CSA Global
Mining Industry Consultants
an ERM Group company

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

## NI 43-101 TECHNICAL REPORT

PREPARED FOR: Silver Bull Resources Inc.

REPORT Nº: R465.2020
8 February 2021

## Report prepared for

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| Project Name/Job Code | SVBLMRE01 |
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# Certificates of Qualification

## Certificate of Qualification – Serikjan Urbisinov, B.Sc., MAIG

I, Serikjan Urbisinov, MAIG do hereby certify that:

- I am employed as a Principal Resource Geologist with the firm of CSA Global Pty Ltd located in Perth, Western Australia.
- I graduated with a degree in Bachelor of Science, Geology, from the University of Idaho, 1992.
- I am a member of the Australian Institute of Geoscientists (Membership No. 4183).
- I have worked as a geologist since my graduation for over 20 years, I have experience with precious and base metals mineral projects in Kazakhstan, Australia, Russia, USA, Mongolia, Myanmar, including Mineral Resource estimation.
- 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 have not visited the Beskauga Project.
- I am the principal author of the technical report titled: "Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan: NI 43-101 Technical Report" for Silver Bull Resources Inc., with an effective date of 28 January 2021, and signed and dated 8 February 2021 (the "Technical Report"). I am responsible for Sections 1, 2, 3, 6, 7, 8, 11 and 14–27 inclusive.
- As of the Effective Date of the Technical Report (28 January 2021), 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.
- I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

DATED this 8th day of February 2021 at Perth, Australia

["SIGNED AND SEALED"]

{Serikjan Urbisinov}

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**Serikjan Urbisinov, B.Sc., MAIG**

## Certificate of Qualification – Georgiy Freiman, Ph.D., FAIG

I, Georgiy Freiman, Ph.D., FAIG, do hereby certify that:

- I am the Chief Executive Officer of the firm of GeoMineProject LLP, located at Musabaev St, 3, 050052, Almaty, Republic of Kazakhstan.
- I was admitted to the Degree of Geology & exploration of mineral deposits, from the Novocherkassk Polytechnical Institute of Russia in 1968 and completed the full course of this institute in 1973. I was admitted to the Degree of PhD (Geology & mineralogy of the gold deposit Sekisovskoe) from the Kazakh Polytechnical Institute of the Almaty in 1985.
- I am a Fellow of the Australian Institute of Geoscientists, Certificate #5912.
- I have worked as a geologist since my graduation 47 years ago, and I have over 8 years' experience with porphyry copper-gold mineral projects in Kazakhstan.
- 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 have visited the Beskauga Project on 22 to 23 January 2017.
- I am a co-author of the technical report titled: "Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan: NI 43-101 Technical Report" for Silver Bull Resources Inc., with an effective date of 28 January 2021, and signed and dated 8 February 2021 (the "Technical Report"). I am responsible for Sections 4, 5, 9, 10 and 12.
- As of the Effective Date of the Technical Report (28 January 2021), 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.
- I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

DATED this 8th day of February 2021 at Almaty, Republic of Kazakhstan

["SIGNED"]

{Georgiy Freiman}

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**Georgiy Freiman, Ph.D., FAIG**

## Certificate of Qualified Person – Andrew Sharp

I, Andrew Willis Sharp, B.Eng. (Mining). P.Eng., do hereby certify that:

- I am currently employed as Principal Mining Engineer with CSA Global Consultants Canada Limited, an ERM Group company, with an office at 1111 W Hastings Street, 15th Floor, Vancouver, B.C., V6E 2J3, Canada.
- I am a graduate with BEng (Mining) from the Curtin University, Kalgoorlie in 1987.
- I am registered as a Professional Engineer in good standing with Engineers and Geoscientists BC.
- I have been involved or associated with the mining industry since 1987 in Australia, Malaysia, Ghana, Mexico, Papua New Guinea and Canada in production roles for 28 years and 5 years in consulting.
- 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.
- I am a co-author of the technical report titled: "Beskauga Copper-Gold Project, Pavlodar Province, Republic of Kazakhstan: NI 43-101 Technical Report" for Silver Bull Resources Inc., with an effective date of 28 January 2021, and signed and dated 8 February 2021 (the "Technical Report"). I am responsible for Sections 13 and 14.12 and have provided input to Sections 1, 25, and 26.
- As of the Effective Date of the Technical Report (28 January 2021), 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.
- I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

DATED this 8th day of February 2021 at Vancouver, Canada

"SIGNED AND SEALED"

