>213</b>	<b>91</b>	<b>105</b>	<b>288</b>	<b>228</b>	<b>247</b>	<b>202</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	101	137	161	71	77	139	151	190	213
<b>JV SMCC LLP</b>									
Akdala	24	27	27	6	10	19	23	27	22
Block 4, Inkai	171	183	168	66	65	124	150	170	182
<b>Total</b>	<b>195</b>	<b>210</b>	<b>195</b>	<b>73</b>	<b>75</b>	<b>143</b>	<b>173</b>	<b>196</b>	<b>204</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	113	187	171	59	76	151	157	189	189
<b>Grand Total</b>	<b>1,814</b>	<b>1,880</b>	<b>1,807</b>	<b>706</b>	<b>880</b>	<b>1,887</b>	<b>1,902</b>	<b>2,285</b>	<b>2,269</b>

**Table 10-14: Total Specific Sulphuric Acid Consumption: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (kgS/kgU)	2016 (kgS/kgU)	2017 (kgS/kgU)	H1 2018 (kgS/kgU)	H2 2018 (kgS/kgU)	2019 (kgS/kgU)	2020 (kgS/kgU)	2021 (kgS/kgU)	2022 (kgS/kgU)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	22.1	15.5	17.5	1.5	33.0	71.2	309.2	-	-
Eastern Mynkuduk	75.2	87.0	80.1	68.1	66.4	88.6	101.2	83.7	83.7
Kanzhugan	129.8	145.6	132.5	122.0	149.0	153.9	153.9	153.9	153.9
South Moinkum (Southern part)	85.7	66.8	93.5	232.4	203.8	203.8	203.8	-	-
Central Moinkum	110.6	67.9	218.3	136.5	293.5	293.5	293.5	293.5	293.5

Entity/Deposit	2015 (kgS/kgU)	2016 (kgS/kgU)	2017 (kgS/kgU)	H1 2018 (kgS/kgU)	H2 2018 (kgS/kgU)	2019 (kgS/kgU)	2020 (kgS/kgU)	2021 (kgS/kgU)	2022 (kgS/kgU)
<b>Total</b>	<b>84.8</b>	<b>94.4</b>	<b>100.2</b>	<b>92.8</b>	<b>121.0</b>	<b>145.3</b>	<b>162.4</b>	<b>155.0</b>	<b>155.0</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	102.4	95.1	61.0	2.2	-	-
Central Mynkuduk	86.9	77.3	76.6	58.9	90.5	90.5	90.5	90.5	90.5
<b>Total</b>	<b>86.9</b>	<b>77.3</b>	<b>76.6</b>	<b>60.3</b>	<b>90.7</b>	<b>88.8</b>	<b>88.8</b>	<b>90.5</b>	<b>90.5</b>
<b>RU-6 LLP</b>									
<b>Total</b>	<b>125.7</b>	<b>117.7</b>	<b>141.6</b>	<b>120.4</b>	<b>120.3</b>	<b>126.4</b>	<b>126.4</b>	<b>126.8</b>	<b>126.8</b>
<b>Appak LLP</b>									
Western Mynkuduk	151.9	126.0	130.9	61.7	141.1	141.1	141.1	141.1	141.1
<b>JV Inkai LLP</b>									
<b>Total</b>	<b>46.8</b>	<b>30.8</b>	<b>37.8</b>	<b>38.8</b>	<b>44.2</b>	<b>41.3</b>	<b>40.8</b>	<b>38.4</b>	<b>41.2</b>
<b>Semizbai-U LLP</b>									
Semizbai	191.9	193.7	165.2	172.4	170.1	173.3	166.2	163.4	166.1
Irkol	131.6	130.0	129.8	78.2	126.8	129.8	131.6	142.2	133.0
<b>Total</b>	<b>153.4</b>	<b>157.8</b>	<b>143.9</b>	<b>114.7</b>	<b>144.9</b>	<b>147.9</b>	<b>146.0</b>	<b>151.0</b>	<b>146.8</b>
<b>JV Akbastau JSC</b>									
Block 1 Budenovskoye	33.2	31.7	29.4	28.7	76.0	42.4	43.4	50.2	50.2
Block 3 Budenovskoye	51.7	32.8	33.1	45.4	40.4	41.0	41.4	47.4	47.4
Block 4 Budenovskoye	46.0	44.1	56.1	37.0	51.7	52.1	51.3	53.6	53.6
<b>Total</b>	<b>41.9</b>	<b>34.9</b>	<b>35.8</b>	<b>37.1</b>	<b>55.6</b>	<b>43.3</b>	<b>43.7</b>	<b>49.4</b>	<b>49.4</b>
<b>Karatau LLP</b>									
Block 2, Budenovskoye	45.6	40.9	40.1	35.2	44.2	43.2	43.4	42.0	42.0
<b>JV Zarechnoye JSC</b>									
Zarechnoye	171.9	163.0	166.2	118.2	161.2	161.2	161.2	161.2	161.2
<b>JV Katco LLP</b>									
<b>Total</b>	<b>52.3</b>	<b>52.0</b>	<b>60.6</b>	<b>54.4</b>	<b>63.4</b>	<b>89.1</b>	<b>70.4</b>	<b>62.3</b>	<b>50.4</b>
<b>JV Khorassan-U LLP</b>									
Block Kharassan 1, North Kharassan	92.5	101.3	102.7	94.0	96.7	87.6	94.9	95.7	93.4
<b>JV SMCC LLP</b>									
Akdala	23.2	26.6	29.6	14.6	25.8	23.7	28.8	24.7	23.8
Block 4, Inkai	85.2	89.1	82.7	79.4	80.9	77.6	93.5	84.9	91.1
<b>Total</b>	<b>64.0</b>	<b>68.6</b>	<b>66.4</b>	<b>57.3</b>	<b>62.5</b>	<b>59.7</b>	<b>71.9</b>	<b>63.8</b>	<b>69.8</b>
<b>Baiken-U LLP</b>									
Block Kharassan 2, North Kharassan	74.9	101.7	96.9	69.6	92.9	92.9	96.2	92.9	92.9
<b>Grand Total</b>	<b>76.8</b>	<b>76.5</b>	<b>77.5</b>	<b>64.7</b>	<b>81.2</b>	<b>83.0</b>	<b>83.7</b>	<b>80.9</b>	<b>80.0</b>

### 10.3.6 Uranium Recovery

Overall uranium recovery at the mining operations is managed with the aim of ensuring that the total recovery to uranium in the final product attains the targets specified in the Mining Contract which is sometimes related to the final product (U in U<sub>3</sub>O<sub>8</sub>) and sometimes related to the final product produced at the site. From a management perspective uranium recoveries are assessed at the various stages of production:

- Total block specific recovery from in-situ to PLS or TD as measured over the lifespan of a block through to depletion;
- Recovery from PLS to various stages of production depending on the intermediary and final products produced at each mining operation; and
- Refining recoveries respected by processes completed on the site or in third party refineries.

Table 10-15 presents the PLS uranium recoveries reported for historical (2015 through H1 2018) and forecast (H2 2018 through 2022) periods. Typically, the recoveries recorded range from a low of 90% to a high of 99% with the low values represented by Central Mynkuduk and the higher values represented by Tortkuduk.

Table 10-16 presents the historical reported weighted average overall recoveries to final saleable product for each of the Mining Subsidiaries. In summary these range from a low of approximately 80% to a high of approximately 95% with overall weighted averages from the Mining Subsidiaries remaining relative constant at approximately 88%.

**Table 10-15: PLS Uranium Recovery: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (%)	2016 (%)	2017 (%)	H1 2018 (%)	H2 2018 (%)	2019 (%)	2020 (%)	2021 (%)	2022 (%)
<b>Kazatomprom-SaUran LLP</b>									
Uvanas	90.1	90.1	90.1	90.1	90.1	90.1	90.1	90.1	90.1
Eastern Mynkuduk	95.5	96.4	94.6	94.6	94.6	94.6	94.6	94.6	94.6
Kanzhugan	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0
South Moinkum (Southern part)	92.1	92.1	94.0	94.0	94.0	94.0	94.0	94.0	94.0
Central Moinkum	98.2	98.2	98.2	95.0	95.0	95.0	95.0	95.0	95.0
<b>Total</b>	<b>94.1</b>	<b>94.7</b>	<b>94.3</b>	<b>94.3</b>	<b>94.3</b>	<b>94.4</b>	<b>94.5</b>	<b>94.5</b>	<b>94.5</b>
<b>Ortalyk LLP</b>									
Zhalpak	-	-	-	98.0	97.0	97.0	97.0	-	-
Central Mynkuduk	90.0	90.0	99.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Total</b>	<b>90.0</b>	<b>90.0</b>	<b>99.0</b>	<b>90.5</b>	<b>90.2</b>	<b>90.4</b>	<b>90.1</b>	<b>90.0</b>	<b>90.0</b>
<b>RU-6 LLP</b>									

Entity/Deposit	2015 (%)	2016 (%)	2017 (%)	H1 2018 (%)	H2 2018 (%)	2019 (%)	2020 (%)	2021 (%)	2022 (%)
<b>Total</b>	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
<b>Appak LLP</b>	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
Western Mynkuduk	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
<b>JV Inkai LLP</b>									
<b>Total</b>	97.7	97.9	98.1	93.1	94.9	94.9	94.9	94.9	94.9
<b>Semizbai-U LLP</b>									
Semizbai	97.8	97.9	97.6	98.0	97.0	97.0	97.0	97.0	97.0
Irkol	97.9	98.4	98.0	98.3	97.0	97.0	97.0	97.0	97.0
<b>Total</b>	-	-	95.5	95.8	97.0	97.0	97.0	97.0	97.0
<b>JV Akbastau JSC</b>	97.8	98.2	97.8	98.1	97.0	97.0	97.0	97.0	97.0
Block 1 Budenovskoye									
Block 3 Budenovskoye	96.3	97.1	97.0	96.3	97.0	97.0	97.0	97.0	97.0
Block 4 Budenovskoye	98.5	98.5	98.5	98.7	97.0	97.0	97.0	97.0	97.0
<b>Total</b>	97.7	97.9	97.9	97.7	97.0	97.0	97.0	97.0	97.0
<b>Karatau LLP</b>									
Block 2, Budenovskoye	99.3	99.2	98.6	98.9	97.0	97.0	97.0	97.0	97.0
<b>JV Zarechnoye JSC</b>	99.3	99.2	98.6	98.9	97.0	97.0	97.0	97.0	97.0
Zarechnoye	99.3	99.2	98.6	98.9	97.0	97.0	97.0	97.0	97.0
<b>JV Katco LLP</b>	99.3	99.2	98.6	98.9	97.0	97.0	97.0	97.0	97.0
<b>Total</b>									
<b>JV Khorassan-U LLP</b>	101.5	95.8	95.0	99.1	97.0	97.0	97.0	97.0	97.0
Block Kharassan 1, North Kharassan									
<b>JV SMCC LLP</b>	94.0	94.0	94.0	94.3	95.0	95.0	95.0	95.0	95.0
Akdala									
Block 4, Inkai	100.6	98.7	99.5	99.5	99.1	99.2	99.3	99.4	99.2
<b>Total</b>	100.0	99.7	99.2	99.0	99.1	99.3	99.2	99.5	99.6
<b>Baiken-U LLP</b>	100.2	99.3	99.3	99.2	99.1	99.2	99.3	99.5	99.5
Block Kharassan 2, North Kharassan									
<b>Grand Total</b>	99.0	99.0	99.0	98.9	98.8	98.9	98.8	98.8	98.8

**Table 10-16: Overall Uranium Recovery from in-situ through to final saleable product: historical (2015 through H1 2018) and forecast (H2 2018 through 2022)**

Entity/Deposit	2015 (%)	2016 (%)	2017 (%)	H1 2018 (%)	H2 2018 (%)	2019 (%)	2020 (%)	2021 (%)	2022 (%)
Kazatomprom-SaUran LLP	90.4	90.3	90.0	89.5	89.5	89.2	88.9	88.7	88.7
Ortalyk LLP	88.1	87.4	94.8	91.7	88.8	88.8	88.8	88.8	88.8
RU-6 LLP	87.1	92.9	82.1	99.8	90.1	90.1	90.1	90.0	90.0
Appak LLP	89.9	89.8	89.6	89.6	90.0	90.0	90.0	90.0	90.0
JV Inkai LLP	85.4	86.2	87.0	86.4	85.0	85.0	85.0	85.0	85.0
Semizbai-U LLP	85.3	86.2	86.5	87.2	86.6	86.6	86.6	86.6	86.6
JV Akbastau JSC	87.2	87.1	86.6	87.0	86.8	86.8	86.8	86.8	86.8
Karatau LLP	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
JV Zarechnoye JSC	80.0	80.0	80.0	80.0	78.8	78.8	78.8	78.8	78.8
JV Katco LLP	87.8	88.0	87.8	87.8	90.0	90.0	90.0	90.0	90.0
JV Khorassan-U LLP	88.7	86.8	86.4	84.1	89.5	89.5	89.5	89.3	89.2
JV SMCC LLP	91.0	91.0	90.9	90.0	86.6	86.6	86.6	86.6	86.6
Baiken-U LLP	90.0	90.0	90.0	90.4	90.0	90.0	90.0	90.0	90.0
<b>Grand Total</b>	88.2	88.4	88.5	88.5	88.4	88.3	88.3	88.3	88.3

## 10.4 Mining Subsidiary Historical and Forecast Uranium Production

This section presents summary comments on the historical and forecast production volumes at each of the Mining Subsidiaries.

### 10.4.1 Kazatomprom-SaUran LLP

Kazatomprom-SaUran LLP mines uranium from five deposits: Uvanas; Eastern Mynkuduk; Kanzhugan; South Moinkum (Southern part); and Central Moinkum. The processing facilities enable production of refined U<sub>3</sub>O<sub>8</sub> through a central refinery.

Historical annual production levels have reduced from approximately 2,200tU and following various planned production cuts including cessation of mining operations at Uvanas is currently producing at an annualised (H1 2018) rate of approximately 1,500tU.

Future production comprises a reversal of the planned reductions to re-establish a total production rate of approximately 2,000tU by 2021 declining to approximately 1,000tU following depletion of mining operations at Uvanas (2020), Eastern Mynkuduk (2026) and South Moinkum (2020). The long term production units of Kanzhugan and Central Moinkum are planned to continue at 550tU and 500tU per annum respectively, both of which reflecting planned depletion of current Ore Reserves in 2040.

### 10.4.2 Ortalyk LLP

Ortalyk LLP mines uranium from two deposits: Zhalspak; and Central Mynkuduk with the former currently undergoing pilot well production pending approval for full scale production. The processing facilities enable production of HKPU on site which is then sent to the UMP for

refining to U<sub>3</sub>O<sub>8</sub>.

Historical annual production has varied between approximately 1,800tU and 1,950tU and it is currently running at an annualised (H1 2018) rate of approximately 1,700tU.

Future production comprises a reversal of the planned reductions to re-establish a total annual production rate of approximately 1,970tU by 2021 which is maintained until 2029, thereafter declining to approximately 680tU reflecting planned depletion of current Ore Reserves in 2032.

#### **10.4.3 RU-6 LLP**

RU-6 LLP mines uranium from two deposits: Northern Karamurun; and Southern Karamurun. The processing facilities enable production of HKPU on site which is then sent to UMP for refining to U<sub>3</sub>O<sub>8</sub>.

Historical annual production has varied between approximately 720tU and 950tU and it is currently producing at an annualised (H1 2018) rate of approximately 850tU with approximately equal production at both deposits.

Future production assumes a reversal of planned production cuts to attain approximately 1,000tU in 2021 which is maintained through to 2030, thereafter declining in accordance with depletion of current Ore Reserves at Northern Karamurun and Southern Karamurun in 2032 and 2034 respectively. The steady state split of production for Northern Karamurun and Southern Karamurun from 2021 onwards is approximately 400tU and 600tU per annum respectively.

#### **10.4.4 Appak LLP**

Appak LLP mines uranium from a single deposit Western Mynkuduk which enables production of a final saleable product U<sub>3</sub>O<sub>8</sub> on site.

Historical annual production has varied between approximately 880tU and 1,000tU and is currently producing at an annualised (H1 2018) rate of approximately 880tU.

Future production assumes a reversal of planned production cuts to attain approximately 1,000tU in 2021 which is maintained through to 2035, thereafter declining in accordance with planned depletion of current Ore Reserves in 2036.

#### **10.4.5 JV Inkai LLP**

JV Inkai LLP mines uranium from three deposits: Inkai 1 (a); Inkai 1 (b); and Inkai 1(c). The processing facilities enable production of refined U<sub>3</sub>O<sub>8</sub>. Inkai 1(b) and Inkai 1 (c) are currently ramping up to full production through planned expansions to 2,000tU and 1,000tU per annum respectively.

Historical production levels have ranged from approximately 2,200tU to 2,400tU and largely reflects the planned production cuts, notably at Inkai 1 (a). The mining operations are currently producing at an annualised (H1 2018) rate of approximately 2,630tU with approximately 70% being derived from Inkai 1 (b).

Future production comprises a reversal of the planned reductions at Inkai 1 (a) and the completion of planned expansions at Inkai 1 (b) and Inkai 1 (c) to attain total uranium production of 4,000tU by 2021. This level is maintained through 2045, thereafter declining to approximately 2,000tU following planned depletion at Inkai 1 (b) in 2046 and Inkai 1 (c) in 2052. As production declines of current Ore Reserves in Inkai 1 (a) and Inkai 1 (b), production is assumed to increase at Inkai 1 (c) to 2,000tU for a short period at the end of the LoMp.

#### **10.4.6 Semizbai-U LLP**

Semizbai-U LLP mines uranium from two deposits: Semizbai; and Irkol. The processing facilities enable production of TD at Semizbai and HKPU at Irkol. The TD from Semizbai is sent

to SMCCP and the HKPU from Irkol is sent to UMP for refining to produce  $U_3O_8$ .

Historical annual production has varied between approximately 1,130tU and 1,240tU and it is currently producing at an annualised (H1 2018) rate of approximately 910tU with approximately 40% of production attributable to Semizbai.

Future production assumes a reversal of planned production cuts to attain approximately 1,200tU in 2021 which is maintained through to 2035, thereafter declining in accordance with depletion of current Ore Reserves at Semizbai and Irkol in 2040 and 2041 respectively. The steady state split of production for Semizbai and Irkol from 2021 onwards is approximately 500tU and 700tU respectively.

#### **10.4.7 JV Akbastau JSC**

JV Akbastau JSC mines uranium from three deposits: Block 1 Budenovskoye; Block 3 Budenovskoye; and Block 4 Budenovskoye. On site processing facilitates enable production of TD which is then transported to Karatau LLP's processing facilities for the production of the final saleable product  $U_3O_8$ .

Historical annual production has varied between approximately 1,630tU and 1,940tU and it is currently producing at an annualised (H1 2018) rate of approximately 1,580tU with Block 1 Budenovskoye and Block 3 Budenovskoye producing approximately 330tU each and the balance contributed by Block 4 Budenovskoye.

Future production assumes a combination of reversal of the planned production cuts and planned expansion at Block 3 Budenovskoye to re-establish historical production levels of approximately 1,930tU by 2021. This production level is maintained through to 2036 with production contributions being approximately 730tU, 900tU and 300tU for Block 1 Budenovskoye, Block 3 Budenovskoye, and Block 4 Budenovskoye respectively. The LoMp reflects depletion of current Ore Reserves at Block 1 Budenovskoye in 2037 and Block 3 Budenovskoye and Block 4 Budenovskoye in 2039.

#### **10.4.8 Karatau LLP**

Karatau LLP mines uranium from a single deposit Block 2 Budenovskoye with on-site processing facilities enabling production of final saleable product in the form of  $U_3O_8$ . Historical production has varied between and it is currently producing at an annualised (H1 2018) rate of approximately 1,870tU.

Future production of Block 2 Budenovskoye assumes a combination of a reversal of planned production cuts (2018) with combined expansion to attain 3,200tU by 2021 which is maintained through to 2031 prior to planned depletion of the current Ore Reserves in 2033.

As Karatau LLP provides refining services to Akbastau LLP total refining production increases to approximately 5,100tU which is maintained through to 2031, thereafter declining to approximately 1,930tU when only material from Akbastau LLP is refined prior to cessation of all operations in 2039 on depletion of the current Ore Reserves for Akbastau LLP.

#### **10.4.9 JV Zarechnoye JSC**

JV Zarechnoye JSC mines uranium from a single deposit Zarechnoye to produce HKPU prior to refining to final saleable product ( $U_3O_8$ ) at SMCCP. Historical production has ranged from approximately 800tU to 820tU and it is currently producing at an annualised (H1 2018) rate of approximately 800tU.

Future production is planned to largely remain at these levels until depletion of current Ore Reserves in 2023.



#### **10.4.10 JV Katco LLP**

JV Katco LLP mines uranium from two deposits: Southern Moinkum (Northern part); and Tortkuduk and the processing facilities on site enable production of final sealable product ( $U_3O_8$ ). Historical annual production has ranged from 3,500tU to 4,000tU and it is currently producing at an annualised (H1 2018) rate of approximately 3,350tU with Tortkuduk contributing approximately 56% of total production.

Future production assumes a combination of planned production cuts with combined expansion to retain 4,000tU by 2021 which is maintained through to 2029 prior to planned depletion of the current Ore Reserves at Tortkuduk in 2033. Production at Southern Moinkum (Northern part) declines from 2022 onwards and is offset by planned increased production at Tortkuduk to maintain 4,000tU levels.

#### **10.4.11 JV Khorassan-U LLP**

JV Khorassan-U LLP mines (mining and processing undertaken by Kyzylkum LLP) uranium from one deposit, namely Block Kharassan 1, North Kharassan which produces both TD and HKPU with the TD sent to Baiken-U LLP's refining facilities and the HKPU sent to SMCCP for refining to produce final saleable products ( $U_3O_8$ ).

Historical annual production has ranged from 1,100tU to 1,560tU and it is currently producing at an annualised (H1 2018) rate of approximately 1,510tU.

Future production assumes continued increases in planned production to attain approximately 3,000tU by 2024 which is maintained through 2028, thereafter declining to 2,200tU by 2032 prior to depletion of current Ore Reserves in 2036. The portion of production sent to the third party refinery is assumed to increase to approximately 1,310tU by 2022 and peaking at 2,000tU in 2024, thereafter reducing to approximately 1,500tU by 2027 and ceasing altogether by 2030, after which all production is refined at Baiken-U LLP's processing facilities.

#### **10.4.12 JV SMCC LLP**

JV SMCC LLP mines uranium from two deposits: Akdala; and Block 4 Inkai. The TD from Akdala is transported to the central refining plant which along with material from Block 4 Inkai facilitates production of the final saleable product ( $U_3O_8$ ).

Historical annual production has ranged from approximately 2,940tU to 3,050tU and it is currently producing at an annualised (H1 2018) rate of approximately 2,540tU with 66% attributed to Block 4 Inkai.

Future production assumes reversal of recent planned production cuts to re-establish historical production levels at appropriately 3,000tU by 2021, declining to 2,000tU by 2027 on depletion of current Ore Reserves at Akdala and thereafter maintaining this level until depletion of Block 4 Inkai in 2036.

#### **10.4.13 Baiken-U LLP**

Baiken-U LLP mines uranium from a single deposit Block Kharassan 2 (North Kharassan) which is refined on site to produce final saleable product ( $U_3O_8$ ). Historical annual production has ranged from approximately 1,500tU to 1,840tU and it is currently producing at an annualised (H1 2018) rate of approximately 1,700tU.

Future production assumes that the historical planned production cuts are reversed with planned marginal increases securing production of 2,030tU by 2021 which is maintained until 2025, thereafter declining to less than 1,000tU in 2029 prior to depletion of the current Ore Reserves by 2032.

As previously noted, Baiken-U LLP provides toll processing services on behalf of JV Khorassan-

U LLP and continues providing services for a further four years through to 2036 following planned depletion of its own current Ore Reserves in 2032.

## 11 PROJECT INFRASTRUCTURE

### 11.1 Introduction

This section describes the existing infrastructure on the ISR mines, the transportation of goods to and from the ISR mines and the waste facilities used by the mines.

Most of the ISR mines are relatively young, having become operational after 2005 and have modern infrastructure. A few became operational 30 to 40 years ago; these are Uvanas and Eastern Mynkuduk (both dating to 1978) Kanzhugan (1982) all operated by Kazatomprom-SaUran LLP and North Karamurun and South Karamurun (dating to 1981) both operated by RU-6 LLP. The infrastructure at the older mines is weathered but generally maintained in good condition.

### 11.2 ISR Mine Infrastructure

A summary of infrastructure at the various ISR mine sites is provided in Table 11-1.

The productive aquifers that are being mined are between 90m and 800m below surface. A solution containing sulphuric acid is circulated through these to dissolve uranium. The production wells create reduced pressure in the mined region by withdrawing slightly more water from the ground than is injected; this controls the horizontal spread of the solutions. The PLS is pumped from the production wells to a surface process plant, via settling ponds for removal of suspended particles. There are PLS settling facilities in remote well fields, as well as at the process plant sites.

At the process plant, uranium is removed from the solution in an ion exchange unit where it is attached to resin (loaded resin). The barren solution is returned to the wellfields, via a settling facility for removal of suspended particles. The acidity of the solution is adjusted through addition of sulphuric acid prior to re-injection into the orebody. The uranium is stripped from the loaded resin in an elution unit typically using ammonium nitrate to produce an eluate. It is then precipitated and filtered to form a Yellow Cake product. Several operations produce intermediate products (loaded resin, eluate or filtered products) that are directed to a plant at other operations for upgrading to produce a Yellow Cake product. Some operations (North Kharassan 2; Karatau; Inkai 4; Inkai; Western Mynkuduk; Tortkuduk; and Kanzhugan) produce upgraded  $U_3O_8$  Yellow Cake by means of a drying or calcining process.

**Table 11-1: Infrastructure at the ISR Mines**

Parts of the mine	Infrastructure	Types and ancillary infrastructure
External power supply	Power transmission lines (110kV and 220kV)	
	Substation on/ next to the mine site	
Wellfields standard infrastructure at all operations	Power lines	Power lines (10kV) on various types of poles (pylons, wood and concrete poles) distribute power across the well fields
	Pipelines (mostly plastic, with some steel pipelines for transfer of concentrated acid)	<u>Trunk pipelines connecting wellfields and the process plant</u>
		<ul style="list-style-type: none"> <li>Pregnant solution pipelines (typically buried at 2m depth to prevent freezing)</li> <li>Barren solution pipelines (also buried)</li> <li>Acid pipelines (on surface)</li> </ul>
	Wells	<u>Pipelines linked to wells</u>
		<ul style="list-style-type: none"> <li>For delivery of acidified barren solution to injection wells</li> <li>For transport of pregnant solution from production wells</li> </ul>
	Portable cabins (usually arranged in groups of three at intervals of between 100m and 200m in the wellfields, located at junctions between well pipelines and trunk pipelines),	<u>Injection wells</u>
		<ul style="list-style-type: none"> <li>Production wells</li> <li>Monitoring wells (most monitor the productive aquifer)</li> </ul>
Access roads	<u>Flow monitoring &amp; control cabin</u>	
Drill rigs drilling new wells	<ul style="list-style-type: none"> <li>Acid addition control cabin</li> <li>Power supply control cabin</li> </ul> <u>Generally, each cabin has two external lights</u>	
Drill slimes settling ponds	<ul style="list-style-type: none"> <li>Warm work station cabins are often integrated with the above cabins and are situated at intervals of at least 1km within the well fields.</li> </ul>	
	Unsurfaced roads	
	Drill rigs	
	Drill slimes that are not radioactive (drill slimes from the ore zone are collected separately for disposal at a LLRW waste disposal facility)	

Parts of the mine	Infrastructure	Types and ancillary infrastructure
Wellfields additional infrastructure at some operations	Acid tanks	<ul style="list-style-type: none"> <li>Large tanks</li> <li>Bunds with capacity exceeding the capacity of the tanks (usually about 130%)</li> <li>Acid loading facility (with spill containment below truck-to-tank connections)</li> <li>Portable cabin, with controls and emergency shower, eye wash stands, countering agents (alkali for acid burns) and chemical cupboards.</li> </ul>
	Pregnant solution settling ponds	Lined ponds, with fencing to prevent animal access
	Drilling slimes storage facility	Impoundment with raised embankment walls (generally rectangular with four walls), some have geomembrane applied to surfaces to prevent wind erosion (e.g. Ortalyk LLP's Central Mynkuduk operation)
Process plant	Fencing and security	<ul style="list-style-type: none"> <li>Fences are generally restricted to the process plant area and accommodation facilities</li> <li>There is mobile security both in vehicles and on horseback</li> </ul>
	Process plant and product store	<ul style="list-style-type: none"> <li>The process plant is usually housed in one building or two adjacent buildings and associated with a neighbouring product store. The buildings are generally steel structures.</li> <li>The size of the process plant depends on the product produced (loaded resin, eluate, yellow cake or U<sub>3</sub>O<sub>8</sub> product).</li> <li>Plant producing U<sub>3</sub>O<sub>8</sub> product includes drying or calcining facilities. The stack emissions are scrubbed and particulates removed by scrubbing are returned to the process circuit via the barren solution. The emissions include ammonia gas. The sanitary protection zone around the plant extends up 1km, there are no settlements in this zone.</li> <li>Laboratory (generally located within the plant).</li> </ul>
	Acid storage tanks	<ul style="list-style-type: none"> <li>Large tanks</li> <li>Spill bunds with capacity exceeding the capacity of the tanks (usually about 130%)</li> <li>Acid unloading facility (with bunds below truck to tank connections)</li> </ul>
	Hydrogen peroxide storage tanks	<ul style="list-style-type: none"> <li>Some operations have hydrogen peroxide tanks (hydrogen peroxide is used in the precipitation step of the yellow cake production process), with spill containment exceeding the capacity of the tanks</li> <li>Loading facilities</li> </ul>
	Potable and technical water supply (Typical quantity of water used by an operation is 500,000m <sup>3</sup> /y for an operation producing 2000tU per year as yellow cake – value provided by Inkai 4)	<ul style="list-style-type: none"> <li>Most mines abstract water for potable and technical water supply from boreholes on site</li> <li>Others rely on water piped to site over a considerable distance (for example, the Uvanas mine obtains water from an abstraction point on the Shu River, which is about 60km south west of the mine).</li> <li>Potable water treatment facilities</li> <li>Water storage tanks include fire water tanks</li> </ul>
	Pregnant solution settling ponds or tanks	<ul style="list-style-type: none"> <li>Lined ponds (most operations), or</li> <li>Lined ponds that are sheltered by a roof (but have no walls so that radon can escape) (e.g. Akbastau and Karatau operations), or</li> <li>Settling tanks, including underlying concrete spill bunds with capacity exceeding the capacity of the tanks (usually about 130%) (e.g. Ortalyk LLP's Central Mynkuduk operation and Kazatomprom-SaUran LLP's Central Moinkum operation).</li> </ul>
	Barren solution settling ponds	Lined ponds
	Process slimes settling pond	Generally, there is one pond per operation that receives wash-down water from the process plant.
	Sewage plant and effluent pond	Often there is one pond containing treated effluent. The water is relatively clean and attracts bird life.
	Waste collection and disposal facilities	<ul style="list-style-type: none"> <li>LLRW collection facilities for waste transfer to decontamination and/or disposal facilities.</li> <li>Non-radioactive general/ inert waste disposal sites (often in the well field area, use a trench-system for waste burial).</li> </ul>
	Office and staff facilities	<ul style="list-style-type: none"> <li>Administration building/s</li> <li>Change houses, with boot washing stations, shower facilities that are used by staff twice in a work day prior to meal times, hand washing facilities and radiation monitoring checkpoints</li> <li>Kitchen and canteen/s</li> <li>On-site clinic, with a resident doctor and a site ambulance for evacuating patients to hospital</li> <li>Emergency facilities including emergency showers</li> <li>Comfortable camp sites (at most operations), including recreational and sports facilities (some camps have saunas, a heated pool, gym/fitness centres, table tennis and pool tables and outside football and basketball facilities)</li> </ul>
	Other ancillary infrastructure	<ul style="list-style-type: none"> <li>Pumping station/s</li> <li>Power distribution on site</li> <li>Emergency back-up generator/s</li> <li>Fuel tanks with spill containment and loading facilities</li> <li>Heating plant (diesel powered)</li> <li>Reagent warehouses for storage of ammonia in various forms (as used in the process, includes ammonium nitrate and anhydrous ammonia), caustic soda and other chemicals used in the operations</li> <li>Equipment and spare-part stores</li> <li>Maintenance shops</li> <li>Communications infrastructure</li> <li>Parking bays</li> </ul>

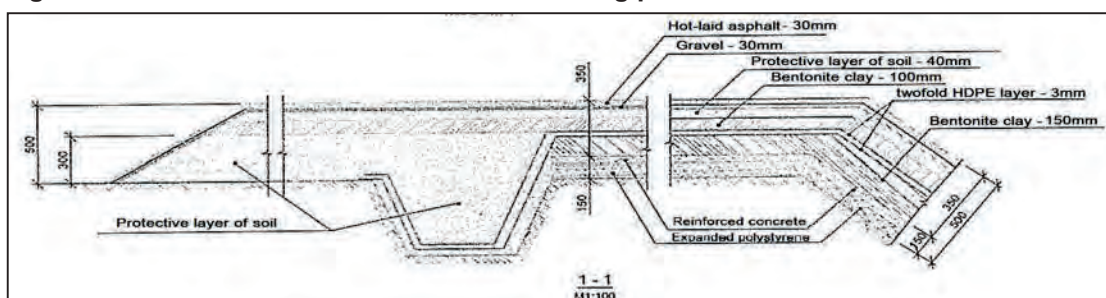
The ponds for PLS, barren solution and process slimes ponds are lined with complex liners (Figure 11-1). The structure of the complex liners varies from operation to operation and the liner designs are approved by regulatory authorities. The structure typically includes an impermeable geotextile layer sandwiched between bentonite clay, soil and gravel protective layers. The structure may also include additional cushioning geotextile layers and be underlain with concrete or asphalt and topped with asphalt. Each pond is monitored by four groundwater monitoring boreholes. An example cross section of the slime settling pond at JV SMCC's LLP Inkai 4 operation is shown below in Figure 11-1.

The sediments that accumulate in the ponds are removed approximately once every three years

and are either returned to the process (in the case of slimes ponds) or transported to a low level radioactive waste (“LLRW”) facility (transportation is described in Section 11.3 and waste disposal is described in Section 11.4).

The ponds are designed and operated with sufficient freeboard to hold an extreme storm event, based on the maximum amount of precipitation in each region. The designs have been approved by the relevant regulatory authority. Gauges are used to monitor the level of solutions in the ponds.

**Figure 11-1: Cross-section of the slime settling pond at Inkai 4**



### 11.3 Goods Transportation

The transportation of goods to and from the ISR operations is mostly undertaken by Trade and Transport Company LLP, a subsidiary of the Company. This company assists with both rail and road transport and also maintains 500km of private roads used for transportation. Licences for transportation of radioactive and hazardous substances have to be obtained from the government (Section 12.3) and require that the roads are maintained in good condition. Product is transported from the operations in metal containers and is escorted by security vehicles.

Large quantities of sulphuric acid are required for the ISR mining operations. The acid is sourced from third party mining companies that produce sulphuric acid as a by-product (by means of their sulphur dioxide emission abatement technology), such as Kazzinc and Kazakhmys, as well as acid plants operated by the Group, specifically SKZ U LLP and SKZ Kazatomprom LLP (49% and 10% ownership by the Company, respectively). The SKZ U LLP plant (capacity of 500ktpa) is located at Zhanakorgan, next to Block Kharassan 1, North Kharassan, and Block Kharassan 2 North Kharassan and supplies mines in the Syrdarya basin. The SKZ Kazatomprom LLP plant is located in the Stepnogorsk Industrial Complex (capacity of 180ktpa) and supplies acid to the Semizbai mine. Acid is transported to the ISR operations in the Shu-Sarysu basin by rail and then road, with transfer between rail tankers and road tankers occurring at the Suzak marshalling yard. Kazatomprom-SaUran’s South Moinkum operation is unusual in that it is serviced by pipelines directly from this marshalling yard, due to its proximity to the yard. The road tankers typically have capacity to carry about 35t to 45t of acid each and each operation typically receives between five and ten tanker loads of acid daily. Other raw materials trucked to site in bulk (a number of truck loads per month) are hydrogen peroxide, ammonium nitrate and caustic soda.

### 11.4 Waste Management

Radioactive wastes produced by the mining operations are low level radioactive wastes (“LLRW”). They contain low concentrations of naturally occurring radioactive materials (“NORM”) with alpha activity less than 100Bq/g (100kBq/kg). These are either disposed of at LLRW facilities or are decontaminated. Wastes that are amenable to decontamination are metal wastes, particularly galvanised metal wastes that do not have pitted surfaces.

Kazmetrao LTD is a company independent of the Company that provides LLRW metal decontamination services. The decontamination processes used by this company is a commercial secret and the fate of the decontaminated metal is unknown to the Company. Reportedly, it is less expensive for the ISR operations to send LLRW metal off to Kazmetrao than it is to dispose of the waste at its own LLRW facilities. Kazmetrao currently operates from a site next to Kyzysheh (the settlement near the Uvanas mine) and uses the Stepnoye LLRW facility for disposal of any remaining waste from the decontamination process.

The LLRW produced by the operations include contaminated paper and cardboard, waste personal protective equipment (“PPE”), plastic, metal waste and filters from the plant emissions abatement technology. They also include drill slimes from the drilling in the ore zone, sediments from settling ponds, contaminated soil and resin. The capacity of the LLRW facilities is limited and the costs of disposal at these facilities is high, so companies are motivated to minimise the waste volumes as much as possible. Waste volumes are reduced by re-using materials as much as possible (for example, re-use of piping) and by means of shredding and/or compaction. The largest quantity of the waste from the operations is contaminated soil from pregnant-solution pipeline leaks. The leaks are detected with leak detection technology and addressed quickly to minimise impacts. There is a Company protocol for clean-up of contaminated soil. It is noted that the protocol requires annual gamma-radiation surveys of well fields to identify any contaminated soils that will need to be collected and disposed of at a LLRW.

The non-metal radioactive wastes produced by the mines are bagged in plastic bags and transported to LLRW facilities in metal containers. The plastic bags are used to prevent dust dispersion from the waste.

The LLRW facilities used by the operations are listed in Table 11-2. The LLRW have been located and designed so they do not impact on the environment. The cells of these facilities are lined with a bentonite clay liner and the wastes are covered with soils at a depth sufficient to prevent public exposure to significant levels of ionising radiation. For example, the cells of the RU-6 LLP’s waste facility are designed with a compacted clay liner (0.5m thick) and will be capped with a clay anti-radon screen (0.5m thick), overlain with a rocky crushed stone layer (0.5m thick) with bitumen impregnation. After that, a layer of potentially fertile soil (0.8m thickness) will be applied followed by topsoil layer (0.2m thick).

**Table 11-2: Low Level Radioactive Waste Facilities Used by the ISR Operations**

Waste facility (Province and geological basin)	Location	Capacity	Operations using the facility
RU-6 (Kyzylorda Province, Syrdarya basin): Operated by RU-6 LLP	Near North Karamurun and South Karamurun mines, 90km from Sheili, in the Shieli district.	Three cells with total capacity of 110,000m <sup>3</sup> : (10,000m <sup>3</sup> ; 50,000m <sup>3</sup> ; and 50,000m <sup>3</sup> ). The first cell is being decommissioned and the second is being commissioned.	All of the Company’s operations in the Kyzylorda Province, specifically: <ul style="list-style-type: none"> <li>• Irkol (Semizbai-U LLP)</li> <li>• North Karamurun and South Karamurun (RU-6 LLP)</li> <li>• Block Kharassan 1, North Kharassan (JV Khorassan LLP)</li> <li>• Block Kharassan 2, North Kharassan (Baiken-U LLP)</li> </ul>
Stepnoye (South Kazakhstan Province, Shu-Sarysu basin): Operated by Kazatomprom-SaUran LLP	Next to the Uvanas Mine and the Kyzysheh settlement	Current cell (80,000m <sup>3</sup> ) where about 50% of the capacity has been used.  Permitted second cell (80,000m <sup>3</sup> ) and construction will commence in 2020.  Space for third cell (100,000m <sup>3</sup> ) whilst space is available, this is not permitted yet.	Many of the Company’s operations in the South Kazakhstan Province. Including operations in the Shu-Sarysu Basin: <ul style="list-style-type: none"> <li>• Southern Moinkum (Northern Part) and Tortkuduk, (JV Katco LLP);</li> <li>• Uvanas and Eastern Mynkuduk (Kazatomprom-SaUran LLP)</li> <li>• Akdala and Block 4 Inkai (JV SMCC LLP)</li> <li>• Western Mynkuduk (Appak LLP)</li> <li>• Central Mynkuduk (Ortalyk LLP)</li> <li>• Block 1, 3 and 4 Budenovskoye (JV Akbastau JSC) and Block 2 Budenovskoye (Karatau LLP)</li> </ul> Also including Zarechnoye (JV Zarechnoye JSC), which is in the Syrdarya basin.
Kanzhugan (South Kazakhstan Province, Shu-Sarysu basin): Operated by Kazatomprom-SaUran LLP	At the Kanzhugan mine	7,200m <sup>3</sup>	Kanzhugan, South Moinkum (Southern Part) and Central Moinkum (Kazatomprom-SaUran LLP operations south of the Shu River)



Waste facility (Province and geological basin)	Location	Capacity	Operations using the facility
PV 1 & 2 (South Kazakhstan Province, Shu-Sarysu basin): Operated by Inkai LLP	At the Inkai mine, 8km from Taikonur	10,000m <sup>3</sup> and 16m <sup>3</sup>	Block 1, Inkai (a), (b) (c) (JV Inkai LLP)
Stepnogorsk waste facility (Akmola Province): Operated by Stepnogorsk Mining-Chemical Combine LLP	25km from Stepnogorsk and 160km from Astana	Unknown	Semizbai (Semizbai-U LLP)

Each package of waste placed in the LLRW facilities has a waste passport with detail of its nature and radioactivity and its location in the facility.

Regulatory authorities favour development of a small number of large facilities shared by a number of operations, rather than each operation having its own dedicated facility. Two groups of operations, both in the Shu-Sarysu basin have dedicated LLRW waste facilities that were developed prior to the government decision not to support dedicated facilities. These are JV Inkai LLP's LLRW facilities (the PV1 and PV2 facilities, which date back to 2001) and Kazatomprom-SaUran LLP's Kanzhugan LLRW facility, which is used by Kazatomprom-SaUran LLP's operations south of the Shu River (Kanzhugan, South Moinkum and Central Moinkum).

Operations in the South Kazakhstan Province that do not have dedicated LLRW facilities, as described above, transport LLRW waste to the Stepnoye facility, which is operated by Kazatomprom-SaUran LLP. Operations in the Kyzylorda Province transport waste to the RU- 6 LLP LLRW facility operated by RU-6 LLP. Regulatory authorities discourage waste transport across provincial boundaries. Consequently, some operations transport waste over vast distances. For example, Karatau LLP and JV Akbastau JSC operations have to use the Stepnoye facility near the Uvanas mine (over 200km) rather than the relatively nearby RU-6 LLP waste facility (less than 100km away). Similarly, the Zarechnoye operation has to use the Stepnoye facility (over 400km away) instead of the RU-6 LLP facility.

The LLRW facilities have been sized based on predicted wastes from the operations they serve and estimates of waste that will come from decommissioning of the mines. The Stepnoye LLRW operators say that it is difficult to get accurate predictions of waste loads that will be received from the mines. It is understood that there are no constraints, other than regulatory authority approvals, the expansion of the facilities. Reportedly, there are no obvious groundwater, environmental and land use reasons why the facilities cannot be expanded.

Wastes not classified as radioactive wastes are classified as inert, non-hazardous (green waste), potentially hazardous (amber waste) and hazardous (red waste) according to legally defined waste classification procedures. The amber waste includes batteries, fluorescent lamps, used oil and filters, medical waste and hydrocarbon contaminated soil/sand. The wastes are removed from site by licenced contractors and are recycled or disposed of at licenced facilities. All operations have waste inventories, together with the receipts, invoices and certificates provided by waste contractor for all wastes removed from site. These records are kept up-to-date for internal and spot checks, inspections and audits. The waste inventories are collated for the year and reported to regulatory authorities annually as part of the permit conditions.

Some operations have small licenced sites for domestic waste disposal and most have licenced facilities for holding of non-radioactive drilling wastes, which are classified as inert or green waste. The Company has reportedly recently established a protocol for drilling waste classification that will result in most companies classifying their drilling wastes as inert. The drill slimes waste facilities have raised embankment walls, but do not have liners because the waste is non-hazardous. The drill slimes of the ore zone are measured for specific alpha-particle activity. If the activity level is above sanitary norms then the slimes are classed as LLRW

and transported to LLRW facilities. Usually less than 1% of the total volume of the drill cuttings from the ore zone are classed as LLRW.

## **12 ENVIRONMENTAL AND SOCIAL MANAGEMENT**

### **12.1 Introduction**

This section of the CPR presents the results of SRK's undertaken an Environmental, Social, Health and Safety ("ESHS") review of the Company's ISR mines. The review involved site visits over the period July to December 2017, interviews with responsible staff members at the operations and from the Company's corporate Health, Safety and Environment ("HSE") department and review of HSE documentation including permitting documentation, monitoring data and management system documentation over the period July 2017 to June 2018.

This chapter of the report outlines the setting of the operations (Section 12.2), outlines the regulatory framework in which they operate (Section 12.3) and key features of the HSE management systems in effect at the operations (Section 12.4). It then identifies potential ESHS risks (Section 12.5), discusses closure liabilities associated with the operations (Section 12.6) and reviews conformance with international standards (Section 12.7). Review conclusions and recommendations are presented in Section 12.8.

### **12.2 Environmental and Social Setting**

Of the 26 production units, 25 are located in southern Kazakhstan across the Kyzylorda and South Kazakhstan Provinces. The Zhalpak production unit, which is subject to trial mining, is also located in the South Kazakhstan Province. The only ISR production unit outside of southern Kazakhstan is Semizbai, which straddles the North-Kazakhstan and Amkola Provinces in the northern part of Kazakhstan.

The administrative locations of the mines are outlined in Table 12-1. All mines are in terrain that is both sparsely vegetated and sparsely populated. The natural vegetation at the mine sites ranges from desert, through open shrubland to steppe. Only six mines are within 10km of human settlements. The settlements that are within 10km of some mines are very small – villages and small towns with populations below 7,000.

The locations of the ISR operations in southern Kazakhstan are shown in Figure 12-1. These are within the Syrdarya River basin and Shu-Sarysu River basin (Table 12-1). The basins are separated by the Karatau Mountains that run from the northwest to the southeast.

#### **12.2.1 ISR Operations in the Syrdarya River Basin**

The operations in the Syrdarya River basin are identified in Table 12-1 and their locations are shown in Figure 12-1.

The main industry in the Syrdarya basin involves uranium mining and agriculture in the form of livestock rearing (breeding of camels, sheep and horse) and crop production (irrigated rice-growing). Rail, road and energy communications are well developed. For all the ISR operations in the Syrdarya basin, with the exception of RU-6 LLP's operations, the surrounding land use is restricted to livestock grazing. Livestock incursions into the mining areas occur as they are not fenced (this is discussed further in Section 12.5.1).

The climate of in Syrdarya River basin is sharply continental, with hot summers, cold winters and high diurnal variations in temperature. The air temperature averages +26°C in summer (maximum +46°C in July) and -9°C in winter (the minimum is -38°C in January). Precipitation does not exceed 200mm per year. The winds blow predominantly from northern and north-easterly directions almost continuously. The speed is usually 8m/s to 12m/s with gusts up to 24m/s.

**Table 12-1: Syrdarya Region: administrative locations of the ISR Mines**

Province and district	Geographic area	Mining Subsidiary	Deposit name	Nearest settlements (distance from mine)
Kyzylorda Province (Shieli and Zhanakorgan districts)	Syrdarya depression	Semizbai-U LLP	Irkol	Kyzylkainy (9km), Ortakshyl (9.5km) and Zhanaturmys (13km)
		RU-6 LLP	Northern Karamurun Southern Karamurun	22nd intersection (1.5km), Avangard (2.6km from North Karamurun deposit), Gigant (3.8km) and Aktam (8.5km)
		JV Khorassan LLP	Block Kharassan 1, North Kharassan	Baykenzhe (7km)
		Baiken-U LLP	Block Kharassan 2, North Kharassan	Baykenzhe (10km) and Belibay (13km)
South Kazakhstan Province (Sozak district)	Syrdarya depression	JV Zarechnoye JSC	Zarechnoye	Koksaray (62km)
	Shu-Sarysu basin (south of Shu River)	JV Akbastau JSC	Block 1, Block 3 and Block 4 Budenovskoye	Aksumbe (40km) Karatau (60km)
		Karatau LLP	Block 2 Budenovskoye	Aksumbe (45km)
		Katco LLP	Tortkuduk	Tasty (20km)
			Southern Moinkum (Northern part)	Taukent (50km), Tasty (50km)
		Kazatomprom-SaUran LLP	Kanzhugan	Taukent (20km)
			South Moinkum (Southern Part)	Taukent (40km)
	Central Moinkum		Taukent (50km), Tasty (50km)	
	Shu-Sarysu basin (north of Shu River)	JV Inkai LLP	Block Inkai (a), (b) and (c)	Taikonur (6km)
		JV SMCC LLP	Block 4, Inkai	Taikonur (12km)
			Akdala	Kyzemshek (35km)
		Ortalyk LLP <sup>(1)</sup>	Central Mynkuduk	Taikonur (70km)
		Appak LLP	Western Mynkuduk	Taikonur (60km)
Kazatomprom-SaUran LLP		Uvanas	Kyzemshek (2km), Zhuantobe (60km) and Tasty (80km)	
		Eastern Mynkuduk	Kyzemshek (60km)	
	Zhalpak (exploration and trial mining site)*	Kyzemshek (85km), Tasty and Zhuantobe (120km)		
North-Kazakhstan Province (Ualikhanovsky district) Amkola Province (Enbekshilder district)	Semizbai depression	Semizbai-U LLP	Semizbai	Kairat and Zhas-karait villages (50km), Bestobe (60km) Stepnogorsk city (150km)

<sup>(1)</sup> Ortalyk LLP is the holder of the mining contract for the Zhalpak deposit. Kazatomprom-SaUran LLP undertaking the trial mining operations at the Zhalpak deposit under contract to Ortalyk LLP. The environmental permit for the trial mining has been issued to the Kazatomprom-SaUran LLP, as the operator of trial mining. Full-scale mining at the Zhalpak deposit will commence is scheduled for 2022 if the trial is successful.

The Syrdarya River basin is approximately 150m to 185m above sea level and is characterised by an aeolian-alluvial plain rising to the foothills of the Karatau Mountains to the northeast. The Syrdarya River is the largest in southern Kazakhstan. It originates in the Kyrgyzstan highlands and flows through the Republic of Tajikistan (“**Tajikistan**”) and Republic of Uzbekistan (“**Uzbekistan**“) and then into Kazakhstan to the endorheic Aral Sea. The river often runs dry before reaching the Aral Sea due to over abstraction for agriculture in the upper and middle reaches and the absence of effective inter-country water sharing agreements. The river is recognised as being moderately polluted, with elevated levels of copper, zinc, and hexavalent chromium, along the length of the river (Water Quality in the Amudarya and Syrdarya River Basins Analytical Report, undated: [http://www.cawater-info.net/water\\_quality\\_in\\_ca/files/analytic\\_report\\_en.pdf](http://www.cawater-info.net/water_quality_in_ca/files/analytic_report_en.pdf).) The prevailing sources pollution are unknown, but are assumed to be industrial activities in the catchments upstream of Kazakhstan. The river is heavily used for irrigation throughout the Kyzylorda Region.

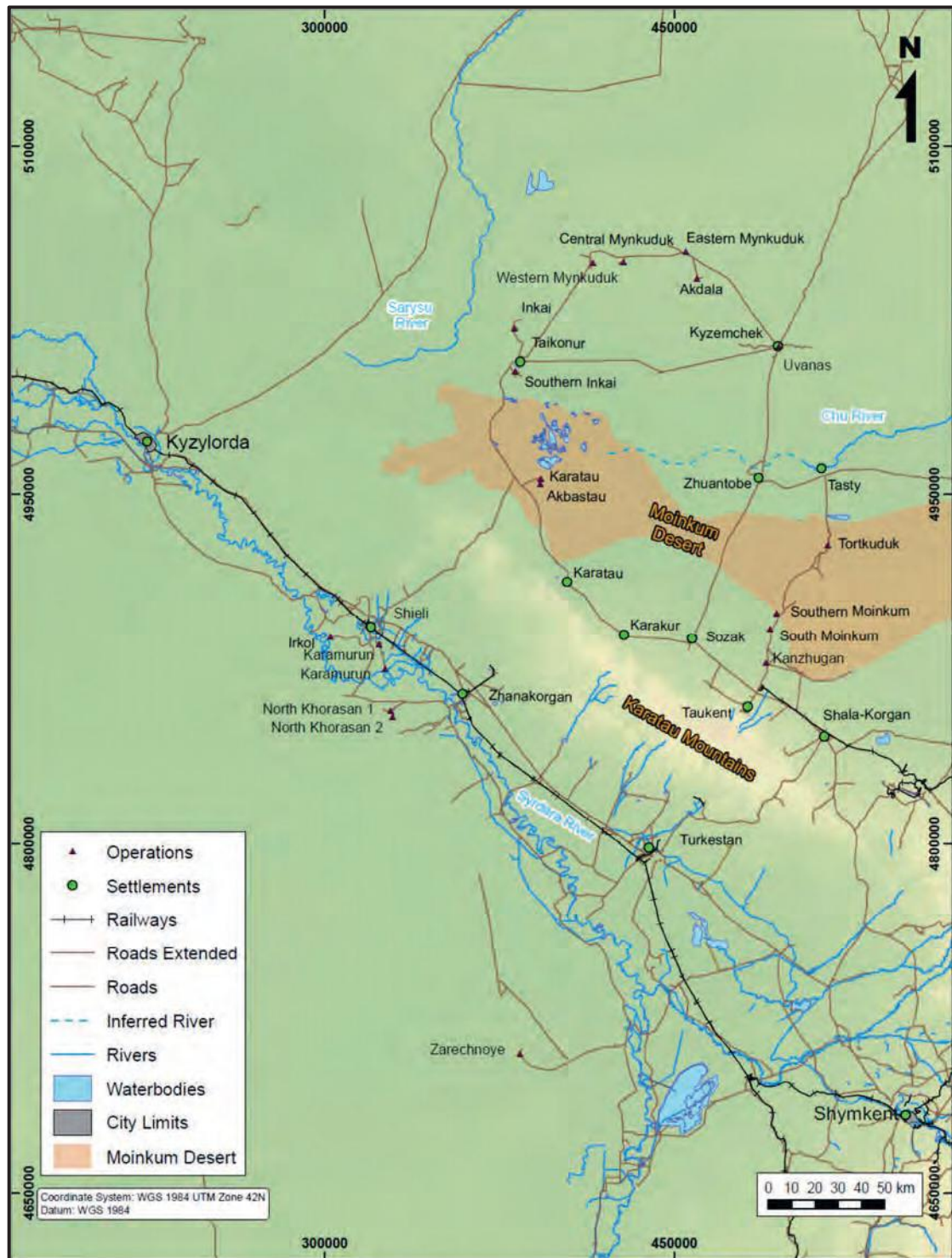
Near the ISR mines in the Syrdarya basin, the Syrdarya River is large and perennial. The highest flows (300m<sup>3</sup>/s to 1,000m<sup>3</sup>/s) follow the spring snow melt (May – June). The operations are located on northern and southern sides of the Syrdarya River at some distance from the river (generally at least 5km). The exception is the Irkol deposit area, which extends across both sides of the river channel. Mining is currently only taking place on the north bank. Expansion of mining operations to the south is not under consideration in the LoMps in this report. Future development to the south of the river would be subject impact assessment and

permitting as described in Section 12.3.

The area around the Irkol deposit is used for livestock grazing. There is no arable cultivation and the only residential dwellings are cattle herders' temporary summer huts.

The river in the Irkol deposit area is classified a water conservation zone. The Ministry of Agriculture Order No. 19-1/446 as of 18.05.2015 defines a water conservation zone as an area surrounding the river (up to 35m from the river bank) where special requirements may be imposed for water protection (as a precaution against water contamination and water depletion). According to the Water Code (Article 119), the lands in the water conservation zone can be used by both legal entities and the public but will be a subject to special control. The water quality upstream and downstream of the Irkol operation is being monitored for radiation parameters by Semizbai-U LLP and is reportedly within an acceptable range.

**Figure 12-1: Location of the Company’s ISR Mining Operations in the Southern Part of Kazakhstan**



At Block Kharassan 1, North Khorassan, there is a manmade canal about 3km to 4km to the north of the mine area that carries drainage from rice fields are at least 20km away.

The Zarechnoye mine is 200km to the south of the other ISR mines in the Syrdarya basin. It is in the Kyzylkum desert, a sand-clay plain that extends southwards to Uzbekistan and Turkmenistan and is characterised by sand dunes and salt flats. The Syrdarya River is located 50km to the east of Zarechnoye.

Land coverage in the Syrdarya basin is predominantly semi-shrub pastureland and tugai forest



in the flood plains. Protected species distribution data cited in impact assessment reports for the mines (Otsenka Vozdejstviya na Okruzhayushchuyu Sredu reports: “**OVOS**”) indicate that protected tulip species and Central Asian endemics could be present around the Karamurun and Kharassan deposits. Animal species that could be present are desert or semi-desert species including saigas (antelope), gazelles, wild boars and small rodents. Larger species are reportedly rarely seen. Birds are diverse during the spring-autumn migration (up to 150 species). This is discussed further in Sections 12.5.

The Zarechnoye mine is in an area known for its conservation of a rare bird (MacQueen's bustard or *Chlamydotis macqueenii*). The Arys Karaktau Nature Reserve of 404,000ha was formally established only a few months before Zarechnoye commenced operations. It is recognised as a reserve on the Bird Life International website. The key objective of reserve is to preserve the breeding grounds and stopover resting places for MacQueen's bustard, though other birds and animal species are monitored and observed. The conservation programme is currently being implemented by a working group that includes the Kazakhstan conservation agencies, World Wildlife Fund Central Asian programme and a research centre from the United Arab Emirates. Mining is not considered to be threat to the reserve by Bird Life International and controlled hunting of the MacQueen's bustard is reportedly allowed within the reserve. The Zarechnoye concession overlaps the boundaries of the nature reserve. SRK notes that an Ordinance from the Prime Minister dated 2005 requires authorities consider the boundaries of the reserve with respect to the Zarechnoye deposit. The relationship between the Zarechnoye mine, the state authorities and the ‘users’ of the reserve is reportedly positive and the mine considers there to be no conflict of interest. SRK understands no specific requirements are currently imposed on the mine as a result of the proximity of this reserve.

RU-6 LLP's operations are located next land used for crop cultivation (generally rice or other grain fields), as well as livestock grazing. The vegetation around Karamurun is monitored for radiological parameters every year to confirm the mine is not impacting on farm produce. This is done in partnership with a Non-Governmental Organisation (“**NGO**”) called the Nuclear Society of Kazakhstan (“**NSK**”). The NSK report dated 2017 assessed groundwater (radiation and heavy metals), soil (radiation and heavy metals) and vegetation/agricultural produce (radiation and nitrates, sulphates and phosphate) in Shieli, Akmaya and Bidaykol at locations agreed with the community. Radiation monitoring included gamma, alpha and beta testing. There were no exceedances of standards identified except for two minor elevated iron readings in Shieli.

The Zarechnoye deposit is more than 50km from the nearest human settlement (direct line) and the land around the deposit is only used for very low intensity livestock farming, mainly sheep. At some distance from the current mining operations, there are a number of artesian wells drilled early in the 19th century, that are used for livestock watering (the closest is 17km and the furthest is 80km). Access to these is in no way restricted by the mine. The wells have been measured in the past by the mine in association with NSK for uranium content, along with a number of groundwater monitoring sites in the nearest villages. The NSK confirmed there is no impact from mining.

Goods are transported to the Zarechnoye operation via road by trucks from Timur railway station, which is approximately 90km from the site.

No sites of archaeological or cultural significance are located near the deposits, except at North Khorassan 2 where a graveyard and mosque are located at the north-eastern corner of the concession. Access to these are not restricted by the mine, the area is not directly impacted by operations and the mine occasionally maintains the road to these sites.

### 12.2.2 ISR Operations in the Shu-Sarysu Basin

The operations in the Shu-Sarysu basin are identified in Table 12-1 and their locations are shown in Figure 12-1.

With the exception of Inkai and Inkai 4 which are located 6km and 12km from the nearest settlement (Taikonur), the mines are more than 30km from the nearest community (Table 12-1).

The climate of the Shu-Sarysu River Basin is an extreme continental climate. The air temperature averages +23°C in summer (maximum +40°C in July) and -15°C in winter (the minimum is -35°C in January). Precipitation does not exceed 140mm per year. The winds blow predominantly from the northern and north-easterly directions and almost continuously. Strong winds prevail, averaging 3.8m/s to 4.6m/s. Dust storms are common.

Like the Syrdarya River, the Shu River originates in the Kyrgyzstan highlands. It drains westwards towards the Sarysu River before disappearing into steppe near the Inkai and Inkai 4 ISR operations. The river splits into a series of saline ponds during the dry season. River flow is highest following the spring thaw (May-June).

The Shu River divides the Shu-Sarysu basin into northern and southern parts. The sandy Moinkum desert extends over the southern part and features small sand dunes and salt pans. The Betpak-Dala clay desert extends over the northern part and continues for some 200km northwards of the Shu-River.

The Shu-Sarysu basin is sparsely populated largely because the environment is harsh and water resources are limited. The main land uses in the Shu-Sarysu basin are nomadic livestock grazing and uranium mining. The livestock includes cattle, horses, camels and karakul sheep. Reportedly, the livestock farmers travel vast distances over the Moinkum and the Betpak-Dala deserts, returning to the Shu River in spring and autumn. All of the uranium mining in the basin is by the Company's ISR mines identified in Table 12-1. The night lights of the ISR operations reveal that they cover large areas. However, at day it appears as if the operations are isolated because the extensive well fields blend into the landscape and are not visible from a distance.

The South Moinkum (Southern Part) and Central Moinkum, Southern Moinkum (Northern Part) and Tortkuduk operations extend over the Moinkum desert. JV Katco LLP uses vehicles safety flags at the latter two operations because the undulating dune terrain affects vehicle visibility. Vegetation in the Moinkum desert is dominated by desert shrubs (*Haloxylon persicum*, *Kochia prostrata*, *Calligonum*), with reeds (*Phragmites* and *Tamarix*) in riverine areas and species such as *Agropyron*, *Festucca* and *Artemesia* in the large spring flood plain. Fauna is typical of desert and semi-desert environments.

Small watercourses drain the Karatau Mountains to the south of the Moinkum desert and then, like the Shu River, disappear into the steppe. Settlements are located close to the mountains to the south and the Shu River, with the intervening desert being remote and sparsely populated.

The operations in the Betpak-Dala desert to the north of the Shu River include Uvanas, Akdala, Eastern, Central and Western Mynkuduk, Block 1 Inkai ('a', 'b' and 'c') and Block 4 Inkai. In addition, there is the Zhalspak trial mining operation about 70km north of the Uvanas operation. The Betpak-Dala desert is a flat to gently rolling plain with elevations ranging from 220mamsl to 300mamsl. The soils are mainly brown sandy deserted-steppe soils with a high content of copper and arsenic. Vegetation is represented by saxaul (*Haloxylon*) and saltwort communities and the fauna is represented by desert and semi-desert species. Large mammals include saiga, goitered gazelle and wolves, and small mammals include foxes, hares, jerboas, gophers. There is a wide variety of bird species as the paths of a number of annual migrations intersect

the region.

Several rare species have distributions that overlap with the deposits, including tulips, mammal species and bird species. Detailed habitat maps have not been prepared for any of the mines in the Shu-Sarysu basin and formal assessment of the occurrence of critical habitat in the areas disturbed by mining have not been undertaken. This is discussed further in Section 12.5.

### 12.2.3 Semizbai ISR Mine

The Semizbai deposit is located in north Kazakhstan, 300km north of Astana and less than 200km from the Russian border. The mine site straddles two provinces, the Akmola and North Kazakhstan Provinces. Approximately 75% of the deposit area and over 80% of uranium reserves are in the Ualikhanovsky district of the North Kazakhstan Province, and the remainder in the Enbekshilder district of the Akmola Province.

The climate at Semizbai is sharply continental with hot summers, severe winters, and large temperature fluctuations during the day. The average monthly temperature is +18°C to 22°C (maximum +35°C) in summer and -17°C to 20°C (minimum -44°C) in winter). Average annual precipitation is around 300mm, most of which falls as rainfall in summer. Strong winds are frequent.

The mine site is in the Semizbai depression on the north-eastern edge of the Kazakh highland. The relief of the area is largely flat with a gentle slope to the north and east with elevation ranging from 90m to 140m. Vegetation is sparse and comprised mostly of low shrubs and grasses with a patches of small trees. Surface water is limited to shallow marshes, saline lakes in natural depressions and ephemeral streams that flow following spring snow melt and summer rain. More permanent lakes to the east are highly saline and unsuitable for domestic, farming or industrial use. Underground waters in the deposit area have high mineralization (from 2g/l to 20g/l).

The area of the deposit is one of the least economically developed in Northern Kazakhstan. The connection between the nearest industrial centres and regional centre of Ualikhanovo is poor. The main occupation of the local population is livestock grazing and grain farming. There is a farmstead 15km from the site that has a shallow aquifer water well (15m) for domestic and farm use. Two abandoned villages within 50km of the mine, Kirovo and Koitas, were reportedly abandoned before the mine was developed as part of a voluntary move to Stepnogorsk.

## 12.3 Legal and Regulatory Framework

The main legislation relating to ESHS management and the main permits required are identified in this section. Comment on how relevant Kazakhstan legislation aligns with international good practice is given in Section 12.7. Regulatory compliance is discussed in Section 12.4.6.

### 12.3.1 Environmental Code

The “**Environmental Code**” (Law No 212-III, January 2007, as amended), is the primary environmental protection law. It has been amended many times, with the most recent amendment having been made in June 2018. The Committee of Environmental Regulation and Control of the Ministry of Energy is currently the responsible environmental authority.

The Environmental Code includes a number of generic requirements applicable to mining projects but these can be superseded by specific requirements within the asset’s environmental permits or other legal agreements. Non-compliance could lead to suspension of operations.

The Environmental Code defines the procedure of obtaining environmental permits, which is a document certifying environmental emission rights of individuals and legal entities. Permits must be renewed when working project documentation or technological processes change.

The mandatory procedure for obtaining environmental permits is the environmental impact assessment (“**EIA**” or OVOS in Russian), an impact assessment process must be undertaken and the OVOS report must be approved by regulatory authorities. An approved OVOS is required not only for new projects but it is also required for variations to an approved project. This means that mining operations have many OVOS reports covering new developments, technology changes and infrastructure alterations. There is a requirement for public hearings for each OVOS project.

Estimates of the expected environmental releases and waste likely to be generated by a project are initially submitted with the OVOS, along with the industrial environmental monitoring program and environmental action plan to enable the necessary permits to be obtained. If the OVOS documentation is no longer applicable, then permit renewal will be based on separate submission documents such as the Maximum Allowable Discharge Report, Maximum Allowable Air Emission Report, Quantitative Estimates of Waste Generation and Disposal Report.

The industrial environmental monitoring programme establishes a mandatory list of parameters to be monitored (including air, soil, groundwater and other), duration and frequency of the measurements, and instrumental or computational methods used. The environmental action plan provides the costs incurred by the operation for implementation of required environmental protection measures and pollution payments.

The emissions permitting system in Kazakhstan is a “*pay-to-pollute*” system wherein the developer pays for the ‘right’ to make emissions to the environment in accordance with the permit. Emission permits contain emission limits that must be adhered to. There are also maximum permissible concentrations (sanitary norms) that apply on the boundary of sanitary protection zones around hazardous facilities. Regulatory authorities impose high penalties for non-compliance with permit limits or sanitary norms. Emissions fees are paid quarterly. Fees for standard emissions are paid based on fixed rates, while multipliers (up to 10 times) are applied to fees for releases in excess of the permit limits or sanitary norms.

Environmental reports must be regularly submitted to regulating authorities as specified in the permit. If the required documentation is not submitted this may lead to fines.

The Environmental Code also provides for regulation of the use of radioactive materials, nuclear energy and radiation safety alongside specific laws on these subjects (Section 12.3.6). In addition, it covers environmental damage, economic evaluation of damage and damage payments. Furthermore, the Environmental Codes regulates greenhouse gas emissions and provides for the Kazakhstan Emissions Trading System (“**KAZ ETS**”). Details of KAZ ETS have been issued in a series of executive decrees. The KAZ ETS was launched in 2013, was temporarily suspended in 2016 and became operational again in January 2018. The Company’s operations are not major producers of greenhouse gases. The annual Scope 1 greenhouse gas emissions from the operations are below the threshold (of 20,000 tonnes of carbon dioxide equivalent) for greenhouse gas reporting and participation in the KAZ ETS. The total annual greenhouse gas emissions from all of the ISR mines together is in the order of 60,000 tonnes of carbon dioxide equivalent.

### 12.3.2 Land Code

The “**Land Code**” (Law No 442 II ZPK, 2003, amended 29 June 2018) enables land to be given designated uses. The Code requires owners/users of land, whether state or privately owned, not to harm public health or the environment, not to pollute the land or cause deterioration in soil fertility, to conserve topsoil and to rehabilitate disturbed land. The Land Code allows for state appropriation of land for “public needs” (which may include mineral exploration/exploitation). It also includes the legal procedure for changing land use.

### 12.3.3 Water Use Code

The “**Water Use Code**” (Law No 481, 2003, amended 29 June 2018) describes the general procedure for water protection activities, including payments for water use and protection of waters from pollution and depletion. As with the Environment Code, the Water Use Code stipulates a permit must be obtained for water abstraction, industrial (and mining) water use and the discharge of effluents (referred to as “*special water uses*”). The responsible authority is the Committee of Water Resources of the Ministry of Agriculture.

### 12.3.4 Subsoil Law and Subsoil Code

Mining law has been updated recently, the “**Subsoil Law**” (№291-IV 24 June 2010, amended 24 May 2018) was superseded by “**Subsoil Code**” in 29 June 2018. The Subsoil Code provides that previously issued Mining Contracts will remain in force.

Permission to mine is given by means of a mining contract, with a limited validity period. At the end of this period, a new contract must be arranged or the site must be handed back to the Government.

Depending on the category of minerals, there are three Competent Authorities, which are the Ministry of Investment and Development (solid minerals), Ministry of Energy (oil, gas, coal and uranium) and regional akimats (sand and clay). The Ministry of Investment and Development also supervises the mining industry through its sub-ordinate Committee on Geology and Subsoil Use (the “**Geology Committee**”).

Mining contracts in Kazakhstan generally contain requirements related to environmental and social aspects. These include general statements about the need to meet legislative norms and specific requirements pertaining to:

- Annual payments for the social and economic development of the region and its infrastructure (amount varies depending on contract);
- Annual investments into education of employees that are citizens of Republic of Kazakhstan, generally in the order of 1% of annual operating expenditure;
- Annual financing of research and development works of Kazakhstan producers of not less than 1% of annual operating expenditures; and
- Annual payments to the liquidation fund (amount varies depending on contract).

### 12.3.5 Specific Requirements for Closure

The Subsoil and Subsoil Use Code provides for application of a retrospective effect to some elements of mining contracts executed prior to its effective date, including liquidation requirements. Detail on how this retrospective effect will apply is not yet available. It is therefore appropriate to discuss the requirements of the both the repealed and the current mining law, specifically:

- The recently repealed Subsoil Law (Law № 291-IV, 24 June 2010, amended 24 May 2018) and associated Rules for Mine Closure and Conservation (Rule № 634 06 June 2011, amended 27 February 2015); and
- The Subsoil Code (№ 156-VI 4 June 2018) and the associated Instructions for developing a liquidation plan and a methodology for calculating the approximate cost of liquidating the consequences of operations for the extraction of solid minerals (Decree № 386 28 May 2018).

The repealed Subsoil Law requires that mines are closed when mineral resources are depleted or ‘conserved’ when mining operations are terminated (for example when the contract has expired). According to Article 111 of this Law, closure or conservation must be carried out in



accordance with a plan designed by an authorised engineering company in the field of environmental protection and funded from a liquidation fund. Contributions to the liquidation fund, held by a bank incorporated in Kazakhstan, are made by the mine operator. At the time of closure or conservation, the mine operator can use the funds with the permission of the competent authority. The terms of payment to the fund (the frequency and amount of payments) are established by the Mining Contract. If the closure cost exceeds the fund's savings the mining operator must cover the closure cost.

Closure or conservation work is considered complete after official acceptance of this closure plan by a commission of competent authorities in the fields of: environmental protection; mineral resources management; industrial safety; sanitary-epidemiological service; land management services; and local authority. The certificate of acceptance of closure or conservation work will be issued by the Environmental Protection Authority (the “EPA”). The GoK can decide that the operation should continue after the current Mining Contract completes its mining. In this case, the mining operator's obligations for implementation of the closure program will be waived and they will waive all rights to the accumulated liquidation fund.

The Subsoil Code has introduced new requirements regarding closure and financial assurance for closure. According to Article 54 of the Subsoil Code, mines and associated auxiliary facilities must be closed when the term of right for subsoil use has expired. Liquidation and reclamation work can be carried out during life of mine to relinquish the portion of the land and lower the cost of liquidation.

Under the Subsoil Code, the aim of the liquidation is health and safety of the population and environmental protection. The associated Instructions for planning and cost estimation are founded on this aim and require an objectives based approach to liquidation planning. The liquidation aim is supported by principles that guide the selection of clear and measurable liquidation objectives for all project components. For each liquidation objective, subsoil users have to propose a set of liquidation options that could achieve the objective and a selected liquidation activity is chosen from these options. Liquidation criteria measure whether the selected activity achieves the specific objective.

The Subsoil Code requires financial assurance for liquidation is provided to cover 100% liquidation costs by means of a guarantee, bank deposit and/or insurance. The mine operator can use the funds for its closure activities with the permission of the competent authority.

The following legislation also has requirements pertinent to closure (relating to clean up of pollution, remediation of disturbed land and revegetation): the Environmental Code (Law No 212-III, January 2007, as amended); Instruction for land reclamation projects development (Decree №346, 17 April 2015); the Land Use Code (Law No 442 II ZPK, 20 June 2003, as amended); the Water Use Code (Law No 481, 09 July 2003, as amended); and the Forest Use Code (Law № 477-II 08 July 2003, as amended).

### 12.3.6 Atomic Industry and Radiation Safety Requirements

The primary legislation on nuclear safety and security is outlined below.

- Law of the Republic of Kazakhstan of 12 January 2016 No 442-V “*On the Use of Atomic Energy*”: The “**Atomic Energy Law**” defines the legal basis and principles of regulating public relations in the use of atomic energy in order to protect the life and health of people, their property and environment. It includes specific provisions on licensing (Article 9), construction of nuclear facilities and repositories (Article 12), nuclear security (Article 13), state accounting for nuclear material and sources of ionising radiation (Article 14), export and import (Article 15), transport (Article 6), handling of radioactive waste and spent fuel

(Article 17), decommissioning of facilities (Article 22), emergency preparedness and response (Article 23), safety and security reviews (Article 24) and compensation (Article 27). Additionally, the Atomic Energy Law defines the types of expertise of nuclear, radiation and nuclear physical safety required for various types of facilities. Natural uranium mining and processing facilities are subject to licensing according to the Atomic Energy Law;

- Law of the Republic of Kazakhstan No 219-I of April 23, 1998 “*On Radiation Safety of the Population*”: The “**Radiation Safety Law**” regulates the field of radiation safety of people to protect them from harmful effects of ionizing radiation; and
- Law of the Republic of Kazakhstan dated May 16, 2014 No 202-V “*On Permits and Notifications*” (as amended on June 15, 2017) (the “**Permits and Notifications Law**”): In addition to the environmental permit/s, licences are required to operate or provide service to a nuclear/radiation hazardous facility. Depending on the operation these may include:
  - licence for works related to the life cycle of nuclear facilities,
  - licence for activities related to radioactive waste management,
  - licence for activities related to the special training of personnel responsible for ensuring nuclear and radiation safety,
  - licence for the provision of services in the field of the use of atomic energy,
  - licence for handling radioactive substances, devices and installations containing radioactive substances,
  - licence for transportation, including transit, of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive waste within the territory of Kazakhstan,
  - licence for physical protection of nuclear installations and nuclear materials,
  - licence for handling nuclear materials.

Several subordinate documents have been developed to support implementation of the Atomic Energy Law, the Radiation Safety Law and the Permits and Notifications Law. Regulatory functions for safety, security and safeguards are assigned to the Committee of Atomic and Energy Supervision and Control, which reports to the Ministry of Energy. The Committee is responsible for licensing of nuclear related activities, development of norms and rules related to radiation safety, emergency planning and supervision of compliance to the norms and rules.

### 12.3.7 Labour Protection and Occupational Health and Safety

Labour protection and health and safety in Kazakhstan are regulated by:

- “**Constitution**”: The Constitution of the Republic of Kazakhstan (adopted at the republican referendum on August 30, 1995) (with amendments and additions as of March 10, 2017);
- “**Labour Code**”: The Labour Code of the Republic of Kazakhstan of November 23, 2015 No. 414-V (as amended and supplemented as of June 13, 2017); and
- “**Law on Civil Protection**”: Law of the Republic of Kazakhstan of April 11, 2014 No. 188-V “*On Civil Protection*” (as amended and supplemented as of June 13, 2017).

The Constitution and the Labour Code guarantee basic workers’ rights, including the occupational safety and health, the right to organise and the right to strike. The Labour Code regulates employment and related matters, including dismissal, and safety in the workplace.

The Constitution and the Labour Code prohibit discrimination based on gender, race, decent, nationality, religion, political opinion, public associations, social class or financial status, and physical shortcomings. The Constitution and Labour Code also prohibit forced and child labour. The mining age for work is 16 years in most work settings and 18 years for hazardous work

(Articles 31 and 26 of the Labour Code, respectively).

The Ministry of Labour and Social Protection is responsible for the enforcement of the Labour Code.

The Labour Code makes written employment contracts mandatory and promotes use of collective bargaining agreements. The Code requires an employer to give a month's notice prior to termination in case of dismissal due to liquidation or downsizing of personnel, unless a longer notification period is stipulated in the employment contract or collective bargaining agreement. Compensation must be paid for dismissal due to liquidation or restructuring and should be one average month salary. It can be more if there is a provision in the employment contract or collective bargaining agreement. An employer is obligated to report to the labour authority at least one month before contemplated collective dismissal. There are restrictions on retrenchment of staffing positions of pregnant women, single parents with young children and people who are close to retirement age. When the employment contract is terminated, amounts due to the employee from the employer must be made no later than three working days after its termination.

The Labour Code provides for labour and employment claims to be asserted collectively or individually and resolved through a conciliation commission, mediation commission, labour arbitration or court hearing.

The Law on Civil Protection regulates fire safety and industrial safety, as well as defines the main tasks, organizational principles for the construction and operation of the civil defence of the Republic of Kazakhstan.

### **12.3.8 Energy Saving Law**

Under the Law No 541-IV *“On Energy Saving and Raising Energy Efficiency”*, which came into effect in 2012, enterprises required to demonstrate improvements in energy saving and energy efficiency. The Company's ISR mines have ISO 5001 energy management systems to facilitate ongoing improvement.

### **12.3.9 Primary Approvals held by the ISR Operations**

SRK's knowledge of the primary environmental approvals and radiation licences held by the operations is presented in Table 12-2. SRK notes that the ISR operations also require a licence for handling of sulphuric acid that is considered to be essential. This is a precursor licence issued under the Law *“On Narcotic Drugs, Psychotropic Substances, Their Analogues and Precursors and Measures to Counteract Their Illicit Trafficking and Their Abuse”*. The precursor licence is issued by the Ministry of Internal Affairs, through the Department for Combating Drug Trafficking and Drug Control.

SRK understands that the mines have all the primary approvals required to continue with their operations. The mines are subject to frequent state inspections as outlined in Sections 12.3.10 and 12.4.6.

Kazatomprom-SaUran LLP is undertaking the trial mining operations at the Zhalspak deposit under contract to Ortalyk LLP, the holder of the mining contract. The environmental permit for the trial mining has been issued to the Kazatomprom-SaUran LLP, as the operator of trial mining. Full-scale mining at the Zhalspak deposit is scheduled for 2022. Using information from the trial mining, a TEO will be prepared and submitted to government together with an OVOS. The OVOS process will commence in 2019, the Company does not envisage there will be any hitches obtaining the approvals to operate by 2021. The LoMp included in Section 13 of this report does not assume full scale mining occurs at the Zhalspak deposit with just pilot/trial mining up to 2020.

**Table 12-2: Primary ESHS Approvals Held by the ISR Operations**

#	Company	Deposit	Primary permits and licenses (note that some operations do not need all of the named approvals, the number and expiry date of the approvals is given)		
			Emissions permit	Licenses to operate or provide services to a radiation hazardous facility	License for handling precursors
1	JV SMCC LLP	Akdala Block 4, Inkai	KZ09VCZ00086365 31.12.2018	15005197 18.03.2020 15004797 12.03.2020	14015339 10.10.2019
2	Semizbai-U LLP	Semizbai Irkol	KZ59VCZ00144538 07.11.2019 KZ08VCZ00146232 31.12.2019	15006612 10.04.2020 15006611 10.04.2020	14006526 13.09.2019
3	Appak LLP	Western Mynkuduk	KZ26VCZ00035716 31.12.2018	15008290 04.05.2020	17010701 13.06.2022
4	JV Inkai LLP	Block 1 Inkai (a), (b) and (c)	KZ91VCZ00123107 31.12.2022	15001154 23.01.2020 15001155 23.01.2020 15001161 23.01.2020	18005470 15.03.2023
5	JV Khorassan LLP	Block Kharassan 1, North Kharassan	KZ01VCZ00147134 31.12.2026	15005616 30.03.2020	13000467 18.01.2018 (issued to Kyzylkum LLP)
6	Baiken-U LLP	Block Kharassan 2, North Kharassan	KZ65VCZ00126388 27.01.2020	15002424 06.02.2020 15002425 06.02.2020	18005471 15.03.2023
7	JV Zarechnoye LLP	Zarechnoye	KZ25VCZ00061439 26.08.2018	14017816 26.11.2019 14017845 26.11.2019	15022800 31.12.2020
8	JV Katco LLP	Southern Moinkum (Northern part) Tortkuduk	KZ30VCZ00128279 31.12.2021 (Southern and Tortkuduk mines) KZ69VDD00067327 termless (Shanyrak mining camp) KZ18VDD00067954 31.12.2021 (Gathering ponds, filtration fields of Southern and Tortkuduk mines and Shanyrak mining camp)	15005057 16.03.2020 14019179 19.12.2019 14019180 19.12.2019 14018897 15.12.2019	16016219 21.10.2021
9	Karatau LLP	Block 2 Budenovskoye	KZ06VCZ00077301 18.12.2018	15015899 26.01.2020 15001330 26.01.2020	16007906 14.05.2021
10	JV Akbastau JSC	Block 1 Budenovskoye Block 4 Budenovskoye Block 3 Budenovskoye	KZ53VCZ00142124 31.12.2020	15002067 04.02.2020 15002066 04.02.2020	15015651 25.08.2020
11	Kazatomprom-SaUran LLP	Uvanas Eastern Mynkuduk Kanzhugan South Moinkum (Southern Part) Central Moinkum	KZ66VCZ00131705 31.12.2018 KZ82VCZ00145482 31.12.2026 KZ12VCZ00145481 31.12.2026	16000551 18.01.2021 16000566 18.01.2021 16000549 18.01.2021	16011551 19.07.2021
12	RU-6 LLP	Northern Karamurun Southern Karamurun	KZ21VCZ00144737 29.11.2018	15003287 17.02.2020 15003286 17.02.2020 15003285 17.02.2020	
13	Ortalyk LLP	Central Mynkuduk Zhalpak	KZ12VCZ00062255 31.12.2018 KZ11VCZ00142298 31.12.2018	15019372 02.11.2020 15009084 19.05.2020	17005428 31.03.2022
14	Budenovskoye LLP	Budenovskoye	Exploration asset		-

### 12.3.10 State Inspections

A number of state inspections are carried out by regulatory authorities to verify compliance with environmental, health and safety and radiation protection regulations. The frequency and procedure for conducting inspections is regulated by the “Commercial Code” (№ 375-V of 29th October 2015, with amendments as of 03.07.2017). The Commercial Code specifies three types of inspections: scheduled; unscheduled; and selective. Scheduled inspections take place based on the schedule published semi-annually on the General Prosecutor’s website: <http://prokuror.gov.kz>. The frequency of the scheduled inspection is based on an assessment of the degree of risks relating the threat to life, public health and the environment.

