Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan

Amended & Restated NI43 101 Technical Report

PREPARED FOR: Arras Minerals Corporation

20 February 2022

Authors:

David Underwood BSc (Hons) Registered Professional Natural Scientist,
South Africa Council for Natural Scientific Professions Pr. Sci. Nat. No.400323/11

Matt Dumala P.Eng

Certificates of Qualification

Certificate of Qualification – David Underwood, B.Sc. (Hons), University of Witwatersrand, South Africa

I, David Underwood, do hereby certify that:

- I am employed as a VP Exploration of Osino Resources, a TSX.V listed company.
- I graduated with a degree in Bachelor of Science (Hons), Geology, from the University of Witwatersrand, South Africa, 1988.
- I am a member of the South African Council for Natural Scientific Professions (Membership No. 400323/11).
- I have worked as a geologist since my graduation for over 30 years, I have experience with precious and base metals mineral projects in Kazakhstan, Namibia, Gabon, Mexico, Ghana, Mali, Burkina Faso, Madagascar, Tanzania, Kenya and South Africa
- I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that because of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
- I visited the Beskauga Project for 20 days during the months of October – November 2021.
- I am the principal author of the technical report titled: "Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan: Amended & Restated NI 43-101 Technical Report" for Arras Inc., with an effective date of 20 February 2022, and signed and dated 20 February 2022 (the "Technical Report"). I am responsible for Sections 1 (excluding 1.11), 2, 3, 4, 5, 6, 7, 8, 10, 11, 12.1, 13 and 15–27 inclusive
- As of the Effective Date of the Technical Report (20 February 2022), to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- I am independent of the Issuer applying all the tests in section 1.5 of NI 43-101.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

DATED this 20th day of February 2022 at Knysna, South Africa

["SIGNED AND SEALED"]

{David Underwood}

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David Underwood, B.Sc. (Hons)

Certificate of Qualification – Matthew Dumala , BSc.,

I, Matthew R. Dumala, P.Eng., of Vancouver, British Columbia, do hereby certify that:

- I am currently employed as a Senior Engineer and Partner with Archer, Cathro & Associates (1981) Limited, with an office at 1016-510 West Hastings Street, Vancouver British Columbia, V6B 1L8.
- I am a graduate of the University of British Columbia in Vancouver, Canada (Bachelor of Science in Geological Engineering in 2002), and received an Applied Geostatistics Citation from the University of Alberta in 2021. I am a member in good standing of the Engineers and Geoscientists British Columbia (Reg. #32783).
- I have practiced my profession continuously since 2003 and have experience in epithermal and intrusion related precious metal systems in Nevada, Yukon, and Mexico. My experience has focused on developing deposit models through drilling and interpretation for resource estimations. I have designed, implemented, and evaluated QA/QC programs for public companies since 2009.
- I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43 101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- I have not visited the Beskauga Project.
- This certificate applies to the technical report titled : "Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan: Amended & Restated NI 43-101 Technical Report" for Arras Inc., with an effective date of 20 February 2022, and signed and dated 20 February 2022 (the "Technical Report").
- I am responsible for Sections 1.11, 12 (excluding 12.1), and 14 of the Technical Report.
- As of the Effective Date of the Technical Report (20 February 2022), to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- I am independent of the Issuer applying all the tests in section 1.5 of NI 43-101.
- I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

DATED this 20th day of February 2022 at Vancouver, Canada

["SIGNED AND SEALED"]

{Matthew Dumala}

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Matthew Dumala, B.Sc.,

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1 Summary

1.1 Issuer and Terms of Reference

Arras Minerals Corp. ("Arras" or the "Issuer") is a private mineral exploration company based in Vancouver, Canada. On 17 August 2020, Arras announced that it had entered into an agreement to acquire a 100% interest in the Beskauga Copper-Gold Project ("Beskauga" or "the Project") located in Pavlodar Province, north-eastern Kazakhstan from Copperbelt AG ("Copperbelt"), a private mineral exploration company registered in Zug, Switzerland.

Arras commissioned David Underwood, Professional Geologist and Matthew Dumala, Partner at Archer Cathro Ltd. (The Authors), to complete a Mineral Resource estimate and prepare a Technical Report on the Beskauga Copper-Gold Project.

1.2 Location and Tenure

The Beskauga Project is located in Pavlodar Region, north-eastern Kazakhstan, approximately 70 km southwest of the city of Pavlodar (population ~330,000). The property comprises three contiguous licences, the Beskauga Mineral Licence (67.8 km^2) in the centre of the property, which has been the subject of all work carried out thus far, and the Stepnoe (425 km^2) and Ekidos (425 km^2) mineral exploration licences. The centre of the property lies at approximately 51° 47'N, 76° 17'E (WGS84, Geographic Coordinates).

Kazakhstan has recently updated its mining code and all new licences are issued under this code. The new mining code, the Code on Subsoil and Subsoil Use ("the SSU Code") was ratified on 29 June 2018 and is based on the Western Australian model. The Beskauga licence was issued under the older contract permitting system in Kazakhstan and gives Arras, via its agreement with the private company, Copperbelt, the right to explore for "All Minerals" (except uranium) until 31 December 2023.

The Stepnoe and Ekidos exploration licences were both granted to Arras's 100% controlled subsidiary, Ekidos Minerals LLP ("Ekidos"), on 22 October 2020 under the new mining code for an initial six-year period.

1.3 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Beskauga deposit is located approximately 300 km from the Kazakhstan capital, Nur-Sultan (formerly Astana), which has all modern services and a well-connected international airport. Access to the Project area is via sealed highway from Ekibastuz (population ~125,000), some 40 km to the west of the Project area, or from Pavlodar, some 70 km to the northeast of the Project area. Ekibastuz is about four hours drive from Nur-Sultan. Pavlodar is also serviced by an international airport. Access around the Project area is by gravel tracks of moderate to good quality which may be temporarily closed because of severe winter weather.

The climate in the Beskauga Project region is characteristic of arid steppe with hot summers and cold winters. Precipitation is generally low, with an average annual total of 200–280 mm. Most of the precipitation falls in the summer. Seasonally appropriate mineral exploration activities may be conducted year-round, and mine operations can operate year-round with supporting infrastructure.

The region has sufficient infrastructure to host large-scale mining operations and is a sophisticated transportation and communication node, with a local economy dominated by activity in the mining and industrial sectors. Some 40% of all of Kazakhstan's power generating capacity comes from the region. Fresh water is supplied to the area from Irtysh River via the Karaganda Canal. There is a large, well-trained labour force to draw upon for any future mining activities.

1.4 History

The Beskauga deposit was discovered by a regional shallow drilling program conducted during the Soviet period in the 1980s. Following privatisation, Licence No. MG 785 (Maikuben) issued to Goldbelt Resources via its 80% subsidiary, Dostyk LLP (Dostyk), included the Beskauga Project area. Goldbelt Resources divested its interest in Dostyk to Celtic Resources in 2000. Neither Goldbelt Resources nor Celtic Resources conducted exploration at Beskauga.

Dostyk was acquired by Cigma Metals in 2007 and by Copperbelt in 2009. Cigma Metals and Copperbelt conducted exploration at Beskauga, as well as other targets in the larger licence area. Copperbelt's current 67.8 km^2 licence only covers the Beskauga deposit; the other prospects were relinquished or divested. Two previous Mineral Resource estimates were completed for Copperbelt on the Beskauga Project by CSA Global Ltd in 2013 and by Geosure Exploration and Mining Solutions in 2015, both reported in accordance with the Joint Ore Reserves Committee Code 2012 Edition (JORC Code). Neither Mineral Resource estimate was publicly reported.

1.5 Geology and Mineralisation

The Beskauga Project is located in north-eastern Kazakhstan, within the "Central Asian Orogenic Belt" or CAOB that is also referred to as the "Altaid Tectonic Collage" and extends eastwards into Russia, Mongolia and China as the Transbaikal-Mongolian orogenic collage. These combined collages extend from the Ural Mountains in Russia and Kazakhstan in the west, through Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan, China, and Mongolia. The CAOB is a region of geological complexity characterised as a collage of numerous tectonic, structural, and stratigraphic domains, that were assembled and intermittently deformed beginning in the Late Neoproterozoic through the Paleozoic to the early Mesozoic, with accretion essentially complete by about 250 Ma. This makes the CAOB the most extensive and long-lived accretionary orogen globally. It progressively developed through the accretion of island arcs, ophiolites, oceanic islands, seamounts, accretionary wedges, oceanic plateaux, and microcontinents in a manner comparable with that of circum-Pacific Mesozoic–Cenozoic accretionary orogens. The CAOB is one of the world's most richly mineralised regions and contains several world class porphyry copper-gold/molybdenum and epithermal gold deposits.

The Beskauga Project, as well as the producing Bozshakol porphyry Cu-Au deposit, are located in the western part of the CAOB, namely the Late Cambrian to Early Ordovician Bozshakol–Chingiz (BC) magmatic-arc terrane, within the Kazakhstan Orocline. The BC arc is one of the major tectonic units in the western CAOB, extending for more than 1000 km and considered part of the larger Kipchak arc.

Beskauga is a gold-rich, copper-gold porphyry-epithermal deposit with elevated grades of silver and molybdenum. The project area is underlain by sedimentary and volcanogenic-sedimentary rocks of Ordovician age, that have been intruded by intrusives ranging in composition from gabbro-diorite to quartz diorite and granodiorite. These intrusive rocks represent the major portion of the Beskauga Main deposit area. Porphyry-style, copper-gold mineralisation in the Beskauga Main deposit is largely hosted within diorite and monzodiorite, whereas the Beskauga South gold mineralisation is hosted within porphyritic andesite, intruded by mineralised dykes of microdiorite. Post-mineral dykes of porphyritic diorite, basalt and basaltic andesite also cut the host sequence. The deposit area is covered by 10–40 m cover of younger sediments of upper Eocene and Quaternary age.

At Beskauga Main, a monzodiorite has been intruded into an extensive area of medium grained, equigranular diorite, and forms a "bulls-eye" magnetic high. The diorite surrounding the monzodiorite intrusion forms a broad concentric de-magnetised zone, coincident with an IP chargeability anomaly. This diorite is host to the bulk of the mineralisation identified to date, as stockwork mineralisation and intense sheeted veining on the eastern flank of the monzodiorite. Intrusive relationships and timing relative to mineralisation have not been clearly established. In 2021, Arras Minerals commissioned the Mineral Deposits Studies Group Unit (MDRU) at the

University of British Columbia, to carry out U-Pb geochronology and trace element analysis of zircon on a drill core sample of the host diorite. A weighted mean 207Pb-corrected, 206Pb/238U age, yielded a late Ordovician age of 457.1 ± 3.3 Ma. As this is the age of the host diorite, this should be considered the maximum age of the mineralisation.

Beskauga is interpreted by Arras Minerals to represent a gold-rich porphyry Cu-Au deposit that has been overprinted by high-sulphidation epithermal mineralisation, either through telescoping or due to clustering of multiple porphyry centres in the Beskauga licence. The overprinted portions of the system are characterised by tennantite (±tennantite-enargite) as the major Cu-sulphide species. The overprinted portion of the Beskauga deposit frequently returns assays exceeding 4 g/t AuEq.

The principal metallic minerals at Beskauga include chalcopyrite, pyrite, tennantite, enargite, bornite and molybdenite, with magnetite and hematite also present. QEMSCAN mineralogy indicates that chalcopyrite and pyrite are the dominant sulphides with subordinate tennantite and chalcocite. Both historical and re-assays show that there is a close correlation between gold and copper grades. Sulphides occur as fine-grained disseminations as well as in stockwork veins and veinlets. The occurrence of significant tennantite at Beskauga is not unusual for gold-rich porphyry systems, particularly those with a high-sulphidation overprint, but does have metallurgical implications.

The highest-grade core of the Beskauga Main deposit is associated with advanced argillic alteration, comprised of kaolinite-dickite-illite-smectite, confirmed by on-going TerraSpec SWIR/NIR spectroscopy. The sheeted veining and stockwork mineralisation hosted within the diorite are generally associated with intense argillic (illite-smectite ± kaolinite) overprinting of earlier potassic (k-feldspar-biotite-magnetite-quartz) alteration. The argillic overprint gradually decreases with depth, eventually giving way to largely unaffected potassic alteration beyond approximately 700 – 850 m. At these depths, argillic alteration persists only as local alteration around faults and fractures. The adjacent monzodiorite which hosts variable mineralisation, including distinctive chalcopyrite-magnetite and chalcopyrite-only veins, is potassic (biotite-k-feldspar-magnetite) altered all the way up to the bedrock surface.

Prior to Arras Minerals acquiring the Beskauga project, minimal work was completed to determine the geometry and zonation of alteration and mineralisation. This represents a substantial gap in the Project and presents an opportunity to improve modelling and resource extension targeting. During 2021, Arras Minerals re-analysed 18 historical drillholes for multi-element lithogeochemistry and the results announced in company news releases dated 05 and 07 November 2021. The primary objective of the re-assay program was to validate and increase the confidence in the 45,059 meters of historical drilling, as well as to provide the geochemical tools needed to map alteration and lithology across the deposit.

1.6 Deposit Types

The Beskauga Project hosts a gold-rich, porphyry-style, copper-gold system with probable high-sulphidation epithermal overprint, associated with calc-alkaline intrusions related to island arc volcanism during the Lower Palaeozoic. Porphyry systems host most of the the world's copper deposits, and mineralisation typically forms at shallow levels (in the upper 4 km of the crust) as low-grade disseminations associated with a halo of hydrothermal alteration related to an intrusion, which may range in composition from diorite to granodiorite and granite. These deposits form by precipitation of mineralisation from magmatic hydrothermal fluids enriched in metals. Owing to their relationship with hydrothermal fluids, porphyry copper deposits display a consistent, broad-scale alteration-mineralisation zoning pattern related to these fluids, comprising a core of potassic alteration, surrounded sequentially outwards by phyllic and propylitic alteration, with the zone of potassic alteration typically being of primary importance for copper mineralisation. Primary (hypogene) copper mineralisation typically occurs as chalcopyrite and bornite.

1.7 Exploration

In 2009–2010, a ground-based magnetic and dipole-dipole induced polarization (IP) survey was carried out over the Beskauga deposit area. The chargeability data has a spatial correlation with the mineralisation defined by the drilling and indicates that the mineralizing system may be much larger than identified to date. Increasing chargeability values with depth suggests that the deposit drilled thus far, lies on the upper part of the "pyritic" halo of a mineralized porphyry system, with an insignificant erosional truncation. However, the deeper extensions of the deposit have never been drill-tested.

Arras is currently conducting a compilation of regional geophysical surveys, 1:250,000 geological mapping, Shuttle Radar Topography Mission (SRTM) and Landsat ASTER images to support exploration targeting within the larger project area.

In 2021, Arras Minerals commissioned SPC Geoken LLP to conduct a high resolution airborne magnetic survey, over the Beskauga and neighbouring Ekidos and Stepnoe licence areas, with flight lines-oriented east-west. The survey was flown at 70 m ground clearance with a line spacing of 100 m and tie-lines of 1000 m. QA/QC and inversion of the resulting magnetic data was carried out by Condor North Consulting, ULC., Vancouver.

1.8 Drilling

Between 2007 and 2017, Dostyk undertook both diamond and KGK (hydraulic-core lift) drilling at Beskauga. A total of 118 diamond drillholes for 45,605.8 m was completed over this period at either HQ or NQ diameter, with hole depths ranging from 150 m to 815 m.

The co-ordinates of the drill collars were determined using high precision, geodetic, single-frequency 12-channel global positioning system (GPS) Trimble R3 (base station + mobile receiver) with GPS antenna on a telescopic rod. All drillholes have downhole surveys completed by the drilling contractor using an IEM-36 instrument. Surveys were completed every 20 m of the downhole length and were taken after the drilling was completed. Core was cut using a diamond saw and half-core sampled on the basis of geological contacts. The sample length was generally between 0.5 m and 1 m, with a lesser proportion up to 2 m.

KGK or hydraulic-core lift drilling is a system designed to drill holes for geochemical sampling and geological mapping of basement rocks underneath surface cover. The method was developed in the Soviet Union and is in general similar to "wet" reverse circulation (RC) drilling. KGK drilling was carried out between 2011 and 2014 to collect geochemical samples of the bedrock beneath the Eocene and Quaternary cover. The depths of drillholes ranged from 22 m to 65 m and holes were typically terminated within 5 m of intersecting bedrock.

A total of 1,606 KGK holes were drilled for 52,580 m, with 2,496 samples sent for analysis. The bedrock geochemistry defined the outline of the mineralized intrusive and a map of primary bedrock dispersion haloes of copper, gold, molybdenum, zinc and other associated elements was compiled.

During 2021, Arras Minerals commenced infill diamond drilling within the Beskauga main deposit with the purpose of increasing and improving confidence in the previously estimated resource, as well as upgrading the Mineral Resource to the Measured classification. Step-out diamond drilling is also planned to close off open trends of mineralization on the flanks of the prospects and to test multiple untested geophysical and geochemical targets outlined within the Beskauga license. During 2021, a total of 4 diamond holes were drilled for 3,694.7 m and 386 KGK holes were drilled for 19,526 m.

1.9 Sample Preparation, Analyses and Security

Sample preparation was carried out at the Dostyk facility in Ekibastuz. Half-core samples were dried, weighed, crushed and screened to -2 mm and thereafter a ~1 kg split was milled to 200 mesh fineness (-90 µm) with the remaining crushed samples stored on site. Milled pulps were split and sent to the Stewart Assay and

Environmental Laboratory (SAEL) in Kara-Balta, Kyrgyzstan for the gold fire assay (FA) and copper, molybdenum, silver ICP-OES (inductively coupled plasma-optical emission spectrometry) analysis. All equipment used for sample crushing and milling was cleaned and blown with compressed air after each sample. In addition, after each batch of samples, a clean blank sample was passed though the equipment. The sample preparation area was subject to compulsory wet cleaning once a day. The split core and crushed duplicate samples are stored in the specifically equipped sample storage facility in Ekibastuz, which can be locked and has on-site security.

The Stewart Assay and Environmental Laboratories LLC (SAEL) has been utilised by Dostyk as the primary laboratory from 2007 to now, with all results used for the Mineral Resource estimate provided by SAEL. Umpire assays were carried out at Genalysis Laboratory in Perth, Australia.

At both SAEL and Genalysis, Samples were analysed for gold using FA with an atomic absorption spectrometry (AAS) finish with a 30 g bead used in the FA process. A further 33 elements were determined by an aqua regia digest followed by ICP-OES measurement of elemental concentrations.

Historical quality assurance/quality control (QA/QC) samples were comprised of certified reference materials (CRMs), blanks, duplicates, and umpire assays. CRMs used were OREAS 209, OREAS 501b, OREAS 502b, OREAS 503b, and OREAS 54Pa. A total of 187 gold CRMs and 124 copper CRMs were analysed, representing 0.52% and 0.34% respectively, of the 36,271 samples in the database, well below the recommended rate for CRMs. A total of 318 blank samples (0.9% of all samples) were submitted for analysis, although no information was provided regarding the acquisition and preparation of the blank samples. Of all the blank material sampled, the majority had below detection or very low values reported, indicating that there is little contamination overall. In 2013, 97 pulp duplicates were submitted for re-assay and the results show relatively good repeatability. However, this only represents one year and 0.27% of all samples and in addition no core duplicates were submitted, representing a significant gap in QA/QC.

External control check assays at Genalysis, were completed on 966 samples (2.7% of all assays) and results show relatively good repeatability and similar distribution for gold and copper, although there is a slight positive bias towards the original results, especially for the copper grades.

In the 2021 drilling campaign of four holes, a total of 81 gold and copper CRMs were analysed, representing 2.76% (insertion rate 1 CRM per 40 samples) of all the 2926 core samples. The CRMs used were OREAS 152a, OREAS 503d, OREAS 505, OREAS 506, OREAS 606, which were submitted to ALS for analysis together with the samples.

It is the Qualified Person's opinion that sample preparation and analyses were done in line with industry standards and are satisfactory. Although the number of CRM, duplicate, and blank samples are lower than what is considered standard, the quality of assays is considered to be reliable and suitable to be used for the Mineral Resource estimate.

1.10 Mineral Processing and Metallurgical Testing

Six metallurgical testing programs have been conducted on the mineralisation at Beskauga between 2009 and 2017, including initial evaluation of flotation testing on a master composite (2009), mineralogical evaluation and flotation response on average grade metallurgical composite (2010), flotation response on high grade metallurgical composite (2011), comminution and flotation optimization testing on various metallurgical composites (2015), gold optimization testing on bulk product (2017) and Toowong Process amenability testing (2017). Testing was carried out at Kazmekhanbor (Almaty, Kazakhstan), ALS Ammtec (Perth, Australia), Wardell Armstrong International (Cornwall, United Kingdom) and HRL Testing (Brisbane, Australia).

Initial laboratory testing showed copper recovery of 78.44% and concentrate grades of 18.48% Cu which were lower than desired, as well as identifying high arsenic levels in the final copper concentrate due to the presence of tennantite. Subsequent bench-scale testwork focused on the testing of a starter pit composite and an average copper grade composite, which enabled a rougher/scavenger stage to recover most of the mineralisation into a low concentrate mass (at a primary grind size P_{80} of 120 µm), followed by regrinding the rougher/ scavenger concentrate and then utilising three-stage cleaning to produce a final copper concentrate. Concentrate grades of >22% Cu were achieved for all samples, with recoveries between 78.18% and 87.58%.

Locked cycle tests carried out on each of the Beskauga Main metallurgical composites showed that copper grades of >20% were achieved at recoveries ranging from 82.66% to 89.06%.

Cyanide leach testing was carried out on rougher and first cleaner scavenger tail products for the gold at Beskauga Main, which is primarily associated with chalcopyrite but also occurs in pyrite. Results showed that there is a high portion of cyanide soluble gold in the rougher tail and first cleaner scavenger tail products and that good recoveries (52.8% and 60.4%, respectively) could be achieved. It is proposed that a pyrite float stage on the rougher tailings stream is included to produce a gold-bearing pyrite concentrate.

The Toowong Process is an emerging hydrometallurgical treatment process designed to remove arsenic, antimony and other metalloid and non-metal penalty or hazardous elements from base and precious metal concentrates. A final copper concentrate sample was used to test the amenability of Beskauga concentrate to the Toowong process. Preliminary benchtop leaching testwork demonstrated that the Beskauga Main concentrate is amenable to removal of the penalty element arsenic with this process.

1.11 Mineral Resource Estimate

The Beskauga drill hole data was provided to Archer Cathro, on December 12, 2021, as Microsoft Excel files and imported into Geovia GEMS for validation. Data was inspected for overlapping or missing data, inconsistent hole depths, downhole survey errors, and mis-matching hole identification.

Wireframes representing mineralised areas were generated by the Company in Leapfrog. Grade shells were based on copper and gold assay data and took into consideration lithological constraints and known structural trends. One metre composites were generated down drillholes passing through the mineralised wireframes.

Classical statistical analysis was carried out for composites within the mineralised wireframes to determine appropriate capping values for copper, gold, and silver. Top cut values for copper, gold, and silver were 3.00%, 10.0 g/t, and 25.0 g/t respectively

Variograms were calculated and modelled for the composited sample file constrained by the corresponding mineralised envelopes using Supervisor software (version 8.14.3.2). Geostatistical analysis was carried out separately for copper, gold, and silver mineralisation.

Horizontal continuity was modeled first at twenty 18° increments. Continuity models were then created for the across strike and dip-plane orientations. Once the direction of maximum continuity was selected, a down-hole linear semi-variogram was created to determine the nugget effect.

Bulk density values were assigned to block model cells using a single bulk density value of 2.73 t/m^3.

Block modelling was carried out using Geovia GEMS software (version 6.7.2). An empty block model was created to enclose the wireframe models with block sizes of 20 m x 20 m x 20 m. Copper, gold, and grades were interpolated into the empty block model using both Ordinary Kriging (OK) and Inverse Distance Weighting (IDW). The IDW method with a power of two was used to support and validate the kriged estimates.

The first search radii for all mineralised envelopes were selected to be equal to approximately one quarter of the semi-variogram long ranges in all directions. Model cells that did not receive a grade estimate from the first pass interpolation run were used in the next (second pass) interpolation with search radii equal to approximately two-thirds the semi-variogram ranges in all directions. A third interpolation run using search radii equal to the semi-variogram ranges. The model cells that did not receive grades from the first three passes were then estimated using a fourth pass with search radii equal to twice the semi-variogram ranges.

Validation of the Beskauga grade interpolation was completed using comparison of the block model and composite mean grades, visual checks on screen in sectional view to ensure that block model grades honour the general grade of downhole composites, swath plots comparing input and output grades in a semi-local sense, and comparison of the block model volume with the combined wireframe volume. There is a degree of smoothing as expected from the estimation method used, particularly evident in areas of wide spaced drilling where the number of composites was relatively low. However, the general trend in the composites is reflected in the block model.

Mineral Resources were classified using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) (2014) definition of Mineral Resources into Indicated and Inferred Mineral Resources. The classification is based upon an assessment of geological and mineralisation continuity, and QAQC results, as well as considering the level of geological understanding of the deposit. Classification was done by colour coding the interpolation run, with blocks falling within the first two interpolation runs classified as Indicated, and all others inferred. The resulting block model was displayed on screen and the classification of outlying blocks downgraded.

To demonstrate potential of the Beskauga deposit for eventual economic extraction, a preliminary pit optimisation study was completed. The pit optimisation was carried out using the Mining module of the Studio NPVS software application using the Lerch-Grossman algorithm.

The Mineral Resource estimate has been reported for all blocks in the resource model that are contained within the pit and have a gross metal value (GMV) exceeding $20/t. The GMV was calculated using base-case metal prices and recoveries for copper, gold, and silver.

The Mineral Resource estimate has reasonable prospects for eventual economic extraction, and is a realistic inventory of mineralisation which, under assumed and justifiable technical and economic conditions, might, in whole or in part, become economically extractable.

Table 1: Mineral Resource estimate for the Beskauga deposit with an effective date of 27 December 2021

Category	Tonnage (Mt)	Cu (%)	Au (g/t)	Ag (g/t)
Indicated	111.2	0.30	0.49	1.34
Inferred	92.6	0.24	0.50	1.14

Notes:

- *A GMV $/t cut-off of $20/t was used, and the GMV formula is: GMV $/t = Au(grams)*74.5%*$56.26+ Cu(tonnes)*85%*$7.714 + Ag(grams)*50%*$0.71*
- *Base metal prices considered were $3.50/lb copper, $22.00/oz silver, and $1,750/oz gold.*
- *The Mineral Resource is stated within a pit shell using the base-case metal prices.*
- *Mineral Resources are estimated and reported in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted 10 May 2014.*
- *Matthew Dumala (P.Eng.), is the independent Qualified Person with respect to the Mineral Resource estimate.*
- *The Mineral Resource is not believed to be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors.*
- *These Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability.*
- *The quantity and grade of reported Inferred Resources in this Mineral Resource estimate are uncertain in nature and there has been insufficient exploration to define these Inferred Resources as Indicated or Measured; however, it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

1.12 Adjacent Properties

There is a working salt mine run by a private company immediately south of the Beskauga mineral licence that covers an area of 21.3 km^2. The Ekidos and Stepnoe exploration licences surround the salt mining licence and there are no other mineral licences adjacent to the licence package.

1.13 Interpretation and Conclusions

The Beskauga deposit is a large porphyry copper-gold deposit within a magmatic arc terrain of the CAOB, that has a demonstrated pedigree for economic porphyry deposits. This maiden Mineral Resource has been completed only for the Beskauga Main porphyry-style mineralisation and not for the Beskauga South mineralisation, which is gold only and may represent an epithermal overprint to the system. The indications of epithermal overprint (limited potassic and dominant argillic alteration) suggest that drilling to date may only have tested the upper part of the porphyry system.

The work required to understand the geometry and zonation of the alteration and mineralisation at Beskauga has not been completed. This is a substantial gap in the Project status and represents an opportunity to improve modelling and resource extension targeting. At this stage, the deposit is not well understood and has not been drill tested thoroughly enough to determine the architecture and extent of the system, including the gold-only Beskauga South zone. The available information suggests substantial upside potential.

The proposed work program will substantially improve understanding of the geology and economic characteristics of the Project and advance it towards a Preliminary Economic Assessment.

The work program will address a number of possible risks to the Mineral Resource estimate and project economics, identified in the current study. These include the following:

- Poor geological understanding to support deposit modelling.
- Limited density data and the measurement procedures and data have not been reviewed. A single average density value of 2.73 g/cm^3 has been used which, although appropriate for the granodioritic host rock, represents a potential source of risk to the estimated tonnage.
- Although the results of QA/QC are acceptable, the low number of QA/QC samples and general lack of duplicates in historical drilling by Dostyk represents a risk to the project. This has been addressed by Arras in the current drill program.
- Comparison of original and umpire samples show a slight positive bias towards the original samples analysed at SAEL. This discrepancy has not been investigated further and represents a risk to the grade of the Mineral Resource estimate.
- Concentrates produced to date contain elevated levels of arsenic that may affect the saleability of the concentrate. Although the concentrates show amenability to further processing via the Toowong Process, which removes arsenic and other deleterious elements from the concentrate, the cost of this process has not been determined and thus the presence of arsenic presents a project risk.

1.14 Recommendations

The authors recommend an additional work program by Arras on the Beskauga Project over the next 12 months should include:

- An drill program testing the extensions of the known mineralisation at Beskauga
- Collection of multi-element and hyperspectral data from a selection of historical pulps and drill core to enable the design of routine analytical protocol for all additional drilling
- Relogging of all available drill core including detailed alteration and vein logging, and development of an appropriate Standard Operating Procedure for logging for future drilling

- Submission of additional QA/QC samples (~5% pulp duplicates and 5% umpire samples) together with CRMs, in order to improve the quality control data, and design of a routine QA/QC protocol for ongoing drilling
- A comprehensive density testing program to confirm the density value used in the Mineral Resource estimate
- Integrated geological, structural, alteration, litho-geochemical and hyperspectral study to support the development of a three-dimensional (3D) geological model along with a geometallurgical domain model
- Additional metallurgical test work to confirm recovery and comminution parameters as well as deleterious element mitigation, with sample selection based on geometallurgical domains
- Follow-up on regional targets with mapping and sampling
- Identify power and water sources, project requirements, and begin all permitting processes
- Address any other gaps to be filled in order to advance the Project towards a Mineral Resource update and Preliminary Economic Assessment.

These items should be carried out concurrently as a single phase of work over the next 12 months.

The authors estimate that the total cost of the next phase work program is approximately US$1.5 million.

Table 2. Recommended Work program budget estimate

Item	Cost in US$
Drilling of 6,000 m at Beskauga (exploration to test extensions of deposit	600,000
Mapping & Sampling	200,000
Geophysics	180,000
Study of infrastructure	20,000
QAQC sampling and density testing	50,000
Additional metallurgical testing	100,000
In-country general and administration and logistics	400,000
Total	**1,500,000**

2 Introduction

2.1 Arras Minerals

On 17 August 2020, Silver Bull Resources (“Silver Bull”), a publicly listed company on the TSX (SVB) and OTCQB (SVBL) announced that it had entered into an option to purchase agreement to acquire a 100% interest in the Beskauga Copper-Gold Project located in in the Pavlodar Province in northeastern Kazakhstan from Copperbelt, a private mineral exploration company registered in Zug, Switzerland.

On 1 April 2021, Silver Bull announced its intention to transfer the option to purchase agreement of the Beskauga project to a 100% owned subsidiary company incorporated in British Columbia, Canada, called Arras Minerals Corp (“Arras”). Silver Bull also announced its intention to issue 34.2 million shares of Arras to Silver Bull shareholders. On 27 September 2021 Silver Bull announced the completion of the share issuance.

Following the completion of the share issuance, Arras emerged as an independent private Canadian-based mineral exploration company engaged in exploring for copper and gold in Kazakhstan.

2.2 Terms of Reference

Arras commissioned The Authors to complete a Mineral Resource estimate and prepare a Technical Report on the Beskauga Copper-Gold Project.

This report has been completed in accordance with disclosure and reporting requirements set forth in National Instrument 43-101 – Standards for Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101CP, and Form 43-101F1. This Technical Report discloses material changes to the Property, particularly, an updated Mineral Resource estimate for the Beskauga Project. As per an agreement announced on 17 August 2020, Arras has the option to purchase a 100% interest in the Beskauga Project from Copperbelt.

The Mineral Resource estimate has been prepared in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves (10 May 2014) as per NI 43-101 requirements. Only Mineral Resources are estimated – no Mineral Reserves are defined. The report is intended to enable the Issuer and potential partners to reach informed decisions with respect to the Project.

The principal authors of this report are Matthew Dumala and David Underwood, who are Qualified Persons according to NI 43-101 standards.

The Effective Date of this report is 20 February 2022. The report is based on technical information known to the author and The Authors at that date.

The Issuer reviewed draft copies of this report for factual errors. Any changes made because of these reviews did not include alterations to the interpretations and conclusions made. Therefore, the statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this report.

2.3 Sources of Information

This report is based, in part, on internal Arras technical reports and maps, consultants’ reports, and public information as listed in Section 27 (References) of this Technical Report. Previous Mineral Resource estimates for the Beskauga Project have been reported under both the JORC and NI43-101 Codes by “CSA Global Ltd.” in February 2021 (NI43-101) and November 2013 (JORC) and by Geosure Exploration and Mining Solutions Pty Ltd in January 2015 (JORC).

The various studies and reports have been collated and integrated into this report by David Underwood. The Authors have taken reasonable steps to verify the information provided, where possible.

Based on the author's experience the historical resources referenced in this report were prepared by experienced experts in a manner in line with industry practice and are therefore reliable. In addition, the historical estimates are relevant to this report because they show an evolution in understanding of the deposit between 2013 to 2022 and provide a reference to how the work was completed during this period.The Qualified Persons have not conducted detailed land status evaluations, and have relied upon previous qualified reports, public documents and statements by Arras regarding Property status and legal title to the Beskauga Project. The authors have not done sufficient work to classify the historical estimates as current mineral resources or mineral reserves.

The Authors also had discussions with the management and consultants of the Issuer, including Mr. Tim Barry (Chief Executive Officer, Arras) regarding the geology and tenure of the Project.

This report includes technical information that requires calculations to derive subtotals, totals, and weighted averages, which inherently involve a degree of rounding and, consequently, introduce a margin of error. Where this occurs, the authors do not consider it to be material.

2.4 Qualified Persons

This report was prepared by the Qualified Persons listed in Table 3.

Table 3: Qualified Persons – report responsibilities

Qualified Person	Report section responsibility
David Underwood -	1 (excluding 1.11), 2, 3, 4, 5, 6, 7, 8, 10, 11, 12.1, 13 and 15–27 inclusive: Property visit in Nov 2021.
Matthew Dumala – Archer Cathro Ltd.	Sections 1.11, 2, 12 (excluding 12.1), 14

The Authors are Qualified Persons with the relevant experience, education, and professional standing for the portions of the report for which they are responsible.

2.5 The Authors conducted an internal check to confirm that there is no conflict of interest in relation to its engagement in this project or with Arras and that there is no circumstance that could interfere with the Qualified Persons' judgement regarding the preparation of the Technical Report.Qualified Person Property Inspection

A visit to the Beskauga Project was completed by David Underwood from 21 October 2021 – 8 November 2021 as detailed in Section 12.1 and meets the requirements of a site visit under section 6.2 of NI 43-101.

3 Reliance on Other Experts

The Authors have relied upon Arras and its management for information related to underlying contracts and agreements pertaining to the acquisition of the mining claims and their status and technical information not in the public domain (Section 4), including extracts from a legal due diligence report (White and Case, 2020) that were provided by Arras to The Authors. The Property description presented in this report is not intended to represent a legal, or any other opinion as to title.

4 Property Description and Location

4.1 Location of Property

The Beskauga Project is located in Pavlodar region, north-eastern Kazakhstan, approximately 300 km east-northeast of Nur-Sultan (formerly Astana), the capital of Kazakhstan (Figure 1) and approximately 70 km southwest of the city of Pavlodar (population ~330,000), and approximately 65 km east of the town of Ekibastuz (population ~125,000). The property comprises three contiguous licences, the Beskauga mineral licence in the centre of the property (which has been the subject of all work carried out thus far) and two additional mineral exploration licences, termed “Stepnoe” and “Ekidos” (Figure 2). The centre of the property lies at approximately 51°47'N, 76°17'E (WGS84, geographic coordinates).

Figure 1: Location of the Beskauga Project in Kazakhstan in relation to the major cities (coordinate grid is WGS84, geographic coordinates)

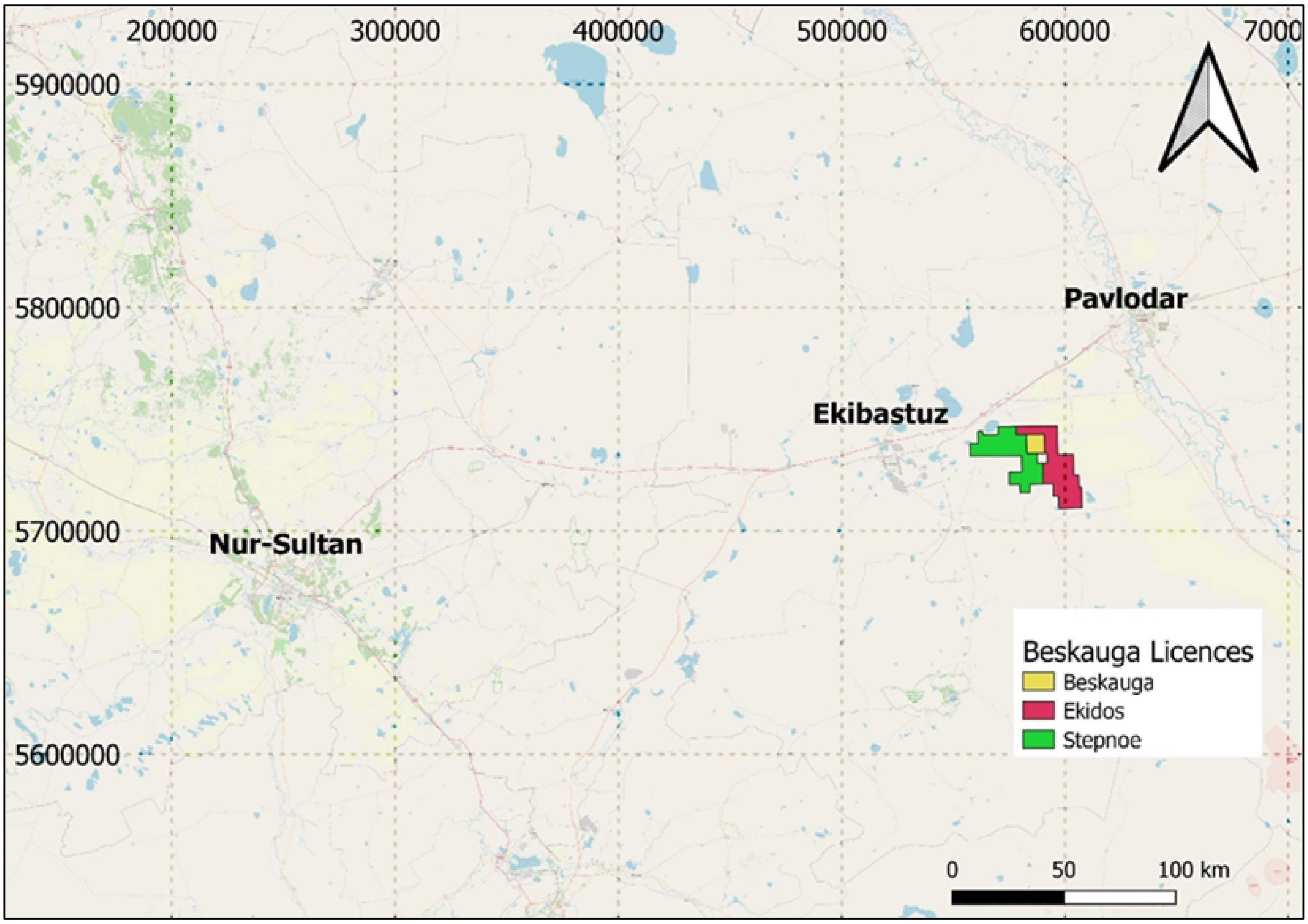

Figure 2: Location of the Beskauga Project licences (coordinates are WGS84/UTM Zone 43N). The missing block is a salt mine not held by Arras. (Source: Silverbull Resources 43-101 report Feb 2021)

4.2 Area of Property

The Beskauga licence is 67.8 km^2 (6,780 hectares) in area, and the Stepnoe and Ekidos licences are each 425 km^2 (42,500 hectares) in area, bringing the total area held or under option to 917.8 km^2 (91,780 hectares).

4.3 Mineral Tenure

4.3.1 Kazakhstan Mining Code

Kazakhstan has recently updated its mining code and all new licences are issued under this code. The new mining code, the Code on Subsoil and Subsoil Use ("the SSU Code") was ratified on 29 June 2018 and is based on the Western Australian model. Under the SSU Code, Kazakhstan transferred from a contractual regime to a licensing regime for solid minerals (except for uranium, which remains under a contractual regime). The purpose has been to boost investment in exploration and mining in Kazakhstan and remove administrative burdens for subsoil users. The mining industry in Kazakhstan accounts for about 14% of gross domestic product and more than 20% of exports and is seen as a key industry.

Under the Kazakhstan Constitution, the subsoil is owned by the state. In regulating the mining sector, the state is represented by the competent authority, the Ministry of Industry and Infrastructural Development (MIID), which is authorised to grant and terminate subsoil use rights (SURs) and control compliance obligations related to SURs. Under the new mining code, SURs are granted under subsoil use licences (SULs), either for exploration or mining. Under the previous regime, SURs were granted under contracts for the right of exploration, mining, or combined exploration and mining (SUCs).

Exploration licences are granted for up to six years with the possibility of an extension for five more years and provide an exclusive right to use the subsoil for the purpose of exploration and for assessment of resources and reserves for subsequent mining. If a deposit is discovered, the exploration licence holder has an exclusive right to obtain a mining licence if the discovery is confirmed by a report on estimation of resources and reserves of solid minerals. The SSU Code entitles subsoil users to estimate resources and reserves under the KAZRC standard, which is aligned with the CRIRSCO, JORC and CIM reporting codes.

Under the older contractual permitting system, a company agreed to meet certain milestones and expenditure. Despite a new mining code being in place, obligations under existing contracts are still enforced. Should a company fail to meet its obligations as stated in the contract, or the company needs to extend or change the terms, the company can approach the government and add an “Addendum” to the contract.

The SSU Code is the principal law regulating the mining sector, with detail provided by a number of government decrees and ministerial orders. Mining of precious metals is also affected by the Law on Precious Metals and Precious Stones (the “Precious Metals Law”) under which the Kazakhstan National Bank can exercise a priority right to buy fine gold. Other relevant legislation includes the Tax Code, the Land Code, and the Environmental Code.

4.3.2 Beskauga Project

Arras’s Beskauga Project consists of three licences: the Beskauga licence which was issued under the older permitting system, and the Ekidos and Stepnoe licences which were issued under the new SSU Code in October 2020. The Beskauga licence is held by Dostyk, a Kazakh entity 100% owned by Copperbelt, a private mineral exploration company registered in Switzerland with which Arras has an option agreement (see Section 4.4.1). The Ekidos and Stepnoe licences are held by Ekidos Minerals LLP, a Kazakh entity 100% controlled by Arras.

4.3.3 Beskauga Licence

Dostyk maintains minerals rights for the Beskauga deposit based on Licence No. 785 (series MG) dated 8 January 1996, and a series of subsequent contracts and addendums as per the Republic of Kazakhstan legislation.

The subsoil right for the Beskauga area was initially acquired by Goldbelt Resources Ltd in 1996 as part of a much larger Licence No. 785 (Mykubinsk), issued to its 80% subsidiary, Dostyk, under the old permitting system. In 2000, Goldbelt Resources Ltd sold its interest in Dostyk to Celtic Resources, a London listed company.

Exploration rights under Licence No. 785 including Beskauga were re-issued to Dostyk in October 2001 as Contract No. 759 for the Maikuben area. No drilling at the Beskauga deposit was conducted by Goldbelt Resources Ltd or Celtic Resources.

In 2007, Cigma Metals, a Vancouver-based company, purchased 80% of Dostyk from Celtic Resources and, later that year, the remaining 20%. Relinquishment of areas considered to be poorly prospective in 2008 reduced the contract area to five plots totalling 2,723.87 km^2. In 2009, the ownership of Dostyk was fully transferred to Copperbelt from Cigma Metals.

Following exploration results from work programs from 2007 to 2010 on the Beskauga, Karagandyozek and Ushtagan prospects, Dostyk was issued rights in 2011 for further exploration/appraisal works for a reduced 419.76 km^2 area. After relinquishment of areas in 2017 (23.23 km^2) and in 2020 (328.73 km^2), the current remaining area is 67.8 km^2.

White and Case (2020) report the following amendments to the subsoil use contract:

a. Amendment No. 1 dated 7 December 2004 which, inter alia:

- amended section 16 (Taxes and Other Mandatory Payments) to reflect provisions of the 2001 Tax Code; and
- introduced a provision stating that guaranties of stability of laws do not apply in respect of military, national security, and people's health laws.

b. Amendment No. 2 dated 31 October 2006 which, inter alia, extended the exploration period for two years (until 31 December 2007).

c. Amendment No. 3 dated 14 May 2008 which, inter alia:
   - extended the exploration period for two years (until 31 December 2009);
   - introduced an obligation to comply with the memorandum of understanding under EITI; and
   - harmonized section 29 (Termination of the Contract) with the Subsoil Use Law.

d. Amendment No. 4 dated 6 September 2010 which, inter alia:
   - extended the exploration period for one year (until 31 December 2010);
   - introduced local content obligations; and
   - introduced a provision stating that guaranties of stability of laws do not apply in respect of environment and tax laws (in addition to military, national security, people's health).

e. Amendment No. 5 dated 13 February 2014 which, inter alia:
   - extended the exploration period (an appraisal stage) until 31 December 2015;
   - introduced a provision on applicability of provisions of the Subsoil Use Law to the Contract; and
   - introduced payment obligations for research and development ("R& D") and training of staff.

f. Amendment No. 6 dated 16 March 2016 which, inter alia:
   - extended the exploration period (an appraisal stage) until 31 December 2018; and
   - amended the obligation for training of staff by making it 0.1 % of production costs.

g. Amendment No. 7 dated 26 May 2017 which, inter alia:
   - extracted the Ushtagan deposit from the Contract to a separate subsoil use contract;
   - amended the obligation for training of staff by making it 1% of exploration investments and 0.1% of production costs;
   - amended the obligation for R&D by making it 1% of annual profit;
   - introduced obligations to follow governmental rules for procurement of goods/works/services.

h. Amendment No. 8 dated 27 February 2019 which, inter alia:
   - extended the exploration period (an appraisal stage) until 31 December 2020;
   - approved a new work program; and
   - introduced an obligation on payment for social and economic development of the region in the amount of 0.64% of appraisal costs.