{Andrew Sharp}

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**Andrew Willis Sharp, B.Eng. (Mining)., P.Eng.**

# Contents

# Figures

# Tables

# 1 Summary

## 1.1 Issuer and Terms of Reference

Silver Bull Resources Inc. ("Silver Bull" or the "Issuer") is a Canadian based mineral exploration company listed on the Toronto Stock Exchange (stock ticker SVB) and on the OTCQB Stock Exchange (stock ticker SVBL). On 17 August 2020, Silver Bull 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 Pavoldar Province, north-eastern Kazakhstan from Copperbelt AG (Copperbelt), a private mineral exploration company registered in Zug, Switzerland.

Silver Bull commissioned CSA Global Consultants Canada Limited (CSA Global), an ERM Group company, 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 Silver Bull, 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 Silver Bull 100% subsidiary, Ekidos LLP, 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 service 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 serviced by an international airport. Access around the Project area is by gravel tracks of moderate to good quality which may be closed as a result of 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. Majority of the precipitation falls in the summer. Seasonally appropriate mineral exploration activities may be conducted year-round, 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 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 Mineralization

The Beskauga Project is located in northeastern Kazakhstan, an area underlain by the rocks of the Altaid tectonic collage or Central Asian Orogenic Belt (CAOB), an extensive Palaeozoic subduction-accretion complex made up of fragments of sedimentary basins, island arcs, accretionary wedges, and tectonically bounded terranes that was progressively developed from the late Neoproterozoic, through the Palaeozoic to the early Mesozoic, and which extends eastwards into Russia, Mongolia and China as the Transbaikal-Mongolian orogenic collage. These tectonic collages contain several major porphyry copper-gold/molybdenum and epithermal gold deposits formed over an extensive period from the Ordovician to the Jurassic and associated with the various magmatic arcs.

Beskauga is thought to be located in the lower Boshchekul-Chingiz volcanic arc, part of the Kipchak arc system. Island-arc volcanism was calc-alkaline in nature, evolving from are more sodic chemistry to more potassic in later stages and formed small hypabyssal intrusive bodies of gabbro, diorites, granodiorite, and sodic granite. These intrusives are responsible for the formation of the copper-gold porphyry systems in the region.

Beskauga is a copper-gold porphyry deposit with elevated grades of molybdenum and silver. The Project area is predominantly underlain by sedimentary and volcanogenic-sedimentary rocks of Ordovician age. These have been intruded by small stock-like intrusive bodies of porphyry ranging in composition from granodiorite to quartz diorite to gabbro-diorite, also interpreted to be Ordovician in age. Dikes of diorite porphyry, diabase and granite-porphyry also cut the host sequence. The host rocks are hornfelsed proximal to intrusive contacts. The deposit area is covered by 10–40 m cover of younger sediments of upper Eocene and Quaternary age.

The Beskauga Main porphyry-style copper-gold mineralization is largely hosted within granodiorite porphyry, whereas the Beskauga South gold mineralization is hosted within diorite porphyry and may represent an epithermal overprint. The diorite is interpreted to cut and postdate the granodiorite. Diabase is also interpreted to cut granodiorite. Intrusive relationships and timing relative to mineralization have not been clearly established.

Porphyry-style mineralization is hosted in granodiorite and plagiogranite intrusions that have elongated sheet-like shapes, often with offshoots. Mineralized zones are affected by stockwork veining and hydrothermal alteration and dip steeply. Alteration is represented by albitization, sericitization and pyritization, with the most intensive alteration at a depth of 250–500 m. Tourmaline has also been described. Potassic alteration is described from mineralogical work. Sericite-pyrophyllite-quartz alteration and silicification in steeply dipping alteration zones is also described indicating a degree of epithermal overprint.

Pyrite and chalcopyrite are the dominant sulphide minerals at Beskauga include with smaller amounts of bornite, chalcocite, tennantite, enargite, and molybdenite, with magnetite and hematite also described. Sulphides occur as fine-grained disseminations as well as in stockwork veins and veinlets, consisting of quartz-carbonate, quartz-carbonate-chlorite, and quartz-pyrite.

The work required to understand the geometry and zonation of alteration and mineralization within a porphyry-epithermal mineralization system like Beskauga has not been completed. This represents a substantial gap in the Project and also presents an opportunity to improve modelling and resource extension targeting.