State inspection bodies that inspect the mines are identified below:

- Environmental state inspections are undertaken by the Committee for Environmental Regulation, Control and State Inspection (of the Ministry of Energy);
- Health and safety inspections are carried out by the Committee for Industrial Development and Industrial Safety (of the Ministry of Investment and Development) and regional inspection of labour protection (of Ministry of Labour and social protection);
- Radiation safety inspections include inspections by the Committee of Atomic and Energy Supervision and Control (of Ministry of Energy) and the Committee for Public Health Protection (of Ministry of Health); and
- Fire safety inspections are carried out by the Emergency Committee of the Ministry of Interior.

Safety violations found during safety inspections may result in imposition of fines on company management personnel receiving administrative sanctions (fines) on the company's officers. Labour inspectors can suspend operations if there are life threatening safety violations and can suspend employees who do not have safety training. Criminal proceedings may be instituted against management personnel where safety violations lead to serious injury or death.

Inspections undertaken at the Company's operations are discussed further in Section 12.4.6.

## 12.4 Health, Safety and Environmental Management Systems

The operations do have HSE management systems and these are integrated with quality management systems. This section outlines features of these management systems.

### 12.4.1 Certification

The management systems at the ISR mines are certified to the ISO 14001 environmental management standard, the OSHAS 18001 occupational health and safety, the ISO 5001 energy management standard and the ISO 9001 quality control standard. The ISO 14001 and ISO 9001 standards were updated in 2015 and some of the operations have been certified under the updated standards, while others aim to migrate their management systems to the new editions of the standards by the end of 2018.

Documentation on training, internal auditing, allocation of responsibilities was evident at ISR mine sites that were visited by SRK. Risk assessments are undertaken and are used to inform operating procedures, action plans and emergency preparedness.

The Company recognizes that there are differences in the management systems of its various daughter companies, as these have been developed with guidance from different consultants and certification bodies, and that there are opportunities for improving alignment of these management systems.

### 12.4.2 Corporate Oversight

The Company oversees HSE management at the operations by means of:

- Corporate audits, which are generally undertaken every second year, but at a frequency of no less than once every three years;
- Review of quarterly and annual reports submitted by each of the operations and collation of these into corresponding corporate internal quarterly and annual reports on HSE performance;
- Top level management review of internal corporate reports on HSE performance, including by the board of directors; and
- Guidance provided two advisory bodies serving the board of directors, which are the Corporate Social Responsibility Sustainable Development Working Group and the Committee for Industrial, Environmental, Radiation and Labour Safety (referred to here as the "safety committee").

The corporate HSE department undertakes the first two tasks on the above list. The department currently has five staff members with expertise spanning radiation protection, occupational health & safety and environmental management disciplines. The team is small relative to the tasks it undertakes, and SRK considers this should be expanded as discussed further at the end of this section.

For corporate HSE audits, radiation protection, occupational health & safety and environmental management disciplines are represented on the corporate audit teams. Often, one member of the corporate audit team will be sourced from another Mining Subsidiary to facilitate learning across operations. The corporate audits cover:



- Conformance with legal requirements and relevant Kazakhstan standards;
- Conformance with the Company's internal standards; and
- Execution of management actions from the corporate annual reports and required by regulatory authorities; and
- Visual assessment of facilities at the operations.

The corporate audits aim to be constructive and are finalised with a meeting between the Company and the Mining Subsidiary's staff and signed agreement on the findings of the audit, which are documented in an audit report.

The corporate quarterly and annual reports on HSE performance are internal reports aimed at presenting a thorough and frank understanding on HSE performance in the organisation. The reports include information on incidents and accidents, inspections and audits, radiation doses, emissions, waste production and pollution payments. They acknowledge non-conformances recorded during inspections and audits and record how many of these have been addressed.

The corporate quarterly and annual reports on HSE performance are reviewed by the safety committee, before review by the board of directors. The safety committee will often add to the recommended management actions that are put forward for board approval. The approved management actions must then be implemented by the operations.

The corporate reports on HSE performance are also shared with all of the Company's operations so that the various operations can see the performance of their sister companies and learn from their experiences. Coupled with this, there is an annual HSE performance meeting attended by the heads of the operations, directors of joint venture companies and the Company's directors. The purpose of the meeting is to review successes and failures and to set the performance objectives for the next year. Reportedly, regulatory authorities are invited to attend this annual meeting and to report their observations made over the past year.

The safety committee was created in 2016 and is constituted of members of the board, experts qualified to advise the board and independent directors. There are currently two independent directors on the committee who are based in the United Kingdom. In addition to the above mentioned roles, the safety committee is also responsible for development and review of the Company's policy on labour, environment protection and radiation safety. It also advises the board on improvements to the corporate governance system pertaining to industrial, radiation and environmental safety. Information on the committee, the board members on the committee and the dates of committee meetings is readily available on the Company's website (<http://www.kazatomprom.kz/en/content/company/corporate-management/board-directors/committees-board-directors>).

A number of corporate standards have been developed for radiation protection, occupational health and safety and environmental management. These standards are developed in consultation with regulatory authorities.

The Company has a Business Transformation Programme underway, which involves reformation of activities to achieve the strategic goals of the Company, to increase competitiveness and to make more profit at the same level of invested capital. One of the many projects being implemented under this Transformation Programme is the KAP 20 Project on Complex Safety, which focuses on radiation protection, occupational health and safety and environmental management. It involves development and refinement of corporate standards. Most of the refinements pertain to occupational health and safety. The refinements include improved hazard identification and changes to safety culture that promote compliance and personal responsibility motivated by personal interests rather than punitive measures. Other

refinements include improvements to training and safety instruction, improvements to the way production activities are organised and improvements to safety incident reporting.

It is expected that the KAP 20 Project will further improve alignment of the management systems of the Mining Subsidiaries. In addition, it involves introduction of new technologies that will automate some management system processes and facilitate real-time incident reporting and tracking of compliance.

Corporate control of waste management is recognised as a top management priority for the Company. The Company has committed to developing the following by 2019, for implementation by the Mining Subsidiaries by 2020 (commitment stated publicly in the Company Annual Report):

- Standards for waste characterisation; and
- A waste control system that accounts for and monitors waste through all stages of handling from collection, through transportation and treatment/ decontamination, to final use and disposal.

The five-man team in the corporate HSE department is effective, but is stretched and will need to be significantly increased in SRK's opinion to meet the Company's current HSE aspirations and address recommendations made in this report. The department does not have sufficient capacity to handle the increasing volume of HSE performance data being collected from the operations. Historically, the department was only focused on data of importance to regulatory authorities but it is now collecting and processing additional data to review and report on the Company's performance in a manner aligned with best international practice.

#### **12.4.3 Environmental Impact Assessment**

As outlined in Section 12.3.1, an approved OVOS is required for new projects and changes to operations. Numerous OVOS are completed for each of the ISR mines. SRK did not review all the OVOS documents available for the assets as they are too voluminous, but a several OVOS reports were studied. Those that were reviewed were found to be based on limited environmental baseline data on climate, landscape and geomorphology, soils, radioactive characteristics, water, ecology and biodiversity and local communities and land use. They do however contain detailed project descriptions. The assessment focuses on defining targets to be applied in the environmental permits for emissions, water use and discharges, waste management.

There are no specific management plans associated with the OVOS, however, the OVOS makes recommendations for addressing identified impacts which are incorporated project designs and management system action plans.

#### **12.4.4 Environmental Impact Management Measures**

The main potential impacts of the ISR mines relate to surface disturbance, groundwater disturbance, and transportation of hazardous substances, waste disposal and stack emissions. Measures taken to mitigate key impacts are discussed below.

##### ***Surface disturbance***

The ISR operations do disturb vast areas of land, the well fields extend over 10km to 20km at each mine. The disturbance is largely reversible because there is limited stripping of soil. Not all soil is stripped to develop the well fields and so natural vegetation and habitats can be readily restored after rehabilitation and closure of the mines.

The various operations limit surface disturbance as far as possible by prohibiting off-road driving. In addition, the standard of house-keeping at the operations is high. The plant sites

are kept clean to minimise occupational exposures to ionising radiation and to avoid soil and water contamination. Wash down water from cleaning of the equipment and plant sites is directed to small plant slimes ponds (usually one per plant).

The mines do disturb habitats and hinder free movement of people and animals. These impacts do not appear though to be of high significance, but the mines do not have information to define the impacts precisely. Recommendations to address this are given in Section 12.8.

### ***Groundwater disturbance***

The mines have numerous measures in place to prevent soil and water contamination. These include:

- Filling of exploration boreholes with cementitious gel;
- Casing of production and injection wells and annual checks of the integrity of the casing;
- Monitoring of flow in pipelines and rapid attention is given to spills;
- Clean up of spills from pipeline leaks and removal of contaminated soils to a LLRW disposal facility (Section 11.4);
- Lining of ponds holding solutions and process plant slimes (Section 11.2); and
- Good housekeeping, with no wastes lying around.

The ISR process intrinsically causes contamination of the host aquifer that is being exploited through the introduction of acidic fluids (lixiviant). These fluids dissolve not only uranium minerals but other minerals in the host aquifer, such as clay minerals, carbonates, sulphides and feldspars. This results in increased concentrations of dissolved ions and trace metals in the groundwater. The movement of contaminated groundwater within the aquifer is controlled by the flow conditions in the mining wellfield block, with groundwater flow from injection wells to extraction wells. Under design conditions the spatial extent, or “sweep”, of the leaching fluid is contained within the extraction zone and should remain constant over the operational life of the block.

Wellhead injection rates are typically high due to the piezometric pressures that have to be exceeded in order to inject acid into the ore-hosting aquifer. Well integrity testing is undertaken annually to identify leaks and other well failures that can occur. It is in the interest of mines to maintain efficient wells and fix problems quickly so as not to impact production.

Monitoring of groundwater quality is undertaken in the ore-hosting aquifer during the life of the block and will be undertaken for a period after closure. Monitoring is undertaken within/on the perimeter of a block, to the side of the orebody and in formations above and below the ore-hosting aquifer. Monitoring locations to the side of the orebody are expected to provide a control water chemistry signature while monitoring wells above and below the ore-hosting aquifer indicate vertical (upward or downward) leakage.

Lateral migration of residual leach solution during the ISR operation is expected to be between 40m to 50m and no more than 80m. The operational priority is not to lose acid through migration so the extraction system is optimised at all times to reduce loss of acid (which is expensive) and lixiviant.

Because of the greater density of lixiviant to natural groundwater there is little upward migration but rather potential for gravity accumulation in the lower part of the aquifer. Lixiviant tends to accumulate in the lower part of the ore-hosting aquifer as a general rule, down-hydraulic gradient of the block. During SRK’s site visits, evidence of vertical contamination into overlying or underlying aquifers was not seen.

When mining of a block is finished as much acid as possible is extracted from the wells to be

used in the next mining block.

Where deposits are hosted by Paleocene formations, for example Uvanas, the groundwater in the host Uvanassky aquifer is a non-potable resource due to the naturally elevated uranium content and high total dissolved solids. Potable water is taken from other sources instead.

Where deposits are hosted by Cretaceous formations there is no uranium content in the Uvansky in the locality of the deposit. The Cretaceous formations themselves have a high TDS chemistry and are not suitable for drinking for this reason.

The ISR mines' monitoring reports do not evaluate the extent and migration of ISR contaminant plumes although SRK notes that contaminant simulation modelling of the ore-bearing aquifer has been undertaken in the past at Inkai (Cameco, 2017. Inkai Operation, South Kazakhstan Oblast, Republic of Kazakhstan. National Instrument 43-101, Technical Report. 23 March 2017, Cameco Corporation).

For closure, the mines are required to restore the ISR-mined aquifers to natural conditions and to support this by means of monitoring. It is envisaged that this will be achieved through natural attenuation processes that restore groundwater chemistry with time post-cessation of mining activities. Natural attenuation is governed by three major factors: velocity and direction of groundwater flow, initial chemistry of the ISR contaminants and mineral composition (including alteration mineralogy) of the host rock.

The mines' groundwater monitoring programmes need to be improved, to be in line with international standards, so that the mines can clearly demonstrate that impacts on groundwater resources and users are not significant during the operational phase and will not be significant post closure. Recommendations to address this are given in Section 12.8.

#### ***Transportation of hazardous substances***

Large quantities of hazardous substances are transported to and from the mines as outlined in Section 11.3. Adequate precautions are taken to prevent associated public health safety hazards as outlined below.

The safety measures for transporting hazardous materials associated with the mining operations include: information cards in each vehicle issued by the Committee for Protection of Public Health of the Ministry of Health of the Republic of Kazakhstan; approval of the roads used the Ministry of Internal Affairs; specific driver training; washing of vehicles and testing of these for radiation contamination; specific emergency plans for accidents; drivers wearing appropriate PPE and dosimeters; equipment for containing any accidental spillage; radio communications; and GPS tracking.

Road transportation accidents are recorded and analysed to understand causes and lessons that can be learned from these. The only major accident on record is an acid transportation spill of 0.35m<sup>3</sup> that occurred in February 2014, between Timur railway station and Zarechnoye mine. The sub-contractor was fined and held responsible by the environmental authority but Zarechnoye mine assisted with the clean-up. The soil was removed by a third party certified to deal with acidified soil. The polluted soil was removed for neutralisation and disposal, and replaced with clean soil.

#### ***Waste disposal***

The disposal of wastes by the mines is undertaken as outlined in Section 11.4. SRK considers that the mines need to pay more attention to waste stewardship, particularly metal LLRW decontamination services used. Recommendations to address this are presented in Section 12.8.

### **Stack emissions**

Stack emissions at the operations are from boilers used for heating and emissions from yellow-cake driers. The latter emissions do not include particulates, which are removed by wet scrubbers and returned to the process. The stack emissions are monitored as outlined in Section 12.4.8.

Fugitive radon emissions can be concentrated above the pregnant-solution settling ponds and in the process plant, but are not a public exposure hazard because they are rapidly dispersed through release to the atmosphere. Associated occupational exposure hazards are controlled as described in Section 12.4.5.

### **12.4.5 Health & Safety and Radiation Protection at the ISR Mines**

At the ISR operations, occupational health and safety and radiation protection are clearly of high priority. The commitment to this is reflected in behaviour on site as well as an abundance of posters on the walls of buildings reinforcing messages. All the operations visited had large, well-equipped training classrooms that were evidently in regular use. Most of the personnel at the ISR mines (more than 7,000 people) received safety and radiation protection training in 2017.

The safety hazards on the mines include:

- Working with ionising radiation – external exposure to gamma and beta radiation, inhalation of radon and inhalation and ingestion of radioactive dust;
- Handling of hazardous substances like acid, ammonia, caustic soda and hydrogen peroxide;
- Extreme temperatures in the wellfields;
- Working at height, equipment under pressure, electricity, noise and vibration, and hoisting mechanisms; and
- Biological hazards – exposure to dangerous wildlife including insects, spiders and snakes.

The most frequently delivered training programmes cover radiation protection, industrial safety and waste management. Specialist training is also frequently delivered on the operational condition and safety of pressure vessels and on crane/ hoist maintenance of and safe working practices.

All workers and visitors in the plant and wellfield areas are required to use full PPE, which is provided by the mine and includes a jacket, boots, hard hat, gloves, a face mask and safety glasses. There are emergency wash stations at several points in the wellfields and plant sites, including showers, eye wash stands, countering agents (alkali for acid burns) and chemical cupboards.

Winter PPE is provided for the cold months and there are heated work stations in the wellfields, less than 1km apart, where staff can warm up in cold weather.

To prevent ingestion of radioactive dust staff are not permitted to eat in work areas. In a 12-hour shift, staff are required to clean-up twice. Just before meal times, they must take off PPE, shower and then have a radioactive contamination check before entering the dining area. Rehydration drinks are allowed in work areas and are consumed after ensuring the cleanliness of the hands and the drink container.

Monitoring safety performance and radiation doses is undertaken as outlined in Sections 12.4.9 and 12.4.10, respectively.

### **12.4.6 Regulatory Compliance**

Compliance with permits, regulations and sanitary norms are evaluated by means of:



- Compliance reports that must be submitted to the relevant regulator as specified in the permit or regulation;
- State inspections that are undertaken by the relevant regulatory authorities to evaluate aspects such as: industrial safety, labour protection, fire protection, radiation safety and environment (Section 12.3.10); and
- Inspections carried out by the Company's corporate HSE department and inspections carried out by enterprises themselves as part of production control.

The compliance reports include:

- Environmental monitoring reports on the monitoring undertaken as required by the environmental permit (PEK environmental reports);
- Annual reports on implementation of environmental action plans (including spend against budget);
- An annual waste inventory covering waste generation, use, neutralization and disposal;
- Annual reports on hazardous waste;
- Quarterly reports on the authorised and actual environmental emissions; and
- State statistical reports (Form 2-TP on air, water management and Form 4-OS on environmental protection costs),

State inspections are undertaken with varying frequencies. At the ISR mines, environmental inspections are generally undertaken every two or three years, health and safety inspections are undertaken annually and radiation protection inspections are undertaken twice per year.

Non-conformances (termed "*violations*") identified during state inspections may lead to either individual fines or legal entity fines. These will be imposed over and above the pollution fees paid where the permit limits or statutory norms are exceeded.

Individual fines imposed by the state, following state inspections, are paid by the responsible person out of their salary where the violation is deemed a failure by the individual against their documented job description and/or regulated responsibilities. In these instances, the Company is not deemed liable. These are generally administrative in nature, for example: data missing from drawings, pipework not marked with flow directions and documentation missing. There are a few potentially significant individual violations like not connecting hoses correctly or not maintaining vehicles so they fail emission tests. These state-imposed fines paid by individuals are typical in the order of KZT11k per fine.

Legal entity violations are generally more serious. These include deviations from an approved project design; failure to submit appropriate applications for changes in project design; and working without permit for emissions into the environment. The fines in this instance vary widely, with values of KZT22k to KZT65.27m observed in the documents provided to SRK. The latter fine was incurred by state supervising authority to JV Katco LLP in 2016 for the absence of a permit for emissions of pollutants from five rented diesel generators and unapproved waste placement.

The 2017 internal annual report on HSE performance indicates that most of state inspection penalties are imposed on individual persons with a total penalty of approximately KZT2.7m for the "**Group Companies**". The total penalties on the Group Companies was in the order of KZT3.5m. These penalties are normal for industry in Kazakhstan and are not of remarkable concern. Repeated offenses may result in greater scrutiny by the regulators. The ISR mines do strive to minimize the violations and penalties that can be incurred and the Company promotes this culture at the corporate level.

All of the fines referred to above are imposed by the state and not by the Company or the Mining Subsidiaries. When violations are identified during state inspections, the Mining Subsidiaries respond by developing plans of action to prevent these occurring with the responsible personnel. This is done for both individual violations and corporate violations. The actions for individuals often involve training or re-training.

#### 12.4.7 Inspections and auditing

The various operations apply a robust four tier internal audit system covering environment, radiation and health and safety. Level 1 involves daily checks by the worker (known as the master) with the results documented in a handwritten journal; Level 2 are weekly checks by superintendent with results; Level 3 are monthly checks by the chief engineer; and Level 4 is an annual check by Company management. For Levels 2 to 4 the results are documented within a form, which is filed.

Over and above the internal audits there is generally an audit by the Company every second year or so. In addition, some of the joint venture partners in the Mining Subsidiaries also audit operations independently. For example, Uranium One undertakes annual audits of the operations of JV SMCC LLP, Karatau LLP and JV Akbastau JSC. JV Katco LLP undertakes annual audits of the Tortkuduk and Southern Moinkum (Northern Part) operations. Furthermore, the Company's customers, such as EDF Energy, undertake audits of the mines and other operations on occasion.

The inspections and audits do identify numerous non-conformances, which are generally attended to promptly.

#### 12.4.8 Environmental Monitoring

Environmental and radiation monitoring is focused on regulatory compliance and consists of the following types of monitoring:

- The stack emissions monitoring by an independent third party on a quarterly basis – pollutants monitored include: nitrogen dioxide, nitrogen oxide, sulphur dioxide, carbon monoxide, ammonia, sulphuric acid, particulates and radiological parameters;
- Ambient air quality monitoring by an independent third party at various locations generally within or at the border of the Sanitary Protection Zone (“SPZ”) and, where required, within local villages;
- Water quality monitoring of the treated sewage, which is re-used in the process or discharged to an evaporation pond;
- Ambient ground water quality monitoring (discussed further below);
- Monitoring of the volumes and types of waste removed from site by third party contractors;
- For some sites, where stipulated in the permit, ambient surface water quality monitoring of rivers is undertaken – this appears to be for radiological parameters only; and
- For some sites, where stipulated in the permit, vegetation and soil monitoring for radiological parameters may be undertaken.

The results of the emission, sewage and waste monitoring are reported to the regulatory authorities as stipulated in the permits or licences but is usually on at least a quarterly basis. The state inspectors may also undertake monitoring during their visits or review other data such as that relating to groundwater, vegetation or soils. The results of radiation monitoring undertaken in local villages and at the SPZ is reported in local newspapers to inform local communities. Also, there is often an automatic radiation monitor along with a large screen display in the village/s closest to the mine sites.

SRK is not aware of any monitoring data indicating the mines are having adverse impacts on surrounding land users, but there are some weaknesses in the monitoring programmes as outlined below and in Section 12.5.

Groundwater monitoring falls within the responsibility of both the environment protection teams and the geology teams. The later teams focus on the groundwater quality within the immediate mining area with monitoring boreholes located within the ore body and occasionally in overlying aquifers. This monitoring aims to check that product leakage is not occurring so the parameter suite is often restricted to pH, uranium and sulphate.

The environmental protection team monitoring of groundwater targets the orebody aquifer and overlying aquifers (including the perched aquifers at some sites) at the SPZ or beyond (for example village wells). The monitoring suite is slightly larger but still focused on radiological parameters. Other parameters monitored a couple of times a year are pH, total suspended solids (“TSS”). Additional parameters monitored on an annual basis are sulphate, iron, nitrate, calcium, magnesium and cadmium and uranium radiological parameters. Depending on the location of potential receptors and the number of monitoring locations varies from several (for example at Zarechnoye and Semizbai) to up to 170 sites (at RU-6).

In general, additional monitoring sites beyond those permitted or wider parameter suites are not evaluated though some of the Mining Subsidiaries have worked with a NGO called NSK (Section 12.2), who undertake environmental monitoring for a wide suite of parameters at villages, drinking wells or other locations beyond the mining contract area. The testing is done on a tripartite basis between the company, the Association and local community representatives. NSK has also completed testing at the nuclear test sites to show the effects of potential historical radiation. An example is at Zarechnoye where three artesian drinking water wells located outside of the mining area were monitored for an extensive suite of anions, cations, metals and organics. The results indicate the water may not be suitable for domestic drinking water but does not indicate any negative effects as a result of mining.

The monitoring reports to the regulators and internal corporate reporting focus on compliance with sanitary norms or permit limits rather than presenting trends in the data. The data does not appear to be actively interpreted to facilitate long term management of impacts and risks, or to feed into closure planning. This is compounded by weakness of the pre-mining baseline data collected in the OVOS where the choice of monitoring locations and suite of parameters is often limited. Monitoring is discussed further in Section 12.5.

Waste management involves keeping inventory records and collation of receipts from all contractors taking away the various project waste streams. It is noted that the operations do keep records of their waste handling, have ‘passports’ for their wastes, each have a waste management programs coupled with standard operating procedures for most waste streams.

#### **12.4.9 Safety Monitoring – Tracking of Safety Incidents**

The Company has provided the safety statistics for 2014 to 2017 as shown in Table 12-3. The focus of the safety reporting by most operations to date has historically been on ‘reportable’ incidents specified by law. Minor first aid type injuries or near misses were not tracked until 2018. As part of the KAP 20 project (Section 12.4.2), new systems for identifying and recording hazardous activities, hazardous conditions and potentially dangerous situations (near miss incidents) were implemented this year. In addition, a system for conducting behavioural safety audits has been implemented. Information on identified potentially dangerous situations and conducted behavioural safety audits is included in the corporate HSE performance reports.

**Table 12-3: Safety statistics for all Group Companies and ISR Operations**

Indicators	Group Companies			ISR mines only		
	2014	2015	2016	2017	2016	2017
Number of employees	26,101	26,812	25,609	24,766	7,965	7,826
Number of lost time incidents	7	7	9	7	3	1
Lost time injury frequency rate ("LTIFR") (per million man-hours)	0.21	0.18	0.19	0.14	0.22	0.08
Fatal accidents	3	2	0	0	0	0

#### 12.4.10 Radiation Protection Monitoring

Staff exposed to ionising radiation on the mines are identified as Group 'A, workers. The radiation doses received by these personnel is determined by measuring and adding doses received via three pathways: external gamma radiation; inhalation of radon and inhalation of radioactive dust. Total annual effective doses are calculated and compared with the annual effective dose limits. Personal dosimeters are used to determine doses received from gamma radiation and area monitoring is undertaken to calculate doses from radon and uranium dust. Summaries of doses received by staff on a quarterly basis are published on a notice board in the administration building. Each Group 'A' employee is provided with the monitoring data and is required to sign off that they have received and understood the results. Long-term effective dose data records are kept for every Group 'A' employee and they can take this data with them to share with another employer if they resign from the Company. This monitoring aligns with international good practice as defined by the IAEA.

JV Katco LLP, JV Inkai LLP, Baiken-U LLP and joint venture companies that have Uranium One as a partner, complement the above-mentioned dose monitoring with urine monitoring. The total uranium in the urine is determined (by means of inductively coupled plasma mass spectrometry) on an annual basis for all Group A personnel and on a monthly basis for personnel working in the drier unit of the plant. The Company is considering introducing this monitoring as a corporate requirement and is awaiting the development of a corresponding standard for this by the Ministry of Health, at present there is no standard for this in Kazakhstan.

SRK understands that the annual effective doses received by most Group A personnel in the Group Companies is less than 5mSv/year and no doses exceed the applicable annual dose limit legal limit is 20mSv/year in a calendar year (in special cases employers may apply a dose limit of 100mSv in 5 years with no more than 50mSv in a single year). The maximum annual effective dose received by an individual working at the ISR mines was 6.7mSv in 2015, 9.6mSv in 2016 and 5.5mSv in 2017. The value recorded in 2016 was measured at JV SMCC LLP's Inkai 4 Mine and was attributed in to an increase in the U<sub>3</sub>O<sub>8</sub> production. Upgrades were made to the gas cleaning and ventilation systems in the plant and doses were much reduced thereafter.

#### 12.4.11 Emergency Preparedness and Response

The operations have emergency preparedness and response plans developed on the basis of risk assessments. The plans are developed for a range of emergency scenarios including: fire; acid spills; radiation emergencies; failures of ponds and consequent discharges; failures in the process plant; failures of storage facilities for hazardous substances; emergency energy shut downs; and road accidents. The plans identify responsible people, the actions of the response team, the actions of employees, and equipment and materials required together with details of where these are stored.

Plans for emergencies that could extend beyond the site boundaries are developed in consultation with public health authorities, the Akim (the mayor/ elected leader of the local authority), the police and the Committee on Atomic Energy, as required.

Emergency plans are subject to review and approval as follows:

- Action plans for emergency response on a local scale are approved by local executive

- bodies (akimats);
- Action plans for emergency response on a global and regional scale are approved by the central executive bodies of the Republic of Kazakhstan (Emergency Committee of the Ministry of Interior);
  - Action plans for site-level emergency response and remediation are approved by the organizations themselves; and
  - Accident elimination plans are approved by the head of the organization and coordinated with professional emergency services and/or units.

The plans that SRK observed do align with international good practice.

Staff are trained on emergency actions to be taken and emergency drills are undertaken. The training and drill records are checked as part of the regular state inspections.

#### **12.4.12 Community Stakeholder Engagement**

Formal stakeholder engagement is limited to the legally required public hearings that have been held whenever an OVOS is submitted to the environmental regulator. The hearing may be facilitated by the Company or by the technical institute responsible for the OVOS. They generally take place in the villages and/or town closest to the mine site. The meeting protocol (minutes), along with the attendance register, is kept with the associated OVOS report.

Other methods of engagement that occur include:

- Public-display-dosimeters display the radiation background in several local villages including Shieli, Sholak-Korgan, Taukent, Zhuantobe and Kyzemcheck, and at the Timur station;
- Notices in newspapers publishing annual or quarterly radiation results, including results of radiation surveys in the villages and the surrounds.
- Articles in local newspapers;
- Presentations at the local schools to raise awareness of radiation safety issues and dispel fears around radiation exposure;
- Public hearings organised by the NGO NSK following preparation of their independent monitoring reports; and
- Regular meetings with Akims (mayor/ leader of the local authorities).

The frequency and extent of engagement with local communities by the operations correlates with the proximity of the communities to mining operations. Mines that are within 10km of local communities engage with local communities more actively.

The standard method of making a grievance in Kazakhstan is to register complaints with the Akim, not directly with the Company. The Akim will bring the grievances to the attention of a director of the Company.

Many mines are in regular contact with the local Akim. Uvanas mine engages Kyzemchek Akim on a daily basis and involves the Akim in many of its management meetings. Karatau and Akbastau mines engage with the local Akim more than ten times a month. Most mines meet with Akims at least once a month.

Several operations explained to SRK that a Company director is assigned responsibility for liaison with the community. Reception days are scheduled on a weekly basis and on these days the director will receive people in his office and hear their comments and concerns. The same director is generally also responsible for staff grievances. Reception days are also used to hear staff grievances (Section 12.4.13).



Comments and grievances received from the community are formally documented and attended to.

The experience of the mines is that the community engagement is almost always focused on requests for financial support; contract opportunities for local service providers; and employment opportunities, with people being very keen to be employed at the mines.

Although engagement with the communities is occurring, it does not align with recognised good international practice (Section 12.7). The potentially affected communities, and their characteristics and interests in the operations, have not been formally identified. The mines do not hold a register of interested parties from local communities and do not have stakeholder engagement plans for ongoing engagement of the communities and documented grievance procedures.

The Company attributes the above finding to cultural differences. It is traditional for people to communicate through Akims. The Akims are appointed by the GoK and it is their responsibility to have a good understanding of the communities that they serve and to facilitate communication between local communities and industry.

#### **12.4.13 Working Conditions**

Working conditions in all Group Companies are overseen by the corporate Department of Social Development and Government Relations, which aims to promote favourable working conditions.

Working conditions are defined in collective agreements that are negotiated between staff representatives and company. The agreements are signed by participants in the negotiation and are valid for a couple of years or longer. Each operation has its own collective agreement on working conditions. The agreements are not uniform throughout the group. Some operations can offer more generous conditions than others.

The working conditions covered in the collective agreements cover facilities where the operations are located, living conditions, medical services, quality food, safe working conditions and specific working conditions for specific groups. The collective agreements also cover compensation and retirement.

The collective agreements are drafted through a negotiation process. The drafts are reviewed by Company economists, lawyers and health and safety specialists to check they are realistic and there is no risk of violation of legislation. Following internal checks, the draft agreement is sent out to the State Labour Inspectorate to check again that there is conformance with relevant legislation. Once approved by all parties, the document is signed and made public.

Most of the mine staff (about 83%) reportedly belong to the Professional Union of Workers of the Atomic Industry. The union is generally involved in the drafting of collective agreements through the staff representatives involved in drafting of the collective agreements.

Employees are able to submit grievances by various means ranging from suggestion boxes, through engagement of supervisors or engagement with a Company director on a reception day (held weekly at the operations), to the Labour Inspector. Annual reviews show that employee grievances are generally resolved at the Company level.

The Company reception days are scheduled so that staff will have an opportunity to speak with the director, regardless of their shift hours. Staff grievances are also handled through a complaints box usually located at reception. In addition, all Group Companies have a hotline for employee concerns and access to this is not limited to employees; staff are allowed to give the number to anyone they want to. Furthermore, there is a hotline number on the Company's website and grievances reported via this number are published on the website

(<http://www.kazatomprom.kz/en/content/kompaniya/korporativtik-baskaru/hot-line>).

Employee grievances are recorded and responded to. Employees can also submit grievances anonymously. These are documented separately from other grievances.

Two thirds of the employee grievances received pertain to procurement complaints (such as complaints about unclear qualifying criteria) and labour conflicts. About 6% of the grievances are about property theft and about 6% are about mismanagement. The rest are diverse in theme.

The Group Companies are subject to an annual review of social stability, undertaken by an independent company. The review engages randomly selected employees and they answer questions on life satisfaction, level of happiness, family conditions and financial stability.

Reports on the annual reviews of social stability are available for the Group Companies. Findings of the annual reviews of social stability over the period 2013 to 2017 are summarised in the *“2017 Report on the Activities in Corporate Social Responsibility and Sustainable Development of Kazatomprom”*. The social stability ratings of all Group Companies are good and there has been an increase in the mean rating for all of the subsidiaries from 72% in 2015 (above average) to 83% in 2017 (high). The 2017 social stability rating was based on interviews with 3,023 employees involved in production. The high rating was attributed to factors such as the creation of a favourable psychological climate, improved working conditions and safety measures, improvement of a power supply, financial remuneration and professional development.

The 2017 social stability ratings of the Companies range from 96% to (Ortalyk LLP) to 76% (JV SMCC LLP) that is from high to above average. Most of the mining subsidiaries have ratings classed as high.

#### **12.4.14 Social Investment**

The Company has prepared a Corporate Social Responsibility program that has been approved by the Resolution of the Government of the Republic of Kazakhstan on April 15, 2015 No. 239. It has five key focus areas:

- Regulation of labour relations and ensuring special security of employees, including: training and continual professional development of staff and potential employees and a collective agreement with the trade union;
- Participation in social stability rating identification survey that focuses on the wellbeing and views of employees;
- Labour and environmental protection including establishment of management systems and monitoring of occupational health and environmental controls;
- Socioeconomic development of the operations areas, which is discussed in more detail below; and
- Charity and sponsorship, which is also discussed below.

According to its 2016 Sustainability Report, the Company preferentially employs local people and procures local services. The Company achieved a Kazakhstan local content amounting to 78% in 2015. In addition, in 2015, the Company financed the construction of a variety of social projects for over KZT38bn, including: eight hospitals, 19 schools and kindergartens, 30 sport and cultural facilities, roads and bridges and entertainment centres.

Much of the social investment made by the mines is via annual payments (Table 12-4) made terms of the conditions of mining contracts (Section 12.3.4) to a social fund that is used by the local government. The mines also make other social investments through the Company and

individually, in consultation with local Akims.

In December 2014, the Company concluded cooperation memorandums with the Akimats (governments) of Kyzylorda and South Kazakhstan Provinces on socio-economic development. In 2015/16 this included transferring 19 social facilities free of charge to the local executive bodies, together with the funds for their maintenance (amounting to KZT1.6bn). A further KZT1.6bn was agreed to be transferred to each region for new developments.

In 2016 significant charitable activities by the Company were organised to be carried out through a single fund called the “**Samruk-Kazyna Trust**”.

In 2017 KZT1.1bn was transferred to the Kyzylorda and South Kazakhstan Provinces for new developments.

The various ISR mines make charitable payments locally to help vulnerable people, local communities and local schools. This is not formally planned but responsive in nature to requests that are generally received through the Akim. The responsible person is generally the director responsible for community liaison. Each mine is assigned one or more villages that it is responsible for supporting. Where there are many mines near one village, a mine may be assigned a village/ villages more than 100km away.

Examples of support given include:

- Small payments to local low income families to help with food, winter heating, school books and other basic needs, and also with gifts and holidays;
- School and/or tertiary education bursaries, with the later beneficiaries often being recruited to the company;
- Support to World War II veterans;
- Support to vulnerable pensioners;
- Social or cultural events in the area;
- Supply of drinking water wells; and
- Developing football fields and playgrounds.

**Table 12-4: Annual Social Operating Expenditure**

Mining Subsidiary	Deposit	Social Costs (US\$kp)
Kazatomprom-SaUran LLP	Uvanas	200
	Eastern Mynkuduk	200
	Kanzhugan	300
	South Moinkum (Southern part)	300
	Central Moinkum	300
Ortalyk LLP	Zhalpak	100
	Central Mynkuduk	100
RU-6 LLP	Northern Karamurun	260
	Southern Karamurun	
Appak LLP	Western Mynkuduk	100
JV Inkai LLP	Block 1 Inkai (a)	30
	Block 1 Inkai (b)	
	Block 1 Inkai (c)	
Semizbai-U LLP	Semizbai	100
	Irkol	70
JV Akbastau JSC	Block 1 Budenovskoye	150
	Block 3 Budenovskoye	350
	Block 4 Budenovskoye	
Karatau LLP	Block 2 Budenovskoye	140
JV Zarechnoye JSC	Zarechnoye	50
JV Katco LLP	Southern Moinkum (Northern part)	30
	Tortkuduk	
JV Khorassan-U LLP	Block Kharassan 1, North Kharassan	120
JV SMCC LLP	Akdala	50
Baiken-U LLP	Block 4 Inkai	100
	Block Kharassan 2, North Kharassan	100

## 12.5 Issues to be addressed: Residual Impacts and Cumulative Impacts

The ISR mines are designed and operated to minimise ESHS impacts. This combined with

remote setting of the mines and a relative absence of sensitive receptors, does reduce the ESHS risks associated with the operations. Nevertheless, SRK sees that there are refinements that can be made to the ESHS management at the mines. The mines have insufficient understanding of environmental and social context and do not use the full potential of monitoring to ensure or prove they do not have any impacts, individually and cumulatively. These potential impacts pertain to surface disturbance and groundwater contamination as discussed further below (Sections 12.5.1 and 12.5.2).

The cumulative impacts of clusters of mines could be significant. These have not been defined.

### **12.5.1 Surface Disturbance and Associated Impacts on Ecology and Land use**

While ISR mining does not permanently displace soils and subsoils like open pit mining, it does cause soil disturbance in the short term. The well fields do occupy large areas of land, stretching over distances of up to 20km, and do somewhat hinder free movement of people, livestock and wild animals. There must be some impacts on habitats, plants and animal species of conservation importance and nomadic farmers, however these are not defined clearly and monitored specifically.

Nomadic livestock farming was observed by SRK in the environs of most ISR operations. The mines do not have a documented understanding of this land use, based on consultation with farmers and social studies. At some mines, livestock movement is not seen to be an issue because it is not frequent. At other mines, such as the Block Kharassan 1 (North Kharassan) and Block Kharassan 2 (North Kharassan) deposits, the livestock movement through the wellfields can sometimes be a problem. Farmers are instructed to keep out of the wellfields but they ignore warning signs and herds of livestock have to be directed out of the wellfields by mine security. Potential risks associated with this include physical harm to livestock as a result of interaction with mine infrastructure and equipment (for example, being hit by a vehicle). Also, there is a risk of livestock damaging pipework and thus potentially increasing the risk of a spill. Exposures of livestock to radiation are not monitored but are not expected to be significant.

At Block 1 Inkai there are artesian wells near to the mine that create pools of water on surface that are used for livestock watering. Herds of horses were seen to be grazing near the mine. Inkai does monitor surface water and groundwater as required by regulatory authorities but does not present interpreted data in a way that can be used to readily demonstrate the mine has no potential impacts on the livestock.

Some mines have photographs on their walls showing how the steppe desert environment changes through the seasons, including photos showing fields of tulips that emerge in spring. The mines do not have data to quickly prove that they are not affecting plant populations, individually and cumulatively.

About 3km to 4km to the north of Block Kharassan 1 (North Kharassan) there is a manmade canal (drainage from the rice fields which are at least 20km away). Neither this nor the Syrdarya River are monitored by the mine, and there is no baseline data for these, as this is not required by regulators.

The Karamurun wellfields are located in what used to be either livestock grazing or arable land (generally rice or other grain fields). There are crops grown in close proximity to the process plant and mine area so the vegetation is monitored for radiological parameters every year. Surface water samples are taken annually for radioactivity measurements in partnership with branch of The Republican State Enterprise on the right of economic management “*National Centre of Expertise*” of the Public Health Protection Committee of the Ministry of Health of the Republic of Kazakhstan.

No displacement of local farmers will be required for the life of mine plans considered in this report. However, it is still noted that the process for land acquisition specified by national law is not aligned with good international practice with respect to transparency, communication and post-acquisition monitoring of compulsory acquisitions.

### 12.5.2 Groundwater Impacts

The Company's ISR mines have measures in place to prevent water contamination (Section 12.4.4). They can also present strong rationale verbally why they are not impacting on groundwater resources, based on the argument that vertical and horizontal spread of contaminants from mining is limited. However, supporting information is not readily available for public review. In addition, the available monitoring data is not presented in a manner that robustly proves there are no groundwater resources and users affected by the operations.

Better interpretation of monitoring data to prove that the individual mines are not having impacts on receptors and to understand the cumulative impacts of the mines is recommended by SRK (Section 12.8). SRK does however note that monitoring has been undertaken by a NGO, NSK, to confirm that the Karamurun and Zarechnoye operations are not impacting on the groundwater resources and users in the vicinity of these operations (Section 12.2.1).

The mines also need to use their monitoring data to define closure objectives and criteria in advance of closure of the mines.

As explained in Section 12.4.4, the mines envisage that the ISR-mined aquifers will be restored to natural conditions after closure of the mines by natural attenuation.

SRK is currently only aware of documented natural attenuation programmes at the mine sites through published case studies, for example: research on natural attenuation at the Irkol deposit published in 2002 by the Company and a high level case study on environmental protection at the Akdala deposit presented in an IAEA TECDOC handbook. The Irkol study covered monitoring data over a 13-year period up to 1997 in a post-ISR environment. The monitoring data demonstrates that natural attenuation is almost completely effective over this period of time in reducing the impact on groundwater at the site, with contaminated fluids moving less than a few hundreds of metres from the wellfield and contaminant levels returning to natural levels over this time period. The natural attenuation method is considered effective on this basis with the only negative aspect being the time required for full restoration ("tens of years").

## 12.6 Closure Planning and Cost Estimates (Liquidation)

The section below reviews the Company's approach to closure planning and summarises closure cost estimates made to date. The estimates are life of mine closure cost estimates that present the cost that a mine operator would incur to perform all the actions required to fulfil the closure liabilities.

This sections also includes estimates of asset retirement obligations ("**ARO**"). These estimates are used in annual financial reports. The ARO estimates are for the mines as they are now and they differ from the life of mine estimates because they do not include closure liabilities that will be incurred in future, over the remaining life of the mine.

Mining contracts contain specific requirements related to closure. The magnitude of provisions is usually stated in the contracts as a percentage of operating expenditure that must be allocated annually into a dedicated liquidation fund account in a Kazakhstan bank. These payments vary significantly between contracts. Generally, the payments are in the amount of 0.1% to 6.8% of the annual operating expenditure and summarised in Table 12-5 below.

Contributions to the liquidation fund are made by mining contract holders according to the frequency and amounts specified in the mining contract. At the time of closure or rehabilitation,



the mine operator can use the funds with the permission of the Competent Authority. If the closure cost exceeds the fund's savings the mining operator must cover the closure cost. In case closure cost are less than the amount accumulated in fund then the remainder is returned to the operator as taxable income. The liquidation funds closing balances as at 30 June 2018 (Table 12-5) are not allowed to be used for personnel retrenchment payments according to legislation.

**Table 12-5: Liquidation Fund Closing Balances (30/06/2018) and future contributions opex percentages<sup>(1)</sup>**

Mining Subsidiary	Deposit	Liquidation Fund Closing Balance (30/06/2018)		Contribution (%)
		(KZTm)	(US\$m)	
Kazatomprom-SaUran LLP	Uvanas	1,406.2	4.1	6.77
	Eastern Mynkuduk	1,086.3	3.2	1.27
	Kanzhugan	1,832.6	5.4	3.47
	South Moinkum (Southern part)	61.7	0.2	1.00
	Central Moinkum	37.9	0.1	1.00
	<b>Subtotal</b>	<b>4,424.8</b>	<b>13.0</b>	
Ortalyk LLP	Central Mynkuduk	950.6	2.8	1.00
	Zhalpak	9.1	0.0	
	<b>Subtotal</b>	<b>959.7</b>	<b>2.8</b>	
RU-6 LLP	Southern Karamurun	1,461.2	4.3	1.00
	Northern Karamurun			
	<b>Subtotal</b>	<b>1,461.2</b>	<b>4.3</b>	
Appak LLP	Western Mynkuduk	776.5	2.3	1.00
JV Inkai LLP <sup>(2)</sup>	Block 1 Inkai (a)			
	Block 1 Inkai (b)	203.5	0.6	1.00
	Block 1 Inkai (c)			
	<b>Subtotal</b>	<b>203.5</b>	<b>0.6</b>	
Semizbai-U LLP	Semizbai	419.1	1.2	1.00
	Irkol	526.4	1.5	1.00
	<b>Subtotal</b>	<b>945.5</b>	<b>2.8</b>	
JV Akbastau JSC	Budenovskoye, Block 1			
	Budenovskoye, Block 3	862.5	2.5	1.00
	Budenovskoye, Block 4			
	<b>Subtotal</b>	<b>862.5</b>	<b>2.5</b>	
Karatau LLP	Budenovskoye, Block 2	714.5	2.1	1.00
JV Zarechnoye JSC	Zarechnoye	70.931	0.2	0.10
JV Katco LLP	Southern Moinkum (Northern part)	4,595.0	13.5	1.00
	Tortkuduk			
	<b>Subtotal</b>	<b>4,595.0</b>	<b>13.5</b>	
JV Khorasan LLP	Block Kharassan 1, North Kharassan	576.7	1.7	1.00
	Akdala	881.1	2.6	0.10
JV SMCC LLP	Block 4, Inkai	1,192.1	3.5	1.00
	<b>Subtotal</b>	<b>2,073.2</b>	<b>6.1</b>	
	Baiken-U LLP	Block Kharassan 2, North Kharassan	942.4	2.8
<b>Total</b>		<b>18,606.3</b>	<b>54.7</b>	

<sup>(1)</sup> Liquidation Fund percentages applied to the sum of mining, MET, Mining Depreciation, PGR, GRR gross-up by an assumed 20% margin.

<sup>(2)</sup> Payments are made annually and make 0.5% of an annual gross profit within the first five years, 1% from an annual gross profit within the next 15 years and 1.5% from an annual gross profit during the period which has remained till the end of working off. At accumulation of sum exceeding US\$500k, the Subsoil user will not have the further obligations on payments, and the percent charged for this sum can be used for holding of current reclamation.

## 12.6.1 Scope of Liquidation Programmes

The Mining Subsidiaries have developed liquidation programmes as required by legislation and mining contracts. The liquidation programmes are prepared to estimate the amount of funds required to settle closure liabilities upon completion of mining. Liquidation of an ISR operation typically follows the following:

- Pre-liquidation environmental and radiation surveys;
- Preparation of detailed reclamation and liquidation projects and obtaining required government approvals. This includes actions required to write off the remaining GKZ System 'reserves' from state balance and may require confirmation drilling and sampling;
- Liquidation of well fields, processing and auxiliary facilities followed by land reclamation;
- Disposal of LLRW and industrial waste from dismantling; and
- Monitoring of the environment during and post closure, and specifically the monitoring of groundwater is suggested to be undertaken for more than 20 years after closure activities are completed.

The scope of work (Table 12-6) required by legislation includes removal of the facilities and infrastructure tabulated below and subsequent land rehabilitation.

**Table 12-6: ISR mine components and respective closure actions**

Location	Infrastructure	Closure actions
Closure of wells	<ul style="list-style-type: none"> <li>Production and injections wells</li> <li>Monitoring wells</li> </ul>	<ul style="list-style-type: none"> <li>Injection of cement and clay mixture into a well to isolate the aquifers</li> <li>Removal of soil to a depth of 1.0m to 1.5m (treated as LLRW)</li> <li>Cutting the casing of a well to a depth of 1.0m to 1.5m (treated as LLRW)</li> <li>Installation of well plug (either timber capping or cement filling)</li> <li>Filling the void with clean soil</li> <li>Resloping and revegetation of disturbed areas</li> </ul>
Technological blocks and wells	<ul style="list-style-type: none"> <li>Technological units of acidification and distribution of solutions ("TUZ")</li> <li>Pipelines for transportation of barren/pregnant solutions and sulfuric acid</li> <li>Electrical equipment, including cabling and equipment</li> <li>Access roads</li> </ul>	<ul style="list-style-type: none"> <li>Removal of all equipment from technological units of acidification and distribution of solutions</li> <li>Removal of all containers where the equipment was installed</li> <li>Removal of pipelines connecting the units to wells, which includes digging the buried pipelines, removal and cutting of pipelines, backfilling the trenches from excavated pipelines</li> <li>Removal of electrical equipment including cabling, substations and powerline towers</li> <li>Resloping and revegetation of disturbed areas</li> </ul>
Infrastructure connecting technological blocks with processing facilities	<ul style="list-style-type: none"> <li>Pregnant solution pipelines (HDPE)</li> <li>Barren solution pipelines (HDPE)</li> <li>Sulfuric acid pipelines (steel)</li> <li>Valve and distribution chambers</li> <li>Power transmission towers and cabling</li> </ul>	<ul style="list-style-type: none"> <li>Draining and flushing of the pipelines to remove the residual solution</li> <li>Excavation of pregnant and barren solutions pipelines (acid pipelines are installed on surface supports rather than being installed underground)</li> <li>Cutting and transportation of pipelines off-site</li> <li>Removal of distribution and valve chambers</li> <li>Backfilling of the trenches and valve chambers with non-contaminated soil</li> <li>Power transmission towers and cabling removal</li> </ul>
Processing sites	<ul style="list-style-type: none"> <li>Pregnant and barren solution ponds</li> <li>Processing facilities and final product preparation and storages</li> <li>Solutions pumping stations</li> <li>Chemical storage facilities for sulfuric acid, hydrogen peroxide, ammonia nitrate</li> <li>Processing site pipelines</li> <li>Boiler houses and electrical substations and cabling</li> <li>Warehouses and workshops</li> <li>Water intake wells, pumping stations and storage facilities</li> </ul>	<p><b>Solutions ponds:</b></p> <ul style="list-style-type: none"> <li>Removal of residual solutions and any sediment</li> <li>Removal of liners</li> <li>Radiological survey and backfilling the ponds with clean non-contaminated soil</li> <li>Resloping and revegetation of surface areas</li> </ul> <p><b>Chemicals storage facilities:</b></p> <ul style="list-style-type: none"> <li>Removal of residual chemicals from tanks and secondary containments</li> <li>Flushing of pipelines</li> <li>Dismantling of the facilities and basement</li> <li>Removal of waste</li> <li>Resloping and revegetation of disturbed areas</li> </ul> <p><b>Pipelines:</b></p> <ul style="list-style-type: none"> <li>Removal of aerial pipelines</li> <li>Removal of buried pipelines and backfilling the trenches with clean soil</li> </ul> <p><b>Processing plant:</b></p> <ul style="list-style-type: none"> <li>Shutdown of plant</li> <li>Draining and cleaning of equipment parts to reduce risk for contamination during dismantling works</li> <li>Dismantling of all equipment and pipelines (considered to be LLRW and directed to LLRW facility)</li> <li>Demolition of buildings and slabs</li> <li>Radiological survey of the process plant demolition waste and plant area</li> </ul>
Auxiliary site infrastructure and buildings	<ul style="list-style-type: none"> <li>Administrative offices, shift camps (if applicable), canteens and change rooms</li> <li>Sewage water treatment facilities and ponds</li> <li>Industrial and domestic waste management and disposal facilities</li> <li>Open storage yards, roads, garages, fuel storage and distribution facilities</li> </ul>	<ul style="list-style-type: none"> <li>These facilities are removed when the rest of the closure works are complete</li> <li>If possible, these facilities can be transferred to a third parties for subsequent use</li> <li>If there is no post closure user of the facilities then the buildings are demolished and the waste is treated non-radioactive waste and is disposed on in industrial landfill after chemical and radiological survey</li> </ul>
LLRW disposal facilities (if applicable to a specific site).		<ul style="list-style-type: none"> <li>Closure of the cells and radiological surveys for confirmation of safety</li> </ul>

All closure actions must be supplemented with radiological surveys to ensure that no contaminated waste is misplaced. Creation of a temporary site to store LLRW from facilities demolition and contaminated equipment is required to accommodate the waste generated

before it is sent to LLRW facility.

Active reclamation of groundwater in production aquifers is not required by legislation and is not included into the liquidation programmes but extended periods of groundwater monitoring to assess the recovery of water quality are part of the liquidation programmes (up to 25 years).

### 12.6.2 Closure Liability Estimates

Overall, the closure costs estimated in liquidation programmes present a good basis to assess the closure liabilities of the Mining Subsidiaries with certain exclusions. The liquidation programmes have detailed description of scope of work, basis for calculation of the liabilities and description of assumptions used to estimate the amount of work. However, there is potential to improve these to reduce risks of underestimated closure liabilities:

- There is no unified approach to closure liabilities assessment across the Mineral Assets. This complicates auditing and management of closure liabilities for the Mineral Assets;
- All operations do have liquidation programmes or liquidation cost estimates that assess the LoM closure liabilities, but they are not updated regularly to reflect the change in liabilities due to economic changes (cost of fuel, manpower, closure materials etc.) and changes in production plans that alter the amount of infrastructure to be removed. Mine development projects have changed since the liquidation programmes were developed without updating the liquidation programmes;
- The scope of work that is included into liquidation programmes does not always include dismantling of processing equipment and related estimation of LLRW that will be generated and disposed of. This is one of the key cost component of closure liabilities;
- The liquidation programmes do not account for the cost of expansion of LLRW disposal facilities that will be required to accommodate the waste generated during closure of operations; and
- None of Mineral Assets have reached closure stage thus limited specific experience on closure of wellfields and processing facilities is available.

The existing closure costs prepared in liquidation programmes were derived using a combination of national cost estimation norms and methodology for various construction works, site specific assumptions on equipment and manpower productivity and actual data from third parties.

SRK's approach to assessment of closure liabilities for the Mineral Assets included preparation of the closure costs based on information available from technical documentation, data requests regarding site infrastructure and unified unit costs for various activities to develop the closure costs.

The Katco closure programme approach was used to estimate the site-specific closure costs for the Mineral Assets due to being the most aligned with international practice:

- The closure approach follows internal requirements of Areva that follow international guidelines;
- The closure approach is developed by a multidisciplinary internal group on closure planning that includes representatives of technical, financial and environmental, health and safety departments;
- The closure cost estimation approach uses actual costs of manpower, materials, site specific productivity of personnel and equipment; and
- Estimation of processing facilities and auxiliary buildings dismantling costs is based on data from technical passports of the facilities and unit costs for dismantling calculated in cost

estimation software per unit of volume of facilities, concrete slabs and equipment weight.

The standardised closure unit costs that have been recently been developed for the Mineral Assets and applied for estimation of liabilities of all operations include:

- Liquidation of injecting and producing wells: materials costs, equipment and fuel costs, and manpower cost;
- Liquidation of technological blocks: TUZ dismantling, pipelines removal and waste transportation off-site;
- Pipelines and infrastructure removal: excavation, cutting costs; valve chamber removal, powerlines and transmission towers removal costs;
- Resloping of disturbed wellfield areas;
- Dismantling or processing facilities and auxiliary infrastructure - volume of buildings, concrete slab volume, equipment weight;
- LLRW disposal: transportation costs, disposal costs; and
- Post-closure monitoring and controls: full round of monitoring after 5 years of closure, groundwater monitoring and vegetation maintenance.

SRK estimates do not include miscellaneous costs related to types of works for which data was not readily available or constitutes non-material cost. A contingency of 10% was applied to the cost estimates of LoM and ARO closure liabilities to account for conceptual nature of the estimates. The estimates of LoM and ARO closure costs do not include the labour termination costs which are included into LoM plan models separately based on one-month labour costs of the entire workforce on closure.

The resulting closure costs are higher than those in the liquidation programmes and demonstrate that it is necessary to update the liquidation programmes estimates to reflect the potential changes in project design, missing closure cost components and up to date costs of various activities required to settle the closure liabilities. Table 12-7 below summarises information regarding closure liabilities of the Mineral Assets, namely:

- ARO: Asset Retirement Obligations closure costs estimate as of 30 June, 2018;
- LoMp: Life of Mine plan closure cost estimates (costs incurred at the end of Life of Mine);
- Liquidation Fund closing balance as at 30/06/2018;
- Liquidation Fund LoMp Contributions: future contributions to the liquidation funds from the LoM plans;
- Liquidation Fund Surplus/(Deficit): Expected liquidation fund Surplus/Deficit compared to LoM closure estimates; and
- Retrenchment: Expected retrenchment costs based on LoM plans.

**Table 12-7: Mineral Assets Environmental and Social Closure Costs**

Company	Operations/Deposits	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/ (Deficit)	Retrenchment
		(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)	(KZTm)
<b>Kazatomprom-SaUran LLP</b>								
	Uvanas	2,288.3	2,291.7	1,406.2	175.6	1,581.9	(709.8)	9.3
	Eastern Mynkuduk	3,954.0	4,390.5	1,086.3	1,032.4	2,118.7	(2,271.8)	41.3
	Kanzhugan	3,273.4	5,590.2	1,832.6	7,206.6	9,039.2	3,449.0	73.4
	South Moinkum (Southern part)	1,940.3	2,009.2	61.7	20.6	82.3	(1,926.9)	15.4
	Central Moinkum	1,177.1	4,309.0	37.9	2,528.3	2,566.3	(1,742.8)	30.3
	<b>Subtotal</b>	<b>12,633.1</b>	<b>18,590.7</b>	<b>4,424.8</b>	<b>10,963.5</b>	<b>15,388.4</b>	<b>(3,202.3)</b>	<b>169.7</b>
<b>Ortalyk LLP</b>								
	Zhalpak	-	-	9.1	80.6	89.7	89.7	20.8
	Central Mynkuduk	3,734.1	4,841.1	950.6	2,618.3	3,568.9	(1,272.2)	203.6
	<b>Subtotal</b>	<b>3,734.1</b>	<b>4,841.1</b>	<b>959.7</b>	<b>2,699.0</b>	<b>3,658.7</b>	<b>(1,182.5)</b>	<b>224.4</b>
<b>RU-6 LLP</b>								
	Northern Karamurun	2,351.2	3,906.3	-	1,302.5	1,302.5	(2,603.8)	70.0

Company	Operations/Deposits	ARO (KZTm)	LoMp (KZTm)	Liquidation Fund 30/06/2018 (KZTm)	Liquidation Fund LoMp Contributions (KZTm)	Liquidation Fund on Closure (KZTm)	Liquidation Fund Surplus/ (Deficit) (KZTm)	Retrenchment (KZTm)
	Southern Karamurun	4,097.7	5,073.1	1,461.2	1,302.5	2,763.7	(2,309.3)	70.0
		<b>6,448.9</b>	<b>8,979.4</b>	<b>1,461.2</b>	<b>2,605.1</b>	<b>4,066.3</b>	<b>(4,913.1)</b>	<b>140.1</b>
<b>Appak LLP</b>								
	Western Mynkuduk	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
<b>JV Inkai LLP</b>								
	Block 1 Inkai (a), (b), (c)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
<b>Semizbai-U LLP</b>								
	Semizbai	2,549.6	6,125.7	419.1	1,625.6	2,044.7	(4,081.0)	35.0
	Irkol	2,513.8	3,693.4	526.4	2,094.2	2,620.7	(1,072.7)	47.6
	<b>Subtotal</b>	<b>5,063.4</b>	<b>9,819.1</b>	<b>945.5</b>	<b>3,719.9</b>	<b>4,665.4</b>	<b>(5,153.7)</b>	<b>82.7</b>
<b>JV Akbastau JSC</b>								
	Block 1 Budenovskoye	960.5	2,411.4	-	971.8	971.8	(1,439.7)	-
	Block 3 Budenovskoye, Block 4 Budenovskoye	2,441.6	4,845.4	862.5	1,952.6	2,815.1	(2,030.3)	20.9
	<b>Subtotal</b>	<b>3,402.0</b>	<b>7,256.8</b>	<b>862.5</b>	<b>2,924.4</b>	<b>3,786.9</b>	<b>(3,469.9)</b>	<b>20.9</b>
<b>Karatau LLP</b>								
	Budenovskoye, Block 2	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
<b>JV Zarechnoye JSC</b>								
	Zarechnoye	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
<b>JV Katco LLP</b>								
	Southern Moinkum (Northern part) and Tortkuduk	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
<b>JV Khorassan LLP</b>								
	Block Kharassan 1, North Kharassan	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
<b>JV SMCC LLP</b>								
	Akdala	3,186.8	4,361.7	881.1	45.0	926.1	(3,435.6)	129.7
	Southern Inkai 4	4,725.7	9,740.3	1,192.1	3,428.6	4,620.7	(5,119.6)	196.3
	<b>Subtotal</b>	<b>7,912.6</b>	<b>14,102.0</b>	<b>2,073.2</b>	<b>3,473.6</b>	<b>5,546.8</b>	<b>(8,555.2)</b>	<b>326.0</b>
<b>Baiken-U LLP</b>								
	Block Kharassan 2, North Kharassan	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>		<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>

### ***LLRW Management and Disposal***

Material management is a critical activity to comply with the objectives of cost and time associated to decommissioning projects. The availability of treatment processes and suitable facilities for material management on-site, such as disposal locations for the radioactive wastes to be generated, is essential to assure the success of a project.

The waste generated by the dismantling must be managed taking in account the acceptance criteria existing at the storage and/or treatment centres. It is important to be familiar with all the flows of material to be managed and to ensure that they are all properly documented and authorised, so that waste can be dispatched from the site as soon as possible.

The ISR operations liquidation programmes have different assumptions on the amount of waste generated during decommissioning works of wellfields and processing facilities. Several of the operations use a conservative approach and consider that all equipment that was in contact with uranium bearing solutions or uranium products is considered to be LLRW and decontamination process is not efficient to separate the radioactive and non-radioactive waste with required level of precision which may pose risk to the environment and public safety.

Metal LLRW is currently not supposed to be disposed of in LLRW facilities. Some companies rely on transferring radioactive metal wastes to Kazmetrao, a third-party company that provides decontamination services for various types of LLRW metal waste. No further details are available on the efficiency of decontamination and the final destination of decontaminated metal (the Kazmetrao products).

The LLRW facilities that are owned by the Company and supposed to receive the waste from closure works are listed in Table 11-2. The total capacity of the existing facilities is lower than required to accommodate all future LLRW that will be generated during closure of the Company's operations. Expanding the LLRW facilities will incur additional costs during closure. The cost of construction of an additional 80,000m<sup>3</sup> cell at Stepnoye LLRW facility was estimated to be KZT207m in 2014. The Inkai liquidation programme considers increasing the capacity of its own LLRW facility to accommodate the liquidation wastes. The expected cost of increasing



the Inkai LLRW facility as per the liquidation programme is estimated at KZT281m to increase capacity from 10,000m<sup>3</sup> to 66,000m<sup>3</sup>.

The Company's vision for the management of the LLRW during closure of the Mineral Assets comprises development of an internal standard that defines procedures on liquidation of mining operations, specifically:

- The standard prescribes that the owner of the each LLRW storage facility has to make forecasts of the LLRW that it will accept for next three to five years (with annual corrections) – to facilitate creation of additional storage space for waste to be accommodated as required;
- When a mine is approaching end of LoM it will develop an actual liquidation project where the amount of closure LLRW is defined – this information is then provided to the owner of the facility who is responsible for creation of additional disposal capacity by expanding the existing facilities. The construction work is either financed from the LLRW facility owner's budget or requesting required amounts of financial resources from the Company; and
- An independent company, Kazmetrao, will receive and decontaminate metal LLRW (Section 11.4).

Some operations include decontamination of equipment and piping as a strategy to reduce the amount of LLRW generation during closure. However, the efficiency of decontamination is not clear and influences the amount of LLRW for disposal.

### 12.6.3 Key Closure Risks Identified

Uranium ISR operations have certain risks at closure that have to be managed to ensure successful closure and environmental and public safety. The following general and specific risks are applicable to the Mineral Assets:

- Failure to properly close injection\pumping\monitoring wells may result in water infiltration to adjacent aquifers;
- Insufficient monitoring to demonstrate improvement in groundwater quality with time and, ultimately, attainment of pre-mining groundwater chemistry conditions.
- LLRW management at closure:
  - improper handling of contaminated waste resulting in exposure of personnel and public to ionizing radiation post closure,
  - lack of capacity in existing LLRW storage facilities to accommodate all waste from the Mineral Assets upon closure at the end of LoM resulting in additional expenditures for expansion,
  - limited of capacity of Kazmetrao to accept large quantities of metal LLRW for decontamination arising from mine closure,
  - unauthorised use of contaminated equipment\materials by third parties;
- Poor revegetation rates requiring extended periods of vegetation maintenance; and
- Social impacts related to closure of operations and retrenchment of personnel upon closure.

## 12.7 Conformance with International Standards

This section reviews the conformance of the Company's ESHS management at its ISR mines with international good practice as defined by the International Finance Corporation ("IFC") Performance Standards ("PS") on Environmental and Social Sustainability (2012) and the relevant Work Bank Group ("WBG") Environmental Health and Safety Guidelines ("EHSG"), which date to 2007 and are currently being revised. For uranium mining operations, the IAEA

Safety Standards and IAEA Security Series are also relevant. This section begins with a comment on how relevant Kazakhstan legislation aligns with international good practice and then focuses on the Company's ESHS management.

### 12.7.1 Status of Relevant Law in Kazakhstan

The IFC PS and the WBG EHS Guidelines are applied by financiers when reviewing projects and operations in all countries other than designated countries identified by the Equator Principles. These standards and guidelines are not applied to designated countries on the grounds they have adequate legislation and institutional capacity to protect their people and the natural environment. For designated countries, the review only focuses on compliance with relevant host country laws, regulations and permits. The designated countries comprise most of the member countries of the Organisation for Economic Co-operation and Development ("OECD"). Kazakhstan is not a designated country but aspires to become a member of the OECD, it participates in a country programme with the OECD and agencies of the OECD (<http://equator-principles.com/designated-countries/>).

Since Kazakhstan became independent it has worked with international agencies to align legislation with international good practice and to observe obligations in international legal instruments that it has signed. Legal reforms were given additional impetus by the Kazakhstan 2050 Strategy, announced by the President in 2012, which aims to make the country one of the top 30 most developed countries by 2050. There has been extensive legal reform in Kazakhstan to facilitate the country's transition to a market economy and improve the business climate for foreign investors.

Kazakhstan has substantial environmental legislation and advanced legislation on nuclear safety and security.

The Environmental Code has been amended 17 times since 2007 when it was enacted. It is now a vast legal instrument comprising 47 Chapters and 326 Articles. SRK understands that it has been compiled with input from many international advisors and considering legislation of OECD countries, including numerous EU Directives. Kazakhstan is continuing to revise its Environmental Code to facilitate the country's transition to a green economy. Commitment to this transition is expressed in the Country's 2013 Green Economy Concept Policy.

The environmental legislation is also likely to be revised to address shortcomings identified by international reviews of this legislation that have been invited by the Kazakhstan government. An example of an international review recently undertaken is that of the OECD in 2016 (OECD, 2017. Development Pathways Multi-dimensional Review of Kazakhstan (Volume 2). <http://www.oecd.org/publications/multi-dimensional-review-of-kazakhstan-9789264269200-en.htm>). Factors that limit the effectiveness of environmental legislation of Kazakhstan, as identified in this OECD review, include:

- The frequent changes to the legislation, which currently hinder the formation of uniform law enforcement practices;
- Sub-ordinate legislation is not yet fully aligned with the Environmental Code;
- The approaches to dealing with environmental damage, and liability for environmental damage, focus too much on financial penalties paid to government rather than restoration and do not motivate avoidance of damage enough;
- The approach to impact assessment, which is highly prescribed, does not always result in a thorough understanding of the unique environmental and social setting of each project;
- The judgements about the applicable limit values for discharges of pollutants from sites are

too prescribed and do not involve value judgements;

- Emission limit values (for emissions and effluents) are based on ambient standards for the environment (maximum permissible concentrations) that are often unrealistic (academically derived and, in many cases, impossibly strict), they should be set taking account of local conditions, what is desirable from the environmental point of view and what is feasible from a technical and economic standpoint;
- Emissions limits are set for a very large number of parameters, rather than priority parameters leading to a high administrative burden that cannot be justified in terms of environmental and health gain; and
- Payments for emissions and fines for environmental damage paid to government are not routinely invested in environmental protection, they tend to be used for other purposes and there is a dependence on these that could hinder implementation of alternative pollution control regimes.

SRK agrees with the above based on experience reviewing mines in Kazakhstan. To some extent these are reflected in the findings of the ESHS review of the Mineral Assets, as discussed in this chapter and summarised in Section 12.7 and Section 12.8. The ESHS management at the Mineral Assets does however conform to international standard in many respects. This could be attributed to both positive corporate governance and an additional nuclear safety legislation that the mines have to observe.

Kazakhstan did not have legislative base for regulating nuclear safety and security when it became independent in 1991 but has now established a robust legislative base. It invited the IAEA to scrutinise its regulatory structures in 2012 and 2016. The first review was undertaken in the form of an IAEA Integrated Regulatory Review Service review and the second was undertaken in the form of an IAEA Integrated Nuclear Infrastructure Review mission. The latter mission was focused on evaluating Kazakhstan's interest developing nuclear power generation capacity to support the country's development. The findings of the latter mission have been made public (<https://www.iaea.org/services/review-missions>). From the report on this mission, it is apparent that the IAEA recognises that Kazakhstan:

- Has progressed recommendations from previous reviews;
- Adheres to relevant international legal instruments;
- Has terms of international safeguards agreement in place;
- Has appropriate radiation protection programmes;
- Has legislation based on the IAEA recommendations and standards on safety (particularly, the Fundamental Safety Principles IAEA Safety Standards Series No. SF-1);
- Actively participates in the IAEA technical cooperation programme;
- Has established a regulatory body (the Committee for Atomic and Energy Supervision and Control) with experienced leadership (although it will need to be expanded to cover the future nuclear power programme); and
- Has benefited from training from the IAEA and other international organizations and participates in international meetings to share experience.

Kazakhstan is party to the key IAEA Conventions on nuclear safety, nuclear security and on emergency preparedness and response. It is also party to the Non-Proliferation of Nuclear Weapons Treaty ("NPT") and has signed a Comprehensive Safeguards Agreement and an Additional Protocol with the IAEA (<https://www.iaea.org/resources/legal/country-factsheets>). The IAEA noted in its recent review mission (the 2016 mission – as outlined above) that

Kazakhstan authorities are aware of their obligations under international agreements pertaining to nuclear safety and security and have ample experience in the implementation of the agreements.

Kazakhstan joined the International Labour Organization (“ILO”) in 1993, and has ratified key ILO conventions pertaining to minimum employment age, prohibition on the use of forced labour and the worst forms of child labour, prohibition on discrimination in employment, equal pay, and collective bargaining. The Constitution and the national labour legislation guarantee basic workers' rights, including the occupational safety and health, the right to organize and the right the right to organize and the right to strike. They also prohibit discrimination, child labour and forced labour.

### 12.7.2 Conformance of the Company’s ESHS Management with International Standards

An appraisal of conformance of the Company’s ESHS management at the Mineral Assets with the IFC PS has been undertaken. The appraisal findings are summarised in Appendix A. As part of this appraisal, SRK has also considered conformance with the WBG ESHG. SRK has found that the Company’s ESHS management largely conforms to these standards and guidelines. The non-conformances with these standards and guidelines pertain only to a few matters – a couple of matters result in non-conformances with several items/ paragraphs in the standards and guidelines. These matters are summarised in the Table 12-8.

SRK has made a number of recommendations to address the non-conformances (Appendix A). At the request of the Company these recommendations have been consolidated into the concluding recommendation in Section 12.8, so that there is one set of recommendations to be addressed. To avoid repetition, the recommendations have been numbered in Section 12.8 and cross references to the recommendations are given in the table below.

Other non-conformances with the IFC Performance Standards are that the HSE and the human resources policies of the Company do not refer specifically to the IFC Performance Standards or explicitly aim to meet the principles in the standards.

**Table 12-8: Key Non-Conformances with the IFC PS and WBG ESHG**

Non-conformance		Relevant sections of this report	
Description	Relevant IFC PS paragraphs (p) and WBG ESHG sections (s)	Providing insight on this matter	Providing recommendations
The mines have insufficient understanding of environmental and social context.	This is a non-conformance with PS-1 p-7 to p-12. This also has knock-on effect on compliance with other paragraphs of PS1 pertaining to management and monitoring of impacts, and staff awareness of and competence to manage impacts. It also means that emergency response plans may not adequately address risks to the health and safety of surrounding land users, which results in potential non-conformance with PS-1 p-20 & 21 and PS-4 p-11. In addition, it results in non-conformance with PS-4 p-5 general requirements, specifically with the WBG ESHG requirement pertaining to land use and biodiversity. Furthermore, it results in non-conformance with PS-6 pertaining to biodiversity and conservation.	Sections 12.4.3, 12.5 and 12.8 Appendix A	Section 12.8: Recommendations 1A to 1G
The mines do engage with local communities, directly and indirectly through Akims, but this engagement is not fully aligned with international best practice. Akims play a major role in the engagement process. The role of the mines in the planning and implementation of the engagement is not active enough to meet the IFC PS.	This results in partial non-conformance with PS-1, p-25 to p-31 and p-33 to p-36.	Section 12.4.12	Section 12.8 Recommendations 2A to 2C
The mines have limited knowledge of the metal LLRW decontamination service that they use in terms of capacity to process wastes, processes used, ESHS management practices	This results in non-conformance with PS4-12.	Sections 11.4, 12.6.2 and 12.6.3	Section 12.8: Recommendations 3A and 3B
Closure plans and cost estimates need to be updated	This results in a partial non-conformance with PS1-16	Section 12.6	Section 12.8: Recommendations 4A to 4C

## 12.8 Conclusions, Risks and Recommendations

The Mineral Assets are designed and operated to minimise ESHS impacts. This coupled with remote setting of most mines and a relative absence of sensitive receptors (Section 12.2), does reduce the ESHS risks associated with the operations. The Mineral Assets are strictly regulated by the GoK, frequently inspected by state authorities and regularly audited by the Company's HSE department. The standard of HSE management at the operations is high in that they have certified HSE management systems, non-conformances are acknowledged and addressed promptly and there is evidence of continuous improvement in HSE management.

The Company's corporate oversight of the operations involves a frank understanding on HSE performance in the organisation. The Company, like the Mining Subsidiaries, is open to opportunities for improvement and this is reflected in initiatives like the KAP 20 Project on implementation of target operational model of complex safety management. The internal annual and quarterly corporate reports on HSE performance are reviewed by the board of directors and are shared with all of the Mineral Assets so that the various operations can see the performance of their sister companies and learn from their experiences.

The Mineral Assets have a positive socio-economic impact through employment of large numbers of people and various social investments.

Nevertheless, SRK sees that there are refinements that can be made to the ESHS management at the mines. These refinements are outlined below. The Company has developed action plans to address the findings and recommendations.

### 12.8.1 Understanding of Context

#### *Finding 1*

The Mining Subsidiaries have insufficient understanding of environmental and social context and do not use the full potential of monitoring to ensure or prove that they do not have impacts on sensitive receptors, individually and cumulatively.

With the current global trend of increased awareness of environmental issues and increased litigation, the mines need to shift their environmental impact definition and monitoring paradigms beyond regulatory compliance.

#### *Recommendation 1 (Recommendations 1A to 1G for Finding 1)*

In respect of the above finding, SRK recommends that the Mining Subsidiaries implement the following with the aim of defining and monitoring impacts of the mines individually and cumulatively:

- **Recommendation 1A:** Review existing baseline data and collect new data to clearly define the impacts of the mines on habitats, plants and animal species of conservation importance and surrounding land uses such as nomadic farming;
- **Recommendation 1B:** Compile habitat maps that delineate the different habitats disturbed by mining. Ascertain whether there are any habitats that fall into the critical habitat category;
- **Recommendation 1C:** Collate existing baseline data and collect new data to define the impacts of the mine on water resources and groundwater;
- **Recommendation 1D:** Update management plans to address any new impacts on ecology, water users and land users that are identified;
- **Recommendation 1E:** Update emergency response plans to address risks to the health and safety of surrounding land users;
- **Recommendation 1F:** Refine the existing monitoring programmes so that the data is



collected and interpreted in a way that demonstrates that the mine is not impacting on ecology, biodiversity, surrounding land users and water resources;

- **Recommendation 1G:** Bring in external expertise to assist with impact identification and train staff to monitor and address impacts on ecology, water resources and land use; and
- **Recommendation 1H:** Estimate and report on both Scope 1 and Scope 2 greenhouse gas emissions (not just Scope 1 emissions).

## 12.8.2 Stakeholder Engagement

### *Finding 2*

The Mining Subsidiaries do engage with local communities but this engagement is not fully aligned with international best practice. The mines have not undertaken social baseline studies that define how people are using land and water around the mines and do not each have community stakeholder database and stakeholder engagement plan. Grievance procedures are not framed in the context of good international practice and documented.

### *Recommendation 2 (Recommendations 2A to 1C for Finding 2)*

In respect of the above finding, SRK recommends that the ISR mines implement the following:

- **Recommendation 2A:** As part of the upgrade of information on surrounding land uses (see above), undertake a social scan that identifies potentially affected communities, and their characteristics and interests in the operations that are relevant to effective engagement;
- **Recommendation 2B:** Develop and implement stakeholder engagement plans for each operation; and
- **Recommendation 2C:** Review and refine grievance mechanisms such that they align with international good practice.

## 12.8.3 Decontaminated Metal Waste Stewardship

### *Finding 3:*

Kazmetrao is an independent company providing metal LLRW decontamination services to the ISR mines. A number of mines assume that much of the metal LLRW waste arising from closure can be handled by Kazmetrao. This assumption is questionable. Also, the Kazmetrao decontamination operations have not been audited by the Mining Subsidiaries and neither the decontamination methods nor final destinations of the decontaminated wastes are known.

### *Recommendation 3 (Recommendations 3A to 3B for Finding 3)*

- **Recommendation 3A:** Evaluate whether the assumptions of the mines about the quantities of metal LLRW waste that can be decontaminated at closure match with the capacity of decontamination service providers.
- **Recommendation 3B:** Metal LLRW decontamination services should be subject to scrutiny. The Company should have evidence that these are being operated to acceptable standards and should obtain chain of custody documentation on the decontaminated waste to its final destination.

## 12.8.4 Ongoing Refinement of Closure Plans

### *Finding 4:*

The Mining Subsidiaries have developed closure plans and cost estimates, in the form of liquidation programmes required by legislation and mining contracts. SRK estimates that the closure costs are generally at least double those given in the liquidation programmes. The estimates provided in this report and included in the TEPs have been updated with input from

the Company. Closure plans and cost estimates need to be updated on a regular basis.

**Recommendation 4 (Recommendations 4A to 4D for Finding 4)**

The following recommendations on the closure planning and liabilities assessments are suggested for the Mining Subsidiaries to align with international practice:

- **Recommendation 4A:** Create internal closure planning group in the Company and each Mining Subsidiary to carry out gap analysis of existing liquidation programs;
- **Recommendation 4B:** Agree closure criteria with stakeholders (regulatory authorities and local communities);
- **Recommendation 4C:** Update liquidation programs to reflect current project designs and productions plans using realistic closure criteria, assumptions and costs; and
- **Recommendation 4D:** Regularly review the liquidation programs and cost estimates to ensure that sufficient resources are allocated to cover closure liabilities.

### 12.8.5 Capacity of the Corporate HSE Department

**Finding 5:**

The five-man team in the corporate HSE department is effective, but is stretched and will need to be significantly increased to meet the Company's current HSE aspirations and address recommendations made in this report (as above). The department also does not have sufficient capacity to handle the increasing volume of HSE performance data being collected from the operations. Historically, the department was only focused on data of importance to regulatory authorities but it is now collecting and processing additional data to review and report on the Company's performance in a manner aligned with best international practice.

**Recommendation**

- **Recommendation 5:** Significantly increase the capacity of the corporate HSE department. The capacity should be at least doubled.

## 13 LIFE OF MINE PLANS

### 13.1 Introduction

This section includes discussion and comment on the TEPs as established by the Company in developing its LoMps. Specifically, details are provided in respect of the: Mining Subsidiaries and Company's equity interests; Life of Mine planning process; and TEPs.

- In conjunction with the Company, SRK has developed post-tax pre-finance cashflow models based on the following key inputs:
  - Final products produced at each site or an independent/Company related refinery,
  - Mass balance determinations from in-situ grades through, PLS concentration, PLS processing and refining to final product;
- All LoMp production is sourced from Proved and Probable Ore Reserves, unless explicitly stated otherwise;
- All TEPs are presented at the Mining Subsidiary Level and reported on a 100% basis, that is to say not on an equity attributable basis to the Company, unless explicitly stated otherwise; and
- All revenues and expenditures are reported in real terms as at the Base Technical Information Date (1 July 2018) and are provided in annual increments along with LoMp

totals, with the exception of 2018 which reflects the six month period ending 31 December 2018.

Forecast sales from the Mining Subsidiaries which are reported herein as attributable to the Company are assumed to be to the Company and not from the Company to any third parties. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been sold directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

SRK notes that whilst the disclosure guidance of the ESMA Recommendations, notably “Appendix II – Mining Competent Person’s Report – recommended content” (hereinafter “**Mining CPR**”) is not mandatory, the granularity of disclosure as included in this section of the CPR has been prepared on the basis of that considered to be the minimum level of detail required in order for an appropriately expertised valuator to undertake a valuation of the Mineral Assets. Accordingly, SRK highlights the following:

- Disclosure includes all technical and economic parameters in respect of saleable production, operating expenditures (mining, processing, G&A, retrenchment), Mineral Extraction Tax (royalty), capital expenditures (including development capital sustaining capital, environmental liabilities) and sales revenue determinations. In respect of the latter, the assumptions are derived from the commodity pricing forecasts as provided by UxC and relevant price discount (Table 13-8) applicable to each Mining Subsidiary;
- Commodity sales are net of movement in work-in-progress and details for the relevant days and opening balances are included in this CPR;
- Determinations of both cash and non-cash costs are in practice in certain instances determined at a deposit level, however, for the purpose of simplification, the reporting detail presented in this CPR is provided at a Mining Subsidiary level; and
- In order to determine post-tax pre-finance cashflows as would normally be required to support a valuation of the Mineral Assets, other non-technical parameters (Section 13.3.8) are necessary to be considered which are specifically excluded from this CPR. SRK has however been informed that these items including all associated opening balances and formulae are to be incorporated into the section captioned “*Operating and Financial Review*” contained in the “**Registration Document**” and the Prospectus.

The determination of cash costs in the metals and mining sector varies both within and between commodity focus companies. Furthermore, it would appear that with respect to reporting standards, that defined by the World Gold Council (“**WGC**”) and published (June 2013) (“**WGC 2013**”) in its guidance noted on “all-in sustaining costs” and “all-in costs” metrics would appear to be the most comprehensive. This was an advance from the cash cost reporting methodology introduced in 1996 which focused solely on the mining and processing costs incurred. In contrast WGC 2013 focuses on costs incurred in the complete mining lifecycle from exploration to closure. With respect to the uranium sector, comparative assessment of the approach adopted by mining companies yield varying interpretations with no explicit reporting of adherence to any specific standard. Accordingly, and in conjunction with the Company, SRK has determined both historical and forecast cash costs which is largely based on the WGC guidance inclusive of certain modifications (exclusion of Mineral Extraction Tax to establish the variant C1 (exc MET); and exclusion of the contributions to the environmental closure fund and ultimate closure costs from the “**All In Sustaining Costs**”) as advised by the Company. To this end the following definitions have been adopted:

- C1 cash costs (“**C1**”) comprising all direct cash expenditures required to secure the sales volumes and sales revenues as determined and include, mining, processing, general and administration, Mineral Extraction Tax, Reimbursable Services, Distribution, Toll Refining and Retrenchment costs;
- C1 cash costs excluding Mineral Extraction Tax (“**C1 (exc MET)**”); and
- All in sustaining Costs (“**AISC**”) comprising the C1 cash costs as well as the production well construction costs and sustaining costs.

For clarification these costs specifically do not include any significant non-cash items and as such being presented on a cash basis and cannot be directly compared with any historical cash costs or AISC as derived either by the Company or other competitors operating in the uranium sector. Furthermore, SRK notes that both historical and forecast unit cash costs as reported herein are expressed per tonne of U<sub>3</sub>O<sub>8</sub> sold with the primary variance between both produced and sold being largely attributable to movement in Work-in-Progress (“**WIP**”) as determined by the change in closing balances between the reporting periods. For certain Mining Subsidiaries the variance between that which is produced and that which is sold in respect of tonnes of U in the final product is not significant and accordingly reporting on either an as produced or as sold basis is not considered significant, specifically when considering forecast data. This aside, SRK notes that certain of the Mining Subsidiaries have due to various market conditions, not sold all that was produced historically, thereby resulting in increased product stockpiles. This is specifically the case for Kazatomprom-SaUran LLP, and in this specific instance the unit of cash cost reporting adopted is on an as produced U<sub>3</sub>O<sub>8</sub> basis.

## 13.2 Mining Subsidiaries

The Company has equity interests in 13 (producing companies) Mining Subsidiaries incorporated in Kazakhstan which are either managed directly by the Company or through JV or Associated Company arrangements. Table 13-1 presents the corporate details relating to each of the Mining Subsidiaries, specifically in respect of name, JV partner and date of incorporation, deposit name, equity interest, depletion and cessation of services date and the first year of commercial production. The equity interests as reflected in Table 13-1, assume that certain transactions underway are effective as at 1 July 2018. Details relating to the Transactions are included in Section 2.2, however in summary the changes are:

- For JV Khorassan-U LLP an increase in the attributable equity interest from 33.98% to 50.00%;
- For Baiken-U LLP an increase in the attributable equity interest from 5.00% to 52.50%; and
- For Kyzylkum LLP an increase in the attributable equity interest from 30.00% to 50.00%.