Via its option agreement with Copperbelt, Arras has acquired the right to explore for “All Minerals” (except uranium) on the remaining Dostyk licence including the Beskauga deposit. The present contract set forth its validity period as until the last day of validity of Licence MG No. 785, 8 January 2021, with an ability to extend until the full depletion of resources.

On 8 February 2021, the Competent Authority, the MIID, granted an extension of the exploration rights to Dostyk until 8 February 2024. Pursuant to this extension, Dostyk is committed to work program expenditures over three years to keep the license in good standing as follows:

- 2021: 720,384,000 KZT
- 2022: 1,090,350,000 KZT
- 2023: 1,880,125,000 KZT

Before expiration in February 2024, the Beskauga exploration licence could be converted into a mining license for twenty-five years, subject to all conditions of the current licence being met and a committee review by the Kazakh mining department. Alternatively, as License MG No.785 was issued under the older permitting system, it can be converted into an exploration license issued under the new permitting system. This would allow extending the exploration period under a new exploration license for up to 5 additional years, prior to requiring to be converted to a mining license.

4.3.4 Stepnoe and Ekidos Exploration Licences

Arras recently acquired two exploration licences, both of which were granted on 22 October 2020 to Ekidos LLP, a Kazakh entity 100% owned by Arras. The Ekidos (No. 875-EL) and Stepnoe (No. 876-EL) licences were applied for under the new SSU Code. Under the new code, the licences are granted for "All Minerals" (except uranium) for an initial six-year period. The licence can be extended once for an additional 5 years.

An annual exploration commitment for each licence is calculated based on the number of 2.5 km^2 "blocks" contained within the licence. The exploration commitment for each block is calculated based on a "Minimum wage index" ("MRP") by the Kazakh State which is then multiplied by the exchange rate of the Kazakh Tenge (KZT) to the United States dollar (US$). The rates will vary slightly from year to year due to changing exchange rates, but the annual expenditure commitment for 2022 for the Stepnoe and Ekidos licences is calculated via a formula outlined in the mining code to be approximately US$150K for each licence. It is not expected this annual exploration commitment cost will materially vary over the first three years.

In addition to the annual exploration commitment costs there is also an annual "land lease" fee which is calculated using the formula "15MRP x No. of blocks". It is calculated this fee will equate to approximately US$21,000 each per year for the Ekidos and Stepnoe licences.

The annual expenditure commitment can be reduced by ceding ground.

4.4 Tenure Agreements and Encumbrances

4.4.1 Beskauga Mineral Licence Option Agreement

A summary of the option agreement between Arras and Copperbelt on the Beskauga licence is outlined below.

On execution of the option agreement, Arras paid Copperbelt US$30,000. An additional US$40,000 was paid to Copperbelt following the closing of the deal on 27 January 2021.

Commencing on 27 January 2021, Arras has four years to conduct exploration on the property. A cumulative US$15 million in exploration expenditure on the Beskauga licence, as well as the Ekidos and Stepnoe exploration licences (see Section 4.4.2 Ekidos-Stepnoe JV agreement below) is required to keep the option in good standing over the four-year period. Minimum expenditures each year are as follows: US$2 million in year one, US$3 million in year two, US$5 million in year three and US$5 million in year four, for a total exploration spend of US$15 million over four years.

The Beskauga Option Agreement also provides that subject to its terms and conditions, after Arras has incurred the exploration expenditures, it may exercise the Beskauga Option and acquire the Beskauga Property for a US$15 million cash payment.

In addition to the $15 million cash payment, the Beskauga Option Agreement provides that, subject to its terms and conditions, Arras may be obligated to make additional bonus payments to Copperbelt if the Beskauga Main Project or the Beskauga South Prospect is the subject of a bankable feasibility study in compliance with Canadian National Instrument 43-101 indicating gold equivalent resources in the amounts in Table 4. Twenty percent of the Bonus Payments is payable after completion of the bankable feasibility study and the remaining 80% is payable within 15 business days of commencement of on-site construction of a mine at Beskauga Main or Beskauga South. Up to 50% of the bonus payments is payable in shares of Arras's common stock valued at the 20-day volume-weighted average trading price of the shares on the Toronto Stock Exchange calculated as of the date immediately preceding the date such shares are issued.

Table 4: Bonus payments under the Beskauga Option Agreement

Gold equivalent resources	Cumulative Bonus Payments
Beskauga Main Project	
3,000,000 ounces	$2,000,000
5,000,000 ounces	$6,000,000
7,000,000 ounces	$12,000,000
10,000,000 ounces	$20,000,000
Beskauga South Prospect	
2,000,000 ounces	$2,000,000
3,000,000 ounces	$5,000,000
4,000,000 ounces	$8,000,000
5,000,000 ounces	$12,000,000

The Beskauga Option Agreement may be terminated under certain circumstances, including (i) upon the mutual written agreement of Arras and Copperbelt; (ii) upon the delivery of written notice by Arras in its sole discretion; or (iii) if there is a material breach by a party of its obligations under the Beskauga Option Agreement and the other party has provided written notice of such material breach, which is incapable of being cured or remains uncured.

4.4.2 Ekidos-Stepnoe JV agreement

On September 1, 2020, Arras also entered into an 80:20 joint venture with Copperbelt on the "Stepnoe" and "Ekidos" exploration licences. Under the terms of the agreement Arras will manage and fund all exploration activities on the properties. Arras can acquire Copperbelt's 20% interest in the joint venture for $1.5 million each in cash. Exploration expenditures on these licences under the joint venture can contribute to Arras's US$15 million expenditure commitment under the Beskauga option agreement.

No other liens or royalties are reported by Arras management.

4.5 Environmental Liabilities

To the Qualified Person's knowledge, there are no known environmental liabilities at the Project. The deposit is under cover and no past mining has been undertaken.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Access to Property

The Beskauga deposit is located approximately 300 km from the Kazakhstan capital, Nur-Sultan (formerly Astana), which has a population of over one million. The international airport at Nur Sultan is serviced by multiple international commercial airlines.

The larger towns of Ekibastuz, Maykain and Bayanaul are within 30–50 km of the licence area. Several smaller villages occur in the vicinity of the Project, including Tortkuduk and Kudyakol which are serviced by rail lines and sealed highways.

Access to the Project area is via sealed highway from Ekibastuz (population ~125,000), some 40 km to the west of the Project area, or from Pavlodar, some 70 km to the northeast of the Project area. Ekibastuz is about four hours drive from Nur-Sultan (Astana) via the P4 and A17 highways. Pavlodar is serviced by an international airport.

Access around the Project area is gained by gravel tracks of moderate to good quality. Roads are accessible by two-wheel drive vehicles; however, they are often subject to seasonal closure as a result of winter weather.

Figure 3: Drilling on the Beskauga deposit. (Source: Silverbull Resources 43-101 report Feb 2021)

5.2 Climate

The climate in the Beskauga Project region is characteristic of arid steppes (prairies). Summers (May to September) are dry and hot with daytime temperatures ranging between 20°C and 35°C, although majority of the precipitation falls in the summer. Winters (November to March) are cold, with average temperatures between 0°C and -20°C with the coldest temperatures in January and February. Winters typically last for three to four months and feature light snow falls.

Precipitation is generally low, with an average annual total of 200–280 mm. The Project region is characterized by moderate winds, with occasional wind gusts, which prevail from the west and southwest. Snow is common in winter, but the ground coverage is inconsistent. Snow cover has an average depth of 0.3 m and soils generally freeze to depths of 2.0–2.5 m.

Seasonally appropriate mineral exploration activities may be conducted year-round at the Project. Mine operations in the region can operate year-round with supporting infrastructure.

5.3 Topography, Elevation and Vegetation

The Project is located within the vast western steppe ecoregion of central Asia that is characterized by grassland plains without trees apart from those near rivers and lakes. The project area consists of low-lying plains with numerous depressions that form lakes. Topography is gentle and the landscape is dominated by sloping hills and ridges of the Irtysh River flood plain. Elevations range from 100 m to 150 m above sea level.

The Irtysh is a major river that rises from the glaciers on the southwestern slopes of the Altai Mountains in the Uygur Autonomous Region of Xinjiang in far northwestern China. The Ob-Irtysh drainage basin is one of the largest in central Asia, encompassing most of Western Siberia, northeastern Kazakhstan, and the Altai Mountains.

Permanent river systems are rare to absent in the Project area but there are numerous stream beds of an ephemeral nature, of which the largest one is Karagandyozek River. The area is rich in lakes, large shallow depressions that fill with saline water during periods of snow melt.

Soils in the region are light-chestnut colour and often saline in character and lacking in nutrients. The overburden cover on the site is an approximately 40 m sheet of loose Cenozoic sediments, primarily alluvial sands, and lacustrine sediments. Vegetation is scarce and dominated by grasses. Fauna sparsely populates the Project area.

5.4 Infrastructure

5.4.1 Sources of Power

The region provides some 40% of all power generating capacity of Kazakhstan with six power stations, three of which are in Pavlodar, two in Ekibastuz, and one in Aksu. Power transmission lines run to various regions of Kazakhstan and Russia. Power generation was developed based on mining of coal from Devonian rocks in the Ekibastuz basin.

5.4.2 Water

Generally, the region has a lack of water resources. Water courses typically have low flow rates and disappear over the summer months. Fresh water is supplied to the area from Irtysh River via the Irtysh-Karaganda Canal with water inflow of approximately 250,000 m^3 per hour. The canal runs through Ekibastuz and passes approximately 18 km from the Beskauga deposit.

Water resources are considered sufficient for a large-scale mining project.

5.4.3 Local Infrastructure and Mining Personnel

The Ekibastuz–Pavlodar region is a major transportation and communication node transected by highways, railways, power transmission lines, and Kazakhstan's largest oil pipeline which travels to Shymkent in the south of the country. The northern boundary of the licence is the Astana/Ekibastuz/Pavlodar/Barnaul rail line and the Astana/Pavlodar highway. Rail lines connect this centre with Russia and various parts of Kazakhstan.

The local economy is dominated by activity in the mining and industrial sectors, with agriculture contributing to a much lesser extent. The Pavlodar region is one the major industrial regions of Kazakhstan with many large industrial companies focused on exports. The region is rich in natural resources and has a well-developed industrial and social infrastructure, up to date transport and communications, foreign investment, and the availability of state-run development programs. A well-developed market for construction materials such as limestone, gravel and quarry stone can be found in the region.

The significant mining activities in the area include the coal mines around Ekibastuz as well as metal mines. KAZ Minerals major Bozshakol open pit porphyry copper mine is located 72 km west of Ekibastuz. The substantial mining industry means that there is a large, well-trained labour force to draw upon for any future mining activities.

The region has sufficient infrastructure and resources to host large-scale mining operations.

5.4.4 Property Infrastructure

The Project has no infrastructure apart from gravel roads. However, a 1,100 kVA powerline passes through the property (Figure 4).

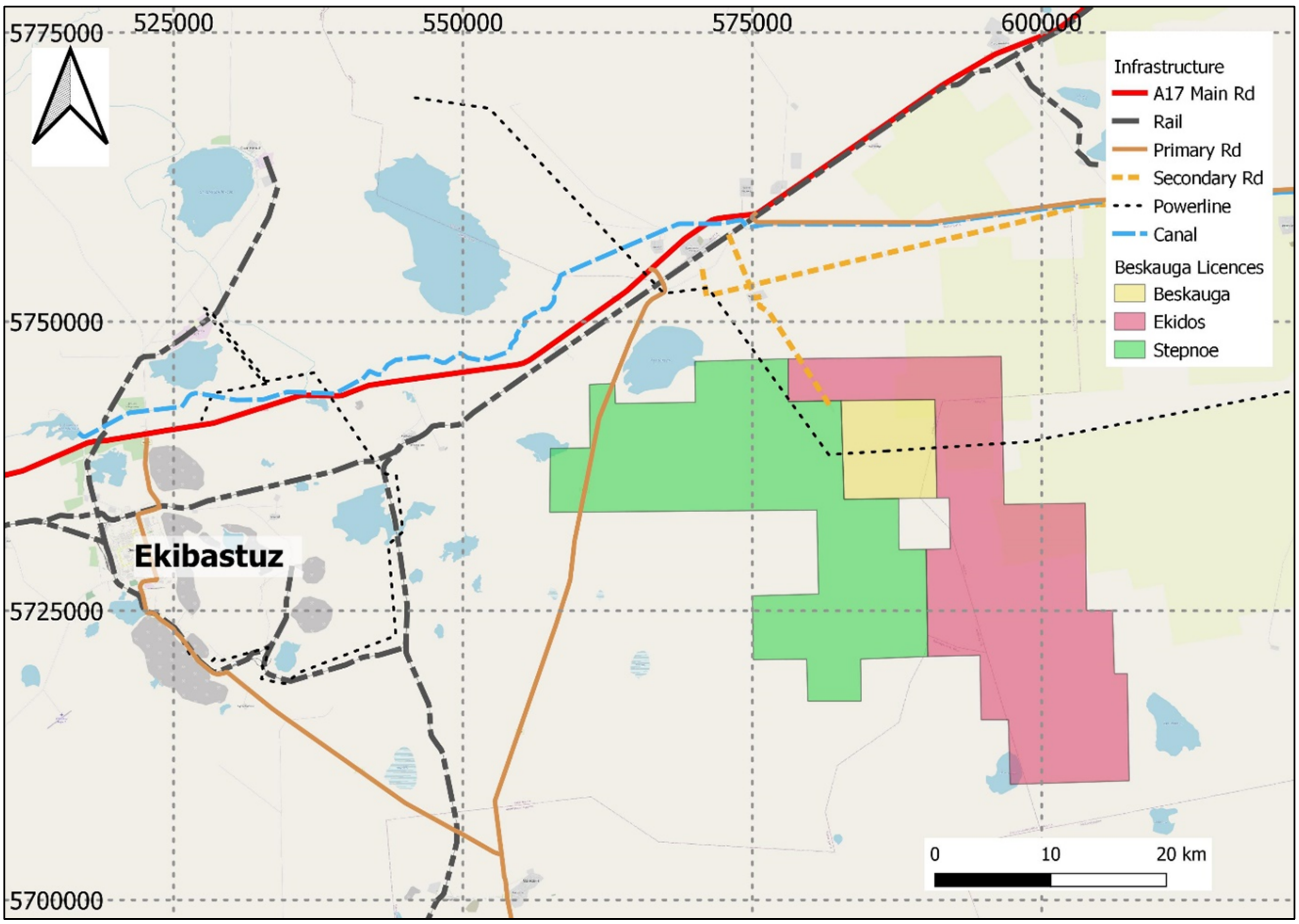

Figure 4: Location of the town of Ekibastuz in relation to the mineral licences owned by Arras. Also shown are roads, rail, and power infrastructure in the immediate area. (Source: Silverbull Resources 43-101 report Feb 2021)

5.4.5 Adequacy of Property Size

The area of the claims making up the Beskauga Project at this time appear to be sufficiently large for the proposed exploration activities and for the infrastructure necessary for potential future mining operations (including potential tailings storage areas, potential waste disposal areas, and potential processing plant sites) should a mineable mineral deposit be delineated at the Project.

6 History

6.1 Property Ownership

The Beskauga deposit was initially discovered during state-funded exploration when Kazakhstan was part of the Soviet Union. Following privatization, the subsoil rights in the Maikuben licence area including the Beskauga Project area were held from 1996 to 1999 by Canadian company, Goldbelt Resources, under Licence No. MG 785, via its 80% subsidiary, Dostyk. Goldbelt explored the area in 1996 and 1997 but relinquished or divested all its Kazakh assets by 2001, including its interest in Dostyk which was sold to Celtic Resources, a UK-listed company, in 2000.

Dostyk was acquired by Vancouver-based Cigma Metals in 2007 when exploration at Beskauga commenced. In 2009, Copperbelt acquired Dostyk from Cigma Metals and continued to undertake exploration at Beskauga, as well as other targets in the larger licence area. Copperbelt's current 67.8 km^2 licence only covers the Beskauga deposit, the other prospects were relinquished or divested by Copperbelt.

6.2 Historical Exploration

6.2.1 Soviet Period

Geological investigation began in the district in the late 1920s when Kazakhstan was part of the Soviet Union. In the 1960s, regional scale mapping outlined some promising areas of alteration and geophysical anomalies that were worthy of follow up work. In the 1970s and the 1980s, continued regional-scale mapping and exploration further delineated zones of interest.

Between 1981 and 1990, the Beskauga area saw ground magnetic and IP surveys and shallow drilling programs. Shallow drilling on a 200 m x 200 m grid (partially infilled at 200 m x 100 m) through the overlying Quaternary cover targeted geophysical and geochemical anomalies. A total of 411 holes were drilled during this period for 15,063 m. This drilling was performed by URB-2A (KGK-100) and SBU-ZIF-150 drill-rigs. The drillholes were generally 30–40 m deep with a few reaching depths between 60 m and 80 m, with the primary aim of obtaining bedrock information, including geochemistry.

A further 20 diamond holes were also drilled during this period to depths of 100–200 m for a total of 3,818 m. Drilling was performed by ZIF-300, ZIF-650 and SBA-500 drill rigs and used tungsten carbide and diamond bits. These drillholes had a diameter of 59mm and were drilled at angles between 75° and 80° towards the southeast. Core recovery in all drillholes drilled in 1981–1990 was between 60% and 80%.

This initial drilling identified Beskauga as an area of interest, but no significant mineralised intercepts were obtained, and the area was not followed up until Dostyk commenced drilling in 2007.

Drillhole locations, survey and analytical data from this period are not available and therefore these holes have not been considered in the preparation of this Technical Report.

6.2.2 Goldbelt Resources

In 1996, Goldbelt Resources, via Dostyk, acquired the Maikuben exploration licence that included the Beskauga area. Goldbelt Resources defined about 20 areas of interest and conducted work programs on these prospects in 1996 and 1997. Based on the results of this program, Goldbelt relinquished approximately 25% of the area covered by Licence MG No. 785.

There is no documentation of this exploration at Beskauga by Goldbelt Resources but it is understood that the exploration focus was on other targets within the larger licence area and that no significant work was completed at Beskauga itself. The Goldbelt Resources exploration data have not been obtained and have therefore not been considered in the preparation of this report.

6.3 Previous Exploration by Copperbelt

Exploration and drilling completed on the Beskauga Project by Copperbelt between 2007 and 2017 is described in Sections 9 and 10.

6.4 Historical Mineral Resource Estimates

Three historical Mineral Resource estimates have previously been completed for Copperbelt on the Beskauga Project, namely by CSA Global in November 2013 (JORC) and again in February 2021 (NI43-101) and by Geosure Exploration and Mining Solutions Pty Ltd in January 2015 (JORC). The Mineral Resource estimate in 2021 was publicly reported by Silver Bull, however the two JORC reports announced in 2013 & 2015 were not publicly reported as the work was completed for a private company, Copperbelt.

The JORC Code is closely aligned with the CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on 10 May 2014. However the estimates have not been reported according to NI 43-101 standards of disclosure. Most significantly, the estimates have not been constrained by an open pit as would normally be the case when reporting under NI 43-101.

For this reason and because they have been superseded by the report presented by Silver Bull in 2021 and this current estimate, the reader is cautioned that the Mineral Resource estimates presented in the table below are considered to be historical. The authors have not done sufficient work to classify the historical estimates as current mineral resources or mineral reserves. They are presented for historical context and informational purposes only and the Issuer is not treating the historical estimates as current Mineral Resources.

Table 5: Historical Mineral Resource estimates at the Beskauga Project

Author	Classification	Tonnes (Mt)	Au (g/t)	Cu (%)
CSA Global (2013) – JORC (non-NI43-101 Compliant)	Indicated	226	0.4	0.25
	Inferred	273	0.36	0.15
Geosure Exploration and Mining Solutions Pty Ltd (2015) – JORC (non-NI43-101 Compilant)	Indicated	248	0.42	0.3
	Inferred	306	0.37	0.2
CSA Global (2021) – NI43-101*	Indicated	207	0.35	0.23
	Inferred	147	0.33	0.15

**Notes on CSA Global 2021 NI43-101 Resource report:*

- *An NSR $/t cut-off of $5.70/t was used, and the NSR formula is: NSR $/t = (38.137+11.612 x Cu%) x Cu% + (19.18 + 12.322 x Au g/t) x Au g/t + (0.07 + 0.0517 x Ag g/t) x Ag g/t*
- *The NSR formula incorporates variable recovery formulae. Average copper recovery was 81.7% copper and 51.8% for both gold and silver.*
- *Metal prices considered were $2.80/lb copper, $1,500/oz gold and $17.25/oz silver.*
- *The Resource is stated within a pit shell that considers a 1.25 factor above the metal prices.*
- *Mineral Resources are estimated and reported in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted 10 May 2014.*
- *The Mineral Resource is not believed to be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors*
- *These Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability.*
- *The quantity and grade of reported Inferred Resources in this MRE are uncertain in nature and there has been insufficient exploration to define these Inferred Resources as Indicated or Measured; however, it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

7 Geological Setting and Mineralisation

7.1 Regional Geology and Metallogeny

The Beskauga Project is located in north-eastern Kazakhstan, within the “Central Asian Orogenic Belt” or CAOB (Sengör et al., 1993; Jahn et al., 2000) that is also referred to as the “Altaid Tectonic Collage” and extends eastwards into Russia, Mongolia and China as the Transbaikal-Mongolian orogenic collage (Yakubchuk, 2002). These combined collages extend from the Ural Mountains in Russia and Kazakhstan in the west through Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan, China, and Mongolia.

The CAOB is situated north of the North China tectonic block and sandwiched between the East European (Baltic) and Siberian cratons (Figure 5). The Ural Mountains, a region with sets of fold belts and imbricated thrust faults, are along the western margin while the southern margin is the high mountain ranges that make up the Tian Shan where the effects of collisional tectonics are well displayed. The Altai Mountains arbitrarily separate western from eastern Central Asia and the Siberian Basin is the northern margin.

In its broadest sense, the CAOB is a region of geological complexity characterised as a collage of numerous tectonic, structural, and stratigraphic domains that were assembled and intermittently deformed beginning in the Late Neoproterozoic through the Paleozoic to the early Mesozoic (Windley et al., 2007), with accretion essentially complete by about 250 Ma. This makes the CAOB the most extensive and long-lived accretionary orogen globally. It progressively developed through the accretion of island arcs, ophiolites, oceanic islands, seamounts, accretionary wedges, oceanic plateaux, and microcontinents in a manner comparable with that of circum-Pacific Mesozoic–Cenozoic accretionary orogens (Windley et al., 2007). The pattern was further complicated by the late overprint of the Alpine–Himalayan deformation related to Indo Asian collision between Gondwana and Asia (Yakubchuk et al., 2002).

The longevity, structural complexity, and paucity of modern detailed studies present challenges to deciphering the assembly of the CAOB, further complicated by the inconsistent usage of terminology. Models involving either a single long-lived arc system (Sengör et al., 1993) or multiple arc and back-arc systems (Yakubchuk, 2002) that collided with the Baltic and Siberian cratons have been invoked. Early Palaeozoic arcs in Kazakhstan, with the sole exception of the Bozshakol-Chingiz arc that hosts the Beskauga Project, are generally characterised by relatively short periods of volcanic activity, which, based upon faunal data, were not synchronous (Windley et al., 2007). This argues against models that suggest the existence of permanently active arcs from the Mesoproterozoic to the Early Palaeozoic, and instead suggests several independent and short-lived arc systems that were welded together by a process of consecutive collisions (Windley et al., 2007), which is now the most widely adopted model (e.g., Berger et al., 2014; Seltmann et al., 2014).

As is typical of large accretionary orogenic belts, the highly endowed CAOB contains a large number and variety of mineral deposits, including volcanogenic massive sulphide deposits, sedimentary-hosted copper deposits, epithermal and orogenic gold deposits, and porphyry copper-gold/molybdenum deposits. This includes several world-class deposits including Muruntau in Uzbekistan, the largest known orogenic gold deposit in the world (Seltmann et al., 2020), the behemothian Oyu Tolgoi porphyry Cu-Au deposit in Mongolia, the super-giant Kal’makyr-Dalnee and Saukbulak (collectively Almalyk) porphyry Cu-Au deposits in Uzbekistan, and the giant

Kounrad and Aktogai porphyry Cu-Au deposits of the Balkhash metallogenic belt in eastern Kazakhstan (Seltmann et al., 2014; Berger et al., 2014). The CAOB is one of Earth's most richly mineralised regions.

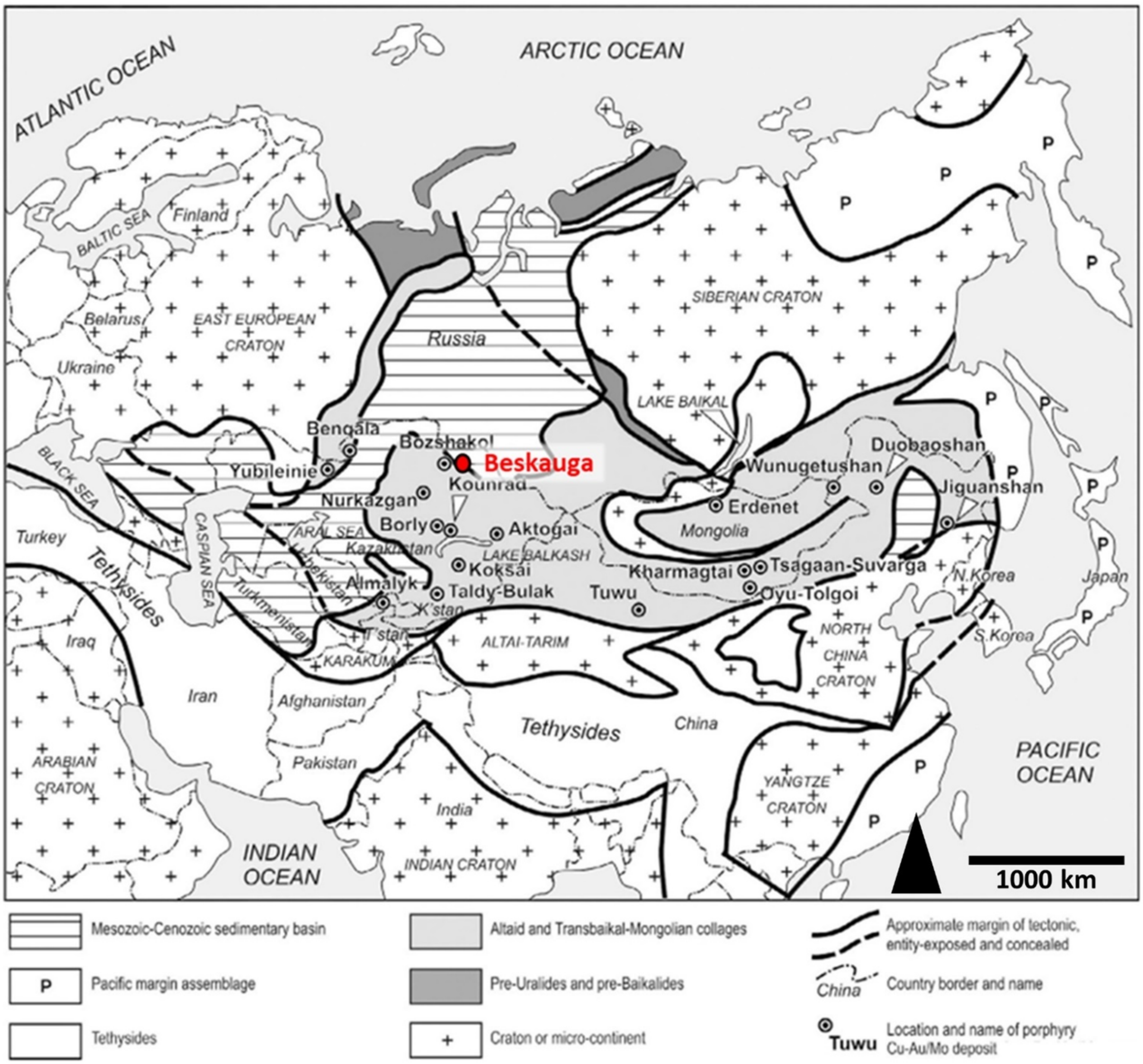

Figure 5. Map showing the principal tectonic elements of Eurasia. Note that collectively the Altaid Tectonic Collage and the Transbaikal-Mongolian Collage constitute the Central Asian Orogenic Belt, or CAOB. The main porphyry Cu–Au/Mo deposits of the CAOB are indicated, and the location of the Beskauga Project also shown. Note that T'stan = Tajikistan, K'stan = Kyrgyzstan (map adapted from: Seltmann et al., 2014).

Major porphyry Cu–Au and Cu–Mo deposits are distributed across almost 5000 km within the CAOB, forming over multiple magmatic episodes. These include Ordovician porphyry Cu–Au/Mo and Au–Cu deposits in the

Kipchak arc (e.g., Bozshakol Cu–Au in Kazakhstan and Taldy Bulak porphyry Cu–Au in Kyrgyzstan); Silurian to Devonian in the Kazakh-Mongol arc (e.g., Nurkazgan Cu–Au in Kazakhstan and Taldy Bulak-Levoberezhny Au in Kyrgyzstan); Devonian in the Urals-Zharma arc (e.g., Yubileinoe Au–Cu in Russia); Devonian in the Kazakh-Mongol arc (e.g., Oyu Tolgoi Cu–Au, and Tsagaan Suvarga Cu–Au, in Mongolia); Carboniferous in the Kazakh-Mongol arc (e.g., Kharmagtai Au–Cu in Mongolia, Tuwu-Yandong Cu–Au in Xinjiang, China, Koksai Cu–Au, Kounrad Cu–Au and the Aktogai Group of Cu–Au deposits, in Kazakhstan); Carboniferous in the Valerianov-Beltau-Kurama arc (e.g., Kal'makyr–Dalnee Cu–Au in Uzbekistan; Benqala Cu–Au in Kazakhstan); Late Carboniferous to Permian in the Selanga-Gobi-Khanka arc (e.g., Duobaoshan Cu–Au in Inner Mongolia, China); Triassic in the Selanga-Gobi-Khanka arc; and Jurassic in the Selanga-GobiKhanka arc (e.g., Wunugetushan Cu–Mo and Jiguanshan Mo in Inner Mongolia, China) as summarised by Seltmann et al. (2014) and Berger et al. (2014) (Figure 6). As a result the CAOB is one of the most important porphyry copper belts in the world.

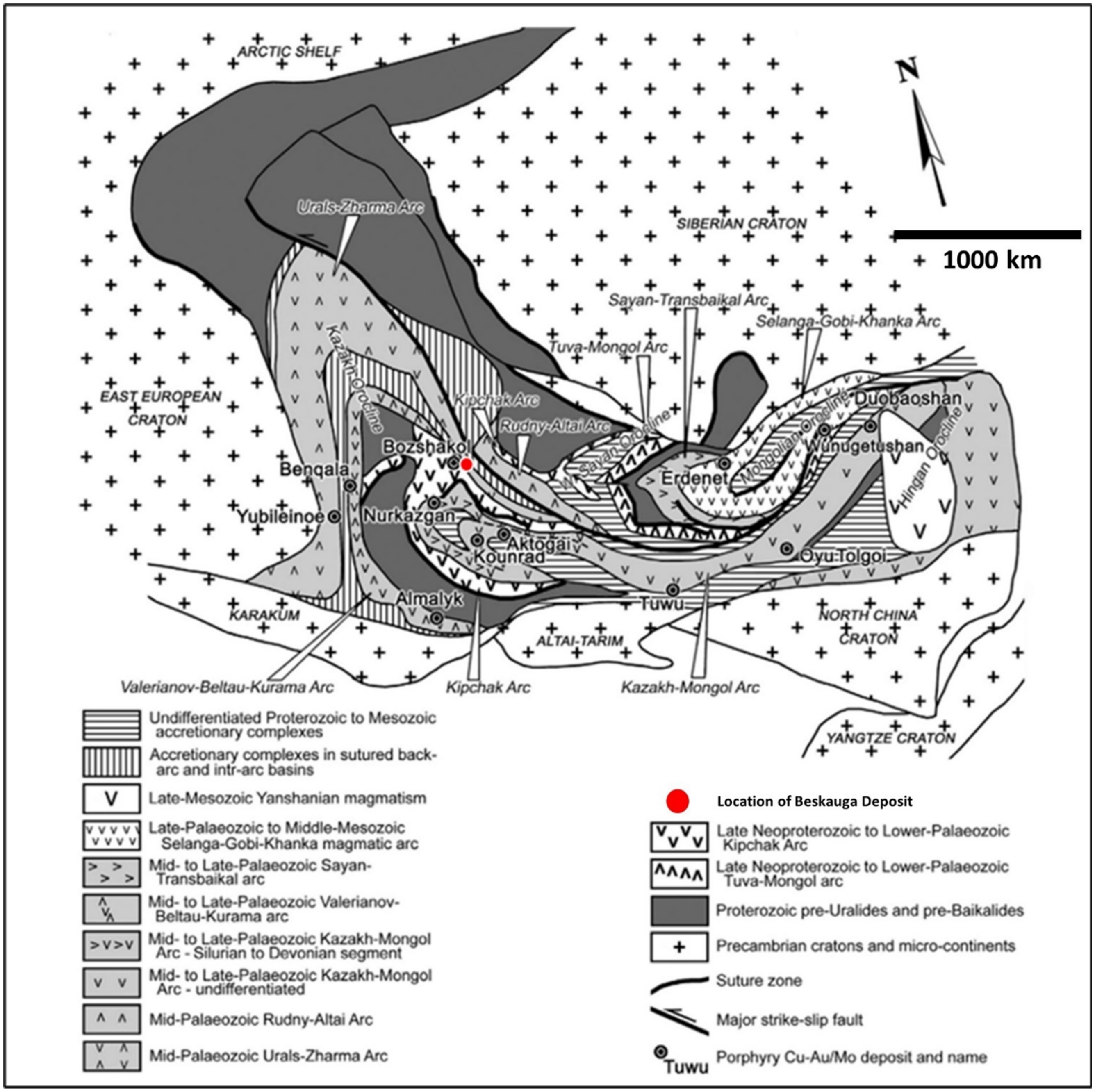

Figure 6. Simplified tectonic map of the Central Asian Orogenic Belt, after removal of Mesozoic–Cenozoic basins and superficial cover and showing the location of selected porphyry Cu–Au/Mo deposits. Location of the Beskauga porphyry Cu-Au Project is indicated by a red circle (from: Seltmann et al., 2014)

7.1.1 Central Asian Orogenic Belt in Northeastern Kazakhstan

The Beskauga Project, as well as the producing Bozshakol porphyry Cu-Au deposit, are located in western part of the CAOB Late Cambrian to Early Ordovician Bozshakol–Chingiz magmatic-arc terrane (hereafter the “BC arc” or

"BC terrane") within the Kazakhstan Orocline, a concentric horseshoe-shaped belt. The BC arc is one of the major tectonic units in the Altaid collage of the western CAOB, extending from Kokshetau in Kazakhstan to West Junggar region of northwestern China, over more than 1000 km (Figure 7). The BC terrane is considered part of the larger Kipchak arc of Şengör et al. (1993). Synthesized geological and geochemical data suggests that it developed on heterogeneous basement that included oceanic and continental fragments (Windley et al., 2007).

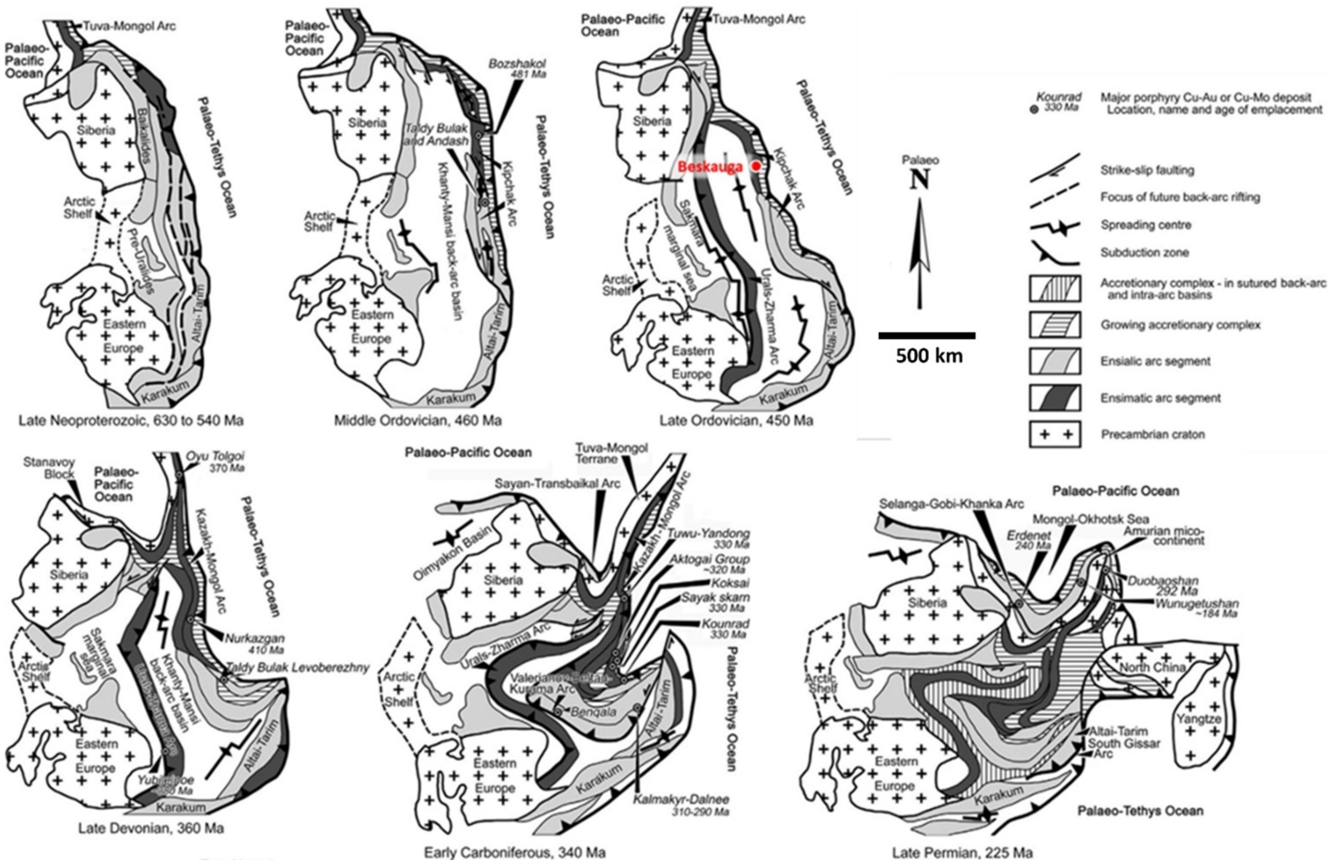

Figure 7. Palinspastic reconstruction of the western Central Asian Orogenic Belt, from the Late Neoproterozoic to the Late Permian, showing selected major porphyry Cu–Au/Mo, related epithermal Au, and major orogenic Au deposits. Location within the Kipchak arc and Late Ordovician timing of the Beskauga porphyry Cu-Au deposit is indicated (figure adapted from: Seltmann et al., 2014)

The present-day geography of the BC terrane comprises a hooked staff-shaped area that has been separated into two parts, northwestern ("the hook"; where the Beskauga Project is located) and southeastern ("the staff"), by Late Paleozoic strike-slip faulting (Berger et al., 2014). The northwest segment is separated on the northwest from the Selety terrane by the Erementau-Ili accretionary wedge and from the Baidaulet-Akbastau terrane by the Maikain-Kyzyltas terrane on the southeast (Windley et al., 2007; Berger et al., 2014). The Cambrian of the northern EI terrane consists of a deformed Early to Middle Cambrian ocean-floor sequence with some arc-type rocks, a Middle Cambrian magmatic-arc sequence, and a Late Cambrian to Middle Ordovician slope sequence with volcanic rocks of arc-affinity (Seltmann et al., 2009) (Figure 8).

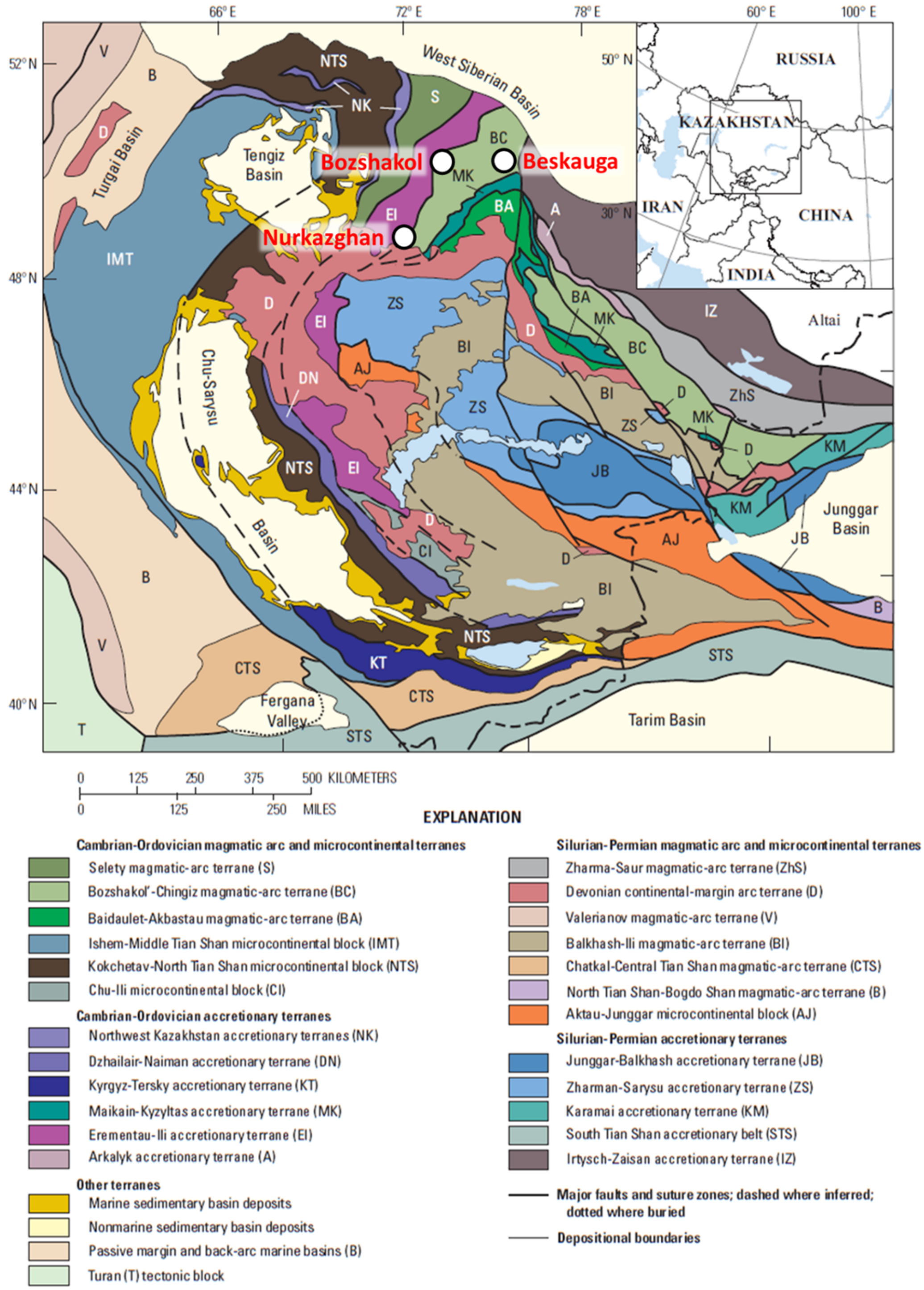

Figure 8. Lithotectonic terrane map of western Central Asia, showing the locations of the Beskauga, Bozshakol and Nurkazghan porphyry copper-gold deposits within in the Bozshakol–Chingiz magmatic-arc terrane and Erementau-Ili accretionary wedge of the Kazakhstan Orocline (map adapted from Berger et al., 2014).

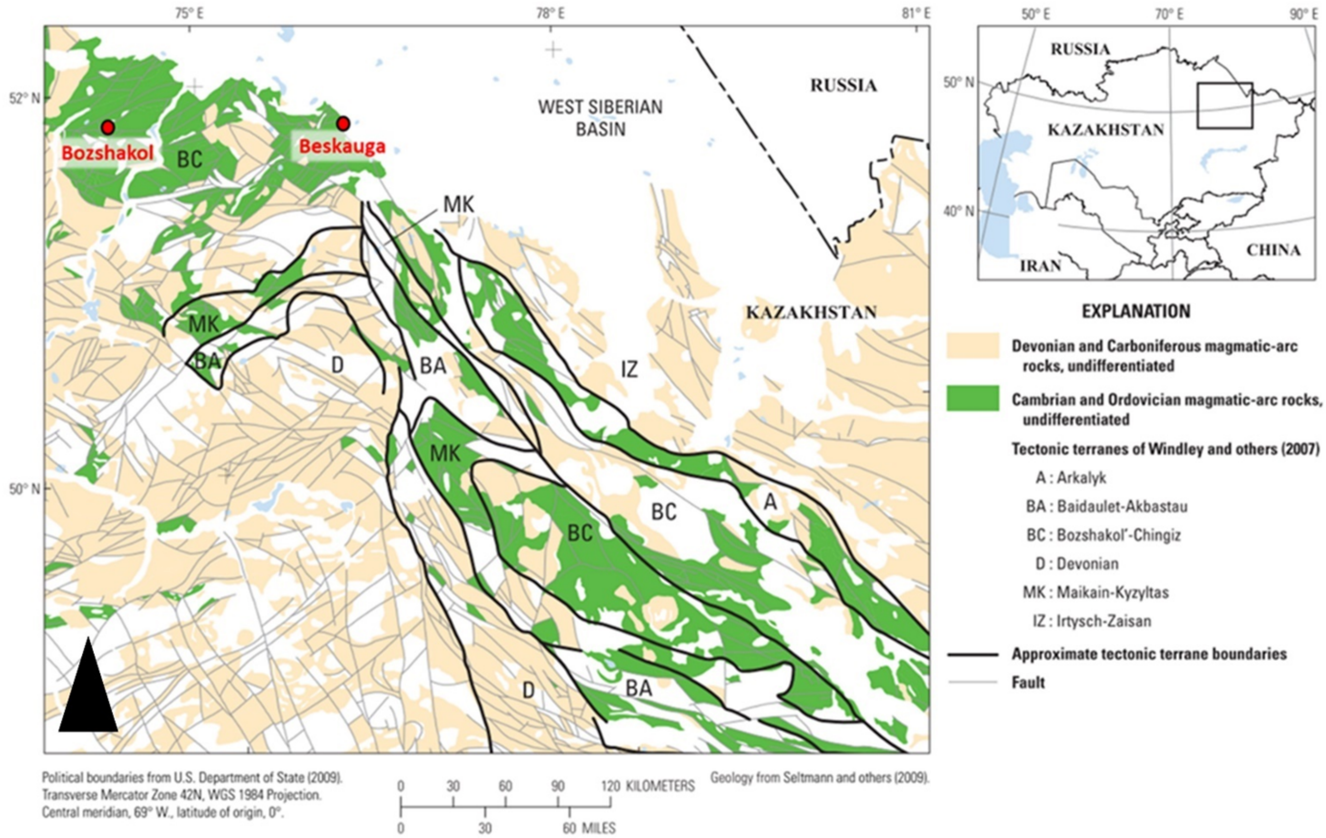

Figure 9. Map showing distribution of Cambrian and Ordovician magmatic-arc rocks in relation to Devonian and Carboniferous magmatic-arc rocks on a fault base (light gray lines) in northeastern Kazakhstan. The lithotectonic terranes of Windley et al. (2009) are shown. Cambrian and Ordovician rocks form a hook-shaped (oroclinal bend) in response to regional-scale strike-slip faulting. Also shown are the locations of the Beskauga and Bozshakol porphyry Cu-Au deposits within the Cambrian to Ordovician Bozshakol–Chingiz magmatic-arc terrane. Note the position of Beskauga at the edge of the younger West Siberian basin (map adapted from Berger et al., 2014).