## 1.6 Deposit Types

The Beskauga Project hosts a gold-rich porphyry-style copper-gold system with probable epithermal overprint, associated with calc-alkaline intrusions related to island arc volcanism during the Lower Palaeozoic within the highly endowed CAOB. Porphyry systems host majority of the world's copper deposits, and mineralization 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 from precipitation of mineralization from magmatic hydrothermal fluids enriched in metals. Owing to their relationship to hydrothermal fluids, porphyry copper deposits display a consistent, broad-scale alteration-mineralization 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 mineralization. Primary (hypogene) copper mineralization 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 IP survey showed a good correlation with the mineralization defined by the drilling and indicated the mineralizing system may be much larger. 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.

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

## 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, totalling 45,605.8 m was completed over this period at either HQ or NQ diameter, with hole depths between 150 m and 815 m.

The coordinates of points (drillholes) were determined by using high precision geodetic sets 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 are taken after the drilling has been completed. Core was split using a diamond saw and half-core was sampled on the basis of geological contacts, and 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 drillholes for geochemical sampling and geological mapping of cover sediments and basement rocks. 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 through the 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 holes were drilled for a total of 52,580 m, and some 2,496 samples were taken and analysed. Geochemistry defined the outlines of the mineralized intrusive and a map of primary (in-bedrock) dispersion haloes of copper, gold, molybdenum, zinc, and other associated elements was compiled.

## 1.9 Sample Preparation, Analyses and Security

Sample preparation was carried out at the Dostyk facility in Ekibastuz. Half-core samples were dried, weighed, and crushed and screened to -2 mm, and a ~1 kg split was milled to 200 mesh fineness (-90 µm). The remaining crushed samples are 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, and after each batch of samples a clean blank material was passed though the equipment. The sample preparation area was subject to compulsory wet cleaning once a day. The split core and crushed duplicate sample are stored in the specifically equipped sample storage facility in Ekibastuz, which can be locked and has on-site security.

SAEL has been utilized by Dostyk as the primary laboratory from 2007 to now, and all results used for the Mineral Resource estimate were provided by SAEL. Umpire assays were carried out at Genalysis Laboratory in Perth, Australia.

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

Quality assurance/quality control (QAQC) samples comprised 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% of the 36,271 samples in the database, below the recommended amount of 5% of 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, majority had below detection or very low values reported, indicating that there is very 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 no core duplicates have been submitted; this represents a significant gap in QAQC.

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.

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 mineralization 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 that were lower than desired, as well as identifying high arsenic levels in the final copper concentrate arising from the presence of tennantite. Subsequent bench-scale testwork focused on testing of a starter pit composite and an average copper grade composite and entailed a rougher/scavenger stage to recovery most of the mineralization 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%.

Gold at Beskauga Main is primarily associated with chalcopyrite but also occurs in pyrite, and cyanide leach testing was carried out on rougher and first cleaner scavenger tail products. Results showed 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 to include a pyrite float stage on the rougher tailings stream 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 database was provided to CSA Global in Microsoft Excel format and was checked using macros and processes designed to detect any errors. No issues were found with the provided data.

Modelling of the geology and mineralized domains was completed using Micromine 2016.1 software. The Qualified Person was provided with lithological descriptions of the drillhole sample intervals and constructed a set of strings for the major lithological units, such as barren dikes and overburden zones. Appropriate mineralization cut-offs of 0.12% Cu and 0.15 g/t Au were determined using a statistical analysis of all samples, and grade shells for both copper and gold were interactively interpreted using grade composites viewed across 18 cross sections. Cross sections were generated in an east-southeast direction, perpendicular to the strike of the interpreted geological structures and mineralized bodies. Distances between section vary from 50 m apart in densely drilled areas up to 250–400 m in sparsely drilled area. The grade composites were generated using minimum composite lengths of 5 m. The topographic surface for the deposit was constructed from the drillhole collar elevations. Composite lengths for interpolation were 1.0 m length.

Classical statistical analysis carried out for samples within the mineralization wireframe shows approximately lognormal distribution of copper and gold grades, with a slightly positive skew for gold. There is no evidence for mixing of populations for either gold or copper grades. A top cut value of 5 g/t was applied to gold, and no top cuts were applied to copper.

Semi-variograms were evaluated for copper and gold. For copper, the maximum ranges were 245 m, 130 m and 80 m in the directions 108°/00°, 198°/66° and 018°/24°, respectively. For gold, a spherical variogram was determined with a maximum range of 200 m.