Accordingly for all forecast data as reported herein, the attributable equity interests in Table 13-1 has been relied on and for all historical data as reported herein, the adjustments relating to the recent Transactions have been reversed to reflect actual interests: JV Khorassan-U LLP (33.98%); Baiken-U LLP (5.00%); and Kyzylkum LLP (30.00%). Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases. Notwithstanding the above, and in alignment with that reported in the Registration Document and the Prospectus, Section 7.5 presents attributable Mineral Resources and Ore Reserves as at 1 July 2018 on a pre-Transaction basis.

**Table 13-1: Mining Subsidiary details<sup>(1)</sup>**

Mining Subsidiary	JV Partner	JV Inc.	Deposit	Equity Interest (%)	LoMp Depletion (year)	Services (year)	First Production (year)
Kazatomprom-SaUran LLP			Uvanas	100.00	2020		1997
			Eastern Mynkuduk	100.00	2026		1997
			Kanzhugan	100.00	2040	2040	1997
			South Moinkum (Southern part)	100.00	2020		2001
			Central Moinkum	100.00	2040		2014
					<b>2040</b>	<b>2040</b>	<b>1997</b>
Ortalyk LLP			Zhalpak	100.00	2020		2018
			Central Mynkuduk	100.00	2032		2007
					<b>2032</b>		<b>2007</b>
RU-6 LLP			Northern Karamurun	100.00	2031		1997
			Southern Karamurun	100.00	2034		1997
					<b>2034</b>		<b>1997</b>
Appak LLP	Sumitomo, Kansai	2005	Western Mynkuduk	65.00	2036		2008
JV Inkai LLP	Cameco	1996	Block 1 Inkai (a)	60.00	2047		2008
			Block 1 Inkai (b)	60.00	2046		2008
			Block 1 Inkai (c)	60.00	2052		2015
					<b>2052</b>		<b>2008</b>
Semizbai-U LLP	CGN Mining	2006	Semizbai	51.00	2040		2009
			Irkol	51.00	2041		2008
					<b>2041</b>		<b>2008</b>
JV Akbastau JSC	Uranium One	2006	Block 1 Budenovskoye	50.00	2037		2009
			Block 3 Budenovskoye	50.00	2039		2009
			Block 4 Budenovskoye	50.00	2039		2009
					<b>2039</b>		<b>2009</b>
Karatau LLP	Uranium One	2005	Block 2 Budenovskoye	50.00	2033	2039	2007
JV Zarechnoye JSC	Uranium One	2001	Zarechnoye	49.98	2023		2007
JV Katco LLP	Orano	1996	Southern Moinkum (Northern part)	49.00	2025		2001
			Tortkuduk	49.00	2033		2007
					<b>2033</b>		<b>2001</b>
JV Khorassan-U LLP <sup>(2)</sup>	Rosatom, Marubeni	2014 (2005)	Block Kharassan 1, North Kharassan	50.00	2036		2008
JV SMCC LLP	Uranium One	2014 (2004)	Akdala	30.00	2025		2004
			Block 4 Inkai	30.00	2036		2007
					<b>2036</b>		<b>2004</b>
Baiken-U LLP <sup>(2)</sup>	Energy Asia	2006	Block Kharassan 2, North Kharassan	52.50	2032	2036	2009
<b>Total</b>					<b>2052</b>		<b>1997</b>

<sup>(1)</sup> Rosatom State Nuclear Energy Corporation ("**Rosatom**") whose equity interest is held through a wholly owned subsidiary Uranium One Inc ("**Uranium 1**"); Cameco Corporation ("**Cameco**"); Sumitomo Corporation Group ("**Sumitomo**"); Kansai Electric Power Company ("**Kansai**"); Marubeni Corporation ("**Marubeni**"); Energy Asia Holding Limited ("**Energy Asia**"); CGN Mining Company Limited ("**CGN Mining**"); Orano Group ("**Orano**" formerly known as Areva)

<sup>(2)</sup> As of 30 June 2018, the Company's interest in JV Khorassan-U LLP and Baiken-U LLP was 33.98% and 5.00%, respectively. The Company expects to increase its interest in JV Khorassan-U LLP and Baiken-U LLP to 50.00% and 52.50%, respectively, in each case before 31 December 2018. Accordingly, the forecast information for JV Khorassan-U LLP and Baiken-U LLP is presented in this CPR on a basis giving effect to such increases.

<sup>(3)</sup> For JV Inkai LLP, the Company's equity participation is determined based on a prescribed formula based on uranium production within the following bands: 0tU to 1,500tU (40.00%); 1,500tU to 2,000tU (50.00%); 2,000tU to 4,000tU (77.50%); 4,000tU (40%) for the period 2015 through 2017 and similarly for 2018 onwards other than for the last band which is amended to 4,000tU (60%).

The Mining Subsidiaries comprise operating companies which extract uranium using in-situ leach mining methods to produce a PLS which is then subject to further processing to derive the final product at each of the processing plants. The final products at each site (Table 13-2) varies and include:

- **Rich Eluate** (Technical Desorbate or TD): produced from pumping of the original PLS into absorption columns where ion exchange resins (sorbents) are loaded with uranium. The Uranium-loaded ion-exchange resin is sent to desorption to produce a rich eluate which typically has uranium content of 1,000x higher than the PLS;
- **Yellowcake** (HKPU): produced from precipitation and filtration of the rich eluate to produce a product which uranium concentration ranges from 45% to 50% and has an accompanying moisture range of 20% to 25%. Typically, this product is transported to third party refiners to produce U<sub>3</sub>O<sub>8</sub>; and
- **U<sub>3</sub>O<sub>8</sub>**: uranium concentrate in accordance with ASTM C967 with U content of at least 65% and ST RK 2573 with U content of at least 80% and is typically produced through calcination of Yellowcake.

**Table 13-2: Mining Subsidiary site products<sup>(1)</sup>**

Mining Subsidiary	Deposit	Site Product	Processing /Refining
Kazatomprom-SaUran LLP	Uvanas	U <sub>3</sub> O <sub>8</sub>	final product
	Eastern Mynkuduk	U <sub>3</sub> O <sub>8</sub>	final product
	Kanzhugan	U <sub>3</sub> O <sub>8</sub>	final product
	South Moinkum (Southern part)	U <sub>3</sub> O <sub>8</sub>	final product
	Central Moinkum	U <sub>3</sub> O <sub>8</sub>	final product



Mining Subsidiary	Deposit	Site Product	Processing /Refining
Ortalyk LLP	Zhalpak	HKPU	UMP
	Central Mynkuduk	HKPU	UMP
RU-6 LLP	Northern Karamurun	HKPU	UMP
	Southern Karamurun	HKPU	UMP
Appak LLP	Western Mynkuduk	U <sub>3</sub> O <sub>8</sub>	final product
JV Inkai LLP	Block 1 Inkai (a)	U <sub>3</sub> O <sub>8</sub>	final product
	Block 1 Inkai (b)	U <sub>3</sub> O <sub>8</sub>	final product
	Block 1 Inkai (c)	U <sub>3</sub> O <sub>8</sub>	final product
Semizbai-U LLP	Semizbai	TD	SMCCP
	Irkol	HKPU	UMP
JV Akbastau JSC	Block 1 Budenovskoye	TD	Karatau
	Block 3 Budenovskoye	TD	Karatau
	Block 4 Budenovskoye	TD	Karatau
Karatau LLP	Block 2 Budenovskoye	U <sub>3</sub> O <sub>8</sub>	final product
JV Zarechnoye JSC	Zarechnoye	HKPU	SMCCP
JV Katoo LLP	Southern Moinkum (Northern part)	U <sub>3</sub> O <sub>8</sub>	final product
	Tortkuduk	U <sub>3</sub> O <sub>8</sub>	final product
JV Khorassan-U LLP	Block Kharassan 1, North Kharassan	TD/HKPU	Baiken-U/SMCCP
JV SMCC LLP	Akdala	U <sub>3</sub> O <sub>8</sub>	final product
	Block 4 Inkai	U <sub>3</sub> O <sub>8</sub>	final product
Baiken-U LLP	Block Kharassan 2, North Kharassan	U <sub>3</sub> O <sub>8</sub>	final product

<sup>(1)</sup> Ulba Metallurgical Plant JSC (“UMP”) in which the Company has a 90.2% equity interest and 100% voting interest.

<sup>(2)</sup> Stepnogorsk Mining Chemical Combine (plant), (“SMCCP”).

Furthermore, certain of the Mining Subsidiaries provide mining and processing services to other Mining Subsidiaries, specifically where:

- A portion of the TD production from JV Khorassan-U LLP is processed at Baiken-U LLP processing facilities to produce U<sub>3</sub>O<sub>8</sub> concentrate;
- All TD produced at JV Akbastau JSC is processed at Karatau LLP to produce U<sub>3</sub>O<sub>8</sub> concentrate; and
- A subsidiary company, Kyzylkum LLP provides all mining and processing services on behalf of JV Khorassan-U LLP. The Company’s equity interest in Kyzylkum LLP is noted at 30.00% (Uranium One 30%; Energy Asia 30%) and whilst the majority of expenditures relating to the provision of services is charged to JV Khorassan-U LLP, there remains a portion of expenditures which are not and are funded by shareholder loans to the subsidiary. In summary, all operating costs incurred by Kyzylkum LLP (mining, processing and G&A) are charged to JV Khorassan-U LLP as is the depreciation charge associated with all capital expenditures incurred by Kyzylkum LLP. Section 13.4 (Table 13-115) provides an annual schedule of these expenditures which are not included in the LoMp assumptions.

All costs associated with the provision of processing services by Baiken-U LLP and Karatau LLP are passed on at cost and reported as services costs to the receiver and services revenue by the provider. In respect of the latter such revenues are allocated as positive operating expenditures.

In respect of RU-6 LLP and Kazatomprom-SaUran LLP, the Company allocates a portion of Company corporate overheads which are charged as a unit rate per tonne of U on site production and are also reported as operating expenditures in the relevant tables included in Section 13.4. Direct expenditures associated with the Mining Subsidiaries which are not included in the LoMps reported herein are exploration and technical study expenditures undertaken by Volkovgeologia JSC in which the Company has a 65% equity interest. Annual expenditures associated with all exploration activities as currently scheduled by the Company are summarised in Section 13.4.

For the avoidance of doubt, the scope of work of the CPR was specifically limited to the Mining Subsidiaries and does not include any technical or economic assessments of the assets and liabilities of the other divisions of the Company, specifically: Volkov, UMP in which the Company holds a 90% equity (and 100% voting) interest, TH KazakAtom AG wholly owned by the Company, or any other of the Company’s subsidiaries, joint ventures or associates.

### 13.3 Company Life-of-Mine planning process

The LoM planning process followed by the Company for the Mineral Assets largely reflect standard practices for ISR operations in Kazakhstan. For pre-production Mineral Assets, the current regulatory process necessitates the generation of key technical documents generated in support of the permitting and contract process which include: scoping/conceptual studies Techniko-Ekonomicheskoe Predlozhenye “TEEP”; pre-feasibility studies (Techniko-Ekonomicheskoe Obosnovanie Konditsy “TEO Konditsy”, Techniko-ekonomicheskije Rasschety – “TER”, Techniko-ekonomicheskije Soobrazheniya - “TES”; feasibility studies Techniko-Ekonomicheskoe Obosnovanie Proyekt – “TEO Project”; and environmental and social impact assessments - “OVOS”. Historically these and other additional documents including business plans, work programmes and detailed design documents are generated in support of the permitting process and award of the mining contract.

These documents are normally generated either directly by the Mining Subsidiaries or outsourced to licensed technical institutes and are only updated should operating conditions, ownership or other initial contract require amendment. As such these documents are not routinely updated and serve as the official reference document in support the decision for construction and commencement of operations. Furthermore, the resulting production and associated expenditure projections are largely undertaken with reliance on essentially two-dimensional semi manual techniques and do not benefit from reliance on computerised geological models which interface with a hydrogeological/chemical model incorporating both spatial and time-related functionalities.

Notwithstanding certain ‘manual’ limitations associated with the above, process, a significant amount of detailed work is undertaken which is further supported by well testing as part of the commitment to commencement of commercial production. The initial assumptions are then revised accordingly and relationships established to account for physical and chemical characteristics (geology, hydrogeology, permeability, mineralogy, concentration) of the deposits, well designs and configuration.

On attaining commercial production, the planning focus changes to the short term where the focus is on a one year plan with monthly schedules and designs with extensions to a five year period to support capital programmes and production volume changes. This limited focus does constrain the updating of the LoMp such that the technical and economic evaluation of the remaining Ore Reserves beyond a five year period through detailed production planning is not able to be assessed/tested to the same degree as initially considered for the first five years. Furthermore, it is not current practice to assess the impact of historical performance, re-interpretations or changed assumptions with respect to the spatial and time-related aspects of any given operation.

This aside, the Company does collate a significant amount of historical monthly technical and economic data which reports details in respect of well construction, well production and performance including PLS concentrations and volumes, physical consumable volumes and unit rates, process recoveries and performance, operating and capital expenditures.

The LoMp projections as developed by the Company and reported herein incorporate 18 month budget parameters (H2 2018 and 2019) and any adjustments deemed necessary for the following three years (2020 to 2022), thereafter relying on the application of unit rates until depletion of the Ore Reserves. The resulting projections rely on development of key parameters per deposit which incorporate annual projections for:

- Assumed production of Uranium quantity (tonnes of U) in the final site products, generally reflecting that projected in the first five years thereafter generally aligned with the contract terms;
- PLS uranium concentrations (mgU/l);
- Injection well pumping rates (m<sup>3</sup>/h);
- Number of Injection wells in operation;
- Determination of Extraction wells, observation wells, exploration wells, and re-drilled (damaged) wells, through application of appropriate ratios;
- Determination of wells require to be constructed, largely based on historical norms which essentially reflect the well design configurations (hexagonal or row);
- Determination of operating expenditures based on activity-element details, where unit rates are determined from historical and planned performance for: labour, power, consumables (acid, reagents etc), water, consumable transportation costs, overheads and other costs; and
- Establishing development and sustaining capital requirements whereby well construction is largely based on well numbers, depths and unit rates per unit length (metres) drilled, and provisions for longer term sustaining costs. Any specific capital items for development/expansion are typically defined within the first five years and account for expansion and or extension of services into new wellfield areas.

Determination of other sales revenue and expenditure elements largely follow well established processes and are largely directly comparable with historical performance. Where appropriate these elements are separately described below.

SRK considers that a number of improvements in the LoMp process presently followed by the Company could be made and in certain operations a degree of computerisation has been initiated, specifically in respect of Mineral Resource estimation, development of mine plans and Ore Reserve reporting. Whilst these advances have not been uniformly adopted at all Mining Subsidiaries, the combination of the relative simplicity of the ISR mining operations and significant historical data with relatively consistent performance ensures that the LoMp assumptions are reasonably well grounded. Furthermore, SRK has assessed historical performance from 2015 through H1 2018 inclusive and where appropriate modified the forecast data as developed by the Company accordingly.

### 13.3.1 Production

Production estimates largely follow the process outlined above on a deposit level and include:

- The Ore Reserves as reported in Table 13-3 on an aggregate (100%) basis;
- Uranium content in PLS;
- Uranium content in TD (desorbate/rich eluate);
- Recovery of Uranium in TD to Uranium in the final site product being (TD, HKPU, U<sub>3</sub>O<sub>8</sub>) through application of a process recovery rate; and
- Recovery from final site product to U<sub>3</sub>O<sub>8</sub> where this occurs off-site.

Furthermore, it is critical to note that each Mining Contract stipulates an agreed overall site product recovery of Uranium from the in-situ content. These typically range from 80% to 90% and essentially reflect the point at which commercial production may cease. Accordingly, the Company monitors the cumulative production from individual wells over time to determine to what extent the contractual recovery has been achieved. To date SRK has confirmed that the

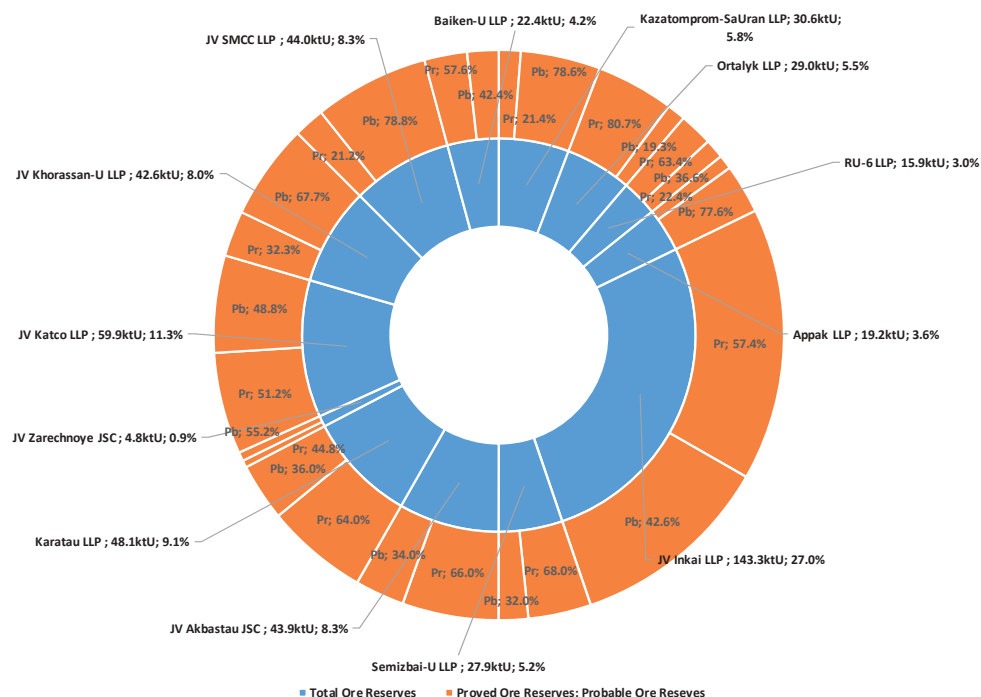
contractual recoveries as forecasted are broadly aligned with actual results as reflected in the historical tables reported herein.

Table 13-4 provides the attributable Ore Reserves to the Company as at 1 July 2018.

**Table 13-3: Mining Subsidiary Ore Reserves and LoMp depletion year (Aggregate 100% basis)**

Mining Subsidiary	Deposit	Proved Ore Reserves			Probable Ore Reserves			Ore Reserves			LoMp Depl'n (year)
		Tonnage (Mt)	Grade (%U)	Content (ktU)	Tonnage (Mt)	Grade (%U)	Content (ktU)	Tonnage (Mt)	Grade (%U)	Content (ktU)	
<b>Kazatomprom-SaUran LLP</b>											
	Uvanas	-	-	-	-	-	-	-	-	-	2020
	Eastern Mynkuduk	15.6	0.030	4.7	6.9	0.030	2.1	22.6	0.030	6.8	2026
	Kanzhugan	3.5	0.042	1.5	27.6	0.038	10.5	31.1	0.038	12.0	2040
	South Moinkum (Southern part)	0.01	0.039	0.003	0.1	0.048	0.04	0.1	0.047	0.0	2020
	Central Moinkum	0.7	0.056	0.4	19.8	0.058	11.5	20.5	0.058	11.9	2040
	<b>Subtotal</b>	<b>19.8</b>	<b>0.033</b>	<b>6.6</b>	<b>54.4</b>	<b>0.044</b>	<b>24.1</b>	<b>74.3</b>	<b>0.041</b>	<b>30.6</b>	<b>2040</b>
<b>Ortalyk LLP</b>											
	Zhalpak	0.4	0.045	0.2	-	-	-	0.4	0.045	0.2	2020
	Central Mynkuduk	49.4	0.047	23.2	14.7	0.038	5.6	64.1	0.045	28.8	2032
	<b>Subtotal</b>	<b>49.8</b>	<b>0.047</b>	<b>23.42</b>	<b>14.7</b>	<b>0.038</b>	<b>5.6</b>	<b>64.5</b>	<b>0.045</b>	<b>29.0</b>	<b>2020</b>
<b>RU-6 LLP</b>											
	Northern Karamurun	6.3	0.069	4.3	2.3	0.050	1.1	8.6	0.064	5.5	2031
	Southern Karamurun	7.1	0.081	5.7	5.3	0.089	4.7	12.4	0.084	10.4	2034
	<b>Subtotal</b>	<b>13.4</b>	<b>0.075</b>	<b>10.1</b>	<b>7.5</b>	<b>0.077</b>	<b>5.8</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>2034</b>
<b>Appak LLP</b>											
	Western Mynkuduk	13.4	0.032	4.3	41.4	0.036	14.9	54.8	0.035	19.2	2036
<b>JV Inkai LLP</b>											
	Block 1 Inkai (a)	36.3	0.076	27.6	9.7	0.061	5.9	46.0	0.073	33.5	2047
	Block 1 Inkai (b)	32.8	0.051	16.7	88.1	0.053	46.7	120.9	0.052	63.4	2046
	Block 1 Inkai (c)	80.7	0.047	37.9	17.3	0.049	8.5	98.0	0.047	46.4	2052
	<b>Subtotal</b>	<b>149.8</b>	<b>0.055</b>	<b>82.2</b>	<b>115.1</b>	<b>0.053</b>	<b>61.1</b>	<b>264.8</b>	<b>0.054</b>	<b>143.3</b>	<b>2052</b>
<b>Semizbai-U LLP</b>											
	Semizbai	17.3	0.057	9.9	2.5	0.053	1.3	19.8	0.056	11.2	2040
	Irkol	22.2	0.041	9.1	18.0	0.042	7.6	40.2	0.041	16.7	2041
	<b>Subtotal</b>	<b>39.5</b>	<b>0.048</b>	<b>19.0</b>	<b>20.6</b>	<b>0.043</b>	<b>8.9</b>	<b>60.1</b>	<b>0.046</b>	<b>27.9</b>	<b>2041</b>
<b>JV Akbastau JSC</b>											
	Block 1 Budenovskoye	9.8	0.107	10.5	5.3	0.088	4.6	15.1	0.100	15.1	2037
	Block 3 Budenovskoye	21.0	0.071	14.9	6.7	0.100	6.7	27.7	0.078	21.7	2039
	Block 4 Budenovskoye	2.5	0.141	3.5	4.2	0.084	3.6	6.7	0.105	7.1	2039
	<b>Subtotal</b>	<b>33.4</b>	<b>0.087</b>	<b>29.0</b>	<b>16.2</b>	<b>0.092</b>	<b>14.9</b>	<b>49.6</b>	<b>0.089</b>	<b>43.9</b>	<b>2039</b>
<b>Karatau LLP</b>											
	Block 2 Budenovskoye	31.8	0.097	30.8	27.5	0.063	17.3	59.3	0.081	48.1	2033
<b>JV Zarechnoye JSC</b>											
	Zarechnoye	3.6	0.060	2.2	4.4	0.060	2.7	8.0	0.060	4.8	2023
<b>JV Katco LLP</b>											
	Southern Moinkum (Northern part)	10.0	0.063	6.3	5.5	0.057	3.1	15.5	0.061	9.4	2025
	Tortkuduk	20.0	0.122	24.4	22.1	0.118	26.1	42.1	0.120	50.5	2033
	<b>Subtotal</b>	<b>29.9</b>	<b>0.102</b>	<b>30.7</b>	<b>27.7</b>	<b>0.106</b>	<b>29.3</b>	<b>57.6</b>	<b>0.104</b>	<b>59.9</b>	<b>2036</b>
<b>JV Khorassan-U LLP</b>											
	Block Kharassan 1, North Kharassan 1	13.0	0.106	13.8	27.0	0.107	28.9	40.0	0.107	42.6	2036
<b>JV SMCC LLP</b>											
	Akdala	7.3	0.057	4.2	2.9	0.057	1.7	10.2	0.057	5.8	2025
	Block 4 Inkai	11.5	0.045	5.2	89.2	0.037	33.0	100.6	0.038	38.2	2036
	<b>Subtotal</b>	<b>18.8</b>	<b>0.050</b>	<b>9.3</b>	<b>92.1</b>	<b>0.038</b>	<b>34.6</b>	<b>110.8</b>	<b>0.040</b>	<b>44.0</b>	<b>2036</b>
<b>Baiken-U LLP</b>											
	Block Kharassan 2, North Kharassan 1	11.3	0.114	12.9	8.7	0.109	9.5	20.0	0.112	22.4	2032
<b>Total</b>		<b>427.4</b>	<b>0.064</b>	<b>274.1</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>2052</b>

**Figure 13-1: Ore Reserve contribution by Mining Subsidiary**



**Table 13-4: Company Attributable Ore Reserves and LoMp depletion year**

Mining Subsidiary	Deposit	Attributable Ore Reserves			LoMp Depletion (year)
		Tonnage (Mt)	Grade (%U)	Content (ktU)	
<b>Kazatomprom-SaUran LLP</b>					
	Uvanas	-	-	-	2020
	Eastern Mynkuduk	22.6	0.030	6.8	2026
	Kanzhugan	31.1	0.038	12.0	2040
	South Moinkum (Southern part)	0.1	0.047	0.04	2020
	Central Moinkum	20.5	0.058	11.9	2040
	<b>Subtotal</b>	<b>74.3</b>	<b>0.041</b>	<b>30.6</b>	<b>2040</b>
<b>Ortalyk LLP</b>					
	Zhalpak	0.4	0.045	0.2	2020
	Central Mynkuduk	64.1	0.045	28.8	2032
	<b>Subtotal</b>	<b>64.5</b>	<b>0.045</b>	<b>29.0</b>	<b>2032</b>
<b>RU-6 LLP</b>					
	Northern Karamurun	8.6	0.064	5.5	2031
	Southern Karamurun	12.4	0.084	10.4	2034
	<b>Subtotal</b>	<b>20.9</b>	<b>0.076</b>	<b>15.9</b>	<b>2034</b>
<b>Appak LLP</b>					
	Western Mynkuduk	35.6	0.035	12.5	2036
<b>JV Inkai LLP</b>					
	Block 1 Inkai (a)	27.6	0.073	20.1	2047
	Block 1 Inkai (b)	72.5	0.052	38.0	2046
	Block 1 Inkai (c)	58.8	0.047	27.8	2052
	<b>Subtotal</b>	<b>158.9</b>	<b>0.054</b>	<b>86.0</b>	<b>2052</b>
<b>Semizbai-U LLP</b>					
	Semizbai	10.1	0.056	5.7	2040
	Irkol	20.5	0.041	8.5	2041
	<b>Subtotal</b>	<b>30.6</b>	<b>0.046</b>	<b>14.2</b>	<b>2041</b>
<b>JV Akbastau JSC</b>					
	Block 1 Budenovskoye	7.5	0.100	7.6	2037
	Block 3 Budenovskoye	13.9	0.078	10.8	2039
	Block 4 Budenovskoye	3.4	0.105	3.5	2039
	<b>Subtotal</b>	<b>24.8</b>	<b>0.089</b>	<b>21.9</b>	<b>2039</b>
<b>Karatau LLP</b>					
	Block 2 Budenovskoye	29.6	0.081	24.1	2033
<b>JV Zarechnoye JSC</b>					
	Zarechnoye	4.0	0.060	2.4	2023
<b>JV Katco LLP</b>					
	Southern Moinkum (Northern part)	7.6	0.061	4.6	2025
	Tortkuduk	20.6	0.120	24.7	2033
	<b>Subtotal</b>	<b>28.2</b>	<b>0.104</b>	<b>29.4</b>	<b>2036</b>
<b>JV Khorassan-U LLP</b>					
	Block Kharassan 1, North Kharassan	20.0	0.107	21.3	2036
<b>JV SMCC LLP</b>					
	Akdala	3.1	0.057	1.7	2025
	Block 4 Inkai	30.2	0.038	11.4	2036
	<b>Subtotal</b>	<b>33.2</b>	<b>0.040</b>	<b>13.2</b>	<b>2036</b>
<b>Baiken-U LLP</b>					
	Block Kharassan 2, North Kharassan	10.5	0.112	11.7	2032
<b>Total</b>		<b>535.3</b>	<b>0.058</b>	<b>312.3</b>	<b>2052</b>



The final sales product at the Mining Subsidiaries is subsequently determined based on the determination actual production at the various stages of production and the determination of the movement WIP and finished goods. This determination requires detailed calculations pertaining to various opening balances and WIP days assumptions. SRK has reflected these determinations in the underlying LoMp with the final aggregated sales presented at a Mining Subsidiary level. Accordingly, in support of such determinations, Table 13-5 provides the supporting details for the determination of WIP by Mining Subsidiary for the 12 month period ended 31 December 2017 and the six month period ended 30 June 2018.

**Table 13-5: Mining Subsidiary Work in Progress and WIP days assumptions**

Mining Subsidiary	2017 Work in Progress			H1 2018 Work in Progress		
	WIP c/b (tU)	WIP days (days)	Production (tU)	WIP c/b (tU)	WIP days (days)	Production (tU)
Kazatomprom-SaUran LLP	1,838	423	1,590	1,619	386	759
Ortalyk LLP	1,082	208	1,898	361	78	837
RU-6 LLP	513	259	718	442	189	426
Appak LLP	105	43	901	440	181	439
JV Inkai LLP	137	23	2,202	458	63	1,315
Semizbai-U LLP	252	81	1,128	413	163	457
JV Akbastau JSC	380	72	1,941	542	124	789
Karatau LLP	450	70	2,359	837	162	937
JV Zarechnoye JSC	200	91	802	422	192	398
JV Katco LLP	332	34	3,519	499	54	1,673
JV Khorassan-U LLP	164	38	1,564	601	143	757
JV SMCC LLP	253	31	2,937	349	50	1,271
Baiken-U LLP	68	14	1,762	263	56	849
<b>Total</b>	<b>5,775</b>	<b>90</b>	<b>23,321</b>	<b>7,245</b>	<b>120</b>	<b>10,905</b>

### 13.3.2 Production Flexibility

The current LoMps as developed by the Company's reflect a combination of: the Company's overall strategic marketing objectives; operational performance; physical constraints (well, processing and refining capacities); contractual commitments as recorded in the respective Mining Contracts for each deposit as held by the respective Mining Subsidiary. As such and pending any changes to the Mining Contracts as well as any other constraints, there remains a fixed production cap on the maximum production from each deposit. In the event that the Company wishes to change production levels as defined in the Mining Contracts, the Company must apply for such amendments through revised regulatory submissions which would then, if approved, be incorporated into revised Mining Contracts.

Presently the prevailing legislation reflects two key routes for obtaining new Mining Contracts:

- The "**Subsoil Law**" legislation of Kazakhstan effective 24/06/2010; and
- The Code of the Republic of Kazakhstan regarding "**Subsoil Code**" effective 27/12/2017.

The applicability of the various legislation is dependent upon the effective dates of either historical mining contracts prior (Subsoil Law) to 27/12/2017 or any new applications made subsequent to or on (Subsoil Code) 27/12/2017. Both the Subsoil Law and the Subsoil Code govern the award of exploration and mining contracts and as such include substantive details relating to the process of award and articles governing transitional provisions for exploration and mining contracts signed prior to 27/12/2017 are included in the Subsoil Law, specifically Articles 277 and 278.

Application and enforcement of the legislation is the responsibility of:

- the Ministry of Energy of the Kazakhstan ("**MoE**", also referred to herein as the "**Competent Authority**"; and
- the Ministry of Environmental Protection of the Kazakhstan ("**MoEP**") and the Ministry of Emergency Situations of Kazakhstan ("**MoES**"), hereinafter the "**State Bodies**".

With respect to Subsoil Law the key provisions and processes are as follows:

- Chapter 5 which governs direct negotiations (“**Direct Negotiations Protocol**”) with the regulatory authorities and notes that this agreement must be concluded within 2 months or alternatively refused;
- Article 62, paragraph 3, governs the preparation of a draft contract, and following submission under must be approved by the Competent Authority and the State Bodies within 30 calendar days;
- Article 64, development of the project prospecting within 8 months subsequent to signing of the Direct Negotiations Protocol;
- Article 67 relating to the payment of the subscription bonus within 20 days following agreement with the Regulatory Authorities. The subscription bonus is determined in accordance with a defined formula noted in Article 726 and is dependent on the quantum of ‘reserves’ defined;
- Article 68 relating to the registration of the contract which must be concluded within 18 months subsequent to signing the Direct Negotiations Protocol;
- Completion of Exploration Programme in accordance with the programme agreed with the Regulatory Authorities. Typically, this can extend for a period of one to four years with allowance for 2 times two year extensions for a total of 8 years. The period of assessment of technical data can be up to 5 years. In respect of Subsoil Code this is defined as a period of one to six years with a possibility of extending for 5 years;
- Completion of Pilot Well Programme, typically completed within a three to five year period; and
- Completion of technical studies defined as “**PRGR**” reports which is typically completed within a one year time frame, of which there are two types:
  - PRGR 1: a technical document which defines the project criteria and assumptions in accordance with the extraction of solid minerals for a new development;
  - PRGR 2: a technical document which includes a detailed mine plan for a project under development. This is also the key document and the basis for development of the annual budget which is also submitted to the Regulatory Authorities.

The time frame for development of these studies and documents is approximately 1 year and these include: generation of both Feasibility Studies and Environmental Impact Assessments; approval by the Central Commission for Exploration and Development Department of the MoE.

Furthermore, the documents and development of exploration/exploitation programmes must adhere to various legislation and ultimately are approved by the Ministry of Investment and Development of the Republic of Kazakhstan. All contracts for extraction are obtained through direct negotiations with the MoE.

With respect to the Subsoil Code, the key processes comprise:

- Submission of application for exploration licence to the Competent Authority;
- Approval or refusal of aforementioned application within 10 working days;
- Development of detailed exploration programme;
- Preparation of geological reports, see PRGR above.

Presently only licensed companies are permitted to author various technical studies as required under the governing legislation and these are typically held by either governmental or non-governmental/private technical institutes who are expertised in the generation of such

documents.

Accordingly, the time frames for obtaining and/or amending a mining contract are critically dependent on the development stage whereby:

- For greenfield sites the combined timeframe for exploration (1 to 8 years), pilot well (3 to 5 years) and technical study periods (1 year) could extend from 5 years to 14 years);
- For projects where exploration is complete, but no pilot wells conducted, the combined time frame could be 4 to 6 years; and
- For projects where pilot wells are completed or which are already under development/production and assuming that no further exploration is required the combined time frame could be as short as 1 year assuming that the relevant technical studies are largely developed. Notwithstanding this aspect, SRK notes that for a defined time frame, the Company can adjust the forecast production rate within a range of  $\pm 20\%$  without recourse to permanent revision of the Mining Contract through re-application and ultimately regulatory approval.

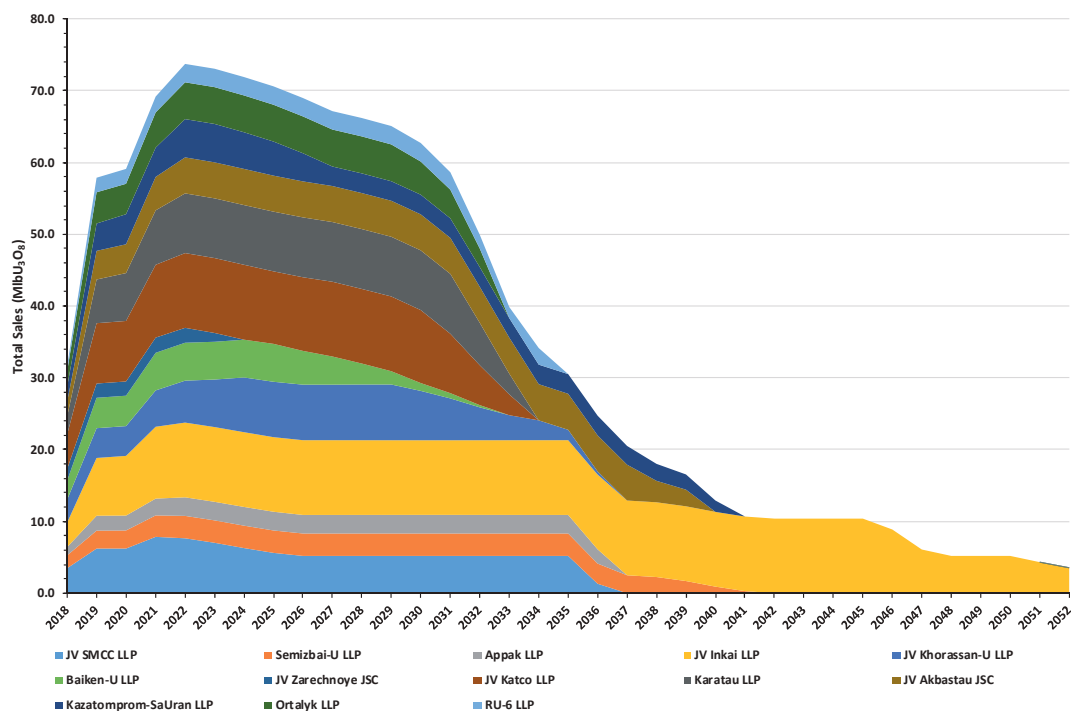
For all existing mining operations, reported production (Table 13-6) is limited to that stipulated in the relevant Mining Contracts (see Section 2.0) for the relevant site products (Table 13-2). During 2017 the Company re-assessed its short term production plans in accordance with anticipated market conditions and reduced production by approximately 20%. The current LoMp as developed by the Company assumes that the reduction is planned to be unwound between H2 2018 and 2020, thereafter returning to full capacity (e.g. Appak LLP). Total production of uranium (tU) at the Mining Subsidiaries is therefore expected to increase to 28ktU by 2021 thereafter declining to 22ktU by 2031 and to 8ktU by 2037 as the number of operating subsidiaries reduce from 13 in 2021 to four by 2037 and the impact of production tails are noted. Figure 13-2 presents a summary of the sales profile for each mining subsidiary in tonnes of  $U_3O_8$ .

**Table 13-6: Mining Subsidiary consolidated (100%) Uranium production: historical and forecast production<sup>(1)</sup>**

Mining Subsidiary	2015 (tU)	2016 (tU)	2017 (tU)	2018 (tU)	2019 (tU)	2020 (tU)	2021 (tU)	2022 (tU)	2023 (tU)
Kazatomprom-SaUran LLP	2,214	2,003	1,590	1,500	1,575	1,630	2,050	2,050	1,950
Ortalyk LLP	1,770	1,953	1,898	1,656	1,677	1,611	1,974	1,974	1,974
RU-6 LLP	956	1,015	718	820	790	790	987	987	987
Appak LLP	880	1,004	901	839	800	800	1,000	1,000	1,000
JV Inkai LLP	2,418	2,413	2,202	2,641	3,200	3,200	4,000	4,000	4,000
Semizbai-U LLP	1,221	1,242	1,128	937	960	960	1,201	1,201	1,201
JV Akbastau JSC	1,630	1,778	1,941	1,561	1,545	1,545	1,931	1,931	1,931
Karatau LLP	2,064	2,108	2,359	1,977	2,560	2,560	3,200	3,200	3,200
JV Zarechnoye JSC	800	817	802	780	764	764	837	788	269
JV Katco LLP	4,007	4,003	3,519	3,337	3,228	3,240	3,967	4,001	4,013
JV Khorassan-U LLP <sup>(2)</sup>	1,095	1,354	1,564	1,552	1,591	1,591	1,985	2,280	2,576
JV SMCC LLP	3,049	3,058	2,937	2,471	2,400	2,400	3,080	2,930	2,680
Baiken-U LLP	1,503	1,838	1,762	1,664	1,630	1,630	2,030	2,030	2,030
<b>Total</b>	<b>23,607</b>	<b>24,586</b>	<b>23,321</b>	<b>21,736</b>	<b>22,719</b>	<b>22,722</b>	<b>28,242</b>	<b>28,372</b>	<b>27,810</b>

<sup>(1)</sup> Historical from 2015 through 2017; combined H1 2018 actual and H2 2018 forecast for 2018; 2019 onwards forecast.

<sup>(2)</sup> Production capacity increased to 3,000tU by 2024.

**Figure 13-2: Annual sales (100%) of Uranium Concentrate (U<sub>3</sub>O<sub>8</sub>)**

Accordingly the key opportunities to arrest the production decline beyond 2031 and maintain sales of U<sub>3</sub>O<sub>8</sub> in the 40Mib to 60Mib range is dependent upon a combination of:

- Re-assessing the production rates at existing Mining Subsidiaries:
  - Completion of appropriate technical studies to assess the potential to increase production at medium life assets (>10 to 15 years), e.g. JV SMCC LLP, Semizbai-U LLP, Appak LLP,
  - Completion of appropriate technical studies to assess the potential for re-assessment of the optimal production rates at long (> 15 years) life Mining Subsidiaries, e.g. JV Inkai LLP, JV Akbastau JSC, JV Zarechnoye JSC,
  - Completion of further technical studies to roll-up the production tails at various of the Mining Subsidiaries, e.g. Ortalyk LLP and RU-6 LLP.

To date the Company has completed various high level conceptual studies at several of the Mining Subsidiaries deposits and these have identified the potential to increase production as follows:

- Semizbai-U LLP: to increase production at the Irkol deposit from 790tU to 850tU, thereby increasing total production by 150tU from 2022 onwards,
- Appak LLP: to increase production from 1,000tU to 1,200tU from 2021 onwards,
- JV Inkai LLP: to increase production from 4,000tU to 4,800tU from 2022 onwards,
- JV Khorassan-U LLP: to cap production at 2,400tU to facilitate the increased processing at Baiken-U LLP from 2021 onwards,
- Baiken-U LLP: to increase production from 2,000tU to 2,400tU from 2021 onwards,
- JV Zarechnoye JSC: to continue production through further exploration and extraction of material currently classified as Inferred Mineral Resources,
- JV Katco LLP: to increase production to 4,800tU from 2022 onwards,
- Karatau LLP: to increase production from 3,200tU to 4,800tU from 2022 onwards,

- JV Akbastau JSC: to increase production from 1,930tU to 2,320tU from 2022 onwards,
- Kazatomprom-SaUran LLP: to increase production at Central Moinkum from 500tU to 600tU from 2022 onwards,
- Ortalyk LLP: to increase production at Central Mynkuduk from 2,000tU to 2,400tU and to increase production at Zhalspak from 500tU to 600tU from 2022 onwards,
- RU-6 LLP: to increase production from 1,000tU to 1,200tU from 2022 onwards;

The combined impact of the above increases would be to expand production levels from the current profiles to 29ktU in 2021, to 33ktU in 2022, reducing thereafter to 31ktU by 2026 (Table 13-7). These increases whilst subject to further technical studies, are largely possible given: the relative simplicity of the ISR mining operations and the expansion of the production well footprint within the mining areas; and where necessary through additional capital programmes expansion of existing processing and refining capacities;

- Completion of Feasibility Studies in respect of advanced exploration properties: properties for which Mineral Resources have been defined but for which insufficient technical work has been completed to support the declaration of Ore Reserves: specifically;
  - the Zhalspak deposit at Ortalyk LLP reporting total Mineral Resources of 44.9Mt, grading 0.032%U for 14.5ktU content and,
  - the Block 2 Inkai and Block 3 Inkai deposits owned by the Company and reporting total Mineral Resources of 306.1Mt grading 0.041%U for content of 125.1ktU. The current exploration contract for Block 2 Inkai and Block 3 Inkai extends to 25 June 2022 with the focus of current detailed exploration being the upgrading of presently classified C2 (Indicated) material to C1 (Measured) and authoring of various regulatory documents. The current programme assumes: (1) completion of further exploration to enable upgrading of current classification by 2021; (2) commencing direct negotiations with the competent authorities to secure the necessary mining contracts (2021); (3) completing appropriate technical studies targeting the production in the range of 2,000tU to 3,000tU with an initial contract term of 25 years. Given the historical production at nearby deposits pilot well testing is not required in this instance; and
- Completion of further exploration activities specifically in respect of :
  - the Company's existing mining operations where potential exists for re-assessing and extending the boundaries of known mineralisation;
  - the Company's broader regional exploration programme as outlined by the planned US\$173.4m programme over the next 10 years (see Section 8 and Section 13.3.7 of the CPR).

To this end the Company is currently undertaking various technical studies to advance the conceptual studies to Pre-feasibility and Feasibility study status with a view to developing appropriately detailed plans to support any planned expansions in production capacity. The decision to implement such plans are obviously dependent on market conditions and furthermore securing the necessary approvals from the Competent Authority and State Bodies to amend existing Mining Contracts.

**Table 13-7: Mining Subsidiary consolidated (100%) conceptual Uranium production forecast production<sup>(1)</sup>**

Mining Subsidiary	2018 <sup>(2)</sup> (tU)	2019 (tU)	2020 (tU)	2021 (tU)	2022 (tU)	2023 (tU)	2024 (tU)	2025 (tU)	2026 (tU)	2027 (tU)
Kazatomprom-SaUran LLP	1,500	1,575	1,630	2,050	2,150	2,050	1,901	1,508	1,212	1,150
Ortalyk LLP	1,656	1,677	1,611	2,300	2,820	3,000	3,000	2,880	2,760	2,640
RU-6 LLP	820	790	790	1,000	1,200	1,200	1,200	1,200	1,200	1,200
Appak LLP	839	800	800	1,200	1,200	1,200	1,200	1,200	1,200	1,200



Mining Subsidiary	2018 <sup>(2)</sup> (tU)	2019 (tU)	2020 (tU)	2021 (tU)	2022 (tU)	2023 (tU)	2024 (tU)	2025 (tU)	2026 (tU)	2027 (tU)
JV Inkai LLP	2,641	3,200	3,200	4,000	4,800	4,800	4,800	4,800	4,800	4,800
Semizbai-U LLP	937	960	960	1,211	1,353	1,353	1,353	1,353	1,353	1,353
JV Akbastau JSC	1,561	1,545	1,545	1,931	2,317	2,317	2,317	2,317	2,317	2,197
Karatau LLP	1,977	2,560	2,560	3,200	3,840	3,840	3,840	3,840	3,840	3,840
JV Zarechnoye JSC	780	764	764	850	800	750	700	650	600	429
JV Katco LLP	3,337	3,228	3,240	3,900	4,800	4,800	4,800	4,800	4,800	4,800
JV Khorassan-U LLP	1,552	1,591	1,591	2,400	2,400	2,400	2,400	2,400	2,400	2,400
JV SMCC LLP	2,471	2,400	2,400	2,800	3,200	3,000	2,900	2,750	2,631	2,400
Baiken-U LLP	1,664	1,630	1,630	2,436	2,436	2,436	2,436	2,436	1,900	1,000
<b>Total</b>	<b>21,736</b>	<b>22,719</b>	<b>22,722</b>	<b>29,278</b>	<b>33,316</b>	<b>33,146</b>	<b>32,847</b>	<b>32,134</b>	<b>31,013</b>	<b>29,409</b>

(1) Note that the above projected increases of approximately 20% in production at the various Mining Subsidiaries is not supported by detailed technical studies and would also require further regulatory submissions to amend the various contractual agreements. It is also important to note that whilst the operating expenditures are only likely to reduce on an unit basis through consideration of the fixed G&A costs with the majority of the remaining expenditures being largely variable. In respect of capital costs, it would also be necessary to intensify the well construction rates in advance in order to ensure the timely attainment of the projected increases. Furthermore and in certain instances additional capital expenditure may be required in order to ensure sufficient processing and refining capacities, although the extent of this has not yet been fully determined and would be the subject of further studies.

(2) Combined historical (H1 2018) and forecast (H2 2018) production.

### 13.3.3 Sales Revenue

The current sales contracts between the Company, its Joint Venture partners and the Mining Subsidiary companies are subject to various sales contracts whereby the attributable sales price assumptions are subject to various adjustments. These adjustments are incorporated into the various governing agreements and are defined in accordance with the GoK uranium concentrate pricing regulations (effective 3 February 2011), whereby the saleable product is purchased by the JV partners at a commercial price equal to the uranium spot price, less a subsidiary specific price discount (maximum allowable). The Company has informed SRK that the specific price discounts as incorporated into each JV agreement is both confidential and as such may not be publically disclosed. Accordingly, in conjunction with the Company SRK has determined the weighted average price discount based on a combination of the LoMp sales forecasts and the UxC price forecast. This analysis indicates that the weighted average price discount for all Mining Subsidiaries (excluding the wholly owned mining subsidiaries of Kazatomprom-SaUran LLP, Ortalyk LLP and RU-6 LLP) is approximately 3.50%. SRK has therefore been requested by the Company to incorporate the following into the forecast data as reported herein with respect to the price discount assumptions:

- For Kazatomprom-SaUran LLP, Ortalyk LLP and RU-6 LLP a price discount factor of 0.00%; and
- For all other mining subsidiaries (JV SMCC LLP; Semizbai-U LLP; Appak LLP; JV Inkai LLP; JV Khorassan-U LLP; Baiken-U LLP; JV Zarechnoye JSC; JV Katco LLP; Karatau LLP; JV Akbastau JSC: hereinafter the “**JV Companies**”) a price discount factor of 3.50%.

Table 13-8 and Table 13-9 provide the discounted sales revenue price assumptions for each of the Mining Subsidiaries.

**Table 13-8: Mining Subsidiary Revenue discounts and sales pricing assumptions (US\$/lbU<sub>3</sub>O<sub>8</sub>): 2018 through 2030**

Price Assumption	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
<b>JV Companies</b>														
Price Discount	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
JV Companies	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.17	26.84	27.80	28.19	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
<b>Wholly Owned</b>														
Price Discount	(%)	-	-	-	-	-	-	-	-	-	-	-	-	-
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75

**Table 13-9: Mining Subsidiary Revenue discounts and sales pricing assumptions (US\$/lbU<sub>3</sub>O<sub>8</sub>): 2031 through 2035**

Price Assumption	Units	2031	2032	2033	2034	2035
Base Case	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
<b>JV Companies</b>						
Price Discount	(%)	3.50	3.50	3.50	3.50	3.50
JV Companies	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01
<b>Wholly Owned</b>						
Price Discount	(%)	-	-	-	-	-
Kazatomprom-SaUran LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
Ortalyk LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53
RU-6 LLP	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53

Forecast sales from the Mining Subsidiaries which are reported herein as attributable to the Company are assumed to be to the Company and not from the Company to any third parties. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been sold directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

### 13.3.4 Operating Expenditure

The determination of operating expenditures at the Mining Subsidiaries are largely based on a combination of historical and planned statistics with modifications for changed circumstances, suppliers etc as considered appropriate. In summary the process incorporates:

- Establishing labour compliments for mining, processing and G&A activities;
- Establishing unit physical consumables for mining and processing which is either related to Uranium content or PLS volumes;
- Application of unit cost rates (including transportation costs) to the determined consumable volumes for both mining and processing activities;
- Determination of additional expenditures and recovery of these expenditures in relation to services provided by one Mining Subsidiary to another, specifically processing to final product;
- Determination of refining charges for conversion of site-products to U<sub>3</sub>O<sub>8</sub> (where the final site product is not U<sub>3</sub>O<sub>8</sub>);
- Determination of terminal benefits liabilities or retrenchment costs based on the current minimum legal requirements in Kazakhstan being 1 month salary assumed as 1/12<sup>th</sup> of the annual labour bill relating to the labour movement determination on closure.
- Determination of both other cash and non-cash costs required to establish the Mineral Extraction Tax, Exploration Depreciation, Property Tax;
- Determination of mining contract related expenditures/provisions specifically:
  - Social Commitments included within the G&A costs and based on annual costs per deposit as noted in (Table 13-10) below,
  - Liquidation provisions (cash cost which is included as a capital item, is not directly tax deductible and not included in any depreciation determinations) which is based on a percentage (Table 13-10) of mining related expenditures inclusive of: direct mining costs; Mineral Extraction Tax (“MET” or royalty); mining depreciation, wellfield development depreciation (“PGR”), mining exploration depreciation. These expenditures are then accumulated and compared with the LoMp closure costs as presented in Table 13-12 whereby any shortfall or excess is then incorporated on the last period of operations; and
- The Company has assessed its exposure of key activity cost centres to currency fluctuations and given the high local content for labour, key consumables such as acid and power the average currency exposure distributions amongst the following key site activities are considered to be appropriate:

- Mining: 95% KZT and 5% US\$,
- Processing: 80% KZT and 20% US\$,
- On-site G&A: 95% KZT and 5% US\$.

**Table 13-10: Mining Subsidiary Liquidation Fund contribution percentages and social cost contributions**

Mining Subsidiary	Deposit	Liquidation Fund <sup>(1)</sup> (%)	Social Costs (US\$kp)
Kazatomprom-SaUran LLP	Uvanas	6.77	200
	Eastern Mynkuduk	1.27	200
	Kanzhugan	3.47	300
	South Moinkum (Southern part)	1.00	300
	Central Moinkum	1.00	300
Ortalyk LLP	Zhalpak	1.00	100
	Central Mynkuduk		100
RU-6 LLP	Northern Karamurun	1.00	260
	Southern Karamurun		
Appak LLP	Western Mynkuduk	1.00	100
JV Inkai LLP <sup>(2)</sup>	Block 1 Inkai (a)	1.00	30
	Block 1 Inkai (b)		
	Block 1 Inkai (c)		
Semizbai-U LLP	Semizbai	1.00	100
	Irkol	1.00	70
JV Akbastau JSC	Block 1 Budenovskoye	1.00	150
	Block 3 Budenovskoye		350
	Block 4 Budenovskoye		
Karatau LLP	Block 2 Budenovskoye	1.00	140
JV Zarechnoye JSC	Zarechnoye	0.10	50
JV Katco LLP	Southern Moinkum (Northern part)	1.00	30
	Tortkuduk		
JV Khorassan-U LLP	Block Kharassan 1, North Kharassan	1.00	120
JV SMCC LLP	Akdala	0.10	50
	Block 4 Inkai	1.00	100
Baiken-U LLP	Block Kharassan 2, North Kharassan	1.00	100

<sup>(1)</sup> Liquidation Fund percentages applied to the sum of mining, MET, Mining Depreciation, PGR, GRR gross-up by an assumed 20% margin.

<sup>(2)</sup> Payments are made annually and make 0.5% of an annual gross profit within the first five years, 1% from an annual gross profit within the next 15 years and 1.5% from an annual gross profit during the period which has remained till the end of working off. At accumulation of sum exceeding US\$500k, the Subsoil user will not have the further obligations on payments, and the percent charged for this sum can be used for holding of current reclamation.

Table 13-11 presents the historical average number of human resources statistics in the reporting period for the Mining Subsidiaries for 2015 through H2 2018 inclusive. For the six month period ended 30 June 2018 the average number engaged at the Mining Subsidiaries were 7,820.

**Table 13-11: Mining Subsidiary Human Resources historical statistics**

Mining Subsidiary	2015 (No)	2016 (No)	2017 (No)	2018H1 (No)
Kazatomprom-SaUran LLP	1,233	1,303	1,450	1,305
Ortalyk LLP	522	535	516	498
RU-6 LLP	429	422	414	407
Appak LLP	394	398	340	298
JV Inkai LLP	601	650	655	681
Semizbai-U LLP	569	570	551	541
JV Akbastau JSC	44	43	46	50
Karatau LLP	629	612	592	583
JV Zarechnoye JSC	428	420	412	378
JV Katco LLP	1,249	1,294	1,232	1,189
JV Khorassan-U LLP	490	515	507	523
JV SMCC LLP	980	961	898	876
Baiken-U LLP	474	499	502	491
<b>Total</b>	<b>8,042</b>	<b>8,222</b>	<b>8,115</b>	<b>7,820</b>

### 13.3.5 Capital Expenditure

Capital expenditures are generally segregated into four key elements:

- Well construction costs which are determined through application of unit construction and equipping costs per unit length (metres) developed. Well construction is assumed to cease two years prior to planned cessation of production on depletion of the Ore Reserves;
- Expansion/Development capital relating to defined one-off activities and typically include, expansion of processing facilities, extension of services and transport routes to new well-field areas, implementation of new systems and processes;

- Sustaining Capital largely reflecting recurring, infrastructure, maintenance and equipment replacement related costs which are assumed to cease three years prior to cessation of production; and
- Liquidation Fund Contributions/Closure Costs.

The key capital expenditure programmes as incorporated in to the LoMps comprise:

- **Appak LLP:** construction of a satellite processing facility and associated expenditure (KZT5.23bn in 2019 and 2020);
- **JV Inkai LLP:** construction of facilities to expand production to 4,000tUpa and other major repairs (infrastructure: KZT3.87bn from H2 2018 through 2019; production expansion: KZT8.84bn from 2019 through 2020);
- **JV Khorassan-U LLP:** construction of a satellite processing facility with capacity of 3,000tU (KZT8.94bn from 2021 through 2022). Note that the capital expenditure is included in Kyzylkum LLP and does not directly report to the JV Khorassan-U LLP TEPs;
- **Baiken-U LLP:** modernisation of the automatic control systems and automated refining (KZT1.08bn in H2 2018);
- **JV Katco LLP:** capital commitments for the implementation of the Tortkuduk project inclusive of infrastructure facilities (KZT73.07bn from H2 2018 through 2021);
- **Karatau LLP:** expansion for refining production to 3,200tUpa at Block 2 Budenovskoye (KZT4.21bn in 2019);
- **JV Akbastau JSC:** expansion of pilot production facilities at Block 4 Budenovskoye (KZT1.10bn remaining in H2 2018); and
- **Ortalyk LLP:** construction of power transmission lines for the Zhalpak deposit and associated expansion commitments (KZT4.78bn from H2 2018 through 2019).

The Company has assessed the exposure of capital expenditures to currency fluctuations and given that the majority of components are locally sourced the currency exposure averages approximately 85% in KZT and 15% in US\$, which appear reasonable given the current context.

### 13.3.6 LoM Closure estimates

The total environmental liabilities as determined for the Mining Subsidiaries are based on the assessment of the closure related costs as at 1 July 2018 and on cessation of planned mining and processing operations. The resulting analysis is summarised in Table 13-12 which indicate a total (100%) ARO, Environmental Closure and Retrenchment Liability of KZT66.2bn, KZT109.4bn and KZT2.8bn respectively. As at 1 July 2018 the opening balance of the liquidation fund was reported as KZT18.6bn and the contributions to the liquidations fund over the LoMp period (KZT42.2bn) results in an estimated fund balance on closure of KZT60.9bn, thereby indicating a shortfall of KZT48.6bn, which is addressed by liquidation fund contributions and the closure expenditures as included in the final year of the Financial Models for each of the Mining Subsidiaries.

These ARO and Environmental closure costs estimates are reported inclusive of a 10% contingency and specifically exclude any provisions for Retrenchment Liabilities. The ARO liabilities are an estimate of closure requirements assuming immediate closure as at 1 July 2018. The LoMp closure costs reflect closure on depletion of the LoMps and effectively are inclusive of the ARO estimates.

**Table 13-12: Mining Subsidiary Environmental Closure and Retrenchment Liabilities**

Company	Operations/Deposits	ARO (KZTm)	LoMp (KZTm)	Liquidation Fund Close 30/06/2018 (KZTm)	Liquidation Fund LoMp Contributions (KZTm)	Liquidation Fund on Closure (KZTm)	Liquidation Fund Surplus/ (Deficit) (KZTm)	Retrenchment (KZTm)
<b>Kazatomprom-SaUran LLP</b>								
	Uvanas	2,288.3	2,291.7	1,406.2	175.6	1,581.9	(709.8)	9.3
	Eastern Mynkuduk	3,954.0	4,390.5	1,086.3	1,032.4	2,118.7	(2,271.8)	41.3
	Kanzhugan	3,273.4	5,590.2	1,832.6	7,206.6	9,039.2	3,449.0	73.4
	South Moinkum (Southern part)	1,940.3	2,009.2	61.7	20.6	82.3	(1,926.9)	15.4
	Central Moinkum	1,177.1	4,309.0	37.9	2,528.3	2,566.3	(1,742.8)	30.3
	<b>Subtotal</b>	<b>12,633.1</b>	<b>18,590.7</b>	<b>4,424.8</b>	<b>10,963.5</b>	<b>15,388.4</b>	<b>(3,202.3)</b>	<b>169.7</b>
<b>Ortalyk LLP</b>								
	Zhalpak	-	-	9.1	80.6	89.7	89.7	20.8
	Central Mynkuduk	3,734.1	4,841.1	950.6	2,618.3	3,568.9	(1,272.2)	203.6
	<b>Subtotal</b>	<b>3,734.1</b>	<b>4,841.1</b>	<b>959.7</b>	<b>2,699.0</b>	<b>3,658.7</b>	<b>(1,182.5)</b>	<b>224.4</b>
<b>RU-6 LLP</b>								
	Northern Karamurun	2,351.2	3,906.3	-	1,302.5	1,302.5	(2,603.8)	70.0
	Southern Karamurun	4,097.7	5,073.1	1,461.2	1,302.5	2,763.7	(2,309.3)	70.0
	<b>Subtotal</b>	<b>6,448.9</b>	<b>8,979.4</b>	<b>1,461.2</b>	<b>2,605.1</b>	<b>4,066.3</b>	<b>(4,913.1)</b>	<b>140.1</b>
<b>Appak LLP</b>								
	Western Mynkuduk	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
<b>JV Inkai LLP</b>								
	Block 1 Inkai (a), (b), (c)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
<b>Semizbai-U LLP</b>								
	Semizbai	2,549.6	6,125.7	419.1	1,625.6	2,044.7	(4,081.0)	35.0
	Irkol	2,513.8	3,693.4	526.4	2,094.2	2,620.7	(1,072.7)	47.6
	<b>Subtotal</b>	<b>5,063.4</b>	<b>9,819.1</b>	<b>945.5</b>	<b>3,719.9</b>	<b>4,665.4</b>	<b>(5,153.7)</b>	<b>82.7</b>
<b>JV Akbastau JSC</b>								
	Block 1 Budenovskoye	960.5	2,411.4	-	971.8	971.8	(1,439.7)	-
	Block 3 Budenovskoye, Block 4 Budenovskoye	2,441.6	4,845.4	862.5	1,952.6	2,815.1	(2,030.3)	20.9
	<b>Subtotal</b>	<b>3,402.0</b>	<b>7,256.8</b>	<b>862.5</b>	<b>2,924.4</b>	<b>3,786.9</b>	<b>(3,469.9)</b>	<b>20.9</b>
<b>Karatau LLP</b>								
	Block 2, Budenovskoye	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
<b>JV Zarechnoye JSC</b>								
	Zarechnoye	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
<b>JV Katco LLP</b>								
	Southern Moinkum (Northern Part) Tortkuduk	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
<b>JV Khorassan LLP</b>								
	Block Kharassan 1, North Kharassan	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
<b>JV SMCC LLP</b>								
	Akdala	3,186.8	4,361.7	881.1	45.0	926.1	(3,435.6)	129.7
	Block 4, Inkai	4,725.7	9,740.3	1,192.1	3,428.6	4,620.7	(5,119.6)	196.3
	<b>Subtotal</b>	<b>7,912.6</b>	<b>14,102.0</b>	<b>2,073.2</b>	<b>3,473.6</b>	<b>5,546.8</b>	<b>(8,555.2)</b>	<b>326.0</b>
<b>Baikent-U LLP</b>								
	Block Kharassan 2, North Kharassan	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>		<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>

### 13.3.7 Exploration Expenditures

In addition to the LoMp related expenditures, the Company has developed a detailed exploration programme which is focused on various projects as detailed in Section 8 of the CPR. The expenditures are separately defined to the TEPs (i.e. not reflected in the LoMps) and comprise total expenditure of KZT58.9bn (US\$173.4m) over a period of 10.5 years as reported in Table 13-13.

**Table 13-13: Mining Subsidiary related Exploration Expenditures**

Region	Total (KZTm)	2018 (KZTm)	2019 (KZTm)	2020 (KZTm)	2021 (KZTm)	2022 (KZTm)	2023 (KZTm)	2024 (KZTm)	2025 (KZTm)	2026 (KZTm)	2027 (KZTm)	2028 (KZTm)
<b>Shu-Sarysu Basin</b>												
	Togusken	53.0	53.0	-	-	-	-	-	-	-	-	-
	East Zhalpak	2,154.5	696.1	1,331.8	126.6	-	-	-	-	-	-	-
	Western (SHSURP)	5,198.2	-	-	50.0	1,498.2	1,150.0	1,150.0	1,150.0	200.0	-	-
	Inkai-Mynkuduk (SHSURP)	3,597.6	-	50.0	587.0	920.0	920.6	200.0	-	-	-	-
	Sarysu-Baktykarynskaya (SHSURP)	4,260.2	-	-	-	-	50.0	1,150.0	950.0	950.0	960.2	200.0
	Block 6; Block 7 Budenovskoye	14,179.0	2,003.3	4,898.2	6,660.1	617.4	-	-	-	-	-	-
	Inkai 2	5,847.0	-	596.3	2,071.4	2,030.8	1,148.5	-	-	-	-	-
	Inkai 3	3,922.0	-	-	439.4	1,377.0	1,315.2	790.4	-	-	-	-
	<b>Subtotal</b>	<b>39,211.5</b>	<b>2,752.4</b>	<b>6,876.4</b>	<b>9,934.5</b>	<b>6,443.4</b>	<b>4,583.7</b>	<b>4,011.0</b>	<b>2,300.0</b>	<b>1,150.0</b>	<b>960.2</b>	<b>200.0</b>
<b>Syrdarya Basin</b>												
	Batteries-Yanykurganskaya (SDURP)	1,966.3	526.6	1,353.0	86.7	-	-	-	-	-	-	-
	Prishimkentskaya (SDURP)	4,619.0	-	-	50.0	1,250.0	1,600.0	1,519.0	200.0	-	-	-
	East Kyzylkum (SDURP)	5,100.0	-	-	-	-	-	50.0	1,500.0	1,180.0	1,180.0	990.0
	<b>Subtotal</b>	<b>11,685.3</b>	<b>526.6</b>	<b>1,353.0</b>	<b>136.7</b>	<b>1,250.0</b>	<b>1,600.0</b>	<b>1,569.0</b>	<b>1,700.0</b>	<b>1,180.0</b>	<b>1,180.0</b>	<b>990.0</b>
<b>North Kazakhstan</b>												
	<b>Subtotal</b>	<b>8,060.0</b>	<b>-</b>	<b>-</b>	<b>110.0</b>	<b>1,750.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>1,500.0</b>	<b>200.0</b>	<b>-</b>
<b>Total</b>		<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>

### 13.3.8 Common Assumptions

The following section includes a summary description of the common cash and non-cash



assumptions which in conjunction with the TEPs are required to derive the post-tax pre-finance cash flows for the Mining Subsidiaries. For the avoidance of doubt, the following applies to the TEPs as reported in the CPR:

- The PGR has been determined on a deposit basis where applicable and utilised for the determination of the MET and the Property Tax;
- The MET is separately reported in the TEPs and the Property Tax is distributed between the mining and processing operating expenditures as noted in the detailed explanations provided below; and
- Details considered necessary in support of determination of wellfield development depreciation (PGR), exploration depreciation (GRR), Depreciation, and Corporate Income Tax are provided in the section captioned “*Operating and Financial Review*” contained in the Registration Document and the Prospectus. No detail at a Mining Subsidiary level or Company level is provided for Working Capital Determinations.

### **PGR**

In accordance with the relevant taxation codes of Kazakhstan, PGR (wellfield development depreciation) is a tax-deductible non-cash item which is determined from a unit cost rate (the “**PGR Rate**”) applied to the depleted Ore Reserves (in-situ U content). The PGR Rate is determined from the sum of the PGR opening balance of well field expenditures (KZT) in the period and additional expenditures incurred in the period, divided by a sub-set of the Ore Reserves, specifically that portion of the Ore Reserves (U content) which is directly accessible by constructed wells (sum of opening balance in the period + following period in-situ production (U content)). The PGR Rate is then multiplied by the depleted Ore Reserves to determine the tax-deductible non-cash charge in the period and the PGR closing balance is determined by the net assessment of the PGR opening balance and the PGR charge determined in the period. Details relating to the relevant opening balances of PGR for each Mining Subsidiary are included in the section captioned “*Operating and Financial Review*” contained in the Registration Document and the Prospectus.

### **GRR**

In accordance with the relevant taxation codes of Kazakhstan, GRR (exploration depreciation) is a tax-deductible non-cash item which is determined based on the undepreciated opening balance of GRR multiplied by a depletion ratio, which depletion ratio is based on the ratio of in period production divided by (total LoMp production less the cumulative production to the prior period). Details relating to the relevant opening balances of GRR for each Mining Subsidiary are included in the section captioned “*Operating and Financial Review*” contained in the Registration Document and the Prospectus.

### **Mineral Extraction Tax (“MET”)**

In accordance with the relevant taxation codes of Kazakhstan, MET is form of ‘*mineral royalty*’ determined by application of 29% tax charge to the taxable expenditures. The tax charge is a cash cost of mining and is based on an assumed 20% profit margin on certain expenditures and a MET rate of 18.50% and where the tax charge of 29% is determined by the following formulae:  $(1+20\%)*18.5\%/(1-(1+20\%)*18.5\%)$ . The taxable expenditures comprise all direct expenditures associated with the mining operations and specifically exclude (processing and G&A) but include the period PGR charge and any other depreciation charges attributable to direct mining activities.

### ***Property Tax (“PT”)***

In accordance with the relevant taxation codes of Kazakhstan, PT is a tax charge derived from application of a rate of 1.50% to the average of the opening and closing balances of PGR determined in the period. The property tax as determined is then apportioned in a ratio of 40% to the mining costs and 60% to the processing costs.

### ***Depreciation***

In accordance with the relevant taxation codes of Kazakhstan, Depreciation is a tax deductible charge and is determined by depreciation of expansion and sustaining capital related expenditures through allocation to: production depreciation (70%) and accounting depreciation (30%). With respect to production depreciation this is based on the undepreciated opening balance of production depreciation multiplied by a depletion ratio, which is based on the ratio of in period production divided by (total LoMp production less the cumulative production to the prior period). With respect to accounting depreciation all related expenditures are depreciated on a straight line basis for four years. The opening balances for production depreciation and accounting depreciation is determined by distributing the overall opening balance to: production depreciation (70%) and accounting depreciation (30%). The overall depreciation charge is then apportioned to Mining, Processing and G&A activities by the assumed distribution determined in the prior reporting period that being the six month period ended 30 June 2018. Details relating to the relevant opening balances of depreciation for each Mining Subsidiary are included in the section captioned “*Operating and Financial Review*” contained in the registration document and the prospectus.

### ***Corporate Income Tax (“CIT”)***

In accordance with the relevant tax codes of Kazakhstan, CIT is determined by application of a 20% tax rate to the taxable income, which taxable income is derived through deductions from Earnings Before Interest Tax, Depreciation and Amortisation (“**EBITDA**”) of the following items: Depreciation, PGR, GRR interest and tax. Details relating to the relevant opening balances of PGR for each Mining Subsidiary are included in the section captioned “*Operating and Financial Review*” contained in the registration document and the prospectus.

### ***Working Capital***

The LoMps do not include any determinations for working capital movement in respect of debtors, creditors and stores/inventory and furthermore no details in support of the necessary inputs for determination of the working capital movement inputs (opening balances and assumed days) for each subsidiary are included herein.

## **13.4 Technical-Economic Parameters**

The TEPs as included in the LoMps are presented on an annual basis for the duration of the LoMp (with the exception of H2 2018 which is for 6 months to 31 December 2018) for each Mining Subsidiary and in addition on a consolidated and equity attributable basis. These parameters are reported in KZT and US\$ as appropriate and are reported in 1 July 2018 money terms with US\$ values converted from KZT assuming a constant exchange rate of 340 KZT to one US\$.

Production assumptions as incorporated into the LoMps are derived at a deposit level as are certain cost elements, specifically the direct mining related expenditures. Given the considerable volume of detail generated at the deposit level, the following tables are consolidated for each Mining Subsidiary.

The information contained in historical (2015, 2016, 2017 and H1 2018) operating performance

tables as reported in this CPR has been collated from the Company's period-end unaudited management accounts and other unaudited internal reporting data and is provided as a historical record of production, sales, sales revenue, operating expenditures and capital expenditures as they related to the individual Mining Subsidiaries. As this information is unaudited it cannot be directly compared with metrics derived from audited historical financial statements as may be reported in the Registration Documents or the Prospectus. Furthermore, the historical statistics are presented in order to provide a benchmark reference point against which the LoMp assumptions can be compared.

In addition, certain financial metrics presented in the tables below are provided for illustrative purposes only, and should not be treated as indicative of similar metrics for the Company as a whole; for example, EBITDA of the individual Mining Subsidiaries presented in the tables below is not indicative of the Company's total EBITDA or similar metrics or any component thereof.

The LoMp forecasts comprise projections for all Mining Subsidiaries and present annual assumptions for production, sales, operating and capital expenditure items over the LoMp from 2019 and with H2 2018 representing the 6 month period ending 31 December 2018. These are limited to the depletion of the Ore Reserves and specifically do not include any production derived from Inferred Mineral Resources. This aside, SRK notes the following:

- The addition of WIP and finished goods opening balances as at 1 July 2018; and
- The inclusion of an additional 80tU at Uvanas which is sourced from final pumping of wells prior to implementation of closure activities.

The specific tables for each of the Mining Subsidiaries, the total Mining Subsidiaries and attributable to the Company comprise:

- Table 13-14 through Table 13-21 which present the historical and forecast TEPs for Kazatomprom-Sauran LLP;
- Table 13-22 through Table 13-27 which present the historical and forecast TEPs for Ortalyk LLP;
- Table 13-28 through Table 13-33 which present the historical and forecast TEPs for RU-6 LLP;
- Table 13-34 through Table 13-39 which present the historical and forecast TEPs for Appak LLP;
- Table 13-40 through Table 13-49 which present the historical and forecast TEPs for JV-Inkai LLP;
- Table 13-50 through Table 13-57 which present the historical and forecast TEPs for Semizbai-U LLP;
- Table 13-58 through Table 13-63 which present the historical and forecast TEPs for JV Akbastau JSC;
- Table 13-64 through Table 13-69 which present the historical and forecast TEPs for JV Karatau LLP;
- Table 13-70 through Table 13-73 which present the historical and forecast TEPs for JV Zarechnoye JSC;
- Table 13-74 through Table 13-79 which present the historical and forecast TEPs for Katco LLP;
- Table 13-80 through Table 13-85 presents the historical and forecast TEPs for Khorassan-U;

- Table 13-86 through Table 13-91 presents the historical and forecast TEPs for JV SMCC LLP;
- Table 13-92 through Table 13-97 which presents the historical and forecast TEPs for Baiken-U LLP;
- Table 13-98 through Table 13-102 which present the historical and forecast TEPs for the Total Mining Subsidiaries (100%);
- Table 13-103 through Table 13-107 which present the historical and forecast TEPs for the Company Attributable Mining Subsidiaries (KZT); and
- Table 13-108 through Table 13-112 which present the LoMp assumptions for the Company Attributable Mining Subsidiaries (US\$).

The Mining Subsidiaries have LoMp forecast aggregated Sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.74/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$4.88bn (inclusive of environmental closure costs).

For the 12-month period ended 31 December 2017 the Mining Subsidiaries reported aggregated Sales of 60.22MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$260.9m (inclusive of environmental closure costs).

For the 6-month period ended 30 June 2018 the Mining Subsidiaries reported aggregated Sales of 23.30MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.99/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$15.00/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure of US\$93.4m (inclusive of environmental closure costs).

The Company's equity attributable LoMp forecasts for the Mining Subsidiaries indicate, Sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$2.9bn (inclusive of environmental closure costs).

For the 12-month period ended 31 December 2017 the Company's equity attributable statistics for the Mining Subsidiaries reported sales of 30.53MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$130.5m (inclusive of environmental closure costs).

For the 6-month period ended 30 June 2018 the Company's equity attributable statistics for the Mining Subsidiaries reported sales of 12.96MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.28/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure of US\$51.2m (inclusive of environmental closure costs).