The BC terrane is accreted to the Cambrian - Ordovician Baidaulet-Akbastau (BA) terrane across the Maikain-Kyzyltas (MK) accretionary wedge terrane (Windley et al., 2007). The BA-MK suture is thought to be middle Late Ordovician in age (Alexeiev, 2008). The BA terrane is comprised of a Late Cambrian to Early Ordovician andesitic arc, which was built on Cambrian-age deep-water sedimentary and mafic volcanic rocks (Seltmann et al., 2009; Berger et al., 2014). Post-suturing, strike-slip faulting has resulted in the BA, MK, and BC terranes having a composite, tightly hooked orocline-like bend around a regional-scale north-south, right-lateral strike-slip fault (Berger et al., 2014), which Alexeiev (2008) suggests developed during the Late Carboniferous to Early Permian, as shown in Figure 8.

Gold-rich Urals-type volcanogenic massive sulphide (VMS) deposits, e.g., the Maikain ore field (Bespaev et al., 1997; Kokkuzova et al., 2017) Akabastau and Mizek deposits (Lobanov et al., 2014), indicate that the BA arc was submarine. The Maikain ore field located SSW of Arras Minerals' exploration licences, hosts a non-NI43-101 compliant historical resource of > 40 Mt at 0.9 – 1.3 % Cu, 0.4 % Pb, 2.1-2.6 % Zn, 2.5 g/t Au and 43 g/t Ag. The widespread VMS deposits indicate that submarine magmatic-arc volcanism persisted, likely intermittently, throughout the extent of the BA arc into the Late Ordovician (Berger et al., 2014). In the Maikain ore field, Pan et al. (2015) identified two types of volcanic rocks: Type I, tholeiitic to calc-alkaline basalts, andesites, gabbros and dolerites that display flat REE patterns, have a negative Nb anomaly and have Th /Yb enrichment, indicating that they were generated above a subduction zone; and Type II, calc-alkaline andesites that are strongly enriched in LREE, have a negative Nb anomaly and have Th /Yb enrichment, suggesting generation in a normal island-arc setting. The Type II andesites are the host rock to the mineralisation at Maikain. SIMS zircon U-Pb dating of Type II andesite yields a late Ordovician age (459. 1 ± 4.8 Ma), that overlaps with the age for the diorite that hosts the Beskauga Project (457.1 ± 3.3 Ma, *see chapters below*). Lu-Hf isotopic composition of zircons from the Type II andesite suggest that these melts were derived from a mantle wedge above a subduction zone (Pan et al., 2015). A string of intra-arc ophiolitic blocks, including the Maikain-Ekibastuz Ophiolitic Zone (Nikitin et al., 2006) delineate the suture zone between the BA and MK accretionary wedge terranes. In the MK terrane, a tectonic mixture of Late Ordovician siliciclastic rock suites and volcanic-arc suites suggests that the middle Late Ordovician collision terminated subduction in the Late Ordovician BA arc.

The giant Bozshakol (also spelt Boshekul or Boshchekul in older literature) porphyry Cu-Au deposit is situated in Pavlodar Province, only 130 km west of the Beskauga Project. Geologically it is located in the northwest segment of the BC arc (Berger et al., 2014). The mineralisation is associated with Late Cambrian (489 ± 3.3 Ma; Shen et al., 2015) calc-alkaline porphyry dykes (quartz diorites and tonalities), with the bulk of the ore hosted by the volcanic wall rocks of the Bozshakol Group. The volcanogenic and intrusive rocks are overlain by post-mineral Ordovician sediments (Seltmann and Porter, 2004). The host intrusives at Bozshakol have a geochemical affinity with adakites and are suggested to have been derived from partial melting of the mantle wedge subducted slab in a Cambrian intra-oceanic subduction zone (Shen et al., 2015).

The deposit is one of the largest copper resources in Kazakhstan and is mined by KAZ Minerals, with a published reserve of 521.1 million tonnes grading 0.35% Cu, 0.13g/t Au, 1.0 g/t Ag in the proven category, and 375.5 million tonnes grading 0.33% Cu, 0.12g/t Au, 0.8g/t Ag in the probable category (Kaz Minerals 2020 Annual Report). Bozshakol has a 30 Mtpa ore processing capacity and has an estimated remaining mine life of >40 years.

Although the deposits highlighted above occur in the same suite of rocks as the Beskauga deposit, The Authors have been unable to verify the information and that the information is not necessarily indicative of the mineralization on the property that is the subject of the technical report.The EI terrane also hosts the gold-rich Nurkazghan (also known as Samarka or Samarskoye) porphyry Cu-Au deposits, which is operated by the Kazakhmys Group and located approximately 285 km southwest of the Beskauga Project. The total mineral resource at Nurkazghan is 516 million tonnes containing 3.9 million tonnes of copper and 8.08 Moz of gold (Shen et al., 2016). Nurkazghan is Silurian (440 ± 3 Ma and 437 ± 3 Ma; Shen et al., 2016) and occurs as a cluster of deposits over a 6 x 3 km area. The Cu–Au orebodies are associated with diorite, quartz diorite, and quartz diorite porphyry and associated breccia pipes which are localised in the core of the earlier mineralised granodiorite porphyries intrusions (Shen et al., 2014).

Perhaps somewhat analogous to the Beskauga Project, the mineralisation at Nurkazghan took place as initial porphyry-style mineralisation of an early granodiorite porphyry, and as an overprinting, high-grade, high sulphidation Cu–Au orebody related to the intrusion of a late-stage porphyritic diorite and numerous associated breccia pipes. The porphyry style mineralisation is comprised of disseminations and stockworks of chalcopyrite, pyrite and molybdenite with grades of 0.3-0.5 % Cu. The porphyry mineralisation is accompanied by potassic (K-feldspar-biotite-quartz) alteration, surrounded by a propylitic (illite-chlorite-epidote-carbonate-quartz) halo

(Seltmann et al., 2014). The overprinting high sulphidation ores, and their associated porphyryitic diorite and breccia pipes, are localised in the core of the earlier granodiorite porphyry and porphyry mineralisation (Shen et al., 2016; Seltmann et al., 2014). This overprinting mineralisation consists of chalcocite, covellite and tetrahedrite with grades of >1–1.5%, locally to 3% Cu and 1 g/t Au and is associated with argillic (illite-chlorite-carbonate-quartz) alteration (Seltmann et al., 2014).

Another group of Ordovician gold-rich porphyry Cu-Au deposits located within the CAOB, forms a 30 km long mineralised corridor in northern Kyrgyzstan, approximately 120 km to the southwest of the capital, Bishkek. The principal deposits include porphyry style mineralisation at Taldy Bulak, Andash, Chonur and Tokhtonysai and skarn ores at Aktash (Seltmann and Porter, 2004). The 444 ±8 Ma (Jenchuraeva, 1997) Taldy Bulak deposit has a resource estimate of 540 million tonnes @ 0.24% Cu, 0.5 g/t Au, 0.008% Mo (Berger et al., 2014). The Andash deposit has a resource estimate of 19.6 million tonnes at 0.40% Cu, 1.10 g/t Au (USGS database, 2021). All are within the Kipchak magmatic arc (cf. Şengör et al., 1993), which the BC arc hosting the Beskauga Project, is considered to form part of. The deposits are associated with Middle Ordovician diorite to monzodiorite porphyries which intrude Late Cambrian to Middle-Ordovician, island arc, terriginous volcanogenic sequences with comparable host lithologies and age to those of the Beskauga Project.

Located within the Carboniferous Kazakh-Mongol arc, approximately 450 km South of the Beskauga Project, is the Balkhash metallogenic belt, one of the most important porphyry Cu metallogenic belts in the CAOB, that hosts several super-large and giant Porphyry Cu ± Mo deposits, as well as polymetallic skarns and quartz vein-greisen W-Mo deposits. Deposits of the Balkhash metallogenic belt include Aktogai-Aidarly porphyry Cu-Mo deposit with 605.7 million tonnes grading 0.31% Cu in the proven category, and 828.6 million tonnes grading 0.32% Cu in the probable category (Kaz Minerals 2020 Annual Report; the Kounrad porphyry Cu-Au deposit with 637 million tonnes at 0.59 % Cu, 0.011 % Mo, 0.19 g/t Au (Berger et al., 2014) and the Kosai porphyry Cu-Mo deposit with 422 million tonnes at 0.55 % Cu, 0.049 % Mo, 0.21 g/t Au and 1.24 g/t Ag (Berger et al., 2014), along with many smaller porphyry deposits. The Authors have been unable to verify the information and that the information is not necessarily indicative of the mineralization on the property that is the subject of the technical report.

7.2 Property Geology

Beskauga is a gold-rich, copper-gold porphyry-epithermal deposit with elevated grades of silver and molybdenum, hosted within diorite and monzodiorite intrusions. A map of the deposit area is shown in Figure 10 and a representative cross section through the deposit is shown in Figure 11.

The project area is underlain by sedimentary rocks of upper Ordovician age, termed the Oroiskaya and Angrensorskaya suites, and volcanogenic-sedimentary rocks, termed the Biikskaya suite. These have been intruded by intrusives ranging in composition from gabbro-diorite to quartz diorite and granodiorite jointly referred to as the Shangirau complex. Post-mineral dykes of porphyritic diorite, basalt and basaltic andesite also cut the host sequence. Intrusive rocks represent the major portion of the Beskauga Main deposit area. Porphyry-style copper-gold mineralisation in the Beskauga Main deposit is largely hosted within diorite and monzodiorite, whereas the Beskauga South gold mineralisation is hosted within porphyritic andesite intruded by mineralised dykes of microdiorite. Note that Beskauga South has received minor drilling to date but has not been included in the Mineral Resource estimate.

At Beskauga Main, a monzodiorite has been intruded into an extensive area of medium grained, equigranular diorite, and forms a “bulls-eye” magnetic high. The diorite surrounding the monzodiorite intrusion forms a broad concentric de-magnetised zone, coincident with an IP chargeability anomaly. This diorite is host to the bulk of the mineralisation identified to date, as stockwork mineralisation and intense sheeted veining on the eastern flank of the monzodiorite. Intrusive relationships and timing relative to mineralisation have not been clearly established. It is yet unclear whether the monzodiorite is the causative intrusion, and further drilling is planned to evaluate this hypothesis. To the north of the deposit, unmineralised volcanics consisting of andesites (including plagioclase-phyric trachyandesites), basalts and weakly bedded andesitic tuffs have been mapped in recent KGK drilling by Arras Minerals.

Airborne magnetics flown by Arras Minerals over the property in 2021, has identified two major structural trends, NW-SE and NNE-SSW. These structures likely have a strong control on the sheeted veining observed in the high-grade zones of the Beskauga Main deposit and detailed work on orientated drill core has recently been initiated by Arras Minerals to determine the structural controls on the mineralisation.

The Project area is entirely covered by a 10 m (southern part) to 40 m (northern part) thick cover of younger sediments. This includes upper Eocene Tavda Formation consisting of dark grey to bluish-green clay with lignite and aleurolite (siltstone) along with interlayers and lenses of inequigranular quartz sand. These Eocene sediments are in turn overlain by lower to middle Quaternary cover, consisting of lacustrine-alluvial sand-gravel-pebble sediments. The deposit is fresh beneath the young sedimentary cover, without significant weathering or oxidation.

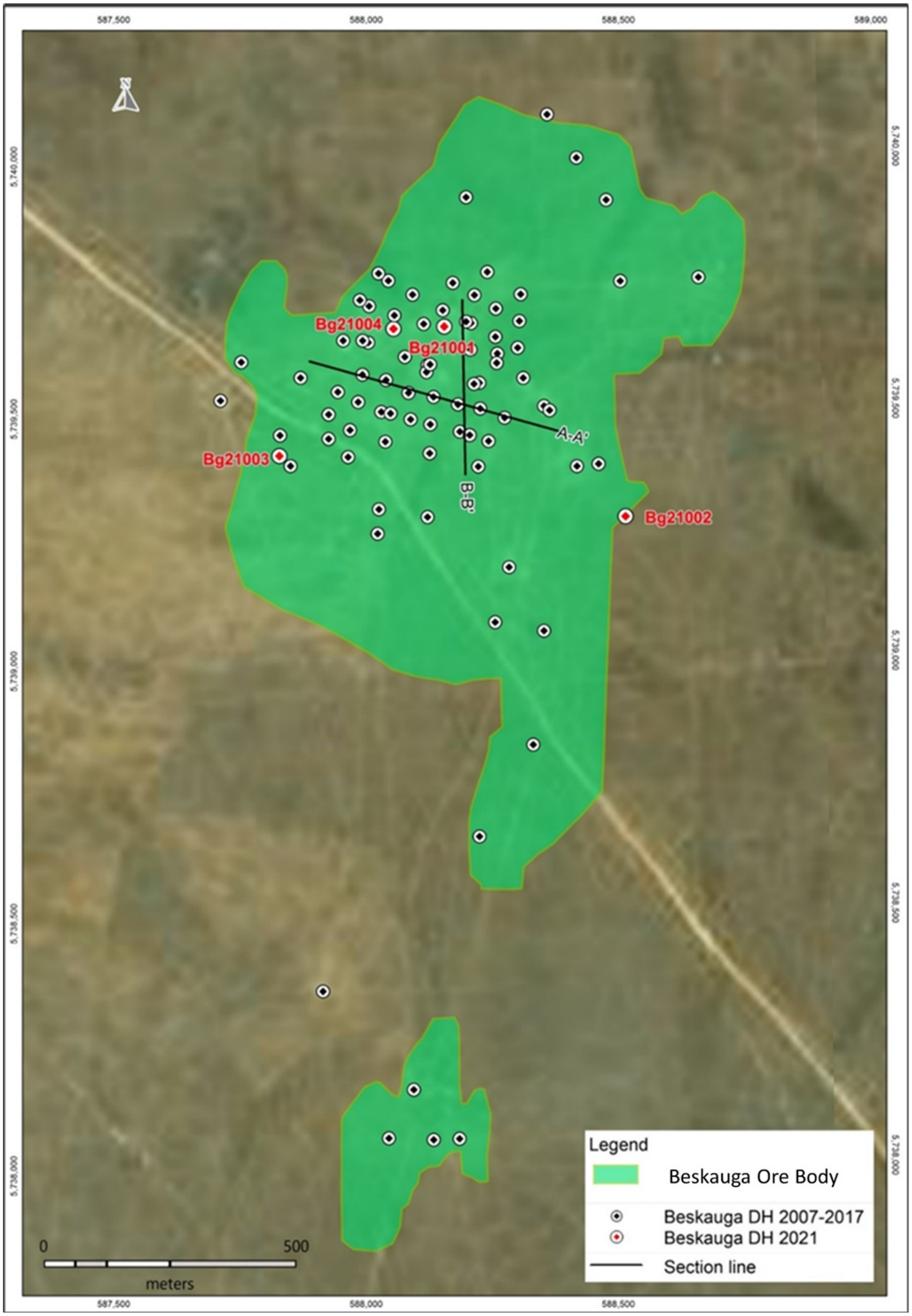

Figure 10. *Beskauga Cu-Au deposit area. Shows the location of the Beskauga Main and Beskauga South deposits and drillhole collars.*

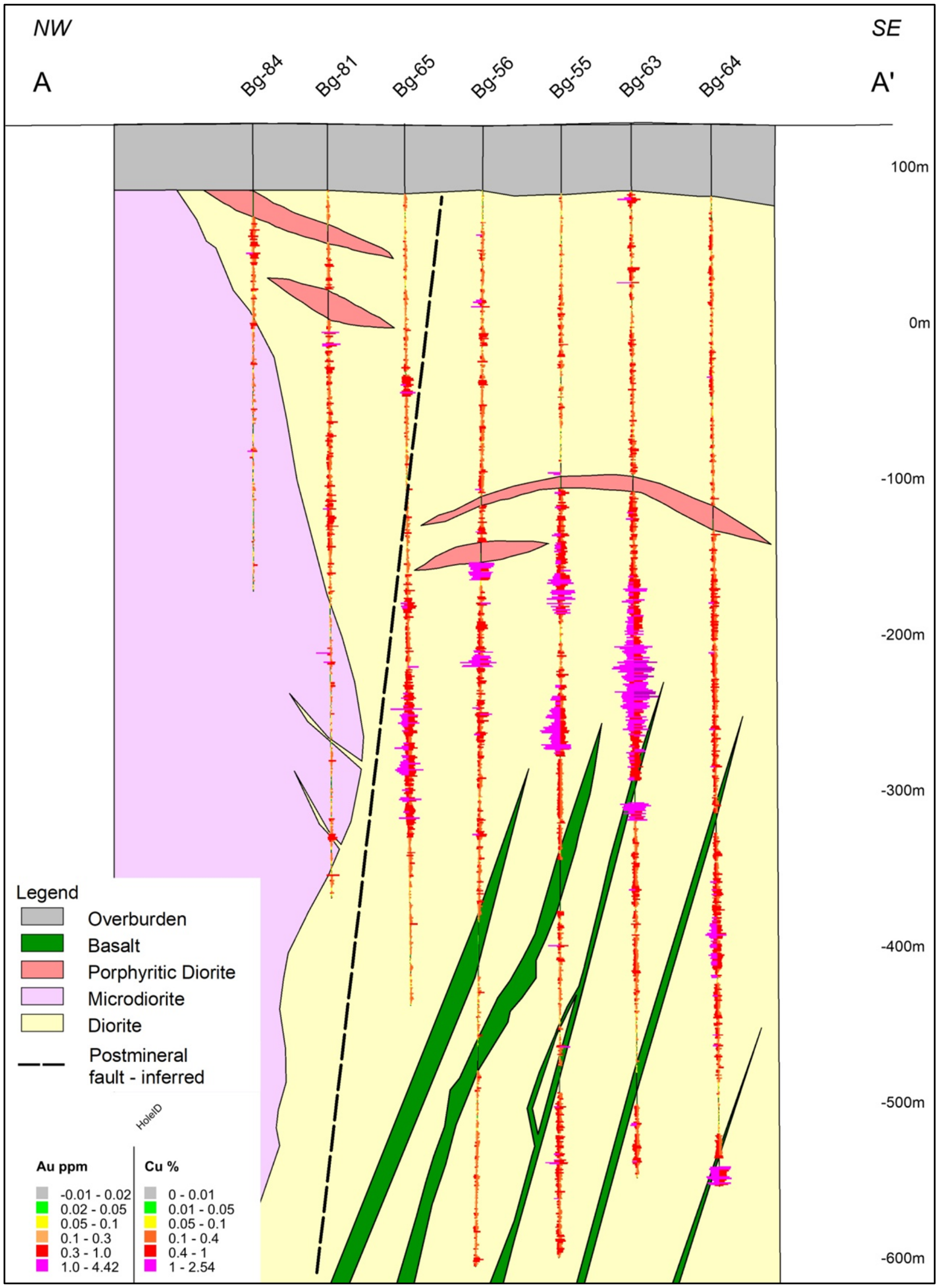

Figure 11. Cross section through the Beskauga Main deposit (looking south) – relogged by Arras in 2021.

7.2.1 Age dating of the Beskauga Deposit

In 2021, Arras Minerals commissioned the Mineral Deposits Studies Group Unit (MDRU) at the University of British Columbia, to carry out U-Pb geochronology and trace element analysis of zircon, on a drill core sample of the host diorite from Beskauga (Bg-031, 419.4 to 421.4 m). The core was processed for heavy mineral zircon separation and analysis by the conventional U-Pb dating technique, following methods presented in Lee et al., (2021) and Lee and Hart (2021).

Forty zircon crystals were collected, mounted, polished, and examined by petrographic, cathodoluminescence (CL) and SEM methods. Zircon grains ranged in size from 40 mm to 120mm in length, were colourless to light pink and mostly equant. Internally, most grains showed oscillatory growth banding and a few had tabular or sector zoning. A few grains had dark rims reflecting uranium damage due to the age of the samples. Twenty-eight grains were selected for analysis using Laser Ablation Inductively Coupled Plasma Mass Spectrometer (LA-ICP-MS) analysis. A weighted mean 207Pb-corrected, 206Pb/238U age, yields a late Ordovician age of **457.1 ± 3.3 Ma**. As this is the age of the host diorite, this should be considered the maximum age of the mineralisation. Direct age dating of the mineralisation using Re-Os (molybdenite) geochronology is planned by Arras Minerals.

In the KC volcanic arc, the known porphyry deposits (Bozshakol and Beskauga) are different ages at 489 and 457 respectively (Shen et al., 2015, 2016; Lee and Hart, 2021). This emphasises the fact that the arc developed and matured over a >30 Ma period and was fertile for at least these two events indicating a prolonged, highly prospective and mostly unexplored porphyry belt.

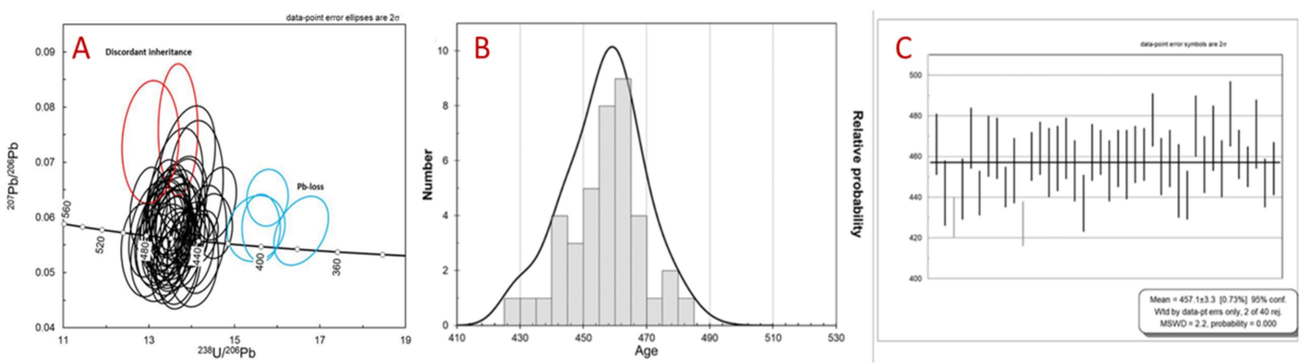

Figure 12. (A) Terra-Wasserberg concordia plot sample Bg-031_419.4-421.4. Red coloured ellipses indicate discordant analyses potentially due to inheritance of uranium. Blue coloured ellipses represent potential Pb-loss. Analyses in black are within error range for statistical calculation and were used in calculation of the U-Pb age; (B) Probability plot showing a gaussian distribution of ages from the sample. Ages ranged from 430 to 480 Ma for individual spot analyses; (C) Weighted mean average plot yielding an age of 457.1 ± 3.3 Ma for sample. Error bars shown in black are included in weighted mean age calculation; bars shown in grey were excluded from the calculation.

Trace element compositions of zircons are increasingly being used to unravel the magmatic history of intrusions and are interpreted for various aspects (e.g., fractionation, mixing, oxidation state, fluid generation) related to the magma fertility and the propensity to form a porphyry Cu-Au deposit. The zircons from borehole Bg-031 show distinct differences in trace elements between the core and rims of the analysed zircons. This suggests fractionation of the melt during crystal formation with increasing oxidation state, decreasing temperature and elevated Eu/EuN* values that is consistent with mineralised porphyry Cu-Au deposits (Dilles et al., 2015; Lu et al., 2016; Lee et al., 2021; Loucks et al., 2020).

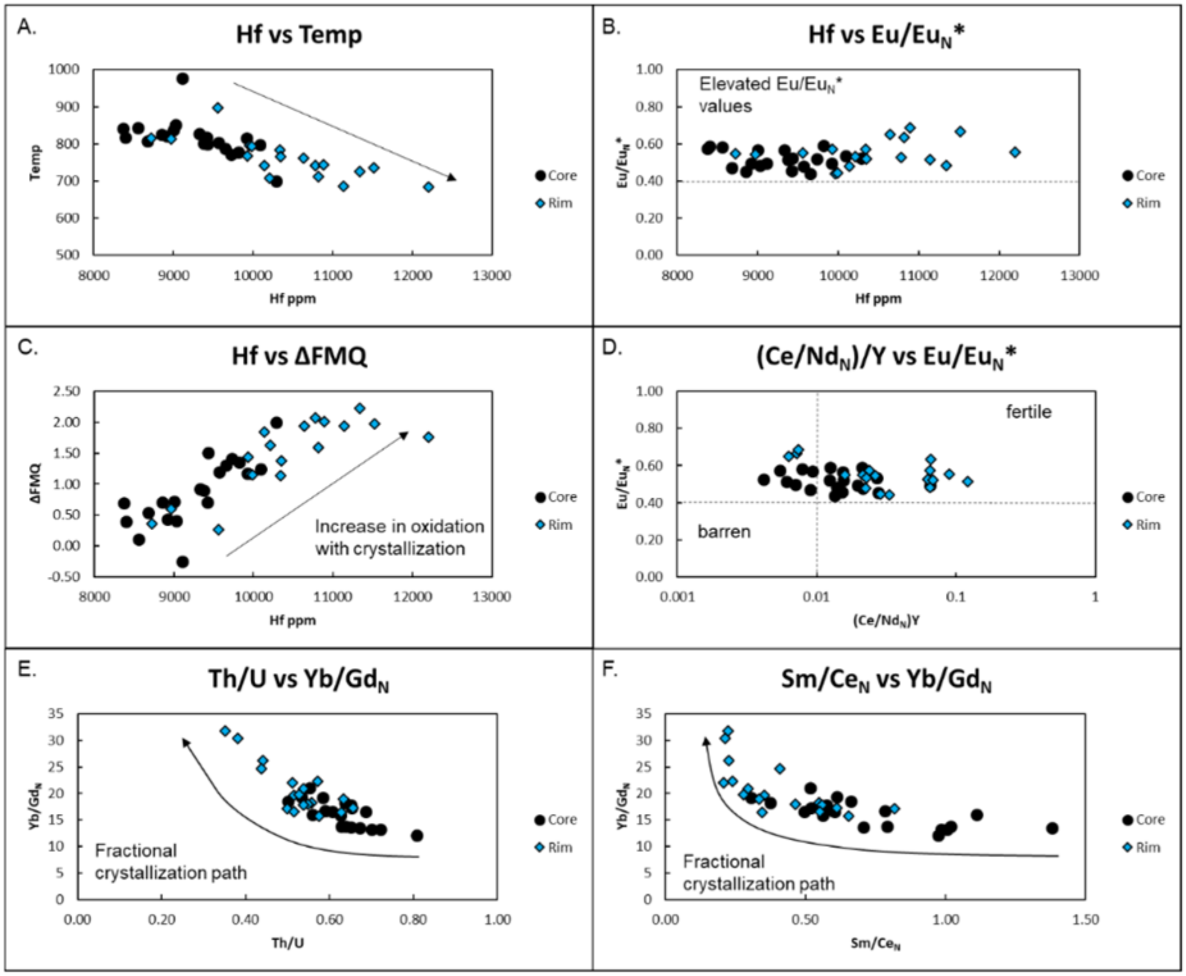

Figure 13. Zircon trace element plots for sample Bg-031_419.4-421.4 with core and rim analyses presented. (A) Hf vs Tin-in-zircon temperature (C°) calculated using method of Ferry and Watson (2007); (B) Hf vs Eu/EuN after Lee et al. (2021), values above 0.4 attributed to hydrous and oxidized magmas; (C) Hf vs calculated FMQ value using calculation from Loucks et al. (2020); (D) (Ce/NdN)/Y vs Eu/EuN* after Lu et al. (2016) with interpreted fertile and barren fields; (E) Th/U vs Yb/GdN and (F) Sm/CeN vs Yb/GdN diagrams after Lee et al., 2021 showing typical fraction paths for hydrous melts.*

7.3 Mineralisation and Alteration

The highest-grade core of the Beskauga Main deposit is associated with advanced argillic alteration, comprised of kaolinite, dickite, illite and smectite to a maximum depth of 350 m, as confirmed by on-going TerraSpec SWIR/NIR spectroscopy. The sheeted veining and stockwork mineralisation hosted within the diorite are generally associated with intense argillic (illite-smectite ± kaolinite) overprinting of earlier potassic (k-feldspar-biotite-magnetite-quartz) alteration, as evidenced by remnants of potassic alteration locally. The argillic overprint gradually decreases with depth, eventually giving way to largely unaffected potassic alteration beyond 700 – 850 m. At these depths, argillic alteration persists only as local alteration around faults and fractures.

The adjacent monzodiorite which hosts variable mineralisation, including distinctive chalcopyrite-magnetite and chalcopyrite-only veins, is potassic (biotite-k-feldspar-magnetite) altered all the way to the bedrock surface, with a zone of potassic altered microdiorite on its eastern flank. Argillic overprinting of the monzodiorite is limited and largely restricted to faults and fractures. Post-mineral porphyritic diorites are potassic altered at depth and argillic altered at shallower levels, mirroring the alteration of the deposit, but lack any veining. Other post-mineral dykes include basalts and basaltic andesites, that are either fresh or have experienced propylitic (chlorite-magnetite-carbonate) alteration.

Beskauga is interpreted by Arras Minerals to represent a gold-rich porphyry Cu-Au deposit that has been overprinted by high-sulphidation epithermal mineralisation, either through telescoping or due to clustering of multiple porphyry centres in the Beskauga licence that have superimposed alteration and mineralisation on their predecessors. Telescoping is the process of juxtaposing early, deep porphyry mineralisation and later, shallow epithermal mineralisation, usually due to rapid syn-hydrothermal erosion of volcanic paleo surface, leading to the vertical compression of contained ore deposits by > 1 km, usually associated with an increase in Cu-Au grade (e.g., Sillitoe, 1994; Sillitoe et al., 2019). The overprinted portions of the system are characterised by tennantite (±tennantite-enargite) as the major Cu-sulphide species. Telescoping can upgrade the overall prospectivity of a porphyry system considerably as demonstrated by the neighbouring Nurkazghan deposit for example (Shen et al., 2016; Seltmann et al., 2014). The overprinted portion of the Beskauga deposit frequently returns assays exceeding 4 g/t AuEq.

The principal metallic minerals at Beskauga include chalcopyrite, pyrite, tennantite, enargite, bornite and molybdenite, with magnetite and hematite also present. Based upon modelling of whole rock lithogeochemistry for copper species, sub-ordinate tennantite is also inferred. QEMSCAN mineralogy, completed as part of metallurgical test work by Dostyk, indicates that chalcopyrite and pyrite are the dominant sulphides with subordinate tennantite and chalcocite. Both historical and re-assays show that there is a close correlation between gold and copper grades. Sulphides occur as fine-grained disseminations as well as in stockwork veins and veinlets, generally 3–5 mm wide, consisting of quartz-magnetite-chalcopyrite; chalcopyrite-magnetite; quartz-chalcopyrite ± molybdenite; chalcopyrite only; quartz-pyrite ± carbonate; quartz-tennantite ± chalcopyrite, pyrite, bornite, covellite, carbonate; and carbonate ± tennantite veins. Free gold has been identified in polished sections and microprobe analysis showed high fineness (gold – 83.41%, silver – 12.63%).

Prior to Arras Minerals acquiring the Beskauga project, minimal work was completed to determine the geometry and zonation of alteration and mineralisation at Beskauga. This represents a substantial gap in the Project and presents an opportunity to improve modelling and resource extension targeting. On-going work by Arras Minerals to address this gap includes detailed re-logging of all historical drill core for lithology, alteration and mineralisation (including vein types, veining intensity). Additional data routinely collected includes magnetic susceptibility, conductivity, density and TerraSpec SWIR/NIR spectroscopy measurements, together with re-photographing of the historical drill cores.

During 2021, Arras Minerals re-analysed 18 historical drillholes for multi-element lithogeochemistry (by SAEL LLC laboratory in Kyrgyzstan using 4AD ICP-MS and FA-AAS analysis, as described in Chapter 11). The results were announced in company announcements dated 05 and 07 November 2021. The primary objective of the re-assay program was to validate and increase the confidence in the 45,059 meters of historical drilling completed between 2007 to 2017 on the Beskauga deposit, as well as to provide the geochemical tools needed to map alteration and lithology across the deposit. The locations of the holes chosen for re-assay were selected to provide a comprehensive picture across the current deposit, and to test and better understand the edges of the high-grade zones within the deposit. A location map and cross section of the re-assayed historical holes is presented in Figure 14 and Figure 15.

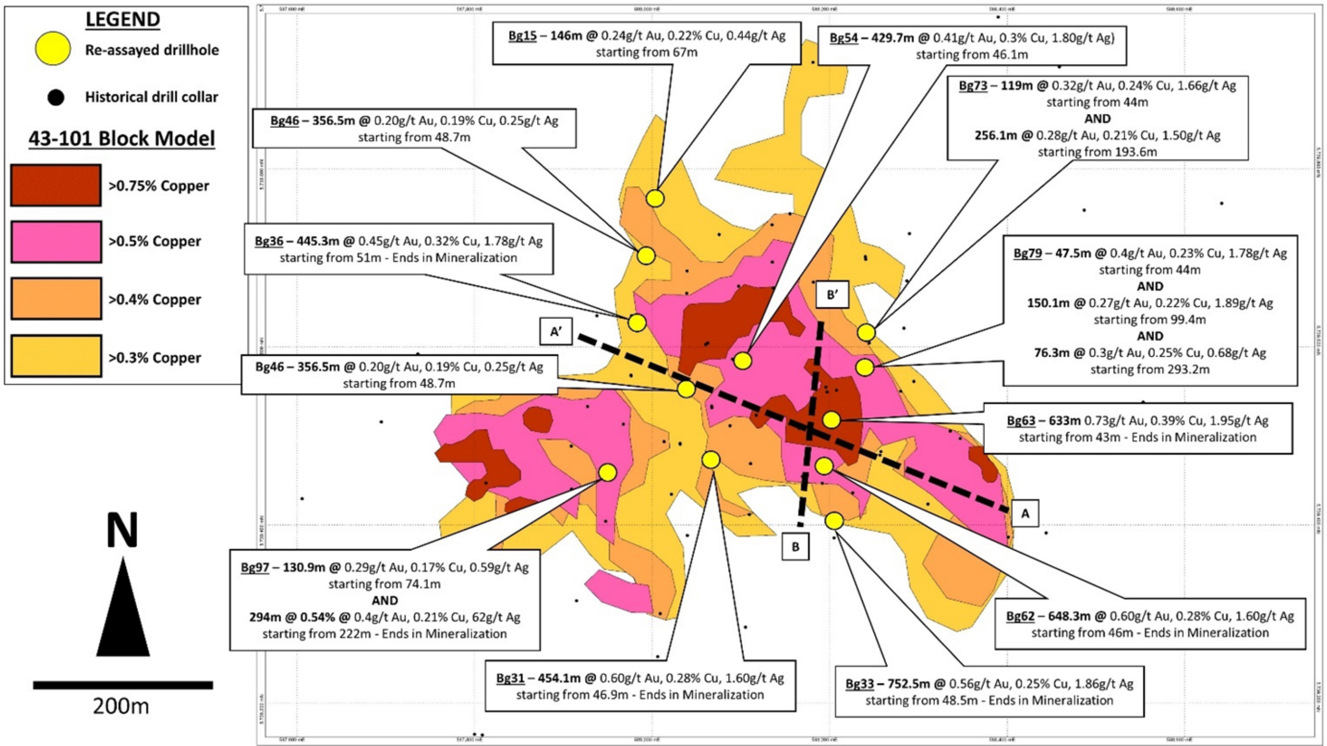

Figure 14. Map of the Beskauga Main deposit showing the high-grade core of the Beskauga deposit surrounded by a halo of lower grade. The highlights of re-assays announced in company announcements dated 05 and 07 October 2021.

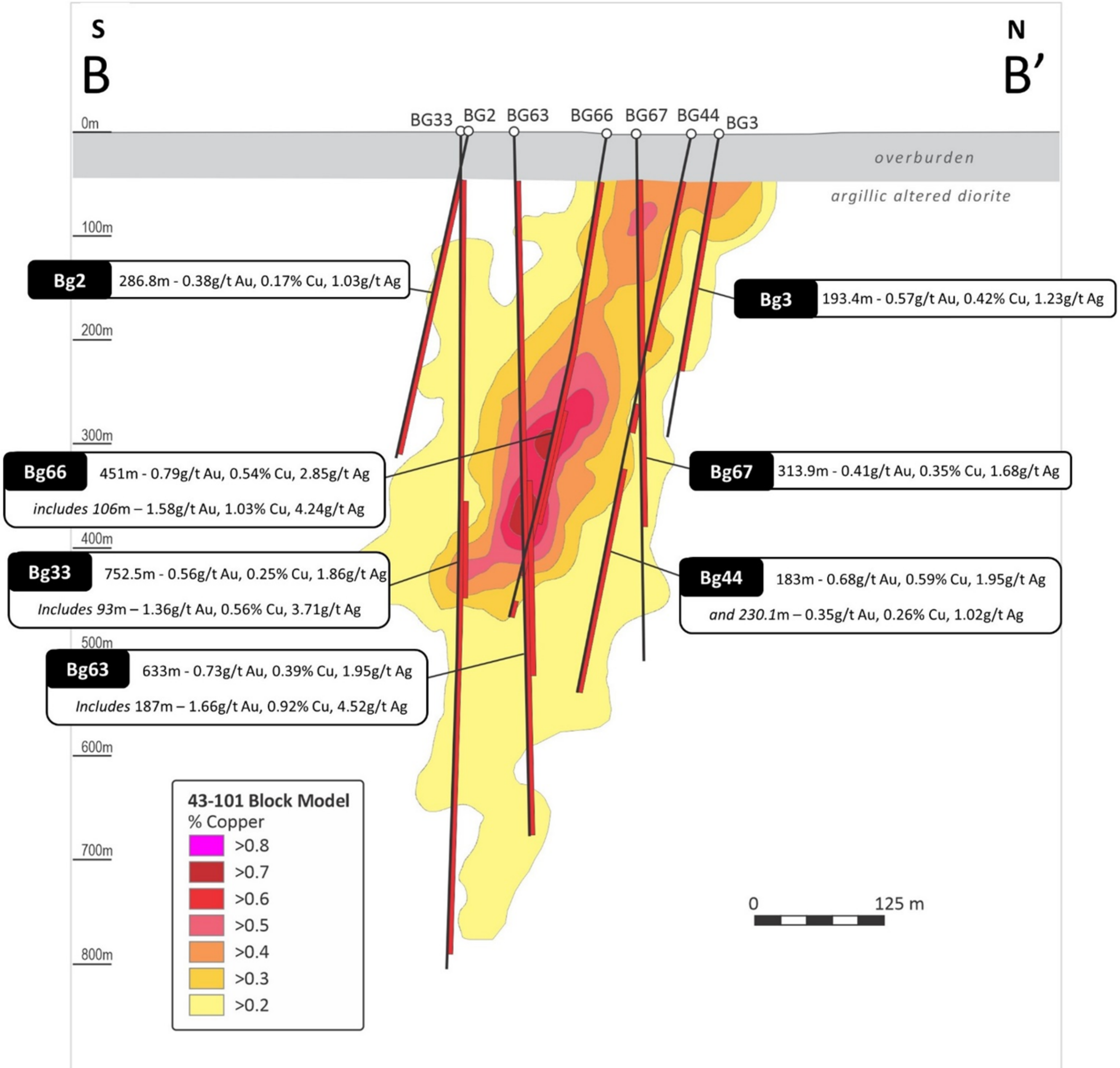

Figure 15. N-S orientated cross section (section B – B') through the Beskauga Main deposit showing the high-grade zone plunging to the S-SW, and highlights of re-assays announced in company announcements dated 05 and 07 October 2021.

The occurrence of significant tennantite at Beskauga is not unusual for gold-rich porphyry systems (USGS database, 2021), particularly those with a high-sulphidation overprint, but does have metallurgical implications as discussed in Section 13. The combination of tennantite with enargite may further support a high-sulphidation overprint as these higher sulphidation-state sulphides are generated progressively shallower in porphyry systems with lower temperatures and hydrolytic alteration.

8 Deposit Types

The Beskauga deposit is interpreted to be a gold-rich, porphyry-style, copper-gold system, associated with calc-alkaline intrusions related to island arc volcanism, during the Ordovician. Porphyry systems host the majority of the world's major copper deposits and are typically high-tonnage and low-grade. Kazakhstan is a proven porphyry copper district and hosts several super-large to giant porphyry deposits (including Kounrad, Bozshakol, Altogai, and Koksai) within the Kazakhstan Orocline of the CAOB. Kounrad was closed in the early 2000's but is being put back into production by its owners, while Bozshakol, Altogai and Koksai are currently in production or under development by KAZ Minerals.

The mineralisation observed in the drill core from the Beskauga deposit is considered to be a gold-rich porphyry copper-gold system that has been overprinted by high-sulphidation epithermal mineralisation, and exploration has been designed with this primary target in mind. The Arras geological team is actively engaged in advancing the understanding of the porphyry system(s) at Beskauga and the potential for further economic porphyry and associated epithermal deposits within the project area. Clustering of porphyry-epithermal deposits is a well-recognised phenomenon within porphyry copper camps around the world.

8.1 Mineralisation styles

At Beskauga and typical of most porphyry deposits, the mineralisation is characterised by disseminated, veinlet- and fracture-controlled copper-iron sulphide minerals, distributed throughout a large volume of rock in association with a halo of hydrothermal alteration related to intrusions, ranging in composition from monzodiorite to diorite.

Owing to their relationship with hydrothermal fluids, porphyry copper deposits such as Beskauga display a consistent, broad-scale alteration-mineralisation zoning pattern, related to the chemistry and evolution of these fluids. In calc-alkaline porphyry deposits, this generally consists of a core of potassium silicate or potassic alteration (characterised by K-feldspar, biotite and magnetite), surrounded sequentially outwards by phyllic, propylitic, argillic and advanced argillic alteration in porphyritic plutons and in the immediate wall rocks (Lowell and Guilbert, 1970; Gustafson and Hunt, 1975). The zone of potassic alteration is of primary importance for copper mineralisation (Figure 15). Phyllic alteration is associated with important tonnages of ore in some deposits but is not present as a distinct alteration type in all deposits (Sillitoe, 2000). Mineralisation occurs at shallow levels (in the upper 4 km of the crust) and typically less in gold-rich porphyries (in the upper 2 km of the crust).

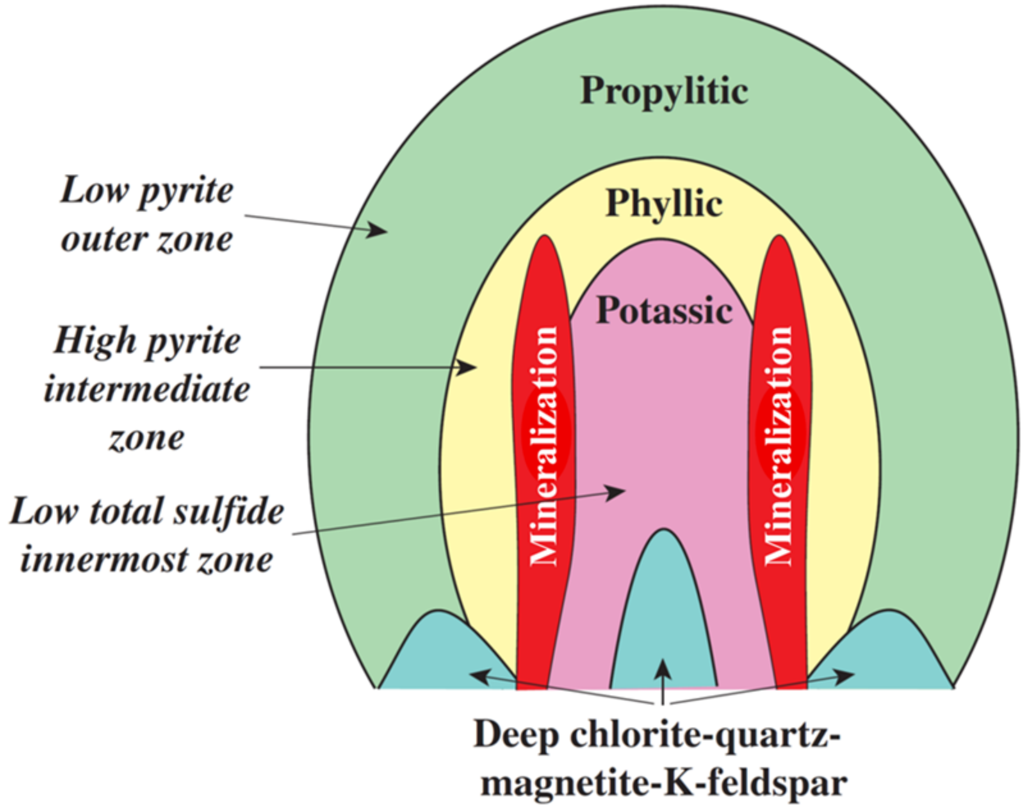

Figure 16. Cartoon cross-section of a porphyry copper deposit. Shows idealized alteration zoning and relationship to mineralisation (from Berger et al., 2008).