### 13.4.1 Kazatomprom-SaUran LLP

**Table 13-14: Kazatomprom-SaUran LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	6.26	5.93	5.01	2.36	74.26	2.33	4.84	4.99	6.31
Grade	(%U)	0.039	0.037	0.035	0.036	0.041	0.036	0.036	0.037	0.037
Content	(tU)	2,450	2,219	1,768	847	30,729	829	1,765	1,833	2,310
Product	(tU)	2,214	2,003	1,590	759	27,068	742	1,575	1,630	2,050
Overall Recovery	(%)	90.4	90.3	90.0	89.5	88.1	89.5	89.2	88.9	88.7
<b>Sales</b>										
Final Product	(tU)	1,795	1,453	1,143	924	28,687	803	1,465	1,608	1,569
Final Product	(MlbU)	3.96	3.20	2.52	2.04	63.24	1.77	3.23	3.55	3.46
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	4.67	3.78	2.97	2.40	74.58	2.09	3.81	4.18	4.08
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.57	33.73	22.60	22.51	35.10	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.57	33.73	22.60	22.51	35.10	26.09	27.81	28.81	29.22
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,794	11,527	7,370	7,349	11,934	8,869	9,456	9,796	9,934

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Sales Revenue</b>										
Product	(KZTm)	41,037.8	43,529.3	21,906.2	17,656.3	890,060.7	18,525.9	36,024.8	40,956.0	40,527.8
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,914.2)	(11,956.7)	(11,847.9)	(6,333.9)	(204,615.5)	(5,295.8)	(11,730.2)	(12,065.9)	(13,793.6)
Processing	(KZTm)	(9,955.2)	(10,095.4)	(10,166.7)	(4,099.4)	(79,737.2)	(2,535.4)	(4,655.0)	(4,700.7)	(4,993.4)
G&A	(KZTm)	(4,721.9)	(4,229.0)	(3,552.0)	(1,742.4)	(85,356.4)	(3,330.8)	(5,869.4)	(5,657.6)	(6,104.4)
MET	(KZTm)	(4,711.6)	(4,725.3)	(4,401.6)	(2,479.2)	(100,984.4)	(1,899.4)	(4,435.9)	(4,961.8)	(5,967.2)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	-	-	-	-	-	-	-	-	-
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(169.7)	(8.8)	-	(24.7)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(29,302.9)</b>	<b>(31,006.4)</b>	<b>(29,968.3)</b>	<b>(14,654.9)</b>	<b>(470,863.3)</b>	<b>(13,070.3)</b>	<b>(26,690.5)</b>	<b>(27,410.7)</b>	<b>(30,858.7)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>11,735.0</b>	<b>12,522.9</b>	<b>(8,062.0)</b>	<b>3,001.4</b>	<b>419,197.4</b>	<b>5,455.6</b>	<b>9,334.3</b>	<b>13,545.3</b>	<b>9,669.1</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,455.2)	(3,942.9)	(5,196.5)	(3,324.1)	(136,354.0)	(3,056.7)	(7,508.6)	(7,699.4)	(7,989.3)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(430.1)	(603.5)	(1,184.9)	(229.7)	(8,941.3)	(430.6)	(904.3)	(949.5)	(951.3)
Liqdn Fund/Closure	(KZTm)	(1,212.3)	(410.3)	(639.0)	693.2	(9,894.7)	(206.9)	(438.9)	(3,083.7)	(464.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(5,097.7)</b>	<b>(4,956.8)</b>	<b>(7,020.4)</b>	<b>(2,860.6)</b>	<b>(155,190.1)</b>	<b>(3,694.3)</b>	<b>(8,851.8)</b>	<b>(11,732.6)</b>	<b>(9,404.6)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,091	5,954	7,250	6,100	6,314	6,257	7,006	6,556	7,564
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,270	6,960	8,601	5,068	4,959	5,348	5,842	5,369	6,101
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,766	6,827	8,794	7,579	8,262	7,927	9,214	8,625	9,755
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	22.91	17.42	22.23	18.68	18.57	18.40	20.61	19.28	22.25
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	23.71	20.36	26.38	15.52	14.59	15.73	17.18	15.79	17.94
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.94	19.98	26.97	23.21	24.30	23.31	27.10	25.37	28.69

Table 13-15: Kazatomprom-SaUran LLP (100%) Forecast (2022 through 2030)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	6.31	5.94	5.38	3.72	3.12	2.60	2.60	2.60	2.60
Grade	(%U)	0.037	0.037	0.038	0.041	0.043	0.046	0.046	0.046	0.046
Content	(tU)	2,310	2,199	2,033	1,533	1,355	1,199	1,199	1,199	1,199
Product	(tU)	2,050	1,950	1,800	1,350	1,190	1,050	1,050	1,050	1,050
Overall Recovery	(%)	88.7	88.7	88.6	88.1	87.8	87.5	87.5	87.5	87.5
<b>Sales</b>										
Final Product	(tU)	2,050	2,056	1,964	1,821	1,507	1,050	1,053	1,047	1,050
Final Product	(MlbU)	4.52	4.53	4.33	4.01	3.32	2.31	2.32	2.31	2.31
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.33	5.34	5.11	4.73	3.92	2.73	2.74	2.72	2.73
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,870	9,895	10,168	10,569	11,328	12,156	12,385	12,739	12,835
<b>Sales Revenue</b>										
Product	(KZTm)	52,600.6	52,883.9	51,915.7	50,031.7	44,389.2	33,184.6	33,905.3	34,673.4	35,036.1
<b>Operating Expenditure</b>										
Mining	(KZTm)	(13,800.6)	(13,383.4)	(12,985.1)	(11,789.8)	(11,360.0)	(7,816.9)	(7,817.3)	(7,817.7)	(7,817.9)
Processing	(KZTm)	(5,001.3)	(4,914.5)	(4,780.0)	(4,375.9)	(4,224.9)	(2,989.0)	(2,989.8)	(2,990.3)	(2,990.7)
G&A	(KZTm)	(6,067.1)	(5,918.4)	(5,145.0)	(4,475.6)	(4,237.4)	(3,014.3)	(3,014.3)	(3,014.3)	(3,014.3)
MET	(KZTm)	(6,116.6)	(5,985.2)	(5,852.1)	(5,349.0)	(5,719.0)	(4,124.7)	(4,132.5)	(4,141.2)	(4,148.7)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	-	-	-	-	-	-	-	-	-
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	(5.7)	-	(36.8)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(30,985.6)</b>	<b>(30,201.4)</b>	<b>(28,768.0)</b>	<b>(25,990.3)</b>	<b>(25,578.1)</b>	<b>(17,944.9)</b>	<b>(17,953.9)</b>	<b>(17,963.4)</b>	<b>(17,971.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>21,615.0</b>	<b>22,682.5</b>	<b>23,147.7</b>	<b>24,041.4</b>	<b>18,811.1</b>	<b>15,239.7</b>	<b>15,951.4</b>	<b>16,709.9</b>	<b>17,064.5</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(7,635.5)	(6,990.1)	(6,886.8)	(6,485.1)	(6,485.1)	(6,485.1)	(6,466.6)	(6,485.1)	(6,485.1)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(998.8)	(402.4)	(387.3)	(333.6)	(315.2)	(299.2)	(299.2)	(299.2)	(299.2)
Liqdn Fund/Closure	(KZTm)	(476.9)	(470.7)	(463.3)	(430.0)	(2,728.0)	(347.4)	(348.4)	(349.6)	(350.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(9,111.2)</b>	<b>(7,863.1)</b>	<b>(7,737.5)</b>	<b>(7,248.7)</b>	<b>(9,528.3)</b>	<b>(7,131.7)</b>	<b>(7,114.3)</b>	<b>(7,133.9)</b>	<b>(7,134.9)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,814	5,651	5,634	5,490	6,527	6,574	6,558	6,600	6,584
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,666	4,531	4,488	4,360	5,068	5,063	5,049	5,078	5,064
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	7,434	7,034	7,059	6,930	8,263	9,059	9,029	9,092	9,069
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.10	16.62	16.57	16.15	19.20	19.33	19.29	19.41	19.36
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.72	13.33	13.20	12.82	14.91	14.89	14.85	14.94	14.89
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.86	20.69	20.76	20.38	24.30	26.64	26.56	26.74	26.67

Table 13-16: Kazatomprom-SaUran LLP (100%) Forecast (2031 through 2039)

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	2.60	2.60	2.60	2.60	2.60	2.46	2.17	1.88	1.10
Grade	(%U)	0.046	0.046	0.046	0.046	0.046	0.046	0.048	0.049	0.051
Content	(tU)	1,199	1,199	1,199	1,199	1,199	1,144	1,033	922	558
Product	(tU)	1,050	1,050	1,050	1,050	1,050	1,000	900	800	482
Overall Recovery	(%)	87.5	87.5	87.5	87.5	87.5	87.4	87.2	86.8	86.4
<b>Sales</b>										
Final Product	(tU)	1,050	1,053	1,047	1,050	1,050	1,056	1,003	906	818
Final Product	(MlbU)	2.31	2.32	2.31	2.31	2.31	2.33	2.21	2.00	1.80
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.73	2.74	2.72	2.73	2.73	2.74	2.61	2.35	2.13
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340



Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	13,450	14,123	14,756	14,816	14,800	14,800	14,800	14,800	14,800
<b>Sales Revenue</b>										
Product	(KZTm)	36,715.3	38,664.3	40,164.9	40,445.3	40,401.0	40,623.9	38,589.3	34,852.8	31,491.9
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,818.1)	(7,818.2)	(7,818.3)	(7,818.4)	(7,818.3)	(7,602.6)	(7,171.4)	(6,738.5)	(4,625.1)
Processing	(KZTm)	(2,991.1)	(2,991.2)	(2,991.3)	(2,991.5)	(2,991.3)	(2,944.6)	(2,851.6)	(2,755.7)	(2,312.6)
G&A	(KZTm)	(3,014.3)	(3,014.3)	(3,014.3)	(3,014.3)	(3,014.3)	(2,939.9)	(2,791.1)	(2,642.4)	(1,914.2)
MET	(KZTm)	(4,155.5)	(4,160.4)	(4,167.3)	(4,174.7)	(4,202.0)	(4,106.9)	(3,788.3)	(3,686.2)	(2,378.0)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	-	-	-	-	-	-	-	-	-
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	(5.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(17,979.0)</b>	<b>(17,984.1)</b>	<b>(17,991.2)</b>	<b>(17,998.8)</b>	<b>(18,025.8)</b>	<b>(17,594.0)</b>	<b>(16,602.4)</b>	<b>(15,822.7)</b>	<b>(11,234.8)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>18,736.3</b>	<b>20,680.2</b>	<b>22,173.6</b>	<b>22,446.5</b>	<b>22,375.2</b>	<b>23,029.9</b>	<b>21,986.9</b>	<b>19,030.0</b>	<b>20,257.1</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(6,485.1)	(6,466.6)	(6,485.1)	(6,485.1)	(6,485.1)	(6,236.2)	(5,766.9)	(5,285.5)	-
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(299.2)	(299.2)	(299.2)	(299.2)	(299.2)	(293.5)	(282.0)	-	-
Liqdn Fund/Closure	(KZTm)	(351.6)	(352.4)	(353.5)	(354.6)	(359.5)	(341.5)	(291.9)	(245.4)	(152.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,135.9)</b>	<b>(7,118.3)</b>	<b>(7,137.8)</b>	<b>(7,138.9)</b>	<b>(7,143.7)</b>	<b>(6,871.1)</b>	<b>(6,340.8)</b>	<b>(5,530.9)</b>	<b>(152.8)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,586	6,569	6,610	6,593	6,603	6,410	6,367	6,719	5,280
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,064	5,049	5,079	5,064	5,064	4,914	4,915	5,154	4,162
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,071	9,040	9,102	9,079	9,089	8,789	8,687	8,964	5,280
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.37	19.32	19.44	19.39	19.42	18.85	18.73	19.76	15.53
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.89	14.85	14.94	14.89	14.89	14.45	14.45	15.16	12.24
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.68	26.59	26.77	26.70	26.73	25.85	25.55	26.36	15.53

**Table 13-17: Kazatomprom-SaUran LLP (100%) Forecast (2040)**

Statistic	Units	2040
<b>Production</b>		
Mining	(Mt)	0.27
Grade	(%U)	0.042
Content	(tU)	112
Product	(tU)	100
Overall Recovery	(%)	88.8
<b>Sales</b>		
Final Product	(tU)	610
Final Product	(MlbU)	1.34
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	1.58
<b>Macro-Economics</b>		
Exchange Rate	(KZT:US\$)	340
<b>Sales Price</b>		
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53
Premium/(Discount)	(%)	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,800
<b>Sales Revenue</b>		
Product	(KZTm)	23,457.1
<b>Operating Expenditure</b>		
Mining	(KZTm)	(1,912.4)
Processing	(KZTm)	(1,775.5)
G&A	(KZTm)	(1,134.9)
MET	(KZTm)	(3,331.8)
Services	(KZTm)	-
Distribution	(KZTm)	-
Toll Refining	(KZTm)	-
Retrenchment	(KZTm)	(88.5)
<b>Total</b>	<b>(KZTm)</b>	<b>(8,243.1)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>15,213.9</b>
<b>Capital Expenditure</b>		
Well Construction	(KZTm)	-
Expansion	(KZTm)	-
Sustaining	(KZTm)	-
Liqdn Fund/Closure	(KZTm)	3,067.0
<b>Total</b>	<b>(KZTm)</b>	<b>3,067.0</b>
<b>Unit Expenditures</b>		
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,201
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,099
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,201
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.30
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.11
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.30

**Table 13-18: Kazatomprom-SaUran LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>3,149</b>	<b>3,521</b>	<b>3,038</b>	<b>1,183</b>	<b>2,555</b>	<b>2,438</b>	<b>2,919</b>	<b>2,921</b>	<b>3,614</b>
Injection	(No)	2,418	2,743	2,324	915	1,946	1,857	2,224	2,225	2,753
Extraction	(No)	732	779	714	268	608	580	695	695	860
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>8.00</b>	<b>9.02</b>	<b>8.15</b>	<b>8.25</b>	<b>7.70</b>	<b>7.77</b>	<b>7.69</b>	<b>7.84</b>	<b>7.99</b>
Mined	(tU)	2,450	2,219	1,768	847	30,729	829	1,765	1,833	2,310
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>50,003</b>	<b>50,439</b>	<b>41,958</b>	<b>19,292</b>	<b>885,862</b>	<b>19,084</b>	<b>44,835</b>	<b>45,883</b>	<b>57,744</b>

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
PLS Grade	(mg/l)	40.7	37.6	38.1	41.7	32.3	41.2	37.2	37.6	37.6
Final Prodn Produced	(tU)	2,214	2,003	1,590	759	27,068	742	1,575	1,630	2,050
Overall Recovery	(%)	90.4	90.3	90.0	89.5	88.1	89.5	89.2	88.9	88.7
Well Construction	(No)	994	952	1,063	853	23,180	708	1,503	1,516	1,574
Injection	(No)	621	599	630	534	15,909	438	967	997	1,026
Extraction	(No)	301	215	299	207	5,348	180	377	388	422
Other	(No)	72	138	134	112	1,924	91	159	131	126

**Table 13-19: Kazatomprom-SaUran LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Wells	(No)	3,614	3,508	3,340	2,874	2,705	2,557	2,550	2,557	2,557
Injection	(No)	2,753	2,673	2,545	2,190	2,061	1,948	1,943	1,948	1,948
Extraction	(No)	860	835	795	684	644	609	607	609	609
Pumping Rate	(m3/h)	7.99	7.96	7.92	7.74	7.66	7.58	7.58	7.58	7.58
Mined	(tU)	2,310	2,199	2,033	1,533	1,355	1,199	1,199	1,199	1,199
PLS Volume	(m <sup>3</sup> )	57,744	55,844	52,994	44,444	41,402	38,744	38,744	38,744	38,744
PLS Grade	(mg/l)	37.6	36.9	35.9	32.1	30.4	28.7	28.7	28.7	28.7
Final Prodn Produced	(tU)	2,050	1,950	1,800	1,350	1,190	1,050	1,050	1,050	1,050
Overall Recovery	(%)	88.7	88.7	88.6	88.1	87.8	87.5	87.5	87.5	87.5
Well Construction	(No)	1,372	1,258	1,217	1,032	1,032	1,032	1,029	1,032	1,032
Injection	(No)	888	872	845	726	726	726	724	726	726
Extraction	(No)	358	273	264	227	227	227	226	227	227
Other	(No)	126	113	108	79	79	79	79	79	79

**Table 13-20: Kazatomprom-SaUran LLP (100%) Forecast Physical Performance: 2031 through 2039**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
Active Wells	(No)	2,557	2,550	2,557	2,557	2,557	2,416	2,153	1,883	1,114
Injection	(No)	1,948	1,943	1,948	1,948	1,948	1,841	1,640	1,435	848
Extraction	(No)	609	607	609	609	609	575	513	448	265
Pumping Rate	(m3/h)	7.58	7.58	7.58	7.58	7.58	7.56	7.50	7.43	7.34
Mined	(tU)	1,199	1,199	1,199	1,199	1,199	1,144	1,033	922	558
PLS Volume	(m <sup>3</sup> )	38,744	38,744	38,744	38,744	38,744	36,589	32,279	27,969	16,346
PLS Grade	(mg/l)	28.7	28.7	28.7	28.7	28.7	28.9	29.5	30.2	31.1
Final Prodn Produced	(tU)	1,050	1,050	1,050	1,050	1,050	1,000	900	800	482
Overall Recovery	(%)	87.5	87.5	87.5	87.5	87.5	87.4	87.2	86.8	86.4
Well Construction	(No)	1,032	1,029	1,032	1,032	1,032	985	896	805	-
Injection	(No)	726	724	726	726	726	693	632	569	-
Extraction	(No)	227	226	227	227	227	217	197	177	-
Other	(No)	79	79	79	79	79	75	67	59	-

**Table 13-21: Kazatomprom-SaUran LLP (100%) Forecast Physical Performance: 2040**

Statistic	Units	2040
Active Wells	(No)	256
Injection	(No)	195
Extraction	(No)	61
Pumping Rate	(m3/h)	7.81
Mined	(tU)	112
PLS Volume	(m <sup>3</sup> )	4,001
PLS Grade	(mg/l)	26.4
Final Prodn Produced	(tU)	100
Overall Recovery	(%)	88.8
Well Construction	(No)	-
Injection	(No)	-
Extraction	(No)	-
Other	(No)	-

### 13.4.2 Ortalyk LLP

**Table 13-22: Ortalyk LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	4.47	4.97	4.46	2.03	64.54	2.05	4.20	4.04	4.95
Grade	(%U)	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
Content	(tU)	2,009	2,233	2,002	913	29,000	922	1,889	1,814	2,222
Product	(tU)	1,770	1,953	1,898	837	25,759	819	1,677	1,611	1,974
Overall Recovery	(%)	88.1	87.4	94.8	91.7	88.8	88.8	88.8	88.8	88.8
<b>Sales</b>										
Final Product	(tU)	1,399	1,189	1,871	888	26,120	830	1,665	1,633	1,888
Final Product	(MlbU)	3.08	2.62	4.13	1.96	57.58	1.83	3.67	3.60	4.16
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.64	3.09	4.86	2.31	67.91	2.16	4.33	4.25	4.91
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	40.94	30.39	22.59	17.62	32.80	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	40.94	30.39	22.59	17.62	32.80	26.09	27.81	28.81	29.22
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,098	10,385	7,366	5,751	11,153	8,869	9,456	9,796	9,934
<b>Sales Revenue</b>										
Product	(KZTm)	33,082.0	32,099.2	35,832.9	13,274.3	757,375.3	19,140.9	40,944.0	41,598.8	48,760.6

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,472.6)	(8,683.0)	(7,162.7)	(3,504.6)	(110,885.0)	(3,880.9)	(7,780.3)	(7,076.7)	(8,333.7)
Processing	(KZTm)	(2,676.5)	(2,906.4)	(2,930.3)	(1,709.0)	(46,340.6)	(1,830.5)	(3,668.3)	(3,591.5)	(3,340.1)
G&A	(KZTm)	(4,356.1)	(3,766.2)	(3,200.6)	(380.4)	(13,339.1)	(542.1)	(1,064.7)	(1,055.8)	(946.8)
MET	(KZTm)	(2,883.6)	(3,313.9)	(3,804.7)	(1,391.4)	(49,946.0)	(1,842.4)	(4,077.7)	(3,593.4)	(3,669.8)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(17.8)	(19.8)	(17.8)	(7.6)	(279.5)	(8.6)	(17.2)	(17.2)	(21.6)
Toll Refining	(KZTm)	(2,492.6)	(2,685.3)	(2,312.1)	(1,155.2)	(33,876.5)	(1,090.6)	(2,205.9)	(2,120.9)	(2,592.2)
Retrenchment	(KZTm)	-	-	-	-	(224.4)	-	-	(20.8)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(19,899.2)</b>	<b>(21,374.6)</b>	<b>(19,428.3)</b>	<b>(8,148.3)</b>	<b>(254,891.1)</b>	<b>(9,195.2)</b>	<b>(18,814.1)</b>	<b>(17,476.3)</b>	<b>(18,904.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>13,182.8</b>	<b>10,724.7</b>	<b>16,404.6</b>	<b>5,126.0</b>	<b>502,484.2</b>	<b>9,945.8</b>	<b>22,129.9</b>	<b>24,122.5</b>	<b>29,856.4</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,364.1)	(2,943.7)	(2,555.5)	(795.6)	(42,109.6)	(1,268.1)	(3,580.1)	(2,566.4)	(3,637.4)
Expansion	(KZTm)	-	-	-	-	(4,780.2)	(721.8)	(4,058.4)	-	-
Sustaining	(KZTm)	(559.3)	(490.7)	(542.8)	(2,012.9)	(5,741.4)	(969.5)	(517.2)	(486.5)	(314.0)
Liqdn Fund/Closure	(KZTm)	(140.7)	(109.4)	(168.9)	(26.7)	(3,881.4)	(99.6)	(220.4)	(104.4)	(198.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,064.1)</b>	<b>(3,543.8)</b>	<b>(3,267.2)</b>	<b>(2,835.2)</b>	<b>(56,512.7)</b>	<b>(3,059.0)</b>	<b>(8,376.0)</b>	<b>(3,157.3)</b>	<b>(4,149.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,473	6,916	3,994	3,530	3,754	4,261	4,345	4,115	3,851
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,680	5,843	3,212	2,927	3,018	3,407	3,403	3,269	3,104
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,277	8,027	4,631	4,747	4,455	5,297	5,291	4,829	4,656
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	24.62	20.24	12.25	10.81	11.04	12.53	12.78	12.10	11.33
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.06	17.10	9.85	8.97	8.88	10.02	10.01	9.62	9.13
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.24	23.49	14.20	14.54	13.10	15.58	15.56	14.20	13.70

Table 13-23: Ortalyk LLP (100%) Forecast (2022 through 2030)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.33
Grade	(%U)	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
Content	(tU)	2,222	2,222	2,222	2,222	2,222	2,222	2,222	2,222	1,944
Product	(tU)	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,727
Overall Recovery	(%)	88.8	88.8	88.8	88.8	88.8	88.8	88.8	88.8	88.8
<b>Sales</b>										
Final Product	(tU)	1,974	1,974	1,975	1,973	1,974	1,974	1,975	1,973	1,780
Final Product	(MlbU)	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	3.93
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.13	5.13	5.14	5.13	5.13	5.13	5.14	5.13	4.63
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,870	9,895	10,168	10,569	11,328	12,156	12,385	12,739	12,835
<b>Sales Revenue</b>										
Product	(KZTm)	50,650.5	50,779.6	52,213.2	54,205.9	58,134.6	62,387.0	63,595.6	65,336.5	59,407.9
<b>Operating Expenditure</b>										
Mining	(KZTm)	(8,345.7)	(8,345.2)	(8,343.9)	(8,343.1)	(8,342.6)	(8,342.2)	(8,341.9)	(8,341.3)	(7,588.8)
Processing	(KZTm)	(3,342.0)	(3,341.1)	(3,338.9)	(3,337.5)	(3,336.6)	(3,336.0)	(3,335.6)	(3,334.6)	(3,207.3)
G&A	(KZTm)	(946.8)	(946.8)	(946.8)	(946.8)	(946.8)	(946.8)	(946.8)	(946.8)	(946.8)
MET	(KZTm)	(3,602.4)	(3,571.8)	(3,553.9)	(3,550.3)	(3,554.9)	(3,562.3)	(3,574.9)	(3,639.6)	(3,291.6)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(21.6)	(21.6)	(21.6)	(21.6)	(21.6)	(21.6)	(21.6)	(21.6)	(18.9)
Toll Refining	(KZTm)	(2,592.2)	(2,592.2)	(2,592.2)	(2,592.2)	(2,592.2)	(2,592.2)	(2,592.2)	(2,592.2)	(2,271.4)
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(18,850.7)</b>	<b>(18,818.6)</b>	<b>(18,797.3)</b>	<b>(18,791.4)</b>	<b>(18,794.6)</b>	<b>(18,801.1)</b>	<b>(18,812.9)</b>	<b>(18,876.0)</b>	<b>(17,324.8)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>31,799.9</b>	<b>31,961.0</b>	<b>33,415.9</b>	<b>35,414.5</b>	<b>39,340.0</b>	<b>43,585.9</b>	<b>44,782.7</b>	<b>46,460.4</b>	<b>42,083.1</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,919.2)	(3,449.9)	(3,438.1)	(3,449.9)	(3,449.9)	(3,449.9)	(3,438.1)	(3,449.9)	(3,012.8)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(261.3)	(456.1)	(456.1)	(456.1)	(456.1)	(456.1)	(456.1)	(456.1)	-
Liqdn Fund/Closure	(KZTm)	(194.7)	(193.0)	(192.0)	(191.8)	(192.1)	(192.5)	(193.2)	(196.7)	(177.9)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,375.2)</b>	<b>(4,099.0)</b>	<b>(4,086.3)</b>	<b>(4,097.8)</b>	<b>(4,098.1)</b>	<b>(4,098.5)</b>	<b>(4,087.4)</b>	<b>(4,102.7)</b>	<b>(3,190.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,673	3,667	3,661	3,664	3,662	3,663	3,664	3,680	3,743
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,971	2,971	2,969	2,972	2,970	2,969	2,967	2,971	3,032
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,488	4,428	4,419	4,425	4,423	4,425	4,422	4,442	4,394
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.80	10.79	10.77	10.78	10.77	10.77	10.78	10.82	11.01
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.74	8.74	8.73	8.74	8.73	8.73	8.73	8.74	8.92
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.20	13.02	13.00	13.02	13.01	13.01	13.01	13.06	12.92

Table 13-24: Ortalyk LLP (100%) Forecast (2031 through 2032)

Statistic	Units	2031	2032
<b>Production</b>			
Mining	(Mt)	3.71	1.70
Grade	(%U)	0.045	0.045
Content	(tU)	1,667	763
Product	(tU)	1,481	678
Overall Recovery	(%)	88.8	88.8
<b>Sales</b>			
Final Product	(tU)	1,534	997
Final Product	(MlbU)	3.38	2.20
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.99	2.59
<b>Macro-Economics</b>			
Exchange Rate	(KZT:US\$)	340	340
<b>Sales Price</b>			
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54

Statistic	Units	2031	2032
Premium/(Discount)	(%)	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	13,450	14,123
<b>Sales Revenue</b>			
Product	(KZTm)	53,627.0	36,593.2
<b>Operating Expenditure</b>			
Mining	(KZTm)	(6,830.2)	(2,648.5)
Processing	(KZTm)	(3,069.8)	(930.9)
G&A	(KZTm)	(946.8)	(262.2)
MET	(KZTm)	(2,779.3)	(2,081.6)
Services	(KZTm)	-	-
Distribution	(KZTm)	(16.2)	(7.4)
Toll Refining	(KZTm)	(1,950.7)	(907.1)
Retrenchment	(KZTm)	-	(203.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(15,592.8)</b>	<b>(7,041.3)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>38,034.2</b>	<b>29,551.9</b>
<b>Capital Expenditure</b>			
Well Construction	(KZTm)	-	-
Expansion	(KZTm)	-	-
Sustaining	(KZTm)	-	-
Liqdn Fund/Closure	(KZTm)	(150.2)	(1,384.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(150.2)</b>	<b>(1,384.7)</b>
<b>Unit Expenditures</b>			
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,911	2,718
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,214	1,914
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,911	2,639
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.50	7.99
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.45	5.63
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.50	7.76

**Table 13-25: Ortalyk LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>1,869</b>	<b>1,941</b>	<b>1,462</b>	<b>1,515</b>	<b>1,982</b>	<b>1,692</b>	<b>1,765</b>	<b>1,631</b>	<b>2,212</b>
Injection	(No)	1,463	1,460	1,075	1,109	1,510	1,289	1,345	1,242	1,685
Extraction	(No)	406	481	387	406	472	403	420	388	527
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>8.50</b>	<b>6.80</b>	<b>5.64</b>	<b>5.96</b>	<b>6.46</b>	<b>6.32</b>	<b>6.17</b>	<b>6.39</b>	<b>6.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>2,009</b>	<b>2,233</b>	<b>2,002</b>	<b>913</b>	<b>29,000</b>	<b>922</b>	<b>1,889</b>	<b>1,814</b>	<b>2,222</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>28,739</b>	<b>28,706</b>	<b>20,307</b>	<b>10,637</b>	<b>373,707</b>	<b>10,768</b>	<b>21,777</b>	<b>20,870</b>	<b>28,741</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>69.9</b>	<b>77.8</b>	<b>89.6</b>	<b>85.4</b>	<b>77.6</b>	<b>85.4</b>	<b>86.4</b>	<b>86.8</b>	<b>77.3</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,770</b>	<b>1,953</b>	<b>1,898</b>	<b>837</b>	<b>25,759</b>	<b>819</b>	<b>1,677</b>	<b>1,611</b>	<b>1,974</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>88.1</b>	<b>87.4</b>	<b>94.8</b>	<b>91.7</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>
<b>Well Construction</b>	<b>(No)</b>	<b>447</b>	<b>516</b>	<b>431</b>	<b>159</b>	<b>7,424</b>	<b>162</b>	<b>549</b>	<b>402</b>	<b>642</b>
Injection	(No)	316	293	250	77	4,588	80	329	222	365
Extraction	(No)	113	136	104	48	1,599	31	123	90	167
Other	(No)	18	87	77	34	1,238	52	97	90	110

**Table 13-26: Ortalyk LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>2,251</b>	<b>2,251</b>	<b>2,245</b>	<b>2,251</b>	<b>2,251</b>	<b>2,251</b>	<b>2,245</b>	<b>2,251</b>	<b>1,970</b>
Injection	(No)	1,715	1,715	1,710	1,715	1,715	1,715	1,710	1,715	1,501
Extraction	(No)	536	536	535	536	536	536	535	536	469
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>1,944</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>29,248</b>	<b>25,592</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>	<b>76.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	<b>1,727</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>
<b>Well Construction</b>	<b>(No)</b>	<b>705</b>	<b>631</b>	<b>629</b>	<b>631</b>	<b>631</b>	<b>631</b>	<b>629</b>	<b>631</b>	<b>551</b>
Injection	(No)	405	405	404	405	405	405	404	405	354
Extraction	(No)	190	127	126	127	127	127	126	127	111
Other	(No)	110	99	99	99	99	99	99	99	86

**Table 13-27: Ortalyk LLP (100%) Forecast Physical Performance: 2031 through 2032**

Statistic	Units	2031	2032
<b>Active Wells</b>	<b>(No)</b>	<b>1,688</b>	<b>771</b>
Injection	(No)	1,286	587
Extraction	(No)	402	184
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>6.50</b>	<b>6.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>1,667</b>	<b>763</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>21,936</b>	<b>10,042</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>76.0</b>	<b>76.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,481</b>	<b>678</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>88.8</b>	<b>88.8</b>
<b>Well Construction</b>	<b>(No)</b>	<b>-</b>	<b>-</b>
Injection	(No)	-	-
Extraction	(No)	-	-
Other	(No)	-	-

## 13.4.3 RU-6 LLP

Table 13-28: RU-6 LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	1.44	1.44	1.15	0.56	20.92	0.58	1.15	1.15	1.44
Grade	(%U)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
Content	(tU)	1,098	1,092	875	426	15,908	438	877	876	1,097
Product	(tU)	956	1,015	718	426	14,293	395	790	790	987
Overall Recovery	(%)	87.1	92.9	82.1	99.8	89.8	90.1	90.1	90.1	90.0
<b>Sales</b>										
Final Product	(tU)	1,057	621	717	392	14,735	281	785	791	845
Final Product	(MlbU)	2.33	1.37	1.58	0.86	32.49	0.62	1.73	1.74	1.86
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.75	1.62	1.86	1.02	38.31	0.73	2.04	2.06	2.20
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	41.78	29.86	22.14	23.31	34.24	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	41.78	29.86	22.14	23.31	34.24	26.09	27.81	28.81	29.22
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,285	10,205	7,218	7,610	11,641	8,869	9,456	9,796	9,934
<b>Sales Revenue</b>										
Product	(KZTm)	25,512.9	16,485.9	13,447.4	7,760.7	445,930.4	6,485.5	19,299.0	20,148.0	21,834.3
<b>Operating Expenditure</b>										
Mining	(KZTm)	(5,319.7)	(5,707.0)	(5,318.5)	(2,207.7)	(95,012.3)	(2,677.2)	(5,496.5)	(5,482.4)	(6,110.1)
Processing	(KZTm)	(905.3)	(1,288.0)	(1,174.9)	(784.8)	(27,245.0)	(805.1)	(1,610.3)	(1,610.5)	(1,712.9)
G&A	(KZTm)	(2,344.3)	(1,943.0)	(1,505.0)	(876.2)	(30,641.3)	(963.0)	(1,846.2)	(1,715.3)	(2,040.0)
MET	(KZTm)	(2,325.7)	(2,504.4)	(2,205.2)	(1,335.6)	(48,194.0)	(1,112.9)	(2,301.9)	(2,377.7)	(2,786.5)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	-	-	-	-	-	-	-	-	-
Toll Refining	(KZTm)	(1,194.4)	(1,318.8)	(933.9)	(553.3)	(18,589.8)	(513.5)	(1,027.0)	(1,027.0)	(1,283.7)
Retrenchment	(KZTm)	-	-	-	-	(140.1)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(12,089.5)</b>	<b>(12,761.2)</b>	<b>(11,137.6)</b>	<b>(5,757.7)</b>	<b>(219,822.4)</b>	<b>(6,071.6)</b>	<b>(12,281.8)</b>	<b>(12,212.8)</b>	<b>(13,933.3)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>13,423.4</b>	<b>3,724.7</b>	<b>2,309.8</b>	<b>2,002.9</b>	<b>226,108.1</b>	<b>413.9</b>	<b>7,017.3</b>	<b>7,935.3</b>	<b>7,901.0</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,805.9)	(3,250.1)	(2,453.3)	(921.3)	(61,250.6)	(1,295.1)	(2,590.2)	(3,311.9)	(4,201.1)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(527.7)	(438.6)	(540.5)	(141.1)	(5,149.1)	(807.1)	(334.0)	(334.0)	(334.0)
Liqdn Fund/Closure	(KZTm)	(155.6)	(136.0)	(282.5)	243.5	(7,518.2)	(60.2)	(124.4)	(128.5)	(150.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,489.3)</b>	<b>(3,824.8)</b>	<b>(3,276.3)</b>	<b>(818.9)</b>	<b>(73,917.9)</b>	<b>(2,162.4)</b>	<b>(3,048.7)</b>	<b>(3,774.4)</b>	<b>(4,685.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,400	7,900	5,978	5,646	5,738	8,303	6,018	5,938	6,339
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,553	6,349	4,795	4,336	4,480	6,781	4,890	4,782	5,071
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,613	10,183	7,585	6,688	7,472	11,178	7,451	7,710	8,403
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.80	23.11	18.33	17.29	16.88	24.42	17.70	17.46	18.64
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.99	18.58	14.70	13.28	13.18	19.94	14.38	14.06	14.92
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	25.26	29.80	23.26	20.48	21.98	32.88	21.91	22.68	24.71

Table 13-29: RU-6 LLP (100%) Forecast (2022 through 2030)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
Grade	(%U)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
Content	(tU)	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097
Product	(tU)	987	987	987	987	987	987	987	987	987
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	987	987	989	985	987	987	989	985	987
Final Product	(MlbU)	2.18	2.18	2.18	2.17	2.18	2.18	2.18	2.17	2.18
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.57	2.57	2.57	2.56	2.57	2.57	2.57	2.56	2.57
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	-	-	-	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,870	9,895	10,168	10,569	11,328	12,156	12,385	12,739	12,835
<b>Sales Revenue</b>										
Product	(KZTm)	25,325.3	25,389.8	26,141.8	27,066.4	29,067.3	31,193.5	31,840.7	32,624.1	32,934.0
<b>Operating Expenditure</b>										
Mining	(KZTm)	(6,121.1)	(6,132.5)	(6,144.3)	(6,152.7)	(6,159.3)	(6,164.3)	(6,167.7)	(6,170.2)	(6,166.7)
Processing	(KZTm)	(1,713.2)	(1,713.5)	(1,713.9)	(1,714.1)	(1,714.3)	(1,714.5)	(1,714.6)	(1,714.6)	(1,714.5)
G&A	(KZTm)	(2,023.0)	(2,024.2)	(2,025.5)	(2,026.5)	(2,027.2)	(2,027.7)	(2,028.1)	(2,028.3)	(2,028.0)
MET	(KZTm)	(2,816.7)	(2,929.8)	(3,015.4)	(3,082.2)	(3,133.9)	(3,173.8)	(3,206.1)	(3,234.9)	(3,177.6)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	-	-	-	-	-	-	-	-	-
Toll Refining	(KZTm)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)	(1,283.7)
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,957.8)</b>	<b>(14,083.8)</b>	<b>(14,182.8)</b>	<b>(14,259.1)</b>	<b>(14,318.4)</b>	<b>(14,363.9)</b>	<b>(14,400.1)</b>	<b>(14,431.8)</b>	<b>(14,370.5)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>11,367.5</b>	<b>11,306.0</b>	<b>11,959.0</b>	<b>12,807.2</b>	<b>14,748.9</b>	<b>16,829.6</b>	<b>17,440.6</b>	<b>18,192.3</b>	<b>18,563.4</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(4,191.8)	(4,898.7)	(4,891.4)	(4,914.4)	(4,914.4)	(4,898.7)	(4,891.4)	(4,898.7)	(3,786.7)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(334.0)	(334.0)	(334.0)	(334.0)	(334.0)	(334.0)	(334.0)	(334.0)	(334.0)
Liqdn Fund/Closure	(KZTm)	(152.3)	(158.4)	(163.0)	(166.6)	(169.4)	(171.6)	(173.3)	(174.9)	(171.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,678.1)</b>	<b>(5,391.1)</b>	<b>(5,388.4)</b>	<b>(5,415.0)</b>	<b>(5,417.8)</b>	<b>(5,404.3)</b>	<b>(5,398.7)</b>	<b>(5,407.6)</b>	<b>(4,292.5)</b>
<b>Unit Expenditures</b>										



Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,440	5,489	5,517	5,568	5,580	5,598	5,601	5,635	5,600
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,342	4,347	4,344	4,364	4,359	4,361	4,354	4,372	4,362
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	7,203	7,528	7,549	7,617	7,625	7,637	7,633	7,678	7,206
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.00	16.14	16.23	16.38	16.41	16.46	16.47	16.57	16.47
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.77	12.78	12.78	12.84	12.82	12.83	12.81	12.86	12.83
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.19	22.14	22.20	22.40	22.43	22.46	22.45	22.58	21.19

**Table 13-30: RU-6 LLP (100%) Forecast (2031 through 2034)**

Statistic	Units	2031	2032	2033	2034
<b>Production</b>					
Mining	(Mt)	1.16	0.88	0.88	0.70
Grade	(%U)	0.076	0.076	0.076	0.076
Content	(tU)	885	667	667	531
Product	(tU)	793	592	592	472
Overall Recovery	(%)	89.6	88.8	88.8	88.8
<b>Sales</b>					
Final Product	(tU)	931	736	591	892
Final Product	(MibU)	2.05	1.62	1.30	1.97
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	2.42	1.91	1.54	2.32
<b>Macro-Economics</b>					
Exchange Rate	(KZT:US\$)	340	340	340	340
<b>Sales Price</b>					
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58
Premium/(Discount)	(%)	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	13,450	14,123	14,756	14,816
<b>Sales Revenue</b>					
Product	(KZTm)	32,538.7	27,010.2	22,674.6	34,357.3
<b>Operating Expenditure</b>					
Mining	(KZTm)	(5,553.2)	(4,928.0)	(4,914.3)	(4,471.7)
Processing	(KZTm)	(1,613.9)	(1,510.3)	(1,509.9)	(1,445.0)
G&A	(KZTm)	(1,734.7)	(1,432.7)	(1,431.2)	(1,239.7)
MET	(KZTm)	(2,815.9)	(2,432.8)	(2,238.4)	(4,357.6)
Services	(KZTm)	-	-	-	-
Distribution	(KZTm)	-	-	-	-
Toll Refining	(KZTm)	(1,031.1)	(770.2)	(770.2)	(613.7)
Retrenchment	(KZTm)	-	-	-	(140.1)
<b>Total</b>	<b>(KZTm)</b>	<b>(12,748.9)</b>	<b>(11,074.0)</b>	<b>(10,864.1)</b>	<b>(12,267.7)</b>
EBITDA	(KZTm)	19,789.8	15,936.1	11,810.5	22,089.5
<b>Capital Expenditure</b>					
Well Construction	(KZTm)	(3,786.7)	(3,779.4)	-	-
Expansion	(KZTm)	-	-	-	-
Sustaining	(KZTm)	(334.0)	-	-	-
Liqdn Fund/Closure	(KZTm)	(152.2)	(131.5)	(121.0)	(5,148.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,272.9)</b>	<b>(3,910.9)</b>	<b>(121.0)</b>	<b>(5,148.6)</b>
<b>Unit Expenditures</b>					
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,270	5,790	7,070	5,290
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,106	4,518	5,613	3,411
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,973	7,767	7,070	5,290
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.50	17.03	20.79	15.56
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.08	13.29	16.51	10.03
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	20.51	22.84	20.79	15.56

**Table 13-31: RU-6 LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Active Wells	(No)	2,338	2,470	2,030	2,003	2,499	2,175	2,171	2,195	2,965
Injection	(No)	1,814	1,943	1,610	1,613	1,948	1,699	1,696	1,715	2,313
Extraction	(No)	524	527	420	390	551	476	475	480	652
Pumping Rate	(m <sup>3</sup> /h)	4.96	5.01	5.15	5.60	4.72	4.67	4.67	4.67	4.70
Mined	(tU)	1,098	1,092	875	426	15,908	438	877	876	1,097
PLS Volume	(m <sup>3</sup> )	21,841	22,226	18,160	9,085	362,310	9,395	18,651	18,842	25,746
PLS Grade	(mg/l)	47.3	46.4	45.4	44.2	41.2	43.9	44.2	43.8	40.0
Final Prodn Produced	(tU)	956	1,015	718	426	14,293	395	790	790	987
Overall Recovery	(%)	87.1	92.9	82.1	99.8	89.8	90.1	90.1	90.1	90.0
Well Construction	(No)	537	530	383	195	9,119	196	392	541	728
Injection	(No)	339	334	232	139	5,851	120	240	331	464
Extraction	(No)	134	134	90	52	1,779	47	93	122	147
Other	(No)	64	62	61	4	1,490	30	59	88	117

**Table 13-32: RU-6 LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Wells	(No)	2,968	2,968	2,960	2,965	2,965	2,966	2,958	2,966	2,966
Injection	(No)	2,315	2,315	2,309	2,313	2,313	2,314	2,308	2,314	2,314
Extraction	(No)	653	653	651	652	652	652	650	652	652
Pumping Rate	(m <sup>3</sup> /h)	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
Mined	(tU)	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097	1,097
PLS Volume	(m <sup>3</sup> )	25,761	25,761	25,761	25,746	25,746	25,753	25,753	25,753	25,753
PLS Grade	(mg/l)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Final Prodn Produced	(tU)	987	987	987	987	987	987	987	987	987
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
Well Construction	(No)	726	712	711	714	714	712	711	712	517
Injection	(No)	463	463	462	464	464	463	462	463	331
Extraction	(No)	146	133	133	134	134	133	133	133	97
Other	(No)	117	116	116	116	116	116	116	116	89

**Table 13-33: RU-6 LLP (100%) Forecast Physical Performance: 2031 through 2034**

Statistic	Units	2031	2032	2033	2034
<b>Active Wells</b>	<b>(No)</b>	<b>2,224</b>	<b>1,453</b>	<b>1,457</b>	<b>1,161</b>
Injection	(No)	1,730	1,123	1,126	897
Extraction	(No)	494	330	331	264
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>4.77</b>	<b>4.90</b>	<b>4.90</b>	<b>4.90</b>
Mined	(tU)	885	667	667	531
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>19,786</b>	<b>13,625</b>	<b>13,625</b>	<b>10,856</b>
PLS Grade	(mg/l)	41.8	45.4	45.4	45.4
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>793</b>	<b>592</b>	<b>592</b>	<b>472</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>89.6</b>	<b>88.8</b>	<b>88.8</b>	<b>88.8</b>
<b>Well Construction</b>	<b>(No)</b>	<b>517</b>	<b>516</b>	-	-
Injection	(No)	331	330	-	-
Extraction	(No)	97	97	-	-
Other	(No)	89	89	-	-

### 13.4.4 Appak LLP

**Table 13-34: Appak LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	2.80	3.19	2.87	1.40	54.78	1.27	2.54	2.54	3.17
Grade	(%U)	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Content	(tU)	979	1,118	1,005	490	19,185	444	889	889	1,111
Product	(tU)	880	1,004	901	439	17,267	400	800	800	1,000
Overall Recovery	(%)	89.9	89.8	89.6	89.6	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	839	960	967	160	17,706	446	797	801	900
Final Product	(MlbU)	1.85	2.12	2.13	0.35	39.04	0.98	1.76	1.77	1.98
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.18	2.50	2.51	0.42	46.03	1.16	2.07	2.08	2.34
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					35.46	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	40.83	26.13	20.36	20.18	34.22	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,075	8,930	6,639	6,590	11,633	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	19,801.5	22,287.7	16,691.0	2,741.3	535,517.0	9,913.5	18,901.8	19,687.5	22,418.6
<b>Operating Expenditure</b>										
Mining	(KZTm)	(5,185.7)	(5,088.6)	(4,768.6)	(1,202.1)	(108,416.5)	(2,646.2)	(5,357.8)	(5,259.9)	(6,187.0)
Processing	(KZTm)	(1,482.4)	(1,499.4)	(2,044.5)	(398.7)	(53,108.4)	(1,437.5)	(2,971.3)	(2,807.8)	(2,945.9)
G&A	(KZTm)	(1,563.6)	(1,948.9)	(1,251.2)	(374.9)	(16,262.5)	(439.5)	(879.1)	(879.1)	(879.1)
MET	(KZTm)	(1,989.5)	(2,002.0)	(2,057.4)	(248.2)	(46,260.3)	(946.0)	(1,935.0)	(1,967.8)	(2,490.9)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(335.9)	(382.5)	(343.6)	(169.6)	(13,642.1)	(316.7)	(633.4)	(633.4)	(789.4)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(102.9)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(10,557.0)</b>	<b>(10,921.3)</b>	<b>(10,465.2)</b>	<b>(2,393.6)</b>	<b>(237,792.7)</b>	<b>(5,785.9)</b>	<b>(11,776.5)</b>	<b>(11,548.0)</b>	<b>(13,292.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>9,244.5</b>	<b>11,366.5</b>	<b>6,225.8</b>	<b>347.7</b>	<b>297,724.3</b>	<b>4,127.6</b>	<b>7,125.2</b>	<b>8,139.5</b>	<b>9,126.3</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,199.7)	(2,375.1)	(2,045.7)	(224.0)	(47,424.6)	(469.4)	(1,584.8)	(2,582.3)	(3,757.0)
Expansion	(KZTm)	-	-	-	-	(5,231.2)	-	(2,231.2)	(3,000.0)	-
Sustaining	(KZTm)	(313.3)	(166.2)	(208.7)	(136.0)	(5,869.6)	(330.1)	(329.9)	(221.6)	(4.1)
Liqdn Fund/Closure	(KZTm)	(98.7)	(113.8)	(86.5)	0.0	(4,827.7)	(67.9)	(121.9)	(125.9)	(164.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(2,611.8)</b>	<b>(2,655.1)</b>	<b>(2,340.9)</b>	<b>(360.0)</b>	<b>(63,353.0)</b>	<b>(867.5)</b>	<b>(4,267.9)</b>	<b>(5,929.8)</b>	<b>(3,925.9)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,838	4,376	4,163	5,754	5,166	4,995	5,685	5,545	5,684
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,926	3,574	3,344	5,158	4,161	4,178	4,751	4,600	4,619
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,990	5,394	5,059	6,620	6,323	5,685	6,610	6,891	7,292
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.77	12.80	12.77	17.62	15.19	14.69	16.72	16.31	16.72
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.67	10.46	10.26	15.80	12.24	12.29	13.97	13.53	13.58
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.95	15.78	15.52	20.28	18.60	16.72	19.44	20.27	21.45

**Table 13-35: Appak LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17
Grade	(%U)	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Content	(tU)	1,111	1,111	1,111	1,111	1,111	1,111	1,111	1,111	1,111
Product	(tU)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	1,000	1,000	1,001	999	1,000	1,000	1,001	999	1,000
Final Product	(MlbU)	2.20	2.20	2.21	2.20	2.20	2.20	2.21	2.20	2.20
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	24,760.8	24,823.8	25,544.3	26,478.5	28,419.4	30,498.2	31,112.9	31,915.5	32,199.9

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Operating Expenditure</b>										
Mining	(KZTm)	(6,167.0)	(6,169.4)	(6,170.6)	(6,171.6)	(6,172.2)	(6,172.8)	(6,173.1)	(6,173.3)	(6,173.6)
Processing	(KZTm)	(2,912.4)	(2,916.4)	(2,918.5)	(2,920.0)	(2,921.2)	(2,922.0)	(2,922.6)	(2,923.0)	(2,923.3)
G&A	(KZTm)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)
MET	(KZTm)	(2,547.4)	(2,575.6)	(2,595.1)	(2,610.3)	(2,621.5)	(2,629.6)	(2,634.5)	(2,639.1)	(2,642.5)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,295.3)</b>	<b>(13,329.9)</b>	<b>(13,352.7)</b>	<b>(13,370.4)</b>	<b>(13,383.3)</b>	<b>(13,392.8)</b>	<b>(13,398.7)</b>	<b>(13,403.9)</b>	<b>(13,407.8)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>11,465.5</b>	<b>11,493.9</b>	<b>12,191.6</b>	<b>13,108.1</b>	<b>15,036.1</b>	<b>17,105.4</b>	<b>17,714.3</b>	<b>18,511.6</b>	<b>18,792.0</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,220.6)	(2,987.3)	(2,974.9)	(2,987.3)	(2,987.3)	(2,987.3)	(2,974.9)	(2,987.3)	(2,987.3)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(4.1)	(452.7)	(452.7)	(452.7)	(452.7)	(452.7)	(452.7)	(452.7)	(452.7)
Liqdn Fund/Closure	(KZTm)	(170.2)	(172.7)	(174.3)	(175.6)	(176.6)	(177.3)	(177.7)	(178.1)	(178.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,394.9)</b>	<b>(3,612.6)</b>	<b>(3,601.9)</b>	<b>(3,615.6)</b>	<b>(3,616.6)</b>	<b>(3,617.3)</b>	<b>(3,605.3)</b>	<b>(3,618.1)</b>	<b>(3,618.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,114	5,127	5,129	5,150	5,148	5,151	5,147	5,163	5,157
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,134	4,137	4,132	4,144	4,139	4,140	4,135	4,146	4,141
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,354	6,450	6,446	6,475	6,471	6,475	6,463	6,488	6,480
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.04	15.08	15.09	15.15	15.14	15.15	15.14	15.18	15.17
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.16	12.17	12.15	12.19	12.17	12.18	12.16	12.19	12.18
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.69	18.97	18.96	19.04	19.03	19.04	19.01	19.08	19.06

Table 13-36: Appak LLP (100%) Forecast (2031 through 2036)

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Production</b>							
Mining	(Mt)	3.17	3.17	3.17	3.17	3.17	0.85
Grade	(%U)	0.035	0.035	0.035	0.035	0.035	0.035
Content	(tU)	1,111	1,111	1,111	1,111	1,111	296
Product	(tU)	1,000	1,000	1,000	1,000	1,000	267
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>							
Final Product	(tU)	1,000	1,001	999	1,000	1,000	763
Final Product	(MlbU)	2.20	2.21	2.20	2.20	2.20	1.68
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.60	2.60	2.60	2.60	2.60	1.98
<b>Macro-Economics</b>							
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340
<b>Sales Price</b>							
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53
Premium/Discount	(%)	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282
<b>Sales Revenue</b>							
Product	(KZTm)	33,743.1	35,480.0	36,970.2	37,171.1	37,130.5	28,347.5
<b>Operating Expenditure</b>							
Mining	(KZTm)	(6,173.7)	(6,173.8)	(6,173.9)	(6,173.9)	(6,166.3)	(2,560.3)
Processing	(KZTm)	(2,923.6)	(2,923.7)	(2,923.8)	(2,923.9)	(2,911.3)	(2,060.4)
G&A	(KZTm)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)	(879.1)
MET	(KZTm)	(2,644.9)	(2,645.8)	(2,647.3)	(2,648.5)	(2,570.2)	(2,268.2)
Services	(KZTm)	-	-	-	-	-	-
Distribution	(KZTm)	(789.4)	(789.4)	(789.4)	(789.4)	(789.4)	(217.3)
Toll Refining	(KZTm)	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	(102.9)
<b>Total</b>	<b>(KZTm)</b>	<b>(13,410.7)</b>	<b>(13,411.7)</b>	<b>(13,413.5)</b>	<b>(13,414.8)</b>	<b>(13,316.3)</b>	<b>(8,088.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>20,332.4</b>	<b>22,068.2</b>	<b>23,556.7</b>	<b>23,756.3</b>	<b>23,814.2</b>	<b>20,259.3</b>
<b>Capital Expenditure</b>							
Well Construction	(KZTm)	(2,987.3)	(2,974.9)	(2,987.3)	(2,987.3)	-	-
Expansion	(KZTm)	-	-	-	-	-	-
Sustaining	(KZTm)	(452.7)	(452.7)	(452.7)	-	-	-
Liqdn Fund/Closure	(KZTm)	(178.6)	(179.6)	(167.8)	(161.3)	(186.7)	(1,892.5)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,618.6)</b>	<b>(3,607.3)</b>	<b>(3,607.8)</b>	<b>(3,148.6)</b>	<b>(186.7)</b>	<b>(1,892.5)</b>
<b>Unit Expenditures</b>							
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,158	5,152	5,166	5,160	5,122	4,075
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,141	4,135	4,147	4,141	4,133	2,932
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,482	6,468	6,491	6,309	5,122	4,075
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.17	15.15	15.20	15.18	15.06	11.99
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.18	12.16	12.20	12.18	12.16	8.62
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.06	19.02	19.09	18.56	15.06	11.99

Table 13-37: Appak LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>										
Injection	(No)	1,590	1,636	1,305	1,247	1,551	1,305	1,337	1,333	1,671
Extraction	(No)	1,220	1,287	989	934	1,190	1,001	1,026	1,023	1,282
Extraction	(No)	370	349	316	313	361	303	311	310	389
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>8.50</b>	<b>8.50</b>	<b>8.56</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>979</b>	<b>1,118</b>	<b>1,005</b>	<b>490</b>	<b>19,185</b>	<b>444</b>	<b>889</b>	<b>889</b>	<b>1,111</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>26,375</b>	<b>25,004</b>	<b>22,713</b>	<b>11,080</b>	<b>478,625</b>	<b>10,914</b>	<b>22,184</b>	<b>22,184</b>	<b>27,730</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>34.2</b>	<b>41.1</b>	<b>40.6</b>	<b>42.7</b>	<b>38.0</b>	<b>38.6</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>880</b>	<b>1,004</b>	<b>901</b>	<b>439</b>	<b>17,267</b>	<b>400</b>	<b>800</b>	<b>800</b>	<b>1,000</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>89.9</b>	<b>89.8</b>	<b>89.6</b>	<b>89.6</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>										
Injection	(No)	467	460	380	70	8,218	100	298	451	643
Extraction	(No)	327	315	264	47	5,303	59	178	300	414
Other	(No)	123	112	93	21	1,700	25	73	103	145
Other	(No)	17	33	23	2	1,215	16	47	48	84

**Table 13-38: Appak LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>1,671</b>	<b>1,671</b>	<b>1,666</b>	<b>1,671</b>	<b>1,671</b>	<b>1,671</b>	<b>1,666</b>	<b>1,671</b>	<b>1,671</b>
Injection	(No)	1,282	1,282	1,279	1,282	1,282	1,282	1,279	1,282	1,282
Extraction	(No)	389	389	388	389	389	389	388	389	389
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>552</b>	<b>515</b>	<b>513</b>	<b>515</b>	<b>515</b>	<b>515</b>	<b>513</b>	<b>515</b>	<b>515</b>
Injection	(No)	335	335	334	335	335	335	334	335	335
Extraction	(No)	133	102	101	102	102	102	101	102	102
Other	(No)	84	78	78	78	78	78	78	78	78

**Table 13-39: Appak LLP (100%) Forecast Physical Performance: 2031 through 2036**

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Active Wells</b>	<b>(No)</b>	<b>1,671</b>	<b>1,666</b>	<b>1,671</b>	<b>1,671</b>	<b>1,671</b>	<b>444</b>
Injection	(No)	1,282	1,279	1,282	1,282	1,282	341
Extraction	(No)	389	388	389	389	389	103
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>	<b>8.50</b>
<b>Mined</b>	<b>(tU)</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>1,111</b>	<b>296</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>27,730</b>	<b>7,393</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>	<b>38.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>267</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>515</b>	<b>513</b>	<b>515</b>	<b>515</b>	-	-
Injection	(No)	335	334	335	335	-	-
Extraction	(No)	102	101	102	102	-	-
Other	(No)	78	78	78	78	-	-

### 13.4.5 JV Inkai LLP

**Table 13-40: JV Inkai LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	4.76	4.78	4.44	2.67	264.84	2.68	6.65	6.82	8.59
Grade	(%U)	0.060	0.059	0.057	0.057	0.054	0.058	0.057	0.055	0.055
Content	(tU)	2,833	2,799	2,529	1,522	143,300	1,560	3,765	3,765	4,706
Product	(tU)	2,418	2,413	2,202	1,315	121,805	1,326	3,200	3,200	4,000
Overall Recovery	(%)	85.4	86.2	87.0	86.4	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	2,041	2,456	2,282	830	122,263	1,313	3,098	3,202	3,855
Final Product	(MlbU)	4.50	5.41	5.03	1.83	269.54	2.90	6.83	7.06	8.50
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.31	6.38	5.93	2.16	317.86	3.41	8.05	8.32	10.02
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					38.90	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.34	22.36	19.36	19.86	37.54	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,743	7,641	6,312	6,485	12,764	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	46,392.4	48,781.2	37,448.7	13,985.5	4,057,037.2	29,223.1	73,498.6	78,681.8	96,082.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(4,444.4)	(3,807.5)	(4,292.1)	(1,771.4)	(294,558.8)	(3,533.1)	(7,855.1)	(7,731.6)	(9,061.8)
Processing	(KZTm)	(4,867.2)	(5,393.5)	(4,327.8)	(1,995.1)	(317,307.5)	(3,482.3)	(8,556.7)	(8,516.2)	(9,788.2)
G&A	(KZTm)	(1,601.0)	(2,198.0)	(1,552.4)	(648.8)	(66,124.6)	(940.9)	(1,903.3)	(1,994.8)	(2,000.2)
MET	(KZTm)	(2,441.4)	(1,925.3)	(2,887.0)	(1,251.4)	(187,309.5)	(2,461.0)	(5,729.8)	(5,591.8)	(6,373.6)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(1,055.8)	(1,799.2)	(1,919.8)	(705.8)	(112,920.0)	(561.0)	(2,717.2)	(3,385.8)	(3,612.1)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(472.7)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(14,409.8)</b>	<b>(15,123.5)</b>	<b>(14,979.1)</b>	<b>(6,372.5)</b>	<b>(978,693.0)</b>	<b>(10,978.2)</b>	<b>(26,762.0)</b>	<b>(27,220.2)</b>	<b>(30,836.0)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>31,982.6</b>	<b>33,657.6</b>	<b>22,469.6</b>	<b>7,613.0</b>	<b>3,078,344.2</b>	<b>18,244.9</b>	<b>46,736.6</b>	<b>51,461.6</b>	<b>65,246.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(4,221.4)	(4,008.5)	(5,258.5)	(2,808.9)	(316,196.9)	(4,977.8)	(10,886.3)	(12,972.4)	(9,479.6)
Expansion	(KZTm)	-	-	-	-	(8,035.9)	-	(5,006.5)	(3,029.4)	-
Sustaining	(KZTm)	(4,275.9)	(6,529.1)	(8,077.0)	(1,581.9)	(112,932.4)	(2,320.6)	(6,158.3)	(3,536.1)	(3,554.7)
Liqdn Fund/Closure	(KZTm)	-	-	-	(5.1)	(8,136.3)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(8,497.2)</b>	<b>(10,537.6)</b>	<b>(13,335.5)</b>	<b>(4,395.9)</b>	<b>(445,301.4)</b>	<b>(7,298.4)</b>	<b>(22,051.2)</b>	<b>(19,537.9)</b>	<b>(13,034.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,716	2,369	2,525	2,955	3,079	3,215	3,323	3,270	3,077
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,256	2,067	2,038	2,375	2,490	2,494	2,611	2,599	2,441
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,317	4,020	4,772	4,991	4,429	5,353	5,439	5,254	4,377
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.22	6.93	7.74	9.05	9.06	9.46	9.77	9.62	9.05
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.15	6.05	6.25	7.27	7.32	7.34	7.68	7.64	7.18
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.42	11.76	14.64	15.29	13.03	15.74	16.00	15.45	12.87

**Table 13-41: JV Inkai LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	8.59	8.59	8.59	8.59	8.59	8.59	8.59	8.59	8.59
Grade	(%U)	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Content	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706
Product	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	4,000	4,000	4,002	3,998	4,000	4,000	4,002	3,998	4,000
Final Product	(MlbU)	8.82	8.82	8.82	8.81	8.82	8.82	8.82	8.81	8.82
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	10.40	10.40	10.40	10.39	10.40	10.40	10.40	10.39	10.40
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	99,043.1	99,295.4	102,088.6	106,006.0	113,677.6	121,992.8	124,343.8	127,773.0	128,799.5
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,383.2)	(9,379.1)	(9,374.9)	(9,372.3)	(9,370.7)	(9,369.8)	(9,369.2)	(9,368.7)	(9,368.5)
Processing	(KZTm)	(9,902.3)	(9,910.2)	(9,903.9)	(9,899.9)	(9,897.6)	(9,896.3)	(9,895.3)	(9,894.6)	(9,894.3)
G&A	(KZTm)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)
MET	(KZTm)	(6,401.5)	(6,267.1)	(6,176.2)	(6,123.5)	(6,100.4)	(6,084.3)	(6,069.0)	(6,063.9)	(6,060.7)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(31,419.8)</b>	<b>(31,289.2)</b>	<b>(31,187.9)</b>	<b>(31,128.5)</b>	<b>(31,101.6)</b>	<b>(31,083.2)</b>	<b>(31,066.3)</b>	<b>(31,060.1)</b>	<b>(31,056.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>67,623.3</b>	<b>68,006.2</b>	<b>70,900.7</b>	<b>74,877.5</b>	<b>82,576.0</b>	<b>90,909.6</b>	<b>93,277.5</b>	<b>96,712.9</b>	<b>97,743.1</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(11,157.3)	(10,403.5)	(10,363.9)	(10,403.5)	(10,403.5)	(10,403.5)	(10,363.9)	(10,403.5)	(10,403.5)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(2,919.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)
Liqdn Fund/Closure	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(14,077.2)</b>	<b>(13,901.3)</b>	<b>(13,861.8)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,861.8)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,021	3,009	2,998	2,995	2,991	2,989	2,986	2,988	2,986
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,406	2,406	2,404	2,406	2,404	2,404	2,403	2,405	2,404
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,375	4,346	4,330	4,332	4,328	4,326	4,318	4,326	4,323
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.89	8.85	8.82	8.81	8.80	8.79	8.78	8.79	8.78
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.08	7.08	7.07	7.08	7.07	7.07	7.07	7.07	7.07
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.87	12.78	12.74	12.74	12.73	12.72	12.70	12.72	12.72

**Table 13-42: JV Inkai LLP (100%) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	8.59	8.59	8.59	8.59	8.59	8.59	8.59	8.59	8.59
Grade	(%U)	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Content	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706
Product	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	4,000	4,002	3,998	4,000	4,000	4,002	3,998	4,000	4,000
Final Product	(MlbU)	8.82	8.82	8.81	8.82	8.82	8.82	8.81	8.82	8.82
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	10.40	10.40	10.39	10.40	10.40	10.40	10.39	10.40	10.40
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	134,972.3	141,796.8	148,009.4	148,684.5	148,521.9	148,594.5	148,449.2	148,521.9	148,521.9
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,368.4)	(9,368.2)	(9,368.1)	(9,368.1)	(9,368.1)	(9,368.1)	(9,368.0)	(9,368.1)	(9,368.1)
Processing	(KZTm)	(9,894.1)	(9,893.9)	(9,893.7)	(9,893.7)	(9,893.7)	(9,893.6)	(9,893.5)	(9,893.6)	(9,893.6)
G&A	(KZTm)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)
MET	(KZTm)	(6,058.9)	(6,053.6)	(6,055.3)	(6,056.7)	(6,058.1)	(6,054.9)	(5,660.3)	(5,661.4)	(5,662.0)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(31,054.3)</b>	<b>(31,048.5)</b>	<b>(31,049.9)</b>	<b>(31,051.4)</b>	<b>(31,052.7)</b>	<b>(31,049.4)</b>	<b>(30,654.7)</b>	<b>(30,655.9)</b>	<b>(30,656.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>103,918.1</b>	<b>110,748.3</b>	<b>116,959.4</b>	<b>117,633.1</b>	<b>117,469.1</b>	<b>117,545.1</b>	<b>117,794.6</b>	<b>117,866.0</b>	<b>117,865.3</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(10,403.5)	(10,363.9)	(10,403.5)	(10,403.5)	(10,403.5)	(10,363.9)	(10,403.5)	(10,403.5)	(10,403.5)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)
Liqdn Fund/Closure	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,901.3)</b>	<b>(13,861.8)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,861.8)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,986	2,984	2,987	2,986	2,986	2,984	2,949	2,948	2,948
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,404	2,402	2,405	2,404	2,404	2,402	2,405	2,404	2,404
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,323	4,317	4,325	4,323	4,323	4,317	4,287	4,285	4,285
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.78	8.78	8.79	8.78	8.78	8.78	8.67	8.67	8.67



Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07	7.07
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.71	12.70	12.72	12.71	12.71	12.70	12.61	12.60	12.60

**Table 13-43: JV Inukai LLP (100%) Forecast (2040 through 2048)**

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
<b>Production</b>										
Mining	(Mt)	8.59	8.59	8.59	8.59	8.63	8.75	6.98	5.29	4.97
Grade	(%U)	0.055	0.055	0.055	0.055	0.055	0.054	0.054	0.049	0.047
Content	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	3,764	2,588	2,353
Product	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	3,200	2,200	2,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	4,002	3,998	4,000	4,000	4,002	3,998	3,414	2,343	2,001
Final Product	(MibU)	8.82	8.81	8.82	8.82	8.82	8.81	7.53	5.17	4.41
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	10.40	10.39	10.40	10.40	10.40	10.39	8.88	6.09	5.20
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	148,594.5	148,449.2	148,521.9	148,521.9	148,594.5	148,449.2	126,779.7	87,002.3	74,297.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,368.0)	(9,368.0)	(9,368.0)	(9,368.4)	(9,369.8)	(9,364.8)	(7,476.3)	(6,256.2)	(6,013.2)
Processing	(KZTm)	(9,893.6)	(9,893.5)	(9,893.6)	(9,894.2)	(9,895.8)	(9,887.6)	(9,196.6)	(7,043.1)	(6,872.4)
G&A	(KZTm)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(1,604.3)	(1,604.3)	(1,604.3)
MET	(KZTm)	(5,657.9)	(5,659.9)	(5,661.1)	(5,627.7)	(5,639.5)	(5,650.0)	(5,562.7)	(4,089.8)	(3,432.6)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(2,983.6)	(2,051.4)	(1,864.9)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	(61.6)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(30,652.3)</b>	<b>(30,654.2)</b>	<b>(30,655.6)</b>	<b>(30,623.2)</b>	<b>(30,637.9)</b>	<b>(30,635.3)</b>	<b>(26,823.5)</b>	<b>(21,106.4)</b>	<b>(19,787.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>117,942.2</b>	<b>117,795.0</b>	<b>117,866.2</b>	<b>117,898.7</b>	<b>117,956.5</b>	<b>117,813.9</b>	<b>99,956.2</b>	<b>65,895.9</b>	<b>54,509.8</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(10,363.9)	(10,403.5)	(10,403.5)	(10,403.5)	(10,553.6)	(8,236.5)	(5,444.6)	(6,055.3)	(6,047.6)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)
Liqdn Fund/Closure	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,861.8)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(14,051.5)</b>	<b>(11,734.4)</b>	<b>(8,942.5)</b>	<b>(9,553.2)</b>	<b>(9,545.5)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,946	2,949	2,948	2,945	2,945	2,947	3,022	3,465	3,804
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,402	2,405	2,403	2,404	2,403	2,404	2,395	2,793	3,144
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,278	4,287	4,285	4,282	4,295	4,076	4,029	5,033	5,639
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.67	8.67	8.67	8.66	8.66	8.67	8.89	10.19	11.19
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.07	7.07	7.07	7.07	7.07	7.07	7.04	8.22	9.25
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.58	12.61	12.60	12.59	12.63	11.99	11.85	14.80	16.58

**Table 13-44: JV Inukai LLP (100%) Forecast (2049 through 2052)**

Statistic	Units	2049	2050	2051	2052
<b>Production</b>					
Mining	(Mt)	4.97	4.97	3.98	2.68
Grade	(%U)	0.047	0.047	0.047	0.047
Content	(tU)	2,353	2,353	1,882	1,270
Product	(tU)	2,000	2,000	1,600	1,079
Overall Recovery	(%)	85.0	85.0	85.0	85.0
<b>Sales</b>					
Final Product	(tU)	1,999	2,000	1,672	1,365
Final Product	(MibU)	4.41	4.41	3.69	3.01
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	5.20	5.20	4.35	3.55
<b>Macro-Economics</b>					
Exchange Rate	(KZT:US\$)	340	340	340	340
<b>Sales Price</b>					
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>					
Product	(KZTm)	74,224.6	74,260.9	62,066.4	50,697.2
<b>Operating Expenditure</b>					
Mining	(KZTm)	(6,014.0)	(6,012.4)	(5,188.7)	(4,539.7)
Processing	(KZTm)	(6,873.6)	(6,871.2)	(6,527.3)	(6,083.9)
G&A	(KZTm)	(1,604.3)	(1,604.3)	(1,597.5)	(1,594.1)
MET	(KZTm)	(3,459.3)	(3,665.0)	(2,422.5)	(1,957.7)
Services	(KZTm)	-	-	-	-
Distribution	(KZTm)	(1,864.9)	(1,864.9)	(1,491.9)	(1,006.2)
Toll Refining	(KZTm)	-	-	-	-
Retrenchment	(KZTm)	-	-	-	(411.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(19,816.2)</b>	<b>(20,017.8)</b>	<b>(17,227.9)</b>	<b>(15,592.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>54,408.5</b>	<b>54,243.1</b>	<b>44,838.6</b>	<b>35,104.7</b>
<b>Capital Expenditure</b>					
Well Construction	(KZTm)	(6,055.3)	(6,055.3)	-	-
Expansion	(KZTm)	-	-	-	-
Sustaining	(KZTm)	(3,497.9)	-	-	-
Liqdn Fund/Closure	(KZTm)	-	-	-	(8,136.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(9,553.2)</b>	<b>(6,055.3)</b>	-	<b>(8,136.3)</b>
<b>Unit Expenditures</b>					

Statistic	Units	2049	2050	2051	2052
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,813	3,850	3,964	4,393
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,147	3,145	3,407	3,841
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,651	5,014	3,964	4,393
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.21	11.32	11.66	12.92
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.26	9.25	10.02	11.30
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.62	14.75	11.66	12.92

**Table 13-45: JV Inkai LLP (100%) Historical (2015 through H1 2018) and Forecast Physical Performance (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Active Wells	(No)	1,173	1,051	1,275	1,079	2,008	1,338	1,627	1,787	2,257
Injection	(No)	830	774	906	773	1,530	1,020	1,240	1,362	1,720
Extraction	(No)	343	277	369	306	478	319	387	426	537
Pumping Rate	(m <sup>3</sup> /h)	6.83	8.48	8.87	9.95	8.31	8.57	8.62	8.56	8.41
Mined	(tU)	2,833	2,799	2,529	1,522	143,300	1,560	3,765	3,765	4,706
PLS Volume	(m <sup>3</sup> )	22,631	21,056	24,575	12,283	1,157,157	11,551	28,043	30,649	37,951
PLS Grade	(mg/l)	109.2	116.7	91.6	109.1	108.5	118.4	117.6	107.6	108.7
Final Prodn Produced	(tU)	2,418	2,413	2,202	1,315	121,805	1,326	3,200	3,200	4,000
Overall Recovery	(%)	85.4	86.2	87.0	86.4	86.4	85.0	85.0	85.0	85.0
Well Construction	(No)	706	635	787	489	36,354	507	1,165	1,184	1,124
Injection	(No)	415	363	434	330	24,904	332	771	786	757
Extraction	(No)	148	134	159	121	7,937	117	272	268	261
Other	(No)	143	138	194	38	3,514	59	122	130	106

**Table 13-46: JV Inkai LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Wells	(No)	2,234	2,234	2,228	2,234	2,234	2,234	2,228	2,234	2,234
Injection	(No)	1,702	1,702	1,697	1,702	1,702	1,702	1,697	1,702	1,702
Extraction	(No)	532	532	530	532	532	532	530	532	532
Pumping Rate	(m <sup>3</sup> /h)	8.47	8.47	8.47	8.47	8.47	8.47	8.47	8.47	8.47
Mined	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706
PLS Volume	(m <sup>3</sup> )	37,839	37,839	37,839	37,839	37,839	37,839	37,839	37,839	37,839
PLS Grade	(mg/l)	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0
Final Prodn Produced	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
Well Construction	(No)	1,264	1,199	1,195	1,199	1,199	1,199	1,195	1,199	1,199
Injection	(No)	825	825	822	825	825	825	822	825	825
Extraction	(No)	317	258	257	258	258	258	257	258	258
Other	(No)	122	116	116	116	116	116	116	116	116

**Table 13-47: JV Inkai LLP (100%) Forecast Physical Performance: 2031 through 2039**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
Active Wells	(No)	2,234	2,228	2,234	2,234	2,234	2,228	2,234	2,234	2,234
Injection	(No)	1,702	1,697	1,702	1,702	1,702	1,697	1,702	1,702	1,702
Extraction	(No)	532	530	532	532	532	530	532	532	532
Pumping Rate	(m <sup>3</sup> /h)	8.47	8.47	8.47	8.47	8.47	8.47	8.47	8.47	8.47
Mined	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706
PLS Volume	(m <sup>3</sup> )	37,839	37,839	37,839	37,839	37,839	37,839	37,839	37,839	37,839
PLS Grade	(mg/l)	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0
Final Prodn Produced	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
Well Construction	(No)	1,199	1,195	1,199	1,199	1,199	1,195	1,199	1,199	1,199
Injection	(No)	825	822	825	825	825	822	825	825	825
Extraction	(No)	258	257	258	258	258	257	258	258	258
Other	(No)	116	116	116	116	116	116	116	116	116

**Table 13-48: JV Inkai LLP (100%) Forecast Physical Performance: 2040 through 2048**

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
Active Wells	(No)	2,228	2,234	2,234	2,234	2,264	2,359	1,964	1,500	1,397
Injection	(No)	1,697	1,702	1,702	1,702	1,725	1,797	1,497	1,143	1,064
Extraction	(No)	530	532	532	532	539	562	468	357	333
Pumping Rate	(m <sup>3</sup> /h)	8.47	8.47	8.47	8.47	8.34	8.04	7.59	7.33	7.33
Mined	(tU)	4,706	4,706	4,706	4,706	4,706	4,706	3,764	2,588	2,353
PLS Volume	(m <sup>3</sup> )	37,839	37,839	37,839	37,839	37,858	37,906	29,789	21,962	20,508
PLS Grade	(mg/l)	109.0	109.0	109.0	109.0	108.9	108.8	110.7	103.3	100.5
Final Prodn Produced	(tU)	4,000	4,000	4,000	4,000	4,000	4,000	3,200	2,200	2,000
Overall Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
Well Construction	(No)	1,195	1,199	1,199	1,199	1,221	939	696	774	773
Injection	(No)	822	825	825	825	840	648	484	538	537
Extraction	(No)	257	258	258	258	263	203	151	168	168
Other	(No)	116	116	116	116	118	88	61	68	68

**Table 13-49: JV Inkai LLP (100%) Forecast Physical Performance: 2049 through 2052**

Statistic	Units	2049	2050	2051	2052
Active Wells	(No)	1,401	1,401	1,120	754
Injection	(No)	1,067	1,067	854	574
Extraction	(No)	333	333	267	179
Pumping Rate	(m <sup>3</sup> /h)	7.33	7.33	7.33	7.33
Mined	(tU)	2,353	2,353	1,882	1,270
PLS Volume	(m <sup>3</sup> )	20,508	20,508	16,406	11,065
PLS Grade	(mg/l)	100.54	100.54	100.54	100.54
Final Prodn Produced	(tU)	2,000	2,000	1,600	1,079

Statistic	Units	2049	2050	2051	2052
<b>Overall Recovery</b>	(%)	<b>85.0</b>	<b>85.0</b>	<b>85.0</b>	<b>85.0</b>
<b>Well Construction</b>	(No)	<b>774</b>	<b>774</b>	-	-
Injection	(No)	538	538	-	-
Extraction	(No)	168	168	-	-
Other	(No)	68	68	-	-

### 13.4.6 Semizbai-U LLP

**Table 13-50: Semizbai-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	3.12	3.09	2.82	1.13	60.07	1.18	2.37	2.37	2.96
Grade	(%U)	0.046	0.047	0.046	0.047	0.046	0.047	0.047	0.047	0.047
Content	(tU)	1,431	1,440	1,303	524	27,882	554	1,108	1,108	1,387
Product	(tU)	1,221	1,242	1,132	454	24,195	480	960	960	1,201
Overall Recovery	(%)	85.4	86.2	86.9	86.7	86.8	86.6	86.6	86.6	86.6
<b>Sales</b>										
Final Product	(tU)	1,201	1,218	1,130	518	24,608	680	958	961	1,147
Final Product	(MlbU)	2.65	2.69	2.49	1.14	54.25	1.50	2.11	2.12	2.53
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.12	3.17	2.94	1.35	63.98	1.77	2.49	2.50	2.98
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					36.41	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	36.25	22.54	21.70	21.73	35.14	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,058	7,702	7,076	7,093	11,947	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	25,149.0	24,388.1	20,788.9	9,545.3	764,318.9	15,140.7	22,733.7	23,608.2	28,585.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(6,780.0)	(6,849.0)	(6,272.6)	(2,987.9)	(159,403.7)	(3,273.5)	(6,611.6)	(6,597.0)	(7,551.0)
Processing	(KZTm)	(1,438.4)	(1,497.1)	(1,892.5)	(1,098.0)	(50,159.2)	(1,063.8)	(2,143.4)	(2,148.0)	(2,231.6)
G&A	(KZTm)	(919.8)	(1,082.2)	(1,090.0)	(588.3)	(26,330.4)	(564.5)	(1,140.9)	(1,140.9)	(1,140.9)
MET	(KZTm)	(3,001.1)	(3,170.8)	(2,690.1)	(1,053.1)	(68,818.0)	(1,317.2)	(2,699.6)	(2,708.2)	(3,306.8)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(37.3)	(37.9)	(32.5)	(12.8)	(685.6)	(13.0)	(25.9)	(25.9)	(32.5)
Toll Refining	(KZTm)	(1,667.6)	(1,779.1)	(1,593.4)	(658.3)	(35,266.1)	(711.8)	(1,423.6)	(1,423.6)	(1,781.1)
Retrenchment	(KZTm)	-	-	-	-	(82.7)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,844.2)</b>	<b>(14,416.1)</b>	<b>(13,571.1)</b>	<b>(6,398.4)</b>	<b>(340,745.7)</b>	<b>(6,943.9)</b>	<b>(14,045.1)</b>	<b>(14,043.6)</b>	<b>(16,043.8)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>11,304.8</b>	<b>9,972.0</b>	<b>7,217.8</b>	<b>3,146.9</b>	<b>423,573.1</b>	<b>8,196.8</b>	<b>8,688.5</b>	<b>9,564.6</b>	<b>12,541.4</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,475.2)	(2,608.9)	(2,364.4)	(1,158.0)	(69,542.3)	(1,466.8)	(2,890.0)	(3,283.4)	(4,529.4)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(690.4)	(985.9)	(469.8)	(39.0)	(11,931.6)	(556.9)	(377.3)	(315.9)	(605.2)
Liqdn Fund/Closure	(KZTm)	(105.5)	(133.9)	(136.7)	(36.8)	(8,873.6)	(71.2)	(145.9)	(146.4)	(178.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,271.2)</b>	<b>(3,728.8)</b>	<b>(2,970.9)</b>	<b>(1,233.8)</b>	<b>(90,347.5)</b>	<b>(2,095.0)</b>	<b>(3,413.2)</b>	<b>(3,745.1)</b>	<b>(5,313.4)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,436	4,553	4,619	4,755	5,326	3,925	5,638	5,623	5,380
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,474	3,551	3,703	3,972	4,250	3,181	4,554	4,539	4,271
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,450	5,688	5,584	5,644	6,600	5,069	6,949	7,064	7,102
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	19.96	13.32	14.16	14.56	15.66	11.54	16.58	16.54	15.82
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.63	10.39	11.36	12.17	12.50	9.35	13.39	13.35	12.56
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	24.52	16.64	17.12	17.29	19.41	14.91	20.44	20.78	20.89

**Table 13-51: Semizbai-U LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
Grade	(%U)	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
Content	(tU)	1,387	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386
Product	(tU)	1,201	1,201	1,201	1,201	1,201	1,201	1,201	1,201	1,201
Overall Recovery	(%)	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6
<b>Sales</b>										
Final Product	(tU)	1,201	1,201	1,201	1,200	1,201	1,201	1,201	1,200	1,201
Final Product	(MlbU)	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	29,748.8	29,811.2	30,649.6	31,818.0	34,124.8	36,620.9	37,331.2	38,351.4	38,664.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,439.4)	(7,436.7)	(7,435.7)	(7,435.1)	(7,434.7)	(7,434.5)	(7,434.3)	(7,434.2)	(7,434.2)
Processing	(KZTm)	(2,235.6)	(2,234.9)	(2,233.7)	(2,233.0)	(2,232.6)	(2,232.4)	(2,232.1)	(2,232.0)	(2,232.0)
G&A	(KZTm)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)
MET	(KZTm)	(3,225.4)	(3,200.9)	(3,186.8)	(3,180.0)	(3,178.9)	(3,179.1)	(3,179.2)	(3,183.7)	(3,189.2)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(32.5)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)
Toll Refining	(KZTm)	(1,781.1)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(15,854.9)</b>	<b>(15,826.2)</b>	<b>(15,809.9)</b>	<b>(15,801.8)</b>	<b>(15,799.9)</b>	<b>(15,799.7)</b>	<b>(15,799.4)</b>	<b>(15,803.6)</b>	<b>(15,809.0)</b>

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>EBITDA</b>	<b>(KZTm)</b>	<b>13,893.9</b>	<b>13,985.0</b>	<b>14,839.6</b>	<b>16,016.2</b>	<b>18,324.8</b>	<b>20,821.2</b>	<b>21,531.7</b>	<b>22,547.8</b>	<b>22,855.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,741.7)	(3,413.3)	(3,392.2)	(3,413.3)	(3,413.3)	(3,413.3)	(3,392.2)	(3,413.3)	(3,413.3)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(439.8)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)
Liqdn Fund/Closure	(KZTm)	(174.3)	(173.0)	(172.3)	(171.9)	(171.8)	(171.8)	(171.9)	(172.1)	(172.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,355.8)</b>	<b>(4,216.9)</b>	<b>(4,195.0)</b>	<b>(4,215.8)</b>	<b>(4,215.7)</b>	<b>(4,215.8)</b>	<b>(4,194.6)</b>	<b>(4,216.0)</b>	<b>(4,216.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,076	5,069	5,061	5,065	5,061	5,061	5,058	5,066	5,064
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,043	4,044	4,041	4,046	4,043	4,043	4,040	4,045	4,043
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,415	6,364	6,349	6,361	6,357	6,357	6,346	6,362	6,360
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.93	14.91	14.89	14.90	14.89	14.89	14.88	14.90	14.89
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.89	11.89	11.89	11.90	11.89	11.89	11.88	11.90	11.89
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.87	18.72	18.67	18.71	18.70	18.70	18.66	18.71	18.70

**Table 13-52: Semizbai-U LLP (100%) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	2.96	2.96	2.96	2.96	2.96	2.63	2.42	2.22	1.59
Grade	(%U)	0.047	0.047	0.047	0.047	0.047	0.046	0.045	0.044	0.043
Content	(tU)	1,386	1,386	1,386	1,386	1,386	1,201	1,083	965	689
Product	(tU)	1,201	1,201	1,201	1,201	1,201	1,046	947	849	606
Overall Recovery	(%)	86.6	86.6	86.6	86.6	86.6	87.1	87.4	87.9	88.0
<b>Sales</b>										
Final Product	(tU)	1,201	1,201	1,200	1,201	1,201	1,081	968	871	660
Final Product	(MibU)	2.65	2.65	2.65	2.65	2.65	2.38	2.14	1.92	1.46
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	3.12	3.12	3.12	3.12	3.12	2.81	2.52	2.26	1.72
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	40,517.2	42,571.0	44,425.4	44,633.4	44,584.6	40,133.9	35,959.7	32,323.2	24,505.6
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,434.2)	(7,434.1)	(7,434.1)	(7,434.1)	(7,433.6)	(6,903.7)	(6,566.8)	(6,229.1)	(5,425.0)
Processing	(KZTm)	(2,232.0)	(2,231.9)	(2,231.9)	(2,231.9)	(2,231.2)	(2,199.7)	(2,179.0)	(2,157.7)	(2,065.6)
G&A	(KZTm)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)	(1,140.9)
MET	(KZTm)	(3,195.7)	(3,201.4)	(3,211.5)	(3,223.8)	(3,287.6)	(2,995.2)	(2,816.5)	(2,651.2)	(2,239.5)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(32.4)	(23.5)
Toll Refining	(KZTm)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,780.3)	(1,470.4)	(1,273.6)	(1,076.6)	(762.5)
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(15,815.5)</b>	<b>(15,821.1)</b>	<b>(15,831.2)</b>	<b>(15,843.5)</b>	<b>(15,906.1)</b>	<b>(14,742.4)</b>	<b>(14,009.2)</b>	<b>(13,288.0)</b>	<b>(11,657.0)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>24,701.7</b>	<b>26,749.8</b>	<b>28,594.2</b>	<b>28,789.9</b>	<b>28,678.6</b>	<b>25,391.5</b>	<b>21,950.5</b>	<b>19,035.2</b>	<b>12,848.6</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,413.3)	(3,392.2)	(3,413.3)	(3,413.3)	(3,413.3)	(2,928.8)	(2,652.5)	(2,351.7)	(1,387.8)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(630.6)	(177.9)	-
Liqdn Fund/Closure	(KZTm)	(172.7)	(173.0)	(173.6)	(174.3)	(177.7)	(161.9)	(152.2)	(143.3)	(121.1)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,216.7)</b>	<b>(4,195.8)</b>	<b>(4,217.5)</b>	<b>(4,218.2)</b>	<b>(4,221.6)</b>	<b>(3,721.3)</b>	<b>(3,435.3)</b>	<b>(2,672.9)</b>	<b>(1,508.8)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,066	5,065	5,074	5,075	5,095	5,246	5,564	5,871	6,794
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,043	4,040	4,045	4,043	4,042	4,180	4,445	4,700	5,489
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	6,362	6,353	6,371	6,371	6,391	6,513	6,868	6,989	7,603
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.90	14.90	14.92	14.93	14.99	15.43	16.36	17.27	19.98
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.89	11.88	11.90	11.89	11.89	12.30	13.07	13.82	16.14
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.71	18.68	18.74	18.74	18.80	19.16	20.20	20.56	22.36

**Table 13-53: Semizbai-U LLP (100%) Forecast (2040 through 2041)**

Statistic	Units	2040	2041
<b>Production</b>			
Mining	(Mt)	0.70	0.18
Grade	(%U)	0.044	0.041
Content	(tU)	305	76
Product	(tU)	268	67
Overall Recovery	(%)	87.8	88.8
<b>Sales</b>			
Final Product	(tU)	355	116
Final Product	(MibU)	0.78	0.26
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	0.92	0.30
<b>Macro-Economics</b>			
Exchange Rate	(KZT:US\$)	340	340
<b>Sales Price</b>			
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,282	14,282
<b>Sales Revenue</b>			
Product	(KZTm)	13,174.5	4,302.6
<b>Operating Expenditure</b>			
Mining	(KZTm)	(4,303.2)	(1,853.8)
Processing	(KZTm)	(1,924.5)	(788.6)
G&A	(KZTm)	(1,140.9)	(665.8)
MET	(KZTm)	(2,079.0)	(1,181.4)

Statistic	Units	2040	2041
Services	(KZTm)	-	-
Distribution	(KZTm)	(10.1)	(3.1)
Toll Refining	(KZTm)	(342.7)	(74.8)
Retrenchment	(KZTm)	(35.0)	(47.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(9,835.6)</b>	<b>(4,615.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>3,338.9</b>	<b>(312.6)</b>
<b>Capital Expenditure</b>			
Well Construction	(KZTm)	-	-
Expansion	(KZTm)	-	-
Sustaining	(KZTm)	-	-
Liqdn Fund/Closure	(KZTm)	(4,193.4)	(1,136.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,193.4)</b>	<b>(1,136.6)</b>
<b>Unit Expenditures</b>			
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	10,662	15,320
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,409	11,398
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	10,662	15,320
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	31.36	45.06
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	24.73	33.52
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	31.36	45.06

**Table 13-54: Semizbai-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>2,761</b>	<b>2,438</b>	<b>2,003</b>	<b>1,674</b>	<b>1,864</b>	<b>1,744</b>	<b>1,759</b>	<b>1,754</b>	<b>2,212</b>
Injection	(No)	2,227	1,911	1,506	1,211	1,358	1,266	1,276	1,273	1,608
Extraction	(No)	534	527	497	463	505	478	482	481	604
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>6.06</b>	<b>6.27</b>	<b>6.01</b>	<b>5.47</b>	<b>5.70</b>	<b>5.64</b>	<b>5.64</b>	<b>5.64</b>	<b>5.67</b>
Mined	(tU)	1,431	1,440	1,303	524	27,882	554	1,108	1,108	1,387
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>31,702</b>	<b>28,510</b>	<b>25,163</b>	<b>10,742</b>	<b>569,882</b>	<b>11,415</b>	<b>22,829</b>	<b>22,829</b>	<b>28,713</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>40.7</b>	<b>45.4</b>	<b>46.6</b>	<b>43.9</b>	<b>44.4</b>	<b>44.0</b>	<b>44.0</b>	<b>44.0</b>	<b>43.7</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,221</b>	<b>1,242</b>	<b>1,128</b>	<b>457</b>	<b>24,195</b>	<b>480</b>	<b>960</b>	<b>960</b>	<b>1,201</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>85.3</b>	<b>86.2</b>	<b>86.5</b>	<b>87.2</b>	<b>86.8</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>
<b>Well Construction</b>	<b>(No)</b>	<b>932</b>	<b>940</b>	<b>647</b>	<b>460</b>	<b>14,030</b>	<b>311</b>	<b>606</b>	<b>576</b>	<b>827</b>
Injection	(No)	478	477	330	291	8,945	194	330	340	489
Extraction	(No)	279	299	208	136	3,642	86	202	182	263
Other	(No)	175	164	109	33	1,443	31	74	54	75

**Table 13-55: Semizbai-U LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>2,212</b>	<b>2,211</b>	<b>2,205</b>	<b>2,211</b>	<b>2,211</b>	<b>2,211</b>	<b>2,205</b>	<b>2,211</b>	<b>2,211</b>
Injection	(No)	1,608	1,607	1,603	1,607	1,607	1,607	1,603	1,607	1,607
Extraction	(No)	604	603	602	603	603	603	602	603	603
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>
Mined	(tU)	1,387	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>28,713</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>
<b>Well Construction</b>	<b>(No)</b>	<b>754</b>	<b>713</b>	<b>709</b>	<b>713</b>	<b>713</b>	<b>713</b>	<b>709</b>	<b>713</b>	<b>713</b>
Injection	(No)	462	462	460	462	462	462	460	462	462
Extraction	(No)	214	177	175	177	177	177	175	177	177
Other	(No)	78	74	74	74	74	74	74	74	74