Primary (hypogene) copper mineralisation typically occurs as chalcopyrite and bornite, although copper may also occur as tennantite, enargite, and chalcocite (Berger et al., 2008). Deposits may also contain molybdenite and trace amounts of native gold. Other associated minerals may include sphalerite, galena, tetrahedrite (Berger et al., 2008).

8.2 Conceptual Models

Porphyry deposits typically form from magmatic-hydrothermal fluids that have evolved from a voluminous magma chamber at paleodepths of 5 – 15 km below the deposit itself (Sillitoe, 2010). Predating or associated with those fluids are vertical dikes and stocks of porphyritic intrusive rocks from which this deposit type derives its name.

In porphyry systems, there exists a close spatial and temporal link between volumetrically small causative intrusions and broadly dispersed magmatic-hydrothermal alteration and mineralisation. Porphyry copper systems may contain porphyry Cu ± Au ± Mo ± Ag deposits of various sizes ranging from a few million tonnes to several billion tonnes. Typical primary porphyry Cu deposits have average grades of 0.5 to 1.5% Cu, <0.01 to 0.04% Mo, and 0.01 to 1.5 g/t Au, and a few gold-only deposits have grades of 0.9 to 1.5 g/t gold but little Cu (<0.1 %) (Sillitoe, 2010).

Porphyry systems can be causative for different deposits including:

- Porphyry deposits centred on the parent intrusion and its surrounding host rocks
- Epithermal and skarn deposits peripheral to porphyry deposits (skarn related mineralisation has not been identified at Beskauga, but a strong epithermal overprint of the porphyry is observed).
- Carbonate replacement and sediment hosted deposits with increasing distance from the parent intrusion (not identified at Beskauga).

Porphyry deposits occur in linear belts related to composite plutons and convergent plate boundaries either within continental magmatic arcs or island arcs, in association with subduction zones or post-collision volcanism. Porphyry deposits are often located at the intersection of the porphyry belt and intra-arc fault zones, forming at relatively shallow depths of 1 to 4 km and related to magma chambers forming vertical elongate stocks or dyke swarms (Sillitoe, 2010). Several discrete stocks are often emplaced in one area, resulting in spatially and temporally clustered deposits or structurally controlled alignments, which consist of several generations of intermediate to felsic porphyritic intrusions.

In porphyry systems, there is a common upward- and outward-zoning in hydrothermal alteration, characterised by a core of biotite + K-feldspar (potassic, > 300°C), proximal actinolite- through epidote-propylitic (300 to 230°C) to distal chlorite-calcite-propylitic (< 230°C) alteration. In many systems, these early-stage alteration zones are overprinted by transitional-stage chlorite-sericite-clay (intermediate argillic); and late-stage quartz-sericite (sericitic-phyllic) and quartz-alunite-pyrophyllite-dickite (advanced argillic) alteration. A similar zoning in sulphide minerals occurs, characterised by central, higher-temperature bornite-chalcopyrite, proximal chalcopyrite-pyrite and distal, lower-temperature pyrite-chalcopyrite-sphalerite-galena. This last assemblage is common in the late-stage, epithermal veins that locally flank porphyry centres (Figure 18).

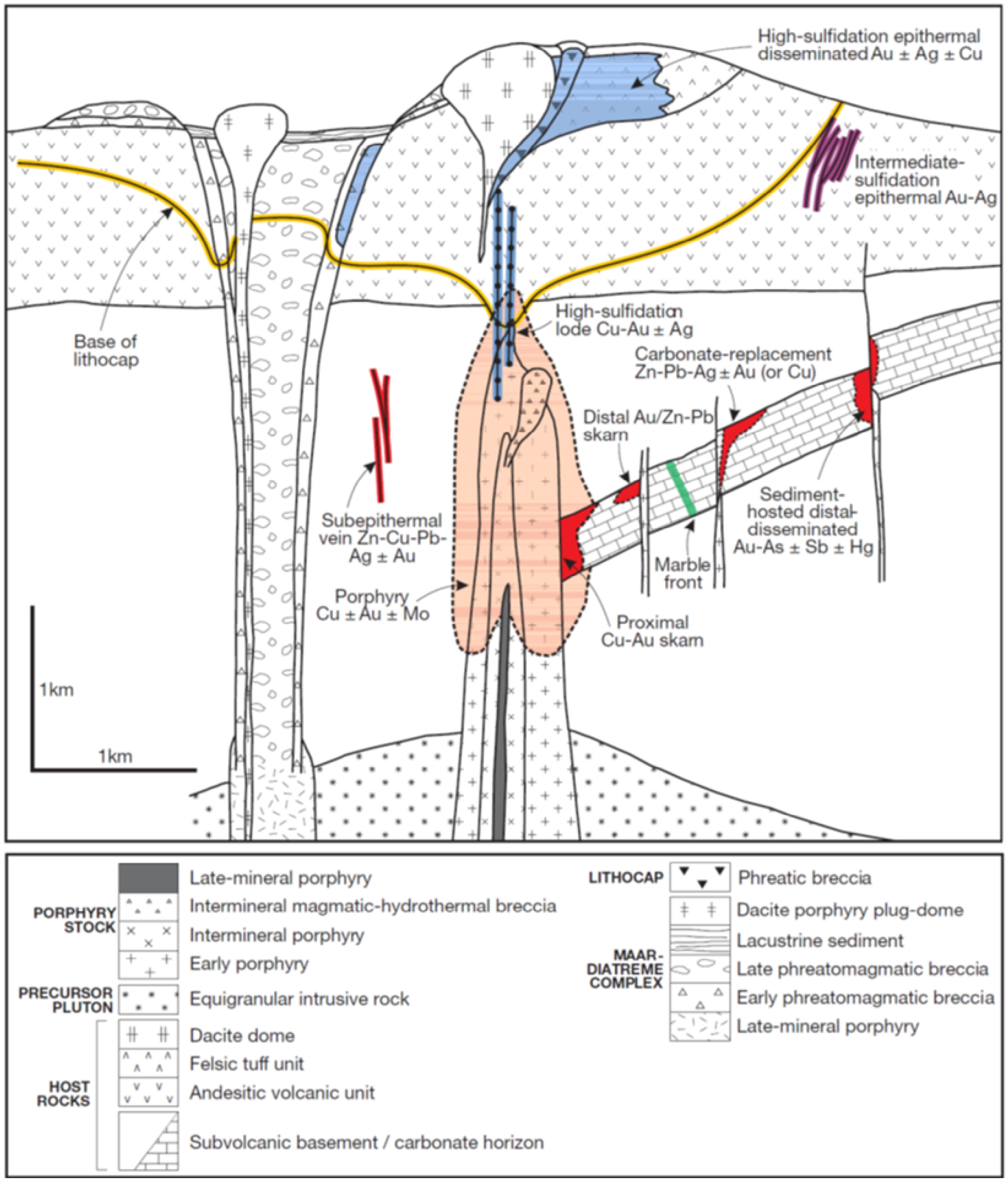

Figure 17. Anatomy of a porphyry mineral system. Shows the spatial relationship between a centrally located porphyry deposit with skarn, carbonate-replacement, sediment-hosted and epithermal vein type deposits. From Sillitoe (2010).

Porphyry deposits form as a result of precipitation of mineralisation from magmatic fluids enriched in metals and derived from intrusions emplaced shallower than 4 km depth. This shallow emplacement depth results in early vapour saturation and the formation of a chlorine-enriched magmatic fluid that can effectively scavenge copper and other metals from the relatively unfractionated magma. The parental magmas need to be sufficiently water rich to allow saturation of the magma with the fluid phase and need to be oxidised in order to suppress magmatic sulphide which may sequester metals before they can partition into the aqueous phase (Sillitoe, 2010).

When a porphyry deposit begins to form, potassic alteration occurs in the core of the up-flow zone of the mineralizing magmatic fluid. Cooling of the fluid over the ~550°C to 350°C range, assisted by fluid-rock interaction, is largely responsible for precipitation of the mineralisation at the margins of this core zone. The thermal gradient associated with this high-temperature up-flow zone leads to convection of surrounding ground waters that results in a peripheral propylitic alteration zone (Berger et al., 2008). Phyllic alteration crosscuts potassic alteration and is thought to form from a mixture of meteoric and magmatic fluids.

The general characteristics of porphyry systems are:

1. Small diameter (<2 km) causative intrusions of intermediate to felsic composition.
2. Shallow levels of emplacement (typically 1-4 km).
3. Porphyritic texture of causative intrusions, where feldspar, quartz and mafic phenocrysts are contained in a fine-grained to aplitic groundmass.
4. Multiple phases of intrusion, pre-, syn- and post-ore; late-stage diatremes are common.
5. Several stages of hydrothermal alteration associated with each mineralising intrusion.
6. Extensive development of fracture-controlled alteration and mineralisation in both porphyritic intrusions and adjacent wall-rock
7. A progression from early, discontinuous and irregular veins and veinlets (“A veinlets”) through transitional, planar veins (“B veins”) to late, through-going veins (“D veins”) and breccia bodies (vein terminology follows that of Gustafson and Hunt, 1975)
8. A progression in hydrothermal alteration from early, proximal potassium silicate and distal propylitic styles to late sericitic / phyllic, advanced and intermediate argillic alteration types
9. Sulphide and oxide minerals which vary from early (bornite)-magnetite through transitional chalcopyrite-pyrite to late pyrite-(hematite), pyrite-enargite or pyrite-bornite
10. Fluid inclusion studies indicate that early alteration and copper mineralisation are generated by magmatic fluids with 30 to >60 wt. % NaCl equivalent, over a temperature range of 400^{o} to >700^{o}C. Whereas the fluids related to late alteration and mineralisation commonly include a meteoric component and are more dilute (<15 wt. % NaCl equivalent) and lower in temperature (200^{o} to 400^{o}C).

9 Exploration

The following section details exploration carried out at Beskauga by Dostyk between 2007 and 2017 and by Arras Minerals in 2020 to 2021. Apart from diamond and KGK drilling (detailed in Section 10 below), the primary exploration technique has been geophysics.

9.1 Geophysics

In 2012, Dostyk undertook a ground-based magnetic and IP survey over the main Beskauga deposit area. Both the magnetic and IP surveys were completed SPC Geoken LLP, a local geophysical service provider.

The survey points for the magnetic survey were collected at 20 second intervals with a variable line spacing of 200 m to 400 m using a Proton Precession Magnetometer MM-61. The results of the magnetic survey show several relative magnetic highs >1000 nT which present interesting targets for follow-up exploration. Drilling by Arras Minerals in 2021 has demonstrated one of the magnetics highs to be associated with a mineralised and intensely potassic altered monzodiorite intrusion.

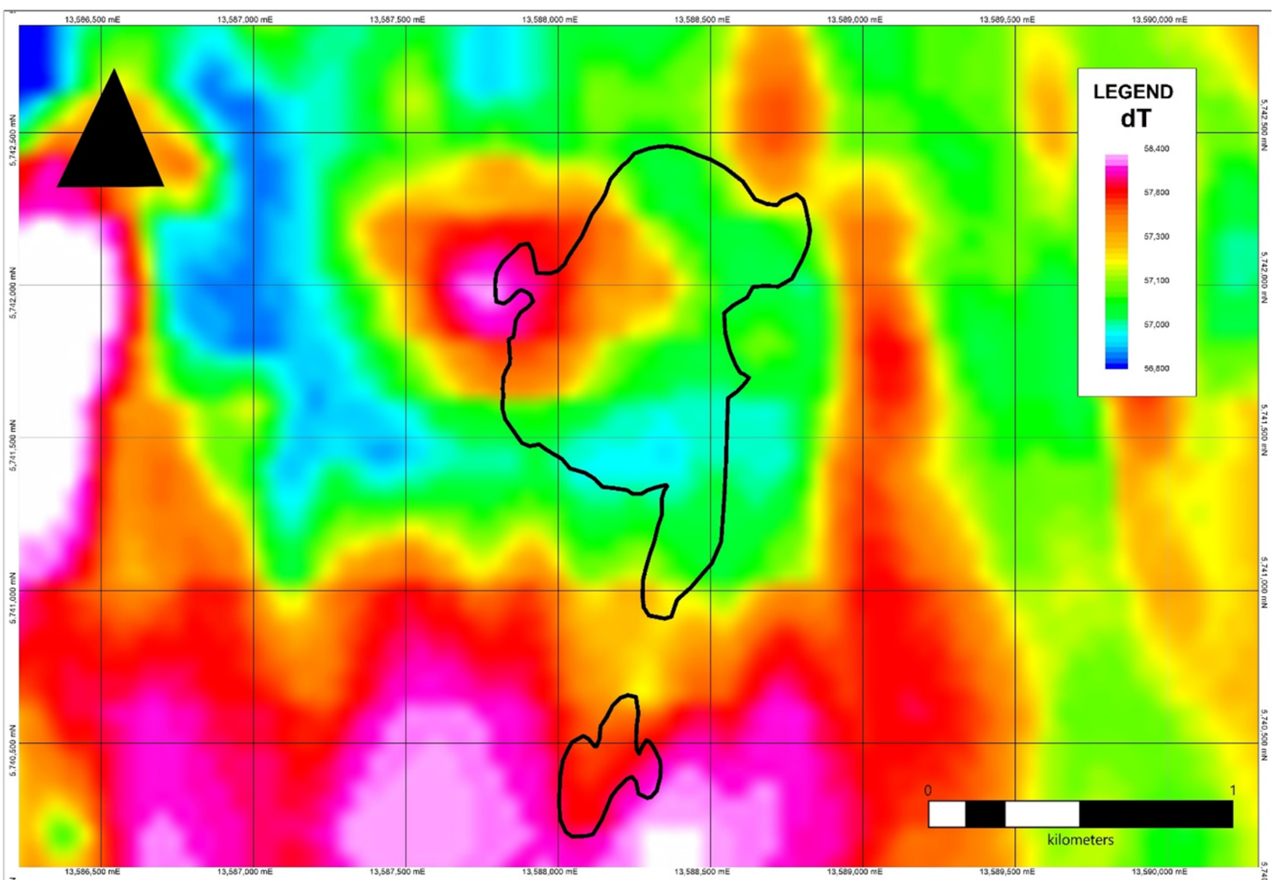

Figure 18. Magnetic anomaly map (Total Magnetic Intensity) and grid points for the magnetic survey. Black outline indicates area of the main deposit (Source: Arras airborne magnetic survey 2021)

The survey points for the IP dipole-dipole survey were taken on 100 m centres with a 400 m line spacing using a Zonge GGT 30 kW transmitter. The chargeability data shows a spatial correlation with the known mineralisation defined by drilling and indicates that the mineralising system may be much larger than the historically defined area. The area of anomalous chargeability is ~9 km2, comparable to many known large porphyry copper-gold deposits of the world.

The fact that chargeability values increase with depth, suggests that the deposit drilled thus far lies in the upper portions of the mineralised porphyry system, with an insignificant erosional truncation. This correlates with the mineralogy and alteration types identified in drilling to date suggesting that only the upper epithermally overprinted part of a system has been tested. In 2021, Arras Minerals commissioned Condor Consulting Limited to carry out re-processing of the 2012 IP dipole-dipole survey data and the resulting chargeability anomalies are currently being drill tested by the company.

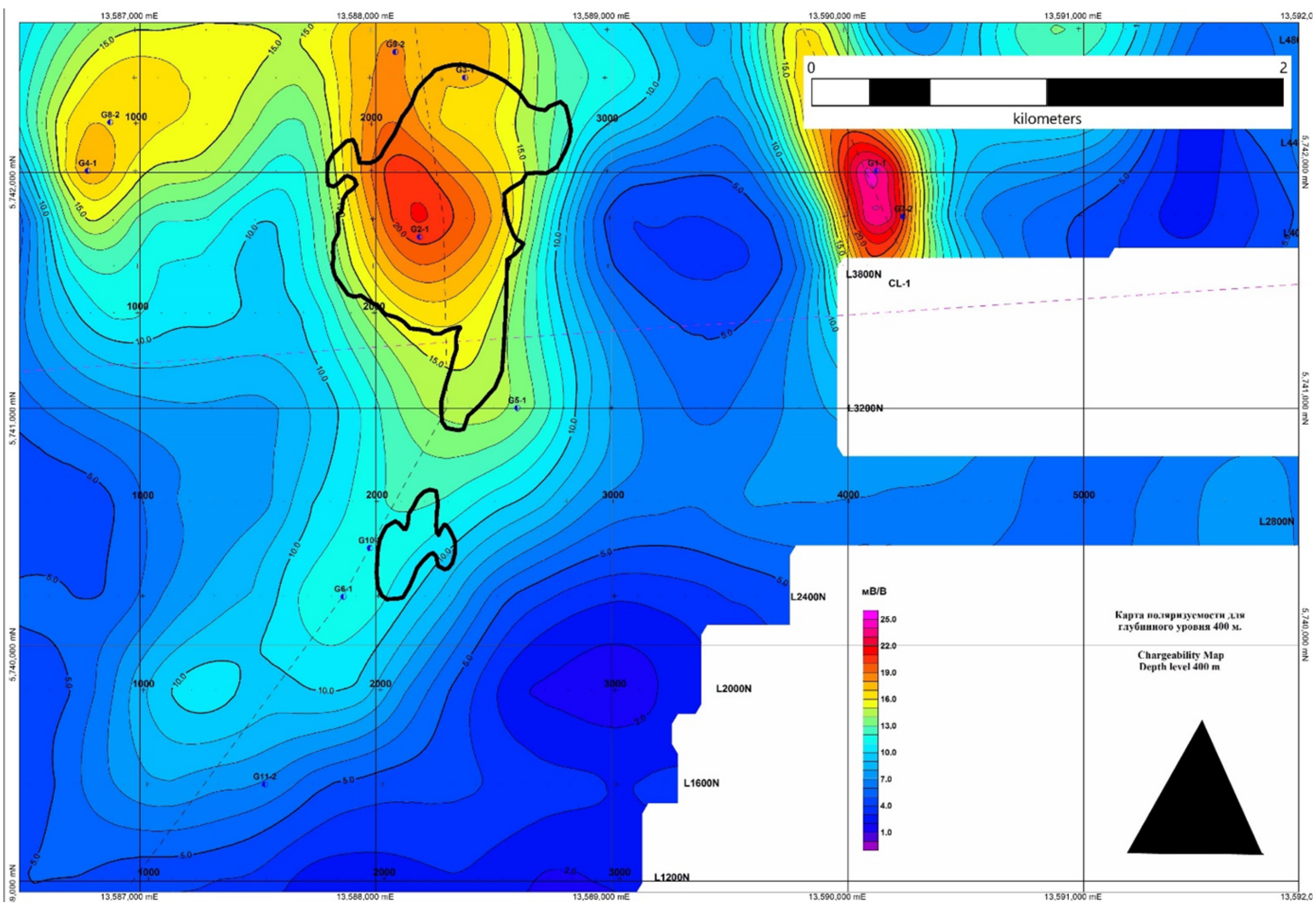

Figure 19. IP anomaly map of chargeability over the Beskauga deposit – depth slice at 300 m. Black outline indicates area of the main deposit. (Source: Dostyk IP survey 2012)

In 2021, Arras Minerals commissioned SPC Geoken LLP to conduct a high resolution airborne magnetic survey, over the Beskauga and neighbouring Ekidos and Stepnoe licence areas with flight lines oriented east-west. The survey was flown at 70 m ground clearance with a line spacing of 100 m and tie-lines of 1000 m. QA/QC and inversion of the resulting magnetic data was carried out by Francis Moul P.Geo., a Principal Geophysicist at Condor North Consulting, ULC., Vancouver.

9.2 Exploration at Beskauga

Because the entire Beskauga licence is covered by a blanket of recent sediments between 10 to 40 meters thick, there is no outcrop in which to conduct geological mapping. Furthermore, the sediment is too deep to allow for other traditional exploration methods such as trenching or soil sampling. To this end, exploration relies relies on geophysics to "see through cover" followed up by drilling (core and KGK) which targets geophysical anomalies or does small step outs from known mineralization in order to define the boundaries of the deposit.

9.3 Regional Evaluation

Arras Minerals, via its 100% owned subsidiary Ekidos LLP, has staked two 450 square km exploration licences immediately adjoining the Beskauga project (Stepnoe and Ekidos), with the intention of exploring the surrounding region. At the time of writing, work has yet to commence on this additional ground.

Arras Minerals is currently integrating an abundance of data, both public and private, on the regional area around Beskauga. The public information is from work conducted during the Soviet era and includes regional geophysical surveys as well as 1:250,000 and 1:50,000 scale geological mapping. This data forms a valuable initial basis for prospect evaluation when used with targeted stratigraphic and structural analysis. In addition, Arras Minerals has used Landsat and ASTER images to develop hydrothermal alteration models for selected target areas where there is no overburden.

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10 Drilling

10.1 Introduction

During the period 2007-2017, the main deposit at Beskauga was extensively drilled from surface by diamond core for a total of 118 holes, of which 101 are included in the Beskauga Mineral Resource estimate. During the same period, Dostyk LLP also drilled 1606 shallow hydraulic-core lift drillholes (KGK). This KGK or hydraulic-core lift drilling is a system designed during the Soviet era for geochemical sampling and geological mapping of bedrock beneath cover sediments. These KGK drillholes are therefore not used for determining the Mineral Resource estimate.

During 2021, Arras Minerals commenced infill diamond drilling within the Beskauga Main deposit with the purpose of increasing and improving confidence in the previously estimated resource, as well as upgrading the Mineral Resource to the Measured classification. In addition, step-out diamond drilling is planned to close off open mineralisation on the flanks of the deposit and to test multiple geophysical and geochemical targets outlined within the Beskauga licence. During the year, drilling of 4 diamond drillholes for 3,694.7 m and 386 KGK drillholes for 19,526 m was completed.

Figure 20. TzentrGeolSyomka LLP – CDH-1600 diamond drill rig (left) and KGK drill rig on right (Photo - Arras Minerals 2021)

10.2 Diamond drilling

10.2.1 Historical drilling pre-2007

During the Soviet exploration era (1981-1990), the Beskauga area saw significant shallow drilling on a 200 by 200 meter grid (partially infilled at 200 by 100 meters) through the overlying Quaternary and Eocene cover to sample the underlying bedrock. A total of 411 holes were drilled during this period for an aggregate of 15,063 meters. None of the core or original assay data is available from this work but Dostyk LLP obtained the reports from the drilling campaign and used this as the basis for staking the ground in 2007.

In addition to the shallow prospecting holes, a further 20 holes were drilled to depths of 100 to 200m for a total of 3,818 meters. This drilling was performed by ZIF-300, ZIF-650 and SBA-500 drill rigs and used tungsten carbide and diamond bits. These drillholes had a diameter of 59 mm and were drilled at angles between 75 and 80 degrees towards the southeast. Core recovery in all drill-holes for the period 1981-1990 was between 60 and 80%.

Drilling data from this period was not used in the Mineral Resource estimate.

10.2.2 Dostyk LLP Drilling 2007-2017

A total of 118 diamond drillholes for 45,605.8 m were completed by Dostyk LLP between 2007 and 2017 (Table 5). Diamond drilling was performed by contractor CenterGeolSyomka LLP using SKB-5M drill rigs and Boart Longyear tooling. Drilling was done at either HQ or NQ diameter depending on the depth of the hole, which ranged from 150 m to 815 m.

Of the 118 diamond drillholes completed, 101 have been used for the Mineral Resource estimate (Table 6).

Table 6. Summary table of the diamond drilling conducted by Dostyk between 2007 and 2017

Year	No. of holes	Drilled (m)
2007	16	4,714.3
2008	6	1,671.0
2009	7	2,130.7
2010	6	3,639.5
2011	18	7,960.1
2012	9	2,918.5
2013	8	3,806.0
2014	19	7,732.1
2017	29	11,033.6
Total	**118**	**45,605.8**

Table 7. Collar positions, lengths, and orientations of 2007-2017 diamond drillholes at Beskauga Main used for the Mineral Resource estimate

Hole ID	X	Y	Z	Length	Azimuth	Dip	Year
Bg-1	588110.9	5739469	127	309	123.5	-70	2007
Bg-2	588169.4	5739454	126	333	124.5	-70	2007
Bg-3	588135.5	5739695	126	310.3	114.5	-69.5	2007
Bg-4	588399.9	5739998	126	192.5	143.5	-69.75	2007
Bg-5	588458.9	5739914	126	250.5	129.5	-69.75	2007
Bg-6	588243.5	5739610	127	304.6	116.5	-69.5	2007
BgS-7	588314.6	5738834	126	304.5	109.5	-70	2007
BgS-8	586981.7	5737959	126	307.6	49.5	-70	2007
Bg-9	588444	5739391	127	305	114.5	-70	2007
BgS-10	588208.2	5738652	126	168.1	114.5	-70	2007
BgS-11	587007.1	5737697	126	403	54.5	-70	2007
Bg-12	588075.6	5739726	127	152.2	117.5	-70	2007
BgS-13	586681.3	5738673	126	304	54.5	-69	2007
BgS-14	586660.3	5739431	126	306	77.5	-68	2007
Bg-15	588027.6	5739754	127	425	119.5	-70	2007
Bg-16	588013.4	5739494	127	339	124.5	-70	2007
Bg-17	588105.1	5739285	127	312.2	112.5	-70	2008
Bg-18	588336.1	5739060	127	276.6	112.5	-70	2008
Bg-19	588181.3	5739919	126	305.7	160.5	-70	2008
Bg-20	588239.4	5739077	127	338	97.5	-70	2008
Bg-21	588009.1	5739300	127	193.4	89.5	-70	2008
Bg-22	588341.8	5740083	127	245	164.5	-70	2008
Bg-23	587927.3	5739533	127	318.7	14.5	-70	2009
Bg-24	587937.9	5739635	127	337	14.5	-70	2009
Bg-25	587736.1	5739592	127	348	14.5	-72.5	2009
Bg-26	588226.1	5739436	127	254	111.5	-70	2009
BgS-27	588168.9	5738053	126	251	99.5	-70	2009
Bg-29	588117.4	5738051	125	301	99.5	-70	2009
BgS-30	588028.9	5738054	125	406.4	99.5	-70	2010
Bg-31	588071.8	5739479	126	501	114.5	-71	2010
Bg-32	587967.5	5739513	126	504.1	112.5	-70	2010
Bg-33	588188.9	5739448	126	801	0	-90	2010
Bg-34	588006.4	5739252	126	741.2	100.5	-75	2010
Bg-35	587853.6	5739561	126	685.8	112.5	-75	2010
Bg-36	587987.8	5739631	127	633	119.5	-70	2011
Bg-37	588105.2	5739587	126	522.4	117.5	-70	2011
Bg-38	587694.9	5739516	126	271.6	29.5	-70	2011
Bg-39	588191.3	5739670	126	622	144.5	-75	2011
Bg-40	588207.7	5739551	126	392.3	114.5	-70	2011
Bg-41	588336	5739505	127	617.4	299.5	-70	2011
Bg-42	588641.8	5739761	127	300.4	0	-90	2011
BgS-43	587789.7	5737044	125	280.3	69.5	-72	2011
Bg-44	588097.5	5739668	126	568	124.5	-70	2011
Bg-45	588266.9	5739186	126	375.2	114.5	-70	2011
Bg-46	587989.5	5739703	126	527	122.5	-70	2011
BgS-47	587898.3	5738345	126	485	99.5	-70	2011
Bg-48	588486.8	5739753	127	355	99.5	-70	2011
BgS-49	587698.6	5737058	125	299.9	99.5	-70	2011
Bg-50	588401.3	5739386	126	605.7	299.5	-70	2011
BgS-51	587754.4	5737061	125	221.9	99.5	-70	2011
BgS-52	588078	5738150	126	350	105.5	-70	2011
Bg-53	588031.6	5739491	126	533.1	107.5	-70	2011
Bg-54	588103	5739572	126	525.4	0	-90	2012
Bg-55	588165.4	5739508	126	726	0	-90	2012

Hole ID	X	Y	Z	Length	Azimuth	Dip	Year
Bg-56	588117.2	5739523	126	732.1	0	-90	2013
Bg-58	588289.9	5739727	127	506.5	120.5	-90	2013
BgS-59	587580.2	5737077	126	304.3	0	-90	2012
BgS-60	587833.2	5737081	127	259	196.5	-76.2	2012
BgS-61	587672.4	5737074	126	301	259.5	-75	2012
Bg-62	588205.9	5739386	127	694.3	29.5	-90	2013
Bg-63	588209.6	5739500	127	676	29.5	-90	2013
Bg-64	588257.8	5739482	127	681.7	29.5	-90	2013
Bg-65	588067.3	5739531	127	565.5	29.5	-88.6	2013
Bg-66	588110.4	5739588	127	500	114.5	-69.9	2013
Bg-67	588190.3	5739617	128	509	294.5	-88.9	2014
Bg-68	588198	5739725	126	394.5	125.5	-89.7	2014
Bg-69	588240.6	5739698	126.5	451.5	114.5	-89.1	2014
Bg-70	588155.4	5739749	126	379	233.5	-87.8	2014
Bg-71	588181.7	5739673	126	430	124.5	-88.4	2014
BgS-72	587907.2	5737128	127	308	231.5	-76.8	2014
Bg-73	588239.7	5739643	127	510	99.5	-88.4	2014
Bg-74	588197.2	5739549	127	500	121.5	-88.8	2014
BgS-75	587569.1	5736916	125	300	71.5	-70	2014
Bg-76	588109.6	5739412	127.7	659	4.5	-88.9	2014
Bg-77	588060.3	5739602	129	500	139.5	-88.8	2014
Bg-78	588283.8	5739621	127.053	300	184.5	-88.9	2014
Bg-79	588242.4	5739591	127.18	369.5	135.5	-88.8	2014
Bg-80	588039.3	5739685	126.975	500	104.5	-71.8	2014
Bg-81	588023	5739557	127.158	496.7	178.5	-89.5	2014
Bg-82	587976.7	5739635	127.22	330	339.5	-88.1	2014
Bg-83	587971	5739715	127	197.3	129.5	-88.5	2014
Bg-84	587976.3	5739567	127.339	300	194.5	-88.1	2015
Bg-85	587833.4	5739386	127.257	297.6	109.5	-78	2015
BgS-86	587518.2	5737072	126.508	147.1	0	-90	2016
BgS-87	587576.5	5737003	126.315	150.6	0	-90	2016
BgS-88	587681.9	5736997	126.407	221.3	0	-90	2017
BgS-89	587578.6	5736875	126.054	158.6	0	-90	2017
BgS-90	587829.4	5737054	126.671	161.7	0	-90	2017
BgS-91	587659.9	5736880	126.338	213.6	0	-90	2017
BgS-92	587755.6	5737030	126.401	150.4	0	-90	2017
Bg-93	588295	5739561	127.145	540.3	0	-90	2017
Bg-94	588347.2	5739497	127.084	500.4	0	-90	2017
Bg-95	587909.2	5739440	126.955	585	0	-90	2017
Bg-96	588021.7	5739434	127.038	502.2	0	-90	2017
Bg-97	587951.4	5739457	126.988	516	0	-90	2017
Bg-98	587947.7	5739404	127.055	528.7	0	-90	2017
Bg-99	587812.7	5739447	127.11	484.5	0	-90	2017
Bg-100	588223.7	5739771	127.145	275.8	0	-90	2017
Bg-101	588008	5739768	126.706	195	0	-90	2017
Bg-102	588287.1	5739674	127.248	373	0	-90	2017
Bg-103	587909	5739489	127.1	497.4	0	-90	2017

10.2.2.1 Collar Surveying

The coordinates of drill collars were determined using a high precision single-frequency 12-channel GPS Trimble R3 base station and mobile receiver with GPS antenna on a telescopic rod.

10.2.2.2 Downhole Surveying

All drillholes (including vertical holes) have downhole surveys completed by the drilling contractor using an IEM-36 survey instrument (a Soviet/Russian instrument for use in a non-magnetic environment). Surveys were completed every 20 m of the downhole length and were taken after the drilling has been completed, before closing the drillhole. All related documents are kept at the Dostyk head office in Almaty.

10.2.2.3 Core Logging and Photography

Primary field logging was performed at the Dostyk LLP base camp after core delivery from drilling sites. A logging geologist was responsible for tracing the mineralized zone boundaries, recording drilling runs and the definition of core recovery ratios.

Prior to logging, the core was placed onto special tables where it was thoroughly washed and photographed. The core was described in field core logs based on a system of coding and the data recorded into logging blank forms and captured digitally.

Intervals to be sampled were determined by the logging geologist on the basis of geological parameters. The sample length was generally between 0.5 m and 1 m, with a lesser proportion up to 2 m. Upon completion of logging the drill core was marked along the long axis to be split in half for sampling.

10.2.2.4 Core Sampling

All samples were prepared for wet chemical analyses at the Dostyk LLP sample preparation facility located on site. Core sampling was performed by cutting the core along long axis into two equal portions using a diamond saw. One half of the core was sampled and sent to the laboratory for assay, whereas the other half was retained to serve as a library sample which could be used for future duplicate sampling, for additional test work or for petrography and mineralogy studies.

10.2.2.5 Significant Intervals

Table 8. Significant intervals drilled at Beskauga in 2007-2017 (>100 m intervals at >0.3 g/t Au)

Drillhole name	From (m)	To (m)	Intercept (m)	Au (g/t)	Cu (%)
Bg1	45.1	309	263.9	0.41	0.2
Bg2	46.2	333	286.8	0.38	0.17
Bg3	48	241.4	193.4	0.57	0.42
Bg31	46.9	501	454.1	0.6	0.29
Bg32	47	504.1	457.1	0.42	0.28
Bg33	48.5	801	752.5	0.54	0.26
Bg36	51	496.3	445.3	0.43	0.33
Bg37	46	431.7	385.7	0.81	0.53
Bg39	44.7	200.9	156.2	0.36	0.36
Bg40	45	184.6	139.6	0.32	0.18
Bg41	208.2	509.7	301.5	0.74	0.43
Bg44	47.6	230.6	183	0.68	0.59
Bg44	47.6	182.9	135.3	0.85	0.71
Bg44	337.9	568	230.1	0.35	0.26
Bg47	341	482	141	0.34	0.09
Bg53	115	352.4	237.4	0.33	0.2
Bg53	399.9	533.1	133.2	0.34	0.15
Bg54	46.1	484.2	438.1	0.37	0.31
Bg55	43.5	471.2	427.7	0.58	0.3
Bg55	233.1	365.8	132.7	0.71	0.47
Bg56	62.1	267.4	205.3	0.34	0.26
Bg56	280.3	509	228.7	0.55	0.39
Bg62	45.7	694.3	648.6	0.33	0.13
Bg63	43	676	633	0.62	0.4
Bg64	46.5	681.7	635.2	0.48	0.24
Bg65	45	565.5	520.5	0.38	0.3
Bg66	49	500	451	0.79	0.54
Bg67	46	407	313.9	0.41	0.35
Bg74	42	500	398.4	0.66	0.42
Bg77	45.2	396	350.8	0.56	0.36
Bg81	125.8	302	176.2	0.35	0.33

10.2.3 Arras Drilling 2021

During 2021 four deep diamond holes were drilled for a total of 3,694.7 m. Diamond drilling was performed by contractor CenterGeolSyomka LLP using CDH-1600 drill rigs with Boart Longyear tooling. All holes were started with HQ diameter and then reduced to NQ diameter for the deeper portions of each hole, which ranged in depth from 404.7 m to 1164.3m. Core recovery was greater than 95% on average. Arras Minerals have integrated the historical databases with the current/ongoing drilling program and all 4 diamond holes are included in Mineral Resource estimate (Table 8).

Table 9. Collar positions, lengths, and orientations of 2021 diamond drillholes at Beskauga Main used for the Mineral Resource estimate

Hole ID	X	Y	Z	Length	Azimuth	Dip	Year
Bg-21001	588136.45	5739666.01	127	1017.2	180	-70.0	2021
Bg-21002	588497.72	5739287.06	127	1108.50	310	-70.0	2021
Bg-21003	587605.67	5739429.39	124	404.70	180	-70.0	2021
Bg-21004	588038.99	5739660.01	124	1164.30	180	-70.0	2021

10.2.3.1 Drillhole location and collar survey

The drillhole collar field location is marked using a handheld GPS to an accuracy of 1 m. Once the position of drillhole collar is defined, it is marked up using a stake labeled with the hole ID, azimuth, and dip (the stake is either painted or marked with fluorescent tape). Once the planned hole has been marked up, the drill platform is constructed (usually by an excavator or bulldozer) based on the requirements of the drilling equipment.

Once the drill rig has been installed and set-up based on the stakes and/or flagging tape line, the geologist completes a pre-start check ensuring that the drill rig is on the correct platform, the hole ID is established, and the azimuth and inclination of the drill coincides with the information on the proposed drillhole list.

After completion of each drillhole, the final collar survey is made with high precision Leica GS18 GNSS real time kinematic positioning system device.

10.2.3.2 Downhole Surveying

All drillholes have downhole surveys completed by the drilling and survey contractors using an IEM-36 and GIS-43 survey instruments (a Soviet/Russian instrument for use in a non-magnetic environment). Surveys were completed every 20 m of the downhole length and were taken after the drilling has been completed and before closing the drillhole.

10.2.3.3 Core Handling

Core is initially handled by the drill crew, correctly oriented with regard to the down hole direction and then placed directly in pre-marked wooden core boxes. Core boxes are labeled with the drillhole number, box sequence and from-to depth recorded in permanent marker. The core is placed in the trays starting from the bottom left corner. The core is placed neatly in the trays. Core breaks are clearly identified by marking the core on both sides of all such breaks with an “X”. To ensure that pieces of core are not lost, rotated end for end, or misplaced in the tray, the operator reconstructs the core after it has been placed in the tray. Wooden block markers are inserted by the driller to record depth and any core loss.

A Reflex ACT IIID electronic core orientation tool and barrel is used for orienting and marking core. The barrel is oriented using the electronic orientation unit prior to the drill run. The full, oriented barrel is then retrieved, the core aligned and marked using a bottom hole convention. The down hole direction is marked at the end base of the core. The core is marked with a red marker at regular intervals to record the down hole direction.

For transportation, core boxes lids were fitted and boxes were firmly secured with strapping in the transport vehicle.

10.2.3.4 Geotechnical logging

After the core reaches the core yard it is carefully washed, core box labels checked and meter marks for 1 meter intervals added. A trained geotechnician records the geotechnical characteristics of the rock including rock quality designation (RQD) and detailed core recovery. Core with drilling orientation marks is carefully placed on angle iron channels and aligned with adjacent core intervals - ideally several core runs are placed together to provide an overview of a number of drill core runs so that core orientation line and core cutting line can be drawn consistently over the drill core.

Logging records include:

- Depth from/to
- Core diameter
- Recovery

- Rock quality designation
- TerraSpec readings (one per meter)
- Mag Susceptibility readings (two per meter)
- Specific gravity (one per meter)
- Core and QA/QC sample ID
- Core box Photo ID

10.2.3.5 Drill core logging

After core is oriented, geological structures are measured based on alpha, beta angles relative to the orientation line. True orientations of features are determined using a conversion calculation in Excel.

Geological logging is recorded using a digital logging form that provides an extensive geological description through a system of codes for lithology, alteration, mineralisation, weathering, and vein descriptors. Logging records include the prospect name, hole ID, person logging, date of logging, depth from/to:

- Lithology
  - Rock type
  - Color
  - Texture
  - Oxidation
- Alteration
  - Alteration type 1 to 2
  - Alteration minerals 1 to 4
  - Alteration intensity
- Veins
  - Vein type
  - Veins per meter
  - Average vein thickness
- Mineralisation
  - Mineralisation Style 1 to 2
  - Mineralisation Type 1 to 3
  - Mineralisation Pct for MinType 1 to 3
- Structure type
  - Alpha (dip of structure)
  - Beta (strike of structure)
  - Angle to core axis
  - Core orientation confidence
  - Type of lode (if known).

All logging data is captured digitally and then transferred to Microsoft Access Data Base. Once imported into the database, all data is validated and undergoes QA/QC.

This logging detail is considered appropriate for the nature of the open pit mineralisation and suitable for Mineral Resource estimation and related studies.

Core Photography

Prior to cutting, all drill core is routinely photographed. The photographs are of a high quality so that the texture and fabric of the rock as well as the structure and vein patterns are clearly visible. The core may be photographed both dry and wet. The color and texture of the rock are best seen when the core is wet but the fracture patterns which are important to the geotechnical study are best viewed when the core is dry. The core is washed with water using a hand sprinkler.

Core boxes are placed in sequential order on the table where photos are taken. The interval and box number of each core box is written on the side of the box with a permanent marker. Core photographs are taken after the core has been oriented and returned to the core tray with the reference line facing the bottom edge of the tray so that any structures or fabric in the rock are consistently aligned. The meter marks and core blocks must be clearly visible. Photos are downloaded after each day and named in an acceptable format for storage on the server for a digital photographic record for the drill core.

10.2.3.6 Core Cutting

Once logged, the core is carefully marked for sampling. Core boxes are arranged in an organized manner by placing one next to the other horizontally on an appropriate stand. The core is carefully removed and placed in the core holder such that it fits and can be taken out easily. The core is cut completely in two halves using an electric diamond blade saw. For core duplicate samples, the left part of the halved core is cut again into quarters. Cut core is removed from the core holder and replaced in its original position in the core tray.

The standard protocol is that the cut is made along core cutting line, 2 cm to the left in a down hole direction of the orientation line, with the right side being retained and the left half broken up for assay. In the upper zone, where the core is too friable for diamond saw cutting, the core is dry cut or cleaved.

10.2.3.7 Core Storage

After samples are dispatched to the laboratory, drill core boxes are sent for final storage with the front of the boxes labeled by drillhole ID, box number and from and to depths. The core yard facility located in Ekibastuz has spacious core logging facilities, a dedicated XRF/spectrometer office, a dedicated core saw/splitter facility, covered core storage with racking, and enclosed storage for pulps.
The storage facility consists of sheds with elevated racks on concrete floors that are sheltered from wind and rain. The core is stored following geological logging, photography, core cutting and sampling.

10.2.3.8 Significant Intervals from 2021 drill program

Table 10. Significant intervals drilled at Beskauga in 2021.

Drillhole name	From (m)	To (m)	Core length (m)	Au (g/t)	Cu (%)
Bg-21001	44.0	1017.2	973.2	0.56	0.33
Bg-21002	43.0	1108.5	995	0.31	0.13
Bg-21003	68.0	132.6	64.6	0.28	0.20
Bg-21004	43.9	584.0	540.1	0.48	0.34

10.2.3.9 2021 Drilling

Below shows the plan map of the 2021 drill holes relative to the deposit highlighted in this report, along with representative sections of holes Bg21001 & Bg21002 in relation to the mineral resource and historical drilling completed by Copper Belt's Kazakh subsidiary "Dostyk LLP" between 2007 – 2017.

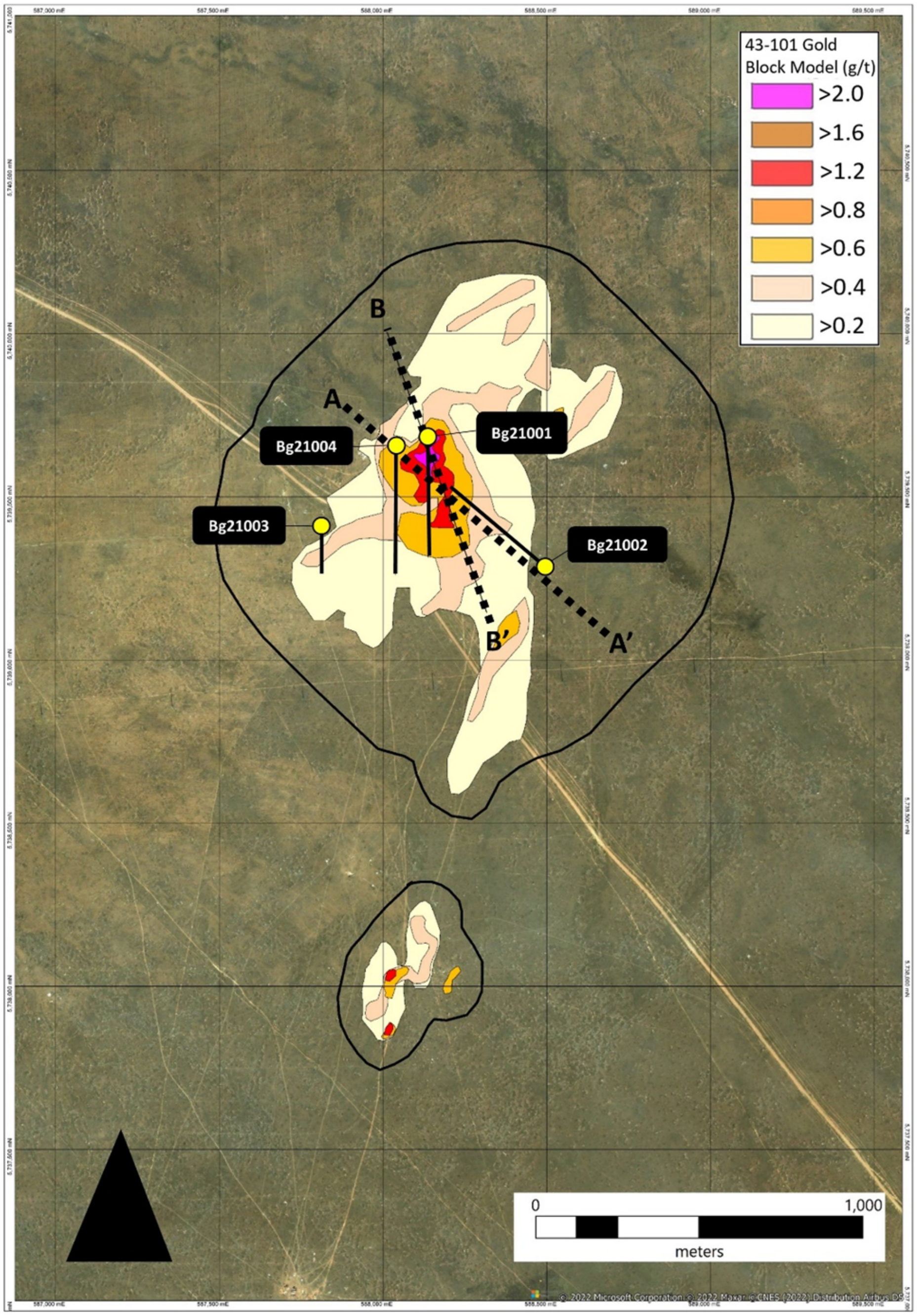


Figure 21. Plan map showing the locations of holes Bg21001-Bg21004

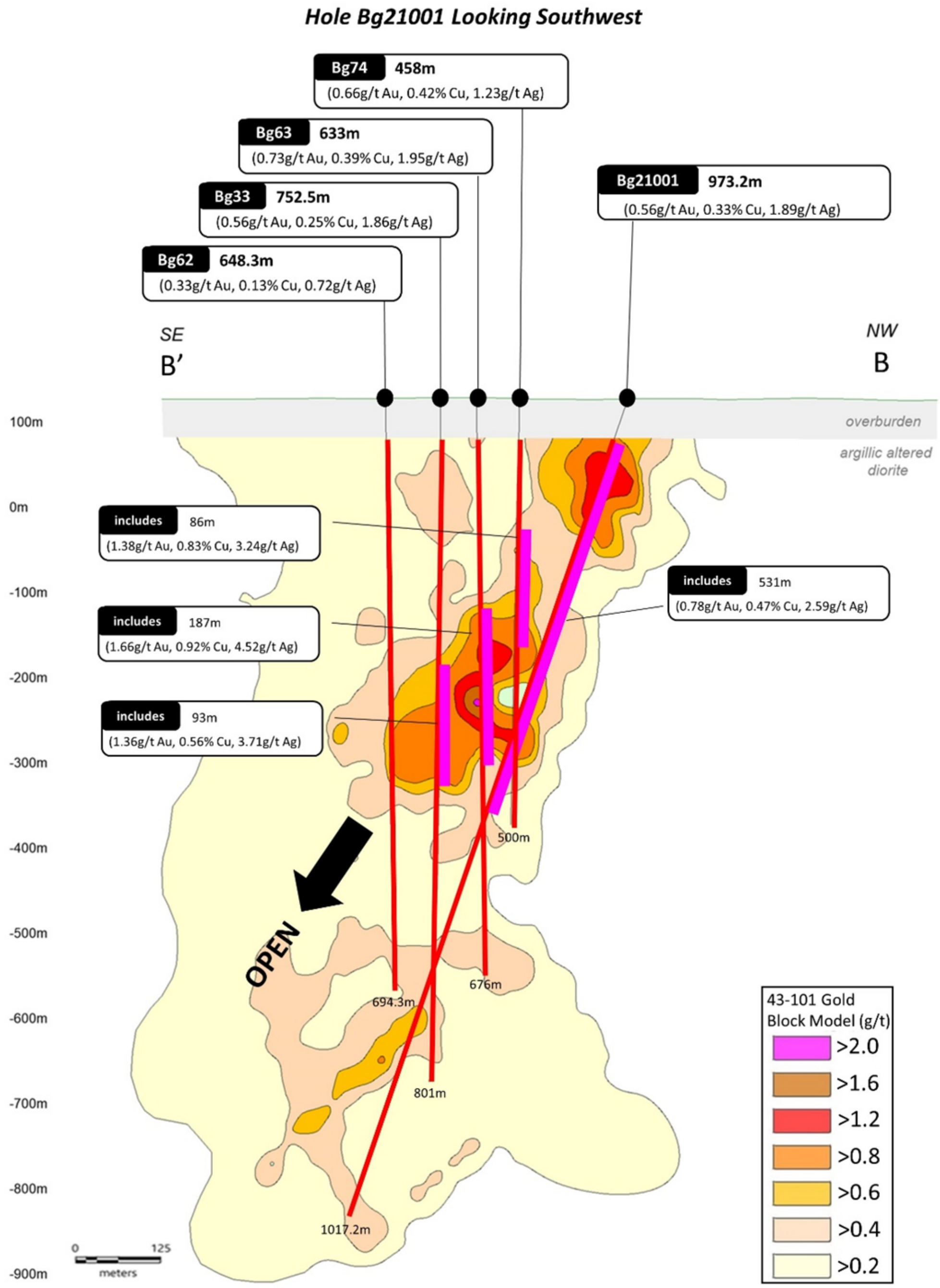


Figure 22. Section showing mineral resource and hole Bg21001 with historical holes drilled by Dostyk.

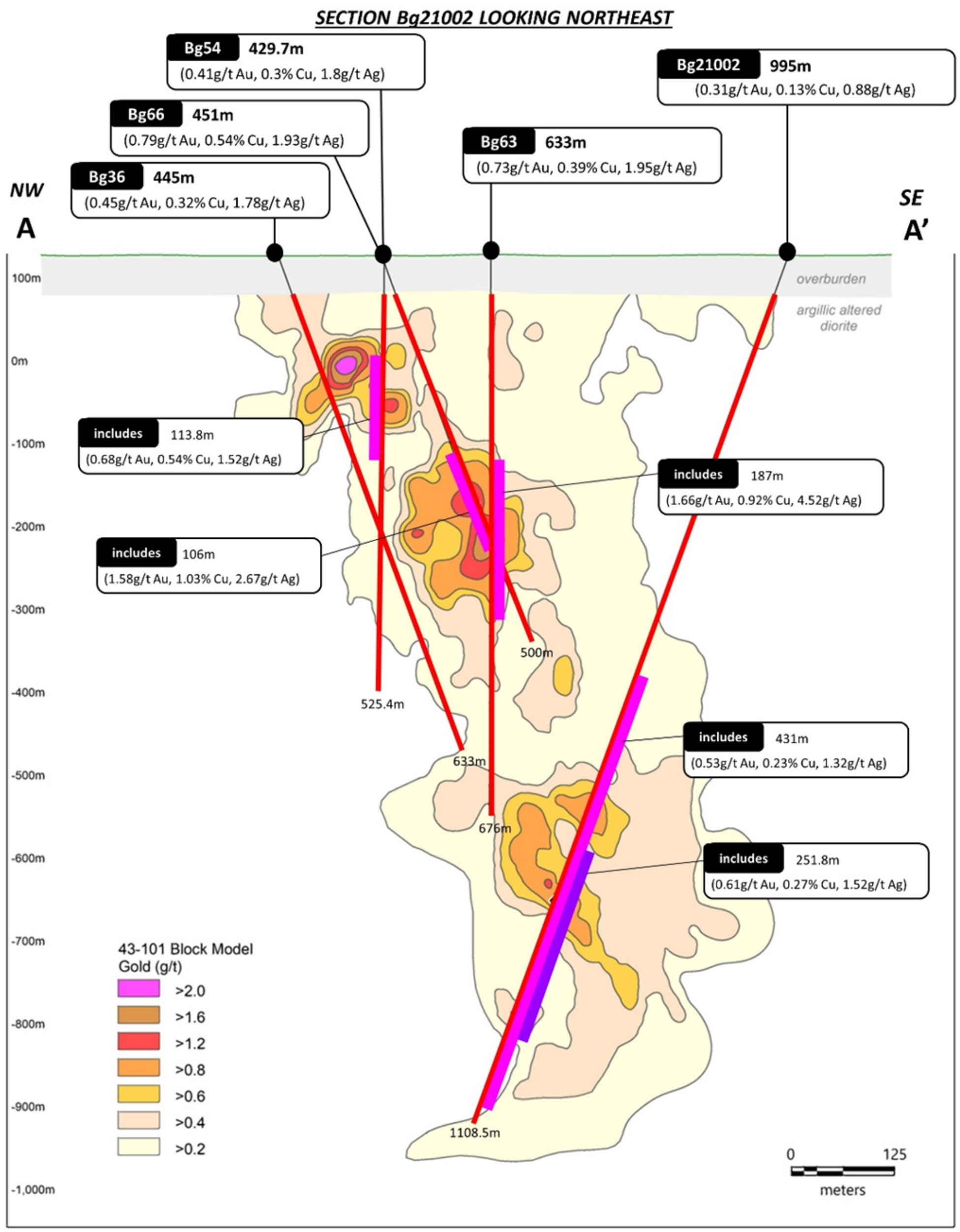


Figure 23. Section showing mineral resource and hole Bg21002 with historical holes drilled by Dostyk.

10.2.3.10 Interpretation

Mineralisation occurs as a broad, steeply west-dipping to sub-vertical zone that strikes on average north-northeast (020°); however, this strike is locally variable between north (000°) and east-northeast (060°).

True Thickness

Based on apparent mineralisation intercepts, the zone of mineralisation at Beskauga varies between approximately 50 and 600 m wide, with a footprint that extends for approximately 700 m along a north-south strike, and 600 m along east-west strike, with a depth of between 300 m and 800 m.

10.3 KGK DRILLING

KGK or hydraulic-core lift drilling is a system designed to drill holes for geochemical sampling and geological mapping of bedrock beneath the cover sediments. The method was developed in the Soviet Union and is in general similar to “wet” RC drilling. Rocks are cut by hard alloy crown bits and the cut chips and drill mud are delivered through a dual rod by pump to the surface, where the material is filtered out and collected. The method is used in the early phases of mineral exploration for a quick assessment of relatively large areas.

Between 2011 and 2014, Dostyk undertook an extensive KGK drill program to define “blind” mineralized targets through the Quaternary cover. The depths of drillholes ranged from 22m to 65m and averaged around 35m. Usually the holes were terminated within 5 m after intersecting bedrock. A total of 1,606 holes were drilled for 52,580 m within the greater Beskauga area and 2,496 samples were collected for analysis. A summary table of the meters drilled is presented in Table 10 and collar locations are shown in Figures 22 and 23 below.

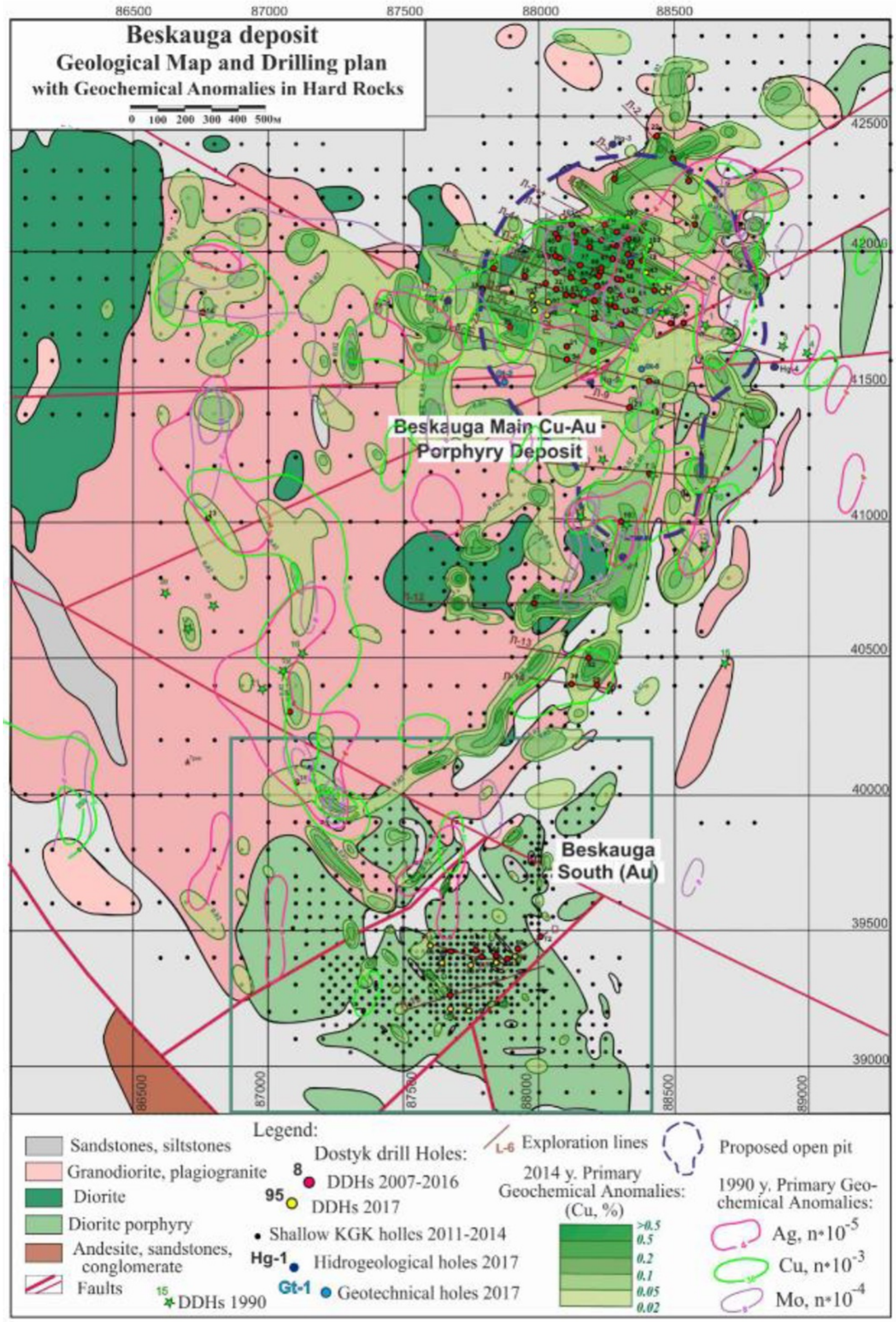


Figure 24. Cu geochemical anomalies from 2011-2014 KGK drilling and Soviet drilling. (Source: Silverbull Resources 43-101 report Feb 2021)

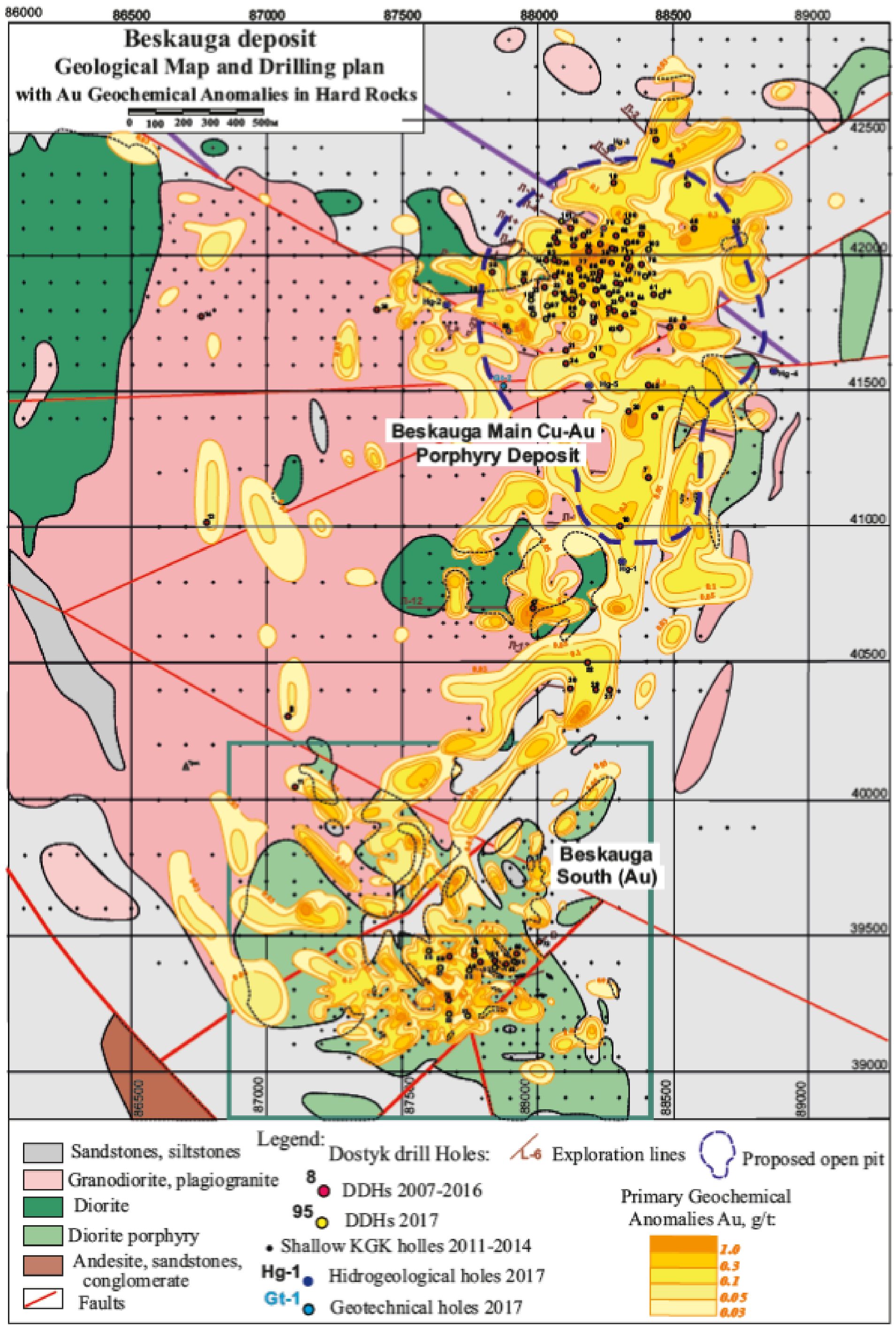


Figure 25. Au geochemical anomalies from 2011-2014 KGK drilling and Soviet drilling (Source: Silverbull Resources 43-101 report Feb 2021)

Table 11. Summary table of the KGK drilling

Year	Holes	Samples	Drilled (m)
2011	801	1,207	28,281
2012	556	813	16,948
2014	249	476	7,351
2021	354	354	18,702
Total	**1,960**	**2,850**	**71,282**

In 2021, Arras Minerals started a KGK drilling program on the periphery of the Beskauga deposit that had not tested by previous campaigns, as well as additional infill holes in areas previously drilled by Dostyk. A total of 354 holes have been drilled to date for 18,702m and a single sample from each hole collected and sent for assay. The depth of the drillholes varies from 15 to 99 m with an average depth of 50 m.

The purpose of KGK drilling is to map geology and define areas of alteration and mineralisation below the overburden and hence these holes are only sampled at or near the contact with the underlying bedrock. KGK drilling is therefore considered an exploration tool and drill results are not used for mineral resource estimation.

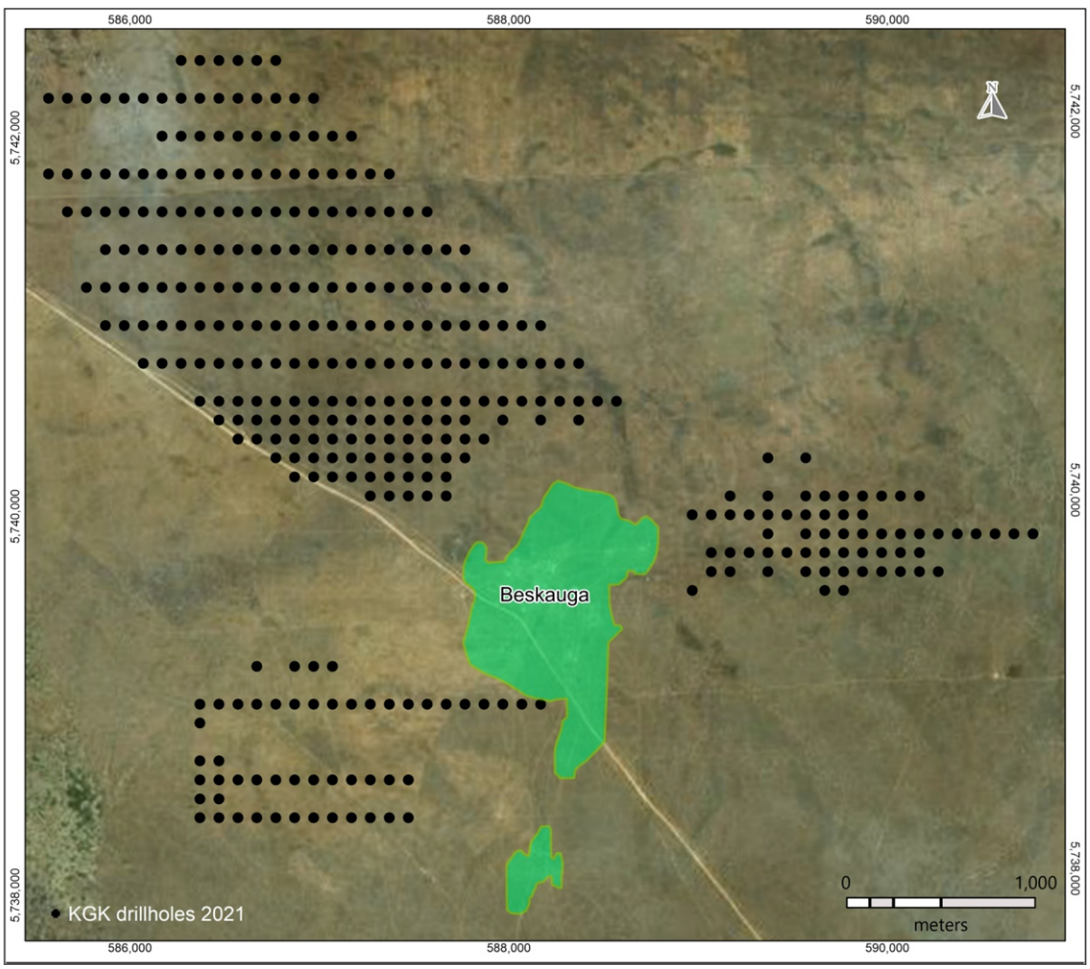


Figure 26. 2021 KGK drilling campaign design to test peripheries of Beskauga deposit.

11 Sample Preparation, Analyses and Security

11.1 Sample Preparation and Security

During the 2007–2017 exploration program, samples were prepared at the Dostyk facility in Ekibastuz. The half-core samples were dried in a drying chamber and weighed using laboratory scales with a 0.05 g division value with weights registered in a sample receipt log. Samples were then crushed using two-stage crushing, with the first stage involving jaw crushing (to -7 mm) and the second stage using a roller crusher and screen (to -2 mm).

Following crushing, samples were split with a Jones splitter, with the bulk of the sample stored as a crush reject and ~1 kg milled using cup vibration mills to 200 mesh fineness (-90 µm). The samples were then split again, with one portion sent to the Stewart Assay and Environmental Laboratories LLC (SAEL) in Kara-Balta, Kyrgyzstan. Upon arrival at SAEL, the samples were coded and registered in the sample coding log and then re-registered under their new codes in the sample passing log. Following registration of samples and inclusion into the operator database, the samples were sent for analysis for gold by fire assay and copper, molybdenum, and silver by 0.2 g aqua regia digestion, followed by inductively coupled plasma optical emission spectrometry (ICP-OES) analysis.

A second portion of selected samples was sent to Jetysugeomining LLP laboratory for atomic-absorption analysis, and the remaining sample was stored as a pulp duplicate. All equipment used for sample crushing and milling (including tables) was cleaned and blown with compressed air after each sample. After each batch of samples, a clean blank material was passed though the equipment (glass for crushers, quartz sand for mills). The sample preparation area was subject to compulsory wet cleaning once a day.

The split core and crushed duplicate sample were stored in the specifically equipped sample storage facility consisting of a hangar with shelves. This facility can be locked and has on-site security.

During 2021 Arras exploration program, cut drillcore samples were sent to ALS laboratory in Karaganda where sample preparation was undertaken. Gold fire assay and atomic absorption spectroscopy were carried out at the Karaganda laboratory, while prepared samples were shipped to ALS laboratory in Ireland for ICP-MS analyses.

Figure 27. Dostyk LLP storage facility with core and crushed duplicate samples (Photo - Arras Minerals)

11.2 Analytical Method

Between 2007 and 2021, various laboratories were utilised for analytical requirements including the following:

- Quartz Chemical/Analytical Laboratory, Semipalatinsk, Kazakhstan (2007–2008)
- Jetysugeomining Laboratory LLP, Almaty, Kazakhstan (2009–2011)
- HelpGeo Laboratory, Almaty, Kazakhstan (2012–2014)
- Stewart Assay and Environmental Laboratories LLC (SAEL), Kara-Balta, Kyrgyzstan (2007–2017)
- ALS Kazgeochemistry LLP, Karaganda, Kazakhstan (2021)

SAEL was utilised by Dostyk as the primary laboratory from the commencement of the 2007 exploration program until 2017. It should be noted that all results used for the Mineral Resource estimate were provided by SAEL up to and including 2017, while results from 2021 were provided by ALS laboratory in Kazakhstan.

Samples were analysed at SAEL for gold using FA on a 30g bead with an AAS finish. A further 33 elements were determined by aqua regia digest followed by ICP-OES analysis of elemental concentrations.

Umpire assays at Genalysis Laboratory Services Pty Ltd (Perth, Australia) were performed using FA on a 30g bead with an AAS finish. A further 33 elements were determined by an aqua regia digest followed by ICP-OES analysis of elemental concentrations.

In the 2021 drill campaign, ALS Karaganda was utilised for analysis of 48 elements by four acid digest and ICP-MS, while ore grade elements were analysed by four acid digest and ICP-AES with Cu ore grade at >1% four acid digest.

The Qualified Person notes that for SAEL analyses only copper, gold, molybdenum and silver data has been provided by Copperbelt.

11.3 Quality Assurance and Quality Control

The quality of any exploration data depends on the sample selection, sample preparation and analytical techniques adopted, as well as implementation of a quality assurance program with collection of quality control data. QA/QC programs should be implemented at all exploration stages, including drilling, collection of all types of samples, sample preparation and analysis, determination of sample density, collection of geotechnical data, data digitization, data storage and other associated aspects.

QA/QC may be implemented through several steps, which may include but are not limited to adding blank samples, CRMs (or “standards”) with predetermined grades, and various duplicate samples (field duplicates, crush duplicates, pulp duplicates).

For the Beskauga Project, the quality control samples were submitted during the drilling programs are outlined below. [The QP has not been provided with a detailed breakdown but understands that quality control sample submission varied from program to program. The description in this section is based on the information and data provided by Copperbelt without reference to specific programs].

Pulverized duplicates of 0.0074 mm in size, produced at the second stage of the sample preparation process

- Blank samples
- CRM samples.

In addition to these QA/QC checks, the SAEL Laboratory conducted internal QA/QC checks and Dostyk completed second laboratory checks at Genalysis Laboratories. In 2021 ALS laboratory conducted internal QA/QC checks.

11.3.1 Internal Laboratory QA/QC

Internal QA/QC checks carried out by SAEL LLP 2007-2017

All the measuring equipment was regularly tested. Daily, before work, all scales were checked with the special set of weights, and the temperature of the oven was measured by thermocouple unit.

All standard materials were acquired from reliable suppliers that are accredited in accordance with ISO Guide 34:2000. The laboratory used a broad range of standards prepared by well-known brands, such as CANMET, CDN Resource Laboratories, Geostats, ORE, Rocklabs, and others. One standard, one blank and five duplicates were inserted every 50 samples.

SAEL performed several routine quality control checks during the analytical process to monitor contamination, accuracy and precision. Contamination was monitored by the insertion of a blank and standard at standard intervals. Accuracy was monitored using appropriate CRMs and precision by the duplication of samples.

SAEL operated a three-tier quality control system. Instrument operators stored data in job files and then perused the data to ensure analytical sequences were correct, standard values were correct and other controls also confirmed that the analytical run had not been beset with problems. These staff members initiated checking of suspicious results. The second phase of quality control checking was performed either by quality control staff in each department or by the head of the department. Lastly, and before any batch of results were reported, senior staff in charge of reporting of results also perused the data. These staff members were not directly associated with the laboratory sections generating the results; however, they may also initiate queries in relation to any work which had been carried out on a sample and they may return work for re-analysis if they were dissatisfied with analytical quality.

All laboratory quality control data was reported within the structure of the final reports.

Quality control limits for the CRM, blank and duplicate samples were determined according to the analytical technique employed and were automatically flagged by the laboratory information management system (LIMS) as being erroneous if they fell outside these limits by the laboratory information management system. Prior to their release, laboratory personnel validated all results and flagged errors were assessed and, if possible, the sample batch was re assayed, or the errors reported. All data generated from quality control samples were captured for assessment.

Quality control reports were generated and dispatched with the sample result file for each laboratory job.

Montgomery (2015) described the results of the SAEL final analysis report 14K014-14K016 and found no significant issues relating to the Beskauga drill database resulting from exploration between 2007 and 2017. The SAEL Final Analysis Report 14K014-14K016 contained records for 600 samples analysed and was accompanied by 164 repeat analyses for gold (>20%). The spreadsheet also contained 30 records for blanks and 30 records for CRM analysis (5%). All blank analyses were below detection limits. Two standards were included in the CRM results, ST 4/12 (19 results) and ST 7/12 (11 results), and 164 repeat (duplicate) analyses were carried out.

Internal QAQC checks carried out by ALS in 2021

ALS Geochemistry - Loughrea, Ireland is accredited by The Irish National Accreditation Board (INAB) which is the Irish body for the accreditation of organisations including laboratories.

Accreditation to this ISO standard involves detailed, on-site audits by skilled specialist assessors to evaluate ALS quality management system and verify the technical competence of their methods and personnel. This technical verification includes the requirement for successful participation in inter-laboratory proficiency testing programs and full method validation.

The quality assurance program is an integral part of all day-to-day activities at ALS Geochemistry Loughrea and involves all levels of staff. Responsibilities are formally assigned for all aspects of the quality assurance program.

The ALS sample tracking system ensures complete chain of custody records at every stage in the sample preparation and analytical process.

- Complete traceability of the sample through the entire laboratory process.
- Sample integrity is guaranteed by scanning the sample label at every stage.

Record of every sample weight submitted to the laboratory from the field.

The weighing room is segregated for the weighing of low- and high-grade samples and follow specialised standard operating procedures in sample handling, equipment used and cleaning.

The laboratory operates a policy of calibration so as to ensure that, where the concept is applicable, all principal and subsidiary measurements are traceable to SI units as realised by appropriate national or international standards. Laboratory staff has appropriate training to monitor calibration of equipment.

All items of equipment are subject to regular calibration verification which is recorded in an appropriate section of the Equipment Log. Equipment subject to calibration or verification at specific time intervals is clearly labelled to show when re-calibration or re-verification is due. Staff may not use any equipment, which is overdue for calibration or verification. Emphasis is on setting intervals conservatively so that problems will be detected before the quality of service or product is affected.

An electronic balance is used to weigh samples which are calibrated yearly to UKAS standards by an external accredited company. Calibration is checked on a daily basis by the operator using check weights. Weights are recorded on quality record sheet QR_005. These daily check weights are then checked yearly against reference weights which are calibrated externally by an external accredited company and are traceable to National Standards.

If any deviations in calibration of equipment is suspected it will be checked using externally calibrated reference equipment and action taken as required.

Quality control samples are an important part of the ALS quality assurance program. They monitor the accuracy and precision of an analytical method and are used to evaluate the quality of the "unknown" sample data. GEMS (Laboratory Information System) inserts quality control samples (reference materials, method blanks and duplicates) on each analytical run, based on the rack sizes associated with the method.

Each batch of samples contains a minimum of the following:

1 method blank. It is placed in the first position of the batch and does not contain a sample and goes through the entire analytical process from weighing to instrument analysis. This blank contains the same reagents as the regular samples and is used to monitor contamination throughout the analytical process.

1 reference material. Reference materials are homogenous samples containing known concentrations of analytes. They go through the exact same process as the regular samples and therefore can be used to monitor the accuracy and precision of the method as a whole, as well as sample order, contamination, and digestion quality of the batch. The first reference material is inserted in the second position of the batch and a second reference material is inserted into a random position chosen by GEMS. Results for the reference materials should be within the criteria set for the method.

1 set of duplicates. The duplicate sample is the last sample in the batch and is a separate weighing from the same pulp as the original sample. Duplicates are used to evaluate the precision of the analytical method. For gold analysis, duplicates show the degree of homogeneity of the sample.

Laboratory staff analyse quality control samples at least at the frequency specified above. If necessary, they may include additional quality control samples above the minimum specifications.

All data gathered for quality control samples – blanks, duplicates and reference materials are automatically captured, sorted and retained in the QC Database.

QC program may include the following clients QC samples which are not monitored during approval of data:

- Barren Material to be crushed or pulverized or both. May also be a pulp sample.
- Reference Materials could be purchased from the same suppliers used by ALS or prepared from the client's property (ie. matrix matched to samples).
- Field Duplicates collected out in the field.
- Preparation Duplicates taken after either crushing or pulverizing as per client's instructions.

Quality Control Limits for reference materials and duplicate analyses are established according to the precision and accuracy requirements of the method.

Data outside control limits are identified and investigated and require corrective actions to be taken. Quality control data is scrutinised at several levels. Each analyst is responsible for ensuring the data submitted is within control specifications. In addition, there are several other checks.

If any data for reference materials, duplicates, or blanks falls beyond the control limits established, it is automatically flagged red by the computer system for serious failures, and yellow for borderline results. The Department Manager conducting the final review of the Certificate is thus made aware that a problem may exist with the data set.

After the import, results become available for approval. The approval process involves three stages.

- During initial stage the data is reviewed by one of the technicians from the department who will check the results and make sure that all QC samples such as duplicates, and blanks reported are within method specifications. Any failures and deviations are automatically flagged by GEMS. The samples can be sent for re-weight, where new analysis would be initiated on a new sample split. If all results are within spec, the technician will approve the run and this stage is called Tech Approval.

- After tech approval the run is reviewed by one of our more qualified members of staff in the department such as department supervisor. Once they are satisfied with the quality of results, they carry out Final Approval. After this the analysis of the samples involved by the method code in question is treated as finished.
- Final approval is carried out by Data approval department, who approve results for entire completed workorder, frequently having results coming from more than one analysis code. They review the data, checking not only QC performance for individual methods but also reviewing entire set of results and looking at correlations between results from different methods. After their approval, entire workorder is finalized and results are automatically sent to the customer.

At any of the three approval stages any failures and deviations from the method specifications are flagged. If there is an indication that the failures are due to problems that occurred at any stage of the procedure, the samples can be sent for re-weight, where new analysis would be initiated on a new sample split.

Results are provided to clients by workorder batch. Reporting formats are specified to ensure results are reported accurately, clearly and unambiguously. To meet client needs, results can be reported via several avenues and in many customized formats like Webtrive™, electronic format sending Email with excel/.csv results, or sending traditional hard copy.

Evaluation of Trends - Control charts for frequently used method codes are generated and evaluated by laboratory staff on a regular basis. The control charts are evaluated to ensure internal specifications for precision and accuracy are met. The data is also reviewed for any long-term trends and drifts.

Precision Specifications and Definitions are discussed on the accompanying fact sheet (ALS QC Limits for Reference Materials & Duplicates) which we regularly share with clients.

External Proficiency Tests - Proficiency testing is designed to provide an independent assessment of laboratory performance by an outside agency. Test materials are regularly distributed to the participants and results are processed by a central agency. The results are usually converted to a Z-Score to rate the laboratory's result against the consensus value from all participating labs.

11.3.2 Certified Reference Materials

During the 2007-2017 Dostyk drilling campaigns, CRMs OREAS 209, OREAS 501b, OREAS 502b, OREAS 503b, OREAS 54Pa were submitted to SAEL, and in the 2021 Arras Minerals drilling campaign CRMs OREAS 152a, OREAS 503d, OREAS 505, OREAS 506, OREAS 606 were submitted to ALS for analysis together with samples. The CRM certificates can be downloaded from the company's website (https://www.ore.com.au/).

The reference grades and standard deviation (SD) for the CRMs are shown in Table 11.

During the 2007-2017 campaign, a total of 187 gold CRMs and 124 copper CRMs were analysed, representing 0.52% and 0.34% respectively of the 36,271 samples in the database.

In the 2021 drilling campaign of four holes, a total of 81 gold and copper CRMs were analysed, representing 2.76% (insertion rate 1 CRM per 40 samples) of all the 2926 core samples.

Table 12. CRM grades

Exploration year	CRM	Company	Element/Test type	Grade	SD	No. of analyses
2007-2017	209	OREAS	Au, Pb FA (ppm)	1.58	0.044	52
			Cu, aqua regia (ppm)	76	3.7	0
	501b	OREAS	Au, Pb FA (ppm)	0.248	0.01	45
			Cu, four-acid digestion (wt. %)	0.26	0.011	40
	502b	OREAS	Au, Pb FA (ppm)	0.494	0.015	11
			Cu, four-acid digestion (wt. %)	0.773	0.02	11
	503b	OREAS	Au, Pb FA (ppm)	0.695	0.021	65
			Cu, four-acid digestion (wt. %)	0.531	0.023	63
	54Pa	OREAS	Au, Pb FA (ppm)	2.9	0.11	14
			Cu, four-acid digestion (wt. %)	1.55	0.02	10
2021	152a	OREAS	Au, Pb FA (ppb)	116	5	28
			Cu, four-acid digestion (wt. %)	0.385	0.009	28
	503d	OREAS	Au, Pb FA (ppm)	0.666	0.015	11
			Cu, four-acid digestion (wt.%)	0.524	0.01	11
	505	OREAS	Au, Pb FA (ppm)	0.555	0.014	24
			Cu, four-acid digestion (wt. %)	0.321	0.008	24
	506	OREAS	Au, Pb FA (ppm)	0.364	0.01	13
			Cu, four-acid digestion (wt. %)	0.444	0.01	13
	606	OREAS	Au, Pb FA (ppm)	0.34	0.01	5
			Cu, four-acid digestion ppm)	268	11	5

When using control charts, upper and lower warning limits are set to identify a range of values where the process can be considered “in control”. Most of the data is expected to plot within this range. Two SDs are generally used to define this range. An action limit generally represents an excess of deviation within a process, which exceeds three times the SD. A point outside of the mean ±3 SD range represents an out-of-control situation, and it is recommended that action be taken. Figures below show Shewhart Control Charts for the analysed CRMs. Figure 24 provides a legend for the control charts where the warning limit 1 boundary represents one SD; the warning limit 2 boundary represents two SDs and the action limit boundary represents three SDs.

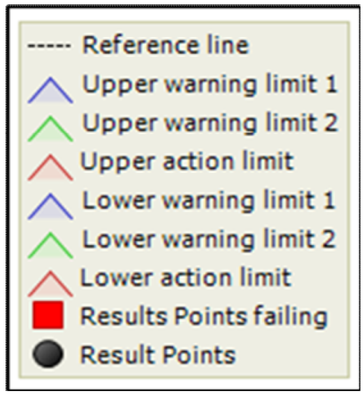


Figure 28. Legend for Shewhart control charts

OREAS 209

CRM OREAS 209 was prepared from a blend of gold-bearing Magdala ore from the Stawell Gold Mine, west-central Victoria, Australia and barren tholeiitic basalt from Epping, Victoria, Australia. The Magdala lode is intimately associated with an intensely deformed package of volcanogenic sedimentary rocks. The ore samples were taken from basalt contact lodes and are strongly chlorite-altered (± silica, stilpnomelane) carbonaceous mudstones located directly on the western margin of the Magdala basalt dome. Mineralisation in the ore consists of a quartz-sericite-carbonate schist assemblage containing the sulphides arsenopyrite, pyrrhotite and pyrite. OREAS 209 is one of a suite of 11 CRMs ranging in gold content from 0.340 ppm to 9.25 ppm.

A total of 52 samples were analysed for gold and majority of samples were within three SDs and close to the actual grades (Figure 25). There were five samples that were outside of three SDs with one sample showing a significantly lower value than the reference grades (0.293 ppm Au instead of expected 1.58 ppm Au).

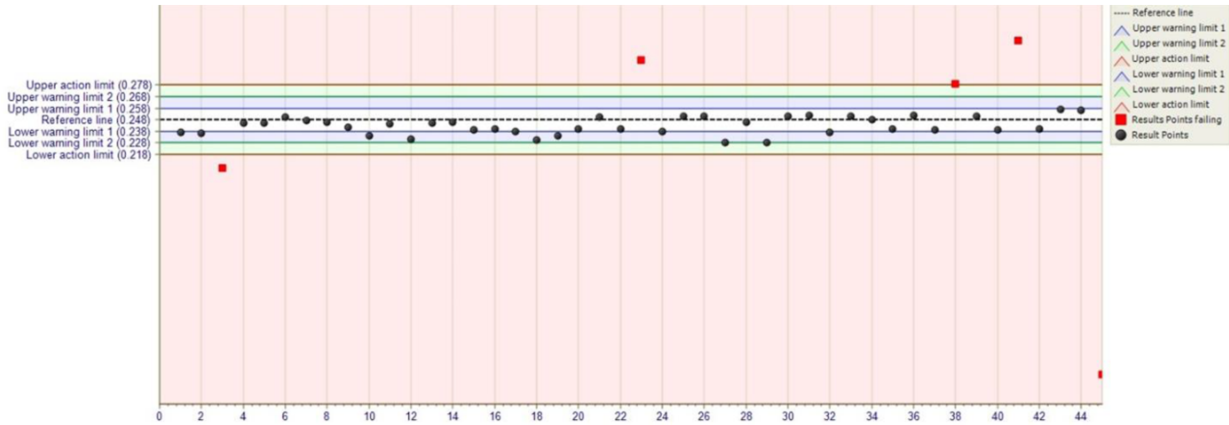
File Name	QAQC\Standards	Count	52	Kurtosis	36.3100	Expected to -1SD	15 (28.85%)	2SD to 3SD	5 (9.62%)
Field Name	Au g/t (FA)1	Median	1.5550	Skewness	-5.8267	Inside 1SD	29 (55.77%)	+3SD	0 (0.00%)
Action Level	99.7300	Mode	1.5697	Range	1.3970	+1SD to +2SD	1 (1.92%)	-3SD	5 (9.62%)
Groups	52	Mean	1.5233	Minimum	0.2930	-1SD to -2SD	12 (23.08%)	Outside 3SD	5 (9.62%)

Figure 29. OREAS 209 Shewhart Control Chart for gold

OREAS 501b

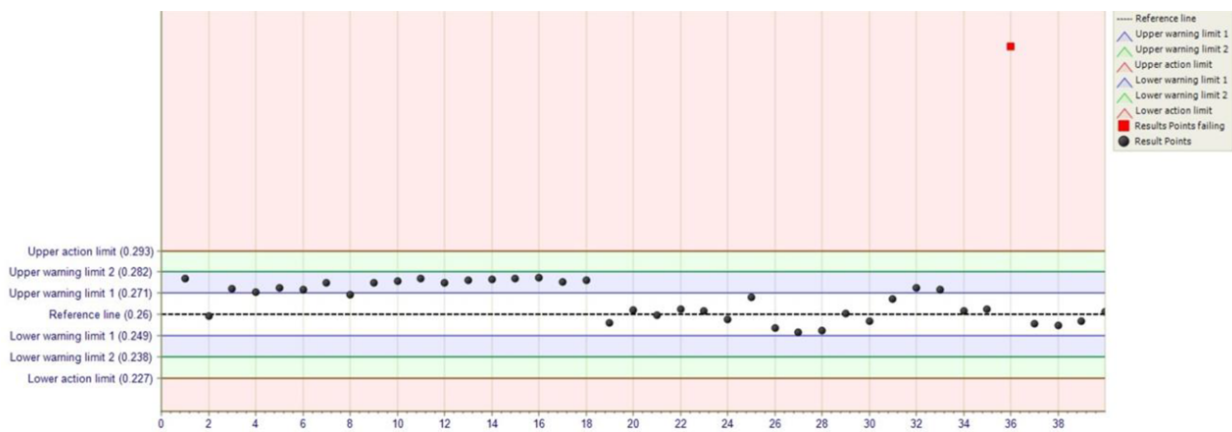
OREAS 501b was prepared from porphyry copper-gold ore and waste samples from a mine located in central western New South Wales, Australia with the addition of a minor quantity of copper-molybdenum concentrate.

Total of 45 samples were analysed for gold and majority of samples were within three SDs and close to the actual grades (Figure 26). There were five samples that were outside of three SDs with one sample showing a significantly lower value than the reference grades (0.026 ppm Au instead of expected 0.248 ppm Au).
A total of 40 samples were analysed for copper and majority of samples were within three SDs and close to the actual grades (Figure 27). There was one sample that was outside of three SDs and this was possibly due to the erroneous database entry.



File Name	QAQC\Standards	Count	45	Kurtosis	23.8540	Expected to -1SD	19 (42.22%)	2SD to 3SD	0 (0.00%)
Field Name	Au g/t (FA)1	Median	0.2440	Skewness	-4.1755	Inside 1SD	31 (68.89%)	+3SD	3 (6.67%)
Action Level	99.7300	Mode	0.2398	Range	0.2912	+1SD to +2SD	0 (0.00%)	-3SD	2 (4.44%)
Groups	45	Mean	0.2409	Minimum	0.0258	-1SD to -2SD	9 (20.00%)	Outside 3SD	5 (11.11%)

Figure 30. OREAS 501b Shewhart Control Chart for gold

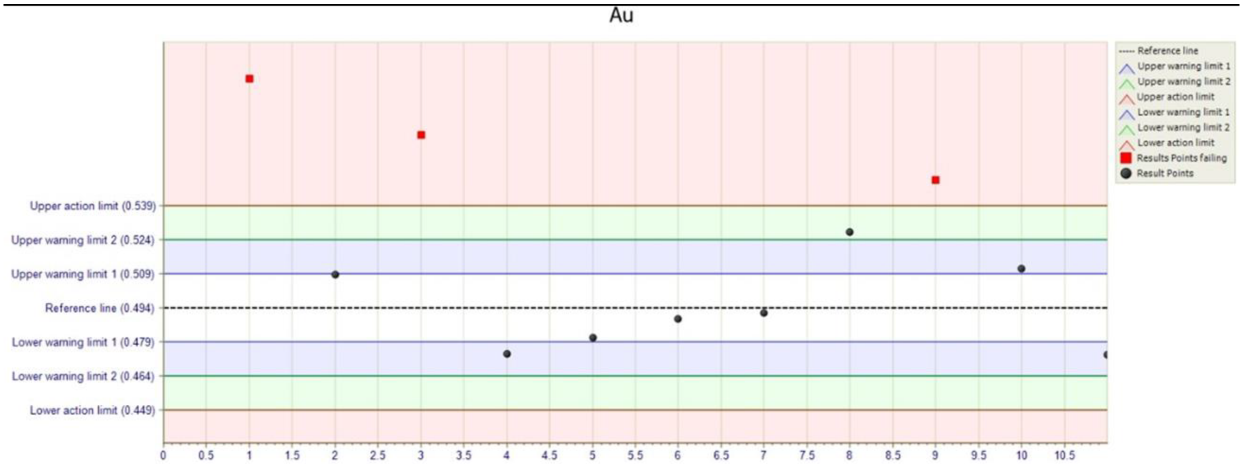


File Name	QAQC\Standards	Count	40	Kurtosis	23.5378	Expected to -1SD	11 (27.50%)	2SD to 3SD	0 (0.00%)
Field Name	Cu ppm (ICP)1	Median	0.2698	Skewness	4.5493	Inside 1SD	21 (52.50%)	+3SD	1 (2.50%)
Action Level	99.7300	Mode	0.2790	Range	0.1478	+1SD to +2SD	18 (45.00%)	-3SD	0 (0.00%)
Groups	40	Mean	0.2705	Minimum	0.2510	-1SD to -2SD	0 (0.00%)	Outside 3SD	1 (2.50%)

Figure 31. OREAS 501b Shewhart Control Chart for copper

OREAS 502b

OREAS 502b was prepared from porphyry copper-gold ore and waste samples from a mine deposit located in central western New South Wales, Australia with the addition of a minor quantity of copper-molybdenum concentrate.