**Table 13-56: Semizbai-U LLP (100%) Forecast Physical Performance: 2031 through 2039**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Active Wells</b>	<b>(No)</b>	<b>2,211</b>	<b>2,205</b>	<b>2,211</b>	<b>2,211</b>	<b>2,211</b>	<b>1,838</b>	<b>1,609</b>	<b>1,375</b>	<b>975</b>
Injection	(No)	1,607	1,603	1,607	1,607	1,607	1,347	1,188	1,025	728
Extraction	(No)	603	602	603	603	603	490	421	350	247
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.67</b>	<b>5.79</b>	<b>5.91</b>	<b>6.08</b>	<b>6.10</b>
Mined	(tU)	1,386	1,386	1,386	1,386	1,386	1,201	1,083	965	689
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>28,699</b>	<b>23,924</b>	<b>20,892</b>	<b>17,857</b>	<b>12,667</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>43.7</b>	<b>45.7</b>	<b>47.4</b>	<b>49.7</b>	<b>50.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,201</b>	<b>1,046</b>	<b>947</b>	<b>849</b>	<b>606</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>86.6</b>	<b>87.1</b>	<b>87.4</b>	<b>87.9</b>	<b>88.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>713</b>	<b>709</b>	<b>713</b>	<b>713</b>	<b>713</b>	<b>578</b>	<b>498</b>	<b>413</b>	<b>210</b>
Injection	(No)	462	460	462	462	462	379	329	277	145
Extraction	(No)	177	175	177	177	177	140	119	96	45
Other	(No)	74	74	74	74	74	59	50	40	20

**Table 13-57: Semizbai-U LLP (100%) Forecast Physical Performance: 2040 through 2041**

Statistic	Units	2040	2041
<b>Active Wells</b>	<b>(No)</b>	<b>436</b>	<b>98</b>
Injection	(No)	325	75
Extraction	(No)	111	23
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>6.06</b>	<b>6.50</b>
Mined	(tU)	305	76
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>5,678</b>	<b>1,274</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>49.4</b>	<b>55.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>268</b>	<b>67</b>



Statistic	Units	2040	2041
Overall Recovery	(%)	87.8	88.8
Well Construction	(No)	-	-
Injection	(No)	-	-
Extraction	(No)	-	-
Other	(No)	-	-

### 13.4.7 JV Akbastau JSC

**Table 13-58: JV Akbastau JSC (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	2.00	2.22	2.50	1.01	49.58	1.00	2.00	2.00	2.50
Grade	(%U)	0.094	0.092	0.090	0.090	0.089	0.089	0.089	0.089	0.089
Content	(tU)	1,869	2,041	2,241	906	43,895	890	1,779	1,779	2,224
Product	(tU)	1,630	1,778	1,941	789	38,068	772	1,545	1,545	1,931
Overall Recovery	(%)	87.2	87.1	86.6	87.0	86.7	86.8	86.8	86.8	86.8
<b>Sales</b>										
Final Product	(tU)	1,587	1,826	1,946	602	38,609	792	1,540	1,546	1,798
Final Product	(MlbU)	3.50	4.02	4.29	1.33	85.12	1.75	3.40	3.41	3.96
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	4.13	4.75	5.06	1.56	100.38	2.06	4.00	4.02	4.67
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					36.39	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.32	24.99	19.36	21.46	35.11	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,740	8,540	6,314	7,008	11,939	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	36,064.6	40,534.1	31,938.7	10,967.4	1,198,405.1	17,626.2	36,545.3	37,999.7	44,809.3
<b>Operating Expenditure</b>										
Mining	(KZTm)	(5,207.5)	(4,350.5)	(4,543.5)	(1,356.2)	(99,246.2)	(1,927.1)	(3,293.9)	(3,757.7)	(4,840.3)
Processing	(KZTm)	(4,280.0)	(2,308.2)	(2,388.0)	(720.6)	(51,982.8)	(2,436.9)	(2,496.8)	(2,508.5)	(2,605.1)
G&A	(KZTm)	(325.3)	(321.7)	(331.7)	(160.1)	(12,121.1)	(271.6)	(563.3)	(563.3)	(600.2)
MET	(KZTm)	(1,797.5)	(1,818.1)	(1,905.6)	(841.6)	(54,101.8)	(1,049.8)	(1,860.3)	(2,049.7)	(2,621.1)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(324.8)	(259.0)	(220.3)	(143.3)	(6,294.3)	(66.2)	(302.5)	(302.6)	(307.0)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(20.9)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(11,935.1)</b>	<b>(9,057.4)</b>	<b>(9,389.2)</b>	<b>(3,221.8)</b>	<b>(223,767.0)</b>	<b>(5,751.6)</b>	<b>(8,516.8)</b>	<b>(9,181.8)</b>	<b>(10,973.7)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>24,129.5</b>	<b>31,476.7</b>	<b>22,549.5</b>	<b>7,745.7</b>	<b>974,638.1</b>	<b>11,874.6</b>	<b>28,028.6</b>	<b>28,818.0</b>	<b>33,835.6</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,687.1)	(2,640.8)	(3,103.4)	(921.5)	(72,607.0)	(1,265.8)	(2,756.3)	(3,693.7)	(4,141.6)
Expansion	(KZTm)	-	-	-	-	(250.0)	-	(125.0)	(125.0)	-
Sustaining	(KZTm)	(85.9)	(262.4)	(2,485.9)	(393.4)	(8,082.7)	(1,101.4)	(129.5)	(129.5)	(174.5)
Liqdn Fund/Closure	(KZTm)	(89.6)	(136.9)	(143.9)	(1.0)	(6,394.3)	(56.7)	(100.6)	(110.8)	(141.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(2,862.7)</b>	<b>(3,040.2)</b>	<b>(5,733.2)</b>	<b>(1,315.8)</b>	<b>(87,334.0)</b>	<b>(2,424.0)</b>	<b>(3,111.4)</b>	<b>(4,059.0)</b>	<b>(4,457.8)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,892	1,908	1,856	2,059	2,229	2,793	2,127	2,284	2,348
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,457	1,525	1,479	1,521	1,690	2,283	1,662	1,774	1,787
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,564	2,520	2,961	2,899	3,033	3,942	2,847	3,235	3,271
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.01	5.58	5.69	6.31	6.56	8.21	6.25	6.72	6.90
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.05	4.46	4.54	4.66	4.97	6.71	4.89	5.22	5.26
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.04	7.37	9.08	8.88	8.92	11.59	8.37	9.52	9.62

**Table 13-59: JV Akbastau JSC (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Grade	(%U)	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089
Content	(tU)	2,224	2,224	2,224	2,224	2,224	2,224	2,224	2,224	2,224
Product	(tU)	1,931	1,931	1,931	1,931	1,931	1,931	1,931	1,931	1,931
Overall Recovery	(%)	86.8	86.8	86.8	86.8	86.8	86.8	86.8	86.8	86.8
<b>Sales</b>										
Final Product	(tU)	1,931	1,931	1,933	1,929	1,931	1,931	1,933	1,929	1,931
Final Product	(MlbU)	4.26	4.26	4.26	4.25	4.26	4.26	4.26	4.25	4.26
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	47,810.6	47,932.4	49,302.5	51,149.1	54,875.0	58,889.0	60,050.4	61,652.0	62,174.7
<b>Operating Expenditure</b>										
Mining	(KZTm)	(5,259.5)	(5,039.6)	(5,040.2)	(5,040.5)	(5,040.7)	(5,040.8)	(5,040.9)	(5,041.0)	(5,041.0)
Processing	(KZTm)	(2,500.3)	(2,504.9)	(2,505.3)	(2,505.5)	(2,505.6)	(2,505.7)	(2,505.7)	(2,505.8)	(2,505.8)
G&A	(KZTm)	(600.2)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)
MET	(KZTm)	(2,743.6)	(2,697.9)	(2,710.7)	(2,721.9)	(2,731.8)	(2,737.8)	(2,743.4)	(2,749.0)	(2,754.8)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(11,421.7)</b>	<b>(11,126.6)</b>	<b>(11,140.3)</b>	<b>(11,152.0)</b>	<b>(11,162.3)</b>	<b>(11,168.5)</b>	<b>(11,174.3)</b>	<b>(11,180.0)</b>	<b>(11,185.8)</b>

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>EBITDA</b>	<b>(KZTm)</b>	<b>36,388.9</b>	<b>36,805.8</b>	<b>38,162.1</b>	<b>39,997.1</b>	<b>43,712.7</b>	<b>47,720.4</b>	<b>48,876.1</b>	<b>50,472.0</b>	<b>50,988.9</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(4,141.6)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(174.5)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)
Liqdn Fund/Closure	(KZTm)	(148.3)	(145.8)	(146.5)	(147.1)	(147.7)	(148.0)	(148.3)	(148.6)	(148.9)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,464.4)</b>	<b>(4,586.8)</b>	<b>(4,587.5)</b>	<b>(4,588.1)</b>	<b>(4,588.6)</b>	<b>(4,589.9)</b>	<b>(4,589.2)</b>	<b>(4,589.5)</b>	<b>(4,589.8)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,275	2,216	2,217	2,224	2,224	2,225	2,224	2,229	2,228
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,729	1,679	1,678	1,681	1,679	1,679	1,678	1,681	1,679
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,135	3,101	3,101	3,109	3,108	3,109	3,108	3,115	3,113
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.69	6.52	6.52	6.54	6.54	6.54	6.54	6.56	6.55
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	5.08	4.94	4.93	4.94	4.94	4.94	4.94	4.94	4.94
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.22	9.12	9.12	9.14	9.14	9.15	9.14	9.16	9.16

**Table 13-60: JV Akbastau JSC (100%) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	2.50	2.50	2.50	2.50	2.50	2.50	2.22	1.61	0.72
Grade	(%U)	0.089	0.089	0.089	0.089	0.089	0.089	0.087	0.082	0.082
Content	(tU)	2,224	2,224	2,224	2,224	2,224	2,224	1,940	1,329	595
Product	(tU)	1,931	1,931	1,931	1,931	1,931	1,931	1,676	1,130	506
Overall Recovery	(%)	86.8	86.8	86.8	86.8	86.8	86.8	86.4	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	1,931	1,933	1,929	1,931	1,931	1,933	1,923	1,154	891
Final Product	(MlbU)	4.26	4.26	4.25	4.26	4.26	4.26	4.24	2.54	1.96
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.02	5.02	5.02	5.02	5.02	5.02	5.00	3.00	2.32
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	65,154.5	68,479.1	71,416.3	71,773.7	71,695.2	71,761.9	71,396.7	42,842.6	33,068.9
<b>Operating Expenditure</b>										
Mining	(KZTm)	(5,041.0)	(5,041.0)	(5,041.1)	(5,041.1)	(5,041.1)	(5,036.4)	(4,622.6)	(2,914.7)	(2,064.1)
Processing	(KZTm)	(2,505.8)	(2,505.8)	(2,505.8)	(2,505.8)	(2,505.8)	(2,502.9)	(2,188.6)	(1,500.3)	(669.9)
G&A	(KZTm)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(566.1)	(515.1)	(515.1)
MET	(KZTm)	(2,761.2)	(2,768.3)	(2,776.5)	(2,786.4)	(2,798.9)	(2,648.9)	(2,721.0)	(1,483.7)	(1,185.0)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(318.0)	(276.0)	(186.1)	(83.3)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	(2.8)	(18.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(11,192.2)</b>	<b>(11,199.3)</b>	<b>(11,207.5)</b>	<b>(11,217.5)</b>	<b>(11,230.0)</b>	<b>(11,072.4)</b>	<b>(10,374.4)</b>	<b>(6,602.8)</b>	<b>(4,535.5)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>53,962.3</b>	<b>57,279.8</b>	<b>60,208.7</b>	<b>60,556.3</b>	<b>60,465.2</b>	<b>60,689.5</b>	<b>61,022.3</b>	<b>36,239.7</b>	<b>28,533.4</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(3,985.7)	(2,397.0)	(2,397.0)	-	-
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)	(455.2)	-	-	-
Liqdn Fund/Closure	(KZTm)	(149.2)	(149.6)	(150.1)	(150.6)	(151.3)	(143.2)	(147.1)	(80.2)	(3,534.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,590.2)</b>	<b>(4,590.6)</b>	<b>(4,591.0)</b>	<b>(4,591.5)</b>	<b>(4,592.2)</b>	<b>(2,995.4)</b>	<b>(2,544.0)</b>	<b>(80.2)</b>	<b>(3,534.0)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,230	2,229	2,235	2,235	2,237	2,204	2,075	2,201	1,959
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,680	1,678	1,681	1,680	1,680	1,676	1,531	1,707	1,447
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,114	3,113	3,120	3,119	3,122	2,771	2,555	2,201	1,959
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.56	6.56	6.57	6.57	6.58	6.48	6.10	6.47	5.76
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	4.94	4.94	4.94	4.94	4.94	4.93	4.50	5.02	4.26
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.16	9.16	9.18	9.17	9.18	8.15	7.51	6.47	5.76

**Table 13-61: JV Akbastau JSC (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>776</b>	<b>905</b>	<b>1,108</b>	<b>1,277</b>	<b>908</b>	<b>1,078</b>	<b>962</b>	<b>959</b>	<b>962</b>
Injection	(No)	563	668	832	959	672	800	712	710	712
Extraction	(No)	212	237	276	318	236	279	250	249	250
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>5.52</b>	<b>6.21</b>	<b>6.57</b>	<b>4.92</b>	<b>5.75</b>	<b>4.79</b>	<b>5.21</b>	<b>5.30</b>	<b>5.87</b>
Mined	(tU)	1,869	2,041	2,241	906	43,895	890	1,779	1,779	2,224
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>9,746</b>	<b>12,496</b>	<b>15,138</b>	<b>6,839</b>	<b>245,376</b>	<b>5,650</b>	<b>10,926</b>	<b>11,106</b>	<b>12,293</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>168.4</b>	<b>143.4</b>	<b>130.0</b>	<b>116.6</b>	<b>159.9</b>	<b>140.9</b>	<b>145.8</b>	<b>143.4</b>	<b>161.9</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>1,630</b>	<b>1,778</b>	<b>1,941</b>	<b>789</b>	<b>38,068</b>	<b>772</b>	<b>1,545</b>	<b>1,545</b>	<b>1,931</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>87.2</b>	<b>87.1</b>	<b>86.6</b>	<b>87.0</b>	<b>86.7</b>	<b>86.8</b>	<b>86.8</b>	<b>86.8</b>	<b>86.8</b>
<b>Well Construction</b>	<b>(No)</b>	<b>228</b>	<b>270</b>	<b>235</b>	<b>146</b>	<b>5,879</b>	<b>93</b>	<b>221</b>	<b>330</b>	<b>335</b>
Injection	(No)	156	181	153	93	4,029	56	141	224	224
Extraction	(No)	68	74	72	50	1,453	31	65	88	88
Other	(No)	4	15	10	3	398	7	15	18	23

**Table 13-62: JV Akbastau JSC (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>962</b>	<b>959</b>	<b>962</b>	<b>962</b>	<b>962</b>	<b>959</b>	<b>962</b>	<b>962</b>	<b>962</b>
Injection	(No)	712	710	712	712	712	710	712	712	712
Extraction	(No)	250	249	250	250	250	249	250	250	250
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>	<b>5.87</b>

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mined	(tU)	2,224	2,224	2,224	2,224	2,224	2,224	2,224	2,224	2,224
PLS Volume	(m <sup>3</sup> )	12,293	12,293	12,293	12,293	12,293	12,293	12,293	12,293	12,293
PLS Grade	(mg/l)	161.9	161.9	161.9	161.9	161.9	161.9	161.9	161.9	161.9
Final Prodn Produced	(tU)	1,931	1,931	1,931	1,931	1,931	1,931	1,931	1,931	1,931
Overall Recovery	(%)	86.8	86.8	86.8	86.8	86.8	86.8	86.8	86.8	86.8
Well Construction	(No)	323	323	323	323	323	323	323	323	323
Injection	(No)	224	224	224	224	224	224	224	224	224
Extraction	(No)	77	77	77	77	77	77	77	77	77
Other	(No)	22	22	22	22	22	22	22	22	22

**Table 13-63: JV Akbastau JSC (100%) Forecast Physical Performance: 2031 through 2039**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
Active Wells	(No)	962	959	962	962	962	959	828	534	239
Injection	(No)	712	710	712	712	712	710	610	388	174
Extraction	(No)	250	249	250	250	250	249	218	145	65
Pumping Rate	(m <sup>3</sup> /h)	5.87	5.87	5.87	5.87	5.87	5.87	5.86	5.84	5.84
Mined	(tU)	2,224	2,224	2,224	2,224	2,224	2,224	1,940	1,329	595
PLS Volume	(m <sup>3</sup> )	12,293	12,293	12,293	12,293	12,293	12,293	10,715	7,110	3,184
PLS Grade	(mg/l)	161.9	161.9	161.9	161.9	161.9	161.9	161.2	163.8	163.8
Final Prodn Produced	(tU)	1,931	1,931	1,931	1,931	1,931	1,931	1,676	1,130	506
Overall Recovery	(%)	86.8	86.8	86.8	86.8	86.8	86.8	86.4	85.0	85.0
Well Construction	(No)	323	323	323	323	323	183	183	-	-
Injection	(No)	224	224	224	224	224	124	124	-	-
Extraction	(No)	77	77	77	77	77	46	46	-	-
Other	(No)	22	22	22	22	22	13	13	-	-

### 13.4.8 Karatau LLP

**Table 13-64: Karatau LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	2.82	2.88	3.23	1.28	59.27	1.42	3.50	3.50	4.38
Grade	(%U)	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
Content	(tU)	2,293	2,342	2,621	1,041	48,139	1,156	2,844	2,844	3,556
Product	(tU)	2,064	2,108	2,359	937	43,325	1,040	2,560	2,560	3,200
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	2,037	2,037	2,378	524	44,162	963	2,340	2,563	2,913
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	4.49	4.49	5.24	1.16	97.36	2.12	5.16	5.65	6.42
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.30	5.30	6.18	1.36	114.81	2.50	6.08	6.66	7.57
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					33.46	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	37.06	23.92	19.60	21.46	32.29	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,236	8,174	6,390	7,006	10,979	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	43,609.8	43,286.2	39,510.4	9,546.4	1,260,546.6	21,426.3	55,510.8	62,990.8	72,610.5
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,469.5)	(6,819.6)	(6,699.3)	(2,060.8)	(115,064.8)	(2,474.6)	(5,626.6)	(5,687.8)	(7,597.9)
Processing	(KZTm)	(6,316.0)	(6,737.7)	(6,515.8)	(2,519.8)	(97,541.6)	(2,252.4)	(5,264.9)	(5,321.1)	(5,894.4)
G&A	(KZTm)	(714.1)	(766.3)	(744.0)	(393.5)	(18,508.8)	(519.9)	(1,051.1)	(1,061.2)	(1,174.9)
MET	(KZTm)	(1,925.1)	(1,747.3)	(2,499.4)	(426.2)	(62,626.4)	(1,403.0)	(3,324.9)	(3,298.8)	(4,309.0)
Services	(KZTm)	2,873.5	3,504.7	3,611.8	1,677.3	77,888.2	1,765.1	3,536.3	3,542.3	3,802.0
Distribution	(KZTm)	(200.3)	(307.5)	(330.0)	(126.7)	(6,205.1)	(94.0)	(438.6)	(488.3)	(471.1)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(329.5)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(13,751.6)</b>	<b>(12,873.7)</b>	<b>(13,176.7)</b>	<b>(3,849.8)</b>	<b>(222,388.1)</b>	<b>(4,978.7)</b>	<b>(12,169.7)</b>	<b>(12,314.9)</b>	<b>(15,645.3)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>29,858.2</b>	<b>30,412.4</b>	<b>26,333.7</b>	<b>5,696.7</b>	<b>1,038,158.6</b>	<b>16,447.6</b>	<b>43,341.0</b>	<b>50,675.9</b>	<b>56,965.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,108.5)	(3,098.4)	(4,368.9)	(891.7)	(78,899.4)	(1,240.1)	(5,463.5)	(5,698.1)	(6,642.6)
Expansion	(KZTm)	-	-	-	-	(5,165.0)	-	(4,200.7)	(964.3)	-
Sustaining	(KZTm)	(742.5)	(458.9)	(2,558.2)	(601.4)	(16,113.5)	(428.2)	(564.6)	(162.8)	(416.5)
Liqdn Fund/Closure	(KZTm)	(90.7)	(94.6)	(98.5)	(0.2)	(6,303.4)	(63.2)	(165.4)	(164.0)	(215.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,941.6)</b>	<b>(3,651.8)</b>	<b>(7,025.6)</b>	<b>(1,493.3)</b>	<b>(106,481.3)</b>	<b>(1,731.5)</b>	<b>(10,394.3)</b>	<b>(6,989.3)</b>	<b>(7,274.9)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,597	2,431	2,131	2,825	1,937	1,989	2,001	1,848	2,066
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,233	2,101	1,727	2,512	1,392	1,428	1,454	1,353	1,497
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,324	3,103	3,252	3,921	2,765	2,655	2,991	2,728	2,997
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.68	7.11	6.54	8.65	5.63	5.85	5.88	5.44	6.08
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.05	6.15	5.30	7.70	4.09	4.20	4.28	3.98	4.40
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.96	9.08	9.97	12.01	7.98	7.81	8.80	8.02	8.82

**Table 13-65: Karatau LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38
Grade	(%U)	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
Content	(tU)	3,556	3,556	3,556	3,556	3,556	3,556	3,556	3,556	3,556
Product	(tU)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Sales</b>										
Final Product	(tU)	3,200	3,200	3,204	3,196	3,200	3,200	3,204	3,196	3,200
Final Product	(MlbU)	7.05	7.05	7.06	7.05	7.05	7.05	7.06	7.05	7.05
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	8.32	8.32	8.33	8.31	8.32	8.32	8.33	8.31	8.32
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	79,234.5	79,436.3	81,729.7	84,743.6	90,942.0	97,594.3	99,546.7	102,144.6	103,039.6
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,749.7)	(7,749.4)	(7,747.6)	(7,746.5)	(7,746.0)	(7,745.7)	(7,745.5)	(7,745.4)	(7,745.3)
Processing	(KZTm)	(5,780.9)	(5,780.6)	(5,778.9)	(5,777.9)	(5,777.4)	(5,777.1)	(5,776.9)	(5,776.8)	(5,776.8)
G&A	(KZTm)	(1,165.6)	(1,128.6)	(1,128.6)	(1,128.6)	(1,128.6)	(1,128.6)	(1,128.6)	(1,128.6)	(1,128.6)
MET	(KZTm)	(4,292.6)	(4,195.8)	(4,164.5)	(4,160.3)	(4,169.1)	(4,175.1)	(4,184.4)	(4,199.8)	(4,219.2)
Services	(KZTm)	3,802.0	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6
Distribution	(KZTm)	(444.0)	(444.0)	(444.0)	(444.0)	(444.0)	(444.0)	(444.0)	(444.0)	(444.0)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(15,630.8)</b>	<b>(15,497.8)</b>	<b>(15,463.1)</b>	<b>(15,456.9)</b>	<b>(15,464.5)</b>	<b>(15,470.0)</b>	<b>(15,478.9)</b>	<b>(15,494.1)</b>	<b>(15,513.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>63,603.7</b>	<b>63,938.5</b>	<b>66,266.6</b>	<b>69,286.7</b>	<b>75,477.5</b>	<b>82,124.3</b>	<b>84,067.9</b>	<b>86,650.6</b>	<b>87,526.1</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(6,660.6)	(5,913.2)	(5,901.2)	(5,913.2)	(5,913.2)	(5,913.2)	(5,901.2)	(5,913.2)	(5,913.2)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(147.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)
Liqdn Fund/Closure	(KZTm)	(213.2)	(208.0)	(206.3)	(206.1)	(206.5)	(206.8)	(207.3)	(208.2)	(209.2)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,021.0)</b>	<b>(7,149.3)</b>	<b>(7,135.6)</b>	<b>(7,147.4)</b>	<b>(7,147.8)</b>	<b>(7,148.2)</b>	<b>(7,136.7)</b>	<b>(7,149.5)</b>	<b>(7,150.5)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,879	1,863	1,856	1,860	1,859	1,860	1,858	1,865	1,865
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,363	1,359	1,356	1,360	1,358	1,358	1,356	1,359	1,358
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,697	2,697	2,688	2,696	2,693	2,694	2,690	2,700	2,699
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	5.53	5.48	5.46	5.47	5.47	5.47	5.47	5.48	5.48
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	4.01	4.00	3.99	4.00	3.99	3.99	3.99	4.00	3.99
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.93	7.93	7.91	7.93	7.92	7.92	7.91	7.94	7.94

**Table 13-66: Karatau LLP (100%) Forecast (2031 through 2039)<sup>(1)</sup>**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	4.38	2.08	0.61	-	-	-	-	-	-
Grade	(%U)	0.081	0.081	0.081	-	-	-	-	-	-
Content	(tU)	3,556	1,689	495	-	-	-	-	-	-
Product	(tU)	3,200	1,520	445	-	-	-	-	-	-
Overall Recovery	(%)	90.0	90.0	90.0	-	-	-	-	-	-
<b>Sales</b>										
Final Product	(tU)	3,200	2,266	1,117	-	-	-	-	-	-
Final Product	(MlbU)	7.05	5.00	2.46	-	-	-	-	-	-
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	8.32	5.89	2.90	-	-	-	-	-	-
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	-	-	-	-	-	-
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	-	-	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	43.58	43.53	43.53	43.53	43.53	43.53
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	-	-	-	-	-	-
<b>Sales Revenue</b>										
Product	(KZTm)	107,977.9	80,282.0	41,337.0	-	-	-	-	-	-
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,738.5)	(5,806.5)	(4,560.2)	(1,241.1)	(1,241.1)	(1,241.1)	(1,077.1)	(726.3)	(325.1)
Processing	(KZTm)	(5,770.3)	(4,720.3)	(4,038.8)	(2,298.2)	(2,298.2)	(2,298.2)	(2,142.6)	(1,809.7)	(1,429.0)
G&A	(KZTm)	(1,128.6)	(1,128.6)	(1,128.6)	(186.8)	(186.8)	(186.8)	(186.8)	(186.8)	(186.8)
MET	(KZTm)	(4,747.0)	(2,792.5)	(2,275.8)	(535.5)	(562.3)	(598.9)	(514.7)	(346.8)	(156.4)
Services	(KZTm)	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6	3,800.6	3,474.6	2,777.3	1,979.8
Distribution	(KZTm)	(444.0)	(210.9)	(61.8)	-	-	-	-	-	-
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	(329.5)
<b>Total</b>	<b>(KZTm)</b>	<b>(16,027.9)</b>	<b>(10,858.2)</b>	<b>(8,264.6)</b>	<b>(461.0)</b>	<b>(487.8)</b>	<b>(524.3)</b>	<b>(446.6)</b>	<b>(292.4)</b>	<b>(447.1)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>91,950.0</b>	<b>69,423.8</b>	<b>33,072.4</b>	<b>(461.0)</b>	<b>(487.8)</b>	<b>(524.3)</b>	<b>(446.6)</b>	<b>(292.4)</b>	<b>(447.1)</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(5,913.2)	-	-	-	-	-	-	-	-
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	(1,028.2)	-	-	-
Liqdn Fund/Closure	(KZTm)	(237.7)	(132.0)	(103.9)	(7.6)	(8.8)	(10.3)	(8.7)	(5.9)	(3,308.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,179.0)</b>	<b>(1,160.1)</b>	<b>(1,132.1)</b>	<b>(1,035.8)</b>	<b>(1,036.9)</b>	<b>(1,038.4)</b>	<b>(8.7)</b>	<b>(5.9)</b>	<b>(3,308.4)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,927	1,843	2,847	-	-	-	-	-	-
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,356	1,369	2,063	-	-	-	-	-	-
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,761	2,018	3,201	-	-	-	-	-	-
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	5.67	5.42	8.37	-	-	-	-	-	-
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	3.99	4.03	6.07	-	-	-	-	-	-
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.12	5.93	9.42	-	-	-	-	-	-

<sup>(1)</sup> From 2034 through 2039 inclusive, Karatau LLP continues to provide services on behalf of JV Akbastau JSC.

**Table 13-67: Karatau LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>1,252</b>	<b>1,486</b>	<b>1,588</b>	<b>1,609</b>	<b>1,019</b>	<b>1,025</b>	<b>1,147</b>	<b>1,014</b>	<b>1,232</b>
Injection	(No)	1,038	1,191	1,225	1,226	777	781	874	772	939
Extraction	(No)	214	295	363	383	243	244	273	241	293
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>7.59</b>	<b>5.85</b>	<b>4.83</b>	<b>4.40</b>	<b>10.44</b>	<b>7.10</b>	<b>8.10</b>	<b>9.10</b>	<b>10.10</b>
Mined	(tU)	2,293	2,342	2,621	1,041	48,139	1,156	2,844	2,844	3,556
PLS Volume	(m <sup>3</sup> )	14,255	15,309	15,421	7,019	333,263	7,331	18,573	18,491	24,872
PLS Grade	(mg/l)	142.7	143.7	161.0	134.7	134.0	146.2	142.1	142.7	132.6
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>2,064</b>	<b>2,108</b>	<b>2,359</b>	<b>937</b>	<b>43,325</b>	<b>1,040</b>	<b>2,560</b>	<b>2,560</b>	<b>3,200</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>295</b>	<b>285</b>	<b>457</b>	<b>143</b>	<b>6,464</b>	<b>117</b>	<b>411</b>	<b>425</b>	<b>553</b>
Injection	(No)	211	208	326	101	4,610	81	261	276	374
Extraction	(No)	81	72	131	38	1,637	31	128	130	160
Other	(No)	3	5	-	4	217	5	22	19	19

**Table 13-68: Karatau LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>1,121</b>	<b>1,121</b>	<b>1,118</b>	<b>1,121</b>	<b>1,121</b>	<b>1,121</b>	<b>1,118</b>	<b>1,121</b>	<b>1,121</b>
Injection	(No)	854	854	852	854	854	854	852	854	854
Extraction	(No)	267	267	266	267	267	267	266	267	267
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>
Mined	(tU)	3,556	3,556	3,556	3,556	3,556	3,556	3,556	3,556	3,556
PLS Volume	(m <sup>3</sup> )	24,872	24,872	24,872	24,872	24,872	24,872	24,872	24,872	24,872
PLS Grade	(mg/l)	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>	<b>3,200</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>550</b>	<b>490</b>	<b>489</b>	<b>490</b>	<b>490</b>	<b>490</b>	<b>489</b>	<b>490</b>	<b>490</b>
Injection	(No)	362	362	361	362	362	362	361	362	362
Extraction	(No)	171	113	113	113	113	113	113	113	113
Other	(No)	17	15	15	15	15	15	15	15	15

**Table 13-69: Karatau LLP (100%) Forecast Physical Performance: 2031 through 2033**

Statistic	Units	2031	2032	2033
<b>Active Wells</b>	<b>(No)</b>	<b>1,121</b>	<b>531</b>	<b>156</b>
Injection	(No)	854	405	119
Extraction	(No)	267	126	37
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>11.10</b>	<b>11.10</b>	<b>11.10</b>
Mined	(tU)	3,556	1,689	495
PLS Volume	(m <sup>3</sup> )	24,872	11,814	3,461
PLS Grade	(mg/l)	132.6	132.6	132.6
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>3,200</b>	<b>1,520</b>	<b>445</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>490</b>	-	-
Injection	(No)	362	-	-
Extraction	(No)	113	-	-
Other	(No)	15	-	-

### 13.4.9 JV Zarechnoye JSC

**Table 13-70: JV Zarechnoye JSC (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	1.67	1.70	1.67	0.83	8.05	0.81	1.62	1.62	1.77
Grade	(%U)	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Content	(tU)	1,000	1,021	1,003	498	4,829	485	970	970	1,063
Product	(tU)	800	817	802	398	3,805	382	764	764	837
Overall Recovery	(%)	80.0	80.0	80.0	80.0	78.8	78.8	78.8	78.8	78.8
<b>Sales</b>										
Final Product	(tU)	850	849	849	245	4,228	615	763	765	819
Final Product	(MlbU)	1.87	1.87	1.87	0.54	9.32	1.36	1.68	1.69	1.80
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.21	2.21	2.21	0.64	10.99	1.60	1.98	1.99	2.13
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					28.39	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	35.59	23.48	20.28	20.40	27.39	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	7,909	8,026	6,613	6,660	9,313	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	17,476.3	17,718.0	14,596.9	4,242.9	102,361.7	13,683.8	18,096.0	18,797.6	20,398.8
<b>Operating Expenditure</b>										
Mining	(KZTm)	(3,187.3)	(3,746.3)	(4,728.0)	(1,467.6)	(22,586.7)	(2,220.7)	(4,385.4)	(4,370.1)	(4,727.7)
Processing	(KZTm)	(1,858.1)	(1,948.1)	(1,530.4)	(420.4)	(8,423.1)	(790.3)	(1,580.6)	(1,580.7)	(1,627.8)
G&A	(KZTm)	(511.1)	(602.7)	(555.3)	(248.7)	(3,423.7)	(306.9)	(613.8)	(613.8)	(631.8)
MET	(KZTm)	(2,431.9)	(2,071.1)	(2,239.6)	(712.9)	(13,043.9)	(1,219.3)	(2,395.2)	(2,356.8)	(2,546.7)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(128.8)	(64.9)	(65.0)	(20.7)	(317.2)	(31.9)	(63.7)	(63.7)	(69.8)
Toll Refining	(KZTm)	(889.5)	(938.8)	(905.6)	(448.3)	(4,348.1)	(436.7)	(873.4)	(873.4)	(956.7)
Retrenchment	(KZTm)	-	-	-	-	(133.8)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(9,006.6)</b>	<b>(9,372.0)</b>	<b>(10,024.0)</b>	<b>(3,318.6)</b>	<b>(52,276.6)</b>	<b>(5,005.7)</b>	<b>(9,912.2)</b>	<b>(9,858.6)</b>	<b>(10,560.5)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>8,469.7</b>	<b>8,346.0</b>	<b>4,572.9</b>	<b>924.3</b>	<b>50,085.1</b>	<b>8,678.0</b>	<b>8,183.8</b>	<b>8,939.0</b>	<b>9,838.3</b>



Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,552.8)	(2,884.7)	(3,386.0)	(2,018.6)	(14,167.0)	(2,040.6)	(4,300.9)	(3,904.9)	(3,920.5)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(290.9)	(517.3)	(534.5)	(177.6)	(659.8)	(255.4)	(201.4)	(203.0)	-
Liqdn Fund/Closure	(KZTm)	(9.5)	(10.2)	(10.9)	(2.9)	(2,924.9)	(6.6)	(12.9)	(12.7)	(13.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(3,853.2)</b>	<b>(3,412.2)</b>	<b>(3,931.5)</b>	<b>(2,199.1)</b>	<b>(17,751.7)</b>	<b>(2,302.7)</b>	<b>(4,515.3)</b>	<b>(4,120.6)</b>	<b>(3,934.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,076	4,245	4,541	5,209	4,756	3,131	4,998	4,958	4,963
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,976	3,307	3,527	4,090	3,570	2,368	3,791	3,773	3,766
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,816	5,786	6,318	8,657	6,105	4,567	7,269	7,024	6,805
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.34	12.42	13.93	15.96	13.99	9.21	14.70	14.58	14.60
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.39	9.68	10.82	12.53	10.50	6.97	11.15	11.10	11.08
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	26.17	16.93	19.37	26.51	17.96	13.43	21.38	20.66	20.02

Table 13-71: JV Zarechnoye JSC (100%) Forecast (2022 through 2023)

Statistic	Units	2022	2023
<b>Production</b>			
Mining	(Mt)	1.67	0.57
Grade	(%U)	0.060	0.060
Content	(tU)	1,000	341
Product	(tU)	788	269
Overall Recovery	(%)	78.8	78.8
<b>Sales</b>			
Final Product	(tU)	800	466
Final Product	(MlbU)	1.76	1.03
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.08	1.21
<b>Macro-Economics</b>			
Exchange Rate	(KZT:US\$)	340	340
<b>Sales Price</b>			
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10
Premium/(Discount)	(%)	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548
<b>Sales Revenue</b>			
Product	(KZTm)	19,816.2	11,569.2
<b>Operating Expenditure</b>			
Mining	(KZTm)	(4,458.6)	(2,424.1)
Processing	(KZTm)	(1,593.7)	(1,250.0)
G&A	(KZTm)	(630.5)	(626.8)
MET	(KZTm)	(2,243.6)	(2,282.3)
Services	(KZTm)	-	-
Distribution	(KZTm)	(65.7)	(22.4)
Toll Refining	(KZTm)	(900.4)	(307.4)
Retrenchment	(KZTm)	-	(133.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(9,892.6)</b>	<b>(7,046.9)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>9,923.6</b>	<b>4,522.3</b>
<b>Capital Expenditure</b>			
Well Construction	(KZTm)	-	-
Expansion	(KZTm)	-	-
Sustaining	(KZTm)	-	-
Liqdn Fund/Closure	(KZTm)	(12.1)	(2,866.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(12.1)</b>	<b>(2,866.7)</b>
<b>Unit Expenditures</b>			
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,755	5,816
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,676	3,932
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,755	5,816
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.98	17.11
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.81	11.57
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.98	17.11

Table 13-72: JV Zarechnoye JSC (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>										
Injection	(No)	759	736	730	739	683	776	746	730	812
Extraction	(No)	221	235	231	231	213	242	233	228	254
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>13.57</b>	<b>12.97</b>	<b>12.99</b>	<b>12.50</b>	<b>12.00</b>	<b>12.00</b>	<b>12.00</b>	<b>12.00</b>	<b>12.00</b>
<b>Mined</b>	<b>(tU)</b>	<b>1,000</b>	<b>1,021</b>	<b>1,003</b>	<b>498</b>	<b>4,829</b>	<b>485</b>	<b>970</b>	<b>970</b>	<b>1,063</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>25,181</b>	<b>25,660</b>	<b>25,197</b>	<b>12,023</b>	<b>116,942</b>	<b>12,312</b>	<b>23,475</b>	<b>23,041</b>	<b>25,560</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>33.8</b>	<b>33.9</b>	<b>33.9</b>	<b>35.1</b>	<b>34.8</b>	<b>33.2</b>	<b>34.8</b>	<b>35.5</b>	<b>35.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>800</b>	<b>817</b>	<b>802</b>	<b>398</b>	<b>3,805</b>	<b>382</b>	<b>764</b>	<b>764</b>	<b>837</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>80.0</b>	<b>80.0</b>	<b>80.0</b>	<b>80.0</b>	<b>78.8</b>	<b>78.8</b>	<b>78.8</b>	<b>78.8</b>	<b>78.8</b>
<b>Well Construction</b>										
Injection	(No)	364	372	391	228	1,266	171	360	360	375
Extraction	(No)	155	135	168	82	509	70	145	144	150
Other	(No)	24	15	16	13	84	14	28	21	21

Table 13-73: JV Zarechnoye JSC (100%) Forecast Physical Performance: 2022 through 2023

Statistic	Units	2022	2023
<b>Active Wells</b>			
Injection	(No)	771	263
Extraction	(No)	241	82
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>12.00</b>	<b>12.00</b>
<b>Mined</b>	<b>(tU)</b>	<b>1,000</b>	<b>341</b>

Statistic	Units	2022	2023
PLS Volume	(m <sup>3</sup> )	24,268	8,286
PLS Grade	(mg/l)	34.7	34.7
Final Prodn Produced	(tU)	788	269
Overall Recovery	(%)	78.8	78.8
Well Construction	(No)	-	-
Injection	(No)	-	-
Extraction	(No)	-	-
Other	(No)	-	-

### 13.4.10 JV Katco LLP

**Table 13-74: JV Katco LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	4.39	4.37	3.85	1.83	57.61	1.78	3.45	3.46	4.24
Grade	(%U)	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Content	(tU)	4,562	4,547	4,006	1,906	59,921	1,849	3,586	3,600	4,408
Product	(tU)	4,007	4,003	3,519	1,673	53,929	1,664	3,228	3,240	3,967
Overall Recovery	(%)	87.8	88.0	87.8	87.8	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	4,179	4,059	3,581	1,499	54,428	1,852	3,235	3,240	3,898
Final Product	(MlbU)	9.21	8.95	7.89	3.31	119.99	4.08	7.13	7.14	8.59
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	10.86	10.55	9.31	3.90	141.50	4.81	8.41	8.42	10.13
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					33.07	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	37.23	24.04	21.45	21.50	31.91	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,275	8,215	6,995	7,020	10,851	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	89,908.6	86,680.3	65,118.1	27,365.2	1,535,403.4	41,205.2	76,738.1	79,627.6	97,145.5
<b>Operating Expenditure</b>										
Mining	(KZTm)	(6,712.0)	(6,923.2)	(7,321.2)	(3,761.1)	(130,551.3)	(3,599.2)	(8,927.3)	(8,449.6)	(9,612.0)
Processing	(KZTm)	(7,011.1)	(8,416.5)	(7,854.1)	(2,395.2)	(136,900.5)	(3,857.1)	(7,453.0)	(7,587.2)	(8,686.8)
G&A	(KZTm)	(2,430.6)	(2,388.2)	(2,218.3)	(1,175.0)	(47,796.9)	(1,265.2)	(2,597.5)	(2,665.8)	(2,993.6)
MET	(KZTm)	(5,201.9)	(5,310.5)	(5,240.8)	(2,261.0)	(102,632.2)	(3,595.2)	(7,974.3)	(8,231.1)	(8,683.7)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(244.5)	(264.6)	(295.4)	(121.3)	(6,665.0)	(205.7)	(398.9)	(400.5)	(490.3)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(431.4)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(21,600.2)</b>	<b>(23,303.0)</b>	<b>(22,929.8)</b>	<b>(9,713.6)</b>	<b>(424,977.3)</b>	<b>(12,522.5)</b>	<b>(27,351.0)</b>	<b>(27,334.2)</b>	<b>(30,466.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>68,308.4</b>	<b>63,377.3</b>	<b>42,188.3</b>	<b>17,651.6</b>	<b>1,110,426.1</b>	<b>28,682.6</b>	<b>49,387.1</b>	<b>52,293.3</b>	<b>66,679.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(10,708.2)	(10,537.8)	(10,251.9)	(3,577.8)	(133,254.8)	(5,414.4)	(17,309.1)	(16,626.4)	(11,599.5)
Expansion	(KZTm)	-	-	-	-	(56,682.3)	-	(5,181.2)	(14,484.7)	(18,025.1)
Sustaining	(KZTm)	(3,247.6)	(2,778.6)	(2,865.9)	(1,865.2)	(42,927.8)	(2,512.7)	(1,079.2)	(3,066.1)	(4,733.4)
Liqdn Fund/Closure	(KZTm)	(693.1)	(761.1)	(768.4)	(787.6)	(7,577.0)	(93.2)	(180.7)	(181.4)	(222.1)
<b>Total</b>	<b>(KZTm)</b>	<b>(14,648.8)</b>	<b>(14,077.5)</b>	<b>(13,886.3)</b>	<b>(6,230.5)</b>	<b>(240,441.8)</b>	<b>(8,020.2)</b>	<b>(23,750.1)</b>	<b>(34,358.6)</b>	<b>(34,580.0)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,988	2,208	2,463	2,492	3,003	2,601	3,252	3,245	3,006
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	1,509	1,705	1,900	1,912	2,278	1,854	2,304	2,268	2,149
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,273	3,471	3,872	3,888	4,248	4,248	5,439	5,583	4,618
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.95	6.46	7.55	7.63	8.83	7.65	9.57	9.54	8.84
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.79	4.99	5.83	5.86	6.70	5.45	6.78	6.67	6.32
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.73	10.15	11.87	11.91	12.50	12.49	16.00	16.42	13.58

**Table 13-75: JV Katco LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	4.27	4.29	4.28	4.14	4.23	4.27	4.27	4.28	4.16
Grade	(%U)	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Content	(tU)	4,445	4,459	4,450	4,308	4,397	4,445	4,446	4,450	4,328
Product	(tU)	4,001	4,013	4,005	3,877	3,958	4,000	4,001	4,005	3,896
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	3,997	4,012	4,007	3,888	3,950	3,996	4,002	4,004	3,906
Final Product	(MlbU)	8.81	8.84	8.83	8.57	8.71	8.81	8.82	8.83	8.61
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	10.39	10.43	10.42	10.11	10.27	10.39	10.41	10.41	10.15
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	98,980.3	99,589.1	102,214.1	103,086.8	112,256.4	121,879.2	124,355.4	127,954.4	125,770.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(8,942.8)	(8,942.1)	(8,911.0)	(8,754.9)	(8,833.2)	(8,876.5)	(8,876.5)	(8,879.7)	(8,761.7)
Processing	(KZTm)	(9,472.8)	(9,466.8)	(9,446.9)	(9,356.5)	(9,402.2)	(9,427.0)	(9,426.8)	(9,428.6)	(9,360.0)
G&A	(KZTm)	(3,192.3)	(3,191.4)	(3,190.5)	(3,189.8)	(3,189.5)	(3,189.4)	(3,189.4)	(3,189.3)	(3,189.3)
MET	(KZTm)	(8,063.7)	(7,538.4)	(6,902.6)	(6,411.7)	(6,226.4)	(6,276.6)	(6,322.7)	(6,405.5)	(6,414.1)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(494.4)	(496.0)	(495.0)	(479.1)	(489.1)	(494.4)	(494.5)	(495.0)	(481.5)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(30,166.0)</b>	<b>(29,634.7)</b>	<b>(28,945.9)</b>	<b>(28,192.0)</b>	<b>(28,140.4)</b>	<b>(28,263.9)</b>	<b>(28,309.8)</b>	<b>(28,398.1)</b>	<b>(28,206.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>68,814.2</b>	<b>69,954.4</b>	<b>73,268.2</b>	<b>74,894.8</b>	<b>84,116.0</b>	<b>93,615.3</b>	<b>96,045.6</b>	<b>99,556.3</b>	<b>97,563.5</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(11,246.4)	(8,889.5)	(7,164.8)	(7,584.0)	(8,060.4)	(8,144.3)	(8,124.0)	(8,156.5)	(7,929.3)
Expansion	(KZTm)	(18,991.3)	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(4,996.5)	(3,317.5)	(3,317.5)	(3,317.5)	(3,317.5)	(3,317.5)	(3,317.5)	(3,317.5)	(3,317.5)
Liqdn Fund/Closure	(KZTm)	(223.9)	(224.6)	(224.2)	(217.0)	(221.5)	(223.9)	(224.0)	(224.2)	(218.1)
<b>Total</b>	<b>(KZTm)</b>	<b>(35,458.2)</b>	<b>(12,431.6)</b>	<b>(10,706.5)</b>	<b>(11,118.6)</b>	<b>(11,599.4)</b>	<b>(11,685.7)</b>	<b>(11,665.5)</b>	<b>(11,698.1)</b>	<b>(11,464.9)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,903	2,841	2,779	2,789	2,740	2,720	2,721	2,728	2,778
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,127	2,119	2,116	2,155	2,134	2,116	2,113	2,113	2,146
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,466	4,012	3,785	3,868	3,848	3,824	3,820	3,831	3,885
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.54	8.36	8.17	8.20	8.06	8.00	8.00	8.02	8.17
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.26	6.23	6.22	6.34	6.28	6.22	6.21	6.21	6.31
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.13	11.80	11.13	11.38	11.32	11.25	11.24	11.27	11.43

Table 13-76: JV Katco LLP (100%) Forecast (2031 through 2033)

Statistic	Units	2031	2032	2033
<b>Production</b>				
Mining	(Mt)	3.33	2.18	0.98
Grade	(%U)	0.104	0.104	0.104
Content	(tU)	3,461	2,265	1,023
Product	(tU)	3,115	2,038	920
Overall Recovery	(%)	90.0	90.0	90.0
<b>Sales</b>				
Final Product	(tU)	3,189	2,140	1,112
Final Product	(MibU)	7.03	4.72	2.45
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	8.29	5.56	2.89
<b>Macro-Economics</b>				
Exchange Rate	(KZT:US\$)	340	340	340
<b>Sales Price</b>				
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40
Premium/(Discount)	(%)	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240
<b>Sales Revenue</b>				
Product	(KZTm)	107,601.6	75,836.3	41,163.5
<b>Operating Expenditure</b>				
Mining	(KZTm)	(7,922.4)	(6,750.9)	(5,511.5)
Processing	(KZTm)	(8,872.6)	(8,190.5)	(7,465.8)
G&A	(KZTm)	(3,189.1)	(3,188.3)	(3,186.4)
MET	(KZTm)	(5,561.4)	(3,902.2)	(4,122.6)
Services	(KZTm)	-	-	-
Distribution	(KZTm)	(385.0)	(251.9)	(113.7)
Toll Refining	(KZTm)	-	-	-
Retrenchment	(KZTm)	-	-	(431.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(25,930.5)</b>	<b>(22,283.8)</b>	<b>(20,831.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>81,671.1</b>	<b>53,552.5</b>	<b>20,332.0</b>
<b>Capital Expenditure</b>				
Well Construction	(KZTm)	(6,335.0)	(462.4)	(208.8)
Expansion	(KZTm)	-	-	-
Sustaining	(KZTm)	-	-	-
Liqdn Fund/Closure	(KZTm)	(174.4)	(114.1)	(4,609.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(6,509.4)</b>	<b>(576.5)</b>	<b>(4,818.5)</b>
<b>Unit Expenditures</b>				
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,128	4,005	7,206
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,457	3,303	5,780
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,892	4,088	7,278
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.20	11.78	21.19
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.23	9.72	17.00
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.45	12.02	21.41

Table 13-77: JV Katco LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>2,985</b>	<b>3,271</b>	<b>3,478</b>	<b>3,679</b>	<b>3,280</b>	<b>3,767</b>	<b>3,848</b>	<b>3,962</b>	<b>3,716</b>
Injection	(No)	2,258	2,503	2,667	2,838	2,499	2,870	2,932	3,019	2,831
Extraction	(No)	727	768	811	841	781	897	916	943	885
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>8.53</b>	<b>8.63</b>	<b>8.52</b>	<b>8.71</b>	<b>8.79</b>	<b>8.44</b>	<b>8.37</b>	<b>8.40</b>	<b>8.55</b>
Mined	(tU)	4,562	4,547	4,006	1,906	59,921	1,849	3,586	3,600	4,408
PLS Volume	(m <sup>3</sup> )	52,062	55,773	57,984	30,511	890,782	32,049	64,388	66,721	63,488
PLS Grade	(mg/l)	76.8	72.3	61.1	55.3	60.8	52.4	50.5	48.9	62.8
Final Prod'n Produced	(tU)	4,007	4,003	3,519	1,673	53,929	1,664	3,228	3,240	3,967
Overall Recovery	(%)	87.8	88.0	87.8	87.8	90.0	90.0	90.0	90.0	90.0
<b>Well Construction</b>	<b>(No)</b>	<b>1,031</b>	<b>1,048</b>	<b>995</b>	<b>349</b>	<b>10,119</b>	<b>412</b>	<b>1,019</b>	<b>1,070</b>	<b>1,207</b>
Injection	(No)	685	689	577	243	6,740	247	603	642	748
Extraction	(No)	229	238	218	92	2,508	87	243	320	375
Other	(No)	117	121	200	14	872	79	173	108	84

Table 13-78: JV Katco LLP (100%) Forecast Physical Performance: 2022 through 2030

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>3,694</b>	<b>3,646</b>	<b>3,602</b>	<b>3,439</b>	<b>3,482</b>	<b>3,520</b>	<b>3,511</b>	<b>3,524</b>	<b>3,428</b>
Injection	(No)	2,814	2,778	2,744	2,620	2,653	2,682	2,675	2,685	2,612
Extraction	(No)	879	868	858	819	829	838	836	839	816

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>8.69</b>	<b>8.79</b>	<b>8.84</b>	<b>8.95</b>	<b>9.00</b>	<b>9.00</b>	<b>9.00</b>	<b>9.00</b>	<b>9.00</b>
Mined	(tU)	4,445	4,459	4,450	4,308	4,397	4,445	4,446	4,450	4,328
PLS Volume	(m <sup>3</sup> )	64,190	64,096	63,831	61,507	62,645	63,321	63,339	63,397	61,664
PLS Grade	(mg/l)	62.6	62.9	63.0	63.3	63.4	63.4	63.4	63.4	63.4
Final Prodn Produced	(tU)	4,001	4,013	4,005	3,877	3,958	4,000	4,001	4,005	3,896
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Well Construction</b>	<b>(No)</b>	<b>674</b>	<b>624</b>	<b>587</b>	<b>629</b>	<b>672</b>	<b>679</b>	<b>677</b>	<b>680</b>	<b>661</b>
Injection	(No)	410	437	418	449	480	485	484	486	473
Extraction	(No)	204	137	131	140	150	152	151	152	148
Other	(No)	60	50	38	40	42	42	42	42	40

**Table 13-79: JV Katco LLP (100%) Forecast Physical Performance: 2031 through 2033**

Statistic	Units	2031	2032	2033
<b>Active Wells</b>	<b>(No)</b>	<b>2,741</b>	<b>1,789</b>	<b>810</b>
Injection	(No)	2,089	1,363	617
Extraction	(No)	653	426	193
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>9.00</b>	<b>9.00</b>	<b>9.00</b>
Mined	(tU)	3,461	2,265	1,023
PLS Volume	(m <sup>3</sup> )	49,313	32,265	14,568
PLS Grade	(mg/l)	63.4	63.4	63.4
Final Prodn Produced	(tU)	3,115	2,038	920
Overall Recovery	(%)	90.0	90.0	90.0
<b>Well Construction</b>	<b>(No)</b>	<b>528</b>	-	-
Injection	(No)	378	-	-
Extraction	(No)	118	-	-
Other	(No)	32	-	-

### 13.4.11 JV Khorassan-U LLP

**Table 13-80: JV Khorassan-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	1.16	1.46	1.70	0.84	39.96	0.83	1.67	1.67	2.08
Grade	(%U)	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107
Content	(tU)	1,234	1,560	1,811	900	42,622	889	1,778	1,778	2,222
Product	(tU)	1,095	1,354	1,564	757	38,140	796	1,591	1,591	1,985
Overall Recovery	(%)	88.7	86.8	86.4	84.1	89.5	89.5	89.5	89.5	89.3
<b>Sales</b>										
Final Product	(tU)	1,109	1,429	1,522	645	38,741	1,232	1,590	1,591	1,943
Final Product	(MlbU)	2.45	3.15	3.36	1.42	85.41	2.72	3.50	3.51	4.28
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.88	3.72	3.96	1.68	100.72	3.20	4.13	4.14	5.05
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					34.12	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	40.36	23.53	21.80	19.29	32.93	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,970	8,041	7,110	6,298	11,195	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	25,863.5	29,876.4	28,138.4	10,560.4	1,127,576.0	27,406.2	37,711.6	39,111.7	48,421.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(4,115.0)	(4,746.3)	(5,422.9)	(2,548.2)	(130,519.4)	(2,796.5)	(5,326.3)	(6,118.2)	(6,920.6)
Processing	(KZTm)	(2,003.9)	(2,173.3)	(2,625.7)	(1,226.3)	(54,338.1)	(1,275.2)	(2,825.6)	(3,212.0)	(3,210.3)
G&A	(KZTm)	(819.5)	(752.0)	(937.6)	(617.4)	(23,028.7)	(565.0)	(1,151.4)	(1,163.5)	(1,257.5)
MET	(KZTm)	(2,306.0)	(2,602.3)	(2,828.0)	(1,518.1)	(78,158.3)	(1,566.3)	(2,851.8)	(3,095.9)	(3,743.9)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(335.8)	(796.2)	(402.1)	(401.7)	(20,238.1)	(422.1)	(844.2)	(844.2)	(1,053.1)
Toll Refining	(KZTm)	(1,128.2)	(1,453.0)	(1,694.9)	(840.5)	(55,040.1)	(832.3)	(1,664.6)	(1,664.6)	(2,073.6)
Retrenchment	(KZTm)	-	-	-	-	(20.2)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(10,708.3)</b>	<b>(12,523.1)</b>	<b>(13,911.2)</b>	<b>(7,152.2)</b>	<b>(361,342.9)</b>	<b>(7,457.4)</b>	<b>(14,664.0)</b>	<b>(16,098.6)</b>	<b>(18,259.0)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>15,155.2</b>	<b>17,353.3</b>	<b>14,227.2</b>	<b>3,408.2</b>	<b>766,233.1</b>	<b>19,948.7</b>	<b>23,047.6</b>	<b>23,013.1</b>	<b>30,162.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,824.2)	(4,217.4)	(6,582.4)	(2,453.8)	(112,626.3)	(2,325.7)	(2,205.0)	(4,900.6)	(6,606.2)
Expansion	(KZTm)	-	-	-	-	(735.8)	-	(552.2)	(183.6)	-
Sustaining	(KZTm)	-	(680.4)	(253.6)	(76.2)	(8,652.2)	(409.2)	(44.1)	(29.1)	(303.1)
Liqdn Fund/Closure	(KZTm)	(66.8)	(272.4)	(182.5)	(4.3)	(5,090.2)	(84.7)	(154.2)	(167.3)	(202.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(2,891.0)</b>	<b>(5,170.2)</b>	<b>(7,018.4)</b>	<b>(2,534.3)</b>	<b>(127,104.5)</b>	<b>(2,819.5)</b>	<b>(2,955.4)</b>	<b>(5,280.6)</b>	<b>(7,111.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,714	3,370	3,515	4,265	3,588	2,329	3,548	3,891	3,615
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,914	2,670	2,800	3,360	2,812	1,840	2,858	3,143	2,874
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,693	4,689	5,242	5,774	4,792	3,183	4,092	5,082	4,983
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.71	9.86	10.78	13.06	10.55	6.85	10.44	11.44	10.63
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.11	7.81	8.59	10.29	8.27	5.41	8.41	9.24	8.45
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.12	13.72	16.08	17.69	14.09	9.36	12.04	14.95	14.66

**Table 13-81: JV Khorassan-U LLP (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	2.40	2.71	3.12	3.12	3.12	3.12	3.12	3.12	2.71
Grade	(%U)	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107
Content	(tU)	2,556	2,889	3,333	3,333	3,333	3,333	3,333	3,333	2,889
Product	(tU)	2,280	2,576	2,970	2,970	2,973	2,978	2,984	2,990	2,600
Overall Recovery	(%)	89.2	89.2	89.1	89.1	89.2	89.3	89.5	89.7	90.0
<b>Sales</b>										

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Final Product	(tU)	2,249	2,545	2,929	2,969	2,973	2,977	2,984	2,988	2,641
Final Product	(MlbU)	4.96	5.61	6.46	6.54	6.55	6.56	6.58	6.59	5.82
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.85	6.62	7.62	7.72	7.73	7.74	7.76	7.77	6.87
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	55,689.9	63,167.2	74,721.8	78,713.5	84,482.1	90,796.2	92,709.5	95,496.8	85,029.1
<b>Operating Expenditure</b>										
Mining	(KZTm)	(7,655.5)	(8,296.7)	(9,096.8)	(9,032.2)	(8,979.1)	(9,000.4)	(9,025.9)	(9,057.5)	(8,237.9)
Processing	(KZTm)	(3,123.4)	(3,315.8)	(3,471.2)	(3,352.0)	(3,254.1)	(3,293.4)	(3,340.4)	(3,398.7)	(3,207.3)
G&A	(KZTm)	(1,265.0)	(1,268.1)	(1,268.3)	(1,263.8)	(1,260.1)	(1,261.6)	(1,263.4)	(1,265.6)	(1,264.0)
MET	(KZTm)	(4,178.9)	(4,613.7)	(5,326.0)	(5,408.7)	(5,468.5)	(5,525.6)	(5,573.9)	(5,767.7)	(5,258.0)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(1,209.9)	(1,366.7)	(1,575.7)	(1,575.7)	(1,577.6)	(1,579.9)	(1,583.1)	(1,586.3)	(1,379.5)
Toll Refining	(KZTm)	(2,381.0)	(2,688.3)	(3,098.0)	(3,098.0)	(3,103.9)	(3,111.6)	(3,121.8)	(3,132.1)	(2,729.7)
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(19,813.6)</b>	<b>(21,549.2)</b>	<b>(23,836.0)</b>	<b>(23,730.5)</b>	<b>(23,643.3)</b>	<b>(23,772.6)</b>	<b>(23,908.5)</b>	<b>(24,207.8)</b>	<b>(22,076.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>35,876.3</b>	<b>41,618.0</b>	<b>50,885.8</b>	<b>54,983.0</b>	<b>60,838.9</b>	<b>67,023.6</b>	<b>68,801.0</b>	<b>71,289.0</b>	<b>62,952.7</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(7,402.1)	(7,873.6)	(9,054.9)	(9,085.7)	(9,085.7)	(9,085.7)	(9,054.9)	(9,085.7)	(7,883.5)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(268.9)	(690.7)	(690.7)	(690.7)	(690.7)	(690.7)	(690.7)	(690.7)	(690.7)
Liqdn Fund/Closure	(KZTm)	(225.9)	(249.4)	(287.9)	(292.4)	(295.6)	(298.7)	(301.3)	(311.8)	(284.2)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,896.9)</b>	<b>(8,813.7)</b>	<b>(10,033.5)</b>	<b>(10,068.8)</b>	<b>(10,072.0)</b>	<b>(10,075.1)</b>	<b>(10,046.9)</b>	<b>(10,088.2)</b>	<b>(8,858.4)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,389	3,257	3,130	3,075	3,059	3,071	3,082	3,116	3,216
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,674	2,560	2,431	2,374	2,352	2,358	2,364	2,374	2,450
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,700	4,552	4,410	4,341	4,324	4,335	4,338	4,375	4,465
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.97	9.58	9.21	9.04	9.00	9.03	9.06	9.17	9.46
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.86	7.53	7.15	6.98	6.92	6.93	6.95	6.98	7.21
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.82	13.39	12.97	12.77	12.72	12.75	12.76	12.87	13.13

Table 13-82: JV Khorassan-U LLP (100%) Forecast (2031 through 2036)

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Production</b>							
Mining	(Mt)	2.29	1.77	1.35	1.08	0.52	0.12
Grade	(%U)	0.107	0.107	0.107	0.107	0.107	0.107
Content	(tU)	2,444	1,889	1,444	1,156	556	133
Product	(tU)	2,200	1,700	1,300	1,040	500	120
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>							
Final Product	(tU)	2,242	1,753	1,341	1,067	556	172
Final Product	(MlbU)	4.94	3.86	2.96	2.35	1.23	0.38
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.83	4.56	3.49	2.77	1.45	0.45
<b>Macro-Economics</b>							
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340
<b>Sales Price</b>							
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282
<b>Sales Revenue</b>							
Product	(KZTm)	75,643.9	62,101.7	49,655.2	39,667.4	20,659.4	6,391.8
<b>Operating Expenditure</b>							
Mining	(KZTm)	(7,418.8)	(6,380.6)	(5,558.1)	(4,960.5)	(3,734.3)	(2,923.5)
Processing	(KZTm)	(3,016.7)	(2,752.2)	(2,555.5)	(2,311.3)	(1,832.1)	(1,591.0)
G&A	(KZTm)	(1,262.4)	(1,259.5)	(1,257.7)	(1,252.2)	(1,241.7)	(1,238.0)
MET	(KZTm)	(4,748.6)	(3,980.9)	(3,328.8)	(2,925.9)	(1,771.0)	(3,024.2)
Services	(KZTm)	-	-	-	-	-	-
Distribution	(KZTm)	(1,167.4)	(902.1)	(689.8)	(551.9)	(265.3)	(63.6)
Toll Refining	(KZTm)	(2,310.0)	(1,785.0)	(5,326.7)	(4,239.6)	(5,455.9)	(3,223.3)
Retrenchment	(KZTm)	-	-	-	-	-	(20.2)
<b>Total</b>	<b>(KZTm)</b>	<b>(19,923.9)</b>	<b>(17,060.2)</b>	<b>(18,716.5)</b>	<b>(16,241.3)</b>	<b>(14,300.4)</b>	<b>(12,083.8)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>55,720.0</b>	<b>45,041.5</b>	<b>30,938.7</b>	<b>23,426.0</b>	<b>6,359.0</b>	<b>(5,692.0)</b>
<b>Capital Expenditure</b>							
Well Construction	(KZTm)	(6,692.3)	(5,164.3)	(3,952.2)	(3,168.3)	-	-
Expansion	(KZTm)	-	-	-	-	-	-
Sustaining	(KZTm)	(690.7)	(690.7)	(690.7)	-	-	-
Liqdn Fund/Closure	(KZTm)	(256.7)	(215.2)	(179.9)	(158.2)	(95.7)	(1,028.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,639.7)</b>	<b>(6,070.2)</b>	<b>(4,822.8)</b>	<b>(3,326.5)</b>	<b>(95.7)</b>	<b>(1,028.8)</b>
<b>Unit Expenditures</b>							
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,419	3,744	5,367	5,854	9,886	27,000
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,604	2,870	4,413	4,799	8,662	20,243
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,685	5,029	6,699	6,996	9,886	27,000
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.05	11.01	15.79	17.22	29.08	79.41
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.66	8.44	12.98	14.12	25.48	59.54
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.78	14.79	19.70	20.58	29.08	79.41

Table 13-83: JV Khorassan-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Active Wells	(No)	819	1,077	1,311	1,386	1,763	1,354	1,387	1,376	1,711



Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Injection	(No)	598	797	976	1,021	1,299	998	1,022	1,014	1,261
Extraction	(No)	221	280	335	365	464	356	365	362	450
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>6.20</b>	<b>6.30</b>	<b>6.20</b>	<b>6.10</b>	<b>6.05</b>	<b>6.20</b>	<b>6.00</b>	<b>6.00</b>	<b>6.05</b>
Mined	(tU)	1,234	1,560	1,811	900	42,622	889	1,778	1,778	2,225
PLS Volume	(m <sup>3</sup> )	11,931	15,362	17,481	9,263	438,833	9,351	18,391	18,291	22,863
PLS Grade	(mg/l)	94.0	92.3	94.2	88.5	88.4	86.6	88.0	88.5	88.5
Final Prodn Produced	(tU)	1,095	1,354	1,564	757	38,140	796	1,591	1,591	1,985
<b>Overall Recovery</b>	<b>(%)</b>	<b>88.7</b>	<b>86.8</b>	<b>86.4</b>	<b>84.1</b>	<b>86.4</b>	<b>89.5</b>	<b>89.5</b>	<b>89.5</b>	<b>89.3</b>
<b>Well Construction</b>	<b>(No)</b>	<b>532</b>	<b>546</b>	<b>706</b>	<b>280</b>	<b>11,053</b>	<b>233</b>	<b>216</b>	<b>478</b>	<b>646</b>
Injection	(No)	236	272	412	175	7,327	145	126	283	408
Extraction	(No)	118	135	214	87	2,748	65	51	143	180
Other	(No)	178	139	80	18	978	23	39	52	58

**Table 13-84: JV Khorassan-U LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>1,968</b>	<b>2,225</b>	<b>2,560</b>	<b>2,567</b>	<b>2,567</b>	<b>2,567</b>	<b>2,560</b>	<b>2,567</b>	<b>2,225</b>
Injection	(No)	1,450	1,639	1,886	1,892	1,892	1,892	1,886	1,892	1,639
Extraction	(No)	518	586	674	676	676	676	674	676	586
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>
Mined	(tU)	2,556	2,889	3,333	3,333	3,333	3,333	3,333	3,333	2,889
PLS Volume	(m <sup>3</sup> )	26,294	29,723	34,296	34,296	34,296	34,296	34,296	34,296	29,723
PLS Grade	(mg/l)	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5
Final Prodn Produced	(tU)	2,280	2,576	2,970	2,970	2,973	2,978	2,984	2,990	2,600
<b>Overall Recovery</b>	<b>(%)</b>	<b>89.2</b>	<b>89.2</b>	<b>89.1</b>	<b>89.1</b>	<b>89.2</b>	<b>89.3</b>	<b>89.5</b>	<b>89.7</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>724</b>	<b>773</b>	<b>889</b>	<b>892</b>	<b>892</b>	<b>892</b>	<b>889</b>	<b>892</b>	<b>774</b>
Injection	(No)	461	521	600	602	602	602	600	602	522
Extraction	(No)	201	186	214	215	215	215	214	215	186
Other	(No)	62	66	75	75	75	75	75	75	66

**Table 13-85: JV Khorassan-U LLP (100%) Forecast Physical Performance: 2031 through 2036**

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Active Wells</b>	<b>(No)</b>	<b>1,883</b>	<b>1,451</b>	<b>1,112</b>	<b>890</b>	<b>428</b>	<b>102</b>
Injection	(No)	1,387	1,069	820	656	315	75
Extraction	(No)	495	382	293	234	113	27
<b>Pumping Rate</b>	<b>(m3/h)</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>
Mined	(tU)	2,444	1,889	1,444	1,156	556	133
PLS Volume	(m <sup>3</sup> )	25,150	19,434	14,862	11,889	5,716	1,371
PLS Grade	(mg/l)	88.5	88.5	88.5	88.5	88.5	88.5
Final Prodn Produced	(tU)	2,200	1,700	1,300	1,040	500	120
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>657</b>	<b>507</b>	<b>388</b>	<b>311</b>	-	-
Injection	(No)	442	341	261	209	-	-
Extraction	(No)	158	122	93	75	-	-
Other	(No)	57	44	34	27	-	-

### 13.4.12 JV SMCC LLP

**Table 13-86: JV SMCC LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	7.85	7.92	7.67	3.30	110.82	3.12	6.25	6.25	7.97
Grade	(%U)	0.043	0.042	0.042	0.043	0.040	0.043	0.043	0.043	0.043
Content	(tU)	3,350	3,362	3,231	1,412	43,958	1,333	2,667	2,667	3,422
Product	(tU)	3,049	3,058	2,937	1,271	39,562	1,200	2,400	2,400	3,080
Overall Recovery	(%)	91.0	91.0	90.9	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	3,039	3,383	2,896	1,063	39,911	1,344	2,398	2,401	3,021
Final Product	(MlbU)	6.70	7.46	6.38	2.34	87.99	2.96	5.29	5.29	6.66
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	7.90	8.80	7.53	2.76	103.76	3.49	6.24	6.24	7.85
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					34.33	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	37.69	23.05	20.85	21.24	33.12	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,377	7,877	6,799	6,935	11,262	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	66,185.3	69,286.5	51,179.3	19,166.6	1,168,580.4	29,904.8	56,895.9	58,996.4	75,285.4
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,283.2)	(12,169.8)	(8,948.6)	(3,468.3)	(149,573.9)	(4,152.1)	(8,283.1)	(9,445.6)	(10,646.0)
Processing	(KZTm)	(8,456.3)	(4,253.0)	(4,419.8)	(1,790.6)	(57,362.9)	(2,087.7)	(4,709.0)	(4,812.8)	(5,490.1)
G&A	(KZTm)	(448.1)	(997.6)	(910.9)	(407.7)	(17,360.5)	(560.9)	(1,150.5)	(1,164.0)	(1,197.8)
MET	(KZTm)	(3,786.3)	(4,157.7)	(4,360.5)	(1,809.6)	(71,759.4)	(1,831.3)	(3,741.8)	(4,170.6)	(4,893.5)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(801.0)	(1,666.6)	(1,057.0)	(855.8)	(21,527.2)	(762.8)	(1,524.3)	(1,538.1)	(1,576.1)
Retrenchment	(KZTm)	-	-	-	-	(326.0)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(22,774.9)</b>	<b>(23,244.8)</b>	<b>(19,696.7)</b>	<b>(8,332.1)</b>	<b>(317,909.9)</b>	<b>(9,394.7)</b>	<b>(19,408.8)</b>	<b>(21,131.1)</b>	<b>(23,803.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>43,410.4</b>	<b>46,041.7</b>	<b>31,482.5</b>	<b>10,834.5</b>	<b>850,670.5</b>	<b>20,510.1</b>	<b>37,487.1</b>	<b>37,865.3</b>	<b>51,482.0</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(3,998.9)	(3,967.1)	(3,961.9)	(1,548.5)	(75,747.5)	(2,123.3)	(4,756.1)	(5,992.3)	(4,935.5)
Expansion	(KZTm)	-	-	-	-	(3,177.4)	(146.5)	(1,492.1)	(1,538.7)	-

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Sustaining	(KZTm)	(3,920.2)	(3,102.9)	(2,761.4)	(210.0)	(22,795.0)	(315.9)	(820.3)	(885.7)	(1,882.1)
Liqdn Fund/Closure	(KZTm)	(138.0)	(87.7)	(858.4)	(108.0)	(12,028.8)	(76.6)	(149.1)	(168.9)	(198.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(8,057.1)</b>	<b>(7,157.7)</b>	<b>(7,581.8)</b>	<b>(1,866.5)</b>	<b>(113,748.8)</b>	<b>(2,662.3)</b>	<b>(7,217.7)</b>	<b>(8,585.5)</b>	<b>(7,016.0)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,883	2,643	2,617	3,015	3,064	2,689	3,113	3,386	3,031
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,403	2,170	2,037	2,360	2,372	2,165	2,513	2,718	2,408
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,885	3,446	3,510	3,651	4,014	3,387	4,007	4,488	3,899
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.97	7.73	8.02	9.23	9.01	7.91	9.16	9.96	8.91
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.81	6.35	6.25	7.23	6.98	6.37	7.39	7.99	7.08
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.48	10.08	10.76	11.18	11.80	9.96	11.79	13.20	11.47

Table 13-87: JV SMCC LLP C (100%) Forecast (2022 through 2030)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	7.67	7.19	6.64	6.12	5.86	5.86	5.86	5.86	5.86
Grade	(%U)	0.042	0.041	0.040	0.039	0.038	0.038	0.038	0.038	0.038
Content	(tU)	3,256	2,978	2,667	2,371	2,222	2,222	2,222	2,222	2,222
Product	(tU)	2,930	2,680	2,400	2,134	2,000	2,000	2,000	2,000	2,000
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	2,943	2,702	2,425	2,168	2,000	2,000	2,000	2,000	2,000
Final Product	(MlbU)	6.49	5.96	5.35	4.78	4.41	4.41	4.41	4.41	4.41
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	7.65	7.02	6.30	5.64	5.20	5.20	5.20	5.20	5.20
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	72,869.3	67,062.9	61,853.4	57,485.6	56,838.8	60,996.4	62,156.2	63,902.7	64,399.7
<b>Operating Expenditure</b>										
Mining	(KZTm)	(10,938.8)	(10,051.1)	(9,561.8)	(9,081.8)	(7,596.6)	(7,596.8)	(7,596.9)	(7,597.0)	(7,597.1)
Processing	(KZTm)	(5,339.0)	(3,906.8)	(3,562.9)	(3,381.5)	(2,360.5)	(2,360.5)	(2,360.5)	(2,360.6)	(2,360.6)
G&A	(KZTm)	(1,208.3)	(1,213.3)	(1,213.3)	(1,213.3)	(820.8)	(820.8)	(820.8)	(820.8)	(820.8)
MET	(KZTm)	(4,893.0)	(4,685.7)	(4,366.4)	(4,705.4)	(3,607.1)	(3,621.9)	(3,636.9)	(3,654.3)	(3,673.8)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(1,565.3)	(1,428.2)	(1,274.6)	(1,128.7)	(1,055.1)	(1,055.1)	(1,055.1)	(1,055.1)	(1,055.1)
Retrenchment	(KZTm)	-	-	-	(129.7)	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(23,944.4)</b>	<b>(21,285.1)</b>	<b>(19,978.9)</b>	<b>(19,640.5)</b>	<b>(15,440.1)</b>	<b>(15,455.2)</b>	<b>(15,470.3)</b>	<b>(15,487.8)</b>	<b>(15,507.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>48,924.8</b>	<b>45,777.8</b>	<b>41,874.4</b>	<b>37,845.1</b>	<b>41,398.7</b>	<b>45,541.2</b>	<b>46,685.8</b>	<b>48,414.9</b>	<b>48,892.3</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(5,029.4)	(6,249.0)	(4,237.1)	(4,243.8)	(4,243.8)	(4,243.8)	(4,237.1)	(4,243.8)	(4,243.8)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(819.3)	(1,874.6)	(1,619.7)	(1,619.7)	(1,619.7)	(1,619.7)	(1,619.7)	(1,619.7)	(1,619.7)
Liqdn Fund/Closure	(KZTm)	(205.7)	(198.4)	(197.2)	(3,635.4)	(195.0)	(195.0)	(196.6)	(197.5)	(198.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(6,054.5)</b>	<b>(8,321.9)</b>	<b>(6,054.0)</b>	<b>(9,499.0)</b>	<b>(6,058.5)</b>	<b>(6,059.3)</b>	<b>(6,053.4)</b>	<b>(6,061.1)</b>	<b>(6,062.1)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,130	3,031	3,169	3,484	2,969	2,972	2,975	2,979	2,982
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,490	2,363	2,477	2,650	2,276	2,276	2,275	2,276	2,276
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,894	4,187	4,098	4,525	4,097	4,100	4,101	4,107	4,110
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.20	8.91	9.32	10.25	8.73	8.74	8.75	8.76	8.77
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.32	6.95	7.28	7.79	6.69	6.69	6.69	6.70	6.69
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.45	12.32	12.05	13.31	12.05	12.06	12.06	12.08	12.09

Table 13-88: JV SMCC LLP (100%) Forecast (2031 through 2036)

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Production</b>							
Mining	(Mt)	5.86	5.86	5.86	5.86	5.86	0.99
Grade	(%U)	0.038	0.038	0.038	0.038	0.038	0.038
Content	(tU)	2,222	2,222	2,222	2,222	2,222	375
Product	(tU)	2,000	2,000	2,000	2,000	2,000	338
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>							
Final Product	(tU)	2,000	2,000	2,000	2,000	2,000	510
Final Product	(MlbU)	4.41	4.41	4.41	4.41	4.41	1.12
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.20	5.20	5.20	5.20	5.20	1.33
<b>Macro-Economics</b>							
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340
<b>Sales Price</b>							
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	41.88	42.05	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,240	14,298	14,282	14,282
<b>Sales Revenue</b>							
Product	(KZTm)	67,486.2	70,880.4	74,023.4	74,342.2	74,260.9	18,939.9
<b>Operating Expenditure</b>							
Mining	(KZTm)	(7,597.1)	(7,597.1)	(7,597.1)	(7,597.2)	(7,573.5)	(1,467.3)
Processing	(KZTm)	(2,360.6)	(2,360.6)	(2,360.6)	(2,360.6)	(2,355.1)	(472.9)
G&A	(KZTm)	(820.8)	(820.8)	(820.8)	(820.8)	(820.8)	(230.7)
MET	(KZTm)	(3,696.8)	(3,724.2)	(3,761.2)	(3,749.1)	(3,631.9)	(1,714.4)
Services	(KZTm)	-	-	-	-	-	-
Distribution	(KZTm)	(1,055.1)	(1,055.1)	(1,055.1)	(1,055.1)	(1,055.1)	(178.1)
Retrenchment	(KZTm)	-	-	-	-	-	(196.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(15,530.4)</b>	<b>(15,557.9)</b>	<b>(15,594.9)</b>	<b>(15,582.9)</b>	<b>(15,436.4)</b>	<b>(4,259.7)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>51,955.7</b>	<b>55,322.5</b>	<b>58,428.5</b>	<b>58,759.4</b>	<b>58,824.5</b>	<b>14,680.1</b>

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Capital Expenditure</b>							
Well Construction	(KZTm)	(4,243.8)	(4,237.1)	(4,243.8)	(4,243.8)	-	-
Expansion	(KZTm)	-	-	-	-	-	-
Sustaining	(KZTm)	(1,619.7)	(1,619.7)	(1,619.7)	-	-	-
Liqdn Fund/Closure	(KZTm)	(199.8)	(201.3)	(203.3)	(202.7)	(196.3)	(5,212.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(6,063.4)</b>	<b>(6,058.1)</b>	<b>(6,066.9)</b>	<b>(4,446.5)</b>	<b>(196.3)</b>	<b>(5,212.3)</b>
<b>Unit Expenditures</b>							
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,987	2,991	3,000	2,997	2,969	3,212
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,276	2,275	2,276	2,276	2,270	1,919
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,115	4,118	4,128	3,813	2,969	3,212
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.78	8.80	8.82	8.81	8.73	9.45
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.69	6.69	6.70	6.69	6.68	5.65
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.10	12.11	12.14	11.22	8.73	9.45

**Table 13-89: JV SMCC LLP (100%) Historical (2014 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Active Wells</b>	<b>(No)</b>	<b>3,280</b>	<b>3,395</b>	<b>3,421</b>	<b>3,279</b>	<b>2,363</b>	<b>2,463</b>	<b>2,595</b>	<b>2,780</b>	<b>3,468</b>
Injection	(No)	2,494	2,583	2,626	2,675	1,760	1,818	1,913	2,048	2,555
Extraction	(No)	786	812	796	604	603	645	682	733	913
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>8.00</b>	<b>7.21</b>	<b>6.55</b>	<b>7.97</b>	<b>7.11</b>	<b>7.06</b>	<b>6.87</b>	<b>6.85</b>	<b>7.26</b>
<b>Mined</b>	<b>(tU)</b>	<b>3,350</b>	<b>3,362</b>	<b>3,231</b>	<b>1,412</b>	<b>43,958</b>	<b>1,333</b>	<b>2,667</b>	<b>2,667</b>	<b>3,422</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>55,086</b>	<b>51,294</b>	<b>45,658</b>	<b>20,348</b>	<b>665,621</b>	<b>19,270</b>	<b>39,298</b>	<b>42,270</b>	<b>55,637</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>56.4</b>	<b>60.6</b>	<b>65.4</b>	<b>63.5</b>	<b>61.0</b>	<b>63.6</b>	<b>62.6</b>	<b>58.2</b>	<b>56.8</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>3,049</b>	<b>3,058</b>	<b>2,937</b>	<b>1,271</b>	<b>39,562</b>	<b>1,200</b>	<b>2,400</b>	<b>2,400</b>	<b>3,080</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>91.0</b>	<b>91.0</b>	<b>90.9</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>934</b>	<b>865</b>	<b>818</b>	<b>368</b>	<b>11,218</b>	<b>295</b>	<b>612</b>	<b>1,081</b>	<b>873</b>
Injection	(No)	646	610	569	257	7,699	202	410	708	550
Extraction	(No)	263	232	217	93	2,672	77	144	276	202
Other	(No)	25	23	32	18	848	17	58	97	121

**Table 13-90: JV SMCC LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Active Wells</b>	<b>(No)</b>	<b>3,338</b>	<b>3,028</b>	<b>2,674</b>	<b>2,351</b>	<b>2,185</b>	<b>2,185</b>	<b>2,179</b>	<b>2,185</b>	<b>2,185</b>
Injection	(No)	2,462	2,241	1,987	1,758	1,639	1,639	1,634	1,639	1,639
Extraction	(No)	876	787	686	594	546	546	545	546	546
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>7.25</b>	<b>7.22</b>	<b>7.18</b>	<b>7.13</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>
<b>Mined</b>	<b>(tU)</b>	<b>3,256</b>	<b>2,978</b>	<b>2,667</b>	<b>2,371</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>53,296</b>	<b>47,722</b>	<b>41,479</b>	<b>35,552</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>56.4</b>	<b>57.6</b>	<b>59.3</b>	<b>61.6</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>2,930</b>	<b>2,680</b>	<b>2,400</b>	<b>2,134</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>829</b>	<b>755</b>	<b>615</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>615</b>	<b>616</b>	<b>616</b>
Injection	(No)	518	496	437	438	438	438	437	438	438
Extraction	(No)	198	169	146	146	146	146	146	146	146
Other	(No)	113	90	32	32	32	32	32	32	32

**Table 13-91: JV SMCC LLP (100%) Forecast Physical Performance: 2031 through 2036**

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Active Wells</b>	<b>(No)</b>	<b>2,185</b>	<b>2,179</b>	<b>2,185</b>	<b>2,185</b>	<b>2,185</b>	<b>368</b>
Injection	(No)	1,639	1,634	1,639	1,639	1,639	276
Extraction	(No)	546	545	546	546	546	92
<b>Pumping Rate</b>	<b>(m<sup>3</sup>/h)</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>
<b>Mined</b>	<b>(tU)</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>2,222</b>	<b>375</b>
<b>PLS Volume</b>	<b>(m<sup>3</sup>)</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>	<b>32,560</b>	<b>5,497</b>
<b>PLS Grade</b>	<b>(mg/l)</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>	<b>63.0</b>
<b>Final Prodn Produced</b>	<b>(tU)</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>338</b>
<b>Overall Recovery</b>	<b>(%)</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>
<b>Well Construction</b>	<b>(No)</b>	<b>616</b>	<b>615</b>	<b>616</b>	<b>616</b>	-	-
Injection	(No)	438	437	438	438	-	-
Extraction	(No)	146	146	146	146	-	-
Other	(No)	32	32	32	32	-	-

### 13.4.13 Baiken-U LLP

**Table 13-92: Baiken-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	1.49	1.83	1.75	0.84	19.99	0.81	1.62	1.62	2.02
Grade	(%U)	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112
Content	(tU)	1,670	2,043	1,958	939	22,352	906	1,811	1,811	2,256
Product	(tU)	1,503	1,838	1,762	849	20,117	815	1,630	1,630	2,030
Overall Recovery	(%)	90.0	90.0	90.0	90.4	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	1,397	2,077	1,882	671	20,380	1,016	1,629	1,630	2,014
Final Product	(MlbU)	3.08	4.58	4.15	1.48	44.93	2.24	3.59	3.59	4.44
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.63	5.40	4.89	1.75	52.98	2.64	4.24	4.24	5.24
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )					31.06	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)					3.50	3.50	3.50	3.50	3.50

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	36.64	26.89	19.71	19.12	29.98	25.17	26.84	27.80	28.19
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,143	9,189	6,426	6,242	10,192	8,559	9,125	9,453	9,586
<b>Sales Revenue</b>										
Product	(KZTm)	29,576.1	49,619.0	31,450.3	10,896.3	539,994.1	22,598.4	38,656.8	40,063.2	50,204.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(4,342.6)	(6,718.3)	(6,132.6)	(2,037.1)	(79,356.1)	(2,975.1)	(5,949.5)	(5,953.7)	(6,717.7)
Processing	(KZTm)	(3,028.3)	(2,964.4)	(4,121.8)	(902.6)	(46,872.4)	(1,405.5)	(2,810.7)	(2,811.9)	(3,056.9)
G&A	(KZTm)	(1,186.5)	(1,410.5)	(1,533.7)	(521.4)	(32,202.2)	(870.3)	(1,740.7)	(1,740.7)	(1,740.7)
MET	(KZTm)	(2,217.1)	(3,406.2)	(3,321.6)	(1,176.3)	(45,163.5)	(1,658.0)	(3,322.3)	(3,287.6)	(3,858.7)
Services	(KZTm)	554.7	908.4	1,030.2	410.4	37,021.7	525.0	1,050.0	1,050.0	1,018.5
Distribution	(KZTm)	(488.1)	(841.4)	(828.3)	(79.6)	(9,798.2)	(397.0)	(793.9)	(793.9)	(988.7)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	(299.8)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(10,707.9)</b>	<b>(14,432.4)</b>	<b>(14,907.8)</b>	<b>(4,306.6)</b>	<b>(176,670.5)</b>	<b>(6,780.9)</b>	<b>(13,567.1)</b>	<b>(13,537.8)</b>	<b>(15,344.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>18,868.1</b>	<b>35,186.6</b>	<b>16,542.6</b>	<b>6,589.7</b>	<b>363,323.6</b>	<b>15,817.5</b>	<b>25,089.8</b>	<b>26,525.4</b>	<b>34,860.0</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(2,613.0)	(4,302.6)	(4,389.5)	(1,589.5)	(46,185.9)	(2,045.9)	(4,115.5)	(4,663.1)	(4,663.1)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(1,377.7)	(2,673.9)	(3,051.3)	(757.4)	(32,912.7)	(1,347.7)	(2,418.2)	(2,011.3)	(2,116.5)
Liqdn Fund/Closure	(KZTm)	(122.9)	(225.4)	(232.7)	(9.0)	(3,070.3)	(91.5)	(183.2)	(181.8)	(212.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,113.6)</b>	<b>(7,201.9)</b>	<b>(7,673.5)</b>	<b>(2,355.8)</b>	<b>(82,168.9)</b>	<b>(3,485.1)</b>	<b>(6,716.9)</b>	<b>(6,856.2)</b>	<b>(6,992.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,948	2,673	3,046	2,467	3,334	2,568	3,203	3,194	2,930
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,338	2,042	2,367	1,793	2,482	1,940	2,418	2,419	2,193
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,047	3,965	4,566	3,812	4,827	3,853	4,745	4,769	4,224
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.27	7.82	9.34	7.56	9.89	7.55	9.42	9.39	8.62
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.52	5.98	7.26	5.49	7.30	5.71	7.11	7.11	6.45
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	18.21	11.60	14.00	11.67	14.18	11.33	13.96	14.03	12.42

Table 13-93: Baiken-U LLP (100%) Forecast (2022 through 2030)

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	2.02	2.02	2.02	2.02	1.79	1.49	1.09	0.70	0.41
Grade	(%U)	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112
Content	(tU)	2,256	2,256	2,256	2,256	2,000	1,667	1,222	778	459
Product	(tU)	2,030	2,030	2,030	2,030	1,800	1,500	1,100	700	413
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
<b>Sales</b>										
Final Product	(tU)	2,030	2,030	2,030	2,030	1,809	1,512	1,116	715	424
Final Product	(MibU)	4.48	4.48	4.48	4.47	3.99	3.33	2.46	1.58	0.93
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	5.28	5.28	5.28	5.28	4.70	3.93	2.90	1.86	1.10
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.01	28.08	28.86	30.00	32.15	34.50	35.15	36.16	36.43
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,524	9,548	9,812	10,199	10,931	11,731	11,951	12,293	12,386
<b>Sales Revenue</b>										
Product	(KZTm)	50,264.4	50,392.4	51,790.1	53,818.7	51,406.5	46,099.4	34,659.7	22,859.5	13,654.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(6,715.8)	(6,714.2)	(6,712.7)	(6,710.4)	(6,267.6)	(5,689.0)	(4,918.2)	(4,147.9)	(3,595.1)
Processing	(KZTm)	(3,056.4)	(3,056.0)	(3,055.6)	(3,055.0)	(2,977.6)	(2,876.4)	(2,741.6)	(2,607.0)	(2,510.4)
G&A	(KZTm)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)
MET	(KZTm)	(3,801.8)	(3,790.6)	(3,791.0)	(3,866.2)	(3,622.1)	(3,287.2)	(2,779.7)	(2,218.1)	(1,795.8)
Services	(KZTm)	1,018.5	1,018.5	1,018.5	1,018.5	1,260.0	1,575.0	1,995.0	2,415.0	2,716.4
Distribution	(KZTm)	(988.7)	(988.7)	(988.7)	(988.7)	(876.7)	(730.6)	(535.8)	(340.9)	(201.2)
Toll Refining	(KZTm)	-	-	-	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(15,284.9)</b>	<b>(15,271.6)</b>	<b>(15,270.2)</b>	<b>(15,342.5)</b>	<b>(14,224.6)</b>	<b>(12,748.8)</b>	<b>(10,721.0)</b>	<b>(8,639.6)</b>	<b>(7,126.7)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>34,979.5</b>	<b>35,120.8</b>	<b>36,519.9</b>	<b>38,476.2</b>	<b>37,181.8</b>	<b>33,350.6</b>	<b>23,938.7</b>	<b>14,219.9</b>	<b>6,527.5</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(4,663.1)	(4,556.0)	(4,537.0)	(4,556.0)	(4,041.3)	(3,367.9)	(2,469.9)	(1,581.1)	(926.1)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(2,155.4)	(2,341.5)	(2,341.5)	(2,341.5)	(2,277.2)	(2,193.3)	(2,081.5)	(1,969.7)	(1,889.4)
Liqdn Fund/Closure	(KZTm)	(209.6)	(208.9)	(208.9)	(213.0)	(199.4)	(180.8)	(152.7)	(121.7)	(98.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(7,028.2)</b>	<b>(7,106.4)</b>	<b>(7,087.5)</b>	<b>(7,110.5)</b>	<b>(6,517.9)</b>	<b>(5,742.1)</b>	<b>(4,704.1)</b>	<b>(3,672.4)</b>	<b>(2,913.9)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,896	2,894	2,893	2,907	3,025	3,244	3,697	4,646	6,465
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,176	2,175	2,175	2,175	2,255	2,408	2,738	3,453	4,836
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,188	4,201	4,196	4,214	4,368	4,659	5,266	6,555	9,018
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.52	8.51	8.51	8.55	8.90	9.54	10.87	13.66	19.01
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.40	6.40	6.40	6.40	6.63	7.08	8.05	10.16	14.22
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.32	12.35	12.34	12.40	12.85	13.70	15.49	19.28	26.52

Table 13-94: Baiken-U LLP (100%) Forecast (2031 through 2036)<sup>(1)</sup>

Statistic	Units	2031	2032	2033	2034	2035	2036
<b>Production</b>							
Mining	(Mt)	0.27	0.11	-	-	-	-
Grade	(%U)	0.112	0.112	-	-	-	-
Content	(tU)	300	121	-	-	-	-
Product	(tU)	270	109	-	-	-	-
Overall Recovery	(%)	90.0	90.0	-	-	-	-
<b>Sales</b>							
Final Product	(tU)	276	119	-	-	-	-
Final Product	(MibU)	0.61	0.26	-	-	-	-
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	0.72	0.31	-	-	-	-
<b>Macro-Economics</b>							

Statistic	Units	2031	2032	2033	2034	2035	2036
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340
<b>Sales Price</b>							
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	-	-	-	-
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.17	40.08	43.40	43.58	43.53	43.53
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	12,979	13,629	14,756	14,816	14,800	14,800
<b>Sales Revenue</b>							
Product	(KZTm)	9,296.3	4,230.4	-	-	-	-
<b>Operating Expenditure</b>							
Mining	(KZTm)	(3,315.5)	(2,973.8)	-	-	-	-
Processing	(KZTm)	(2,301.2)	(2,039.1)	(1,812.1)	(1,683.7)	(1,532.9)	(1,482.6)
G&A	(KZTm)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)	(1,740.7)
MET	(KZTm)	(1,541.0)	(2,543.4)	-	-	-	-
Services	(KZTm)	2,310.0	1,785.0	5,326.7	3,424.3	3,273.6	3,223.3
Distribution	(KZTm)	(131.5)	(53.1)	-	-	-	-
Toll Refining	(KZTm)	-	-	-	-	-	-
Retrenchment	(KZTm)	-	-	(159.5)	-	-	(140.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(6,719.9)</b>	<b>(7,565.0)</b>	<b>1,614.4</b>	<b>-</b>	<b>-</b>	<b>(140.3)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>2,576.5</b>	<b>(3,334.6)</b>	<b>1,614.4</b>	<b>-</b>	<b>-</b>	<b>(140.3)</b>
<b>Capital Expenditure</b>							
Well Construction	(KZTm)	-	-	-	-	-	-
Expansion	(KZTm)	-	-	-	-	-	-
Sustaining	(KZTm)	(1,849.5)	(1,804.4)	(1,774.0)	-	-	-
Liqdn Fund/Closure	(KZTm)	(83.9)	(138.1)	-	-	-	(585.7)
<b>Total</b>	<b>(KZTm)</b>	<b>(1,933.3)</b>	<b>(1,942.5)</b>	<b>(1,774.0)</b>	<b>-</b>	<b>-</b>	<b>(585.7)</b>
<b>Unit Expenditures</b>							
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,382	24,371	-	-	-	-
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	7,230	16,178	-	-	-	-
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	11,964	30,185	-	-	-	-
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	27.59	71.68	-	-	-	-
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	21.27	47.58	-	-	-	-
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	35.19	88.78	-	-	-	-

(1) From 2033 through 2036 inclusive, Baiken-U LLP continues to provide processing services on behalf of JV Khorassan LLP.