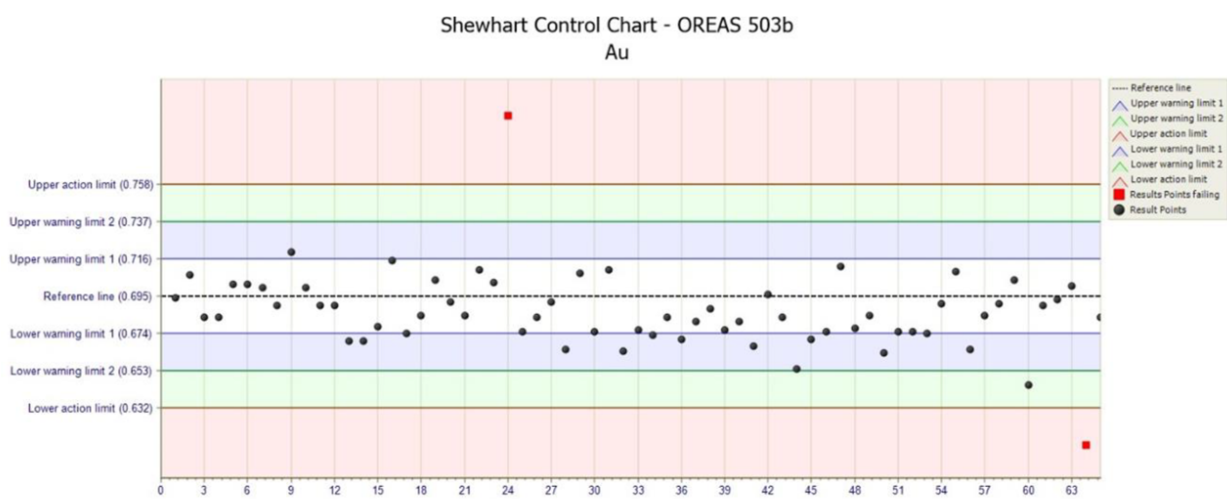


File Name	QAQC\Standards	Count	11	Kurtosis	-0.6848	Expected to -1SD	3 (27.27%)	2SD to 3SD	1 (9.09%)
Field Name	Au g/t (FA)1	Median	0.5085	Skewness	0.7455	Inside 1SD	4 (36.36%)	+3SD	3 (27.27%)
Action Level	99.7300	Mode	0.4732	Range	0.1215	+1SD to +2SD	1 (9.09%)	-3SD	0 (0.00%)
Groups	11	Mean	0.5155	Minimum	0.4733	-1SD to -2SD	2 (18.18%)	Outside 3SD	3 (27.27%)
Group Size	0	Std Dev	0.0408	Maximum	0.5948	1SD to 2SD	3 (27.27%)		
Ref Mean	0.49	Variance	0.0017	Expected to +1SD	1 (9.09%)	+2SD to +3SD	1 (9.09%)		

Figure 32. OREAS 502b Shewhart Control Chart for gold

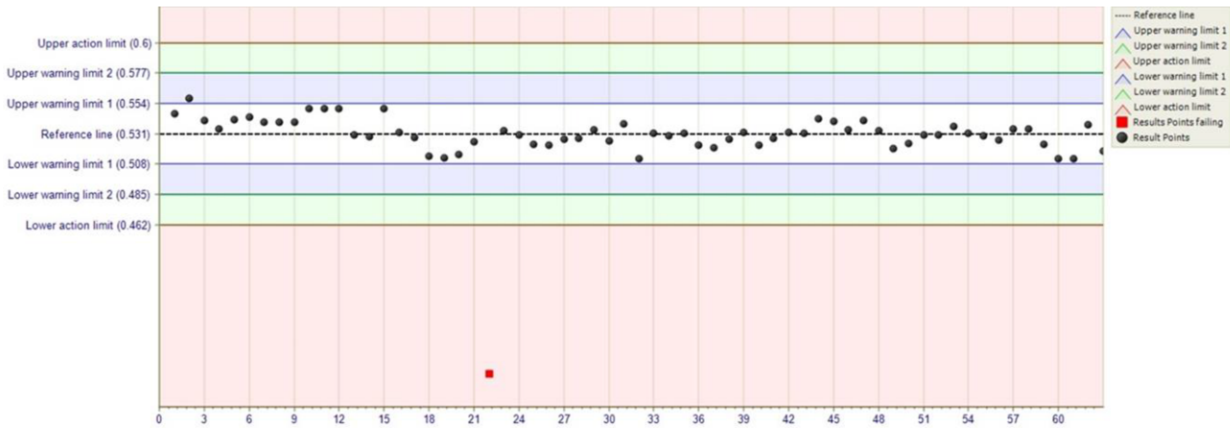
OREAS 503b

OREAS 503b was prepared from porphyry copper-gold ore and waste samples from a mine located in central western New South Wales, Australia with the addition of a minor quantity of copper-molybdenum concentrate. A total of 65 samples were analysed for gold (Figure 29) and copper (Figure 30) and majority of samples were within three SDs and close to the actual grades. There were two samples that were outside of three SDs for gold, and one sample that was outside of three SDs for copper.



File Name	QAQC\Standards	Count	65	Kurtosis	8.3520	Expected to -1SD	34 (52.31%)	2SD to 3SD	1 (1.54%)
Field Name	Au g/t (FA)1	Median	0.6840	Skewness	1.2066	Inside 1SD	50 (76.92%)	+3SD	1 (1.54%)
Action Level	99.7300	Mode	0.6835	Range	0.1860	+1SD to +2SD	1 (1.54%)	-3SD	1 (1.54%)
Groups	65	Mean	0.6864	Minimum	0.6110	-1SD to -2SD	11 (16.92%)	Outside 3SD	2 (3.08%)
Group Size	0	Std Dev	0.0228	Maximum	0.7970	1SD to 2SD	12 (18.46%)		
Ref Mean	0.69	Variance	0.0005	Expected to +1SD	16 (24.62%)	+2SD to +3SD	0 (0.00%)		
Ref Std Dev	0.02	Coeff. of Variation	0.0331	Expected	0 (0.00%)	-2SD to -3SD	1 (1.54%)		

Figure 33. OREAS 503b Shewhart Control Chart for gold



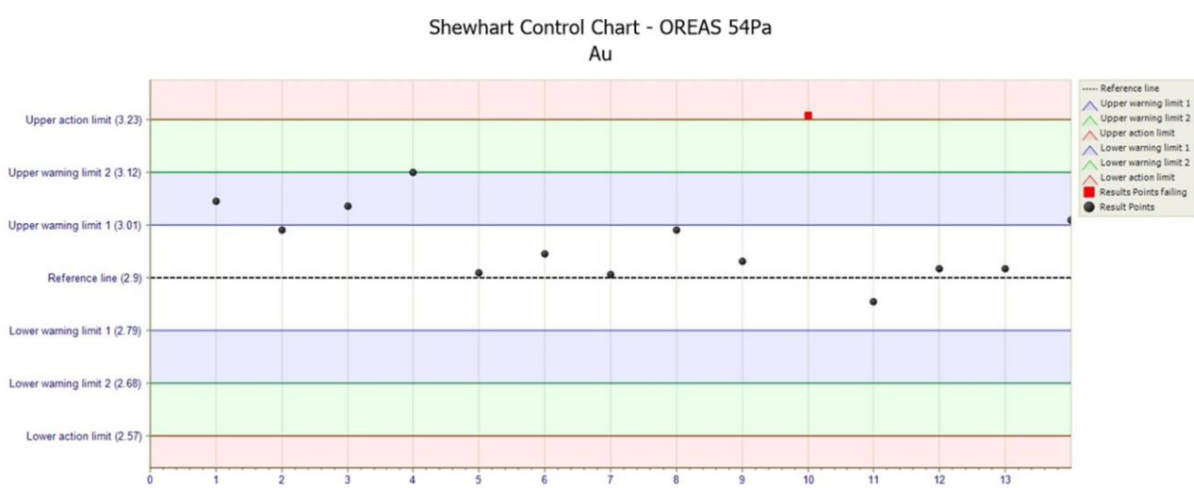
File Name	QAQC\Standards	Count	63	Kurtosis	39.7569	Expected to -1SD	30 (47.62%)	2SD to 3SD	0 (0.00%)
Field Name	Cu ppm (ICP)1	Median	0.5314	Skewness	-5.8547	Inside 1SD	61 (96.83%)	+3SD	0 (0.00%)
Action Level	99.7300	Mode	0.5318	Range	0.2093	+1SD to +2SD	1 (1.59%)	-3SD	1 (1.59%)
Groups	63	Mean	0.5285	Minimum	0.3487	-1SD to -2SD	0 (0.00%)	Outside 3SD	1 (1.59%)

Figure 34. OREAS 503b Shewhart Control Chart for copper

OREAS 54Pa

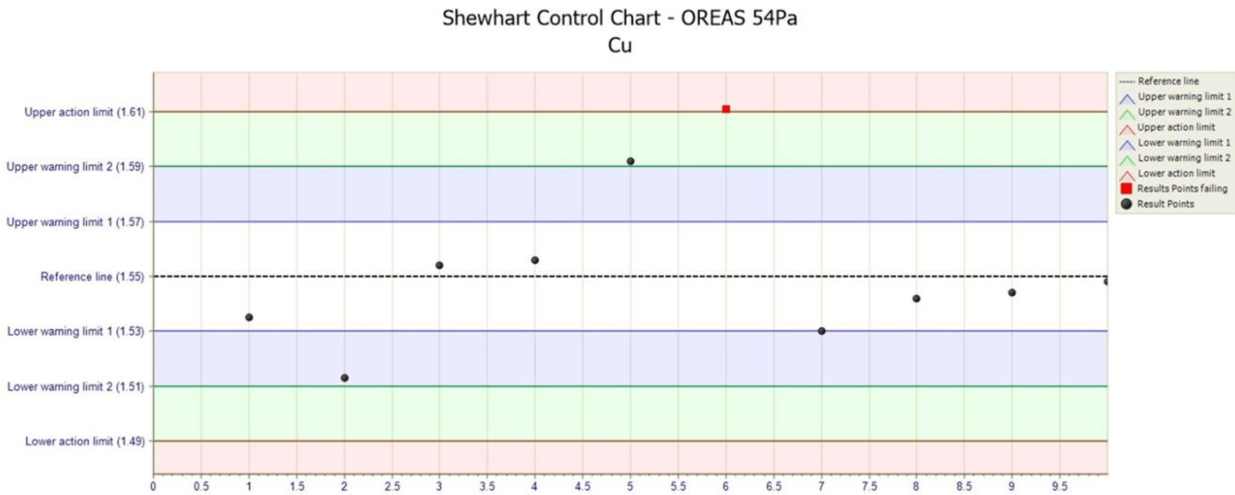
Reference material OREAS 54Pa is a porphyry copper-gold standard prepared from ore and waste rock samples from a porphyry copper-gold deposit in central western New South Wales, Australia. Copper-gold mineralisation occurs as stockwork quartz veins and disseminations associated with potassic alteration. This alteration is intimately associated spatially and temporally with the small finger-like quartz monzonite porphyries that intrude the Goonumbla Volcanics.

A total of 14 samples were analysed for gold and 10 samples for copper, and majority of the samples were within three SDs and close to the actual grades for both elements (Figure 31, Figure 32). There was one sample for both gold and copper that was outside of three SDs.



File Name	QAQC\Standards	Count	14	Kurtosis	0.5168	Expected to -1SD	1 (7.14%)	2SD to 3SD	0 (0.00%)
Field Name	Au g/t (FA)1	Median	2.9750	Skewness	0.9649	Inside 1SD	9 (64.29%)	+3SD	1 (7.14%)
Action Level	99.7300	Mode	2.9083	Range	0.3895	+1SD to +2SD	4 (28.57%)	-3SD	0 (0.00%)
Groups	14	Mean	2.9915	Minimum	2.8500	-1SD to -2SD	0 (0.00%)	Outside 3SD	1 (7.14%)
Group Size	0	Std Dev	0.1023	Maximum	3.2395	1SD to 2SD	4 (28.57%)		
Ref Mean	2.90	Variance	0.0105	Expected to +1SD	8 (57.14%)	+2SD to +3SD	0 (0.00%)		
Ref Std Dev	0.11	Coeff. of Variation	0.0342	Expected	0 (0.00%)	-2SD to -3SD	0 (0.00%)		

Figure 35. OREAS 54Pa Shewhart Control Chart for gold



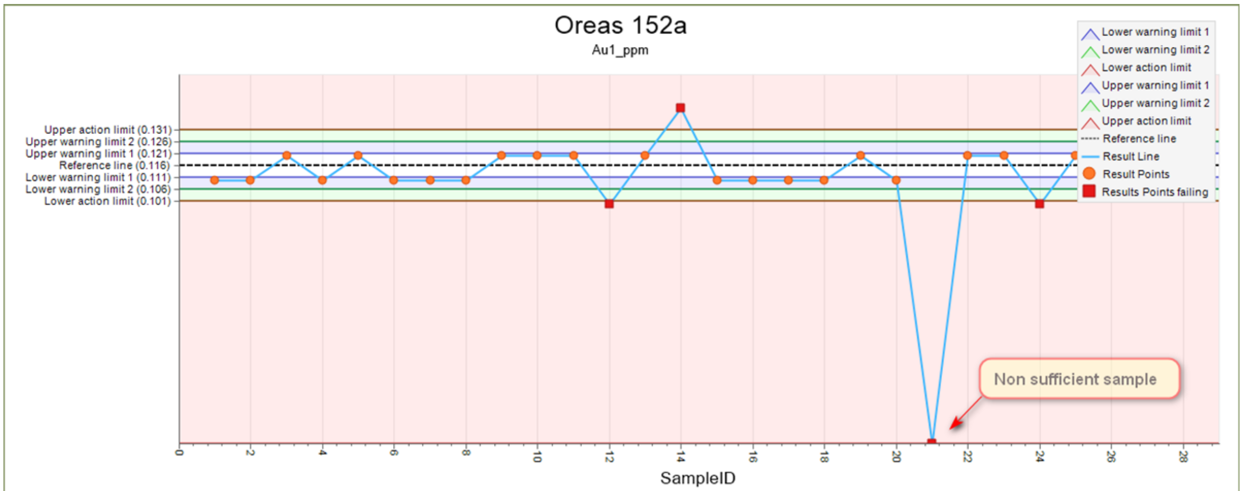
File Name	QAQC\Standards	Count	10	Kurtosis	-0.0443	Expected to -1SD	5 (50.00%)	2SD to 3SD	1 (10.00%)
Field Name	Cu ppm (ICP)1	Median	1.5460	Skewness	0.8716	Inside 1SD	7 (70.00%)	+3SD	1 (10.00%)
Action Level	99.7300	Mode	1.5132	Range	0.0980	+1SD to +2SD	0 (0.00%)	-3SD	0 (0.00%)
Groups	10	Mean	1.5525	Minimum	1.5130	-1SD to -2SD	1 (10.00%)	Outside 3SD	1 (10.00%)
Group Size	0	Std Dev	0.0290	Maximum	1.6110	1SD to 2SD	1 (10.00%)		
Ref Mean	1.55	Variance	0.0008	Expected to +1SD	2 (20.00%)	+2SD to +3SD	1 (10.00%)		
Ref Std Dev	0.02	Coeff. of Variation	0.0187	Expected	0 (0.00%)	-2SD to -3SD	0 (0.00%)		

Figure 36. OREAS 54Pa Shewhart Control Chart for copper

OREAS152a

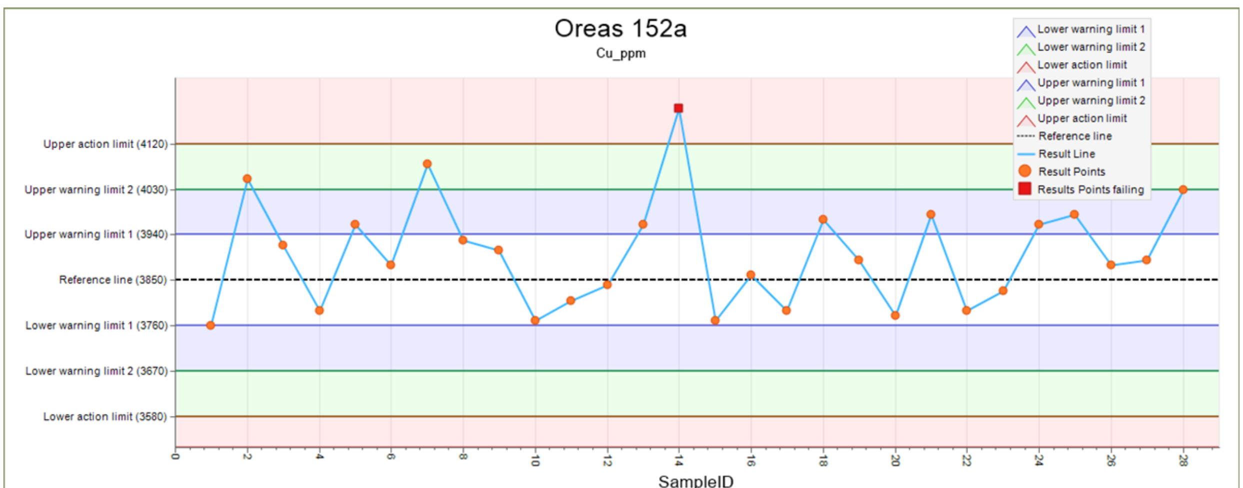
OREAS 152a is one of three porphyry Cu-Au-Mo-S certified reference materials prepared from copper ore from the Waisoi district, Viti Levu, Fiji. The two deposits in the area are the Waisoi East deposit (quartz porphyry) and the Waisoi West deposit (diorite porphyry). Copper mineralisation in the region is accompanied by stockwork quartz veinlets and is characterised by bornite-chalcopyrite-pyrite assemblages.

Only one sample failed with lower action limit that is reported as zero value for gold (Figure 33) which is explained by insufficient materially caused by fire assay failure in ALS lab.



File Name	Bg21001-Bg21004 standards	Ref Std Dev	0.01	Variance	0.0005	Maximum	0.1400	-1SD to -2SD	11 (39.29%)	-3SD	3 (10.71%)
Field Name	Au1_ppm	Count	28	Coeff. of Variation	0.2084	Expected to +1SD	13 (46.43%)	1SD to 2SD	11 (39.29%)	Outside 3SD	4 (14.29%)
Action Level	95.4500	Median	0.1150	Kurtosis	17.4679	Expected	0 (0.00%)	+2SD to +3SD	0 (0.00%)		
Groups	28	Mode	0.1202	Skewness	-4.0731	Expected to -1SD	0 (0.00%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	0.1111	Range	0.1400	Inside 1SD	13 (46.43%)	2SD to 3SD	0 (0.00%)		
Ref Mean	0.12	Std Dev	0.0231	Minimum	0.0000	+1SD to +2SD	0 (0.00%)	+3SD	1 (3.57%)		

Figure 37. OREAS 152a Shewhart Control Chart for gold



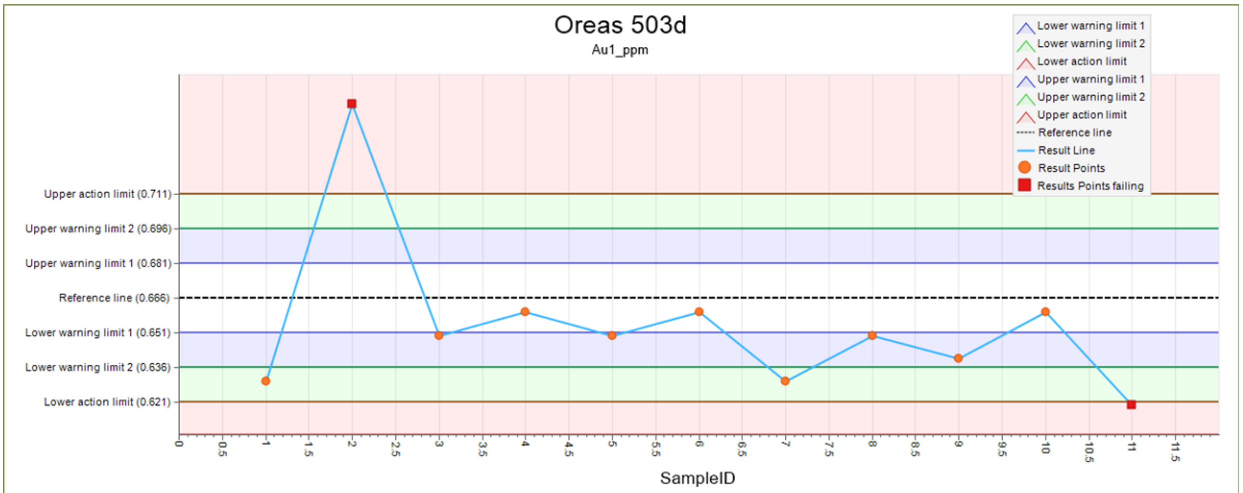
File Name	Bg21001-Bg21004 standards	Ref Std Dev	90.00	Variance	11444.8413	Maximum	4190.0000	-1SD to -2SD	0 (0.00%)	-3SD	0 (0.00%)
Field Name	Cu_ppm	Count	28	Coeff. of Variation	0.0274	Expected to +1SD	8 (28.57%)	1SD to 2SD	7 (25.00%)	Outside 3SD	1 (3.57%)
Action Level	95.4500	Median	3890.0000	Kurtosis	0.1097	Expected	0 (0.00%)	+2SD to +3SD	2 (7.14%)		
Groups	28	Mode	3792.5000	Skewness	0.6765	Expected to -1SD	10 (35.71%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	3901.7857	Range	430.0000	Inside 1SD	18 (64.29%)	2SD to 3SD	2 (7.14%)		
Ref Mean	3850.00	Std Dev	106.9806	Minimum	3760.0000	+1SD to +2SD	7 (25.00%)	+3SD	1 (3.57%)		

Figure 38. OREAS 152a Shewhart Control Chart for copper

OREAS 503d

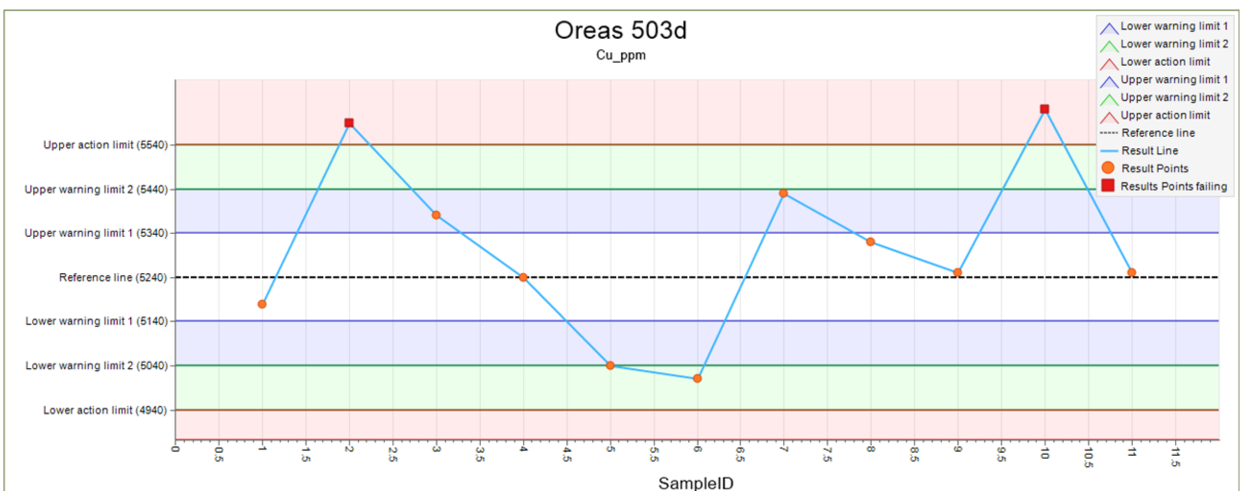
OREAS 503d was prepared from a blend of porphyry copper-gold ore, barren granodiorite and a minor quantity of Cu-Mo concentrate. The ore was sourced from the Ridgeway underground mine located in the Cadia Valley Operations (CVO) situated in central western New South Wales, Australia. The barren I-type hornblende-bearing granodiorite

was sourced from the Late Devonian Lysterfield granodiorite complex located in eastern Melbourne, Australia.
Total of 11 samples were analysed for gold and copper, and majority of the samples were within three SDs and close to the actual grades for both elements (Figure 35, Figure 36). There was one sample for gold and two for copper that was outside of three SDs.



File Name	Bg21001-Bg21004 standards	Ref Std Dev	0.01	Variance	0.0012	Maximum	0.7500	-1SD to -2SD	4 (36.36%)	-3SD	1 (9.09%)
Field Name	Au1_ppm	Count	11	Coeff. of Variation	0.0526	Expected to +1SD	0 (0.00%)	1SD to 2SD	4 (36.36%)	Outside 3SD	2 (18.18%)
Action Level	95.4500	Median	0.6500	Kurtosis	3.6501	Expected	0 (0.00%)	+2SD to +3SD	0 (0.00%)		
Groups	11	Mode	0.6505	Skewness	2.0409	Expected to -1SD	3 (27.27%)	-2SD to -3SD	2 (18.18%)		
Group Size	0	Mean	0.6545	Range	0.1300	Inside 1SD	3 (27.27%)	2SD to 3SD	2 (18.18%)		
Ref Mean	0.67	Std Dev	0.0345	Minimum	0.6200	+1SD to +2SD	0 (0.00%)	+3SD	1 (9.09%)		

Figure 39. OREAS 503d Shewhart Control Chart for gold

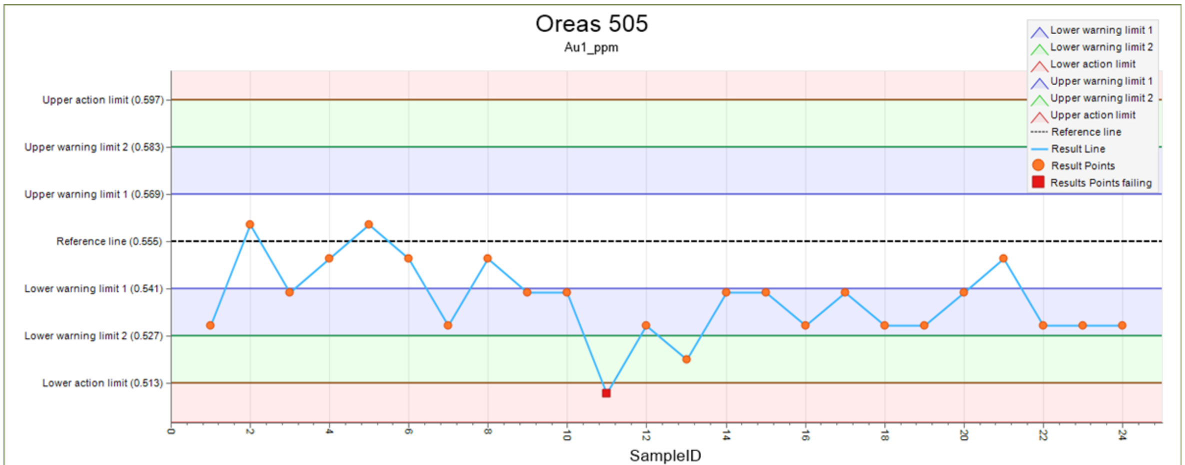


File Name	Bg21001-Bg21004 standards	Ref Std Dev	100.00	Variance	38489.0909	Maximum	5620.0000	-1SD to -2SD	1 (9.09%)	-3SD	0 (0.00%)
Field Name	Cu_ppm	Count	11	Coeff. of Variation	0.0370	Expected to +1SD	3 (27.27%)	1SD to 2SD	3 (27.27%)	Outside 3SD	2 (18.18%)
Action Level	95.4500	Median	5250.0000	Kurtosis	-0.7943	Expected	1 (9.09%)	+2SD to +3SD	0 (0.00%)		
Groups	11	Mode	5249.0000	Skewness	0.2037	Expected to -1SD	1 (9.09%)	-2SD to -3SD	1 (9.09%)		
Group Size	0	Mean	5300.9091	Range	610.0000	Inside 1SD	5 (45.45%)	2SD to 3SD	1 (9.09%)		
Ref Mean	5240.00	Std Dev	196.1864	Minimum	5010.0000	+1SD to +2SD	2 (18.18%)	+3SD	2 (18.18%)		

Figure 40. OREAS 503d Shewhart Control Chart for copper

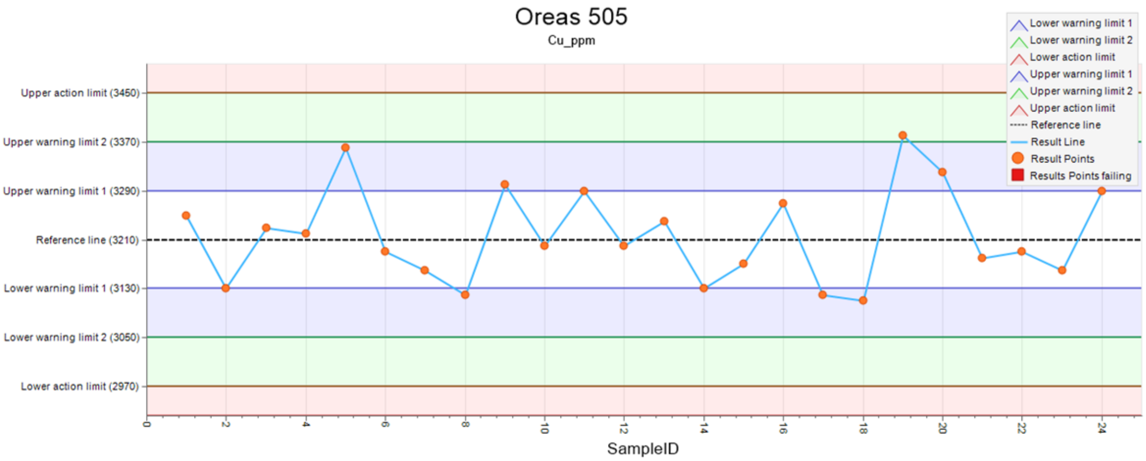
OREAS 505

OREAS 505 was prepared from a blend of porphyry copper-gold ores, barren granodiorite and a minor quantity of Mo concentrate. The ores were sourced from both the Northparkes Mine and Ridgeway Mine. Both mines are located in the Central West of New South Wales, Australia. The barren granodiorite was sourced from the mafic, S-Type, Late Devonian Bulla Granodiorite complex located in northern Melbourne, Australia.
Total of 24 samples analysed for both gold and copper where only one sample for gold was outside 3SD range (0.51 instead 0.513).



File Name	Bg21001-Bg21004 standards	Ref Std Dev	0.01	Variance	0.0001	Maximum	0.5600	-1SD to -2SD	16 (66.67%)	-3SD	1 (4.17%)
Field Name	Au1_ppm	Count	24	Coeff. of Variation	0.0221	Expected to +1SD	2 (8.33%)	1SD to 2SD	16 (66.67%)	Outside 3SD	1 (4.17%)
Action Level	95.4500	Median	0.5400	Kurtosis	-0.0355	Expected	0 (0.00%)	+2SD to +3SD	0 (0.00%)		
Groups	24	Mode	0.5305	Skewness	0.0198	Expected to -1SD	4 (16.67%)	-2SD to -3SD	1 (4.17%)		
Group Size	0	Mean	0.5375	Range	0.0500	Inside 1SD	6 (25.00%)	2SD to 3SD	1 (4.17%)		
Ref Mean	0.56	Std Dev	0.0119	Minimum	0.5100	+1SD to +2SD	0 (0.00%)	+3SD	0 (0.00%)		

Figure 41. OREAS 503d Shewhart Control Chart for gold

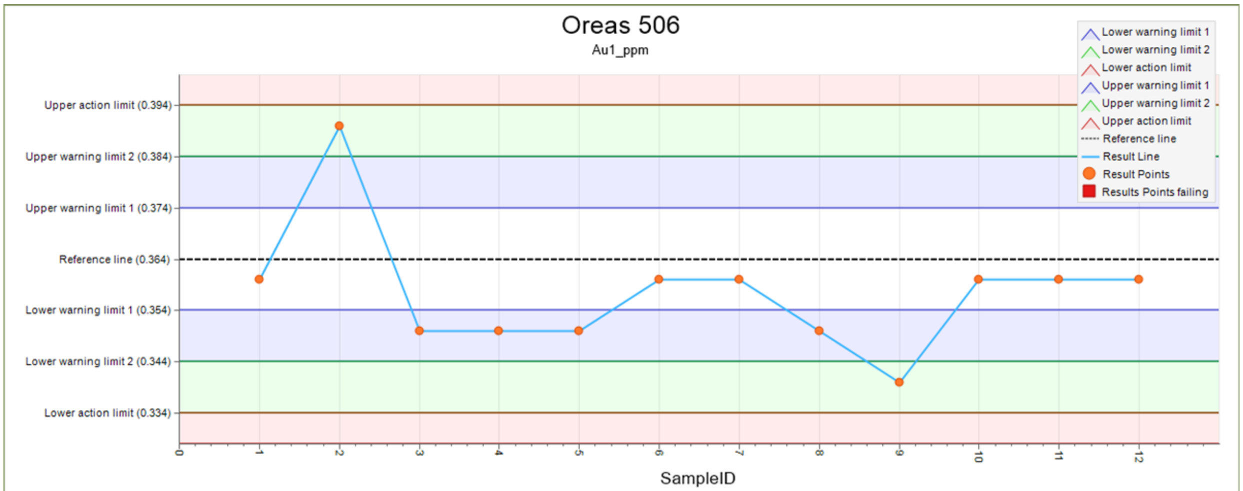


File Name	Bg21001-Bg21004 standards	Ref Std Dev	80.00	Variance	5969.3841	Maximum	3380.0000	-1SD to -2SD	3 (12.50%)	-3SD	0 (0.00%)
Field Name	Cu_ppm	Count	24	Coeff. of Variation	0.0240	Expected to +1SD	7 (29.17%)	1SD to 2SD	6 (25.00%)	Outside 3SD	0 (0.00%)
Action Level	95.4500	Median	3200.0000	Kurtosis	-0.7077	Expected	0 (0.00%)	+2SD to +3SD	1 (4.17%)		
Groups	24	Mode	3122.5000	Skewness	0.4739	Expected to -1SD	10 (41.67%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	3217.0833	Range	270.0000	Inside 1SD	17 (70.83%)	2SD to 3SD	1 (4.17%)		
Ref Mean	3210.00	Std Dev	77.2618	Minimum	3110.0000	+1SD to +2SD	3 (12.50%)	+3SD	0 (0.00%)		

Figure 42. OREAS 503d Shewhart Control Chart for copper

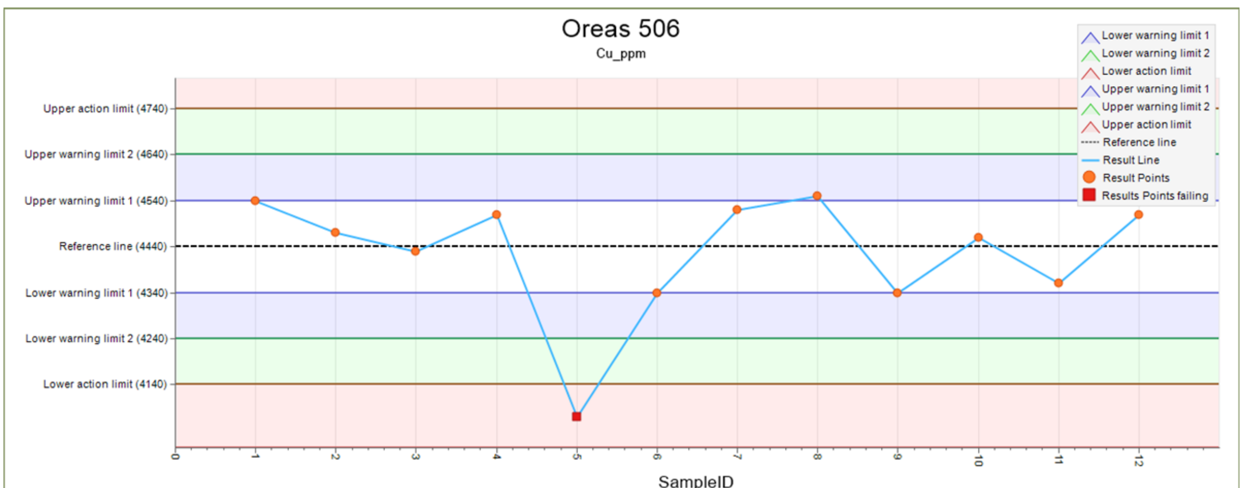
OREAS 506

OREAS 506 was prepared from a blend of porphyry copper-gold ore, barren granodiorite and a minor quantity of Cu-Mo concentrate. The ore was sourced from the Northparkes Mine located in the Central West of New South Wales, Australia. The barren granodiorite was sourced from the mafic, S-Type, Late Devonian Bulla Granodiorite complex located in northern Melbourne, Australia.
A total of 12 samples analysed for copper and gold where all samples are within SD range (Figure 39, Figure 40).



File Name	Bg21001-Bg21004 standards	Ref Std Dev	0.01	Variance	0.0001	Maximum	0.3900	-1SD to -2SD	4 (33.33%)	-3SD	0 (0.00%)
Field Name	Au1_ppm	Count	12	Coeff. of Variation	0.0340	Expected to +1SD	0 (0.00%)	1SD to 2SD	4 (33.33%)	Outside 3SD	0 (0.00%)
Action Level	95.4500	Median	0.3600	Kurtosis	2.5548	Expected	0 (0.00%)	+2SD to +3SD	1 (8.33%)		
Groups	12	Mode	0.3602	Skewness	1.4477	Expected to -1SD	6 (50.00%)	-2SD to -3SD	1 (8.33%)		
Group Size	0	Mean	0.3575	Range	0.0500	Inside 1SD	6 (50.00%)	2SD to 3SD	2 (16.67%)		
Ref Mean	0.36	Std Dev	0.0122	Minimum	0.3400	+1SD to +2SD	0 (0.00%)	+3SD	0 (0.00%)		

Figure 43. OREAS 506 Shewhart Control Chart for gold



File Name	Bg21001-Bg21004 standards	Ref Std Dev	100.00	Variance	18209.0909	Maximum	4550.0000	-1SD to -2SD	0 (0.00%)	-3SD	1 (8.33%)
Field Name	Cu_ppm	Count	12	Coeff. of Variation	0.0305	Expected to +1SD	6 (50.00%)	1SD to 2SD	1 (8.33%)	Outside 3SD	1 (8.33%)
Action Level	95.4500	Median	4465.0000	Kurtosis	1.9696	Expected	0 (0.00%)	+2SD to +3SD	0 (0.00%)		
Groups	12	Mode	4342.5000	Skewness	-1.5669	Expected to -1SD	4 (33.33%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	4425.0000	Range	480.0000	Inside 1SD	10 (83.33%)	2SD to 3SD	0 (0.00%)		
Ref Mean	4440.00	Std Dev	134.9411	Minimum	4070.0000	+1SD to +2SD	1 (8.33%)	+3SD	0 (0.00%)		

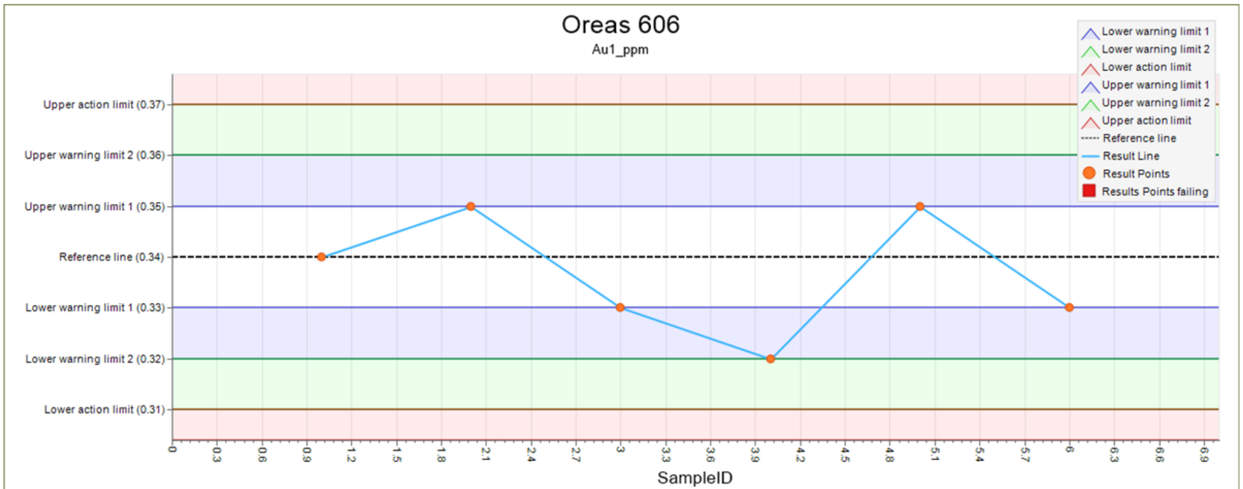
Figure 44. OREAS 506 Shewhart Control Chart for copper

OREAS 606

This CRM was prepared from a blend of silver-copper-gold bearing ores from Evolution Mining's Mount Carlton Operation in Queensland, Australia and argillic rhyodacite waste rock sourced from a quarry east of Melbourne, Australia.

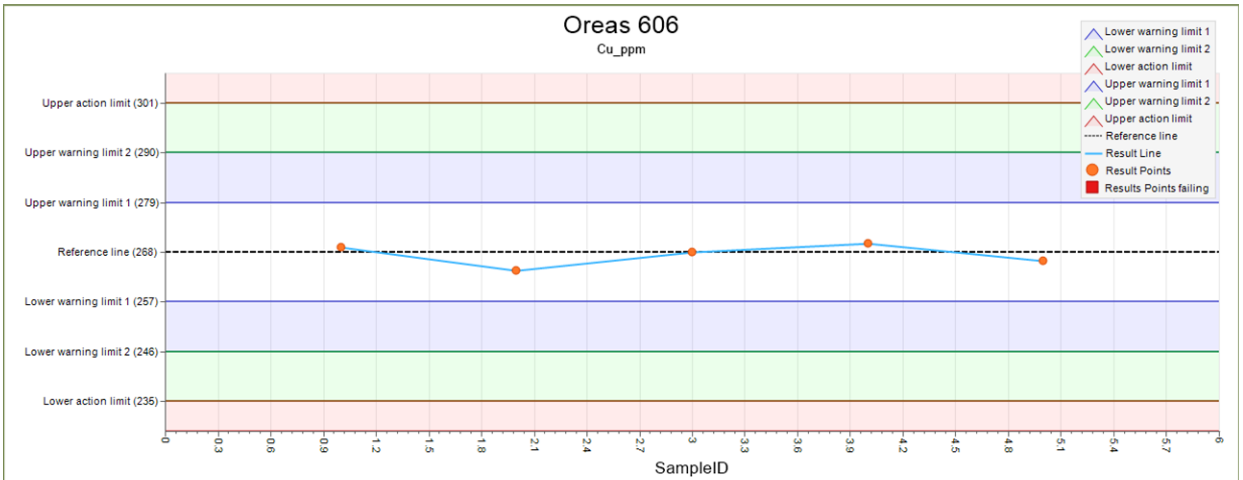
The mineralisation assemblage at Mount Carlton consists of pyrite, enargite/tennantite, tetrahedrite, digenite, covellite, sphalerite, galena, alunite, dickite, kaolinite and vuggy silica, hosted in advanced argillic altered rhyodacite containing Sulphur-salts.

Total of 6 samples was analysed for copper and gold, all within SD range.



File Name	Bg21001-Bg21004 standards	Ref Std Dev	0.01	Variance	0.0001	Maximum	0.3500	-1SD to -2SD	1 (16.67%)	-3SD	0 (0.00%)
Field Name	Au1_ppm	Count	6	Coeff. of Variation	0.0360	Expected to +1SD	2 (33.33%)	1SD to 2SD	1 (16.67%)	Outside 3SD	0 (0.00%)
Action Level	95.4500	Median	0.3350	Kurtosis	-1.3884	Expected	1 (16.67%)	+2SD to +3SD	0 (0.00%)		
Groups	6	Mode	0.3305	Skewness	-0.0548	Expected to -1SD	2 (33.33%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	0.3367	Range	0.0300	Inside 1SD	5 (83.33%)	2SD to 3SD	0 (0.00%)		
Ref Mean	0.34	Std Dev	0.0121	Minimum	0.3200	+1SD to +2SD	0 (0.00%)	+3SD	0 (0.00%)		

Figure 45. OREAS 606 Shewhart Control Chart for gold



File Name	Bg21001-Bg21004 standards	Ref Std Dev	11.00	Variance	5.8000	Maximum	270.0000	-1SD to -2SD	0 (0.00%)	-3SD	0 (0.00%)
Field Name	Cu_ppm	Count	5	Coeff. of Variation	0.0090	Expected to +1SD	2 (40.00%)	1SD to 2SD	0 (0.00%)	Outside 3SD	0 (0.00%)
Action Level	95.4500	Median	268.0000	Kurtosis	-1.2363	Expected	1 (20.00%)	+2SD to +3SD	0 (0.00%)		
Groups	5	Mode	263.9800	Skewness	-0.4034	Expected to -1SD	2 (40.00%)	-2SD to -3SD	0 (0.00%)		
Group Size	0	Mean	267.4000	Range	6.0000	Inside 1SD	5 (100.00%)	2SD to 3SD	0 (0.00%)		
Ref Mean	268.00	Std Dev	2.4083	Minimum	264.0000	+1SD to +2SD	0 (0.00%)	+3SD	0 (0.00%)		

Figure 46. OREAS 606 Shewhart Control Chart for copper

11.3.3 Blanks

In campaigns before 2021 a total of 318 blank samples (0.9% of all samples) were submitted for analysis. No information was provided by Copperbelt regarding the acquisition and preparation of the blank samples. Of all the blank material sampled, the majority had below detection or very low values reported; thus, the blank values indicate that there is very little contamination overall. However, it should be noted that only a small proportion of the whole database comprise blanks, and usually a greater number (~4% of all samples) would be expected.

Table 13.Blank assay results for period before 2021

Element	Minimum	Maximum	Mean	Median	No. of results
Au (ppm)	0.025	0.18	0.04	0.03	313
Cu (ppm)	3	2,893	273	175	240
Ag (ppm)	0.5	3.3	0.57	0.5	318

A total of 81 blank samples (2.49 % with insertion rate 1/40 samples) were submitted for analysis. The blank used is a quartz sand supplied locally by CJSC Quarry "Gora Khrustalnaya". For all the blank material analysed for gold, only one sample exceed the 3 x lower limit of detection (LLD) and this sample does not appear to indicate any carryover contamination. However, the copper does show higher values from 10-56 ppm and one sample returned 868 ppm Cu. This issue needs to be addressed by testing the blank value for copper with several analyses to check for possible contamination in the lab.

Table 14. Blank assay results 2021

Element	Minimum	Maximum	Mean	Median	No. of results
Au (ppm)	0.01	0.1	0.011	0.01	83
Cu (ppm)	4	868	36.33	19	83

Ag (ppm)	0.5	0.37	0.27	0.02	83

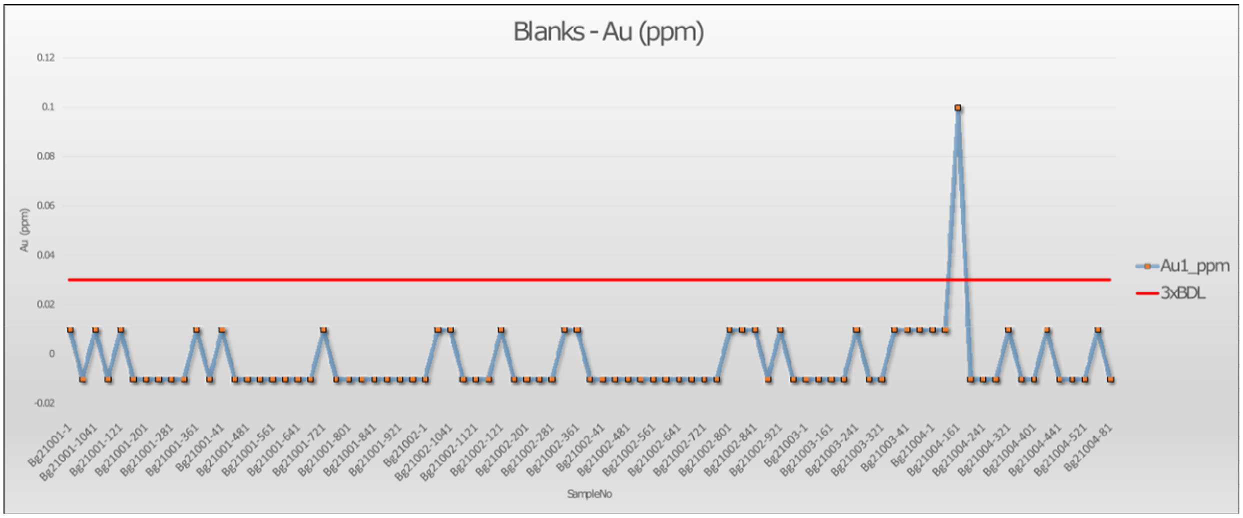


Figure 47. 2021 Blanks - control chart for gold

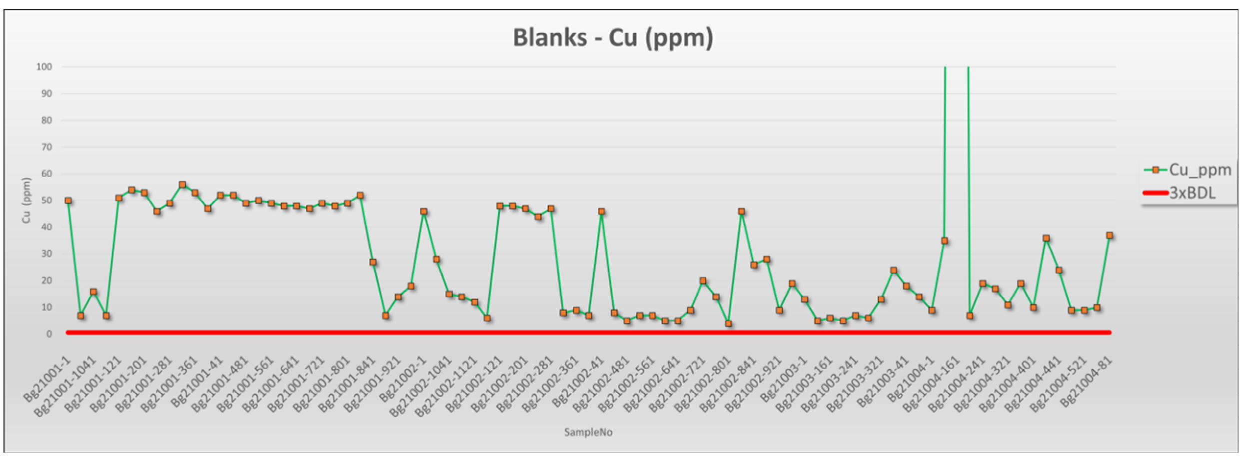


Figure 48. 2021 Blanks - control chart for copper

11.3.4 Duplicates

A total of 97 pulp duplicates were submitted in 2013 to estimate the laboratory assay precision and to quantify the related risk for the MRE. No information for duplicate samples submitted in other years has been provided by Copperbelt. The duplicates were analysed for gold, silver, and copper.

The laboratory results for all analysed elements show relatively good repeatability with the statistics and plots showing similar distributions. Tests for all laboratory results show a precision of ±4.05% for gold (Figure 45), ±2.91% for copper (Figure 46), ±2.36% for silver (Figure 47), which are within the acceptable limits and indicate a low risk related to assay precision. However, the available dataset represents just one year and a small proportion of the complete database (only 0.27% of all assays) so it is not possible to draw general conclusions on the quality of the entire assay dataset.

There is no information on core duplicates for previous drilling campaigns, and it has been assumed that no core duplicate samples were collected.

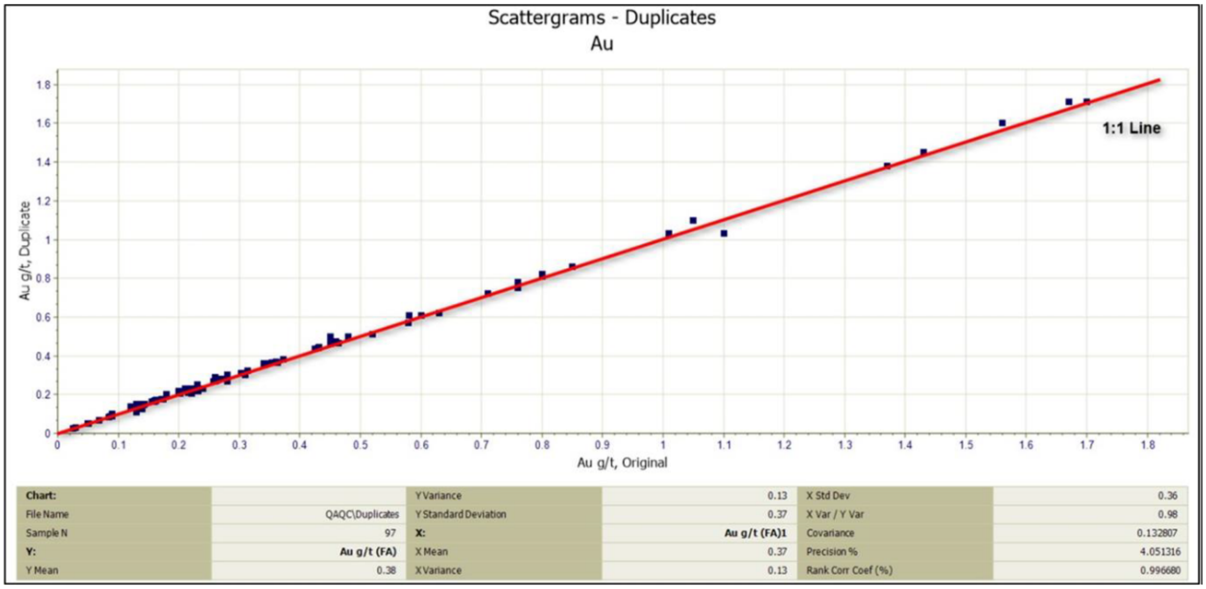


Figure 49. Linear regression of gold for duplicates from 2013

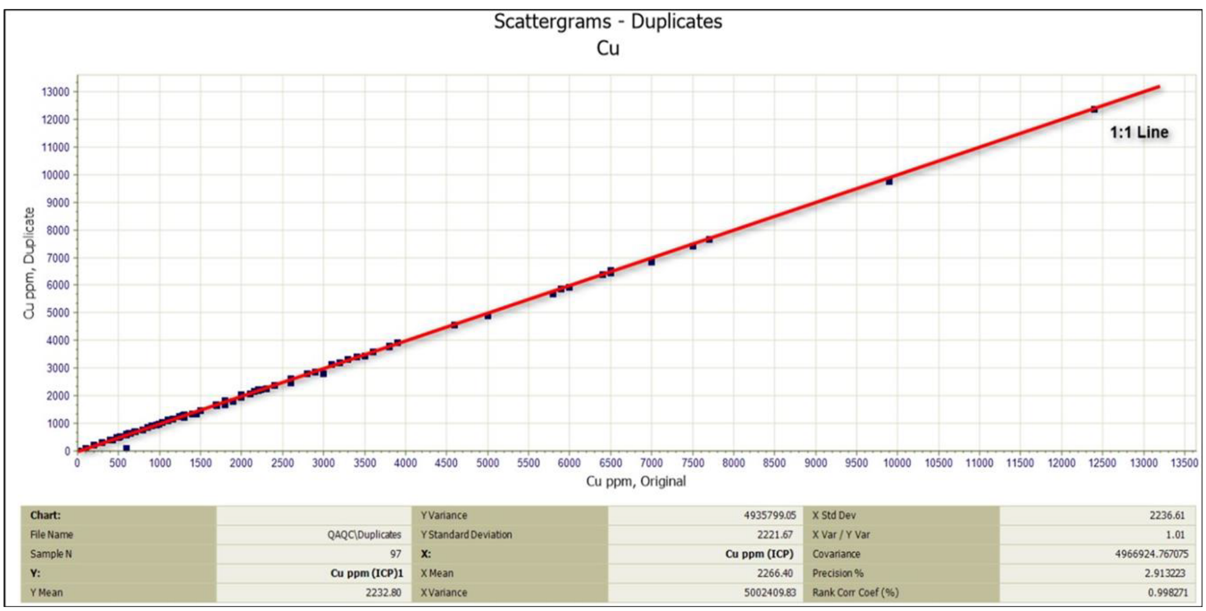


Figure 50. Linear regression of copper for duplicates from 2013

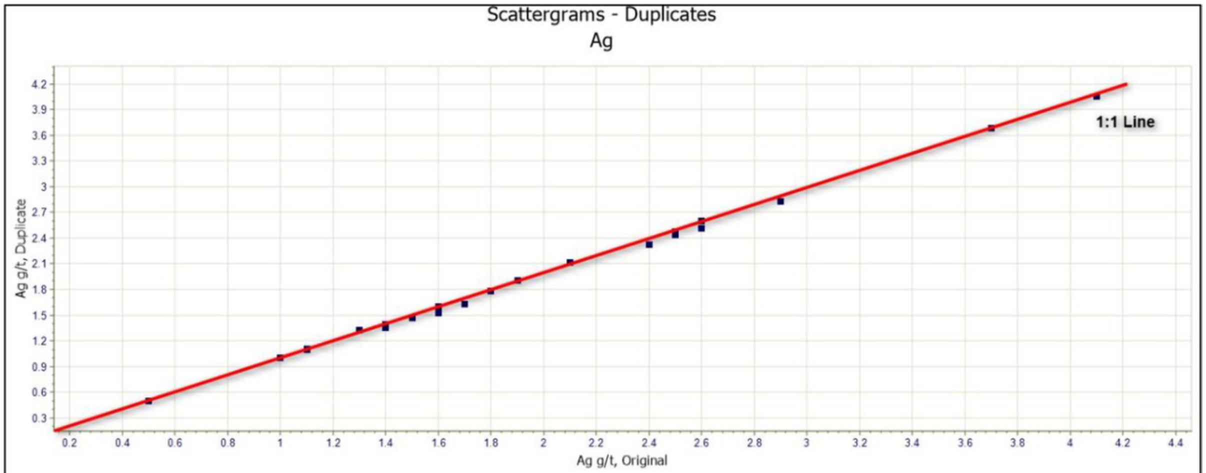


Chart:		Y Variance	0.64	X Std Dev	0.81
File Name	QAQC\Duplicates	Y Standard Deviation	0.80	X Var / Y Var	1.04
Sample N	97	**X:**	**Ag g/t (ICP)**	Covariance	0.649057
Y:	**Ag g/t (ICP)1**	X Mean	0.88	Precision %	2.356956
Y Mean	0.87	X Variance	0.66	Rank Corr Coef (%)	0.999954

Figure 51. Linear regression of silver for duplicates from 2013

During the Arras Minerals campaign in 2021 a total of 163 field duplicates – quarter of halved core (5.0 % with insertion rate 1/20 samples) were analysed. Results of copper and gold showed good repeatability with the plots showing similar distribution. Laboratory results for the duplicates returned a precision of ±19.96% for gold (Figure 48), ±26.58% for copper (Figure 49), and ±29.9% for silver (Figure 50). The industry standard is between 5-20% and Arras will need to review the duplicate procedure and data in detail to understand why these numbers are high.

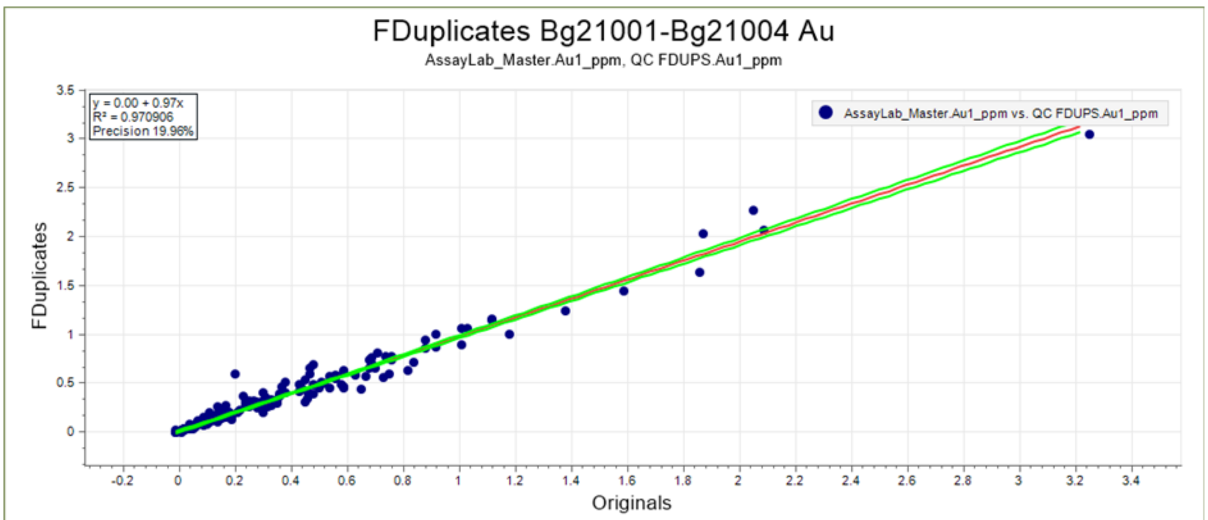


Chart:		b0	0.000000	Y Mean	0.39	X Std Dev	0.46
File Name	Bg21001-Bg21004 FDUPS	b1	0.971180	Y Variance	0.20	X Var / Y Var	1.06
Confidence level %	90.00	Corr Coeff (R)	0.985346	Y Standard Deviation	0.45	Covariance	0.201502
Sample N	163	R^2	0.970906	**X:**	**AssayLab_Master.Au1_ppm**	Precision %	19.959576
Model:	**Linear**	Rank Corr Coef (%)	0.98	X Mean	0.39	Rank Corr Coef (%)	0.976539
Model	$y = b_0 + b_1x$	**Y:**	**QC FDUPS.Au1_ppm**	X Variance	0.21		

Figure 52. Linear regression of gold for duplicates from 2021

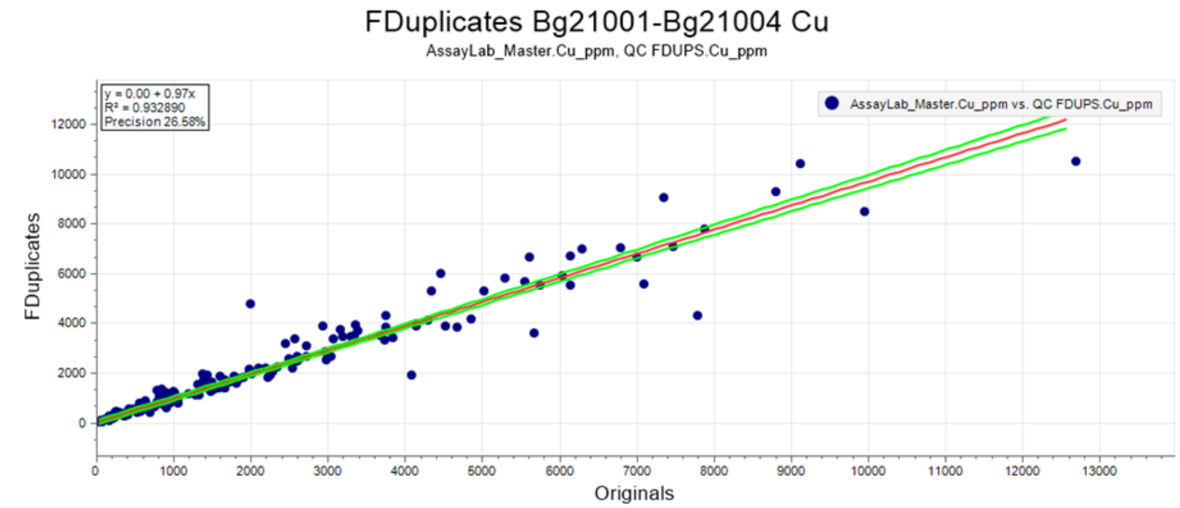


Chart:		b0	0.000000	Y Mean	2242.74	X Std Dev	2308.67
File Name	Bg21001-Bg21004 FDUPS	b1	0.968232	Y Variance	5064169.95	X Var / Y Var	1.05
Confidence level %	90.00	Corr Coeff (R)	0.965862	Y Standard Deviation	2250.37	Covariance	5018010.841968
Sample N	163	R²	0.932890	**X:**	**AssayLab_Master.Cu_ppm**	Precision %	26.581582
Model:	**Linear**	Rank Corr Coef (%)	0.98	X Mean	2251.29	Rank Corr Coef (%)	0.983398
Model	y = b₀ + b₁x	**Y:**	**QC FDUPS.Cu_ppm**	X Variance	5329967.89		

Figure 53. Linear regression of copper for duplicates from 2021

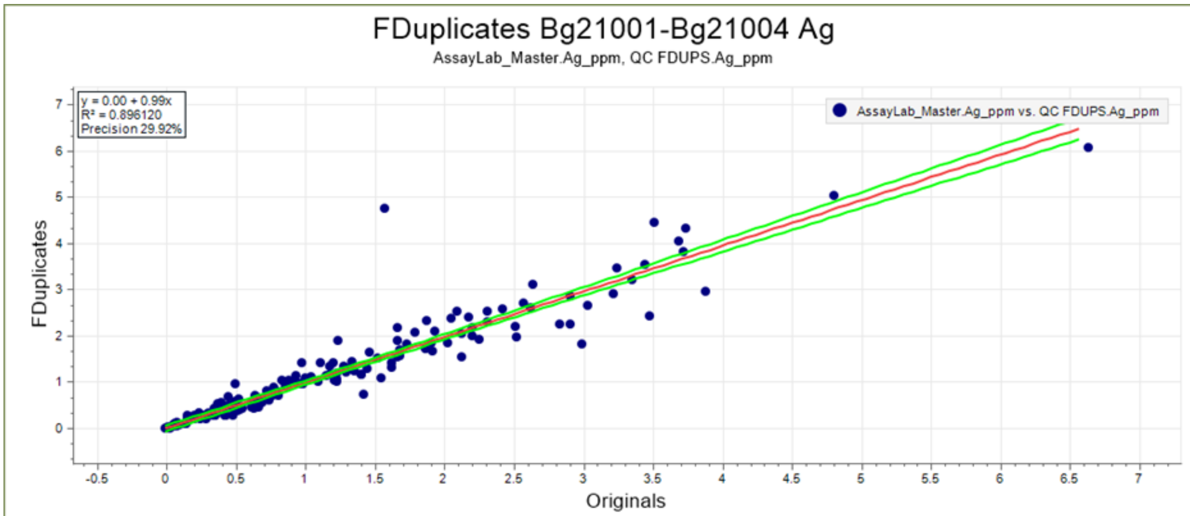


Chart:		b0	0.000000	Y Mean	1.22	X Std Dev	1.10
File Name	Bg21001-Bg21004 FDUPS	b1	0.987051	Y Variance	1.26	X Var / Y Var	0.96
Confidence level %	90.00	Corr Coeff (R)	0.946636	Y Standard Deviation	1.12	Covariance	1.171546
Sample N	163	R²	0.896120	**X:**	**AssayLab_Master.Ag_ppm**	Precision %	29.919284
Model:	**Linear**	Rank Corr Coef (%)	0.98	X Mean	1.22	Rank Corr Coef (%)	0.977506
Model	y = b₀ + b₁x	**Y:**	**QC FDUPS.Ag_ppm**	X Variance	1.22		

Figure 54. Linear regression of silver for duplicates from 2021

11.4 Author's Opinion on Sample Preparation, Security and Analytical Procedures

It is the Qualified Person's opinion that the reported sample preparation and analyses were completed in line with industry standards and are adequate for the purposes of this Mineral Resource Estimate and Technical Report. Although the number of CRM, duplicate and blank samples are lower than what is considered appropriate, based on the assessment of the quality control data, the Qualified Person considers that the quality of assays is adequate and suitable to be used for the Mineral Resource Estimate.

The Qualified Person however does note that documentation of historical quality control data is incomplete and has identified quality control as a risk to the Mineral Resource Estimate and has considered this in classification. Additional check sampling and analysis on existing drill core and pulps is recommended in the next phase of work to bring the type and proportion of data to accepted industry standards. The current industry best practice recommendations are that at least 4% CRM, 4% blank as well as field duplicates (cut core), coarse reject duplicates (split off after crushing) and pulp duplicates (split off after pulverising) are added to each batch. The CRM's and blanks should be supplied blind by Arras.

12 Data Verification

12.1 Site Visit

A site visit was carried out by David Underwood, Qualified Person, between 21 October and 08 November 2021, during which drill rigs and core storage sites were visited, and logging and sample preparation facilities and procedures were inspected. All procedures observed were considered appropriate.

During the site visit, David Underwood observed core logging and sampling procedures, reviewed sampling preparation facilities and procedures, and inspected documentation related to drilling, sampling, and assaying. No samples were collected for additional laboratory verification; however, mineralized intervals were inspected and compared with assay values for confirmation of mineralization.

12.2 Data Validation

The Authors have reviewed all of the information provided by the Company and all publically available historical reports.

Original assay certificates were made available for drilling completed between 2007 and 2021. The Author compared randomly chosen sample intervals within the drill database provided by the Company, to the original assay certificates. Several instances were noted where provisional values were not updated with final assay values. The database was updated using the final certified values. No other discrepancies were identified.

Drill hole logs from all years of drilling were reviewed for consistency and anomalies. Intervals were inspected for gaps in data or overlaps. No discrepancies were identified.

Validation completed as part of the Mineral Resource estimation is described in Section 14.

It is the Qualified Persons' opinion that the data available are a reasonable and accurate representation of the Beskauga Project and are of sufficient quality to provide the basis for the conclusions and recommendations reached in this Technical Report.

13 Mineral Processing and Metallurgical Testing

Six metallurgical testing programs have been conducted on the mineralisation at Beskauga between 2009 and 2017. The results obtained during each phase of testing indicated specific areas that needed further evaluation in subsequent phases. Larger scale (pilot plant) and downstream testing programs were also carried out as part of later phases of work, as is typical for large-scale copper porphyry projects.

The following is a summary of the chronology of the testing programs completed to date:

- 2009: Kazmekhanbor, Almaty, Kazakhstan – initial evaluation of flotation testing on a master composite
- 2010: ALS Ammtec, Perth, Australia – mineralogical evaluation and flotation response on average grade metallurgical composite
- 2011: ALS Ammtec, Perth, Australia – flotation response on high grade metallurgical composite
- 2015: Wardell Armstrong International (WAI), Cornwall, United Kingdom – comminution and flotation optimization testing on various metallurgical composites
- 2017: WAI, Cornwall, United Kingdom – gold optimization testing on bulk products.
- 2017: HRL Testing, Brisbane, Australia – Toowong Process amenability testing.

13.1 SAMPLE SELECTION

13.1.1 *2009 Kazmekhanbor Metallurgical Composite Sample*

A single master composite representing the resource grade was obtained from holes BG1 and BG3. Half HQ core samples were shipped to the Kazmekhanobr laboratory in Almaty. Twenty-five core samples were used to create 104.3 kg sample averaging 0.875 g/t Au and 0.424% Cu, 5.1 g/t Ag, and 0.05% As.

13.1.2 *2010 ALS Ammtec Metallurgical Composite Sample*

Two metallurgical composite samples were prepared for the 2010 metallurgical program conducted by ALS Ammtec, from holes drilled during the 2009 and 2010 drilling campaigns. The composites were as follows:

- A “resource grade” composite of 106.7 kg, created from 11 samples from holes Bg30, Bg31, Bg32, and Bg33, averaging 0.45 g/t Au and 0.2% Cu, 5.135 g/t Ag, and 0.065% As
- A 43.9 kg “high-grade” composite created from 11 samples from holes Bg23, Bg25, Bg26, and Bg27 averaging 0.67 g/t Au and 0.68% Cu, <2 g/t Ag, and 0.017% As.

Half HQ core was shipped to the Ammtec laboratory in Perth where the composite was prepared.

13.1.3 2015 WAI Metallurgical Composite Sample Grade

Three composite metallurgical samples were prepared by WAI in 2015 representing a composite sample for a potential “starter pit”, a composite sample representing the “average grade” of the resource, and a composite representing “high-grade” within the resource. The sample intervals from various drillholes are as follows:

- Starter Pit Composite: 11 samples from 11 holes totaling 217.3 kg (Bg63, Bg64, Bg65, Bg66, Bg67, Bg68, Bg71, Bg74, Bg77, Bg78 and Bg79) averaging 0.56 g/t Au and 0.38% Cu, 1.46 g/t Ag, and 0.06% As
- Average Grade Composite: 30 samples from four holes totaling 233.9 kg (Bg68, Bg74, Bg77 and Bg79) averaging 0.43 g/t Au and 0.29% Cu, 1.21 g/t Ag, and 0.044% As
- High Grade Composite: 11 samples from 11 holes totaling 209.9 kg (Bg63, Bg64, Bg65, Bg66, Bg67, Bg68, Bg71, Bg74, Bg77, Bg78 and Bg79) averaging 0.91 g/t Au and 0.51% Cu, 2.13 g/t Ag, and 0.078% As.

Half HQ core was shipped to the WAI laboratory in Cornwall where composites were prepared. The 2010 and 2015 composite samples were also used for later test work.

13.2 METALLURGICAL TEST RESULTS

13.2.1 Mineralogy

An initial mineralogical assessment undertaken by Kazmekhanobr in 2010 using optical microscopy on the composite samples showed mineralogy typical of copper-gold porphyry. Mineralisation is comprised of pyrite, chalcopyrite, tennantite, magnetite, and hematite (with minor molybdenite, bornite, sphalerite, galena, pyrrhotite, native gold and silver telluride), and was seen to vary between disseminated and vein style. Mineralisation was hosted in a strongly potassic-altered diorite that was often overprinted with later silicification, sericitization, and argillic alteration.

QEMSCAN® test work was carried out on the “Starter Pit” composite by as part of the 2015 WAI metallurgical test work program. The sample was subdivided into four size fractions (106 µm, -106/+53 µm, -53/+20 µm, and -20/+2 µm). The aim was to determine mineralogy, mineral association and liberation characteristics, mineral deportment and theoretical grade recovery curve information.

The test work showed that sulphide mineralisation is comprised of predominantly pyrite and chalcopyrite, with lesser copper arsenides, bornite, chalcocite (in slightly varying proportions depending on grain size – Figure 51), with gangue mineralogy comprised of predominantly quartz and muscovite, with minor K-feldspar, plagioclase feldspar, ankerite, iron/manganese carbonate, chlorite and biotite with trace barite, ilmenite, rutile, apatite and zircon. “Cu arsenides” is assumed to include tennantite and possibly enargite.

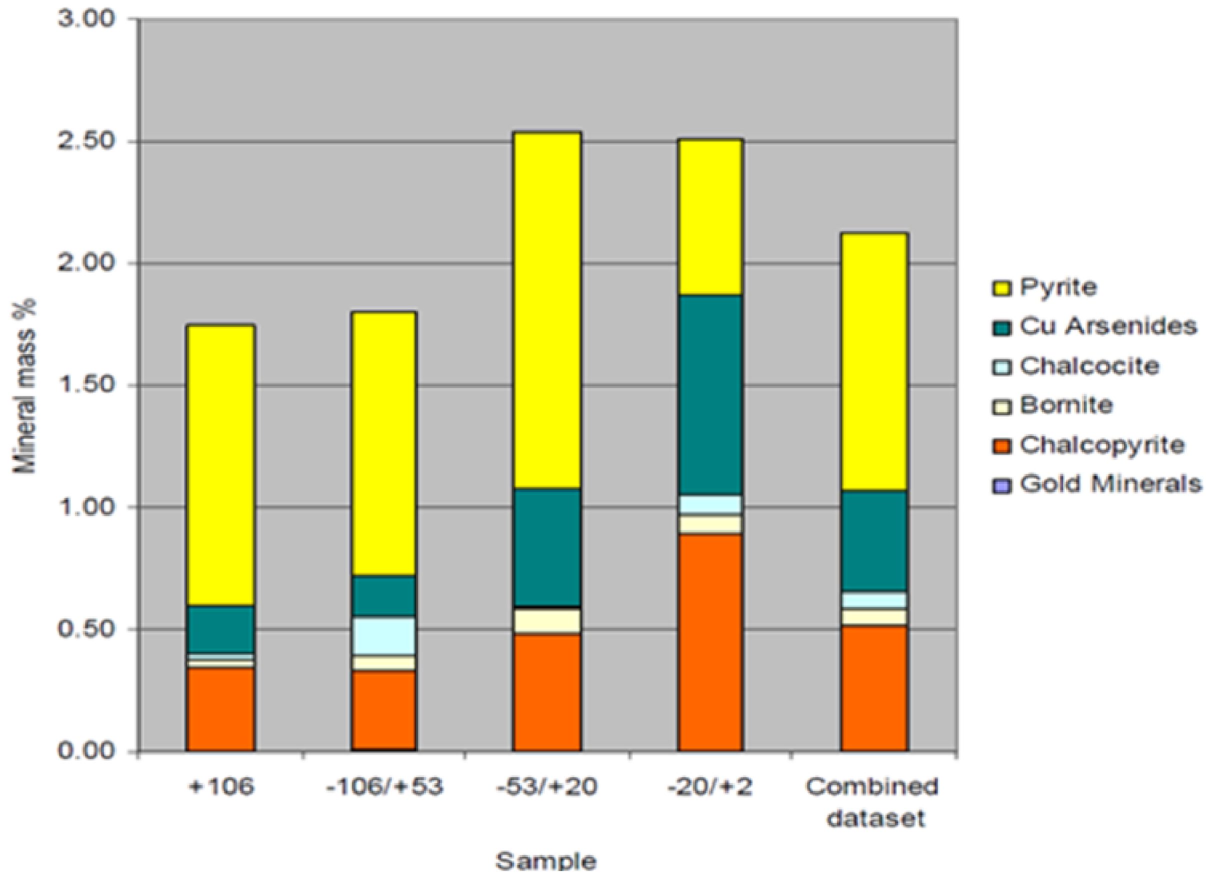


Figure 55. QEMSCAN® modal mineralogy for the sulphide phases

13.2.2 Bench-Scale Test work

The laboratory testing program completed at Ammtec in 2010 provided encouraging copper recovery results (78.44 %) but the concentrate grades of 18.48% Cu were lower than desired. Initial open cycle cleaner tests also identified high arsenic levels in the final copper concentrate arising from the presence of tennantite (Cu12As4S13). Molybdenum grades in the feed were too low to produce a saleable molybdenum concentrate.

Subsequent bench-scale test work by WAI in 2015 focused on testing of a starter pit composite and an average copper grade composite in order to represent the life-of-mine resource grade for the Beskauga Main zone. Additionally, a high-grade copper and gold composite was tested to determine maximum design parameters for the flotation circuit, with respect to residence time and concentrate production.

Bench-scale float tests at both Ammtec and WAI entailed a rougher/scavenger stage to recover most of the mineralisation into a low concentrate mass (at a primary grind size P80 of 120 µm), followed by regrinding the rougher/scavenger concentrate and then utilising three-stage cleaning to produce a final copper concentrate. Regrind optimization tests showed that the optimum concentrate regrind size was a P80 of 34 µm.

Open cycle cleaner tests carried out on the Average Grade Composite indicated that a recovery of 80.3% was achievable into a concentrate mass of 0.95% by weight, assaying 23.74% Cu. Additional locked cycle tests indicated that a copper recovery of 84.8% could be achieved into a concentrate mass of 1.17% by weight, assaying 20.15% Cu. Gold recovery to the final cleaner copper concentrate was 54.6%, at a final concentrate grade of 19.8 g/t Au.

This gold recovery was considered lower than expected, and further gold optimization test work was initiated to determine effect of pH on gold float performance, as well as testing of a sequential chalcopyrite-pyrite float with separate regrinding and cleaning of the chalcopyrite and pyrite rougher/scavenger concentrates.

13.2.3 Flotation Test work

Flotation optimization test work was carried out by Ammtec (2010) and WAI (2015), both carrying out open-cycle rougher and cleaner testing with WAI also carrying out locked cycle test work. The composite samples used had similar head grades of copper (0.2% Cu – Ammtec, 0.29% Cu – WAI) and gold (0.45 g/t Au – Ammtec, 0.43 g/t Au – WAI), representing “average grade” material. However, the Ammtec sample had substantially higher total sulphur content (1.47%) than the WAI sample (0.55%), owing to a higher pyrite content in the Ammtec sample. As a result of the increased pyrite content, there is evidence of non-selectivity during the Ammtec rougher/scavenger flotation.

Ammtec Flotation Tests – 2010

The Ammtec results show that highest rougher recovery (copper recovery of 90.0%) was achieved at a primary grind size P80 of 75 µm (Figure 52), with a concentrate mass of 7.29% by weight, assaying 2.63% Cu. Gold recovery to the rougher/scavenger concentrate was 74.5% at 4.8 g/t Au. Because typical low-grade copper porphyry projects require high installed grinding power requirements for high throughput rates, a standard primary grind size P80 of 106 µm is probably the more suitable for future cleaner tests, as this size achieved recoveries very close to the 75 µm tests (Figure 52).

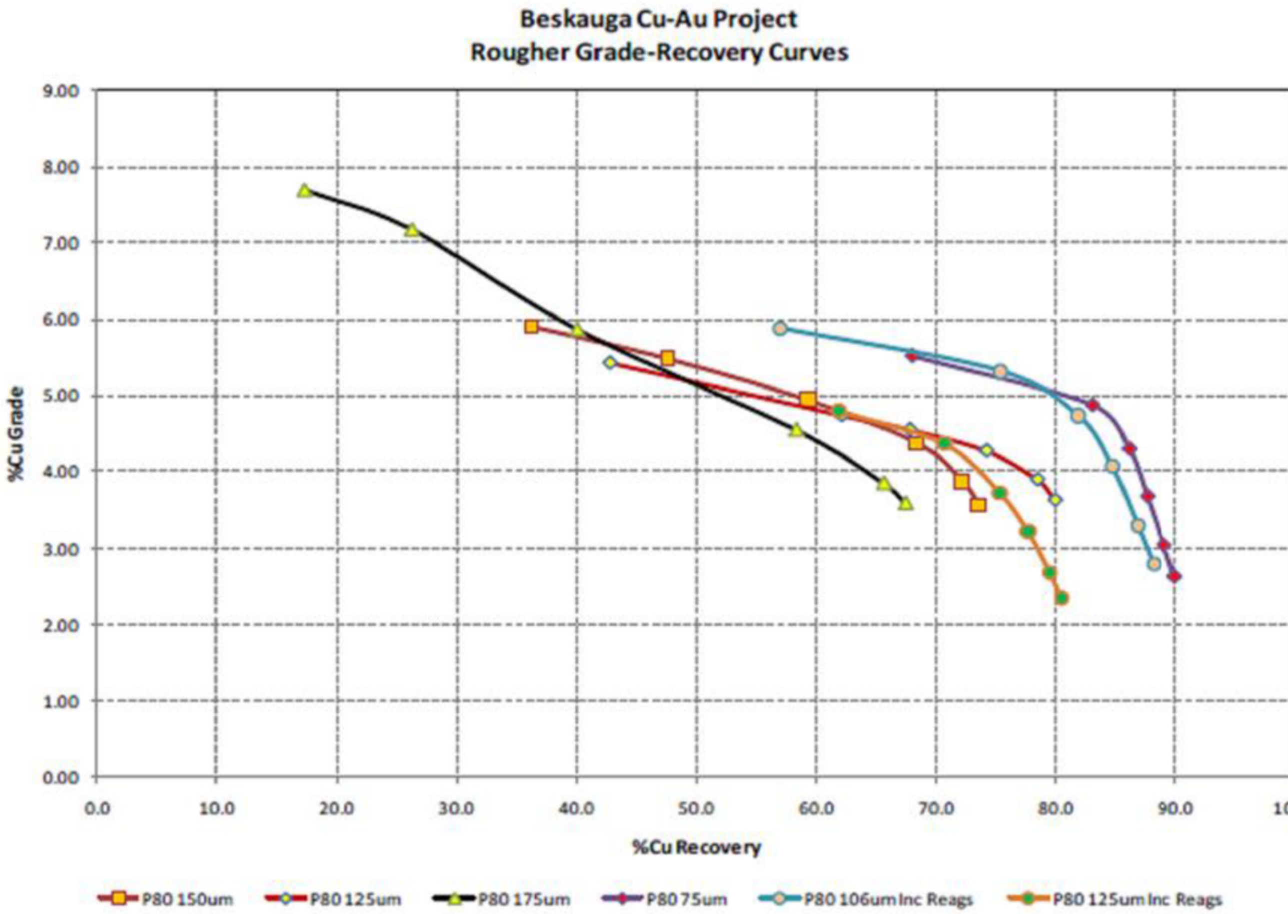


Figure 56. Ammtec "Average Grade" rougher/scavenger grade-recovery curves

Ammtec also conducted a rougher/scavenger float test on the high-grade copper composite to determine its flotation performance. Optimal grade-recovery performance to the rougher/scavenger concentrate was achieved at pH 10.5, with 88.4% Cu recovery into a concentrate mass of 5.72%, assaying 5.30% Cu. Gold recovery was 74.7%, at 11.3 g/t Au.

Ammtec conducted two-stage cleaner tests on the average grade and high-grade copper composite samples, at various concentrate regrind sizes and pH levels.

In the most optimal two-stage cleaner test for the average grade (Figure 53), overall copper recovery was 78.44%, at a final concentrate grade of 18.48% Cu. Gold recovery to the copper concentrate was 45.59% at a gold grade of 21.9 g/t Au. The cleaner grade-recovery curves achieved by Ammtec were satisfactory; however, the high pyrite content resulted in difficulty achieving a >21% Cu target saleable copper concentrate after two stages of cleaning. In the most optimal three-stage cleaner test for the high-grade, copper recovery was 80.5%, at a final concentrate grade of 27.6% Cu. Gold recovery to the copper concentrate was 59.0% at 51.0 g/t Au.

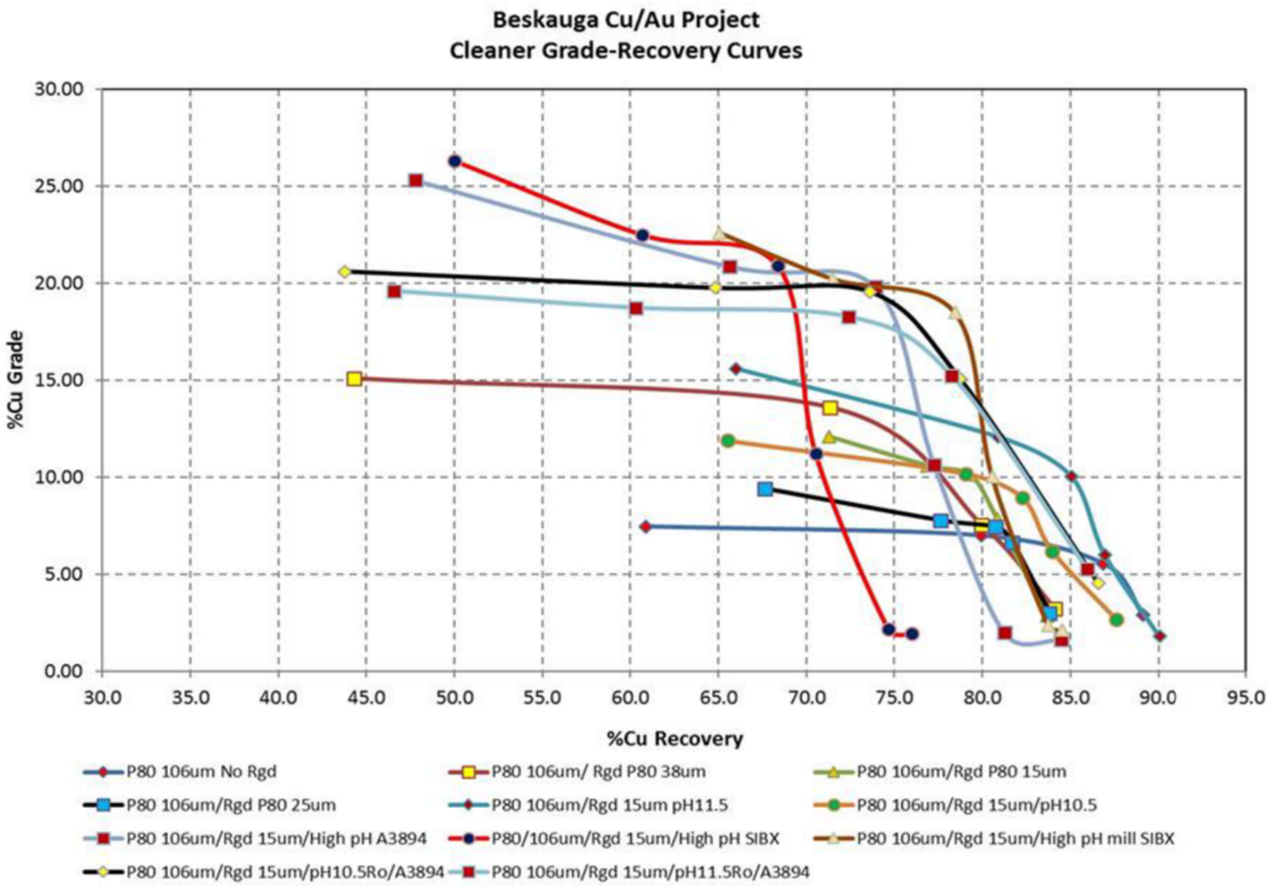


Figure 57. Ammtec "Average Grade" cleaner grade-recovery curves

WAI Flotation Tests – 2015

WAI conducted rougher optimization float tests on three main composites (Starter Pit, Average Grade, and High Grade) using the optimum test conditions derived from the Ammtec testing program in 2010. A series of rougher tests were conducted to determine the effect of primary grind size, collector type and float time on the rougher flotation performance. The primary objective of the rougher tests was to maximize both copper and gold recoveries into the rougher concentrate product.

Rougher performance improved relative to the 2010 Ammtec tests, with >90% copper recovery and >70% gold recovery achieved for all samples (Table 14), at a grind size P80 of 120 µm (coarser than that used for the 2010 test work).

Table 15 Results of optimal WAI rougher tests for three different samples

Composite ID	Test no.	P80 µm	Concentrate mass wt.%	Grade			Recovery		
				Cu %	Au g/t	% TS	Cu %	Au g/t	% TS
Starter Pit	FT 8	120	14.52	1.97	2.72	3.97	92.54	74.27	91.34
Average Grade	FT 1	120	19.40	1.29	1.69	2.70	90.92	75.77	91.179
High Grade	FT 5	120	17.49	2.59	4.03	5.99	94.66	78.78	82.14

A number of first cleaner (timed kinetics) and three-stage open cycle cleaner tests were also carried out to test several variables including regrind size, pH and float time. The primary objective of the open cycle cleaner tests was to maximize copper and gold recoveries at a saleable concentrate grade of circa 22% Cu. Concentrate grades of >22% Cu were achieved for all samples, with recoveries between 78.18% and 87.58% (Table 15).

Table 16. Results of optimal WAI cleaner tests for three different samples

Composite ID	Test no.	Concentrate mass wt.%	Grade			Recovery		
			Cu %	Au g/t	% TS	Cu %	Au g/t	% TS
Starter Pit	FCT 16	0.93	24.72	24.76	27.03	78.18	49.50	43.52
Average Grade	FCT 7	0.95	23.74	23.79	29.17	80.26	50.93	53.91
High Grade	FCT 11	1.87	22.61	27.74	35.32	87.58	65.63	60.69

Locked cycle tests were carried out on each of the Beskauga Main metallurgical composites. In these tests, the cleaner tails streams from each of the cleaner stages are recycled back through to the head of the previous unit cleaner stage. The locked cycle tests were carried out for six cycles in order for equilibrium to be achieved. The objective of the locked cycle testing was to determine the final copper and gold grade recovery relationships that could be expected under actual plant conditions.

For all samples, copper grades of >20% were achieved at recoveries ranging from 82.66% to 89.06% (Table 16). A comprehensive analysis of the concentrate showed that there are potential issues with the arsenic, antimony and mercury levels in the final copper concentrate which would incur smelter penalties. However, it appears these smelter penalty elements can be removed using the Toowong leach technology (see Section 13.2.6).