**Table 13-95: Baiken-U LLP (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021) Physical Performance**

Statistic	Units	2015	2016	2017	H1 2018	Total	H2 2018	2019	2020	2021
Active Wells	(No)	1,027	1,220	1,447	1,402	1,212	1,469	1,434	1,430	1,753
Injection	(No)	751	905	1,072	1,033	893	1,083	1,057	1,054	1,292
Extraction	(No)	276	315	376	369	319	387	377	376	461
Pumping Rate	(m <sup>3</sup> /h)	6.60	6.70	6.22	7.60	6.28	6.10	6.30	6.30	6.30
Mined	(tU)	1,670	2,043	1,958	939	22,352	906	1,811	1,811	2,256
PLS Volume	(m <sup>3</sup> )	15,280	18,905	21,484	11,273	242,721	9,982	19,964	19,964	24,399
PLS Grade	(mg/l)	99.5	98.7	83.2	75.6	85.4	84.2	84.2	84.2	85.8
Final Prodn Produced	(tU)	1,503	1,838	1,762	849	20,117	815	1,630	1,630	2,030
Overall Recovery	(%)	90.0	90.0	90.0	90.4	90.0	90.0	90.0	90.0	90.0
Well Construction	(No)	416	476	777	231	4,946	219	450	498	498
Injection	(No)	197	287	348	130	3,284	145	272	329	329
Extraction	(No)	107	121	145	64	1,232	55	117	129	129
Other	(No)	112	68	284	37	430	19	61	40	40

**Table 13-96: Baiken-U LLP (100%) Forecast Physical Performance: 2022 through 2030**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Wells	(No)	1,753	1,753	1,748	1,753	1,554	1,295	947	605	357
Injection	(No)	1,292	1,292	1,288	1,292	1,145	954	698	445	263
Extraction	(No)	461	461	460	461	409	341	249	159	94
Pumping Rate	(m <sup>3</sup> /h)	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30
Mined	(tU)	2,256	2,256	2,256	2,256	2,000	1,667	1,222	778	459
PLS Volume	(m <sup>3</sup> )	24,399	24,399	24,399	24,399	21,635	18,029	13,221	8,413	4,964
PLS Grade	(mg/l)	85.8	85.8	85.8	85.8	85.8	85.8	85.8	85.8	85.8
Final Prodn Produced	(tU)	2,030	2,030	2,030	2,030	1,800	1,500	1,100	700	413
Overall Recovery	(%)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
Well Construction	(No)	498	487	485	487	432	360	264	169	99
Injection	(No)	329	329	328	329	292	243	178	114	67
Extraction	(No)	129	118	117	118	104	87	64	41	24
Other	(No)	40	40	40	40	36	30	22	14	8

**Table 13-97: Baiken-U LLP (100%) Forecast Physical Performance: 2031 through 2032**

Statistic	Units	2031	2032
Active Wells	(No)	233	94
Injection	(No)	172	69
Extraction	(No)	61	25
Pumping Rate	(m <sup>3</sup> /h)	6.30	6.30
Mined	(tU)	300	121
PLS Volume	(m <sup>3</sup> )	3,245	1,310
PLS Grade	(mg/l)	85.77	85.77
Final Prodn Produced	(tU)	270	109
Overall Recovery	(%)	90.0	90.0
Well Construction	(No)	-	-
Injection	(No)	-	-
Extraction	(No)	-	-
Other	(No)	-	-



### 13.4.14 Total Mining Subsidiaries

**Table 13-98: Total Mining Subsidiaries (100%) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	2018H1	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	44.22	45.79	43.12	20.07	884.68	19.87	41.85	42.02	52.37
Grade	(%U)	0.061	0.061	0.061	0.061	0.061	0.062	0.061	0.061	0.061
Content	(tU)	26,778	27,817	26,354	12,325	531,720	12,255	25,728	25,735	31,983
Product	(tU)	23,607	24,586	23,321	10,905	467,333	10,831	22,719	22,722	28,242
Overall Recovery	(%)	88.2	88.4	88.5	88.5	87.9	88.4	88.3	88.3	88.3
<b>Sales</b>										
Final Product	(tU)	22,529	23,556	23,164	8,961	474,578	12,168	22,265	22,732	26,611
Final Product	(MlbU)	49.67	51.93	51.07	19.76	1,046.27	26.82	49.08	50.12	58.67
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	58.57	61.24	60.22	23.30	1,233.81	31.63	57.88	59.10	69.18
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.32	25.72	21.31	21.18	35.35	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)	2.39	2.56	2.51	2.10	3.01	2.95	2.88	2.88	2.93
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.38	25.06	20.78	20.73	34.29	25.32	27.01	27.98	28.36
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,531	8,566	6,776	6,769	11,657	8,607	9,183	9,514	9,642
<b>Sales Revenue</b>										
Product	(KZTm)	499,659.8	524,571.9	408,047.2	157,708.6	14,383,107.0	272,280.4	531,556.4	562,267.5	667,083.5
<b>Operating Expenditure</b>										
Mining	(KZTm)	(79,433.6)	(87,565.9)	(83,458.6)	(34,707.0)	(1,699,790.2)	(41,451.9)	(86,623.7)	(87,996.2)	(102,099.4)
Processing	(KZTm)	(54,278.9)	(51,480.9)	(51,992.1)	(20,060.5)	(1,027,319.5)	(25,259.6)	(50,745.6)	(51,208.9)	(55,583.7)
G&A	(KZTm)	(21,942.0)	(22,406.3)	(19,382.7)	(8,135.0)	(392,496.1)	(11,140.8)	(21,571.6)	(21,415.8)	(22,707.8)
MET	(KZTm)	(37,018.5)	(38,754.9)	(40,441.6)	(16,504.7)	(928,997.7)	(21,901.9)	(46,650.5)	(47,691.3)	(55,251.3)
Services	(KZTm)	3,428.2	4,413.1	4,642.0	2,087.7	114,909.9	2,290.1	4,586.3	4,592.3	4,820.5
Distribution	(KZTm)	(3,970.1)	(6,439.6)	(5,511.9)	(2,645.0)	(198,572.3)	(2,878.8)	(7,759.9)	(8,493.7)	(9,411.6)
Toll Refining	(KZTm)	(7,372.3)	(8,175.0)	(7,440.0)	(3,655.5)	(147,120.6)	(3,584.9)	(7,194.5)	(7,109.5)	(8,687.4)
Retrenchment	(KZTm)	-	-	-	-	(2,754.0)	(8.8)	-	(45.5)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(200,587.2)</b>	<b>(210,409.5)</b>	<b>(203,584.9)</b>	<b>(83,620.1)</b>	<b>(4,282,141)</b>	<b>(103,936.6)</b>	<b>(215,959.6)</b>	<b>(219,368.6)</b>	<b>(248,920.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>299,072.6</b>	<b>314,162.4</b>	<b>204,462.3</b>	<b>74,088.5</b>	<b>10,100,966.4</b>	<b>168,343.8</b>	<b>315,596.8</b>	<b>342,898.9</b>	<b>418,162.9</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(47,014.3)	(50,778.0)	(55,917.8)	(22,233.3)	(1,206,365.8)	(28,989.9)	(69,946.6)	(77,895.1)	(76,102.9)
Expansion	(KZTm)	-	-	-	-	(84,057.8)	(868.3)	(22,847.3)	(23,325.7)	(18,025.1)
Sustaining	(KZTm)	(16,461.5)	(19,688.4)	(25,534.6)	(8,221.8)	(282,709.2)	(11,785.4)	(13,878.3)	(12,330.9)	(15,389.3)
Liqdn Fund/Closure	(KZTm)	(2,923.4)	(2,491.8)	(3,609.1)	(44.8)	(86,520.9)	(978.2)	(1,997.5)	(4,575.9)	(2,363.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(66,399.2)</b>	<b>(72,958.2)</b>	<b>(85,061.4)</b>	<b>(30,499.9)</b>	<b>(1,659,653.6)</b>	<b>(42,621.8)</b>	<b>(108,669.8)</b>	<b>(118,127.7)</b>	<b>(111,880.6)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,425	3,436	3,381	3,589	3,471	3,286	3,731	3,712	3,598
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,793	2,803	2,709	2,881	2,718	2,593	2,925	2,905	2,799
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,508	4,586	4,733	4,896	4,678	4,575	5,179	5,239	4,921
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	15.41	10.05	10.37	10.99	10.21	9.66	10.97	10.92	10.58
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	12.57	8.20	8.31	8.82	7.99	7.63	8.60	8.54	8.23
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	20.29	13.42	14.51	15.00	13.76	13.45	15.23	15.41	14.47

**Table 13-99: Mining Subsidiaries (100%) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	52.32	50.69	49.43	47.11	46.11	45.34	44.94	44.55	43.11
Grade	(%U)	0.061	0.062	0.063	0.064	0.064	0.064	0.064	0.063	0.063
Content	(tU)	32,124	31,423	31,040	30,102	29,609	29,168	28,725	28,284	27,121
Product	(tU)	28,372	27,810	27,497	26,653	26,213	25,820	25,428	25,037	24,004
Overall Recovery	(%)	88.3	88.5	88.6	88.5	88.5	88.5	88.5	88.5	88.5
<b>Sales</b>										
Final Product	(tU)	28,363	28,103	27,660	27,155	26,531	25,828	25,461	25,033	24,120
Final Product	(MlbU)	62.53	61.96	60.98	59.87	58.49	56.94	56.13	55.19	53.17
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	73.74	73.06	71.91	70.60	68.98	67.15	66.19	65.08	62.71
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	2.88	2.88	2.88	2.88	2.91	2.96	2.95	2.94	2.95
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.19	28.27	29.05	30.19	32.35	34.70	35.35	36.37	36.64
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,585	9,610	9,876	10,264	10,998	11,797	12,020	12,364	12,457
<b>Sales Revenue</b>										
Product	(KZTm)	706,794.2	702,133.2	710,164.6	724,603.8	758,613.6	792,131.6	795,607.4	804,683.7	781,109.0
<b>Operating Expenditure</b>										
Mining	(KZTm)	(102,977.7)	(100,063.5)	(97,524.6)	(95,630.7)	(93,302.6)	(89,249.7)	(88,507.5)	(87,774.0)	(85,527.8)
Processing	(KZTm)	(55,973.3)	(54,311.5)	(52,709.7)	(51,908.9)	(50,604.4)	(49,330.2)	(49,241.9)	(49,166.5)	(48,683.0)
G&A	(KZTm)	(22,862.4)	(22,647.3)	(21,247.7)	(20,574.1)	(19,940.2)	(18,719.0)	(18,721.1)	(18,723.5)	(18,721.5)
MET	(KZTm)	(54,927.4)	(54,334.7)	(51,640.8)	(51,169.4)	(50,133.6)	(48,378.1)	(48,037.2)	(47,896.8)	(46,626.2)
Services	(KZTm)	4,820.5	4,819.1	4,819.1	4,819.1	5,060.6	5,375.6	5,795.6	6,215.6	6,517.0
Distribution	(KZTm)	(9,659.4)	(9,637.3)	(9,669.3)	(9,507.6)	(9,333.8)	(9,195.4)	(9,003.9)	(8,812.7)	(8,449.9)
Toll Refining	(KZTm)	(8,938.4)	(8,652.0)	(8,754.3)	(8,754.3)	(8,760.2)	(8,767.9)	(8,778.1)	(8,788.3)	(8,065.2)
Retrenchment	(KZTm)	-	(133.8)	(5.7)	(129.7)	(36.8)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(250,518.1)</b>	<b>(244,961.1)</b>	<b>(236,733.1)</b>	<b>(232,855.8)</b>	<b>(227,051.1)</b>	<b>(218,264.6)</b>	<b>(216,494.0)</b>	<b>(214,946.2)</b>	<b>(209,556.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>456,276.0</b>	<b>457,172.2</b>	<b>473,431.5</b>	<b>491,748.0</b>	<b>531,562.5</b>	<b>573,866.9</b>	<b>579,113.4</b>	<b>589,737.6</b>	<b>571,552.4</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(73,009.3)	(69,609.6)	(66,828.0)	(67,021.8)	(66,983.5)	(66,378.3)	(65,300.0)	(64,603.7)	(60,970.3)
Expansion	(KZTm)	(18,991.3)	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(13,519.8)	(15,481.4)	(15,211.5)	(15,157.7)	(15,075.1)	(14,975.2)	(14,863.3)	(14,751.5)	(14,215.1)
Liqdn Fund/Closure	(KZTm)	(2,407.2)	(5,269.6)	(2,436.0)	(5,847.0)	(4,703.7)	(2,314.7)	(2,294.7)	(2,283.2)	(2,208.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(107,927.6)</b>	<b>(90,360.6)</b>	<b>(84,475.5)</b>	<b>(88,026.5)</b>	<b>(86,762.2)</b>	<b>(83,668.1)</b>	<b>(82,457.9)</b>	<b>(81,638.4)</b>	<b>(77,393.8)</b>

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,397	3,353	3,292	3,298	3,292	3,251	3,271	3,303	3,342
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,652	2,609	2,574	2,574	2,565	2,530	2,545	2,567	2,598
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,571	4,517	4,433	4,462	4,481	4,462	4,482	4,522	4,541
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.99	9.86	9.68	9.70	9.68	9.56	9.62	9.71	9.83
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.80	7.67	7.57	7.57	7.54	7.44	7.49	7.55	7.64
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.44	13.29	13.04	13.12	13.18	13.12	13.18	13.30	13.36

**Table 13-100: Mining Subsidiaries (100%) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	40.82	34.40	29.51	27.47	26.21	18.14	15.40	14.30	11.99
Grade	(%U)	0.062	0.059	0.056	0.053	0.051	0.056	0.057	0.055	0.055
Content	(tU)	25,162	20,242	16,477	14,535	13,404	10,079	8,762	7,922	6,547
Product	(tU)	22,240	17,819	14,439	12,693	11,682	8,701	7,523	6,779	5,594
Overall Recovery	(%)	88.4	88.0	87.6	87.3	87.2	86.3	85.9	85.6	85.4
<b>Sales</b>										
Final Product	(tU)	22,552	19,202	15,333	13,141	11,738	9,517	7,892	6,930	6,369
Final Product	(MibU)	49.72	42.33	33.80	28.97	25.88	20.98	17.40	15.28	14.04
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	58.63	49.92	39.86	34.16	30.52	24.74	20.52	18.02	16.56
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	2.95	2.99	3.13	2.98	3.19	3.11	3.06	3.04	3.05
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.39	40.30	42.04	42.28	42.14	42.18	42.20	42.21	42.20
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	13,052	13,700	14,295	14,374	14,328	14,340	14,348	14,350	14,349
<b>Sales Revenue</b>										
Product	(KZTm)	765,274.0	683,925.3	569,839.8	491,074.9	437,253.5	354,793.4	294,395.0	258,540.4	237,588.3
<b>Operating Expenditure</b>										
Mining	(KZTm)	(82,211.1)	(72,920.9)	(63,976.7)	(54,106.0)	(48,376.3)	(37,103.0)	(28,805.8)	(25,976.6)	(21,807.4)
Processing	(KZTm)	(47,551.7)	(43,050.4)	(40,289.2)	(30,645.6)	(28,551.6)	(25,445.9)	(19,255.4)	(18,117.1)	(16,370.7)
G&A	(KZTm)	(18,426.5)	(17,436.2)	(17,168.9)	(12,843.5)	(11,593.4)	(10,925.2)	(6,688.0)	(6,488.3)	(5,760.1)
MET	(KZTm)	(44,706.2)	(40,287.0)	(34,584.7)	(30,458.2)	(24,881.9)	(23,411.5)	(15,500.8)	(13,829.4)	(11,620.9)
Services	(KZTm)	6,110.6	5,585.6	9,127.3	7,224.9	7,074.2	7,023.9	3,474.6	2,777.3	1,979.8
Distribution	(KZTm)	(8,069.0)	(7,350.2)	(6,790.2)	(6,476.7)	(6,190.2)	(4,539.4)	(4,038.3)	(3,948.4)	(3,836.6)
Toll Refining	(KZTm)	(7,072.1)	(5,242.6)	(7,877.3)	(6,633.6)	(7,236.3)	(4,693.6)	(1,273.6)	(1,076.6)	(762.5)
Retrenchment	(KZTm)	-	(203.6)	(590.9)	(140.1)	-	(459.6)	-	(2.8)	(352.6)
<b>Total</b>	<b>(KZTm)</b>	<b>(201,925.9)</b>	<b>(180,905.3)</b>	<b>(162,150.5)</b>	<b>(134,078.9)</b>	<b>(119,755.4)</b>	<b>(99,554.4)</b>	<b>(72,087.3)</b>	<b>(66,661.9)</b>	<b>(58,531.0)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>563,348.1</b>	<b>503,019.9</b>	<b>407,689.3</b>	<b>356,996.0</b>	<b>317,498.1</b>	<b>255,238.9</b>	<b>222,307.7</b>	<b>191,878.5</b>	<b>179,057.3</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(54,245.8)	(40,826.5)	(35,679.6)	(34,687.0)	(24,287.6)	(21,925.9)	(21,219.9)	(18,040.7)	(11,791.2)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(10,857.6)	(10,478.6)	(10,448.1)	(5,911.1)	(5,911.1)	(5,905.3)	(4,410.5)	(3,675.8)	(3,497.9)
Liqdn Fund/Closure	(KZTm)	(2,107.1)	(3,171.6)	(6,062.8)	(6,357.8)	(1,176.0)	(9,376.1)	(599.9)	(474.8)	(7,116.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(67,210.5)</b>	<b>(54,476.7)</b>	<b>(52,190.5)</b>	<b>(46,955.9)</b>	<b>(31,374.6)</b>	<b>(37,207.4)</b>	<b>(26,230.3)</b>	<b>(22,191.3)</b>	<b>(22,405.4)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,444	3,624	4,068	3,925	3,924	4,024	3,513	3,700	3,535
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,682	2,817	3,200	3,033	3,109	3,077	2,758	2,932	2,833
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,554	4,652	5,225	5,113	4,914	5,148	4,762	4,905	4,458
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.13	10.66	11.96	11.54	11.54	11.83	10.33	10.88	10.40
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.89	8.28	9.41	8.92	9.14	9.05	8.11	8.62	8.33
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	13.40	13.68	15.37	15.04	14.45	15.14	14.01	14.43	13.11

**Table 13-101: Mining Subsidiary (100%) Forecast (2040 through 2048)**

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
<b>Production</b>										
Mining	(Mt)	9.55	8.77	8.59	8.59	8.63	8.75	6.98	5.29	4.97
Grade	(%U)	0.054	0.055	0.055	0.055	0.055	0.054	0.054	0.049	0.047
Content	(tU)	5,124	4,781	4,706	4,706	4,706	4,706	3,764	2,588	2,353
Product	(tU)	4,368	4,067	4,000	4,000	4,000	4,000	3,200	2,200	2,000
Overall Recovery	(%)	85.3	85.1	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	4,966	4,114	4,000	4,000	4,002	3,998	3,414	2,343	2,001
Final Product	(MibU)	10.95	9.07	8.82	8.82	8.82	8.81	7.53	5.17	4.41
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	12.91	10.70	10.40	10.40	10.40	10.39	8.88	6.09	5.20
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.07	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.19	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,346	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	185,226.0	152,751.8	148,521.9	148,521.9	148,594.5	148,449.2	126,779.7	87,002.3	74,297.2
<b>Operating Expenditure</b>										
Mining	(KZTm)	(15,583.7)	(11,221.8)	(9,368.0)	(9,368.4)	(9,369.8)	(9,364.8)	(7,476.3)	(6,256.2)	(6,013.2)
Processing	(KZTm)	(13,593.5)	(10,682.1)	(9,893.6)	(9,894.2)	(9,895.8)	(9,887.6)	(9,196.6)	(7,043.1)	(6,872.4)
G&A	(KZTm)	(4,278.9)	(2,668.8)	(2,003.0)	(2,003.0)	(2,003.0)	(2,003.0)	(1,604.3)	(1,604.3)	(1,604.3)
MET	(KZTm)	(11,068.7)	(6,841.3)	(5,661.1)	(5,627.7)	(5,639.5)	(5,650.0)	(5,562.7)	(4,089.8)	(3,432.6)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(3,740.0)	(3,732.9)	(3,729.8)	(3,729.8)	(3,729.8)	(3,729.8)	(2,983.6)	(2,051.4)	(1,864.9)
Toll Refining	(KZTm)	(342.7)	(74.8)	-	-	-	-	-	-	-
Retrenchment	(KZTm)	(123.5)	(47.6)	-	-	-	-	-	(61.6)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(48,731.0)</b>	<b>(35,269.4)</b>	<b>(30,655.6)</b>	<b>(30,623.2)</b>	<b>(30,637.9)</b>	<b>(30,635.3)</b>	<b>(26,823.5)</b>	<b>(21,106.4)</b>	<b>(19,787.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>136,495.0</b>	<b>117,482.4</b>	<b>117,866.2</b>	<b>117,898.7</b>	<b>117,956.5</b>	<b>117,813.9</b>	<b>99,956.2</b>	<b>65,895.9</b>	<b>54,509.8</b>
<b>Capital Expenditure</b>										

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
Well Construction	(KZTm)	(10,363.9)	(10,403.5)	(10,403.5)	(10,403.5)	(10,553.6)	(8,236.5)	(5,444.6)	(6,055.3)	(6,047.6)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)	(3,497.9)
Liqdn Fund/Closure	(KZTm)	(1,126.4)	(1,136.6)	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(14,988.2)</b>	<b>(15,037.9)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>	<b>(14,051.5)</b>	<b>(11,734.4)</b>	<b>(8,942.5)</b>	<b>(9,553.2)</b>	<b>(9,545.5)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,774	3,298	2,948	2,945	2,945	2,947	3,022	3,465	3,804
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,917	2,658	2,403	2,404	2,403	2,404	2,395	2,793	3,144
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,848	4,597	4,285	4,282	4,295	4,076	4,029	5,033	5,639
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.10	9.70	8.67	8.66	8.66	8.67	8.89	10.19	11.19
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.58	7.82	7.07	7.07	7.07	7.07	7.04	8.22	9.25
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.26	13.52	12.60	12.59	12.63	11.99	11.85	14.80	16.58

Table 13-102: Mining Subsidiary (100%) Forecast (2049 through 2052)

Statistic	Units	2049	2050	2051	2052
<b>Production</b>					
Mining	(Mt)	4.97	4.97	3.98	2.68
Grade	(%U)	0.047	0.047	0.047	0.047
Content	(tU)	2,353	2,353	1,882	1,270
Product	(tU)	2,000	2,000	1,600	1,079
Overall Recovery	(%)	85.0	85.0	85.0	85.0
<b>Sales</b>					
Final Product	(tU)	1,999	2,000	1,672	1,365
Final Product	(MlbU)	4.41	4.41	3.69	3.01
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	5.20	5.20	4.35	3.55
<b>Macro-Economics</b>					
Exchange Rate	(KZT:US\$)	340	340	340	340
<b>Sales Price</b>					
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53
Premium/Discount	(%)	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>					
Product	(KZTm)	74,224.6	74,260.9	62,066.4	50,697.2
<b>Operating Expenditure</b>					
Mining	(KZTm)	(6,014.0)	(6,012.4)	(5,188.7)	(4,539.7)
Processing	(KZTm)	(6,873.6)	(6,871.2)	(6,527.3)	(6,083.9)
G&A	(KZTm)	(1,604.3)	(1,604.3)	(1,597.5)	(1,594.1)
MET	(KZTm)	(3,459.3)	(3,665.0)	(2,422.5)	(1,957.7)
Services	(KZTm)	-	-	-	-
Distribution	(KZTm)	(1,864.9)	(1,864.9)	(1,491.9)	(1,006.2)
Toll Refining	(KZTm)	-	-	-	-
Retrenchment	(KZTm)	-	-	-	(411.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(19,816.2)</b>	<b>(20,017.8)</b>	<b>(17,227.9)</b>	<b>(15,592.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>54,408.5</b>	<b>54,243.1</b>	<b>44,838.6</b>	<b>35,104.7</b>
<b>Capital Expenditure</b>					
Well Construction	(KZTm)	(6,055.3)	(6,055.3)	-	-
Expansion	(KZTm)	-	-	-	-
Sustaining	(KZTm)	(3,497.9)	-	-	-
Liqdn Fund/Closure	(KZTm)	-	-	-	(8,136.3)
<b>Total</b>	<b>(KZTm)</b>	<b>(9,553.2)</b>	<b>(6,055.3)</b>	-	<b>(8,136.3)</b>
<b>Unit Expenditures</b>					
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,813	3,850	3,964	4,393
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,147	3,145	3,407	3,841
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,651	5,014	3,964	4,393
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.21	11.32	11.66	12.92
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.26	9.25	10.02	11.30
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.62	14.75	11.66	12.92

### 13.4.15 Company Attributable Mining Subsidiaries (KZT)

Table 13-103: Company Attributable Mining Subsidiaries (KZT) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)

Statistic	Units	2015	2016	2017	2018H1	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	25.88	26.59	24.39	11.56	529.45	12.02	25.56	25.64	32.31
Grade	(%U)	0.056	0.056	0.056	0.056	0.058	0.059	0.059	0.058	0.058
Content	(tU)	14,488	14,802	13,633	6,479	309,475	7,049	14,961	14,961	18,785
Product	(tU)	12,766	13,096	12,094	5,771	271,861	6,236	13,218	13,214	16,584
Overall Recovery	(%)	88.1	88.5	88.7	89.1	87.8	88.5	88.4	88.3	88.3
<b>Sales</b>										
Final Product	(tU)	11,945	11,532	11,742	4,986	276,646	6,867	12,922	13,221	15,396
Final Product	(MlbU)	26.33	25.42	25.89	10.99	609.90	15.14	28.49	29.15	33.94
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	31.05	29.98	30.53	12.96	719.22	17.85	33.60	34.37	40.03
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222.25	341.76	326.09	326.49	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.61	26.57	21.53	21.13	35.32	26.09	27.81	28.81	29.22
Premium/Discount	(%)	1.82	1.92	1.92	1.47	2.65	2.52	2.44	2.43	2.52
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.89	26.06	21.12	20.82	34.38	25.43	27.13	28.11	28.48
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,643	8,908	6,886	6,798	11,690	8,645	9,225	9,558	9,683
<b>Sales Revenue</b>										
Product	(KZTm)	268,397.8	267,055.4	210,226.5	88,126.6	8,407,906.5	154,348.4	309,925.3	328,502.5	387,582.4
<b>Operating Expenditure</b>										
Mining	(KZTm)	(47,102.2)	(51,263.8)	(48,887.2)	(21,545.9)	(1,065,933.8)	(26,329.3)	(55,528.9)	(55,774.8)	(65,019.8)
Processing	(KZTm)	(30,397.3)	(30,172.6)	(29,924.5)	(12,430.4)	(610,291.4)	(15,059.1)	(30,341.6)	(30,509.0)	(33,149.3)

Statistic	Units	2015	2016	2017	2018H1	Total	H2 2018	2019	2020	2021
G&A	(KZTm)	(16,047.3)	(15,360.0)	(12,868.1)	(5,208.0)	(265,061.2)	(7,967.3)	(15,213.6)	(14,961.7)	(16,016.7)
MET	(KZTm)	(21,469.8)	(22,026.9)	(22,692.7)	(9,757.0)	(571,916.0)	(13,199.7)	(28,627.0)	(29,114.1)	(33,911.9)
Services	(KZTm)	1,464.5	1,797.8	1,857.4	859.2	58,380.5	1,158.2	2,319.4	2,322.4	2,435.7
Distribution	(KZTm)	(1,543.1)	(2,333.5)	(2,034.4)	(1,085.5)	(106,433.3)	(1,352.9)	(3,847.7)	(4,249.4)	(4,901.1)
Toll Refining	(KZTm)	(5,365.4)	(5,874.4)	(5,087.3)	(2,553.9)	(100,145.2)	(2,601.5)	(5,227.7)	(5,142.7)	(6,299.3)
Retrenchment	(KZTm)	-	-	-	-	(1,554.5)	(8.8)	-	(45.5)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(120,460.6)</b>	<b>(125,233.4)</b>	<b>(119,636.7)</b>	<b>(51,721.6)</b>	<b>(2,662,955)</b>	<b>(65,360.4)</b>	<b>(136,467.2)</b>	<b>(137,474.9)</b>	<b>(156,862.4)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>147,937.2</b>	<b>141,822.0</b>	<b>90,589.8</b>	<b>36,405.0</b>	<b>5,744,951.6</b>	<b>88,988.0</b>	<b>173,458.1</b>	<b>191,027.6</b>	<b>230,720.0</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(25,376.8)	(27,079.4)	(29,108.4)	(12,252.8)	(741,369.2)	(17,017.2)	(41,669.5)	(45,637.4)	(46,534.9)
Expansion	(KZTm)	-	-	-	-	(44,453.4)	(765.8)	(13,718.9)	(11,830.7)	(8,832.3)
Sustaining	(KZTm)	(7,341.4)	(8,278.7)	(11,392.3)	(4,923.8)	(156,889.3)	(7,022.5)	(8,102.1)	(7,128.2)	(8,485.6)
Liqdn Fund/Closure	(KZTm)	(2,131.4)	(1,421.9)	(2,050.8)	466.4	(51,501.5)	(669.3)	(1,383.3)	(3,935.6)	(1,578.0)
<b>Total</b>	<b>(KZTm)</b>	<b>(34,849.5)</b>	<b>(36,780.1)</b>	<b>(42,551.5)</b>	<b>(16,710.1)</b>	<b>(994,213.4)</b>	<b>(25,474.8)</b>	<b>(64,873.8)</b>	<b>(68,531.8)</b>	<b>(65,430.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,879	4,177	3,919	3,990	3,703	3,661	4,062	4,000	3,919
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,188	3,442	3,176	3,237	2,907	2,922	3,210	3,153	3,072
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,933	5,356	5,246	5,315	4,951	5,007	5,544	5,535	5,294
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.45	12.22	12.02	12.22	10.89	10.77	11.95	11.76	11.53
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.34	10.07	9.74	9.92	8.55	8.59	9.44	9.27	9.03
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	22.19	15.67	16.09	16.28	14.56	14.73	16.30	16.28	15.57

**Table 13-104: Company Attributable Mining Subsidiaries (KZT) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	<b>32.35</b>	<b>31.44</b>	<b>30.64</b>	<b>28.75</b>	<b>28.00</b>	<b>27.35</b>	<b>27.14</b>	<b>26.94</b>	<b>25.90</b>
Grade	(%U)	0.058	0.059	0.060	0.061	0.062	0.062	0.062	0.062	0.061
Content	(tU)	18,889	18,538	18,325	17,667	17,354	17,047	16,814	16,583	15,856
Product	(tU)	<b>16,678</b>	<b>16,397</b>	<b>16,222</b>	<b>15,629</b>	<b>15,349</b>	<b>15,075</b>	<b>14,869</b>	<b>14,664</b>	<b>14,018</b>
Overall Recovery	(%)	<b>88.3</b>	<b>88.5</b>	<b>88.5</b>	<b>88.5</b>	<b>88.4</b>	<b>88.4</b>	<b>88.4</b>	<b>88.4</b>	<b>88.4</b>
<b>Sales</b>										
Final Product	(tU)	16,671	16,592	16,382	16,107	15,668	15,079	14,889	14,659	14,102
Final Product	(MibU)	36.75	36.58	36.12	35.51	34.54	33.24	32.82	32.32	31.09
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	43.34	43.14	42.59	41.87	40.73	39.20	38.71	38.11	36.66
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	2.45	2.44	2.45	2.46	2.50	2.57	2.56	2.54	2.55
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.32	28.39	29.17	30.32	32.48	34.84	35.49	36.51	36.79
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	9,628	9,653	9,919	10,308	11,044	11,844	12,068	12,415	12,507
<b>Sales Revenue</b>										
Product	(KZTm)	417,290.2	416,393.5	422,466.6	431,661.9	449,869.1	464,323.0	467,140.9	473,118.4	458,543.8
<b>Operating Expenditure</b>										
Mining	(KZTm)	(65,450.2)	(63,967.8)	(62,602.8)	(61,159.3)	(60,068.5)	(56,257.9)	(55,869.2)	(55,484.3)	(53,970.7)
Processing	(KZTm)	(33,377.9)	(32,791.2)	(31,991.1)	(31,425.1)	(30,898.7)	(29,640.6)	(29,593.3)	(29,552.0)	(29,245.0)
G&A	(KZTm)	(16,063.0)	(15,880.7)	(14,795.0)	(14,124.0)	(13,766.8)	(12,544.9)	(12,546.1)	(12,547.5)	(12,546.3)
MET	(KZTm)	(33,821.5)	(33,537.6)	(32,222.3)	(31,702.6)	(31,612.6)	(29,949.2)	(29,788.1)	(29,750.9)	(28,902.4)
Services	(KZTm)	2,435.7	2,435.0	2,435.0	2,435.0	2,561.8	2,727.2	2,947.7	3,168.2	3,326.4
Distribution	(KZTm)	(5,038.9)	(5,055.3)	(5,102.0)	(5,050.5)	(4,975.4)	(4,902.5)	(4,801.9)	(4,701.4)	(4,515.3)
Toll Refining	(KZTm)	(6,424.8)	(6,281.7)	(6,332.9)	(6,332.9)	(6,335.9)	(6,339.7)	(6,344.8)	(6,349.9)	(5,828.0)
Retrenchment	(KZTm)	-	(66.9)	(5.7)	(38.9)	(36.8)	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(157,740.5)</b>	<b>(155,146.1)</b>	<b>(150,616.9)</b>	<b>(147,398.3)</b>	<b>(145,132.9)</b>	<b>(136,907.5)</b>	<b>(135,995.7)</b>	<b>(135,217.8)</b>	<b>(131,681.2)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>259,549.7</b>	<b>261,247.4</b>	<b>271,849.7</b>	<b>284,263.6</b>	<b>304,736.2</b>	<b>327,415.4</b>	<b>331,145.1</b>	<b>337,900.6</b>	<b>326,862.5</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(45,012.3)	(42,771.9)	(41,733.1)	(41,647.4)	(41,610.6)	(41,282.5)	(40,697.7)	(40,350.4)	(37,745.1)
Expansion	(KZTm)	(9,305.7)	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(7,694.0)	(8,411.4)	(8,319.9)	(8,266.1)	(8,214.0)	(8,154.0)	(8,095.2)	(8,036.5)	(7,538.3)
Liqdn Fund/Closure	(KZTm)	(1,604.6)	(3,036.2)	(1,618.6)	(2,621.8)	(3,888.6)	(1,504.5)	(1,495.4)	(1,491.9)	(1,443.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(63,616.8)</b>	<b>(54,219.5)</b>	<b>(51,671.6)</b>	<b>(52,535.4)</b>	<b>(53,713.2)</b>	<b>(50,941.0)</b>	<b>(50,288.4)</b>	<b>(49,878.9)</b>	<b>(46,726.7)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,639	3,597	3,536	3,520	3,563	3,492	3,513	3,548	3,592
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,859	2,819	2,780	2,763	2,787	2,728	2,744	2,767	2,803
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,856	4,783	4,712	4,712	4,786	4,753	4,774	4,818	4,827
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.70	10.58	10.40	10.35	10.48	10.27	10.33	10.44	10.56
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.41	8.29	8.18	8.13	8.20	8.02	8.07	8.14	8.25
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.28	14.07	13.86	13.86	14.08	13.98	14.04	14.17	14.20

**Table 13-105: Company Attributable Mining Subsidiaries (KZT) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	<b>24.32</b>	<b>19.96</b>	<b>16.68</b>	<b>15.58</b>	<b>14.60</b>	<b>11.11</b>	<b>9.67</b>	<b>8.97</b>	<b>7.42</b>
Grade	(%U)	0.060	0.058	0.056	0.054	0.051	0.055	0.056	0.055	0.054
Content	(tU)	14,636	11,622	9,368	8,340	7,508	6,063	5,379	4,902	4,030
Product	(tU)	<b>12,919</b>	<b>10,214</b>	<b>8,194</b>	<b>7,270</b>	<b>6,528</b>	<b>5,233</b>	<b>4,621</b>	<b>4,198</b>	<b>3,444</b>
Overall Recovery	(%)	<b>88.3</b>	<b>87.9</b>	<b>87.5</b>	<b>87.2</b>	<b>86.9</b>	<b>86.3</b>	<b>85.9</b>	<b>85.6</b>	<b>85.5</b>
<b>Sales</b>										
Final Product	(tU)	13,170	11,137	8,636	7,703	6,556	5,710	4,857	4,327	4,000
Final Product	(MibU)	29.04	24.55	19.04	16.98	14.45	12.59	10.71	9.54	8.82
Final Product	(MibU <sub>3</sub> O <sub>8</sub> )	34.24	28.95	22.45	20.03	17.04	14.84	12.63	11.25	10.40
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
Premium/(Discount)	(%)	2.57	2.62	2.84	2.62	2.94	2.85	2.78	2.77	2.78
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.54	40.45	42.17	42.44	42.25	42.29	42.32	42.32	42.32
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	13,105	13,752	14,338	14,428	14,365	14,378	14,389	14,390	14,388
<b>Sales Revenue</b>										
Product	(KZTm)	448,700.5	398,195.1	321,914.0	288,960.7	244,842.7	213,433.6	181,696.6	161,872.0	149,637.4
<b>Operating Expenditure</b>										
Mining	(KZTm)	(51,627.8)	(44,582.5)	(38,717.3)	(33,615.9)	(28,518.7)	(23,449.2)	(18,991.1)	(17,356.7)	(14,207.3)
Processing	(KZTm)	(28,560.2)	(25,188.6)	(23,344.0)	(18,561.3)	(16,787.1)	(15,458.2)	(12,064.6)	(11,447.3)	(10,351.7)
G&A	(KZTm)	(12,252.1)	(11,263.7)	(10,998.2)	(8,771.6)	(7,526.8)	(7,273.5)	(4,951.3)	(4,777.0)	(4,048.9)
MET	(KZTm)	(27,506.6)	(24,794.9)	(20,736.5)	(19,780.6)	(14,839.8)	(14,392.0)	(10,238.7)	(9,350.4)	(7,588.0)
Services	(KZTm)	3,113.1	2,837.4	4,696.8	3,698.1	3,618.9	3,592.5	1,737.3	1,388.7	989.9
Distribution	(KZTm)	(4,322.7)	(3,958.3)	(3,674.7)	(3,519.0)	(3,375.8)	(2,640.0)	(2,392.5)	(2,347.5)	(2,291.5)
Toll Refining	(KZTm)	(5,044.7)	(3,477.8)	(4,341.5)	(3,641.5)	(3,635.9)	(2,361.5)	(649.5)	(549.0)	(388.9)
Retrenchment	(KZTm)	-	(203.6)	(295.1)	(140.1)	-	(209.5)	-	(1.4)	(178.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(126,201.1)</b>	<b>(110,631.9)</b>	<b>(97,410.6)</b>	<b>(84,331.9)</b>	<b>(71,065.1)</b>	<b>(62,191.3)</b>	<b>(47,550.4)</b>	<b>(44,440.8)</b>	<b>(38,065.1)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>322,499.4</b>	<b>287,563.2</b>	<b>224,503.5</b>	<b>204,628.8</b>	<b>173,777.6</b>	<b>151,242.2</b>	<b>134,146.2</b>	<b>117,431.2</b>	<b>111,572.2</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(32,869.2)	(26,200.8)	(21,754.1)	(21,259.8)	(16,460.8)	(15,146.7)	(14,560.3)	(12,727.0)	(6,949.8)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(5,891.7)	(5,534.1)	(5,518.1)	(3,461.2)	(3,461.2)	(3,455.5)	(2,702.3)	(2,189.4)	(2,098.7)
Liqdn Fund/Closure	(KZTm)	(1,369.5)	(2,510.8)	(3,208.8)	(5,915.9)	(758.2)	(4,116.5)	(447.4)	(361.6)	(3,635.8)
<b>Total</b>	<b>(KZTm)</b>	<b>(40,130.4)</b>	<b>(34,245.7)</b>	<b>(30,480.9)</b>	<b>(30,637.0)</b>	<b>(20,680.2)</b>	<b>(22,718.7)</b>	<b>(17,710.0)</b>	<b>(15,278.0)</b>	<b>(12,684.3)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,686	3,821	4,339	4,211	4,169	4,189	3,766	3,951	3,660
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,882	2,965	3,415	3,223	3,299	3,220	2,955	3,120	2,930
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,818	4,917	5,553	5,445	5,338	5,443	5,133	5,277	4,530
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.84	11.24	12.76	12.38	12.26	12.32	11.08	11.62	10.76
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.48	8.72	10.04	9.48	9.70	9.47	8.69	9.18	8.62
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.17	14.46	16.33	16.02	15.70	16.01	15.10	15.52	13.32

**Table 13-106: Company Attributable Mining Subsidiaries (KZT) Forecast (2040 through 2048)**

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
<b>Production</b>										
Mining	(Mt)	5.78	5.24	5.15	5.15	5.18	5.25	3.88	2.42	2.11
Grade	(%U)	0.054	0.055	0.055	0.055	0.055	0.054	0.054	0.049	0.047
Content	(tU)	3,092	2,862	2,824	2,824	2,824	2,824	2,094	1,182	1,000
Product	(tU)	2,637	2,434	2,400	2,400	2,400	2,400	1,780	1,005	850
Overall Recovery	(%)	85.3	85.1	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	3,192	2,458	2,400	2,400	2,401	2,399	1,899	1,070	850
Final Product	(MlbU)	7.04	5.42	5.29	5.29	5.29	5.29	4.19	2.36	1.87
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	8.30	6.39	6.24	6.24	6.24	6.24	4.94	2.78	2.21
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	2.83	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.30	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,381	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>										
Product	(KZTm)	119,332.7	91,263.8	89,113.1	89,113.1	89,156.7	89,069.5	70,518.7	39,744.3	31,576.3
<b>Operating Expenditure</b>										
Mining	(KZTm)	(9,727.9)	(6,566.3)	(5,620.8)	(5,621.1)	(5,621.9)	(5,618.9)	(4,158.6)	(2,857.9)	(2,555.6)
Processing	(KZTm)	(8,693.1)	(6,338.3)	(5,936.2)	(5,936.5)	(5,937.5)	(5,932.6)	(5,115.4)	(3,217.4)	(2,920.8)
G&A	(KZTm)	(2,918.6)	(1,541.3)	(1,201.8)	(1,201.8)	(1,201.8)	(1,201.8)	(892.4)	(732.9)	(681.8)
MET	(KZTm)	(7,786.8)	(3,998.5)	(3,396.7)	(3,376.6)	(3,383.7)	(3,390.0)	(3,094.1)	(1,868.3)	(1,458.9)
Services	(KZTm)	-	-	-	-	-	-	-	-	-
Distribution	(KZTm)	(2,243.1)	(2,239.5)	(2,237.9)	(2,237.9)	(2,237.9)	(2,237.9)	(1,659.6)	(937.1)	(792.6)
Toll Refining	(KZTm)	(174.8)	(38.2)	-	-	-	-	-	-	-
Retrenchment	(KZTm)	(106.4)	(24.3)	-	-	-	-	-	(28.2)	-
<b>Total</b>	<b>(KZTm)</b>	<b>(31,650.6)</b>	<b>(20,746.3)</b>	<b>(18,393.4)</b>	<b>(18,373.9)</b>	<b>(18,382.8)</b>	<b>(18,381.2)</b>	<b>(14,920.0)</b>	<b>(9,641.8)</b>	<b>(8,409.6)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>87,682.1</b>	<b>70,517.6</b>	<b>70,719.7</b>	<b>70,739.2</b>	<b>70,773.9</b>	<b>70,688.4</b>	<b>55,598.7</b>	<b>30,102.5</b>	<b>23,166.7</b>
<b>Capital Expenditure</b>										
Well Construction	(KZTm)	(6,218.4)	(6,242.1)	(6,242.1)	(6,242.1)	(6,332.2)	(4,941.9)	(3,028.5)	(2,766.2)	(2,570.2)
Expansion	(KZTm)	-	-	-	-	-	-	-	-	-
Sustaining	(KZTm)	(2,098.7)	(2,098.7)	(2,098.7)	(2,098.7)	(2,098.7)	(2,098.7)	(1,945.6)	(1,597.9)	(1,486.6)
Liqdn Fund/Closure	(KZTm)	928.4	(579.6)	-	-	-	-	-	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>(7,388.7)</b>	<b>(8,920.5)</b>	<b>(8,340.8)</b>	<b>(8,340.8)</b>	<b>(8,430.9)</b>	<b>(7,040.6)</b>	<b>(4,974.1)</b>	<b>(4,364.1)</b>	<b>(4,056.8)</b>
<b>Unit Expenditures</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,814	3,247	2,948	2,945	2,945	2,947	3,022	3,465	3,804
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,876	2,621	2,403	2,404	2,403	2,404	2,395	2,793	3,144
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,817	4,552	4,285	4,282	4,295	4,076	4,029	5,033	5,639
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.22	9.55	8.67	8.66	8.66	8.67	8.89	10.19	11.19
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.46	7.71	7.07	7.07	7.07	7.07	7.04	8.22	9.25
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.17	13.39	12.60	12.59	12.63	11.99	11.85	14.80	16.58

**Table 13-107: Company Attributable Mining Subsidiaries (KZT) Forecast (2049 through 2052)**

Statistic	Units	2049	2050	2051	2052
<b>Production</b>					
Mining	(Mt)	2.11	2.11	1.61	1.07
Grade	(%U)	0.047	0.047	0.047	0.047
Content	(tU)	1,000	1,000	765	508
Product	(tU)	850	850	650	432
Overall Recovery	(%)	85.0	85.0	85.0	85.0



Statistic	Units	2049	2050	2051	2052
<b>Sales</b>					
Final Product	(tU)	850	850	679	546
Final Product	(MlbU)	1.87	1.87	1.50	1.20
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	2.21	2.21	1.77	1.42
<b>Macro-Economics</b>					
Exchange Rate	(KZT:US\$)	340	340	340	340
<b>Sales Price</b>					
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	3.50	3.50	3.50	3.50
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.01	42.01	42.01	42.01
Realised Price	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	14,282	14,282	14,282	14,282
<b>Sales Revenue</b>					
Product	(KZTm)	31,545.5	31,560.9	25,214.5	20,278.9
<b>Operating Expenditure</b>					
Mining	(KZTm)	(2,556.0)	(2,555.3)	(2,107.9)	(1,815.9)
Processing	(KZTm)	(2,921.3)	(2,920.3)	(2,651.7)	(2,433.6)
G&A	(KZTm)	(681.8)	(681.8)	(649.0)	(637.6)
MET	(KZTm)	(1,470.2)	(1,557.6)	(984.1)	(783.1)
Services	(KZTm)	-	-	-	-
Distribution	(KZTm)	(792.6)	(792.6)	(606.1)	(402.5)
Toll Refining	(KZTm)	-	-	-	-
Retrenchment	(KZTm)	-	-	-	(164.4)
<b>Total</b>	<b>(KZTm)</b>	<b>(8,421.9)</b>	<b>(8,507.6)</b>	<b>(6,998.8)</b>	<b>(6,237.0)</b>
<b>EBITDA</b>	<b>(KZTm)</b>	<b>23,123.6</b>	<b>23,053.3</b>	<b>18,215.7</b>	<b>14,041.9</b>
<b>Capital Expenditure</b>					
Well Construction	(KZTm)	(2,573.5)	(2,573.5)	-	-
Expansion	(KZTm)	-	-	-	-
Sustaining	(KZTm)	(1,486.6)	-	-	-
Liqdn Fund/Closure	(KZTm)	-	-	-	(3,254.5)
<b>Total</b>	<b>(KZTm)</b>	<b>(4,060.1)</b>	<b>(2,573.5)</b>	<b>-</b>	<b>(3,254.5)</b>
<b>Unit Expenditures</b>					
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,813	3,850	3,964	4,393
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,147	3,145	3,407	3,841
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	5,651	5,014	3,964	4,393
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.21	11.32	11.66	12.92
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	9.26	9.25	10.02	11.30
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	16.62	14.75	11.66	12.92

### 13.4.16 Company Attributable Mining Subsidiaries (US\$)

**Table 13-108: Company Attributable Mining Subsidiaries (US\$) Historical (2015 through H1 2018) and Forecast (H2 2018 through 2021)**

Statistic	Units	2015	2016	2017	2018H1	Total	H2 2018	2019	2020	2021
<b>Production</b>										
Mining	(Mt)	25.88	26.59	24.39	11.56	529.45	12.02	25.56	25.64	32.31
Grade	(%U)	0.056	0.056	0.056	0.056	0.058	0.059	0.059	0.058	0.058
Content	(tU)	14,488	14,802	13,633	6,479	309,475	7,049	14,961	14,961	18,785
Product	(tU)	12,766	13,096	12,094	5,771	271,861	6,236	13,218	13,214	16,584
Overall Recovery	(%)	88.1	88.5	88.7	89.1	87.8	88.5	88.4	88.3	88.3
<b>Sales</b>										
Final Product	(tU)	11,945	13,146	13,264	5,484	279,170	6,984	13,058	13,361	15,396
Final Product	(MlbU)	26.33	28.98	29.24	12.09	615.47	15.40	28.79	29.46	33.94
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	31.05	29.98	30.53	12.96	725.79	18.16	33.95	34.73	40.03
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	222	342	326	326	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.61	26.57	21.53	21.13	35.37	26.09	27.81	28.81	29.22
Premium/(Discount)	(%)	1.82	1.92	1.92	1.47	3.67	4.15	3.45	3.46	2.52
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.89	26.06	21.12	20.82	34.07	25.00	26.85	27.82	28.48
<b>Sales Revenue</b>										
Product	(US\$m)	1,207.6	781.4	644.7	269.9	24,729.1	454.0	911.5	966.2	1,139.9
<b>Operating Expenditure</b>										
Mining	(US\$m)	(211.9)	(150.0)	(149.9)	(66.0)	(3,135.1)	(77.4)	(163.3)	(164.0)	(191.2)
Processing	(US\$m)	(136.8)	(88.3)	(91.8)	(38.1)	(1,795.0)	(44.3)	(89.2)	(89.7)	(97.5)
G&A	(US\$m)	(72.2)	(44.9)	(39.5)	(16.0)	(779.6)	(23.4)	(44.7)	(44.0)	(47.1)
MET	(US\$m)	(96.6)	(64.5)	(69.6)	(29.9)	(1,682.1)	(38.8)	(84.2)	(85.6)	(99.7)
Services	(US\$m)	6.6	5.3	5.7	2.6	171.7	3.4	6.8	6.8	7.2
Distribution	(US\$m)	(6.9)	(6.8)	(6.2)	(3.3)	(313.0)	(4.0)	(11.3)	(12.5)	(14.4)
Toll Refining	(US\$m)	(24.1)	(17.2)	(15.6)	(7.8)	(294.5)	(7.7)	(15.4)	(15.1)	(18.5)
Retrenchment	(US\$m)	-	-	-	-	(4.6)	(0.0)	-	(0.1)	-
<b>Total</b>	<b>(US\$m)</b>	<b>(542.0)</b>	<b>(366.4)</b>	<b>(366.9)</b>	<b>(158.4)</b>	<b>(7,832)</b>	<b>(192.2)</b>	<b>(401.4)</b>	<b>(404.3)</b>	<b>(461.4)</b>
<b>EBITDA</b>	<b>(US\$m)</b>	<b>665.6</b>	<b>415.0</b>	<b>277.8</b>	<b>111.5</b>	<b>16,896.9</b>	<b>261.7</b>	<b>510.2</b>	<b>561.8</b>	<b>678.6</b>
<b>Capital Expenditure</b>										
Well Construction	(US\$m)	(114.2)	(79.2)	(89.3)	(37.5)	(2,180.5)	(50.1)	(122.6)	(134.2)	(136.9)
Expansion	(US\$m)	-	-	-	-	(130.7)	(2.3)	(40.3)	(34.8)	(26.0)
Sustaining	(US\$m)	(33.0)	(24.2)	(34.9)	(15.1)	(461.4)	(20.7)	(23.8)	(21.0)	(25.0)
Liqdn Fund/Closure	(US\$m)	(9.6)	(4.2)	(6.3)	1.4	(151.5)	(2.0)	(4.1)	(11.6)	(4.6)
<b>Total</b>	<b>(US\$m)</b>	<b>(156.8)</b>	<b>(107.6)</b>	<b>(130.5)</b>	<b>(51.2)</b>	<b>(2,924.2)</b>	<b>(74.9)</b>	<b>(190.8)</b>	<b>(201.6)</b>	<b>(192.4)</b>
<b>Unit Expenditures</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.45	12.22	12.02	12.22	10.79	10.59	11.82	11.64	11.53
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.34	10.07	9.74	9.92	8.47	8.45	9.34	9.18	9.03
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	22.19	15.67	16.09	16.28	14.43	14.48	16.14	16.11	15.57

**Table 13-109: Company Attributable Mining Subsidiaries (US\$) Forecast (2022 through 2030)**

Statistic	Units	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Production</b>										
Mining	(Mt)	32.35	31.44	30.64	28.75	28.00	27.35	27.14	26.94	25.90
Grade	(%U)	0.058	0.059	0.060	0.061	0.062	0.062	0.062	0.062	0.061
Content	(tU)	18,889	18,538	18,325	17,667	17,354	17,047	16,814	16,583	15,856
Product	(tU)	16,678	16,397	16,222	15,629	15,349	15,075	14,869	14,664	14,018
Overall Recovery	(%)	88.3	88.5	88.5	88.5	88.4	88.4	88.4	88.4	88.4
<b>Sales</b>										
Final Product	(tU)	16,671	16,592	16,382	16,107	15,668	15,079	14,889	14,659	14,102
Final Product	(MlbU)	36.75	36.58	36.12	35.51	34.54	33.24	32.82	32.32	31.09
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	43.34	43.14	42.59	41.87	40.73	39.20	38.71	38.11	36.66
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.03	29.10	29.91	31.08	33.32	35.75	36.43	37.47	37.75
Premium/(Discount)	(%)	2.45	2.44	2.45	2.46	2.50	2.57	2.56	2.54	2.55
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	28.32	28.39	29.17	30.32	32.48	34.84	35.49	36.51	36.79
<b>Sales Revenue</b>										
Product	(US\$m)	1,227.3	1,224.7	1,242.5	1,269.6	1,323.1	1,365.7	1,373.9	1,391.5	1,348.7
<b>Operating Expenditure</b>										
Mining	(US\$m)	(192.5)	(188.1)	(184.1)	(179.9)	(176.7)	(165.5)	(164.3)	(163.2)	(158.7)
Processing	(US\$m)	(98.2)	(96.4)	(94.1)	(92.4)	(90.9)	(87.2)	(87.0)	(86.9)	(86.0)
G&A	(US\$m)	(47.2)	(46.7)	(43.5)	(41.5)	(40.5)	(36.9)	(36.9)	(36.9)	(36.9)
MET	(US\$m)	(99.5)	(98.6)	(94.8)	(93.2)	(93.0)	(88.1)	(87.6)	(87.5)	(85.0)
Services	(US\$m)	7.2	7.2	7.2	7.2	7.5	8.0	8.7	9.3	9.8
Distribution	(US\$m)	(14.8)	(14.9)	(15.0)	(14.9)	(14.6)	(14.4)	(14.1)	(13.8)	(13.3)
Toll Refining	(US\$m)	(18.9)	(18.5)	(18.6)	(18.6)	(18.6)	(18.6)	(18.7)	(18.7)	(17.1)
Retrenchment	(US\$m)	-	(0.2)	(0.0)	(0.1)	(0.1)	-	-	-	-
<b>Total</b>	<b>(US\$m)</b>	<b>(463.9)</b>	<b>(456.3)</b>	<b>(443.0)</b>	<b>(433.5)</b>	<b>(426.9)</b>	<b>(402.7)</b>	<b>(400.0)</b>	<b>(397.7)</b>	<b>(387.3)</b>
<b>EBITDA</b>	<b>(US\$m)</b>	<b>763.4</b>	<b>768.4</b>	<b>799.6</b>	<b>836.1</b>	<b>896.3</b>	<b>963.0</b>	<b>974.0</b>	<b>993.8</b>	<b>961.4</b>
<b>Capital Expenditure</b>										
Well Construction	(US\$m)	(132.4)	(125.8)	(122.7)	(122.5)	(122.4)	(121.4)	(119.7)	(118.7)	(111.0)
Expansion	(US\$m)	(27.4)	-	-	-	-	-	-	-	-
Sustaining	(US\$m)	(22.6)	(24.7)	(24.5)	(24.3)	(24.2)	(24.0)	(23.8)	(23.6)	(22.2)
Liqdn Fund/Closure	(US\$m)	(4.7)	(8.9)	(4.8)	(7.7)	(11.4)	(4.4)	(4.4)	(4.4)	(4.2)
<b>Total</b>	<b>(US\$m)</b>	<b>(187.1)</b>	<b>(159.5)</b>	<b>(152.0)</b>	<b>(154.5)</b>	<b>(158.0)</b>	<b>(149.8)</b>	<b>(147.9)</b>	<b>(146.7)</b>	<b>(137.4)</b>
<b>Unit Expenditures</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.70	10.58	10.40	10.35	10.48	10.27	10.33	10.44	10.56
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.41	8.29	8.18	8.13	8.20	8.02	8.07	8.14	8.25
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.28	14.07	13.86	13.86	14.08	13.98	14.04	14.17	14.20

**Table 13-110: Company Attributable Mining Subsidiaries (US\$) Forecast (2031 through 2039)**

Statistic	Units	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Production</b>										
Mining	(Mt)	24.32	19.96	16.68	15.58	14.60	11.11	9.67	8.97	7.42
Grade	(%U)	0.060	0.058	0.056	0.054	0.051	0.055	0.056	0.055	0.054
Content	(tU)	14,636	11,622	9,368	8,340	7,508	6,063	5,379	4,902	4,030
Product	(tU)	12,919	10,214	8,194	7,270	6,523	5,233	4,621	4,198	3,444
Overall Recovery	(%)	88.3	87.9	87.5	87.2	86.9	86.3	85.9	85.6	85.5
<b>Sales</b>										
Final Product	(tU)	13,170	11,137	8,636	7,703	6,556	5,710	4,857	4,327	4,000
Final Product	(MlbU)	29.04	24.55	19.04	16.98	14.45	12.59	10.71	9.54	8.82
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	34.24	28.95	22.45	20.03	17.04	14.84	12.63	11.25	10.40
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.56	41.54	43.40	43.58	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	2.57	2.62	2.84	2.62	2.94	2.85	2.78	2.77	2.78
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.54	40.45	42.17	42.44	42.25	42.29	42.32	42.32	42.32
<b>Sales Revenue</b>										
Product	(US\$m)	1,319.7	1,171.2	946.8	849.9	720.1	627.7	534.4	476.1	440.1
<b>Operating Expenditure</b>										
Mining	(US\$m)	(151.8)	(131.1)	(113.9)	(98.9)	(83.9)	(69.0)	(55.9)	(51.0)	(41.8)
Processing	(US\$m)	(84.0)	(74.1)	(68.7)	(54.6)	(49.4)	(45.5)	(35.5)	(33.7)	(30.4)
G&A	(US\$m)	(36.0)	(33.1)	(32.3)	(25.8)	(22.1)	(21.4)	(14.6)	(14.1)	(11.9)
MET	(US\$m)	(80.9)	(72.9)	(61.0)	(58.2)	(43.6)	(42.3)	(30.1)	(27.5)	(22.3)
Services	(US\$m)	9.2	8.3	13.8	10.9	10.6	10.6	5.1	4.1	2.9
Distribution	(US\$m)	(12.7)	(11.6)	(10.8)	(10.4)	(9.9)	(7.8)	(7.0)	(6.9)	(6.7)
Toll Refining	(US\$m)	(14.8)	(10.2)	(12.8)	(10.7)	(10.7)	(6.9)	(1.9)	(1.6)	(1.1)
Retrenchment	(US\$m)	-	(0.6)	(0.9)	(0.4)	-	(0.6)	-	(0.0)	(0.5)
<b>Total</b>	<b>(US\$m)</b>	<b>(371.2)</b>	<b>(325.4)</b>	<b>(286.5)</b>	<b>(248.0)</b>	<b>(209.0)</b>	<b>(182.9)</b>	<b>(139.9)</b>	<b>(130.7)</b>	<b>(112.0)</b>
<b>EBITDA</b>	<b>(US\$m)</b>	<b>948.5</b>	<b>845.8</b>	<b>660.3</b>	<b>601.8</b>	<b>511.1</b>	<b>444.8</b>	<b>394.5</b>	<b>345.4</b>	<b>328.2</b>
<b>Capital Expenditure</b>										
Well Construction	(US\$m)	(96.7)	(77.1)	(64.0)	(62.5)	(48.4)	(44.5)	(42.8)	(37.4)	(20.4)
Expansion	(US\$m)	-	-	-	-	-	-	-	-	-
Sustaining	(US\$m)	(17.3)	(16.3)	(16.2)	(10.2)	(10.2)	(10.2)	(7.9)	(6.4)	(6.2)
Liqdn Fund/Closure	(US\$m)	(4.0)	(7.4)	(9.4)	(17.4)	(2.2)	(12.1)	(1.3)	(1.1)	(10.7)
<b>Total</b>	<b>(US\$m)</b>	<b>(118.0)</b>	<b>(100.7)</b>	<b>(89.6)</b>	<b>(90.1)</b>	<b>(60.8)</b>	<b>(66.8)</b>	<b>(52.1)</b>	<b>(44.9)</b>	<b>(37.3)</b>
<b>Unit Expenditures</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	10.84	11.24	12.76	12.38	12.26	12.32	11.08	11.62	10.76
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.48	8.72	10.04	9.48	9.70	9.47	8.69	9.18	8.62
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.17	14.46	16.33	16.02	15.70	16.01	15.10	15.52	13.32

**Table 13-111: Company Attributable Mining Subsidiaries (US\$) Forecast (2040 through 2048)**

Statistic	Units	2040	2041	2042	2043	2044	2045	2046	2047	2048
<b>Production</b>										
Mining	(Mt)	5.78	5.24	5.15	5.15	5.18	5.25	3.88	2.42	2.11
Grade	(%U)	0.054	0.055	0.055	0.055	0.055	0.054	0.054	0.049	0.047
Content	(tU)	3,092	2,862	2,824	2,824	2,824	2,824	2,094	1,182	1,000
Product	(tU)	2,637	2,434	2,400	2,400	2,400	2,400	1,780	1,005	850
Overall Recovery	(%)	85.3	85.1	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	3,192	2,458	2,400	2,400	2,401	2,399	2,049	1,406	1,201
Final Product	(MlbU)	7.04	5.42	5.29	5.29	5.29	5.29	4.52	3.10	2.65
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	8.30	6.39	6.24	6.24	6.24	6.24	5.33	3.66	3.12
<b>Macro-Economics</b>										
Exchange Rate	(KZT:US\$)	340	340	340	340	340	340	340	340	340
<b>Sales Price</b>										
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	2.83	3.50	3.50	3.50	3.50	3.50	10.54	26.53	31.65
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	42.30	42.01	42.01	42.01	42.01	42.01	38.94	31.98	29.75
<b>Sales Revenue</b>										
Product	(US\$m)	351.0	268.4	262.1	262.1	262.2	262.0	207.4	116.9	92.9
<b>Operating Expenditure</b>										
Mining	(US\$m)	(28.6)	(19.3)	(16.5)	(16.5)	(16.5)	(16.5)	(12.2)	(8.4)	(7.5)
Processing	(US\$m)	(25.6)	(18.6)	(17.5)	(17.5)	(17.5)	(17.4)	(15.0)	(9.5)	(8.6)
G&A	(US\$m)	(8.6)	(4.5)	(3.5)	(3.5)	(3.5)	(3.5)	(2.6)	(2.2)	(2.0)
MET	(US\$m)	(22.9)	(11.8)	(10.0)	(9.9)	(10.0)	(10.0)	(9.1)	(5.5)	(4.3)
Services	(US\$m)	-	-	-	-	-	-	-	-	-
Distribution	(US\$m)	(6.6)	(6.6)	(6.6)	(6.6)	(6.6)	(6.6)	(4.9)	(2.8)	(2.3)
Toll Refining	(US\$m)	(0.5)	(0.1)	-	-	-	-	-	-	-
Retrenchment	(US\$m)	(0.3)	(0.1)	-	-	-	-	-	(0.1)	-
<b>Total</b>	<b>(US\$m)</b>	<b>(93.1)</b>	<b>(61.0)</b>	<b>(54.1)</b>	<b>(54.0)</b>	<b>(54.1)</b>	<b>(54.1)</b>	<b>(43.9)</b>	<b>(28.4)</b>	<b>(24.7)</b>
<b>EBITDA</b>	<b>(US\$m)</b>	<b>257.9</b>	<b>207.4</b>	<b>208.0</b>	<b>208.1</b>	<b>208.2</b>	<b>207.9</b>	<b>163.5</b>	<b>88.5</b>	<b>68.1</b>
<b>Capital Expenditure</b>										
Well Construction	(US\$m)	(18.3)	(18.4)	(18.4)	(18.4)	(18.6)	(14.5)	(8.9)	(8.1)	(7.6)
Expansion	(US\$m)	-	-	-	-	-	-	-	-	-
Sustaining	(US\$m)	(6.2)	(6.2)	(6.2)	(6.2)	(6.2)	(6.2)	(5.7)	(4.7)	(4.4)
Liqdn Fund/Closure	(US\$m)	2.7	(1.7)	-	-	-	-	-	-	-
<b>Total</b>	<b>(US\$m)</b>	<b>(21.7)</b>	<b>(26.2)</b>	<b>(24.5)</b>	<b>(24.5)</b>	<b>(24.8)</b>	<b>(20.7)</b>	<b>(14.6)</b>	<b>(12.8)</b>	<b>(11.9)</b>
<b>Unit Expenditures</b>										
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.22	9.55	8.67	8.66	8.66	8.67	8.24	7.76	7.92
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	8.46	7.71	7.07	7.07	7.07	7.07	6.53	6.26	6.55
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.17	13.39	12.60	12.59	12.63	11.99	10.99	11.27	11.75

**Table 13-112: Company Attributable Mining Subsidiaries (US\$) Forecast (2049 through 2052)**

Statistic	Units	2049	2050	2051	2052
<b>Production</b>					
Mining	(Mt)	2.11	2.11	1.61	1.07
Grade	(%U)	0.047	0.047	0.047	0.047
Content	(tU)	1,000	1,000	765	508
Product	(tU)	850	850	650	432
Overall Recovery	(%)	85.0	85.0	85.0	85.0
<b>Sales</b>					
Final Product	(tU)	1,199	1,200	1,003	819
Final Product	(MlbU)	2.64	2.65	2.21	1.81
Final Product	(MlbU <sub>3</sub> O <sub>8</sub> )	3.12	3.12	2.61	2.13
<b>Macro-Economics</b>					
Exchange Rate	(KZT:US\$)	340	340	340	340
<b>Sales Price</b>					
Benchmark Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	43.53	43.53	43.53	43.53
Premium/(Discount)	(%)	31.65	31.65	34.66	35.67
Realised Price	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	29.75	29.75	28.44	28.00
<b>Sales Revenue</b>					
Product	(US\$m)	92.8	92.8	74.2	59.6
<b>Operating Expenditure</b>					
Mining	(US\$m)	(7.5)	(7.5)	(6.2)	(5.3)
Processing	(US\$m)	(8.6)	(8.6)	(7.8)	(7.2)
G&A	(US\$m)	(2.0)	(2.0)	(1.9)	(1.9)
MET	(US\$m)	(4.3)	(4.6)	(2.9)	(2.3)
Services	(US\$m)	-	-	-	-
Distribution	(US\$m)	(2.3)	(2.3)	(1.8)	(1.2)
Toll Refining	(US\$m)	-	-	-	-
Retrenchment	(US\$m)	-	-	-	(0.5)
<b>Total</b>	<b>(US\$m)</b>	<b>(24.8)</b>	<b>(25.0)</b>	<b>(20.6)</b>	<b>(18.3)</b>
<b>EBITDA</b>	<b>(US\$m)</b>	<b>68.0</b>	<b>67.8</b>	<b>53.6</b>	<b>41.3</b>
<b>Capital Expenditure</b>					
Well Construction	(US\$m)	(7.6)	(7.6)	-	-
Expansion	(US\$m)	-	-	-	-
Sustaining	(US\$m)	(4.4)	-	-	-
Liqdn Fund/Closure	(US\$m)	-	-	-	(9.6)
<b>Total</b>	<b>(US\$m)</b>	<b>(11.9)</b>	<b>(7.6)</b>	<b>-</b>	<b>(9.6)</b>
<b>Unit Expenditures</b>					
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	7.94	8.02	7.89	8.61
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	6.56	6.55	6.78	7.53
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	11.77	10.45	7.89	8.61

### 13.4.17 Other Expenditures

In addition to the LoMp related expenditures, the Company incurs additional cash expenditures which are not attributed to any specific Mining Subsidiary and are either incurred wholly by the Company (exploration expenditures) or on an attributable basis (50% of Kyzylkum LLP expenditures not charged as services to JV Khorassan-U LLP).

The Company has developed a detailed exploration programme which is focused on various projects as detailed in Section 8 of the CPR. The expenditures are expended by Volkovgeology JSC, which is a wholly owned subsidiary of the Company and are not included as TEPs within the Mining Subsidiary LoMps. The expenditures total KZT59.0bn over a period of 10.5 years as reported in Table 13-13. Stated in US\$ these amount to a total of US\$173.4m as scheduled in Table 13-114.

**Table 13-113: Exploration Programme Expenditures**

Region	Total (KZTm)	2018 (KZTm)	2019 (KZTm)	2020 (KZTm)	2021 (KZTm)	2022 (KZTm)	2023 (KZTm)	2024 (KZTm)	2025 (KZTm)	2026 (KZTm)	2027 (KZTm)	2028 (KZTm)
Shu-Sarysu Basin	39,211.5	2,752.4	6,876.4	9,934.5	6,443.4	4,583.7	4,011.0	2,300.0	1,150.0	960.2	200.0	-
Syrdarya Basin	11,685.3	526.6	1,353.0	136.7	1,250.0	1,600.0	1,569.0	1,700.0	1,180.0	1,180.0	990.0	200.0
North Kazakhstan	8,060.0	-	-	110.0	1,750.0	1,500.0	1,500.0	1,500.0	1,500.0	200.0	-	-
<b>Total</b>	<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>	<b>200.0</b>

**Table 13-114: Exploration Programme Expenditures**

Region	Total (US\$m)	2018 (US\$m)	2019 (US\$m)	2020 (US\$m)	2021 (US\$m)	2022 (US\$m)	2023 (US\$m)	2024 (US\$m)	2025 (US\$m)	2026 (US\$m)	2027 (US\$m)	2028 (US\$m)
Shu-Sarysu Basin	115.3	8.1	20.2	29.2	19.0	13.5	11.8	6.8	3.4	2.8	0.6	-
Syrdarya Basin	34.4	1.5	4.0	0.4	3.7	4.7	4.6	5.0	3.5	3.5	2.9	0.6
North Kazakhstan	23.7	-	-	0.3	5.1	4.4	4.4	4.4	4.4	0.6	-	-
<b>Total</b>	<b>173.4</b>	<b>9.6</b>	<b>24.2</b>	<b>29.9</b>	<b>27.8</b>	<b>22.6</b>	<b>20.8</b>	<b>16.2</b>	<b>11.3</b>	<b>6.9</b>	<b>3.5</b>	<b>0.6</b>

With respect to Kyzylkum LLP, the total unallocated cash expenditures as reported on a 100% basis totals KZT16.9bn which is expended from H2 2018 through 2036 inclusive as noted in Table 13-115 and Table 13-116 which in US\$ amounts to US\$49.6m. The Company's equity interest in Kyzylkum LLP is 50% with 30% held by Uranium One and 20% by EAHL. Accordingly the cash expenditures attributable to the Company comprise 50% of the forecast expenditures noted in Table 13-117 through Table 13-118 below.

**Table 13-115: Kyzylkum LLP unallocated cash expenditures (Aggregated)**

Region	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Unallocated Expenditures	(KZTm) (US\$m)	16,862.0 49.6	681.7 2.0	462.9 1.4	2,604.4 7.7	3,681.0 10.8	3,321.5 9.8	546.2 1.6	546.2 1.6	546.2 1.6	546.2 1.6	546.2 1.6

**Table 13-116: Kyzylkum LLP unallocated cash expenditures (Aggregated)**

Region	Units	2028	2029	2030	2031	2032	2033	2034	2035	2036
Unallocated Expenditures	(KZTm) (US\$m)	546.2 1.6	546.2 1.6	546.2 1.6	546.2 1.6	546.2 1.6	546.2 1.6	- -	- -	102.4 0.3

**Table 13-117: Kyzylkum LLP unallocated cash expenditures (Attributable)**

Region	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Unallocated Expenditures	(KZTm) (US\$m)	8,431.0 24.8	340.9 1.0	231.5 0.7	1,302.2 3.8	1,840.5 5.4	1,660.8 4.9	273.1 0.8	273.1 0.8	273.1 0.8	273.1 0.8	273.1 0.8

**Table 13-118: Kyzylkum LLP unallocated cash expenditures (Attributable)**

Region	Units	2028	2029	2030	2031	2032	2033	2034	2035	2036
Unallocated Expenditures	(KZTm) (US\$m)	273.1 0.8	273.1 0.8	273.1 0.8	273.1 0.8	273.1 0.8	273.1 0.8	- -	- -	51.2 0.2

### 13.4.18 Graphical Analysis

The following figures present graphical representations of key TEPs for the Mining Subsidiaries

and for the consolidated Mining Subsidiaries on a total (100%) and equity attributable basis and include:

- Total annual sales of Uranium Concentrate (Figure 13-3);
- Company equity Attributable Mining Subsidiary annual sales of Uranium Concentrate (Figure 13-4);
- Total cash costs C1 inclusive of MET (Figure 13-5);
- Total cash costs C1 exclusive of MET (Figure 13-6);
- All in Sustaining Costs (Figure 13-7);
- Capital Expenditure distribution per Mining Subsidiary (Figure 13-8); and
- Capital Expenditure element contribution (Figure 13-9).

Furthermore it is important to note that the 2018 period comprises a six month period commencing 1 July and ending 31 December and cannot be directly compared with the following annual forecasts.

The Company's annual sales profiles reflect the current LoMp generated in support of the overall Ore Reserve statement dated 1 July 2018. Current annual sales at 54.9Mlb (H1 2018 actual and H2 2018 forecast) is planned to increase to 73.7Mlb U<sub>3</sub>O<sub>8</sub> by 2022 through a combination of a reversal of historical production cuts by 2021 and planned expansions at certain of the Mining Subsidiaries (JV Inkai LLP, JV Khorassan-U LLP, Baiken-U LLP and Karatau LLP). The decline in production beyond 2022 is largely as a result of depletion of Ore Reserves at the various deposits noted in Table 13-3. By 2031 annual sales drop below 60MlbU<sub>3</sub>O<sub>8</sub> and continue to decline sharply to 10MlbU<sub>3</sub>O<sub>8</sub> by 2042 when only JV Inkai LLP remains as the sole operating Mining Subsidiary.