Table 17. Average grade from different areas of the Beskauga deposit

Composite	Product	Copper		Gold		Total sulphur	
		Grade (%)	Recovery (%)	Grade (ppm)	Recovery (%)	Grade (%)	Recovery (%)
Shallow at surface mineralisation	Concentrate	21.96	82.66	22.92	56.65	26.74	52.95
	Tailings	0.05	17.34	0.20	43.35	0.27	47.05
Average Grade	Concentrate	20.15	84.74	19.83	54.63	27.35	61.23
	Tailings	0.04	15.26	0.20	45.37	0.21	38.77
High Grade	Concentrate	21.48	89.06	28.01	67.57	37.41	69.55
	Tailings	0.05	10.94	0.27	32.43	0.33	30.45

13.2.4 Cyanidation Leach Testing

Based on mineralogical investigation, the gold at Beskauga Main is primarily associated with chalcopyrite, with minor pyrite and non-sulphide gangue associations. Investigative testing looked to determine the potential for leaching of gold lost in the rougher and 1st cleaner scavenger tail products, via a separate “add on” carbon-in-leach (CIL) circuit.

Cyanide leach testing was carried out on the rougher and 1st cleaner scavenger tail products from the 2015 WAI flotation tests, which make up the final tailings and the overall gold losses. Bulk sulphide flotation was also carried out on the rougher tail to establish the gold recovery to a pyrite concentrate.

Direct cyanidation leach tests were conducted at varying cyanide concentrations to determine potential recoveries for gold and silver. Results showed that there is a high proportion of cyanide soluble gold in the rougher tail and 1st cleaner scavenger tail products and that good recoveries (52.8% and 60.4%, respectively) could be achieved. However, owing to the large mass pull to the rougher tails (>88% by weight), it is unlikely to be viable to leach the entire rougher tail at the proposed design tonnage rate of 13 million tonnes per annum, therefore the proposed approach is to include a pyrite float stage on the rougher tailings stream to produce a gold-bearing pyrite concentrate. The pyrite concentrate in combination with the 1st cleaner scavenger tail would be sent to a conventional CIL circuit.

13.2.5 Copper/Molybdenum Separation Testing

The recovery and upgrading of molybdenum contained in a bulk flotation concentrate was the objective of test work conducted at Ammtec Perth, Australia. Testing of the concentrate from the high-grade composite sample focused on using additional flotation stages to recovery molybdenum from bulk flotation concentrates. The key parameters evaluated included rougher flotation density, rougher flotation time, molybdenum concentrate re-grind requirements, and the number of cleaning stages required in molybdenum flotation.

The molybdenum recovery to the copper rougher concentrate, was 24.5%. Following three stages of molybdenum cleaning, a concentrate grade of 15.9% Mo with 15.2% molybdenum recovery was obtained. It was concluded that the molybdenum grade in the sulphide ore was too low to warrant incorporating a copper-molybdenum circuit.

13.2.6 Toowong Process Test Program

The Toowong Process is an emerging hydrometallurgical treatment process designed to remove arsenic, antimony and other metalloid and non-metal penalty or hazardous elements from base and precious metal concentrates. The Toowong Process has underdone numerous test work programs including continuous pilot plant testing on concentrates from the Tampakan copper project in the Philippines, which successfully reduced the arsenic content of the concentrates from 1.1% As to 0.05% As. Although at a pilot stage, it utilises established hydrometallurgical processes. At the heart of the process is a patented Alkaline Sulphide Leaching step that solubilises key penalty impurities or metals, generating either an enrichment product or a process stream suitable for conventional downstream metal recovery.
A final copper concentrate sample produced from the 2017 WAI test work was used to test the amenability of Beskauga concentrate for the Toowong process. Preliminary benchtop leaching test work demonstrated that the concentrate can be treated to remove arsenic. In Test 3, arsenic was reduced from 3.69% to 0.31% after 24 hours leaching time. Antimony was reduced from 0.224% to 0.023%.

Leaching was found to be selective for arsenic and antimony with the following results for other elements:

- Gold extraction was negligible in all tests and reported with the clean concentrate product

- Copper and iron are insoluble in the Toowong Process leaching conditions and remain in the leached concentrate (leach residue)
- Mercury was partially removed (28%) after 24 hours
- Reagent use may be reduced by closed circuit processing and further optimizations to the process.

13.2.7 Conclusions, Risks and Other Factors

Several stages of test work have demonstrated the following key findings:

- Approximately 85% or above of the copper in the Beskauga deposit can be recovered to a sulphide concentrate via floatation using a coarse grind size P80 of 120 µm, resulting in a copper concentrate >21% Cu.
- Approximately 55% of the gold contained in the Beskauga deposit reports to the copper concentrate, which grades at approximately 20 g/t Au or above.
- An additional 19.5% of the gold in the Beskauga deposit that does not report to the copper concentrate could potentially be recovered by including a pyrite float stage on the rougher tailings stream to produce a gold bearing pyrite concentrate. The pyrite concentrate in combination with the first cleaner scavenger tail would be sent to a conventional CIL circuit to recover the gold as a gold doré.
- The Toowong Process is a potential avenue to address penalty levels of arsenic in the copper concentrate.

14 Mineral Resource Estimates

14.1 Data Import and Validation

The Beskauga drill hole data was provided to Archer Cathro, on December 12, 2021, as Microsoft Excel files and comprised:

- Collar Locations
- Downhole survey information
- Lithology
- Drill hole assays

Surfaces representing overburden, topography, faults, and lithologies was presented in DXF format.

All of the data was imported into Geovia GEMS and validated. Data was inspected for overlapping or missing data, inconsistent hole depths, downhole survey errors, and mis-matching hole identification. No issues were found with the provided data.

A total of 40,037 samples in 105 drill holes have been collected on the Property. Of these, 29,436 samples in 85 drill holes were used to estimate the Mineral Resource.

Drill hole data included in the files provided by the Company for the Beskauga deposit is summarized in the table below.

Table 18: Drillhole database files

Description	No. of records
Drillhole collars	105
Drillhole survey	2,162
Assay data	40,037

14.2 Solid and Surface Interpretation

Wireframes representing mineralized areas were generated by the Company in Leapfrog. Grade shells were based on copper and gold assay data and took into consideration lithological constraints and known structural trends.

The interpreted 3D solid wireframes for the mineralized envelopes (Figure 41) and lithological units were used to constrain the mineral resource estimate.

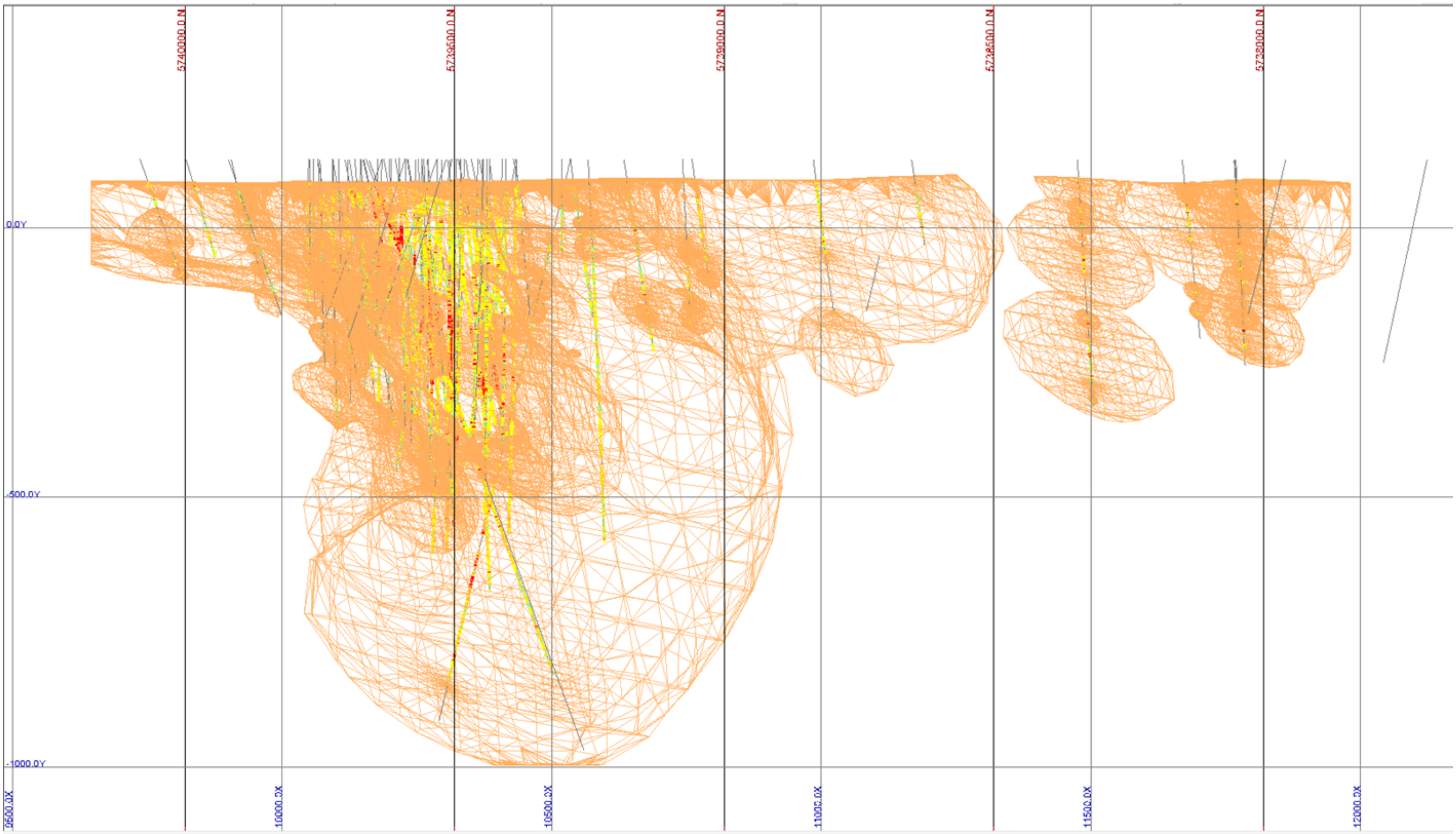


Figure 58. Mineralized solids – View looking east

14.2.1 Topography

The topographic surface for the deposit was constructed from the drillhole collar elevations. Since the deposit area is relatively flat and the mineralization does not crop out at surface, this is considered sufficient for the Mineral Resource estimate.

14.2.2 Overburden

A surface representing overburden deposit was constructed from the drillhole lithology logs. The depth to overburden is relatively consistent throughout the deposit area. This surface was used to clip the mineral resource wireframes.

14.3 Statistical Analyses

Classical statistical analysis was carried out for samples within the mineralization wireframes. Samples not within these wireframes do not impact the Mineral Resource estimate.

Samples were coded separately for each mineralization zone. Visual validation was then performed to check sample coding. Log histograms and probability plots were then analysed to determine top cut grade values. Statistical analysis was performed separately for copper and gold.

The distribution of copper grades was lognormal (**Error! Reference source not found.**). The log histogram for gold values within the mineralization is close to a lognormal distribution with a slightly positive skew (**Error! Reference source not found.**). There is no evidence for mixing of either gold or copper grades, supporting the selected cut-off grades.

Table 19. Statistics for copper, gold and silver within mineralized domains

	Copper (%)	Gold (g/t)	Silver (g/t)
Mean	0.219	0.341	1.159
Maximum	4.816	155.67	110
Minimum	0.001	0.005	0.005
COV	1.071	2.958	1.568
Standard Deviation	0.234	1.009	1.818

14.4 Sample Compositing and Capping

To ensure all samples have the same weight during interpolation and geostatistical analysis, all sample intervals within mineralized domains were composited. A composite length of 1.0 m was used, which represents the mean sample length. Samples were composited from the top of the hole down. Any composites less than 0.50 cm were discarded.

A review of grade outliers was undertaken to ensure that extreme grades are treated appropriately during grade interpolation. All composited drillhole data within the interpreted mineralization was selected to determine if top cuts for copper and gold were required. Histograms, log-probability plots, and coefficient of variation (COV) values were reviewed. The following table shows the top cut values and number of samples cut for each element.

Table 20. Capping values

	Value	Capped
Copper	3.0%	1
Gold	10 g/t	4
Silver	25 g/t	10

Prior to geostatistical analysis, composite intervals were declustered. The following table summarizes the declustered composite statistics.

Table 21: Declustered capped composite statistics

	Copper (%)	Gold (g/t)	Silver (g/t)
Mean	0.211	0.324	1.122
Maximum	3.000	10.000	25.000
Minimum	0.001	0.005	0.005
COV	1.027	1.269	1.121
Standard Deviation	0.217	0.411	1.258

14.5 Geostatistical Analysis

Variograms were calculated and modelled for the composited sample file constrained by the corresponding mineralized envelopes using Supervisor software (version 8.14.3.2). Geostatistical analysis was carried out separately for copper, gold, and silver mineralization.

Horizontal continuity was modeled first at twenty 18° increments. Continuity models were then created for the across strike and dip-plane orientations. Once the direction of maximum continuity was selected, a down-hole linear semi-variogram was created to determine the nugget effect. Nested models were fitted for all elements as summarized in the following table. The anisotropy was assessed using Azimuth, Dip, and Azimuth (ADA) rotation.

Table 22: Semi-Variogram Parameters

Metal	Azimuth	Dip	Azimuth	C_0	C_1	C_2	X(m)	Y(m)	Z(m)	Type
Copper	300	70	210	0.153	0.488		46	47	48	Exponential
						0.359	188	164	118	Spherical
Gold	197	74	216	0.177	0.461		54	45	26	Exponential
						0.362	202	144	99	Spherical
Silver	49	79	256	0.287	0.561		49	33	44	Exponential
						0.152	177	117	145	Spherical

14.6 Density

Bulk density values were assigned to block model cells using a single bulk density value for the Beskauga deposit of 2.73 t/m^3. This density value is based upon specific gravity measurements made by Arras. Specific gravity was determined by weighing a sample in air and immersed in water, and then calculated using Archimedes method.

This value determined by Arras is consistent with historical density measurements collected by previous operators.

14.7 Block Model

Block modelling was carried out using Geovia GEMS software (version 6.7.2). An empty block model was created to enclose the wireframe models. The block model is not rotated and its parameters are summarized in the following table.

Table 23: Block model dimensions and parameters

Axis	Extent (m)		Block size (m)	Number of Blocks
	Minimum	Maximum		
Easting	587349	589089	20	87
Northing	5737530	5740530	20	150
Elevation	-1050	150	20	60

All blocks falling within the mineralized wireframes were coded with the percentage of the block within the wireframe.

14.8 Grade Interpolation

Copper, gold and silver grades were interpolated into the empty block model using both OK and IDW. The IDW method with a power of two using both a spherical and anisotropic search was used to support and validate the kriged estimates.

Interpolation was carried out separately for each metal and was conducted for the blocks that fell within the boundaries of the mineralized wireframe. The radii of the search ellipsoid and orientation of axes were selected based on the results of geostatistical analysis.

The first search radii for all mineralized envelopes were selected to be equal to approximately one quarter of the semi-variogram long ranges in all directions. Model cells that did not receive a grade estimate from the first pass interpolation run were used in the next (second pass) interpolation with search radii equal to approximately two-thirds the semi-variogram ranges in all directions. A third interpolation run using search radii equal to the semi-variogram ranges. The model cells that did not receive grades from the first three passes were then estimated using a fourth pass with search radii equal to twice the semi-variogram ranges. Interpolation parameters are presented in the following table.

Table 24: Interpolation parameters

Metal	Pass	Orientation			Search Size			# of Composites		Max per Hole
		Azimuth	Dip	Azimuth	X (m)	Y (m)	Z (m)	Min	Max	
Copper	1	300	70	210	50	40	30	8	16	6
	2				125	110	80	6	16	4
	3				190	160	120	4	16	3
	4				380	330	235	3	16	2
Gold	1	197	74	216	50	35	25	8	16	6
	2				135	95	65	6	16	4
	3				200	145	100	4	16	3
	4				405	290	200	3	16	2
Silver	1	49	79	256	45	30	35	8	16	6
	2				120	80	95	6	16	4
	3				180	115	145	4	16	3
	4				355	235	290	3	16	2

The blocks were interpolated using only assay composites restricted by the wireframe models. Change of support was honoured by discretizing to 4-point x 4-point x 4-point kriged estimates. These point estimates are simple averages of the block estimates.

14.9 Model Validation

Validation of the Beskauga block model was completed by comparing the OK interpolated model with the ID2 model and original composites. A summary of the average grade of each model is shown in the table below.

Table 25: Comparison of grades between block model and composites

Average grade	Block Model (OK)	Block Model (ID^2)	Composites
Copper	0.14%	0.15%	0.22%
Gold	0.27 g/t	0.27	0.34 g/t
Silver	0.98 g/t	1.00 g/t	1.15 g/t

Validation histograms and probability plots were generated for composites and block model grades. Grade distribution, populations, and swath plots were reviewed and compared. They show that the distribution of block grades honours the distribution of input composite grades. There is a degree of smoothing evident, which is to be expected from the estimation method used, whereby block grades overstate on the lower grade ranges and understate on the higher-grade ranges. Smoothing is particularly evident in areas of wide spaced drilling where the number of composites was relatively low. However, the general trend in the composites is reflected in the block model.

The block models were visually validated by comparing the blocks estimated with actual drill hole composite data on both section and in plan view. Figure 41 is an east-west section showing copper values in the composites plotted against the block model. Composite grades are a good match to the estimated block grades.

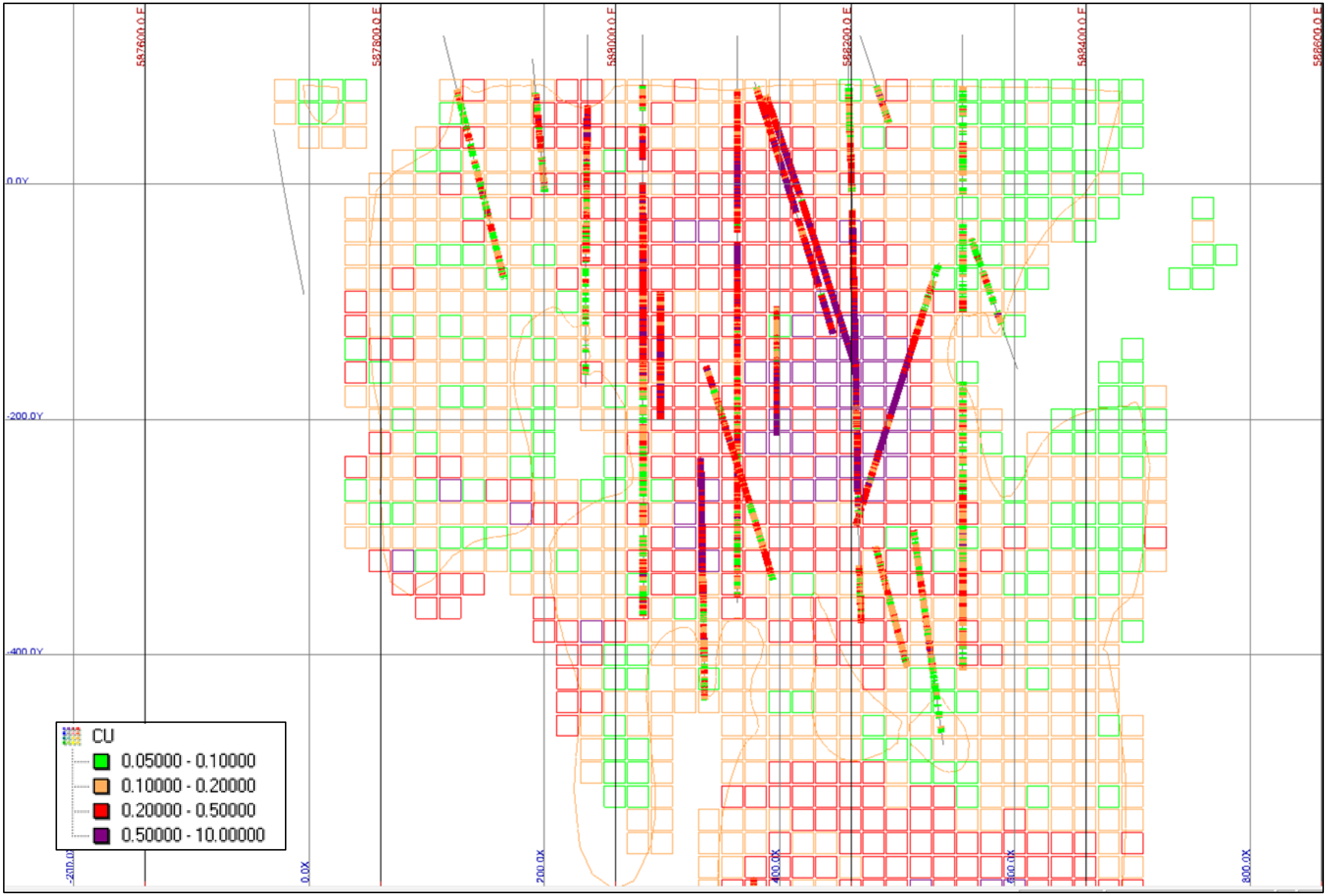


Figure 59.Visual validation of block model copper grades vs drillhole grades

14.10 Mineral Resource Classification

Mineral Resources were classified using the CIM (2014) definition of Mineral Resources into Indicated and Inferred Mineral Resources. The classification is based upon an assessment of geological and mineralization continuity and QAQC results, as well as considering the level of geological understanding of the deposit. Specific requirements concerning the minimum number of samples and minimum number of drillholes used for grade interpolation for each block as carried out for each search pass were applied as detailed above.

The model cells were coded according to the interpolation run. Generally, the Indicated Mineral Resource class was assigned for the model cells that were interpolated in the first two runs. All other interpolated model cells were classified as Inferred.

The block model was then colour coded based on interpolation run and displayed on screen in plan and section views. Isolated blocks and outliers were identified and downgraded or removed from the resource model.

14.11 Prospects for Eventual Economic Extraction

To demonstrate potential of the Beskauga deposit for eventual economic extraction, a preliminary pit optimization study was completed.

The Authors did not estimate Ore Reserves for the deposit. The optimization study was for the sole purpose of providing information that could be used in development of a pit shell for definition of Mineral Resources for the Beskauga Project. This study is conceptual in nature and does not represent any kind of Ore Reserve estimate.

14.11.1 Input Parameters

Inputs for the pit optimization study was based on metallurgical test work and geotechnical pit-slope studies previously completed on the deposit.

The input parameters for the base case are shown in the table below (all costs and prices are in US$).

Table 26: Pit optimization parameters (base case)

Parameter		Unit
Metal prices		
Copper	3.50	$/lb
Gold	1,750	$/oz
Silver	22.00	$/oz
Mining and transport		
Mining cost	1.50	$/t
Incremental mining cost	0.02	$/t per level
Recoveries		
Copper	85.0	%
Gold	74.5	%
Silver	50.0	%
Processing cost		
Processing cost (including G&A)	15.00	$/t
Discount rate	8.0	%
Pit slopes		
Pit slope for overburden	35	°
Pit slope	55	°
Density for model and waste	2.73	t/m^3
Density for overburden	1.50	t/m^3

14.11.2 Pit Optimization

The pit optimization was carried out using Studio NPVS software application using the Lerch-Grossman algorithm. The Lerch-Grossman algorithm is an industry-standard optimization technique used in mining and exploration. It is based on graph theory and is one of the widely used methods that allows the detection of the true optimum pit.

In the Lerch-Grossmann algorithm, directed arcs indicate which blocks need to be removed before a block can either be mined and processed, or be dumped as waste. Each block in the model is assigned a revenue value based on the grade of that block and metal price, and then all associated costs are subtracted from the revenue, so that all blocks are assigned a positive or negative dollar value. If the dollar value is positive, that block could potentially be mined profitably providing that all the blocks above do not make a loss if mined. The model pit slopes are specified in terms of the blocks that must be removed to provide access to each block within the block model.

In order to validate the pit shell selected for the prospect for eventual economic extraction, multiple scenarios were evaluated. This included shallower pit angles, higher processing and mining costs, and different recoveries. The pit shell selected is considered a reasonable representation of the potential prospect for eventual economic extraction.

14.12 Mineral Resource Reporting

The Mineral Resource estimate has been reported for all blocks in the resource model that fall within a pit shell that was developed during the pit-optimization process and a gross metal value exceeding $20/t. The gross metal value was calculated using the recovery factors and metal prices showing in the pit optimization parameters table above.

The Mineral Resource estimate has reasonable prospects for eventual economic extraction, and is a realistic inventory of mineralization which, under assumed and justifiable technical and economic conditions, might, in whole or in part, become economically extractable.

Table 27: Mineral Resource estimate for the Beskauga Project with an effective date of 27 December 2021.

Category	Tonnage (Mt)	Cu %	Au g/t	Ag g/t
Indicated	111.2	0.30	0.49	1.34
Inferred	92.6	0.24	0.50	1.14

Notes:

- *A GMV $/t cut-off of $20/t was used, and the GMV formula is: GMV $/t = Au(grams)*74.5%*$56.26+ Cu(tonnes)*85%*$7.714 + Ag(grams)*50%*$0.71*
- *Base metal prices considered were $3.50/lb copper, $22.00/oz silver, and $1,750/oz gold.*
- *The Mineral Resource is stated within a pit shell using the base-case metal prices.*
- *Mineral Resources are estimated and reported in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted 10 May 2014.*
- *Matthew Dumala (P.Eng.), is the independent Qualified Person with respect to the Mineral Resource estimate.*
- *The Mineral Resource is not believed to be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors.*
- *These Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability.*
- *The quantity and grade of reported Inferred Resources in this Mineral Resource estimate are uncertain in nature and there has been insufficient exploration to define these Inferred Resources as Indicated or Measured; however, it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

15 Mineral Reserve Estimates

This section is not applicable to the current report.

16 Mining Methods

This section is not applicable to the current report.

17 Recovery Methods

This section is not applicable to the current report.

18 Project Infrastructure

This section is not applicable to the current report.

19 Market Studies and Contracts

This section is not applicable to the current report.

20 Environmental Studies, Permitting and Social or Community Impact

This section is not applicable to the current report.

21 Capital and Operating Costs

This section is not applicable to the current report.

22 Economic Analysis

This section is not applicable to the current report.

23 Adjacent Properties

There is a working salt mine run by a private company immediately south of the Beskauga mineral licence that covers an area of 21.3 km^2. The Ekidos and Stepnoe exploration licences surround the salt mining licence here and there are no other mineral licences adjacent to the licence package.

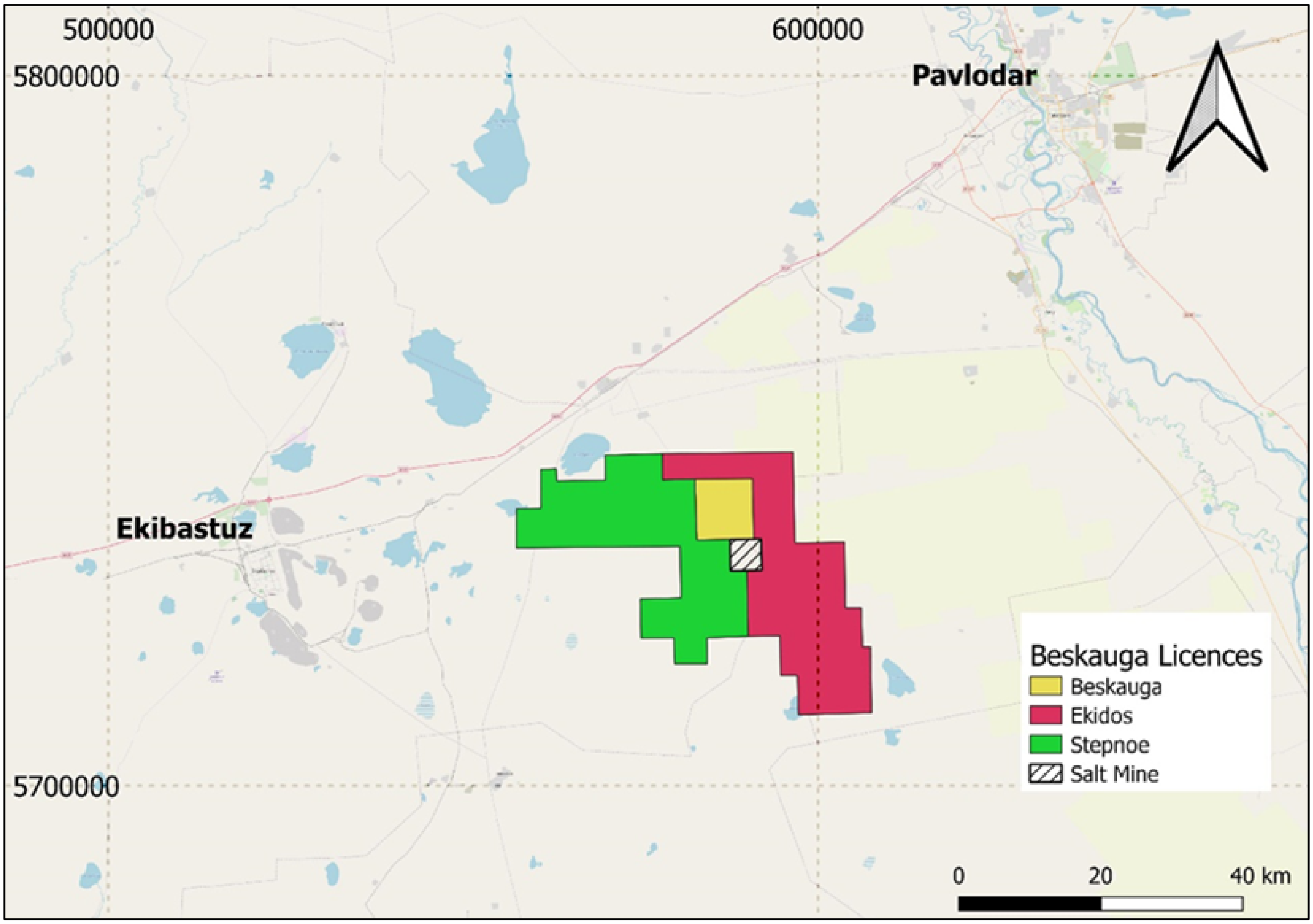


Figure 60: Location of the salt mine within the Beskauga Project area (coordinates are WGS/UTM Zone 43N) (Source: Silver Bull Resources NI43-101 Feb 2021)

24 Other Relevant Data and Information

The Qualified Persons are not aware of any other relevant data or information that has not been included in this report.

25 Interpretation and Conclusions

The Beskauga Project includes the large, gold-rich Beskauga porphyry copper-gold deposit within the Bozshakol–Chingiz magmatic-arc terrane of the CAOB, that has a demonstrated pedigree for economic porphyry deposits, notably KAZ Minerals operating Bozshakol mine 135 km to the west. This maiden Mineral Resource completed to CIM guidelines and reported under NI 43-101 represents a major milestone for the Project. The Mineral Resource has been completed only for the Beskauga Main porphyry-style mineralisation and not for the Beskauga South mineralisation which is gold only and may represent a separate porphyry-epithermal system.

The indications of a high-sulphidation epithermal overprint, including the presence of tennantite and minor enargite, with dominant argillic and local advanced argillic alteration, suggest that drilling to date may only have tested the upper part of the porphyry system. However, more work is required to determine the geometry and zonation of alteration and mineralisation at Beskauga. This represents a substantial understanding gap in the Project and presents an opportunity to improve modelling and resource extension targeting. On-going work by Arras Minerals to address this gap includes detailed re-logging of all historical drill core for lithology, alteration and mineralisation (including vein type and vein intensity) as well as magnetic susceptibility, conductivity, density, TerraSpec SWIR/NIR spectroscopy measurements and re-photographing of the historical drill cores. There appears to be substantial upside potential at Beskauga once the understanding of the mineral system architecture is improved and the Beskauga South mineralisation can be added in.

The proposed work program will substantially improve understanding of the geology and economic characteristics of the Project and advance it towards a Preliminary Economic Assessment. These work programs will address several possible risks to the Mineral Resource estimate and project economics identified in the current study. These include the following:

- There is poor geological understanding to support deposit modelling.
- The density measurement procedures and data have not been reviewed and a single density value of 2.73 g/cm3 has been used, which although appropriate for the dioritic host rock, represents a potential source of risk to the estimated tonnage. Arras have implemented density measurements on a per sample basis for their current drill program and plan to carry out density measurements of all historical drill core.
- Limited numbers of QA/QC samples have been submitted for historical drilling by Dostyk – CRMs for gold and copper represent 0.52% and 0.34% of the total samples respectively, blanks represent only 0.9% of all samples, duplicates 0.27% and umpire samples 2.7%. Although the results of QA/QC are acceptable, the low number of QA/QC samples represents a risk to the Project. Arras have implemented a robust QA/QC program for their current drilling consisting of CRM's, blanks and duplicates at an insertion rate of 2.5%, 2.5% and 5% respectively, which is deemed appropriate for this stage of exploration.
- Comparison of original and umpire samples show a slight positive bias to the original samples analysed at SAEL, which has not been investigated further and which represents a risk to the grade of the Mineral Resource estimate.
- Concentrates contain elevated levels of arsenic that may affect the saleability of the concentrate. Although the concentrates show amenability to further processing via the Toowong Process, which removes arsenic and other deleterious elements from the concentrate, the cost of this process has not been determined and thus the presence of arsenic presents a project risk.

26 Recommendations

The authors recommend an additional work program by Arras on the Beskauga Project over the next 12 months should include:

- An drill program testing the extensions of the known mineralisation at Beskauga
- Collection of multi-element and hyperspectral data from a selection of historical pulps and drill core to enable the design of routine analytical protocol for all additional drilling
- Relogging of all available drill core including detailed alteration and vein logging, and development of an appropriate Standard Operating Procedure for logging for future drilling
- Submission of additional QA/QC samples (~5% pulp duplicates and 5% umpire samples) together with CRMs, in order to improve the quality control data, and design of a routine QA/QC protocol for ongoing drilling
- A comprehensive density testing program to confirm the density value used in the Mineral Resource estimate
- Integrated geological, structural, alteration, litho-geochemical and hyperspectral study to support the development of a three-dimensional (3D) geological model along with a geometallurgical domain model
- Additional metallurgical test work to confirm recovery and comminution parameters as well as deleterious element mitigation, with sample selection based on geometallurgical domains
- Follow-up on regional targets with mapping and sampling
- Identify power and water sources, project requirements, and begin all permitting processes
- Address any other gaps to be filled in order to advance the Project towards a Mineral Resource update and Preliminary Economic Assessment.

These items should be carried out concurrently as a single phase of work over the next 12 months.

The authors estimate that the total cost of the next phase work program is approximately US$1.5 million.

Table 28: Recommended work program budget estimate

Item	**Cost in US$**
Drilling of 6,000 m at Beskauga (exploration to test extensions of deposit	600,000
Mapping & Sampling	200,000
Geophysics	180,000
Study of infrastructure	20,000
QAQC sampling and density testing	50,000
Additional metallurgical testing	100,000
In-country general and administration and logistics	400,000
Total	**1,500,000**

27 References

Alexeiev, D., 2008, Paleozoic tectonics and evolution of Kazakhstan continent. Abstracts of the CERCAMS Workshop on Metallogeny of Central Asia, 25–26 November, 2008.

Ammtec Ltd (December 2010), Flotation Testing conducted on Beskauga Samples, Report No. A12741.

Ammtec Ltd (September 2011), Metallurgical Testing conducted upon High Grade ore composite, Report No. A13457.

Berger, B.R., Ayuso, R.A., Wynn, J.C., and Seal, R.R. (2008). Preliminary Model of Porphyry Copper Deposits. USGS Open-File Report 2008-1321, 55 p.

Berger, B.R., Mars, J.C., Denning, P.D., Phillips, J.D., Hammarstrom, J.M., Zientek, M.L, Dicken, C.L., and Drew, L.J., with contributions from Alexeiev, D., Seltmann, R., and Herrington, R.J., 2014, Porphyry copper assessment of western Central Asia: U.S. Geological Survey Scientific Investigations Report 2010–5090–N, 219 p. DOI: http://dx.doi.org/10.3133/sir20105090N

CSA Global Pty Ltd, (November 2013) JORC Compliant Report, Modelling and Resource Estimation on the Beskauga Au-Ag-Cu-Mo Project, Pavlodar Province, Republic of Kazakhstan.

CSA Global Pty Ltd, (February 2021) NI 43-101 Technical Report, Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan.

Chiaradia, M., 2020, Gold endowments of porphyry deposits controlled by precipitation efficiency. Nature Communications, v. 11:28. DOI: https://doi.org/10.1038/s41467-019-14113-1

Chen, X.H., Seitmuratova, E., Wang, Z.H., Chen, Z.L., Han, S.Q., Li, Y., Yang, Y., Ye, B.Y., Shi, W., 2014, SHRIMP U-Pb and Ar-Ar geochronology of major porphyry and skarn Cu deposits in the Balkhash metallogenic belt, Central Asia, and geological implications. Journal of Asian Earth Sciences, v. 79, p. 723–740.

Dilles, J.H., Kent, A.J.R., Wooden, J.L., Tosdal, R.M., Koleszar, A., Lee, R.G., and Farmer, L.P., 2015, Zircon compositional evidence for sulfur-degassing from ore-forming arc magmas: Economic Geology, v. 110, p. 241–251.

Ferry, J.M., and Watson, E.B., 2007, New thermodynamic models and revised calibrations for the Ti-in-zircon and Zr-in-rutile thermometers: Contributions to Mineralogy and Petrology, v. 154, p. 429–437.

Jahn, B.-M., Wu, F., and Chen, B., 2000, Granitoids of the Central Asian Orogenic Belt and continental growth in the Phanerozoic. Transactions of the Royal Society of Edinburgh, Earth Sciences, v. 91, p. 181-193.

Jenchuraeva, R.J., 1997. Tectonic setting of porphyry-type mineralization and hydrothermal alteration in Paleozoic island arcs and active continental margins, Kyrghyz Range, (Tien Shan) Kyrghyzstan. Mineralium Deposita, v. 32, p. 434–440.

Jenchuraeva, R.J., and Maksumova, R.A., 1993, Porphyry copper-gold mineralization in the ancient active continental margins of the Tien Shan. In: 29th International Geological Congress Proceedings, Mineral Resources Symposia, Volume A: Resource Geology Special Issue, v. 15, Tokyo, p. 241-252.

Joint Ore Reserves Committee, 2012. Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. [online]. Available from http://www.jorc.org (The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and Minerals Council of Australia).

Kazmekhanobr, 2009, Processing Test Results on Geological Sample from Beskauga Main deposit.

Kokkuzova, M., Bekenova, G., Dyussembayeva, K., Dolgopolova, A., and Seltmann, R., 2017, Gold-barite-polymetallic VMS deposit of Maikain, NE Kazakhstan, Applied Earth Science, DOI:

Kaz Minerals: Annual Report and Accounts 2020

Lee, R.G., Bryne, K., D'Angelo, M.D., Hart, C.J.R., Hollings, P., Gleeson, S.A., and Alfaro, M., 2021, Using zircon trace element composition to assess porphyry copper potential of the Guichon Creek batholith and Highland Valley Copper deposit, south-central British Columbia: Mineralium Deposita, v. 56, p. 215238.

Lee, R.G., and Hart, C.J.R., 2021, MRDU Geochronology Report: U-Pb geochronology results and trace element composition from sample Bg-031_419.4-421.4. Report prepared for Arras Minerals Corp.

Lobanov, K., Yakubchuk, A., Creaser, R.A., 2014, Besshi-Type VMS Deposits of the Rudny Altai (Central Asia), Economic Geology, v. 109, p. 1403-1430.

Loucks, R.R., Fiorentini, M.L., and Henríquez, G.J., 2020, New magmatic oxybarometer using trace elements in zircon: Journal of Petrology, p. 1-30, https://doi.org/10.1093/petrology/egaa034

Lu, Y., Loucks, R.R., Fiorentini, M., Mccuaig, T.C., Evans, N.J., Yang, Z., Hou, Z., Kirkland, C.L., Parra-avila, L.A., and Kobussen, A., 2016, Zircon Compositions as a Pathfinder for Porphyry Cu ± Mo ± Au Deposits: Economic Geology Special Publication, v. 19, p. 329–347.

Nikitin, I.F., Popov, L.E. and Bassett, M.G., 2006, Late Ordovician rhynchonelliformean brachiopods of north-eastern Central Kazakhstan. In Bassett, M.G. and Deisler, V.K., (Eds). Studies in Palaeozoic palaeontology. National Museum of Wales Geological Series, v. 25, p. 223–294.

Montgomery, M. (2015), JORC compliant Report, Modelling Resource Estimation on the Beskauga Porphyry Cu/Au Deposit, Pavlodar Province, Republic of Kazakhstan. Prepared by Geosure Exploration & Mining Solutions Pty Ltd for Copperbelt AG.

Pan, H.D., Shen, P., Zhang, L.H., Seitmuratova, E., and Jakupova, S., 2015, Geochemistry, U-Pb dating, Lu-Hf isotopic analysis and geological significance of volcanic rocks in Maikain deposit, Kazakhstan. Acta Petrologica Sinica, v. 31, pp. 401-414.

Seltmann, R., Goldfarb, R.J., Bo, Z., Creaser, R.A., (2021) Muruntau, Uzbekistan: The World's Largest Epigenetic Gold Deposit. In: Sillitoe, R.H., Goldfarb, R.J., Robert, F., and Simmons, S.F., (Eds.) Geology of the World's Major Gold Deposits and Provinces, Special Publication of the Society of Economic Geologists, v. 23. DOI: https://doi.org/10.5382/SP.23.24

Seltmann, R., and Porter, T.M., 2005, The Porphyry Cu-Au/Mo Deposits of Central Eurasia: 1. Tectonic, Geologic & Metallogenic Setting and Significant Deposits. In: Porter, T.M. (Ed.), Super Porphyry Copper & Gold Deposits: A Global Perspective; PGC Publishing, Adelaide, v. 2, p. 467-512.

Seltmann, R., Porter, T.M., and Pirajno, F., 2014, Geodynamics and metallogeny of the central Eurasian porphyry and related epithermal mineral systems: A review. Journal of Asian Earth Sciences, v. 79, p. 810-841. DOI: http://dx.doi.org/10.1016/j.jseaes.2013.03.030

Sengor, A.M.C., Natal'in, B.A., and Burtman, V.S., 1993, Evolution of the Altaid tectonic collage and Paleozoic crustal growth in Eurasia. Nature, v. 364, p. 299-307.

Sillitoe, R.H. (2000). Gold-rich porphyry deposits—Descriptive and genetic models and their role in exploration and discovery. Reviews in Economic Geology, v. 13, p. 315-345.

Sillitoe, R.H. (2010). Porphyry Copper Systems. Economic Geology, v. 105, p. 3-41.

Shen, P., Pan, H., Seitmuratova, E., Yuan, F., Jakupova, S., 2016, A Cambrian intra-oceanic subduction system in the Bozshakol area, Kazakhstan. Lithos, 225, p. 61-77. DOI: https://doi.org/10.1016/j.lithos.2015.02.025

Shen, P., Pan, H., Seitmuratova, E., Jakupova, S., 2016, U–Pb zircon, geochemical and Sr–Nd–Hf–O isotopic constraints on age and origin of the ore-bearing intrusions from the Nurkazgan porphyry Cu–Au deposit in Kazakhstan. Journal of Asian Earth Sciences, v. 116, p. 232-248. DOI: https://doi.org/10.1016/j.jseaes.2015.11.018

Starkey & Associates Inc. (April 2017), Comminution Analysis Report, S&A Project No. S216.

Wardell Armstrong International Ltd (November 2015), Grinding and Flotation Testing of Samples from the Beskauga Main Deposit (Grinding Test work Report), Report No. ZT64-0493

Wardell Armstrong International Ltd (May 2017), Flotation Testing of 3 Bulk Ore Samples from the Beskauga Main deposit, report No. ZT64-0493.

White & Case Kazakhstan LLP, 2 October 2020, Legal Due Diligence Report: Project Silver Bull (extracts provided by Silver Bull)

Windley, B.F., Alexeiev, D., Xiao, W., Kröner, A., and Badarch, G. (2007) Bicentennial Review. Tectonic models for accretion of the Central Asian Orogenic Belt. Journal of the Geological Society, London, Vol. 164, 2007, pp. 31–47.

Yakubchuk, A., Seltmann, R., Shatov, V., and Cole, A., 2001, The Altaids: Tectonic Evolution and Metallogeny. SEG Discovery, v. 46, p. 1-14. DOI: https://doi.org/10.5382/SEGnews.2001-46.fea

Yakubchuk, A., 2002, The Baikalide-Altaid and North Pacific orogenic collages: similarity and diversity of structural patterns and metallogenic zoning. In: Blundell, D., Neubauer, F. and von Quadt, A., (Eds.), Geological Society, London, Special Publications, v. 204, p. 273-297.

28 Abbreviations and Units of Measurement

°	degrees
°C	degrees Celsius
3D	three-dimensional
AAS	atomic absorption spectrometry
Ag	silver
As	arsenic
Au	gold
Beskauga	Beskauga Copper-Gold Project
CAOB	Central Asian Orogenic Belt
CIL	carbon-in-leach
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
Copperbelt	Copperbelt AG
COV	coefficient of variation
CRM	certified reference material
The Authors	The Authors Canada Consultants Limited
Cu	copper
Dostyk	Dostyk LLP
DTM	digital terrain model
FA	fire assay
g	gram(s)
g/cm^3	grams per cubic centimetre
g/t	grams per tonne
GPS	global positioning system
ICP-OES	inductively coupled plasma-optical emission spectrometry
IDW	inverse distance weighting
IP	induced polarization
JORC Code	Joint Ore Reserves Committee Code
kg	kilogram(s)
km, km^2	kilometre(s), square kilometre(s)
kVA	kilo-volt-amperes
lb	pound(s)
LIMS	laboratory information management system
M	million(s)
m, m^2	metre(s), square metre(s)
MIID	Ministry of Industry and Infrastructural Development

mm	millimetre(s)
Mt	million tonnes
NI 43-101	National Instrument 43-101 – Standards for Disclosure for Mineral Projects
NSR	net smelter return
OK	ordinary kriging
oz	ounce(s)
ppm	parts per million
QAQC	quality assurance/quality control
RC	reverse circulation
SAEL	Stewart Assay and Environmental Laboratory
SD	standard deviation
Arras	Arras Resources Inc.
SRTM	Shuttle Radar Topography Mission
SSU Code	Code on Subsoil and Subsoil Use
SUL	subsoil use licence
SUR	subsoil use right
t	tonne(s)
t/m^3	tonnes per cubic metre
the Issuer	Arras Resources Inc.
the Project	Beskauga Copper-Gold Project
US$	United States dollars
WAI	Wardell Armstrong International