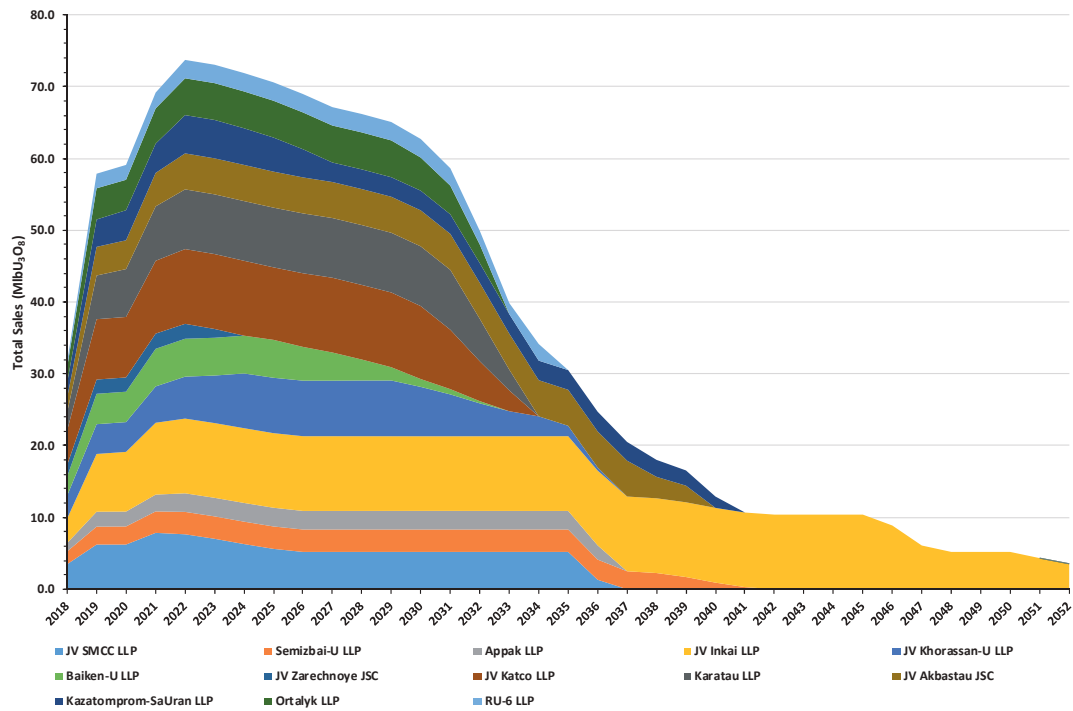
The opportunity to expand or maintain production at a strategic level (e.g. 60MlbU<sub>3</sub>O<sub>8</sub>) is dependent upon realising the opportunities noted in the Section 13.3.2 (Production Flexibility). These opportunities are subject to completion of further exploration and as appropriate further technical studies to both validate the optimal production scenario as well as ensure that the resulting forecasts are technically feasible and economically viable. This aside, SRK notes that owing to the relative simplicity of the nature of the mining operations and assuming that all necessary regulatory approvals are achieved, the process of establishing a revised strategic plan, subject to prevailing market assumptions, is relatively straight forward and not as complex as normally experience elsewhere in the mining and metals sector.

The planned increases in production and associated capital expenditures are noted in Section 13.3.5 and comprise some KZT84.06bn expended from H2 2018 through 2022. In order to sustain production over the LoMp period other capital expenditures (Table 13-99 through Table 13-102) comprise both allocations for well construction which ranges from KZT60bn to KZT80bn over the next ten years thereafter reducing in line with production and general infrastructure related sustaining capital which ranges from KZT12bn to KZT15bn over the next ten year period.

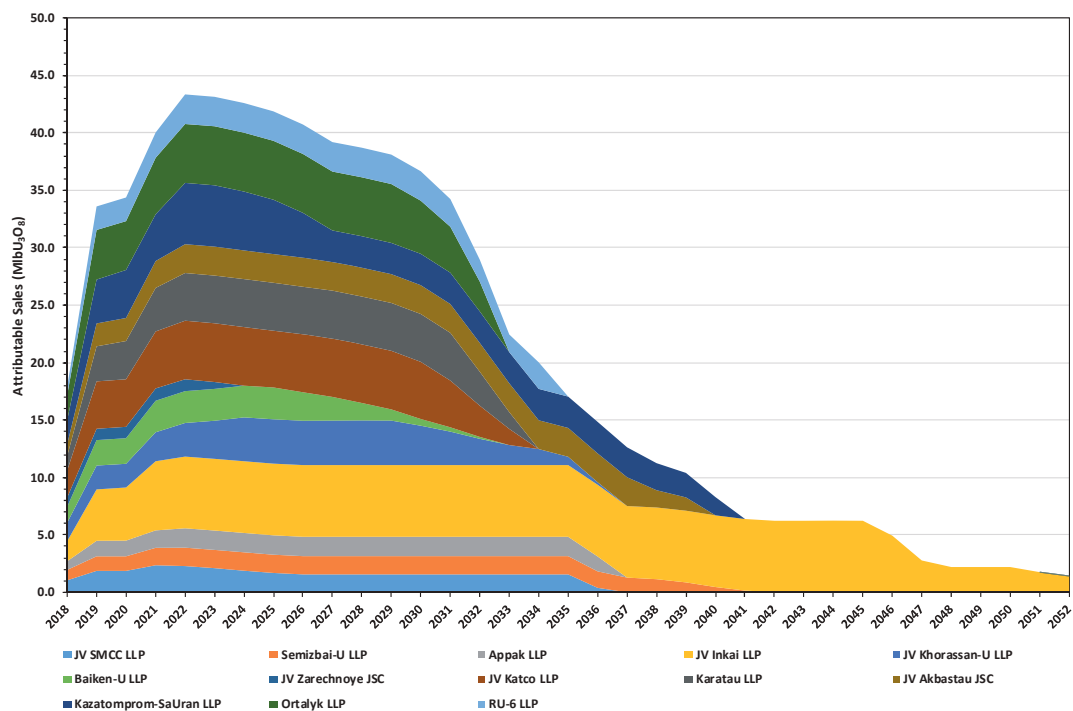
C1 unit cash costs per unit of sales are expected to range in the US\$9.00/lbU<sub>3</sub>O<sub>8</sub> to US\$11.00/lbU<sub>3</sub>O<sub>8</sub> over the next ten years in real terms (1 July 2018) with corresponding values for C1 (excluding MET) being US\$7.00/lbU<sub>3</sub>O<sub>8</sub> to US\$9.00/lbU<sub>3</sub>O<sub>8</sub> and for AISC being US\$13.00/lbU<sub>3</sub>O<sub>8</sub> to US\$16.00/lbU<sub>3</sub>O<sub>8</sub>.



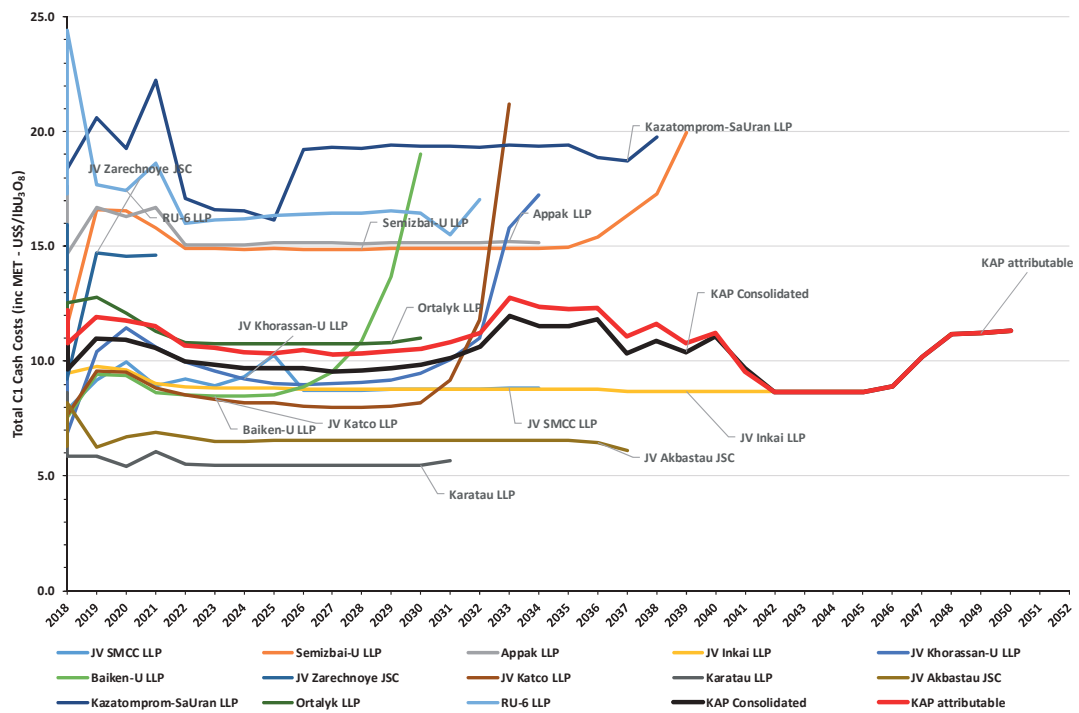
**Figure 13-3: Annual sales (100%) of Uranium Concentrate (MibU<sub>3</sub>O<sub>8</sub>)**



**Figure 13-4: Annual sales (attributable) of Uranium Concentrate (MibU<sub>3</sub>O<sub>8</sub>)**



**Figure 13-5: Total Cash Costs C1 (Including MET – US\$/lbU<sub>3</sub>O<sub>8</sub>)**



**Figure 13-6: Total Cash Costs C1 (exc MET – US\$/lbU<sub>3</sub>O<sub>8</sub>)**

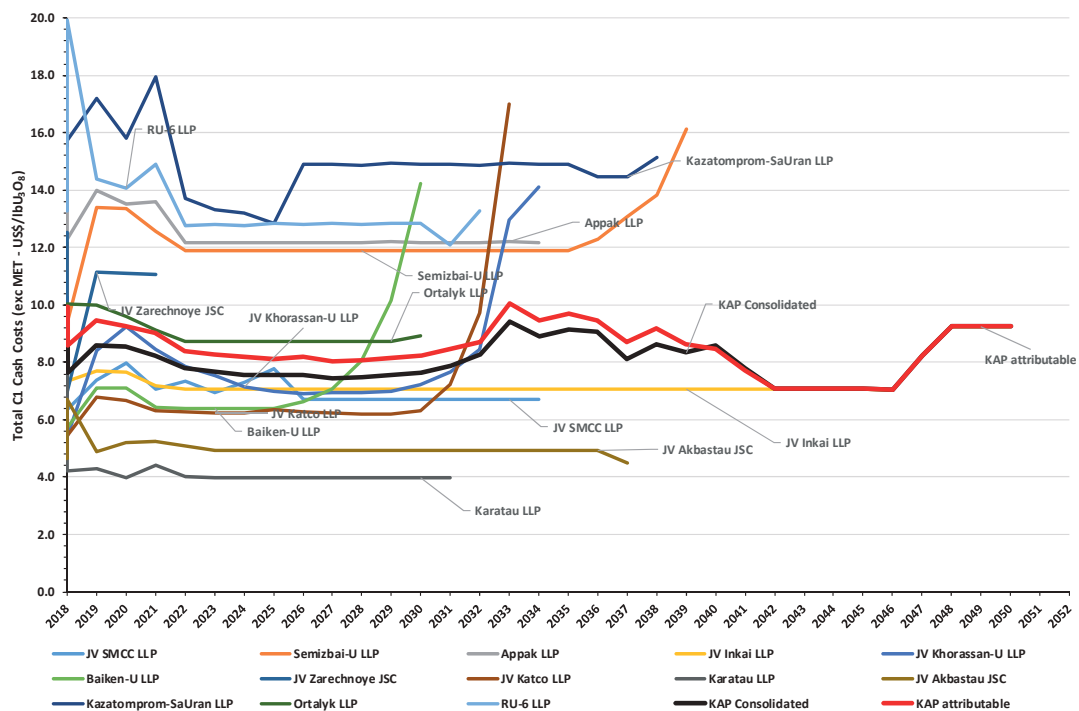


Figure 13-7: All in Sustaining Costs C1 (US\$/lbU<sub>3</sub>O<sub>8</sub>)

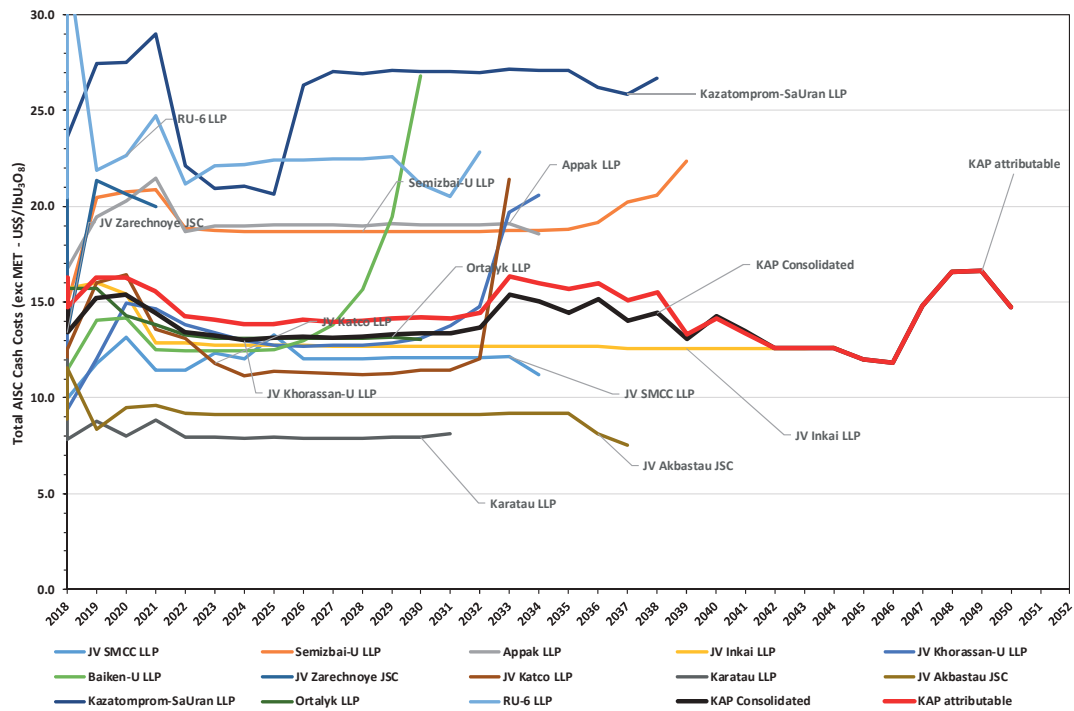
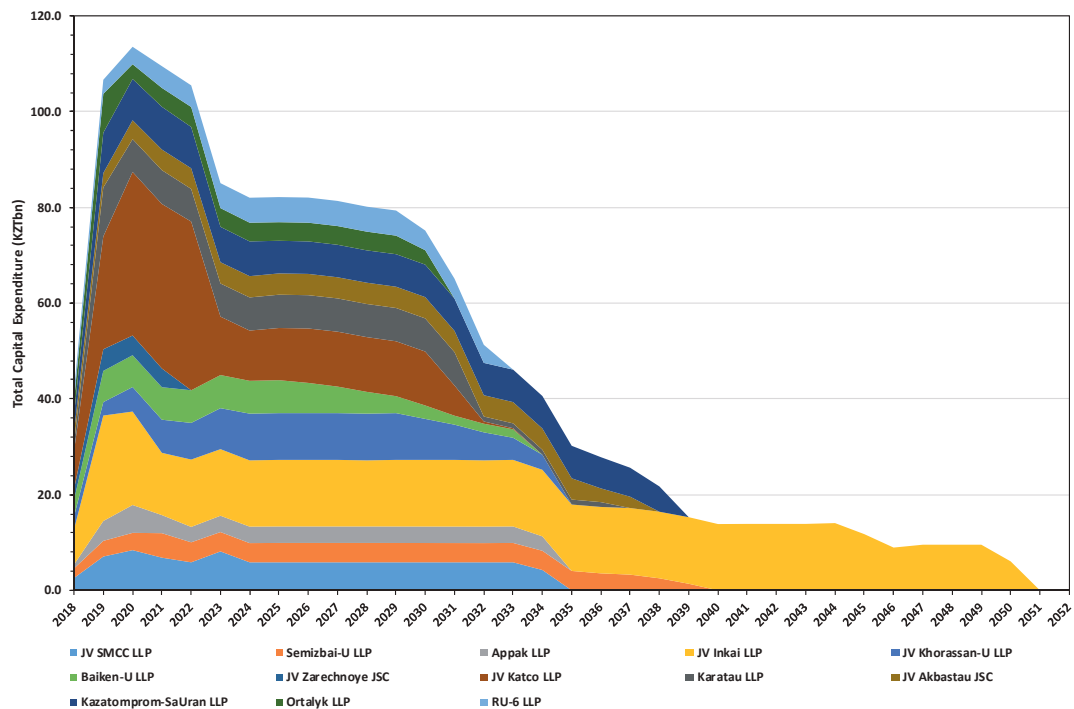
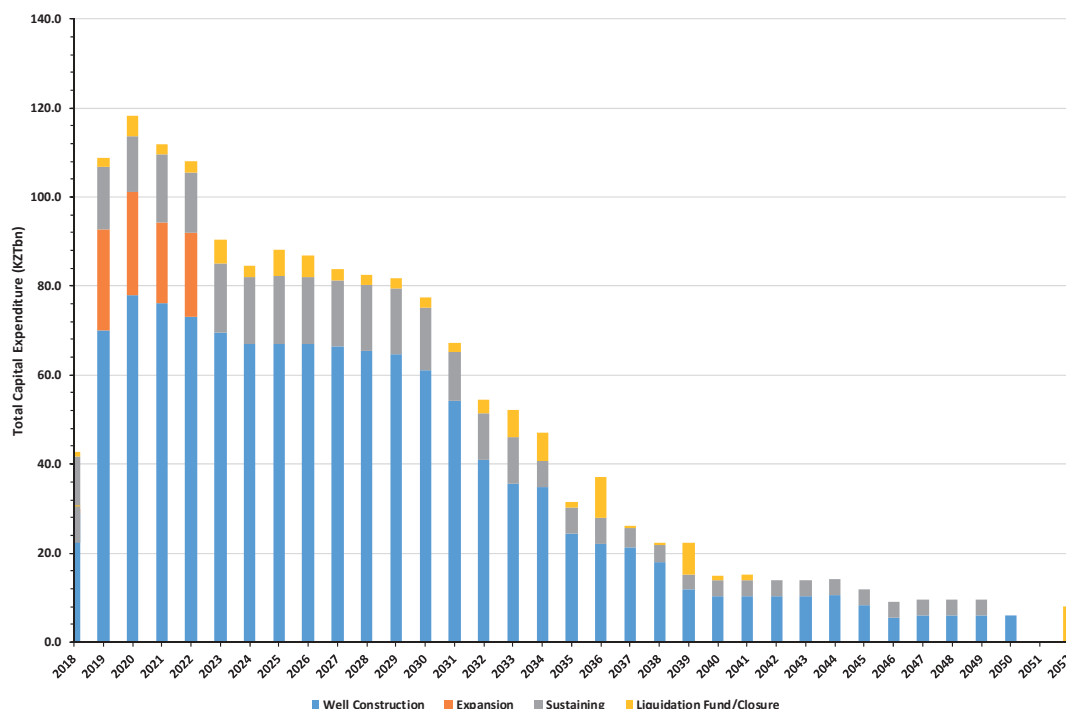


Figure 13-8: Mining Subsidiary Capital Expenditure excluding closure costs (KZTbn)



**Figure 13-9: Capital Expenditure element contribution (KZTbn)**

## 14 RISKS AND OPPORTUNITIES

### 14.1 Introduction

The following section includes a discussion on the key risks and opportunities as they relate to the Mineral Assets specifically with regards to the: Mineral Resources and Ore Reserves; Environmental Liabilities; the Exploration Programme; and the LoMps as reported herein.

### 14.2 Risks

The key risks relating to the Mineral Assets are:

- **The risk relating to the limited availability of computerised geological and mine planning technologies at the Mining Subsidiaries.** Specifically, SRK notes that Feasibility Studies are largely completed in support of the initial application for the Mining Contract or where regulatory approvals are required for updating of the Mining Contract. Furthermore, whilst updates and changes to such studies occur periodically, the present LoMps are largely focused on one or two year detailed plans with extensions thereafter based on a combination of that included in the original historical studies, the conditions of the Mining Contract and unit rates and norms derived from historical statistics and modified as considered appropriate. Whilst the geological, hydrogeological and other physical characteristics may not change significantly in certain deposits, the lack of integrated geological modelling and mine planning, in a computerised environment limits the ability of technical practitioners at the Mining Subsidiaries to:
  - Rapidly assess and update geological models and mine plans in response to changed physical and economic criteria,
  - Incorporate constraints and or variances in spatial changes relating to physical characteristics in the geological modelling and mine planning process,
  - Routinely updated Mineral Resource and Ore Reserve statements in response to changed assumptions, specifically with respect to reporting in accordance with the

- Reporting Standards,
- Assess the impact of strategic options to maximise mineral asset value;
  - **The risk that changes in technical and economic parameters result in the Ore Reserves as reported herein becoming un-economic in changed circumstances:**
    - Specifically should the spot uranium price net of any applicable price discounts fall below US\$20.00/lbU<sub>3</sub>O<sub>8</sub>,
    - In the event that key commodity input costs are subject to higher than inflationary pressures, notably in respect of sulphuric acid costs;
  - **The risk that the Company's current monopoly with respect to exploration, development and operation of uranium Mineral Assets ceases due to:**
    - Changes in regulatory practice/policy,
    - Changes in national legislation;
  - **The risk that the Company due to continued weakened commodity prices is unable to provide sufficient contributions to the liquidation funds in order to meet its environmental liability obligation;**
  - **The risk that further changes in environmental and social policy and or legislation requires adherence to more stringent closure criteria** thereby increasing the closure cost liabilities as reported herein;
  - **The risk that further technical work planned to be completed by the Company indicates that the closure liabilities as reported herein, specifically the contingencies applied are understated** for the LoMp closure costs.

### 14.3 Opportunities

The production and economic forecasts presented in this report relate to the Company's existing mining operations only and, further, to the Ore Reserves reported for these as given in Section 7 of this report. They take no account of the potential the Company has to increase the amount of uranium it produces annually by expanding production at its existing operations, to extend the lives of its existing operations by ongoing exploration at, and in the vicinity of, these operations and the likelihood that it will continue to bring new operations into production for some time to come. In SRK's opinion, this is the key opportunity open to the Company and is a function of the active exploration and development programme the Company has in place, its position as the national atomic company of Kazakhstan with responsibility for mining in Kazakhstan and the preferential rights it has with the Government of Kazakhstan to obtain subsoil use rights through direct negotiations, as opposed to through a tender process.

The Company recognises this opportunity and has allocated a significant budget to continue to explore several projects which are at various stages in the exploration cycle and progress these to the development stage if justified. SRK has reviewed the most advanced of these projects, expects resource estimates for these to start to be produced from next year and fully expects that these will be developed into uranium mines in due course.

The key opportunities relating to the Mineral Assets are:

- **The opportunity to increase the Mineral Resources as reported herein through completion of the Exploration Programme**, specifically:
  - To delineate maiden Mineral Resources at the Company's Exploration Properties, specifically Block 6 Budenovskoye and Block 7 Budenovskoye,
  - To upgrade the current Mineral Resource classification at Block 2 Inkai and Block 3 Inkai,
  - To extend the regional exploration programmes within Kazakhstan given the opportunity



offered by the Company's present monopoly with respect to exploration of uranium deposits;

- **To increase the Company's Ore Reserve base through advancement of further technical studies as outlined in this CPR** specifically in respect of Zhalpak, Block 2 Inkai and Block 3 Inkai; and
- **Maintain U<sub>3</sub>O<sub>8</sub> sales at the Mining Subsidiaries at levels ranging from 40MlbU<sub>3</sub>O<sub>8</sub> to 60Mlb U<sub>3</sub>O<sub>8</sub> post 2032**, through completion of:
  - the Company's planned regional and deposit specific exploration programme,
  - further technical studies which support increased production at existing operations and advancement of exploration properties with delineated Mineral Resources to Feasibility Study and ultimately project development stages.

## 15 CONCLUSIONS

### 15.1 Introduction

The following sections provide a summary SRK's principal findings in respect of the review of the Company's Mineral Assets as reported upon herein with specific focus on: Mineral Assets; Mineral Resource and Ore Reserves; Environmental Liabilities; the Exploration Programme; LoMp; and the associated Risks and Opportunities. SRK has conducted a comprehensive review and assessment of all material issues likely to influence the future operations of the Mineral Assets. The TEPs for the Mineral Assets, as provided and taken in good faith by SRK, have been reviewed and adjusted by SRK where considered appropriate.

Forecast sales from the Mining Subsidiaries which are reported herein as attributable to the Company are assumed to be to the Company and not from the Company to any third party. SRK has been informed by the Company that in some rare cases, a portion of the historical sales from the Mining Subsidiaries may also have been sold directly to any third party. Such sales if occurred, are however considered by the Company to be marginal.

### 15.2 The Mineral Assets

In total there are 30 Mineral Assets comprising 26 Operating Properties, 2 Advanced Exploration Properties and 2 Exploration Properties as well as a number (8) of other regional exploration properties. The Mineral Assets extend over approximately 2,060km<sup>2</sup> and are located in three established uranium mining regions in Kazakhstan Shu-Sarysu (23), Syrdarya (6) and Northern Kazakhstan (1).

The Mineral Assets are managed through a number of Mining Subsidiaries in which the Company has variable equity participation (Table 15-1) which have been developed over a 34 years of exploration with first production commencing in 1997. A number of the Mining Subsidiaries include long life assets with production planned to extend beyond 2035 with the currently defined Ore Reserves depleted in 2052.

Maximum annual production levels at the Mining Subsidiaries range from a low of approximately 840tU at JV Zarechnoye JSC to a high of 4,010tU at JV Katco LLP. As at 1 July 2018 the total Ore Reserves reported on a 100% basis was 884.7Mt grading 0.60%U and containing 531.6ktU and the total Mineral Resources reported on a 100% basis was 1,241.3Mt grading 0.054%U and containing 674.0ktU (Table 15-2).

Historical production for the Mining Subsidiaries reported (100% basis) for the 12 month period ended 31 December 2017 (Table 15-3) comprised sales of 60.2MlbU<sub>3</sub>O<sub>8</sub> at a cash cost of US\$10.37/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.51/lbU<sub>3</sub>O<sub>8</sub> with accompanying capital expenditure of

US\$260.9m. For the six month period ended 30 June 2018 corresponding statistics reported (100% basis) for the Mining Subsidiaries comprised sales of 23.3MlbU<sub>3</sub>O<sub>8</sub> at a cash cost of US\$10.99/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$15.00/lbU<sub>3</sub>O<sub>8</sub> with accompanying capital expenditure of US\$93.4m.

Historical production for the Mining Subsidiaries reported (attributable basis) for the 12 month period ended 31 December 2017 (Table 15-4) comprised sales of 30.5MlbU<sub>3</sub>O<sub>8</sub> at a cash cost of US\$12.02/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.09/lbU<sub>3</sub>O<sub>8</sub> with accompanying capital expenditure of US\$130.5m. For the six month period ended 30 June 2018 corresponding statistics reported (attributable basis) for the Mining Subsidiaries comprised sales of 13.0MlbU<sub>3</sub>O<sub>8</sub> at a cash cost of US\$12.22/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$16.28/lbU<sub>3</sub>O<sub>8</sub> with accompanying capital expenditure of US\$51.2m.

**Table 15-1: Mineral Assets Summary Details**

Mining Subsidiary	Deposits (No)	Contracts (No)	Licences Area (km <sup>2</sup> )	Equity (%)	Discovery (year)	Prdn Start (year)	LoMp Depn (year)
<b>Operating Properties</b>							
Kazatomprom-SaUran LLP	5	5	252.90	100.00	1963	1997	2040
Ortalyk LLP	2	2	186.40	100.00	1964	2007	2032
RU-6 LLP	2	1	59.58	100.00	1979	1997	2031
Appak LLP	1	1	133.46	65.00	1976	2008	2036
JV Inkai LLP	3	1	139.00	60.00	1976	2008	2052
Semizbai-U LLP	2	2	71.20	51.00	1973	2008	2041
JV Akbastau JSC	3	2	2.71	50.00	1976	2009	2039
Karatau LLP	1	1	17.28	50.00	1979	2007	2033
JV Zarechnoye JSC	1	1	38.00	49.98	1977	2007	2023
JV Katco LLP	2	1	45.73	49.00	1976	2001	2033
JV Khorassan-U LLP	1	1	70.80	50.00	1972	2008	2036
JV SMCC LLP	2	2	116.91	30.00	1976	2004	2036
Baiken-U LLP	1	1	350.00	52.50	1972	2009	2032
<b>Subtotal</b>	<b>26</b>	<b>21</b>	<b>1,483.97</b>		<b>1963</b>	<b>1997</b>	<b>2052</b>
<b>Advanced Exploration Properties</b>							
Kazatomprom	2	2	424.00	100.00	1976	2015	n/a
<b>Exploration Properties</b>							
Budenovskoye LLP	2	1	151.30	51.00	1976	2017	n/a
<b>Grand Total</b>	<b>30</b>	<b>24</b>	<b>2,059.27</b>		<b>1963</b>	<b>1997</b>	<b>2052</b>

**Table 15-2: Mineral Assets Summary Ore Reserves and Mineral Resources**

Mining Subsidiary	Ore Reserves			Mineral Resources		
	(Mt)	(%U)	(ktU)	(Mt)	(%U)	(ktU)
<b>Operating Properties</b>						
Kazatomprom-SaUran LLP	74.3	0.041	30.6	75.9	0.041	31.4
Ortalyk LLP	64.5	0.045	29.0	109.1	0.040	43.3
RU-6 LLP	20.9	0.076	15.9	20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	54.8	0.035	19.2
JV Inkai LLP	264.8	0.054	143.3	264.9	0.054	143.4
Semizbai-U LLP	60.1	0.046	27.9	60.1	0.046	27.9
JV Akbastau JSC	49.6	0.089	43.9	49.6	0.089	43.9
Karatau LLP	59.3	0.081	48.1	59.3	0.081	48.1
JV Zarechnoye JSC	8.0	0.060	4.8	12.2	0.056	6.9
JV Katco LLP	57.6	0.104	59.9	57.6	0.104	59.9
JV Khorassan-U LLP	40.0	0.107	42.6	40.0	0.107	42.6
JV SMCC LLP	110.8	0.040	44.0	110.8	0.040	44.0
Baiken-U LLP	20.0	0.112	22.4	20.0	0.112	22.4
<b>Subtotal</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>935.2</b>	<b>0.059</b>	<b>548.8</b>
<b>Advanced Exploration Properties</b>						
Kazatomprom	n/a	n/a	n/a	306.1	0.041	125.1
<b>Exploration Properties</b>						
Budenovskoye LLP	n/a	n/a	n/a			
<b>Grand Total</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>

**Table 15-3: Mining Subsidiary (100%) historical performance (2015 through H1 2018: KZT)**

Statistic	Units	2015	2016	2017	2018H1
<b>Production</b>					
Mined	(Mt)	44.22	45.79	43.12	20.07
Grade	(%U)	0.061	0.061	0.061	0.061
Content	(tU)	26,778	27,817	26,354	12,325
<b>Final Product</b>	<b>(tU)</b>	<b>23,607</b>	<b>24,586</b>	<b>23,321</b>	<b>10,905</b>
<b>Recovery</b>	<b>(%)</b>	<b>88.2</b>	<b>88.4</b>	<b>88.5</b>	<b>88.5</b>
<b>Sales</b>					
Final Product	(tU)	22,529	23,556	23,164	8,961
	(MlbU)	49.67	51.93	51.07	19.76
	(MlbU <sub>3</sub> O <sub>8</sub> )	58.57	61.24	60.22	23.30
<b>Macro Economics</b>					
Exchange Rate	(US\$:KZT)	222	342	326	326
<b>Commodity Price</b>					
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.32	25.72	21.31	21.18
	(%)	2.39	2.56	2.51	2.10

Statistic	Units	2015	2016	2017	2018H1
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.38	25.06	20.78	20.73
	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	8,531	8,566	6,776	6,769
<b>Financial</b>					
Sales Revenue	(KZTm)	499,659.8	524,571.9	408,047.2	157,708.6
Opex	(KZTm)	(200,587.2)	(210,409.5)	(203,584.9)	(83,620.1)
EBITDA	(KZTm)	299,072.6	314,162.4	204,462.3	74,088.5
Capex	(KZTm)	(66,399.2)	(72,958.2)	(85,061.4)	(30,499.9)
<b>Unit Costs</b>					
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,425	3,436	3,381	3,589
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,793	2,803	2,709	2,881
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,508	4,586	4,733	4,896

**Table 15-4: Mining Subsidiary (Attributable) historical performance (2015 through H1 2018)**

Statistic	Units	2015	2016	2017	2018H1
<b>Production</b>					
Mined	(Mt)	25.88	26.59	24.39	11.56
Grade	(%U)	0.056	0.056	0.056	0.056
Content	(tU)	14,488	14,802	13,633	6,479
Final Product	(tU)	12,766	13,096	12,094	5,771
Recovery	(%)	88.1	88.5	88.7	89.1
<b>Sales</b>					
Final Product	(tU)	11,945	13,146	13,264	5,484
	(MlbU)	26.33	28.98	29.24	12.09
	(MlbU <sub>3</sub> O <sub>8</sub> )	31.05	29.98	30.53	12.96
<b>Macro Economics</b>					
Exchange Rate	(US\$:KZT)	222	342	326	326
<b>Commodity Price</b>					
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	39.61	26.57	21.53	21.13
	(%)	1.82	1.92	1.92	1.47
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	38.89	26.06	21.12	20.82
<b>Financial</b>					
Sales Revenue	(US\$m)	1,207.6	781.4	644.7	269.9
Opex	(US\$m)	(542.0)	(366.4)	(366.9)	(158.4)
EBITDA	(US\$m)	665.6	415.0	277.8	111.5
Capex	(US\$m)	(156.8)	(107.6)	(130.5)	(51.2)
<b>Unit Costs</b>					
C1	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	17.45	12.22	12.02	12.22
C1 (exc MET)	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	14.34	10.07	9.74	9.92
AISC	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	22.19	15.67	16.09	16.28

## 15.3 Mineral Resources and Ore Reserves

As at the Effective Date of the CPR, the total Mineral Resources (Table 15-5) reported by SRK in this CPR for the Mining Subsidiaries, as at 1 July 2018, totalled 1,241.3Mt grading 0.054%U and containing 674.0ktU comprising:

- Measured and Indicated Mineral Resources totalling 1,237.1Mt grading 0.054%U and containing 671.9ktU comprising
  - Measured Mineral Resources totalling 508.1Mt grading 0.062%U and containing 314.7ktU;
  - Indicated Mineral Resources totalling 729.0Mt grading 0.049%U and containing 357.2ktU; and
- Inferred Mineral Resources totalling 4.2Mt grading 0.049%U and containing 2.0ktU.

On an attributable basis (Table 15-5) the total Mineral Resources reported by SRK in this CPR for the Mining Subsidiaries totalled 889.7Mt grading 0.051%U and containing 453.5ktU comprising:

- Measured and Indicated Mineral Resources totalling 887.7Mt grading 0.051%U and containing 452.5ktU comprising
  - Measured Mineral Resources totalling 349.5Mt grading 0.059%U and containing 204.9ktU;
  - Indicated Mineral Resources totalling 538.1Mt grading 0.046%U and containing 247.6ktU; and
- Inferred Mineral Resources totalling 2.1Mt grading 0.049%U and containing 1.0ktU.

In all instances SRK concludes that:

- The Mineral Resource statements have an effective date of 1 July 2018;
- The Mineral Resources statements as reported herein are reported in accordance with the terms and definitions of the JORC Code;
- The Mineral Resources have been assessed with regards to economic potential assuming appropriate modifying factors and cut-off-grade determinations as reported in Table 7-11 and assuming a 30% premium in respect of the Long Term Prices utilised to support the reporting of Ore Reserves; and
- The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves.

The Competent Person who has overall responsibility for the Mineral Resources and Ore Reserves as reported herein is Dr Mike Armitage, C.Eng, C. Geol, FGS, MIMM, PhD. He is a full time employee of SRK, a corporate consultant and has over 35 years' experience in the mining and metals industry and also has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Dr Mike Armitage has been responsible for the reporting of Mineral Resources and Ore Reserves on various properties internationally during the past 35 years.

**Table 15-5: Mining Subsidiary Mineral Resources: 100% and Attributable**

Classification/Mining Subsidiary	Aggregated (100%)			Equity		Attributable		
	Tonnage (Mt)	Grade (%U)	Content (ktU)		(%)	Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Measured</b>								
Kazatomprom-SaUran LLP	20.0	0.033	6.6	100.00		20.0	0.033	6.6
Ortalyk LLP	50.0	0.047	23.5	100.00		50.0	0.047	23.5
RU-6 LLP	13.4	0.075	10.1	100.00		13.4	0.075	10.1
Appak LLP	13.4	0.032	4.3	65.00		8.7	0.032	2.8
JV Inkai LLP	149.8	0.055	82.3	60.00		89.9	0.055	49.4
Semizbai-U LLP	39.5	0.048	19.0	51.00		20.1	0.048	9.7
JV Akbastau JSC	33.4	0.087	29.0	50.00		16.7	0.087	14.5
Karatau LLP	31.8	0.097	30.8	50.00		15.9	0.097	15.4
JV Zarechnoye JSC	3.6	0.060	2.2	49.98		1.8	0.060	1.1
JV Katco LLP	29.9	0.102	30.7	49.00		14.7	0.102	15.0
JV Khorassan-U LLP	13.0	0.106	13.8	50.00		6.5	0.106	6.9
JV SMCC LLP	18.8	0.050	9.3	30.00		5.6	0.050	2.8
Baikenu LLP	11.3	0.114	12.9	52.50		5.9	0.114	6.8
Kazatomprom	80.3	0.050	40.4	100.00		80.3	0.050	40.4
<b>Subtotal</b>	<b>508.1</b>	<b>0.062</b>	<b>314.7</b>			<b>349.5</b>	<b>0.059</b>	<b>204.9</b>
<b>Indicated</b>								
Kazatomprom-SaUran LLP	55.9	0.044	24.8	100.00		55.9	0.044	24.8
Ortalyk LLP	59.0	0.033	19.8	100.00		59.0	0.033	19.8
RU-6 LLP	7.5	0.077	5.8	100.00		7.5	0.077	5.8
Appak LLP	41.4	0.036	14.9	65.00		26.9	0.036	9.7
JV Inkai LLP	115.1	0.053	61.1	60.00		69.1	0.053	36.7
Semizbai-U LLP	20.6	0.043	8.9	51.00		10.5	0.043	4.6
JV Akbastau JSC	16.2	0.092	14.9	50.00		8.1	0.092	7.5
Karatau LLP	27.5	0.063	17.3	50.00		13.8	0.063	8.7
JV Zarechnoye JSC	4.4	0.060	2.7	49.98		2.2	0.060	1.3
JV Katco LLP	27.7	0.106	29.3	49.00		13.6	0.106	14.3
JV Khorassan-U LLP	27.0	0.107	28.9	50.00		13.5	0.107	14.4
JV SMCC LLP	92.1	0.038	34.6	30.00		27.6	0.038	10.4
Baikenu LLP	8.7	0.109	9.5	52.50		4.6	0.109	5.0
Kazatomprom	225.9	0.038	84.7	100.00		225.9	0.038	84.7
<b>Subtotal</b>	<b>729.0</b>	<b>0.049</b>	<b>357.2</b>			<b>538.1</b>	<b>0.046</b>	<b>247.6</b>
<b>Measured + Indicated</b>								
Kazatomprom-SaUran LLP	75.9	0.041	31.4	100.00		75.9	0.041	31.4
Ortalyk LLP	109.1	0.040	43.3	100.00		109.1	0.040	43.3
RU-6 LLP	20.9	0.076	15.9	100.00		20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	65.00		35.6	0.035	12.5
JV Inkai LLP	264.9	0.054	143.4	60.00		159.0	0.054	86.0
Semizbai-U LLP	60.1	0.046	27.9	51.00		30.6	0.046	14.2
JV Akbastau JSC	49.6	0.089	43.9	50.00		24.8	0.089	21.9
Karatau LLP	59.3	0.081	48.1	50.00		29.6	0.081	24.1
JV Zarechnoye JSC	8.0	0.060	4.8	49.98		4.0	0.060	2.4
JV Katco LLP	57.6	0.104	59.9	49.00		28.2	0.104	29.4
JV Khorassan-U LLP	40.0	0.107	42.6	50.00		20.0	0.107	21.3
JV SMCC LLP	110.8	0.040	44.0	30.00		33.2	0.040	13.2
Baikenu LLP	20.0	0.112	22.4	52.50		10.5	0.112	11.7
Kazatomprom	306.1	0.041	125.1	100.00		306.1	0.041	125.1
<b>Total</b>	<b>1,237.1</b>	<b>0.054</b>	<b>671.9</b>			<b>887.7</b>	<b>0.051</b>	<b>452.5</b>
<b>Inferred</b>								
Kazatomprom-SaUran LLP	-	-	-	100.00		-	-	-
Ortalyk LLP	-	-	-	100.00		-	-	-

Classification/Mining Subsidiary	Aggregated (100%)			Equity (%)	Attributable		
	Tonnage (Mt)	Grade (%U)	Content (ktU)		Tonnage (Mt)	Grade (%U)	Content (ktU)
RU-6 LLP	-	-	-	100.00	-	-	-
Appak LLP	-	-	-	65.00	-	-	-
JV Inkai LLP	-	-	-	60.00	-	-	-
Semizbai-U LLP	-	-	-	51.00	-	-	-
JV Akbastau JSC	-	-	-	50.00	-	-	-
Karatau LLP	-	-	-	50.00	-	-	-
JV Zarechnoye JSC	4.2	0.049	2.0	49.98	2.1	0.049	1.0
JV Katco LLP	-	-	-	49.00	-	-	-
JV Khorassan-U LLP	-	-	-	50.00	-	-	-
JV SMCC LLP	-	-	-	30.00	-	-	-
Baiken-U LLP	-	-	-	52.50	-	-	-
Kazatomprom	-	-	-	100.00	-	-	-
<b>Subtotal</b>	<b>4.2</b>	<b>0.049</b>	<b>2.0</b>		<b>2.1</b>	<b>0.049</b>	<b>1.0</b>
<b>Mineral Resources</b>							
Kazatomprom-SaUran LLP	75.9	0.041	31.4	100.00	75.9	0.041	31.4
Ortalyk LLP	109.1	0.040	43.3	100.00	109.1	0.040	43.3
RU-6 LLP	20.9	0.076	15.9	100.00	20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	65.00	35.6	0.035	12.5
JV Inkai LLP	264.9	0.054	143.4	60.00	159.0	0.054	86.0
Semizbai-U LLP	60.1	0.046	27.9	51.00	30.6	0.046	14.2
JV Akbastau JSC	49.6	0.089	43.9	50.00	24.8	0.089	21.9
Karatau LLP	59.3	0.081	48.1	50.00	29.6	0.081	24.1
JV Zarechnoye JSC	12.2	0.056	6.9	49.98	6.1	0.056	3.4
JV Katco LLP	57.6	0.104	59.9	49.00	28.2	0.104	29.4
JV Khorassan-U LLP	40.0	0.107	42.6	50.00	20.0	0.107	21.3
JV SMCC LLP	110.8	0.040	44.0	30.00	33.2	0.040	13.2
Baiken-U LLP	20.0	0.112	22.4	52.50	10.5	0.112	11.7
Kazatomprom	306.1	0.041	125.1	100.00	306.1	0.041	125.1
<b>Total</b>	<b>1,241.3</b>	<b>0.054</b>	<b>674.0</b>		<b>889.7</b>	<b>0.051</b>	<b>453.5</b>

As at the Effective Date of the CPR, the total Ore Reserves (Table 15-6) reported by SRK in this CPR for the Mining Subsidiaries as at 1 July 2018, totalled 884.7Mt grading 0.060%U and containing 531.6ktU comprising:

- Proved Ore Reserves totalling 427.4Mt grading 0.064%U and containing 274.1ktU; and
- Probable Ore Reserves totalling 457.3Mt grading 0.056%U and containing 257.6ktU.

On an attributable basis (Table 15-6) the total Ore Reserves reported by SRK in this CPR for the Mining Subsidiaries totalled 535.3Mt grading 0.058%U and containing 312.3ktU comprising:

- Proved Ore Reserves totalling 268.8Mt grading 0.061%U and containing 164.3ktU; and
- Probable Ore Reserves totalling 266.4Mt grading 0.056%U and containing 148.0ktU.

In all instances SRK concludes that:

- The Ore Reserve statements have an effective date of 1 July 2018;
- The Ore Reserve statements as reported herein are reported in accordance with the terms and definitions of the JORC Code; and
- The principal technical and economic inputs relied on for reporting the Ore Reserves have been assessed for each of the Mining Subsidiaries and are reported in Table 7-11 where the uranium price is assumed to increase from US\$26.09/lbU<sub>3</sub>O<sub>8</sub> to US\$43.53/lbU<sub>3</sub>O<sub>8</sub>.

The Competent Person who has overall responsibility for the Ore Reserves as reported herein is Dr Mike Armitage, C.Eng, C. Geol, FGS, MIMM, PhD. He is a full time employee of SRK, a corporate consultant and has over 35 years' experience in the mining and metals industry and also has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code. Dr Mike Armitage has been responsible for the reporting of Mineral Resources and Ore Reserves on various properties internationally during the past 35 years.

**Table 15-6: Mining Subsidiary Ore Reserves: Aggregated and Attributable**

Classification/Mining Subsidiary	Aggregated (100%)			Equity (%)	Attributable		
	Tonnage (Mt)	Grade (%U)	Content (ktU)		Tonnage (Mt)	Grade (%U)	Content (ktU)
<b>Proved</b>							
Kazatomprom-SaUran LLP	19.8	0.033	6.6	100.00	19.8	0.033	6.6
Ortalyk LLP	49.8	0.047	23.4	100.00	49.8	0.047	23.4



Classification/Mining Subsidiary	Aggregated (100%)			Equity (%)	Attributable		
	Tonnage (Mt)	Grade (%U)	Content (ktU)		Tonnage (Mt)	Grade (%U)	Content (ktU)
RU-6 LLP	13.4	0.075	10.1	100.00	13.4	0.075	10.1
Appak LLP	13.4	0.032	4.3	65.00	8.7	0.032	2.8
JV Inkai LLP	149.8	0.055	82.2	60.00	89.9	0.055	49.3
Semizbai-U LLP	39.5	0.048	19.0	51.00	20.1	0.048	9.7
JV Akbastau JSC	33.4	0.087	29.0	50.00	16.7	0.087	14.5
Karatau LLP	31.8	0.097	30.8	50.00	15.9	0.097	15.4
JV Zarechnoye JSC	3.6	0.060	2.2	49.98	1.8	0.060	1.1
JV Katco LLP	29.9	0.102	30.7	49.00	14.7	0.102	15.0
JV Khorassan-U LLP	13.0	0.106	13.8	50.00	6.5	0.106	6.9
JV SMCC LLP	18.8	0.050	9.3	30.00	5.6	0.050	2.8
Baiken-U LLP	11.3	0.114	12.9	52.50	5.9	0.114	6.8
<b>Subtotal</b>	<b>427.4</b>	<b>0.064</b>	<b>274.1</b>		<b>268.8</b>	<b>0.061</b>	<b>164.3</b>
<b>Probable</b>							
Kazatomprom-SaUran LLP	54.4	0.044	24.1	100.00	54.4	0.044	24.1
Ortalyk LLP	14.7	0.038	5.6	100.00	14.7	0.038	5.6
RU-6 LLP	7.5	0.077	5.8	100.00	7.5	0.077	5.8
Appak LLP	41.4	0.036	14.9	65.00	26.9	0.036	9.7
JV Inkai LLP	115.1	0.053	61.1	60.00	69.1	0.053	36.7
Semizbai-U LLP	20.6	0.043	8.9	51.00	10.5	0.043	4.6
JV Akbastau JSC	16.2	0.092	14.9	50.00	8.1	0.092	7.5
Karatau LLP	27.5	0.063	17.3	50.00	13.8	0.063	8.7
JV Zarechnoye JSC	4.4	0.060	2.7	49.98	2.2	0.060	1.3
JV Katco LLP	27.7	0.106	29.3	49.00	13.6	0.106	14.3
JV Khorassan-U LLP	27.0	0.107	28.9	50.00	13.5	0.107	14.4
JV SMCC LLP	92.1	0.038	34.6	30.00	27.6	0.038	10.4
Baiken-U LLP	8.7	0.109	9.5	52.50	4.6	0.109	5.0
<b>Subtotal</b>	<b>457.3</b>	<b>0.056</b>	<b>257.6</b>		<b>266.4</b>	<b>0.056</b>	<b>148.0</b>
<b>Ore Reserves</b>							
Kazatomprom-SaUran LLP	74.3	0.041	30.6	100.00	74.3	0.041	30.6
Ortalyk LLP	64.5	0.045	29.0	100.00	64.5	0.045	29.0
RU-6 LLP	20.9	0.076	15.9	100.00	20.9	0.076	15.9
Appak LLP	54.8	0.035	19.2	65.00	35.6	0.035	12.5
JV Inkai LLP	264.8	0.054	143.3	60.00	158.9	0.054	86.0
Semizbai-U LLP	60.1	0.046	27.9	51.00	30.6	0.046	14.2
JV Akbastau JSC	49.6	0.089	43.9	50.00	24.8	0.089	21.9
Karatau LLP	59.3	0.081	48.1	50.00	29.6	0.081	24.1
JV Zarechnoye JSC	8.0	0.060	4.8	49.98	4.0	0.060	2.4
JV Katco LLP	57.6	0.104	59.9	49.00	28.2	0.104	29.4
JV Khorassan-U LLP	40.0	0.107	42.6	50.00	20.0	0.107	21.3
JV SMCC LLP	110.8	0.040	44.0	30.00	33.2	0.040	13.2
Baiken-U LLP	20.0	0.112	22.4	52.50	10.5	0.112	11.7
<b>Total</b>	<b>884.7</b>	<b>0.060</b>	<b>531.6</b>		<b>535.3</b>	<b>0.058</b>	<b>312.3</b>

## 15.4 Environmental Liabilities

SRK concludes that as of the Effective Date of this CPR, the total Environmental Liabilities for the Mineral Assets reported on a 100% basis comprise:

- Life-of-Mine plan closure costs totalling KZT109.4bn (US\$321.8m); and
- Asset Retirement Obligations (included within the LoMp closure costs) totalling KZT66.2bn (US\$194.8m).

As at 30 June 2018 the closing balances of the liquidation funds for the Mining Subsidiaries reported was KZT18.6bn (US\$54.7m). Future contributions as defined by the individual Mining Contracts necessitates expenditure of a further KZT42.2bn (US\$124.2m) which results in a closing balance of the liquidation fund on closure of KZT60.8bn (US\$179.0m). Overall this indicates a shortfall of KZT48.5bn (US\$142.8m). This shortfall is included in the LoMp as lump sum payments on cessation of activities at each Mining Subsidiary.

In addition the total retrenchment expenditures relating to the LoMps are noted at KZT2.8bn (US\$8.1m).

The Environmental Liabilities as reported herein are inclusive of a 10% contingency, however, it is clear that further work is required in order to develop the closure cost estimate to a minimum of PFS level and to specifically address the accompanying risks as highlighted in Section 14 of this CPR.

**Table 15-7: Mining Subsidiary Environmental Liabilities: 100% and Attributable**

Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
<b>100%</b>								
Kazatomprom-SaUran LLP	(KZTm)	12,633.1	18,590.7	4,424.8	10,963.5	15,388.4	(3,202.3)	169.7
Ortalyk LLP	(KZTm)	3,734.1	4,841.1	959.7	2,699.0	3,658.7	(1,182.5)	224.4

Mining Subsidiary	Units	ARO	LoMp	Liquidation Fund 30/06/2018	Liquidation Fund LoMp Contributions	Liquidation Fund on Closure	Liquidation Fund Surplus/(Deficit)	Retrenchment
RU-6 LLP	(KZTm)	6,448.9	8,979.4	1,461.2	2,605.1	4,066.3	(4,913.1)	140.1
Appak LLP	(KZTm)	2,724.2	5,604.2	776.5	3,057.8	3,834.3	(1,769.9)	102.9
JV Inkai LLP	(KZTm)	5,615.9	8,339.7	203.5	-	203.5	(8,136.3)	472.7
Semizbai-U LLP	(KZTm)	5,063.4	9,819.1	945.5	3,719.9	4,665.4	(5,153.7)	82.7
JV Akbastau JSC	(KZTm)	3,402.0	7,256.8	862.5	2,924.4	3,786.9	(3,469.9)	20.9
Karatau LLP	(KZTm)	3,863.9	7,017.9	714.5	3,000.0	3,714.5	(3,303.4)	329.5
JV Zarechnoye JSC	(KZTm)	1,355.4	2,995.8	70.9	70.5	141.4	(2,854.4)	133.8
JV Katco LLP	(KZTm)	9,293.1	12,172.0	4,595.0	3,018.9	7,613.8	(4,558.2)	431.4
JV Khorassan-U LLP	(KZTm)	1,904.6	5,666.8	576.7	4,224.8	4,801.4	(865.4)	20.2
JV SMCC LLP	(KZTm)	7,912.6	14,102.0	2,073.2	3,473.6	5,546.8	(8,555.2)	326.0
Baikent-U LLP	(KZTm)	2,293.8	4,012.7	942.4	2,484.6	3,427.0	(585.7)	299.8
<b>Total</b>	<b>(KZTm)</b>	<b>66,245.1</b>	<b>109,398.3</b>	<b>18,606.3</b>	<b>42,242.0</b>	<b>60,848.4</b>	<b>(48,549.9)</b>	<b>2,754.0</b>
<b>Attributable</b>	<b>(KZTm)</b>	<b>43,933.1</b>	<b>69,835.1</b>	<b>12,435.3</b>	<b>29,087.9</b>	<b>41,523.1</b>	<b>(28,312.0)</b>	<b>1,645.5</b>
<b>100%</b>								
Kazatomprom-SaUran LLP	(US\$m)	37.2	54.7	13.0	32.2	45.3	(9.4)	0.5
Ortalyk LLP	(US\$m)	11.0	14.2	2.8	7.9	10.8	(3.5)	0.7
RU-6 LLP	(US\$m)	19.0	26.4	4.3	7.7	12.0	(14.5)	0.4
Appak LLP	(US\$m)	8.0	16.5	2.3	9.0	11.3	(5.2)	0.3
JV Inkai LLP	(US\$m)	16.5	24.5	0.6	-	0.6	(23.9)	1.4
Semizbai-U LLP	(US\$m)	14.9	28.9	2.8	10.9	13.7	(15.2)	0.2
JV Akbastau JSC	(US\$m)	10.0	21.3	2.5	8.6	11.1	(10.2)	0.1
Karatau LLP	(US\$m)	11.4	20.6	2.1	8.8	10.9	(9.7)	1.0
JV Zarechnoye JSC	(US\$m)	4.0	8.8	0.2	0.2	0.4	(8.4)	0.4
JV Katco LLP	(US\$m)	27.3	35.8	13.5	8.9	22.4	(13.4)	1.3
JV Khorassan-U LLP	(US\$m)	5.6	16.7	1.7	12.4	14.1	(2.5)	0.1
JV Khorassan-U LLP	(US\$m)	23.3	41.5	6.1	10.2	16.3	(25.2)	1.0
Baikent-U LLP	(US\$m)	6.7	11.8	2.8	7.3	10.1	(1.7)	0.9
<b>Total</b>	<b>(US\$m)</b>	<b>194.8</b>	<b>321.8</b>	<b>54.7</b>	<b>124.2</b>	<b>179.0</b>	<b>(142.8)</b>	<b>8.1</b>
<b>Attributable</b>	<b>(US\$m)</b>	<b>129.2</b>	<b>205.4</b>	<b>36.6</b>	<b>85.6</b>	<b>122.1</b>	<b>(83.3)</b>	<b>4.8</b>

## 15.5 Exploration Programme

The Company has developed an extensive Exploration Programme to conduct further technical work in respect of some 11 prospects located in three key geological regions of Kazakhstan: namely Shu-Sarysu, Syrdarya and North-Kazakhstan. The Company forecasts expenditure of approximately KZT59.0bn (US\$173.4m; Table 15-8) over a 10.5 year period to end 2028 with some 66% of expenditures focused on the Shu-Sarysu region and approximately 20% in the Syrdarya region.

The Exploration Programme encompasses a schedule of activities and expenditures comprising both exploration drilling and other related activities certain of which are contractually committed until 2022, notably in respect of Block 2 Inkai, Block 3 Inkai, Block 6 Budenovskoye and Block 7 Budenovskoye. SRK concludes that the Exploration Programme as forecasted herein (specifically to 2022) includes appropriate supporting details including physical activities, scopes of work and accompanying expenditure assumptions and are considered warranted given the exploration activities completed to date.

Beyond this period, SRK highlights that the expenditures as projected are dependent upon the successful outcome of prior activities and as such inherently include a degree of uncertainty.

SRK concludes that the combination of the historical work completed in respect of the, Development Projects, Advanced Exploration Project and Exploration Properties to date and the supporting technical studies, specifically the outcomes of the exploration works and the 2018 PFS warrants execution of the Exploration Programme as planned and reported herein.

**Table 15-8: Exploration Programme**

Region	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Exploration Programme</b>													
Shu-Sarysu	(KZTm)	39,211.5	2,752.4	6,876.4	9,934.5	6,443.4	4,583.7	4,011.0	2,300.0	1,150.0	960.2	200.0	-
Syrdarya	(KZTm)	11,685.3	526.6	1,353.0	136.7	1,250.0	1,600.0	1,569.0	1,700.0	1,180.0	1,180.0	990.0	200.0
North - Kazakhstan	(KZTm)	8,060.0	-	-	110.0	1,750.0	1,500.0	1,500.0	1,500.0	1,500.0	200.0	-	-
<b>Total</b>	<b>(KZTm)</b>	<b>58,956.8</b>	<b>3,279.0</b>	<b>8,229.3</b>	<b>10,181.2</b>	<b>9,443.4</b>	<b>7,683.7</b>	<b>7,080.0</b>	<b>5,500.0</b>	<b>3,830.0</b>	<b>2,340.2</b>	<b>1,190.0</b>	<b>200.0</b>
<b>Exploration Programme</b>													
Shu-Sarysu	(US\$m)	115.3	8.1	20.2	29.2	19.0	13.5	11.8	6.8	3.4	2.8	0.6	-
Syrdarya	(US\$m)	34.4	1.5	4.0	0.4	3.7	4.7	4.6	5.0	3.5	3.5	2.9	0.6
North - Kazakhstan	(US\$m)	23.7	-	-	0.3	5.1	4.4	4.4	4.4	4.4	0.6	-	-
<b>Total</b>	<b>(US\$m)</b>	<b>173.4</b>	<b>9.6</b>	<b>24.2</b>	<b>29.9</b>	<b>27.8</b>	<b>22.6</b>	<b>20.8</b>	<b>16.2</b>	<b>11.3</b>	<b>6.9</b>	<b>3.5</b>	<b>0.6</b>

## 15.6 Life-of-Mine Plans

The Life-of-Mine plans as reported herein are limited to the depletion Ore Reserves as reported in Table 15-6 and have been developed in combination with the Company with reliance on:

- The detailed two-year budgets developed by the Mining Subsidiaries at a deposit level of detail;
- An assessment of key technical and economic parameters with focus on identifying any significant departure from historical performance, specifically from 2015 through H2 2018;
- The five year capital expenditure programmes and supporting details for specific expansions and mine area extensions as noted in Section 13.3.5 of this CPR; and
- A review of supporting Feasibility Studies and other technical studies completed in respect of key expansion projects.

Table 15-9 through Table 15-12 present a summary of the annual LoMp schedules of all technical and economic parameters consolidated for the Mining Subsidiaries in KZT currency from the details provided in each of the Mining Subsidiaries. The current LoMp assumes depletion of all Ore Reserves by 2052 with uranium production reflecting the combined impact of a reversal of the impacts of planned historical cuts and future expansions/extensions at the Mining Subsidiaries. Total production of uranium is therefore expected to increase to 28ktU by 2021 thereafter declining to 22ktU by 2031 and to 8ktU by 2037 as the number of operating subsidiaries reduce from 13 in 2021 to four by 2037 and the impact of production tails are noted.

The Mining Subsidiaries have LoMp forecast aggregated Sales of 1,233.8MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.21/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$13.76/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$4.88bn (inclusive of environmental closure costs).

Table 15-13 through Table 15-16 provides similar details for the attributable TEPs to the Company assuming the equity percentages as reported in Table 13-1.

The Company's equity attributable LoMp forecasts for the Mining Subsidiaries indicate: Sales of 725.8MlbU<sub>3</sub>O<sub>8</sub> with an estimated C1 LoMp unit cash cost of US\$10.79/lbU<sub>3</sub>O<sub>8</sub> and AISC of US\$14.43/lbU<sub>3</sub>O<sub>8</sub> and capital expenditure requirements of US\$2.92bn (inclusive of environmental closure costs).

The planned increases in production and associated capital expenditures are noted in Section 13.3.5 and comprise some KZT84.06bn expended from H2 2018 through 2022. In order to sustain production over the LoMp period, other capital expenditures (Table 13-99 through Table 13-102) comprise both allocations for well construction which ranges from KZT60bn to KZT80bn over the next ten years thereafter reducing in line with production and general infrastructure related sustaining capital which ranges from KZT12bn to KZT15bn over the next ten year period.

C1 unit cash costs per unit of sales are expected to range in the US\$9.00/lbU<sub>3</sub>O<sub>8</sub> to US\$11.00/lbU<sub>3</sub>O<sub>8</sub> over the next ten years in real terms (1 July 2018) with corresponding values for C1 (excluding MET) being US\$7.00/lbU<sub>3</sub>O<sub>8</sub> to US\$9.00/lbU<sub>3</sub>O<sub>8</sub> and for AISC being US\$13.00/lbU<sub>3</sub>O<sub>8</sub> to US\$16.00/lbU<sub>3</sub>O<sub>8</sub>.

With respect to Kyzylkum LLP, the total unallocated cash expenditures as reported on a 100% basis totals KZT16.9bn which is expended from H2 2018 through 2036 inclusive as noted in Table 13-115 and Table 13-116 which in US\$ amounts to US\$49.6m. The Company's equity interest in Kyzylkum LLP is 50% with 30% held by Uranium One and 20% by EAHL. The cash expenditures attributable to the Company comprise 50% of the forecast expenditures as noted in Table 13-117 through Table 13-118.

The Competent Person who has responsibility for the LoMp and Financial Modelling as reported herein is Dr Iestyn Humphreys, FMIMM, AIME, PhD who is a Corporate Consultant, and Practice Leader with SRK. He is a Fellow of the IMMM which is a RPO included in a list promulgated by the ASX from time to time. Dr Iestyn Humphreys has 28 years' experience in the mining and metals industry and also has been involved in the preparation of Competent Persons' Reports comprising technical evaluations of various mineral assets internationally during the past five years which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code.

### 15.6.1 Mining Subsidiary 100% Technical Economic Parameters

**Table 15-9: Mining Subsidiary (100%) LoMp Technical Economic Parameters (2018H2 through 2025; KZT)**

Statistic	Units	Total	2018H2	2019	2020	2021	2022	2023	2024	2025
<b>Production</b>										
Mined	(Mt)	884.68	19.87	41.85	42.02	52.37	52.32	50.69	49.43	47.11
Grade	(%U)	0.060	0.062	0.061	0.061	0.061	0.061	0.062	0.063	0.064
Content	(tU)	531,720	12,255	25,728	25,735	31,983	32,124	31,423	31,040	30,102
<b>Final Product</b>	<b>(tU)</b>	<b>467,333</b>	<b>10,831</b>	<b>22,719</b>	<b>22,722</b>	<b>28,242</b>	<b>28,372</b>	<b>27,810</b>	<b>27,497</b>	<b>26,653</b>
Recovery	(%)	87.9	88.4	88.3	88.3	88.3	88.3	88.5	88.6	88.5
<b>Sales</b>										
Final Product	(tU)	474,578	12,168	22,265	22,732	26,611	28,363	28,103	27,660	27,155
	(MlbU)	1,046.27	26.82	49.08	50.12	58.67	62.53	61.96	60.98	59.87
	(MlbU <sub>3</sub> O <sub>8</sub> )	1,233.81	31.63	57.88	59.10	69.18	73.74	73.06	71.91	70.60
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	35.35	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08
	(%)	3.01	2.95	2.88	2.88	2.93	2.88	2.88	2.88	2.88
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	34.29	25.32	27.01	27.98	28.36	28.19	28.27	29.05	30.19
	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	11,657	8,607	9,183	9,514	9,642	9,585	9,610	9,876	10,264
<b>Financial</b>										
Sales Revenue	(KZTm)	14,383,107.0	272,280.4	531,556.4	562,267.5	667,083.5	706,794.2	702,133.2	710,164.6	724,603.8
Opex	(KZTm)	(4,282,141)	(103,936.6)	(215,959.6)	(219,368.6)	(248,920.6)	(250,518.1)	(244,961.1)	(236,733.1)	(232,855.8)
EBITDA	(KZTm)	10,100,966.4	168,343.8	315,596.8	342,898.9	418,162.9	456,276.0	457,172.2	473,431.5	491,748.0
Capex	(KZTm)	(1,659,653.6)	(42,621.8)	(108,669.8)	(118,127.7)	(111,880.6)	(107,927.6)	(90,360.6)	(84,475.5)	(88,026.5)
<b>Unit Costs</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,471	3,286	3,731	3,712	3,598	3,397	3,353	3,292	3,298
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,718	2,593	2,925	2,905	2,799	2,652	2,609	2,574	2,574
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,678	4,575	5,179	5,239	4,921	4,571	4,517	4,433	4,462

**Table 15-10: Mining Subsidiary (100%) LoMp Technical Economic Parameters (2026 through 2034; KZT)**

Statistic	Units	2026	2027	2028	2029	2030	2031	2032	2033	2034
<b>Production</b>										
Mined	(Mt)	46.11	45.34	44.94	44.55	43.11	40.82	34.40	29.51	27.47
Grade	(%U)	0.064	0.064	0.064	0.063	0.063	0.062	0.059	0.056	0.053
Content	(tU)	29,609	29,168	28,725	28,284	27,121	25,162	20,242	16,477	14,535
<b>Final Product</b>	<b>(tU)</b>	<b>26,213</b>	<b>25,820</b>	<b>25,428</b>	<b>25,037</b>	<b>24,004</b>	<b>22,240</b>	<b>17,819</b>	<b>14,439</b>	<b>12,693</b>
Recovery	(%)	88.5	88.5	88.5	88.5	88.5	88.4	88.0	87.6	87.3
<b>Sales</b>										
Final Product	(tU)	26,531	25,828	25,461	25,033	24,120	22,552	19,202	15,333	13,141
	(MlbU)	58.49	56.94	56.13	55.19	53.17	49.72	42.33	33.80	28.97
	(MlbU <sub>3</sub> O <sub>8</sub> )	68.98	67.15	66.19	65.08	62.71	58.63	49.92	39.86	34.16
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	33.32	35.75	36.43	37.47	37.75	39.56	41.54	43.40	43.58
	(%)	2.91	2.96	2.95	2.94	2.95	2.95	2.99	3.13	2.98
	(US\$/lbU <sub>3</sub> O <sub>8</sub> )	32.35	34.70	35.35	36.37	36.64	38.39	40.30	42.04	42.28
	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	10,998	11,797	12,020	12,364	12,457	13,052	13,700	14,295	14,374
<b>Financial</b>										
Sales Revenue	(KZTm)	758,613.6	792,131.6	795,607.4	804,683.7	781,109.0	765,274.0	683,925.3	569,839.8	491,074.9
Opex	(KZTm)	(227,051.1)	(218,264.6)	(216,494.0)	(214,946.2)	(209,556.6)	(201,925.9)	(180,905.3)	(162,150.5)	(134,078.9)
EBITDA	(KZTm)	531,562.5	573,866.9	579,113.4	589,737.6	571,552.4	563,348.1	503,019.9	407,689.3	356,996.0
Capex	(KZTm)	(86,762.2)	(83,668.1)	(82,457.9)	(81,638.4)	(77,393.8)	(67,210.5)	(54,476.7)	(52,190.5)	(46,955.9)
<b>Unit Costs</b>										
C1	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	3,292	3,251	3,271	3,303	3,342	3,444	3,624	4,068	3,925
C1 (exc MET)	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	2,565	2,530	2,545	2,567	2,598	2,682	2,817	3,200	3,033
AISC	(KZT/lbU <sub>3</sub> O <sub>8</sub> )	4,481	4,462	4,482	4,522	4,541	4,554	4,652	5,225	5,113

**Table 15-11: Mining Subsidiary (100%) LoMp Technical Economic Parameters (2035 through 2043; KZT)**

Statistic	Units	2035	2036	2037	2038	2039	2040	2041	2042	2043
<b>Production</b>										
Mined	(Mt)	26.21	18.14	15.40	14.30	11.99	9.55	8.77	8.59	8.59
Grade	(%U)	0.051	0.056	0.057	0.055	0.055	0.054	0.055	0.055	0.055

Statistic	Units	2035	2036	2037	2038	2039	2040	2041	2042	2043
Content	(tU)	13,404	10,079	8,762	7,922	6,547	5,124	4,781	4,706	4,706
<b>Final Product</b>	<b>(tU)</b>	<b>11,682</b>	<b>8,701</b>	<b>7,523</b>	<b>6,779</b>	<b>5,594</b>	<b>4,368</b>	<b>4,067</b>	<b>4,000</b>	<b>4,000</b>
Recovery	(%)	87.2	86.3	85.9	85.6	85.4	85.3	85.1	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	11,738	9,517	7,892	6,930	6,369	4,966	4,114	4,000	4,000
	(MlbU)	25.88	20.98	17.40	15.28	14.04	10.95	9.07	8.82	8.82
	(MlbU <sub>3O<sub>8</sub></sub> )	30.52	24.74	20.52	18.02	16.56	12.91	10.70	10.40	10.40
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	3.19	3.11	3.06	3.04	3.05	3.07	3.50	3.50	3.50
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	42.14	42.18	42.20	42.21	42.20	42.19	42.01	42.01	42.01
	(KZT/lbU <sub>3O<sub>8</sub></sub> )	14,328	14,340	14,348	14,350	14,349	14,346	14,282	14,282	14,282
<b>Financial</b>										
Sales Revenue	(KZTm)	437,253.5	354,793.4	294,395.0	258,540.4	237,588.3	185,226.0	152,751.8	148,521.9	148,521.9
Opex	(KZTm)	(119,755.4)	(99,554.4)	(72,087.3)	(66,661.9)	(58,531.0)	(48,731.0)	(35,269.4)	(30,655.6)	(30,623.2)
EBITDA	(KZTm)	317,498.1	255,238.9	222,307.7	191,878.5	179,057.3	136,495.0	117,482.4	117,866.2	117,898.7
Capex	(KZTm)	<b>(31,374.6)</b>	<b>(37,207.4)</b>	<b>(26,230.3)</b>	<b>(22,191.3)</b>	<b>(22,405.4)</b>	<b>(14,988.2)</b>	<b>(15,037.9)</b>	<b>(13,901.3)</b>	<b>(13,901.3)</b>
<b>Unit Costs</b>										
C1	(KZT/lbU <sub>3O<sub>8</sub></sub> )	3,924	4,024	3,513	3,700	3,535	3,774	3,298	2,948	2,945
C1 (exc MET)	(KZT/lbU <sub>3O<sub>8</sub></sub> )	3,109	3,077	2,758	2,932	2,833	2,917	2,658	2,403	2,404
AISC	(KZT/lbU <sub>3O<sub>8</sub></sub> )	4,914	5,148	4,762	4,905	4,458	4,848	4,597	4,285	4,282

**Table 15-12: Mining Subsidiary (100%) LoMp Technical Economic Parameters (2044 through 2052; KZT)**

Statistic	Units	2044	2045	2046	2047	2048	2049	2050	2051	2052
<b>Production</b>										
Mined	(Mt)	8.63	8.75	6.98	5.29	4.97	4.97	4.97	3.98	2.68
Grade	(%U)	0.055	0.054	0.054	0.049	0.047	0.047	0.047	0.047	0.047
Content	(tU)	4,706	4,706	3,764	2,588	2,353	2,353	2,353	1,882	1,270
<b>Final Product</b>	<b>(tU)</b>	<b>4,000</b>	<b>4,000</b>	<b>3,200</b>	<b>2,200</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>1,600</b>	<b>1,079</b>
Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	4,002	3,998	3,414	2,343	2,001	1,999	2,000	1,672	1,365
	(MlbU)	8.82	8.81	7.53	5.17	4.41	4.41	4.41	3.69	3.01
	(MlbU <sub>3O<sub>8</sub></sub> )	10.40	10.39	8.88	6.09	5.20	5.20	5.20	4.35	3.55
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01	42.01
	(KZT/lbU <sub>3O<sub>8</sub></sub> )	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282	14,282
<b>Financial</b>										
Sales Revenue	(KZTm)	148,594.5	148,449.2	126,779.7	87,002.3	74,297.2	74,224.6	74,260.9	62,066.4	50,697.2
Opex	(KZTm)	(30,637.9)	(30,635.3)	(26,823.5)	(21,106.4)	(19,787.4)	(19,816.2)	(20,017.8)	(17,227.9)	(15,592.6)
EBITDA	(KZTm)	117,956.5	117,813.9	99,956.2	65,895.9	54,509.8	54,408.5	54,243.1	44,838.6	35,104.7
Capex	(KZTm)	<b>(14,051.5)</b>	<b>(11,734.4)</b>	<b>(8,942.5)</b>	<b>(9,553.2)</b>	<b>(9,545.5)</b>	<b>(9,553.2)</b>	<b>(6,055.3)</b>	-	<b>(8,136.3)</b>
<b>Unit Costs</b>										
C1	(KZT/lbU <sub>3O<sub>8</sub></sub> )	2,945	2,947	3,022	3,465	3,804	3,813	3,850	3,964	4,393
C1 (exc MET)	(KZT/lbU <sub>3O<sub>8</sub></sub> )	2,403	2,404	2,395	2,793	3,144	3,147	3,145	3,407	3,841
AISC	(KZT/lbU <sub>3O<sub>8</sub></sub> )	4,295	4,076	4,029	5,033	5,639	5,651	5,014	3,964	4,393

## 15.6.2 Mining Subsidiary Attributable Technical Economic Parameters

**Table 15-13: Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2018H2 through 2025; US\$)**

Statistic	Units	Total	2018H2	2019	2020	2021	2022	2023	2024	2025
<b>Production</b>										
Mined	(Mt)	529.45	12.02	25.56	25.64	32.31	32.35	31.44	30.64	28.75
Grade	(%U)	0.058	0.059	0.059	0.058	0.058	0.058	0.059	0.060	0.061
Content	(tU)	309,475	7,049	14,961	14,961	18,785	18,889	18,538	18,325	17,667
<b>Final Product</b>	<b>(tU)</b>	<b>271,861</b>	<b>6,236</b>	<b>13,218</b>	<b>13,214</b>	<b>16,584</b>	<b>16,678</b>	<b>16,397</b>	<b>16,222</b>	<b>15,629</b>
Recovery	(%)	87.8	88.5	88.4	88.3	88.3	88.3	88.5	88.5	88.5
<b>Sales</b>										
Final Product	(tU)	279,170	6,984	13,058	13,361	15,396	16,671	16,592	16,382	16,107
	(MlbU)	615.47	15.40	28.79	29.46	33.94	36.75	36.58	36.12	35.51
	(MlbU <sub>3O<sub>8</sub></sub> )	725.79	18.16	33.95	34.73	40.03	43.34	43.14	42.59	41.87
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	35.37	26.09	27.81	28.81	29.22	29.03	29.10	29.91	31.08
	(%)	3.67	4.15	3.45	3.46	2.52	2.45	2.44	2.45	2.46
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	34.07	25.00	26.85	27.82	28.48	28.32	28.39	29.17	30.32
<b>Financial</b>										
Sales Revenue	(US\$m)	24,729.1	454.0	911.5	966.2	1,139.9	1,227.3	1,224.7	1,242.5	1,269.6
Opex	(US\$m)	(7,832)	(192.2)	(401.4)	(404.3)	(461.4)	(463.9)	(456.3)	(443.0)	(433.5)
EBITDA	(US\$m)	16,896.9	261.7	510.2	561.8	678.6	763.4	768.4	799.6	836.1
Capex	(US\$m)	(2,924.2)	(74.9)	(190.8)	(201.6)	(192.4)	(187.1)	(159.5)	(152.0)	(154.5)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3O<sub>8</sub></sub> )	10.79	10.59	11.82	11.64	11.53	10.70	10.58	10.40	10.35
C1 (exc MET)	(US\$/lbU <sub>3O<sub>8</sub></sub> )	8.47	8.45	9.34	9.18	9.03	8.41	8.29	8.18	8.13
AISC	(US\$/lbU <sub>3O<sub>8</sub></sub> )	14.43	14.48	16.14	16.11	15.57	14.28	14.07	13.86	13.86



**Table 15-14: Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2026 through 2034; US\$)**

Statistic	Units	2026	2027	2028	2029	2030	2031	2032	2033	2034
<b>Production</b>										
Mined	(Mt)	28.00	27.35	27.14	26.94	25.90	24.32	19.96	16.68	15.58
Grade	(%U)	0.062	0.062	0.062	0.062	0.061	0.060	0.058	0.056	0.054
Content	(tU)	17,354	17,047	16,814	16,583	15,856	14,636	11,622	9,368	8,340
<b>Final Product</b>	<b>(tU)</b>	<b>15,349</b>	<b>15,075</b>	<b>14,869</b>	<b>14,664</b>	<b>14,018</b>	<b>12,919</b>	<b>10,214</b>	<b>8,194</b>	<b>7,270</b>
Recovery	(%)	88.4	88.4	88.4	88.4	88.4	88.3	87.9	87.5	87.2
<b>Sales</b>										
Final Product	(tU)	15,668	15,079	14,889	14,659	14,102	13,170	11,137	8,636	7,703
	(MlbU)	34.54	33.24	32.82	32.32	31.09	29.04	24.55	19.04	16.98
	(MlbU <sub>3O<sub>8</sub></sub> )	40.73	39.20	38.71	38.11	36.66	34.24	28.95	22.45	20.03
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	33.32	35.75	36.43	37.47	37.75	39.56	41.54	43.40	43.58
	(%)	2.50	2.57	2.56	2.54	2.55	2.57	2.62	2.84	2.62
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	32.48	34.84	35.49	36.51	36.79	38.54	40.45	42.17	42.44
<b>Financial</b>										
Sales Revenue	(US\$m)	1,323.1	1,365.7	1,373.9	1,391.5	1,348.7	1,319.7	1,171.2	946.8	849.9
Opex	(US\$m)	(426.9)	(402.7)	(400.0)	(397.7)	(387.3)	(371.2)	(325.4)	(286.5)	(248.0)
EBITDA	(US\$m)	896.3	963.0	974.0	993.8	961.4	948.5	845.8	660.3	601.8
Capex	(US\$m)	(158.0)	(149.8)	(147.9)	(146.7)	(137.4)	(118.0)	(100.7)	(89.6)	(90.1)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3O<sub>8</sub></sub> )	10.48	10.27	10.33	10.44	10.56	10.84	11.24	12.76	12.38
C1 (exc MET)	(US\$/lbU <sub>3O<sub>8</sub></sub> )	8.20	8.02	8.07	8.14	8.25	8.48	8.72	10.04	9.48
AISC	(US\$/lbU <sub>3O<sub>8</sub></sub> )	14.08	13.98	14.04	14.17	14.20	14.17	14.46	16.33	16.02

**Table 15-15: Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2035 through 2043; US\$)**

Statistic	Units	2035	2036	2037	2038	2039	2040	2041	2042	2043
<b>Production</b>										
Mined	(Mt)	14.60	11.11	9.67	8.97	7.42	5.78	5.24	5.15	5.15
Grade	(%U)	0.051	0.055	0.056	0.055	0.054	0.054	0.055	0.055	0.055
Content	(tU)	7,508	6,063	5,379	4,902	4,030	3,092	2,862	2,824	2,824
<b>Final Product</b>	<b>(tU)</b>	<b>6,528</b>	<b>5,233</b>	<b>4,621</b>	<b>4,198</b>	<b>3,444</b>	<b>2,637</b>	<b>2,434</b>	<b>2,400</b>	<b>2,400</b>
Recovery	(%)	86.9	86.3	85.9	85.6	85.5	85.3	85.1	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	6,556	5,710	4,857	4,327	4,000	3,192	2,458	2,400	2,400
	(MlbU)	14.45	12.59	10.71	9.54	8.82	7.04	5.42	5.29	5.29
	(MlbU <sub>3O<sub>8</sub></sub> )	17.04	14.84	12.63	11.25	10.40	8.30	6.39	6.24	6.24
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	2.94	2.85	2.78	2.77	2.78	2.83	3.50	3.50	3.50
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	42.25	42.29	42.32	42.32	42.32	42.30	42.01	42.01	42.01
<b>Financial</b>										
Sales Revenue	(US\$m)	720.1	627.7	534.4	476.1	440.1	351.0	268.4	262.1	262.1
Opex	(US\$m)	(209.0)	(182.9)	(139.9)	(130.7)	(112.0)	(93.1)	(61.0)	(54.1)	(54.0)
EBITDA	(US\$m)	511.1	444.8	394.5	345.4	328.2	257.9	207.4	208.0	208.1
Capex	(US\$m)	(60.8)	(66.8)	(52.1)	(44.9)	(37.3)	(21.7)	(26.2)	(24.5)	(24.5)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3O<sub>8</sub></sub> )	12.26	12.32	11.08	11.62	10.76	11.22	9.55	8.67	8.66
C1 (exc MET)	(US\$/lbU <sub>3O<sub>8</sub></sub> )	9.70	9.47	8.69	9.18	8.62	8.46	7.71	7.07	7.07
AISC	(US\$/lbU <sub>3O<sub>8</sub></sub> )	15.70	16.01	15.10	15.52	13.32	14.17	13.39	12.60	12.59

**Table 15-16: Mining Subsidiary (Attributable) LoMp Technical Economic Parameters (2044 through 2052; US\$)**

Statistic	Units	2044	2045	2046	2047	2048	2049	2050	2051	2052
<b>Production</b>										
Mined	(Mt)	5.18	5.25	3.88	2.42	2.11	2.11	2.11	1.61	1.07
Grade	(%U)	0.055	0.054	0.054	0.049	0.047	0.047	0.047	0.047	0.047
Content	(tU)	2,824	2,824	2,094	1,182	1,000	1,000	1,000	765	508
<b>Final Product</b>	<b>(tU)</b>	<b>2,400</b>	<b>2,400</b>	<b>1,780</b>	<b>1,005</b>	<b>850</b>	<b>850</b>	<b>850</b>	<b>650</b>	<b>432</b>
Recovery	(%)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
<b>Sales</b>										
Final Product	(tU)	2,401	2,399	2,049	1,406	1,201	1,199	1,200	1,003	819
	(MlbU)	5.29	5.29	4.52	3.10	2.65	2.64	2.65	2.21	1.81
	(MlbU <sub>3O<sub>8</sub></sub> )	6.24	6.24	5.33	3.66	3.12	3.12	3.12	2.61	2.13
<b>Macro Economics</b>										
Exchange Rate	(US\$:KZT)	340	340	340	340	340	340	340	340	340
<b>Commodity Price</b>										
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53	43.53
	(%)	3.50	3.50	10.54	26.53	31.65	31.65	31.65	34.66	35.67
	(US\$/lbU <sub>3O<sub>8</sub></sub> )	42.01	42.01	38.94	31.98	29.75	29.75	29.75	28.44	28.00
<b>Financial</b>										
Sales Revenue	(US\$m)	262.2	262.0	207.4	116.9	92.9	92.8	92.8	74.2	59.6
Opex	(US\$m)	(54.1)	(54.1)	(43.9)	(28.4)	(24.7)	(24.8)	(25.0)	(20.6)	(18.3)
EBITDA	(US\$m)	208.2	207.9	163.5	88.5	68.1	68.0	67.8	53.6	41.3
Capex	(US\$m)	(24.8)	(20.7)	(14.6)	(12.8)	(11.9)	(11.9)	(7.6)	-	(9.6)
<b>Unit Costs</b>										
C1	(US\$/lbU <sub>3O<sub>8</sub></sub> )	8.66	8.67	8.24	7.76	7.92	7.94	8.02	7.89	8.61
C1 (exc MET)	(US\$/lbU <sub>3O<sub>8</sub></sub> )	7.07	7.07	6.53	6.26	6.55	6.56	6.55	6.78	7.53
AISC	(US\$/lbU <sub>3O<sub>8</sub></sub> )	12.63	11.99	10.99	11.27	11.75	11.77	10.45	7.89	8.61

## 15.7 Production Flexibility

The Company's annual sales profiles reflect the current LoMp generated in support of the overall Ore Reserve statement dated 1 July 2018. Current annual sales at 54.9Mlb (H1 2018 actual and H2 2018 forecast) is planned to increase to 73.7MlbU<sub>3</sub>O<sub>8</sub> by 2022 through a combination of a reversal of historical production cuts by 2021 and planned expansions at certain of the Mining Subsidiaries (JV Inkai LLP, JV Khorassan-U LLP, Baiken-U LLP and Karatau LLP). The decline in production beyond 2022 is largely as a result of depletion of Ore Reserves at the various deposits noted in Table 13-3. By 2031 annual sales drop below 60MlbU<sub>3</sub>O<sub>8</sub> and continue to decline sharply to 10MlbU<sub>3</sub>O<sub>8</sub> by 2042 when only JV Inkai LLP remains as the sole operating Mining Subsidiary.

The opportunity to expand or maintain production at a strategic level (e.g. 60MlbU<sub>3</sub>O<sub>8</sub>) is dependent upon realising the opportunities noted in the Section 13.3.2 (Production Flexibility). These opportunities are subject to completion of further exploration and as appropriate further technical studies to both validate the optimal production scenario as well as ensure that the resulting forecasts are technically feasible and economically viable. This aside, SRK notes that owing to the relative simplicity of the nature of the mining operations and assuming that all necessary regulatory approvals are achieved, the process of establishing a revised strategic plan, subject to prevailing market assumptions, is relatively straight forward and not as complex as normally experienced elsewhere in the mining and metals sector.

## 15.8 Risks and Opportunities

The key risks relating to the Mineral Assets as identified by SRK relate to:

- Changes in technical and economic assumptions which define the economic viability of the Ore Reserves as reported herein, specifically:
  - Should the spot market uranium prices fall below US\$20/lbU<sub>3</sub>O<sub>8</sub>,
  - Should commodity input costs, e.g. sulphuric acid, rise significantly as a result of local shortages or general above inflationary increases in the international market; and
- Changes in legislation and/or regulatory practices which impact on:
  - The criteria applied for determination of environmental closure costs,
  - The Company's current monopoly in respect of exploration, development and operation of uranium Mineral Assets.

The key opportunities relating to the Mineral Assets as identified by SRK relate to:

- Increased Mineral Resources as a result of successful outcomes to the Company's planned Exploration Programme in respect of the Exploration Properties (Block 6 Budenovskoye and Block 7 Budenovskoye);
- Increased Ore Reserves as a result of completion of successful technical studies with respect to the Development Properties (Zhalpak) and the Advanced Exploration Properties (Block 2 Inkai and Block 3 Inkai); and
- Further capitalising on the current Monopoly and expanding the footprint of the current regional Exploration Programme.

## 15.9 Summary Conclusions

The CPR is addressed to and may be relied upon by the Company, the Directors of the Company and its advisors in support of the Listing, specifically in respect of compliance with the Requirements, the Reporting Standard and as appropriate Prospectus Rule 5.5.4R(2)(f). Accordingly, SRK has confirmed in writing (the "**Consent Letter**"), dated on the Publication Date that it:

- Accepts reliance as regards the CPR for any benefit of the Company and its Advisors;
- Consents to the inclusion of the CPR, and to the inclusion of any extracts from the CPR in the Prospectus;
- Confirms that all information contained in the Prospectus which is extracted from the CPR or based upon information contained in the CPR has been reviewed by SRK and that such information as presented is accurate, balanced, complete and not inconsistent with the CPR in accordance with Prospectus Rule 5.5.4R(2)(f); and
- Takes responsibility for the CPR and declares that it has taken all reasonable care to ensure that the information contained in the CPR is, to the best of its knowledge, in accordance with the facts and contains no omission likely to affect its import.

SRK believes that its opinion must be considered as a whole and that selecting portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in this CPR. The preparation of a CPR is a complex process and does not lend itself to partial analysis or summary.

SRK has no obligation or undertaking to advise any person of any development in relation to Mineral Assets which comes to its attention after the date of this CPR or to review, revise or update the CPR or opinion in respect of any such development occurring after the date of this CPR.

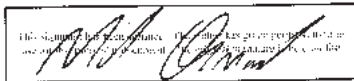
The work completed by SRK in preparing this report has enabled it to present:

- Mineral Resource and Ore Reserve estimates for all of the Company's operating mines, Development Projects and Advanced Exploration Properties;
- A review of the Company's Exploration Programme and the potential in the Company's Exploration Properties;
- An assessment of the Environmental and Social practices relating to the Mineral Assets specifically:
  - the regulatory framework in which the Company operates;
  - the key features of the HSE management systems in effect at the operations;
  - the potential ESHS risks at each of the operations;
  - the asset retirement obligations and closure liabilities associated with the operations and the conformance of the operations to international standards in respect of environmental and social impact management.
- An assessment of the technical and economic parameters as incorporated into the LoMp for the Mineral Assets through development of detailed post-tax pre-finance cashflow models which deplete the Ore Reserves as reported herein; and
- A summary of the key risks and opportunities as they relate to the Mineral Assets.

The observations, comments and conclusions presented in this report represent SRK's opinion as of 30 September 2018 and are based on a review of documentation provided by the Company, site visits to the operations, site visits to all of the operating mines, and discussions with the Company's management and representatives.

SRK cannot accept any liability, either direct or consequential for the validity of information that has been accepted in good faith.

**For and behalf of SRK Consulting (UK) Limited**



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Dr Mike Armitage,  
Corporate Consultant (Geology),  
**Project Manager**,  
SRK Consulting (UK) Limited.



The signature of Dr Iestyn Humphreys is written in black ink and is highly stylized, with a long horizontal line extending to the right. The signature is contained within a rectangular box.

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Dr Iestyn Humphreys,  
Corporate Consultant (Due Diligence),  
**Project Director**,  
SRK Consulting (UK) Limited.

## Glossary

### Glossary – Mineral Resources and Ore Reserves

**Mineral Resource** A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

#### Indicated Mineral Resource

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

#### Inferred Mineral Resource

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

#### Measured Mineral Resource

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.

Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

#### Ore Reserve

An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that

include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

- Probable Ore Reserve** A 'Probable Ore Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve.
- Proved Ore Reserve** A 'Proved Ore Reserve' is the economically mineable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors.

## Glossary – Development Stages

- Producing Property** Mineral assets for which current Ore Reserves are declared and mining and processing operations have been commissioned and are in production.
- Development Property** Mineral assets for which Ore Reserves have been declared and are essentially supported by a minimum of a pre-feasibility study which on a multi-disciplinary basis demonstrates that the consideration is technically feasible and economically viable.
- Pre-Development Property** Mineral assets for which Mineral Resources have been defined but where a decision to proceed with development has not been made.
- Advanced Exploration Property** Mineral assets for which only Mineral Resources have been declared.
- Exploration Property** Mineral assets for which no Mineral Resources have been declared.

## Glossary – Technical Studies

- Feasibility Study** A Feasibility Study is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.
- Preliminary Feasibility Study** A Preliminary Feasibility Study (Pre-Feasibility Study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.
- Scoping Study** A Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably



justified.

## Glossary – Financial Terms

**PGR** In accordance with the relevant taxation codes of Kazakhstan, PGR (wellfield development depreciation) is a tax-deductible non-cash item which is determined from a unit cost rate (the “**PGR Rate**”) applied to the depleted Ore Reserves (in-situ U content). The PGR Rate is determined from the sum of the PGR opening balance of well field expenditures (KZT) in the period and additional expenditures incurred in the period, divided by a sub-set of the Ore Reserves, specifically that portion of the Ore Reserves (U content) which is directly accessible by constructed wells (sum of opening balance in the period + following period in-situ production (U content)). The PGR Rate is then multiplied by the depleted Ore Reserves to determine the tax-deductible non-cash charge in the period and the PGR closing balance is determined by the net assessment of the PGR opening balance and the PGR charge determined in the period.

**GRR** In accordance with the relevant taxation codes of Kazakhstan, GRR (exploration depreciation) is a tax-deductible non-cash item which is determined based on the undepreciated opening balance of GRR multiplied by a depletion ratio, which depletion ratio is based on the ratio of in period production divided by (total LoMp production less the cumulative production to the prior period).

### Mineral Extraction Tax (“MET”)

In accordance with the relevant taxation codes of Kazakhstan, MET is form of ‘mineral royalty’ determined by application of 29% tax charge to the taxable expenditures. The tax charge is a cash cost of mining and is based on an assumed 20% profit margin on certain expenditures and a MET rate of 18.50% and where the tax charge of 29% is determined by the following formulae:  $(1+20\%)*18.5\%/(1-(1+20\%)*18.5\%)$ . The taxable expenditures comprise all direct expenditures associated with the mining operations and specifically exclude (processing and G&A) but include the period PGR charge and any other depreciation charges attributable to direct mining activities.

### Property Tax (“PT”)

In accordance with the relevant taxation codes of Kazakhstan, PT is a tax charge derived from application of a rate of 1.50% to the average of the opening and closing balances of PGR determined in the period. The property tax as determined is then apportioned in a ratio of 40% to the mining costs and 60% to the processing costs.

**Depreciation** In accordance with the relevant taxation codes of Kazakhstan, Depreciation is a tax deductible charge and is determined by depreciation of expansion and sustaining capital related expenditures through allocation to: production depreciation (70%) and accounting depreciation (30%). With respect to production depreciation this is based on the undepreciated opening balance of production depreciation multiplied by a depletion ratio, which depletion ratio is based on the ratio of in period production divided by (total Life-of-Mine plan production less the cumulative production to the prior period). With respect to accounting depreciation all related expenditures are depreciated on a straight line basis for four years. The opening balances for production depreciation and accounting depreciation is determined by distributing the overall opening balance to: production depreciation (70%) and accounting depreciation (30%). The overall depreciation charge is then apportioned to Mining, Processing and G&A activities by the assumed distribution determined in the prior reporting period that being the 6 month period ended 30 June 2018.

### Corporate Income Tax (“CIT”)

In accordance with the relevant tax codes of Kazakhstan, CIT is determined by application of a 20% tax rate to the taxable income, which taxable income is derived through deductions from Earnings Before Interest Tax, Depreciation and Amortisation: Depreciation, PGR, GRR interest and tax.

### Working Capital

The LoMps do not include any determinations for working capital movement in respect of debtors, creditors and stores/inventory and furthermore no details in support of the necessary inputs for determination of the working Capital Movement inputs (opening balances and assumed days) for each subsidiary are included herein.

## Glossary – Terms

Acid	A pH of less than 7.0.
Acidification	The process by which the target area is subject to injection of fluids by dissolving the uranium bearing and gangue minerals.
Alluvial	Relating to or derived from alluvium. Deposition of sediment over a long period of time by a river; an alluvial layer.
Admission	the admission to trading on the Main Market of the London Stock Exchange.
Advisors	Credit Suisse Securities (Europe) Limited and J.P. Morgan Securities plc.
Aggregated	100%
Agropyron	A genus of Eurasian plants in the grass family), native to Europe and Asia but widely naturalised in North America.
AIX Limited	the stock exchange of the Astana International Financial Centre
Alkaline	A pH greater than 7.
Akdala	A uranium deposit owned by JV SMCC LLP.
All In Sustaining Costs	All direct cash expenditures required to secure the sales volumes and sales revenues as determined and include, mining (net of capitalised costs), processing, general and administration, transportation, treatment charges, refining charges, royalties and by-product credits and in addition other costs necessary to sustain mining operations including capitalised operating costs, sustaining capital, closure costs and working capital movements.
Ammonia Hydroxide	A neutralising compound used for treatment of acidic bearing solutions prior to precipitation.
Ammonium diuranate	The precipitate of uranium (NH <sub>4</sub> ) <sub>2</sub> U <sub>2</sub> O <sub>7</sub> formed from precipitation of uranium from acidic solutions.
Anticline	A type of fold that is an arch-like shape and has its oldest beds at its core. A typical anticline is convex up in which the hinge or crest is the location where the curvature is greatest, and the limbs are the sides of the fold that dip away from the hinge.
Apatite	A widely occurring pale green to purple mineral, consisting of calcium phosphate with some fluorine, chlorine, and other elements. It is used in the manufacture of fertilizers.
Appak LLP	A Mining Subsidiary in which the Company has a 65% equity interest.
Aquifer	An underground stratum that will yield water in sufficient quantity to be of value as a source of supply. An aquifer is not a stratum that merely contains water, for this would apply to all strata in the ground-water area. An aquifer must yield water.
Aquitard	A zone within the Earth that restricts the flow of groundwater from one aquifer to another. A completely impermeable aquitard is called an aquiclude or aquifuge. Aquitards comprise layers of either clay or non-porous rock with low hydraulic conductivity.
Argillaceous	Rocks in which clay minerals are a secondary but significant component.
Artemesia	A large, diverse genus of plants with between 200 and 400 species belonging to the daisy family Asteraceae.
Artesian	An aquifer is a geologic layer of porous and permeable material such as sand and gravel, limestone, or sandstone, through which water flows and is stored. An artesian aquifer is a confined aquifer containing groundwater under positive pressure.
Assay	To analyse the proportions of metals in an ore; to test an ore or mineral for composition, purity, weight, or other properties of commercial interest.
Asset Retirement Obligation	A legal obligation associated with the retirement of a tangible long-lived asset in which the timing or method of settlement may be conditional on a future event, the occurrence of which may not be within the control of the entity

burdened by the obligation. The liability equals the present value of the expected cost of retirement/remediation. An asset equal to the initial liability is added to the balance sheet, and depreciated over the life of the asset. The result is an increase in both assets and liabilities, while the total expected cost is recognized over time, with the accrual steadily increasing on a compounded basis.

Associates	Entities over which the Group has, directly or indirectly, significant influence, but not sole or joint control, which is typical for a shareholding of between 20% and 50% of the voting rights. The Group's investments in associates are accounted for using the equity method of accounting.
Atomic Energy Law	Law of the Republic of Kazakhstan of 12 January 2016 No 442-V On the Use of Atomic Energy.
Authigenic	Authigenesis is the process whereby a mineral or sedimentary rock deposit is generated where it is found or observed. Such deposits are described as authigenic.
Baiken-U LLP	A Mining Subsidiary in which the Company has, subsequent to completion of the Transactions (see Transaction) a 52.50% equity interest.
Barite	A mineral consisting of barium sulphate. Used as a weighting agent for drilling fluids in oil and gas exploration to suppress high formation pressures and prevent blowouts.
Barren solution	In hydrometallurgical treatment from which all possible valuable constituents have been removed; it is usually recycled back to plant for reuse in the process.
Base Case	The base case spot market uranium price forecast as provided by Ux Consulting Company.
Basement	Any rock below sedimentary rocks or sedimentary basins that are metamorphic or igneous in origin.
Basin	A general region with an overall history of subsidence and thick sedimentary section.
Bedding	The arrangement of a sedimentary rock in beds or layers of varying thickness and character; the general physical and structural character or pattern of the beds and their contacts within a rock mass, such as cross-bedding and graded bedding; a collective term denoting the existence of beds.
Bentonite	An absorbent aluminium phyllosilicate clay consisting mostly of montmorillonite. The main uses of bentonite are for drilling mud, binder, purifier, absorbent, and as a groundwater barrier.
Beryllium	A chemical element in the periodic table that has the symbol Be and atomic number 4. A toxic bivalent element, beryllium is a steel grey, strong, light-weight yet brittle, alkaline earth metal, that is primarily used as a hardening agent in alloys (most notably, beryllium copper).
Biogenic	A product made by or of life forms. The term encompasses constituents, secretions, and metabolites of plants or animals. In context of molecular biology, biogenic substances are referred to as biomolecules.
Block 1 Budenovskoye	A uranium deposit owned by JV Akbastau JSC.
Block 2, Budenovskoye	A uranium deposit owned by JV Akbastau JSC.
Block 3, Budenovskoye	A uranium deposit owned by JV Akbastau JSC.
Block 4, Budenovskoye	A uranium deposit owned by Karatau LLP.
Block 6, Budenovskoye	A uranium deposit owned by Budenovskoye LLP.
Block 7, Budenovskoye	A uranium deposit owned by Budenovskoye LLP.
Block 2 Inkai	A uranium deposit owned by the Company.
Block 3 Inkai	A uranium deposit owned by the Company.
Block 4, Inkai	A uranium deposit owned by JV SMCC LLP.
Block Kharassan 1, North Kharassan	

	A uranium deposit owned by JV Khorassan LLP.
Block Kharassan 2, North Kharassan	
	A uranium deposit owned by Baiken LLP.
Block 1 Inkai (a), (b) and (c)	
	The uranium deposits owned by JV Inkai LLP.
Breccia	Rock consisting of angular fragments of stones cemented by finer calcareous material.
Budenovskoye LLP	A Mining Subsidiary in which the Company has, subsequent to completion of the Transactions (see Transaction) a 51.00% equity interest.
C1 Cash Cost	All direct cash expenditures required to secure the sales volumes and sales revenues as determined and include, mining (net of capitalised costs), processing, general and administration, transportation, treatment charges, refining charges, royalties and by-product credits.
Cadmium	A soft, bluish-white metal, similar in many respects to zinc, copper, and lead ores. Almost all cadmium is obtained as a by-product in the treatment of these ores. Symbol, Cd.
Calcareous	Containing calcium carbonate.
Calcination	A thermal treatment process in the absence or limited supply of air or oxygen applied to ores and other solid materials to bring about a thermal decomposition.
Calcite	A rock-forming mineral with a chemical formula of CaCO <sub>3</sub> . It is extremely common and found throughout the world in sedimentary, metamorphic, and igneous rocks.
Calcium	A chemical element with symbol Ca and atomic number 20. The largest use of calcium is in steelmaking, due to its strong chemical affinity for oxygen and sulphur.
Caledonian	An orogeny encompasses events that occurred from the Ordovician to Early Devonian, roughly 490Ma to 390Ma.
Caliper Log	A well logging tool that provides a continuous measurement of the size and shape of a borehole along its depth.
Calligonum	A genus of plants in the family Polygonaceae with about 80 species across the Mediterranean Sea region, Asia and North America.
Capital Expenditure	An amount spent to acquire or upgrade productive assets (such as buildings, machinery and equipment, vehicles) in order to increase the capacity or efficiency of a company for more than one accounting period: initial capital expenditure is normally referred to as project capital; capital expenditure associated with subsequent non-recurring activities are defined as deferred capital; and capital expenditure associated with recurring activities (periodic maintenance, tailings dam lifts) are defined as sustaining capital.
Cameco	Cameco Corporation.
Campanian	The fifth of six ages of the Late Cretaceous epoch which spans the time from 84Ma to 72Ma.
Carbon	A non-metallic element, found free in nature in three allotropic forms: amorphous, graphite, and diamond. A fourth form, known as "white" carbon, is now thought to exist. Symbol, C.
Carbonate	A compound containing the acid radical CO <sub>3</sub> of carbonic acid. Bases react with carbonic acid to form carbonates.
Carbonaceous	Rocks or sediments consisting of or containing carbon or its compounds.
Carnotite	A potassium uranium vanadate radioactive mineral. A bright to greenish yellow mineral that occurs typically as crusts and flakes in sandstones.
Caustic Magnesia	A highly reactive form of magnesium oxide produced by calcining or burning crude magnesite at relatively low temperatures.
Caustic Soda	See Sodium Hydroxide.
Cation	A positively charged ion, i.e. one that would be attracted to the cathode in

	electrolysis.
Cenomanian	The oldest or earliest age of the Late Cretaceous epoch or the lowest stage of the Upper Cretaceous series.
Cenozoic	The current and most recent of the three Phanerozoic geological eras, following the Mesozoic Era and extending from 66Ma to the present day.
Central Moinkum	A uranium deposit owned by Kazatomprom-SaUran LLP.
Central Mynkuduk	A uranium deposit owned by Ortalyk LLP.
C1 (exc MET)	C1 cash costs excluding Mineral Extraction Tax.
CESR Recommendations	<i>“ESMA update of the CESR recommendations: The consistent implementation of Commission Regulation (EC) No 809/2004 implementing the Prospectus Directive”</i> , published on 20 March 2013: specifically paragraphs 131 to 132, section 1b – mineral companies, Appendix I – Acceptable Internationally Recognised Mining Standards, and Appendix II – Mining Competent Persons’ Report – recommended content.
China	Peoples’ Republic of China.
Chloride	A compound of chlorine with another element or group, especially a salt of the anion Cl <sup>-</sup> or an organic compound with chlorine bonded to an alkyl group.
Clay	A finely-grained natural rock or soil material that combines one or more clay minerals with possible traces of quartz, metal oxides and organic matter.
Coal	A combustible black or brownish-black sedimentary rock usually occurring in rock strata in layers or veins called coal beds or coal seams.
Cobalt	A chemical element with symbol Co and atomic number 27 primarily used in the manufacture of magnetic, wear-resistant and high-strength alloys.
Coffinite	A uranium-bearing silicate mineral.
Collophane	A variety of Carbonate-rich Apatite. A name used for the massive, cryptocrystalline, colloidal (amorphous) varieties of Carbonate-rich Fluorapatite or Carbonate-rich Hydroxylapatite, such as those that constitute the bulk of phosphate rock and fossil bone.
Company	Joint Stock Company National Atomic Company Kazatomprom.
Competent Authority	Ministry of Energy of the Kazakhstan.
Competent Person	A minerals industry professional who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists, or of a ‘Recognised Professional Organisation’, as included in a list available on the JORC and ASX websites. These organisations have enforceable disciplinary processes including the powers to suspend or expel a member.
Commercial Code	№ 375-V of 29th October 2015, with amendments as of 03.07.2017.
Conglomerate	A coarse-grained clastic sedimentary rock, composed of rounded to sub-angular fragments larger than 2mm in diameter (granules, pebbles, cobbles, boulders) set in a fine-grained matrix of sand or silt, and commonly cemented by calcium carbonate, iron oxide, silica, or hardened clay; the consolidated equivalent of gravel.
Coniacian	A subdivision of the Late Cretaceous epoch or Upper Cretaceous series and spans the time between 90Ma and 86Ma.
Conceptual Closure Plan	Mine closure planning involves planning effectively for the after-mining landscape – all activities required before, during, and after the operating life of a mine that are needed to produce an acceptable landscape economically. The most important benefit of closure planning is identification of critical activities to achieve successful reclamation. Closure planning usually identifies areas of needed research. It also identifies planning constraints (and sometimes opportunities) especially identifying safe methods and locations for tailings storage. These plans provide some assurance that the



mine is not “painting itself into a corner” and provide a starting basis to estimate financial assurance levels – important to both mines and regulators. It also forms a base case against which future planning changes can be compared. Much of this work falls under the concept of “design for closure” introduced 30 years ago.

Consent Letter	SRK’s written consent letter in respect of the publication of this CPR as included in the Prospectus.
Constitution	The Constitution of the Republic of Kazakhstan (adopted at the republican referendum on August 30, 1995) (with amendments and additions as of March 10, 2017).
Consumer Price Index	A measure of changes in the price level of market basket of consumer goods and services purchased by households. The CPI is a statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically.
Consumer Price Inflation	Consumer Price Index reflected as a percentage change between stated timelines, monthly, annual (end of period, average).
Copper	A reddish metallic element that takes on a bright metallic luster and is malleable, ductile, and a good conductor of heat and electricity. Symbol, Cu.
Core Recovery	The amount of the drilled rock withdrawn as core in core drilling, generally expressed as a percentage of the total length of the interval cored.
Cretaceous	A geologic period and system that spans 79Ma from the end of the Jurassic Period 145Ma to the beginning of the Paleogene Period 66Ma. A relatively warm climate, resulting in high eustatic sea levels that created numerous shallow inland seas.
C or crescent shaped deposits	Roll-front deposits that transect the host lithology.
Cut-off-Grade	The lowest grade of mineralised material that qualifies as ore in a given deposit; rock of the lowest assay included in an ore estimate.
Danian	The oldest age or lowest stage of the Paleocene epoch or series, the Paleogene period or system and the Cenozoic era or erathem.
Desorption	A process opposite to sorption, and involves the treatment of saturated sorbent with chemical solutions and the conversion of uranium ions into a solution known as rich eluate.
Devonian	A geologic period and system of the Palaeozoic, spanning 60Ma from the end of the Silurian, 419Ma, to the beginning of the Carboniferous, 359Ma.
Diabase	A dark-coloured igneous rock. It is compositionally equivalent to gabbro and basalt but texturally between them. Diabase is a common rock type. It occurs mostly in shallow intrusions (dikes and sills) of basaltic composition.
di-2-ethylhexyl phosphoric acid	A diester of phosphoric acid and 2-ethylhexanol used in the solvent extraction of uranium, as well as the rare-earth metals.
Diorite	A speckled, coarse-grained igneous rock consisting essentially of plagioclase, feldspar, and hornblende or other mafic minerals.
Dip	The angle at which a planar feature is inclined to the horizontal plane.
Direct Negotiations Protocol	A provision under Subsoil Law which governs direct negotiations.
Disequilibrium	When a solute is more concentrated in one of the two body compartments than the other.
Diuranate	A form of uranium oxide.
3D modelling	The process of three dimensional geological modelling of mineral deposits and the surrounding rock mass.
Drill rig	A drill machine complete with all tools and accessory equipment needed to drill boreholes.
Drill Slimes	a slurry inclusive of fine particles produced as part of the well drilling process.



Eastern Mynkuduk	A uranium deposit owned by Kazatomprom-SaUran LLP.
Effective Date	30 September 2018.
Energy Asia Limited	A consortium made of six Japanese power companies which subsequent to the transactions (see Transactions) has a 47.50% equity interest in Baiken-U LLP.
Environmental Code	Law No 212-III, January 2007, as amended.
Environmental Emissions Permit	A permit required “According to Article 109”.
Environmental and Social Impact Assessment	A process for predicting and assessing the potential environmental and social impacts of a proposed project, evaluating alternatives and designing appropriate mitigation, management and monitoring measures.
Environmental and Social Management Systems	A set of policies, procedures, tools and internal capacity to identify and manage a financial institution's exposure to the environmental and social risks of its clients/investees.
Environmental and Social Liabilities	All bio-physical and social liabilities relating to the closure of a mining and processing operation which inter alia may include physical remediation and retrenchment expenditures as well as post closure monitoring expenditures.
Eocene	Epoch, lasting from 56Ma to 3Ma, is a major division of the geologic timescale and the second epoch of the Paleogene Period in the Cenozoic Era.
Ephemeral stream	A stream that flows only briefly during and following a period of rainfall in the immediate locality.
Epigenetic	Formed later than the surrounding or underlying rock formation.
Equator Principal Financial Institution	A financial institution which has formally adopted the Equator Principals as part of its standard operating investment criteria and policies.
Equator Principle	A risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.
Equator Principles III	A major revision of the IFC Performance Standards on Environmental & Social Sustainability in 2012.
Equity Investment	Entities in which the Group has less than 20% of the voting rights. Equity investments are recognised at fair value as other investments in the Company's consolidated International Financial Reporting Standards financial statements.
Exploration Programme	The Exploration Programme for the Development Property, the Advanced Exploration Property and the Exploration Properties of the Company comprising annual schedules of activities and expenditures not included in the Life-of-Mine plans for the Mineral Assets.
Exploration Work Programme	The exploration programme of schedules activities required to be submitted for initial application of an exploration licence.
Extraction Well	A borehole equipped with submersible pumps for extracting the leached solution from the underground environment.
Feldspar	A group of rock-forming tectosilicate minerals that make up about 41% of the Earth's continental crust by weight. Feldspars crystallize from magma as veins in both intrusive and extrusive igneous rocks and are also present in many types of metamorphic rock.
Festuca	A genus of flowering plants belonging to the grass family, Poaceae (subfamily Pooideae). They are evergreen or herbaceous perennial tufted grasses.

Filtration	Removal of suspended and/or colloidal material from a liquid by passing the suspension through a relatively fine porous medium, e.g., a canvas or other fabric diaphragm; the process is activated by suction or pressure, and commonly includes filter aids. The products are clear liquid and a filter cake.
Fold	A curve or bend of a planar structure such as rock strata, bedding planes, foliation, or cleavage. A fold is usually a product of deformation, although its definition is descriptive and not genetic and may include primary structures.
Forest Use Code	Law № 477-II 08 July 2003, as amended.
Form 2-TP	A statistical report on air and water management reported to the regulatory authorities in Kazakhstan.
Form 4-OS	A report on the environmental protection costs reported to the regulatory authorities in Kazakhstan.
Fuel pellets	The fuel used by nuclear power stations for the generation of electricity.
Gabbro	A phaneritic (coarse-grained), mafic intrusive igneous rock formed from the slow cooling of magnesium-rich and iron-rich magma into a holocrystalline mass deep beneath the Earth's surface.
Gamma logging	A method of measuring naturally occurring gamma radiation to characterize the rock or sediment in a borehole or drill hole.
Gamma Radioactivity/Gamma-Ray	A penetrating electromagnetic radiation arising from the radioactive decay of atomic nuclei. It consists of photons in the highest observed range of photon energy.
Geochemical	Compounds that make up the earth, its atmosphere, and its seas.
Geochemistry	The study of the relative and absolute abundances of the elements and their nuclides (isotopes) in the Earth; the distribution and migration of the individual elements or suites of elements in the various parts of the Earth (the atmosphere, hydrosphere, lithosphere, etc.), and in minerals and rocks, and also the study of principles governing this distribution and migration. Geochemistry may be defined very broadly to include all parts of geology that involve chemical changes, or it may be focused more narrowly on the distribution of the elements.
Geology Committee	The Ministry of Investment and Development also supervises the mining industry through its sub-ordinate Committee on Geology and Subsoil Use.
Geosyncline	A large-scale depression in the earth's crust containing very thick deposits.
GKZ System	The State Commission of Kazakhstan on Mineral Reserves.
GKZ System Statements	The 'reserve' statements for the Mineral Assets dated 1 January 2018 and published in compliance with the GKZ system.
Global Offering	Offering of the ordinary shares of the Company on the AIX Limited being the stock exchange of the Astana International Financial Centre; and global depositary receipts on the Main Market of the London Stock Exchange, market operated by the London Stock Exchange Group plc.
Gold	A chemical element with symbol Au and atomic number 79.
8GR	An annual form submitted by Sub Soil Users to report on the declaration of 'reserves' in accordance with the GKZ System.
Graben	An elongate, relatively depressed crustal unit or block that is bounded by faults on its long sides. It is a structural form that may or may not be geomorphologically expressed as a rift valley.
Grade	The relative quantity or the percentage of ore-mineral or metal content in an orebody.
Granite	A common type of felsic intrusive igneous rock that is granular and phaneritic in texture.
Granosyenites	A term for a syenitic rock closer to granitic composition.
Grid power	Power supplied by an electrical grid is an interconnected network for

	delivering electricity from producers to consumers. It consists of generating stations that produce electrical power, high voltage transmission lines that carry power from distant sources to demand centres, and distribution lines that connect individual customers.
Groundwater	Water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. Groundwater originates from rain and from melting snow and ice and is the source of water for aquifers, springs, and wells. The upper surface of groundwater is the water table.
Group	the Company together with its subsidiaries.
Group A personnel	A category of employees employed by the Company.
Gypsum	A soft sulphate mineral composed of calcium sulphate dihydrate.
Haloxylon persicum	A small tree belonging to the family Amaranthaceae.
Hangingwall	The overlying side of an orebody, fault, or mine working, especially the wall rock above an inclined vein or fault.
Hexagonal configuration	Wellfield design engaged at certain of the Company's operations.
Hexavalent	Having a valency of six where a compound is noted to be in a +6 oxidation state.
Horst	A raised fault block bounded by normal faults. A horst is a raised block of the Earth's crust that has lifted, or has remained stationary, while the land on either side (graben) has subsided.
Hydraulic conductivity	A property of soils and rocks, that describes the ease with which a fluid (usually water) can move through pore spaces or fractures.
Hydrocarbon	A organic compound consisting entirely of hydrogen and carbon.
Hydrochemical facies	A term used in this paper to denote the diagnostic chemical aspect of groundwater solutions occurring in hydrologic systems.
Hydrofluoric acid	A solution of hydrogen fluoride in water used to convert UO <sub>2</sub> to refined uranium products.
Hydrogenous	Of or containing hydrogen.
Hydrogen peroxide	A chemical compound with the formula H <sub>2</sub> O <sub>2</sub> used to aid the precipitation of uranium from solution to produce yellow cake.
Hydrogen sulphide	A chemical compound with the formula H <sub>2</sub> S which is a colourless chalcogen hydride gas.
Hydrogeology	Branch of geology that deals with the distribution and movement of groundwater in the soil and rocks.
Hydrogeological characterisation	The process by which a hydrogeological system/domain is characterised in respect of physical properties governing the flow of water.
Hydrology	The branch of science concerned with the properties of the earth's water, and especially its movement in relation to land.
IAEA Safety Standards	The fundamental principles, requirements and recommendations to ensure nuclear safety.
IAEA Security Series	International consensus guidance on all aspects of nuclear security.
IAEA TECDOC handbook.	Handbook on the Physical Protection of Nuclear Materials and Facilities Restricted.
IFC Performance Standards	Standards which define IFC clients' responsibilities for managing their environmental and social risks. The 2012 edition of IFC's Sustainability Framework, which includes the Performance Standards, applies to all investment and advisory clients whose projects go through IFC's initial credit review process after January 1, 2012.
Igneous	Formed through the cooling and solidification of magma or lava.
Injection Well	A borehole in which fluid is placed deep underground into porous rock

	formations, such as sandstone or limestone, or into or below the shallow soil layer. The fluid may be water, wastewater, brine (salt water), or water mixed with chemicals.
Ion exchange	An exchange of ions between two electrolytes or between an electrolyte solution and a complex. In most cases the term is used to denote the processes of purification, separation, and decontamination of aqueous and other ion-containing solutions with solid polymeric or mineralic ion exchangers.
In-situ	Ore or waste material in its original unmined state.
In-situ Leaching	Also called “solution mining.” The process initially involves drilling of holes into the ore deposit and pumping of a leaching solution into the deposit where it makes contact with the ore. The solution is then collected and further processed and refined to produce a saleable product.
In-Situ Leach Recovery	See In-situ Leaching.
Intercalations	A special form of inter-bedding, where two distinct depositional environments in close spatial proximity migrate back and forth across the border zone.
International Finance Corporation	An international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in developing countries.
Ion	An atom or molecule with a net electric charge due to the loss or gain of one or more electrons.
Ionizing radiation	Radiation consisting of particles, X-rays, or gamma rays with sufficient energy to cause ionization in the medium through which it passes.
Irkol	A uranium deposit owned by Semizbai-U LLP.
Iron	A chemical element with symbol Fe and atomic number 26.
ISO 14001	The international standard that specifies requirements for an effective environmental management system.
ISO 5001	The international standard that specifies requirements for a energy management system.
ISO 9001	The international standard that specifies requirements for a quality management system.
Joint Operation	Entities in respect of which the Group has joint control and has rights to their assets, and revenues and has obligations relating to their expenses as well as financial obligations in proportion to the Group’s holding share therein. The Group’s joint operations, being JV Akbastau JSC and Karatau LLP, are consolidated as joint operations since 1 January 2018.
Joint Stock Company	A business entity in which shares of the company’s stock can be bought and sold by shareholders. Each shareholder owns company stock in proportion, evidenced by their shares.
Joint Venture	Entities that are under the joint control of the Group acting collectively with other parties, and decisions over the relevant activities of such entity require unanimous consent of all parties sharing control. The Group’s interests in joint ventures are accounted for using the equity method.
JORC Code	The Mineral Resource statements included in this CPR are reported in accordance with the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia.
JSC Sovereign Wealth Fund Samruk-Kazyna	A sovereign wealth fund and joint stock company in Kazakhstan which owns, either in whole or in part, a number of major companies in the country. This includes the national rail and postal service, the state oil and gas company KazMunayGas, the state uranium company Kazatomprom, Air Astana, and numerous financial groups. The state is the sole shareholder of the fund.

Jurassic	The second period of the Mesozoic Era, thought to have covered the span of time between 190Ma and 135Ma.
JV Akbastau JSC	A Mining Subsidiary in which the Company has a 50.00% equity interest.
JV Baiken-U LLP	A Mining Subsidiary in which the Company has a 52.50% equity interest.
JV Companies	JV SMCC LLP; Semizbai-U LLP; Appak LLP; JV Inkai LLP; JV Khorassan-U LLP; Baiken-U LLP; JV Zarechnoye JSC; JV Katco LLP; Karatau LLP; JV Akbastau JSC.
JV Inkai LLP	A Mining Subsidiary in which the Company has a 60.00% equity interest.
JV Katco LLP	A Mining Subsidiary in which the Company has a 49.00% equity interest.
JV Khorassan-U LLP	A Mining Subsidiary in which the Company has a 50.00% equity interest.
JV SMCC LLP	A Mining Subsidiary in which the Company has a 30.00% equity interest.
JV Zarechnoye JSC	A Mining Subsidiary in which the Company has a 49.98% equity interest.
Kanzhugan	A uranium deposit owned by Kazatomprom-SaUran LLP.
Kaolinite	A clay mineral, with a soft consistency and earthy texture. It is easily broken and can be moulded or shaped, especially when wet.
KAP Agreement	The contractual agreement between SRK and the Company governing the authoring of the CPR.
KAP 20 Project	A company wide project on Complex Safety, which focuses on radiation protection, occupational health and safety and environmental management.
Karatau LLP	A Mining Subsidiary in which the Company has a 49.98% equity interest.
Karst	A topography formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum. It is characterized by underground drainage systems with sinkholes and caves.
Kazatomprom-SaUran LLP	A Mining Subsidiary in which the Company has a 100.00% equity interest.
Kochia prostrata	A Eurasian plant in the subfamily Camphorosmoideae of the family Amaranthaceae (formerly treated as Chenopodiaceae).
Kyzylkum LLP	A subsidiary entity in which the Company holds a 30% interest, which undertakes mining and processing on behalf of JV Khorassan-U LLP.
Labour Use Code	The Labour Code of the Republic of Kazakhstan of November 23, 2015 No. 414-V (as amended and supplemented as of June 13, 2017).
Lacustrine	Relating to or associated with lakes. Lacustrine deposits are sedimentary rock formations which formed in the bottom of ancient lakes.
Land Code	Law No 442 II ZPK, 20 June 2003, amended 29 June 2018.
Land Code	Law No 442 II ZPK, 2003, amended 29 June 2018.
Law on Civil Protection	Law of the Republic of Kazakhstan of April 11, 2014 No. 188-V On Civil Protection (as amended and supplemented as of June 13, 2017).
Leaching	A process where ore is soluble and impurities are insoluble, widely used extractive metallurgy technique which converts metals into soluble salts in aqueous media.
Leach liquor	The solution containing the metal ions to be recovered and certain undesirable metal ions which require removal.
Lead	A chemical element with symbol Pb and atomic number 82.
Lignite	Often referred to as brown coal, is a soft, brown, combustible, sedimentary rock formed from naturally compressed peat. It is considered the lowest rank of coal due to its relatively low heat content. It has a carbon content around 60% to 70%.
Life-of-mine	The time in which, through the employment of the available capital, the Ore Reserves-or such reasonable extension of the ore reserves as conservative geological analysis may justify-will be extracted.
Life-of-mine plan	The production plan which provides physical details in monthly, quarterly or



	annual time increments in respect of mined waste and ore through to processed material, recovered saleable products and waste materials from a processing facility. The duration of the plan typically reflects the Life-or-Mine, and normally limited to depletion of 'Ore Reserves'.
Limestone	A sedimentary rock consisting chiefly (more than 50% by weight or by areal percentages under the microscope) of calcium carbonate, primarily in the form of the mineral calcite, and with or without magnesium carbonate; specif. a carbonate sedimentary rock containing more than 95% calcite and less than 5% dolomite.
Liquidation Fund	The fund established for financing of environmental liabilities, specifically bio-physical closure costs.
Lixiviant	A liquid medium used in hydrometallurgy to selectively extract the desired metal from the ore or mineral. It assists in rapid and complete leaching. The metal can be recovered from it in a concentrated form after leaching.
Loaded Resin	Resin loaded with uranium in the ion exchange separation of uranium from Alkaline Leachate.
Loam	Soil whose mineral composition is about 40%: 40%: 20% concentration of sand-silt-clay, respectively.
Maastricht	A geological formation whose strata date back to Late Cretaceous 66Ma.
Magnesium	A chemical element with symbol Mg and atomic number 12. Magnesium is used in super-strong, lightweight materials and alloys.
Main Market	The market operated by the London Stock Exchange Group plc
Marble	A metamorphic rock composed of recrystallized carbonate minerals, most commonly calcite or dolomite.
Marlstone	A calcium carbonate or lime-rich mud or mudstone which contains variable amounts of clays and silt.
Marubeni Corporation	A joint venture partner which holds an equity interest in JV Khorassan-U LLP.
Mercury	A chemical element with symbol Hg and atomic number 80.
Mesozoic	An interval of geological time from about 252Ma to 66Ma. It is also called the Age of Reptiles
Metallogenic	Geographic area characterized by a particular assemblage of mineral deposits, or by a distinctive style of mineralization.
Metamorphite	Rocks subjected to a change of minerals or geologic texture in pre-existing rocks (protoliths), without the protolith melting into liquid magma. The change occurs primarily due to heat, pressure, and the introduction of chemically active fluids.
Metasomite	Rocks which have been subject to chemical alteration by hydrothermal and other fluids.
Mineral Assets	The entire suite of producing properties, development properties, advanced exploration properties and exploration properties comprising deposits and all related production facilities (mining, processing, infrastructure).
Mineral Extraction Tax	In accordance with the relevant taxation codes of Kazakhstan, Mineral Extraction Tax ("MET") is form of 'mineral royalty' determined by application of 29% tax charge to the taxable expenditures. The tax charge is a cash cost of mining and is based on an assumed 20% profit margin on certain expenditures and a MET rate of 18.50% and where the tax charge of 29% is determined by the following formulae: $(1+20\%)*18.5\%/(1-(1+20\%)*18.5\%)$ . The taxable expenditures comprise all direct expenditures associated with the mining operations and specifically exclude (processing and G&A) but include the period PGR charge and any other depreciation charges attributable to direct mining activities.
Mining Contracts	The Subsoil Use Contracts which govern the exploration, development and production for and of uranium for each of the Mineral Assets.
Mining CPR	ESMA Recommendations, notably "Appendix II – Mining Competent Person's Report – recommended content".



Mining Subsidiaries	The 14 Mining Subsidiaries which own the Mineral Assets and including: Kazatomprom-SaUran LLP (100,00%); Ortalyk LLP (100.00%); RU-6 LLP (100.00%); Appak LLP (65.00%); JV Inkai LLP (60.00%); Semizbai-U LLP (51.00%); JV Akbastau JSC (50.00%); Karatau LLP (50.00%); JV Zarechnoye JSC (49.98%); JV Katco LLP (49.00%); JV Khorassan-U LLP (50.00%); JV SMCC LLP (30.00%); Baiken-U LLP (52.50%); and Budenovskoye LLP (51.00%).
Miocene	The first geological epoch of the Neogene Period and extends from about 23Ma to 5.3Ma.
Molasse	Sandstones, shales and conglomerates that form as terrestrial or shallow marine deposits in front of rising mountain chains.
Molybdenum	A silvery-white, very hard, metallic element. Symbol, Mo. Valuable as an alloying agent with steel and nickel. Used for electrodes in electrically heated glass furnaces, in nuclear energy applications, and for missile and aircraft parts.
Monitoring wells	A small diameter drilled into the ground, which are used for level monitoring of groundwater and water quality analysis.
Mud Rotary Drilling	One of the main methods of well drilling for water and oil in areas that contain unconsolidated formations. In mud rotary drilling, fluid is pumped down the hollow drill pipe, called the Kelly, and forced out of jets in the drill bit.
Namibia	Republic of Namibia.
Neogene	A geologic period and system that spans 21Ma from the end of the Paleogene Period 23Ma to the beginning of the present Quaternary Period 2.6Ma.
Nitrate	A polyatomic ion with the molecular formula NO <sup>-2</sup> .
Nominal Terms	Expenditures or revenues expressed in nominal terms are unadjusted from the date in which they are recorded, specifically they will include inflationary aspects as determined from a specified reference date.
Northern Karamurun	A uranium deposit owned by RU-6 LLP.
North Kazakhstan Province	An administrative division of the Republic of Kazakhstan.
Niobium	Formerly known as columbium, is a chemical element with symbol Nb (formerly Cb) and atomic number 41. Niobium is used mostly in alloys, the largest part in special steel such as that used in gas pipelines.
Official List	A list of securities issued by companies for the purpose of those securities being traded on a UK regulated market for the instruments listed in Section B of the Annex to the Investment Services Directive. An example of a UK regulated market is the London Stock Exchange's Main Market.
Oligocene	A geologic epoch of the Paleogene Period and extends from about 34Ma to 23Ma before the present.
Operating Expenditure	An operating expense, operating expenditure, operational expense, operational expenditure or opex is an ongoing cost for running a product, business, or system.
Orano	Orano S.A
Ordovician	A geologic period and system, the second of six periods of the Paleozoic Era. The Ordovician spans 41Ma from the end of the Cambrian Period 485Ma to the start of the Silurian Period 444Ma.
Orogenic	An orogen or orogenic belt develops when a continental plate crumples and is pushed upwards to form one or more mountain ranges; this involves a series of geological processes collectively called orogenesis. Orogeny is the primary mechanism by which mountains are built on continents.
Ortalyk LLP	A Mining Subsidiary in which the Company has a 100.00% equity interest.
OSHAS 18001	Occupational Health and Safety Assessment Series, (officially BS OHSAS 18001) is a British Standard for occupational health and safety management systems.

Other Segment	One of the three structural divisions/segments of the Company comprising services and marketing activities.
Outcrop	The part of a rock formation that appears at the surface of the ground.
Oxidant	An oxidizing agent (oxidant, oxidizer) is a substance that has the ability to oxidize other substances, in other words to cause them to lose electrons. Common oxidizing agents are oxygen, hydrogen peroxide and the halogens.
Palaeocene	A geological epoch that lasted from about 66Ma to 56Ma.
Paleogene	Relating to or denoting the earlier division of the Tertiary period, comprising the Palaeocene, Eocene, and Oligocene epochs.
Palaeoproterozoic	The first era of the Proterozoic eon. It came after the Archaean eon, and lasted from 2,500Ma to 1,600Ma.
Permian	A geologic period and system which spans 47Ma from the end of the Carboniferous Period 299Ma, to the beginning of the Triassic period 252Ma.
Permits and Notifications Law	Law of the Republic of Kazakhstan No 219-I of April 23, 1998 On Radiation Safety of the Population.
Phosphate	A non-detrital sedimentary rock which contains high amounts of phosphate minerals.
Phragmites	A genus of four species of large perennial grasses found in wetlands throughout temperate and tropical regions of the world.
Piper Plot	A graphical representation of the chemistry of a water sample or samples.
Pliocene	The epoch in the geologic timescale that extends from 5.3Ma to 2.Ma. It is the second and youngest epoch of the Neogene Period in the Cenozoic Era.
Polymetallic	An ore that is the source of more than one metal suitable for recovery.
Polymictic	Holomictic lakes that are too shallow to develop thermal stratification; thus, their waters can mix from top to bottom throughout the ice-free period.
Porphyry	A textural term for an igneous rock consisting of large-grained crystals such as feldspar or quartz dispersed in a fine-grained silicate rich, generally aphanitic matrix or groundmass.
Potable	Water that is safe to drink or to use for food preparation, without risk of health problems.
Precipitate	The solids resulting from the precipitation process.
Precipitation	The action or process of precipitating a substance from a solution.
Preg robbing	Ores containing carbonaceous material which can inhibit the leaching efficiency of target minerals/metals.
Process slimes	The residual sludge or waste derived from the processing of uranium bearing solutions.
Project for Appraisal Works	A document governing the schedule of works required to advance a exploration property to the next development stage.
Proluvial	Loose formations that are the products of rock fragmentation and that are carried by streams of water to the foot of highlands.
Prompt-fission neutron logging	A means of measuring epithermal and thermal data to derive assays of uranium concentration. A probe inserted into a borehole uses a small D-T accelerator to send out a burst of 14 MeV neutrons into the formation around the borehole, and it then detects prompt epithermal neutrons returning from thermal fissioning of 235U in the formation.
Property Tax	In accordance with the relevant taxation codes of Kazakhstan, Property Tax (“PT”) is a tax charge derived from application of a rate of 1.50% to the average of the opening and closing balances of PGR determined in the period. The property tax as determined is then apportioned in a ratio of 40% to the mining costs and 60% to the processing costs.

Prospectus	The prospectus dated on or around 31 October 2018 in support of the of the Global Offering of: the ordinary shares of the Company on the AIX Limited being the stock exchange of the Astana International Financial Centre; and global depositary receipts on the Main Market of the London Stock Exchange, market operated by the London Stock Exchange Group plc.
Prospectus Directive	Prospectus Directive (2003/71/EC) published by the Financial Services Authority from time to time and governed by the United Kingdom Listing Authority.
Prospectus Regulations	Prospectus Regulations (809/2004) published by the Financial Services Authority from time to time and governed by the United Kingdom Listing Authority.
Prospectus Rules	Prospectus Rules published by the Financial Services Authority from time to time and governed by the United Kingdom Listing Authority.
Proterozoic	A geological eon spanning the time from the appearance of oxygen in Earth's atmosphere to just before the proliferation of complex life (such as trilobites or corals) on the Earth. The Proterozoic Eon extended from 2.5Ga to 541Ma.
Publication Date	15 October 2018 in respect of the Registration Document, and on or around 31 October 2018 in respect of the Prospectus.
Pyrite	The mineral pyrite, or iron pyrite, also known as fool's gold, is an iron sulphide with the chemical formula FeS <sub>2</sub> . Pyrite is considered the most common of the sulphide minerals.
Quaternary	The current and most recent of the three periods of the Cenozoic Era and follows the Neogene Period and spans from 2.6Ma to the present.
Radiation Safety Law	Law of the Republic of Kazakhstan No 219-I of April 23, 1998 On Radiation Safety of the Population.
Radioecological surveys	Radioecology is the branch of ecology concerning the presence of radioactivity in Earth's ecosystems. Investigations in radioecology include field sampling, experimental field and laboratory procedures, and the development of environmentally predictive simulation models, all in an attempt to understand the migration methods of radioactive material throughout the environment.
Radionuclides	An atom that has excess nuclear energy, making it unstable and subject to radioactive decay through emissions defined as ionising radiation.
Rare earth elements	Any of a group of chemically similar metallic elements comprising the lanthanide series and (usually) scandium and yttrium. They are not especially rare, but they tend to occur together in nature and are difficult to separate from one another.
Real terms	Values which has been adjusted to remove the impact of inflation, e.g. where nominal values have been adjusted to determine values which are base dated to a specific date.
Receptor	Environmental and Social Receptors which are impacted by the mining and processing operations.
Recipients	The recipients of this CPR.
Red Book	A recognised world reference on uranium jointly prepared by the Nuclear Energy Agency and the International Atomic Energy Agency (latest edition "Uranium 2016: Resources, Production and Demand").
Registration Document	The registration document to be published by the Company on 15 October 2018.
Requirements	The Prospectus Rules, the Prospectus Directive (2003/71/EC) and the Prospectus Regulations (809/2004) published by the Financial Services Authority from time to time and governed by the United Kingdom Listing Authority.
Resistivity	Electrical resistivity is an intrinsic property of a material that is measured as its resistance to current per unit length for a uniform cross section.
Retrenchment	The action of making an employee redundant.

Rhenium	A chemical element with symbol Re and atomic number 75. Nickel-based superalloys of rhenium are used in the combustion chambers, turbine blades, and exhaust nozzles of jet engines.
Rich Eluate	A uranium bearing solution formed by the treatment of saturated sorbent with chemical solutions and the conversion of uranium ions into a solution.
Riverine	Relating to or situated on a river or riverbank.
Roll front	Roll-front uranium deposits are generally hosted within permeable and porous sandstones or conglomerates. The mechanism for deposit formation is dissolution of uranium from the formation or nearby strata and the transport of this soluble uranium into the host unit. When the fluids change redox state, generally in contact with carbon-rich organic matter, uranium precipitates to form a 'front'.
RosAtom	Rosatom State Nuclear Energy Corporation.
Row Configuration	Wellfield design engaged at certain of the Company's operations.
RU-6 LLP	A Mining Subsidiary in which the Company has a 100.00% equity interest.
Russia	Russian Federation.
Samruk-Kazyna Trust	The incorporated entity through which the Company's charitable activities are enacted.
Sandstone	A clastic sedimentary rock composed mainly of sand-sized (0.0625mm to 2mm) mineral particles or rock fragments.
Santonian	A subdivision of the Late Cretaceous epoch or Upper Cretaceous series. It spans the time between 86Ma and 84Ma.
Scrubbing	The process of removing air polluting gasses and/or particulates from industrial exhaust systems.
Sedimentary	Rock that has formed from sediment deposited by water or air.
Selenium	A chemical element with symbol Se and atomic number 34. Commercial uses for selenium today are glassmaking and pigments and as a semiconductor is also used in photocells.
Self Potential	A naturally occurring electric potential difference in the Earth, measured by an electrode relative to a fixed reference electrode.
Semizbai	A uranium deposit which is owned by Semizbai-U LLP.
Semizbai-U LLP	A Mining Subsidiary in which the Company has a 100.00% equity interest.
Shale	A fine-grained sedimentary rock that forms from the compaction of silt and clay-size mineral particles that we commonly call "mud".
Shares	The ordinary shares of the Company.
Shu-Sarysu Province	A uranium province located in the Republic of Kazakhstan.
Silicate	Rock-forming minerals with predominantly silicate anions. They are the largest and most important class of rock-forming minerals and make up approximately 90% of the Earth's crust.
Siliceous	Sedimentary rocks that have silica (SiO <sub>2</sub> ) as the principal constituent.
Siltstone	A sedimentary rock which has a grain size in the silt range, finer than sandstone and coarser than claystones.
Silver	A precious shiny greyish-white metal, the chemical element of atomic number 47.
Sodium Chloride	Also known as salt, is an ionic compound with the chemical formula NaCl,
Sodium Diuranate	A uranium salt also known as the yellow oxide of uranium.
Sorption	A physical and chemical process by which one substance becomes attached to another.
South Africa	Republic of South Africa.
Southern Karamurun	A uranium deposit owned by RU-6.
Southern Moinkum (Northern Part)	A uranium deposit owned by JV Katco LLP.

South Moinkum (Southern Part)	A uranium deposit owned by Kazatomprom-SaUran LLP.
Spot Market	A public financial market in which financial instruments or commodities are traded for immediate delivery.
State Bodies	Ministry of Environmental Protection of the Kazakhstan and Ministry of Emergency Situations of Kazakhstan.
Steppe	An ecoregion, in the montane grasslands and shrublands and temperate grasslands, savannas and shrublands biomes, characterized by grassland plains without trees apart from those near rivers and lakes.
Strike	The course or bearing of the outcrop of an inclined bed, vein, or fault plane on a level surface; the direction of a horizontal line perpendicular to the direction of the dip.
Subsoil and Subsoil Use Law or “Subsoil Law”	The main legislative act governing extractive activities first enacted in 1996; last amendment – May, 2018: №291-IV 24 June 2010, amended 24 May 2018
Subsoil and Subsoil Use Code or “Subsoil Code”	№ 156-VI4 June 2018 or Effective 27/12/2017
Subsoil Use Agreements	A legally binding agreement between the duly authorised representative of the Government of Kazakhstan and the Subsoil User (see below) which has been granted rights for the exploration and/or production of minerals.
Subsoil User	Legally incorporated entities which have been granted rights for the exploration and/or production of minerals.
Subsidiary	Entities that the Group controls by having (i) the power to direct their relevant activities that significantly affect their returns, (ii) exposure, or rights, to variable returns from its involvement with these entities, and (iii) the ability to use its power over these entities to affect the amount of the Group’s returns. The existence and effect of substantive rights, including substantive potential voting rights, are considered when assessing whether the Group has power over another entity.
Sulphur	The chemical element of atomic number 16, a yellow combustible non-metal. that occurs widely in nature, especially in volcanic deposits, minerals, natural gas, and petroleum. It is used to make gunpowder and fertilizer, to vulcanize rubber, and to produce sulfuric acid.
Syenite	A coarse-grained grey igneous rock composed mainly of alkali feldspar and ferromagnesian minerals such as hornblende.
Synsedimentary	A fault or fold that forms or grows within a sediment during sedimentation.
Syrdarya Province	A uranium province located in Kazakhstan.
Tamarix	Species of flowering plants in the family Tamaricaceae, native to drier areas of Eurasia and Africa.
Tantalum	A chemical element with symbol Ta and atomic number 73. A rare, hard, blue-grey, lustrous transition metal that is highly corrosion-resistant. It is part of the refractory metals group, which are widely used as minor components in alloys.
Technical Economic Parameters	Assumed production, sales volumes, sales revenue, operating and capital expenditure relating to depletion of the Ore Reserves from 1 July 2018.
TEO Konditsii	A technical study completed in accordance with local regulatory requirements in Kazakhstan.
Terrigenous	Derived from the erosion of rocks on land; that is, they are derived from terrestrial (as opposed to marine) environments.
Tertiary	Relating to or denoting the first period of the Cenozoic era, between the Cretaceous and Quaternary periods, and comprising the Palaeogene and Neogene sub-periods.



Thermal log	A measure of measurement of the fraction or percentage of pore volume in a volume of rock.
Third Party	Someone who is not one of the main people involved in a business agreement or legal case, but who is involved in it in a minor role.
Thorium	A weakly radioactive metallic chemical element with symbol Th and atomic number 90.
Thorium and potassium correction	Correction factors applied in assessing the output from thermal logging.
Thrust	A break in the Earth's crust, across which older rocks are pushed above younger rocks.
Tin	A chemical element with the symbol Sn and atomic number 50. A soft, malleable, ductile and highly crystalline silvery-white metal.
Trade and Transport Company LLP	A subsidiary of the Company which facilitates transportation of goods to and from the Mining Subsidiaries operations.
Transactions	With effect from 1 January 2018, the Company increased its equity interest in its joint venture with Cameco, JV Inkai LLP, from 40% to 60%, and, by the end of 31 December 2018, the Company through a various transactions intends to increase its equity interest in JV Baiken-U LLP, a joint venture with the Energy Asia Limited consortium, from 5.0% to 52.5% and its equity interest in Khorasan-U LLP, a joint venture with RosAtom and Marubeni Corporation, from approximately 34% to 50%. Accordingly for the purpose of reporting herein, all attributable data presented in this CPR is done so on a basis giving effect to such increases.
TO-25	A form of management report comprising physical statistics relating to the extraction and production of uranium from the Mineral Assets.
Toll Refining	Where the owner of ore or concentrate contracts the refining of the metal to another party for a fee but the refined metal remains under the original ownership for final sale or disposition.
Tortkuduk	A uranium deposit owned by JV Katco LLP.
Trialkylamine	A group of organic chemical compounds derived from ammonia.
Tributyl phosphate	An organophosphorus compound with the chemical formula 3PO used in the solvent extraction of uranium.
Tugai Forest	A form of riparian forest or woodland associated with fluvial and floodplain areas in arid climates.
Turonian	The second age in the Late Cretaceous epoch, or a stage in the Upper Cretaceous series. It spans the time between 94Ma and 90Ma.
Tyauamunite	A very rare uranium mineral and a member of the carnotite group.
UMP Segment	One of the structural/divisions of the Company responsible for production and sales of products containing beryllium, tantalum and niobium, hydrofluoric acid and by-products. This segment is also engaged in processing of uranium raw materials under tolling arrangements and production of UO <sub>2</sub> powder and fuel pellets.
Unconformity	a surface of contact between two groups of unconformable strata.
United States	United States of America.
U-PRICE™	A recursive system of eleven regression equations and three identities that quantify the casual relationships and interdependencies among key variables of the uranium industry as developed by Ux Consulting Limited.
Uraninite	Formerly pitchblende, is a radioactive, uranium-rich mineral and ore with a chemical composition that is largely UO <sub>2</sub> , but due to oxidation the mineral typically contains variable proportions of U <sub>3</sub> O <sub>8</sub> .
Uranium	A chemical element with symbol U and atomic number 92.
Uranium Segment	One of the structural/divisions of the Company responsible for uranium mining and processing operations from the Group's mines, the Group's purchases of



	uranium from the Group's joint ventures and associates engaged in uranium production, and external sales and marketing of uranium products, in each case other than production and sales of UO <sub>2</sub> powder and fuel pellets.
Uranophane	Also known as uranotile, is a rare calcium uranium silicate hydrate mineral that forms from the oxidation of other uranium-bearing minerals. It has a yellow colour and is radioactive.
Uranyl phosphate	A compound of uranium, phosphorus, and oxygen and noted as the phosphates of uranium.
Uvanas	A uranium deposit owned by Kazatomprom-SaUran LLP.
UxC Report	A industry market specialist report supporting the analysis of the uranium market including the uranium price forecasts as relied upon in this CPR and authored by Ux Consulting Limited.
Vanadium	A chemical element with symbol V and atomic number 23. A grey metal that is normally used as an alloying agent for iron and steel. It is also used to strengthen titanium based alloys.
Vein	An epigenetic mineral filling of a fault or other fracture in a host rock, in tabular or sheetlike form, often with associated replacement of the host rock; a mineral deposit of this form and origin.
Vendian	The latest period of the Proterozoic era, spanning the time between 650Ma and 544Ma. Sometimes referred to as the Ediacaran period, the Vendian is distinguished by fossils representing a characteristic collection of complex soft-bodied organisms found at several localities around the world.
Volcanic	Characteristic of, pertaining to, situated in or upon, formed in, or derived from volcanoes.
Volkovgeologia JSC	A geology and geotechnology company which is primarily engaged in prospecting, exploration and analysis of uranium deposits on behalf of the Group and in which the Group holds equity of 100.00%.
Water Use Code	Law No 481, 2003, amended 29 June 2018.
Water table	The surface where the water pressure head is equal to the atmospheric pressure. It may be visualized as the "surface" of the subsurface materials that are saturated with groundwater in a given vicinity.
Wellfield	The land immediately above and surrounding the wells drilled for extraction of uranium.
Western Mynkuduk	A uranium deposit owned by Appak LLP.
WGC 2013	World Gold Council Report 2013.
X-ray	A form of electromagnetic radiation.
X-ray spectral fluorescent analyses	An x-ray instrument used for routine, relatively non-destructive chemical analyses of rocks, minerals, sediments and fluids.
Yellow Cake	A type of uranium concentrate powder obtained from leach solutions, in an intermediate step in the processing of uranium ores. It is a step in the processing of uranium after it has been mined but before fuel fabrication or uranium enrichment. Modern yellowcake typically contains 70% to 90% triuranium octoxide by weight.
Zarechnoye	A uranium deposit owned by JV Zarechnoye JSC.
Zhalpak	A uranium deposit owned by Ortalyk LLP.
2018 Statements	Mineral Resources and Ore Reserve statements for the Mineral Assets reported in accordance with the terms and definitions of the JORC Code as at 1 July 2018.

## Abbreviations

ACA	Associated of Chartered Accountants
AEP	Advanced Exploration Property
AIME	American Institute of Mining Engineers

AISC	All in sustaining cash costs
AIX	Astana International Financial Centre
ARO	Asset Retirement Obligation
ASTM C 967	Standard specification for uranium concentrate with uranium content of at least 65%
ASX	Australian Securities Exchange
B	See C1
BSc	Bachelor of Science
C1	A measure of geological confidence in accordance with the GKZ system (A, B, C1, C2 in decreasing order of confidence)
C2	See C1
CaCO <sub>3</sub>	Calcium Carbonate
Capex	Capital Expenditure
C. Chem	Chartered Chemist
C.Eng	Chartered Engineer
C. Geol	Chartered Geologist
CIT	Corporate Income Tax
CO <sub>2</sub>	Carbon Dioxide
CPI	Consumer Price Inflation
CPR	Competent Persons Report
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
DP	Development Property
DPA 1998	Data Protection Act 1998 of the United Kingdom
EAHL	Energy Asia Holdings Ltd
EHSG	Environmental Health and Safety Guidelines
EIA	Environmental Impact Assessment
EBITDA	Earnings Before Interest Tax, Depreciation and Amortisation
EP	Exploration Property
EPA	Environmental Protection Authority
ESHS	Environmental, Safety and Health System
Eur. Geol.	European Geologist
FCA	Financial Conduct Authority
FGS	Fellow of the Geological Society
FMIMM	Fellow of the Institute of Materials, Minerals and Mining
FS	Feasibility Study
FSMA	Financial Services and Markets Act 2000 of the United Kingdom
G&A	General and Administration
GIIP	Good International Industry Practice
GIS	Geographic information system
GoK	Government of Kazakhstan
GPS	Global Positioning System
GRR	Exploration Depreciation
H1	1 <sup>st</sup> half of the financial/calendar year in this case being 1 January through 30 June
H2	2 <sup>nd</sup> half of the financial/calendar year in this case being 1 July through 31 December
HCO <sub>3</sub> <sup>-</sup>	anion of carbonic acid
HDPE	High-density polyethylene
HKPU	Yellow Cake

HSE	Health, Safety and Environment
IAEA	International Atomic Energy Agency
IFC	International Finance Corporation
IFRS	International Financial Reporting Standards
ILO	International Labour Organization
ISR	in-situ leach recovery
IX	ion exchange
JV	Joint Venture
K	Potassium
KAP	Joint Stock Company National Atomic Company Kazatomprom
Kazakhstan	Republic of Kazakhstan
Kazatomprom	Joint Stock Company National Atomic Company Kazatomprom
KAZ ETS	Kazakhstan Emissions Trading System
LLRW	Low Level Radioactive Waste
LoMp	Life of Mine plan
LSE	London Stock Exchange
LTIFR	Lost time injury frequency rate
MAusIMM	Member of the Australasian Institute of Mining and Metallurgy
MET	Mineral Extraction Tax
MIMMM	Member of the Institute of Materials, Minerals and Mining
MICAEW	Member of the Institute of Chartered Accountants of England and Wales
MoE	Ministry of Energy of the Kazakhstan
MoEP	Ministry of Environmental Protection of the Kazakhstan
MoES	Ministry of Emergency Situations of Kazakhstan
MRSC	Member of the Royal Society of Chemistry
MSc	Master of Science
NEA	Nuclear Energy Agency
NGO	Non-Governmental Organisation
NGWA	National Groundwater Association
NORM	naturally occurring radioactive materials
NPT	Non-Proliferation of Nuclear Weapons Treaty
NSK	Nuclear Society of Kazakhstan
OECD	Organisation for Economic Co-operation and Development
Opex	Operating Expenditure
OVOS	Otsenka Vozdejstviya na Okruzhayushchuyu Sredu
2P	Proved and Probable Ore Reserves
PFS	Pre-Feasibility Study
PGR	Wellfield development depreciation
pH	A logarithmic scale used to specify the acidity or basicity of an aqueous solution.
PhD	Doctorate of Philosophy
PLS	Pregnant Leach Solution
PNS	Professional Natural Scientist
PP	Producing Property
PPE	personal protective equipment
PS	Performance Standards
PT	Property Tax
RPO	Recognised Professional Organisation

Russia	Russian Federation
SEC	U.S. Securities and Exchange Commission
SMCCP	Stepnogorsk Mining Chemical Combine (plant) LLP
SP	Self Potential
SPZ	Sanitary Protection Zone
SRK	Joint Stock Company National Atomic Company Kazatomprom
SRK Group	SRK Consulting (Global) Limited
ST RK 2573	Standard specification for uranium concentrate with uranium content of at least 80%
TD	Technical Desorbate, a intermediary compound in the process of producing uranium concentrates
TDS	Total Dissolved Solids
TEEP	Techniko-Ekonomicheskoe Predlozhenye
TEO	Technico Ekonomicheskiye Obosnovaniye
TEO Konditsy	Techniko-Ekonomicheskoe Obosnovanie Konditsy
TEO Project	Techniko-Ekonomicheskoe Obosnovanie Proyekta
TEPs	Technical Economic Parameters
TER	Techniko-ekonomicheskije Rasschety
TES	Techniko-ekonomicheskije Soobrazheniya
Th	A weakly radioactive metallic chemical element with symbol Th and atomic number 90
THK	Trade House KazakAtom AG
TSS	Total Suspended Solids
TUZ	Technological units of acidification and distribution of solutions
UEC	Uranium Enrichment Centre
UEIP	JSC Urals Electrochemical Integrated Plant
UK	United Kingdom of Great Britain and Northern Ireland
UKLA	United Kingdom Listing Authority
UME	Uranium Metal Content Equivalent
UMP	Ulba Metallurgic Plant JSC
URM	the weight of pure uranium in a particular product, for natural uranium, triuranium octoxide and other uranium products
United States	United States of America
UF <sub>6</sub>	Uranium hexafluoride is the chemical form of uranium that is used during the uranium enrichment process.
UO <sub>2</sub>	UO <sub>2</sub> powder suitable for making heavy water reactor fuel pellets or uranium hexafluoride (UF <sub>6</sub> )
UO <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> <sup>4-</sup>	uranyl carbonate
UO <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> <sup>4-</sup>	uranyl sulphate
U <sub>3</sub> O <sub>8</sub>	Triuranium octoxide a form of uranium concentrate
UxC	Ux Consulting Company
WBG	Work Bank Group
WGC	World Gold Council
WGC 2013	June 2013 World Gold Council Publication
WIP	Work In Progress
YoY	Year on Year

## Units

amsl above mean sea level

Bq/g	Becquerel per gramme
g	a gramme
Ga	a billion years ago
g/l	a gramme per litre
g/t	a gramme per tonne
GWh	a billion watt hours
ha	hectare
Hz	a hertz
kgU/m <sup>2</sup>	a kilogramme of Uranium per square metre
kgS/kgU	a kilogramme of Sulphur per kilogramme of Uranium
klpm	a thousand litres per month
km	a kilometre
km <sup>2</sup>	a square kilometre
kt	a thousand metric tonnes
ktpa	a thousand tonnes per annum
ktS	a thousand tonnes of Sulphur
ktU	a thousand tonnes of Uranium
kV	a thousand volts
kW/t	a thousand watts per tonne
kWh	a thousand watt hours
KZT	Kazakhstan Tenge
KZTbn	a billion Kazakhstan Tenge
KZT/kgU	Kazakhstan Tenge
KZT/lbU	Kazakhstan Tenge per pound of Uranium
KZTm	a million Kazakhstan Tenge
l	a litre
l/day	litres per day
m	a metre
mbgl	metres below ground level
m <sup>2</sup> /day	a square metre/day
m <sup>3</sup>	a cubic metre
m <sup>3</sup> /d	a cubic metre per day
m <sup>3</sup> /hr	a cubic metre per hour
Ma	a million years ago
mabsl	meters above sea level
mamsl	metres above mean sea level
mbgl	metres below ground level
m/d	metres per day
mgU/l	milli gramme of Uranium per litre
m <sup>3</sup> /hr	a cubic metre per hour
MkRh/h	Roentgens per hour
Mlb	a million pounds
MlbU	a million pounds of Uranium
MlbU <sub>3</sub> O <sub>8</sub>	a million pounds of Triuranium Octoxide
Mlpm	a million litres per month
Mlpa	a million litres per annum
mm	a millimetre
m/s	a metre per second

MPa	a Mega Pascal
mSv	milli sievert
mSv/y	milli sievert per year
Mt	a million tonnes
Mtpa	a million tonnes per annum
MW	a million watts
MWh	a million watt hours
m/y	metres per year
No	number of
ppm	parts per million
t	a metric tonne of Triuranium Octoxide
t/h	tonnes per hour
tU	a metric tonne of Uranium
tU <sub>3</sub> O <sub>8</sub>	a metric tonne of
US\$	a United States Dollar
US\$bn	a billion United States Dollars
US\$k	a thousand United States Dollars
US\$/kg	United States Dollars per kilogramme
US\$/lb	United States Dollars per pound
US\$/lbU	United States Dollar per pound of Uranium
US\$/lbU <sub>3</sub> O <sub>8</sub>	United States Dollar per pound of Uranium
US\$m	a million United States Dollars
US\$/t	United States dollars per tonne
V	volts
°	a degree
°C	a degree Celsius
'	a minute
%	percentage
%U	percentage of Uranium
%Um	grade thickness accumulation
% w/w	the proportion of a particular substance within a mixture, as measured by weight or mass
µm	a micron or 1x10 <sup>-6</sup>
µR/h	micro Roentgen per hour



**APPENDIX**  
**A IFC PERFORMANCE STANDARDS APPRAISAL**

**Appendix A: IFC Performance Standards Appraisal**

Performance Standard (PS)	Non-conformances	Recommendations
Section heading	Para	
<b>PS1: Assessment and Management of Environmental and Social Risks and Impacts</b>		
Environmental and social assessment and management system	5	Compliant, fully fledged management systems have been established at the operations (Section 12.4), but there is room for improvement of these as outlined below.
Policy	6	<p>The Company's HSE policy does not specifically aim for consistency with the principles of the IFC Performance Standards.</p> <p>The policy does however reference other international standards – specifically, the Global Reporting Initiative Standards, management system standards (specifically, ISO 14001, ISO 10018, OHSAS 18001) and International Atomic Energy Agency's (IAEIA's) recommendations.</p> <p>The public version of the policy is an abridged version and does not refer to any international standards.</p> <p>The policy does not specifically reference adequate engagement with potentially affected communities, management of impacts on neighbouring land users, conservation of biodiversity and ecosystem services, and conservation of cultural heritage.</p>
Identification of risks and impacts	7 - 12	The mines have insufficient understanding of environmental and social context. More detailed information on the setting of the operations is required to define impacts on ecology, water resources and land use, including cumulative impacts on sensitive receptors (Sections 12.4.8 and 12.6).
Management programs	13 - 16	<p>Closure targets and completion criteria are not well-defined, particular attention needs to be paid to closure completion criteria for groundwater and the involvement of stakeholders in the agreement of criteria (Sections 12.5 and 12.6).</p> <p>Closure plans/ liquidation programs (and corresponding cost estimates) need to be updated to reflect current designs and production plans and include all components of project infrastructure (Section 12.6).</p>
Organizational capacity and competency	17 - 19	Awareness of and competence to monitor and manage impacts on ecology, water resources and land use should be improved at all operations.
Emergency preparedness and response	20 - 21	Emergency plans do not specifically identify land users that could be affected and have not been developed in consultation with these parties (but have been developed in consultation with Akims) (Section 12.4.11).
		<p>Identify emergency scenarios that could impact on local land users, update plans to reflect findings and in consultation with the potentially affected people. Ensure these people are aware of actions to be taken in the event of an emergency. (Plans should conform with the UNEP APPEL for Mining Guideline: Awareness and Preparedness for Emergencies at Local Level.)</p>

Performance Standard (PS)	Non-conformances		Recommendations
Section heading	Para		
Monitoring and review	22 - 23	Monitoring data is not collected and interpreted in ways that demonstrate there are no impacts on ecology, biodiversity, water resources and surrounding land users (Section 12.5).	Improve monitoring programs to prove that there are no significant impacts on sensitive receptors and to develop and refine closure completion criteria. The improvements required include identification of sensitive receptors (people, ecological receptors and water resources), review of parameters monitored, appropriate QA/QC controls and interpretation of the monitoring data.
Stakeholder engagement (engagement with local communities)	25 - 36	<p>The operations do engage with local communities (Section 12.4.12), but this engagement does not conform with the requirements of the standard in the following respects:</p> <ul style="list-style-type: none"> <li>• Potentially affected communities, and their characteristics and interests in the operations, have not been formally identified;</li> <li>• There is no formal stakeholder engagement plan for the affected communities;</li> <li>• Procedures for registering engagements and recording issues raised and responses are not defined;</li> <li>• Grievance mechanisms exist (grievances are handled through Akims and also by means of weekly reception days), but are not specifically aligned with the standard.</li> </ul>	<p>As part of the upgrade of information on surrounding land uses (see above), undertake a social scan that identifies potentially affected communities, and their characteristics and interests in the operations that are relevant to effective engagement.</p> <p>Develop and implement stakeholder engagement plans for each operation.</p> <p>Review and refine grievance mechanisms such that they are aligned with the standard.</p>
<b>PS2: Labour and working conditions</b>			
Human resources policies and procedures Working conditions and terms of employment	8 – 12	<p>Compliant, the Company's human resource policy sets out approaches to managing workers in line with national law.</p> <p>(Note that the Company's human resource policy does not refer specifically to PS2 – this is not deemed a non-compliance.)</p> <p>See Section 12.4.13 for more background on working conditions. Note collective agreement conditions apply to all employees, employees, regardless of whether the employee is a citizen of Kazakhstan or foreign.</p>	Consider committing to compliance with PS2.
Workers' organisations	13 & 14	Compliant (Section 12.3.7 and 12.4.13)	None
Non-discrimination and equal opportunities	15 to 17	Compliant (Section 12.3.7)	None
Retrenchment	18	<p>Collective agreements require negotiation with the union in terms of rights and interests of workers in the event of a reduction in staff.</p> <p>Alternatives to retrenchment such as reduced working hours to save jobs are allowable under the Labour Code.</p>	None
	19	Legal requirement. (Labour Code Article 113)	None
Grievance mechanism	20	Compliant, Section 12.4.13	None
Child labour	21	Compliant / legally required (Section 12.3.7)	None
Forced labour	22	Compliant / legally required (Section 12.3.7)	None
Occupational health & safety	23	Compliant (Sections 12.4.1, 12.4.2, 12.4.5, 12.4.6, 12.4.7, 12.4.9, 12.4.10, 12.4.11 and 12.4.13)	None
Workers engaged by third parties	24 - 26	Rules for workers engaged by third parties are being developed by the Company, as part of a working group established by Samruk-Kazyna. These rules will address this requirement.	None

Performance Standard (PS)	Non-conformances		Recommendations
Section heading	Para		
Supply chain	27 - 29	<p>Relevant legislation is outlined in Section 12.3.7. All potential suppliers are required to comply with relevant legislation.</p> <p>Potential suppliers and service providers are subject to pre-qualification that evaluates their commitment to observance of fundamental human rights in the workplace.</p> <p>This is a requirement under the Policy of Samruk-Kazyna JSC on procurements management approved by the decision of the Board of Directors No. 125 dated December 10, 2015, which is applied by the ISR operations.</p>	None
<b>PS3: Resource Efficiency and Pollution Prevention</b>			
Requirements	4 - 6	<p>The mines are designed and operated in accordance with relevant legislation and observing IAEA recommendations.</p> <p>The limit values observed by the mines are generally stricter than those given in the World Bank Group (“WBG”) Environmental Health and Safety Guidelines (“ESG”).</p> <p>Non-conformances with WBG EHS were not observed, except that the mines do have insufficient understanding of environmental and social context – this matter is repeated throughout this table (see PS 1 and PS 6). In other words, the mines are not in compliance with land use and biodiversity clauses in the WBG EHS.</p>	All recommendations for PS 1 are relevant.
Greenhouse Gases	7 - 8	<p>All mines actively seek to improve their energy efficiency. The mines have ISO 5001 certified energy management systems (this exceeds the requirement of the standard).</p> <p>The mines greenhouse gas emissions are estimated and are below the threshold of 25,000 tonnes of CO<sub>2</sub>-equivalent produced annually.</p>	None
Water consumption	9	Compliant, water consumption is minimised.	None
Pollution prevention	10-11	See comments for PS 1 Para 22-23, which pertain to monitoring of impacts.	See recommendation for PS 1 Para 22-23.
Wastes	12	<p>On the subject of waste disposal, SRK notes the following:</p> <ul style="list-style-type: none"> <li>Kazmetrao is an independent company providing metal LLRW decontamination services to the ISR mines. A number of mines assume that much of the metal LLRW waste arising from closure can be handled by Kazmetrao. This assumption needs to be checked. The Kazmetrao decontamination operations have not been audited by the Mining Subsidiaries and neither the decontamination methods nor final destinations of the decontaminated metal are known (Sections 11.4)</li> <li>While the various operations do keep detailed waste inventories, the Company is still developing a holistic view of waste management by operations. It has committed to developing a waste management system that accounts for and monitors waste through all stages of handling through to final use or disposal by 2019, for implementation by all daughter companies by 2020. (Section 12.4.2)</li> </ul>	The LLRW decontamination services offered by third parties should be subject to scrutiny. The Company should have evidence that these are being operated to acceptable standards and should obtain chain of custody documentation on the decontaminated waste to its final destination.
Hazardous materials management	13	Compliant, with the exception of the issue raised for Kazmetrao above.	None

Performance Standard (PS)	Non-conformances		Recommendations
Section heading	Para		
Pesticide use & management	14 - 17	Not relevant	None
<b>PS4: Community health and safety, and security</b>			
Community health and safety	5	See comments for PS 1 Para 7 -12 and 22 - 23 Impacts on land uses and water resources need to be better defined and monitored (Section 12.5)	See recommendations for PS 1 Para 7 -12 and 22 - 23
Infrastructure and equipment design and safety	6	Compliant. The operations are designed and undertaken to minimise ESHS impacts. This coupled with remote setting of most mines and a relative absence of sensitive receptors (Section 12.2) does reduce the ESHS risks associated with the operations.	None
Hazardous materials management and safety	7		None
Ecosystem services	8	See comment for PS 1 Para 7-12 Potential impacts on ecosystem services have not been defined	See comments for PS 1 Para 7 -12
Community exposure to disease	9 to 11	Not a significant risk at these mines.	None
Emergency Preparedness and Response	11	See comment for PS 1 Para 20 and 21	See Recommendation for PS 1 Para 20 and 21
Security personnel	12 to 14	Security personnel are not formally provided with training on providing security and respecting human rights. This would be important in situations where land users and their livestock are escorted out of wellfields by security personnel. SRK is not aware of any human rights abuses by security personnel.	Refer to the Voluntary Principles on Security and Human rights <a href="http://www.voluntaryprinciples.org/">http://www.voluntaryprinciples.org/</a> Consider implementation of the Voluntary Principles, and participation in the Voluntary Principles Initiative, to align corporate policies and procedures with internationally recognized human rights principles in the provision of security for their operations.
<b>PS5: Land Acquisition and Involuntary Resettlement</b>			
Physical displacement	19 to 24, 31 & 32	Not relevant, no displacement required in the current life of mine plans	None
Economic displacement	25 to 32	Not relevant, no displacement required in the current life of mine plans Livestock farmers could be economically displaced by future mining on Semizbai's Irkol concession in the vicinity of the Syrdarya River, but this is not being considered in the current life of mine plan for this operation.	If farmers are displaced, a livelihood restoration plan should be developed and implemented in accordance with PS 5.
<b>PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</b>			
Protection and conservation of biodiversity	6 -10	The biodiversity and ecological settings and impacts of the mines are not defined at the level expected by the performance standards. Cumulative impacts have not been assessed. (Section 12.5) The differing values attached to biodiversity and ecosystem services by land users (such as nomadic farmers), other affected communities and other stakeholders have not been formally determined. (Section 12.5)	Review existing baseline data and collect new data to clearly define the impacts of the mines on habitats, plants and animal species of conservation importance and surrounding land uses such as nomadic farming. Compile habitat maps that delineate the different habitats disturbed by mining. Ascertain whether there are any habitats that fall into the critical habitat category.
Modified habitat	11 - 12	Habitats that have been/ will be disturbed by the ISR operations have not been mapped and defined. It is expected that most of the habitats will be of the natural habitat class. It has not been confirmed that there are no habitats that fall in the critical habitat	Update management plans based on the above and to align with PS 6.
Natural habitat	13 - 15		

Performance Standard (PS)		Non-conformances	Recommendations
Section heading	Para		
Critical habitat	16 - 19	category. (Section 12.5)	Refine the existing monitoring programmes so that the data is collected and interpreted in a way that demonstrates that the mines are not impacting on ecology, biodiversity and surrounding land users. Undertake all of the above in consultation with other land users and with the aim of defining and monitoring impacts of the mines individually and cumulatively.
Legally protected & internationally recognised areas	20	The Zarechnoye concession does overlap with the boundaries of the Arys Karaktau Nature Reserve. The reserve was established at the same time as the mine and the mine is not considered to adversely impact on the conservation objectives of the reserve. (Section 12.2.1).	No recommendations other than the above recommendations for PS 6 are given.
Alien invasive species	21 - 23	Specific measures are not taken to control invasive alien species.	As part of the above-mentioned tasks, consider the presence of alien invasive species and special controls that may be required.
Management of ecosystem Services	24 - 25	See comment for PS 1 Para. 7-19. Potential impacts on ecosystem services have not been defined. The contextual information require to do this is not available.	The above management measures are applicable.
Sustainable management of living natural resources	26 - 29	Not relevant	None
Supply chain	30	Suppliers are not required to prove that they are not contributing to significant conversion of natural and/or critical habitats.	Require suppliers to provide verification that they are not contributing to significant conversion of natural and/or critical habitats.
<b>PS 7: Indigenous Peoples</b>			
Not applicable	Reportedly, no indigenous people are affected by the ISR mine developments.		
<b>PS 8: Cultural Heritage</b>			
Protection of cultural heritage in project design and execution - general	6&7	Compliant	None
Consultation and community access	9 & 10	There is no evidence that there has been community consultation to fully understand the local cultural heritage.	When updating the land-use baseline for the operations, consult local communities, particularly people with long living memories, to fully understand the local cultural heritage. Where possible, allow continued access to cultural heritage sites.
Procedures for chance finds and removal of cultural heritage	8 & 11 & 12	No chance find procedures have been established.	Establish chance find procedures for handling and removal of cultural heritage, should this be required.
Critical cultural heritage	13 to 15	Not applicable	None
Use of cultural heritage	16	Not applicable	None



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