Bulk density values were assigned to block model cells using a single bulk density value of 2.76 t/m$^3$.

An empty block model was created within the closed wireframe models for the mineralized envelopes. Block sizes were 20 m x 20 m x 20 m, with sub-celling near domain boundaries to a minimum size of 2 m x 2 m x 2 m. All blocks that fell into the boundaries of the copper domain were coded as copper mineralization blocks and all the blocks that fell into the boundaries of the gold domain were coded as gold mineralization blocks. Copper and gold 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 and three was used to support and validate the kriged estimates. Silver grades were interpolated using the same parameters as gold grades.

Interpolation was carried out separately for copper and gold and was conducted for the blocks that fell within the boundaries of the copper or gold mineralization. A first-pass search used radii equal to two-thirds of the semi-variogram long ranges in all directions. Model cells that did not receive a grade estimate from the first pass interpolation run subject to a second pass interpolation with search radii equal to the semi-variogram ranges in all directions. A third pass with search radii equal to twice the semi-variogram ranges was carried out for blocks that did not receive grades from the first two passes. Blocks were interpolated using only assay composites restricted by the wireframe models, and which belonged to a corresponding wireframe (i.e. each wireframe was estimated individually). De-clustering was performed during the interpolation process by using four sectors within the search neighbourhood.

Validation of the Beskauga grade interpolation was completed using comparison of the block model and composite mean grades for each domain, 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 mineralization 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. Boundaries between the resource classes were interactively interpreted in both plan view and cross sections. The interpreted boundaries were then wireframed and used to code the block model for the Indicated Mineral Resource class.

To demonstrate potential of the Beskauga deposit for eventual economic extraction, a preliminary pit optimization study was completed. A net smelter return (NSR) formula was developed and applied to the block model that incorporates metal prices, concentrate sales terms and metallurgical recoveries that were developed from metallurgical reports available for the Project. The NSR applied was:

- NSR $/t = (38.137+11.612 x Cu%) x Cu% + (0.07 + 0.0517 x Ag g/t) x Ag g/t + (19.18 + 12.322 x Au g/t) x Au g/t.

The pit optimization was carried out using the Mining module of the Micromine version 18.0 software application using the Lerch-Grossman algorithm.

The Mineral Resource estimate has been reported for all blocks in the resource model that fall within a pit shell that was developed for an alternative case with NSR multiplied by factor 1.25 and NSR value exceeding $5.70/t. The entire 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 1: Mineral Resource estimate for the Beskauga deposit with an effective date of 28 January 2021*

| Category | Tonnage (Mt) | Cu (%) | Au (g/t) | Ag (g/t) |
|---|---|---|---|---|
| Indicated | 207 | 0.23 | 0.35 | 1.09 |
| Inferred | 147 | 0.15 | 0.33 | 1.02 |

*Notes:*

- *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% + (0.07 + 0.0517 x Ag g/t) x Ag g/t + (19.18 + 12.322 x Au g/t) x Au 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, $17.25/oz silver and $1,500/oz gold.*
- *The Mineral 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.*
- *Serik Urbisinov (MAIG), CSA Global Principal Resource Geologist, 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 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 majority of the 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. 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 demonstrated pedigree for economic porphyry deposits. This maiden Mineral Resource has been completed for the Beskauga Main porphyry-style mineralization, not for the Beskauga South mineralization which is gold only and may represent an epithermal overprint to the system. The indications of epithermal overprint, limited potassic and predominant phyllic 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 alteration and mineralization at Beskauga has not been completed, as would normally be the case for a porphyry-epithermal mineralization system. This represents a substantial gap in the Project and presents an opportunity to improve modelling and resource extension targeting. The deposit is not well understood and has not been drill tested thoroughly based on understanding the architecture 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.

These work programs 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 are available and measurement procedures and data have not been reviewed. A single average density value of 2.78 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 QAQC are acceptable, the low number of QAQC samples and general lack of duplicates represents a risk to the project.
- 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.

## 1.14 Recommendations

The authors recommend an additional work program by Silver Bull on the Beskauga Project that should include:

- An extensive exploration program to fully test the entire mineralizing system at Beskauga
- Collection of multi-element and hyperspectral data from a selection of historical pulps and drill core and, on this basis, 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
- Review and re-processing of IP and magnetic data collected by Copperbelt
- Submission of additional QAQC samples (~5% pulp duplicates and 5% umpire samples), together with CRMs in order to improve the quality control data, and design of a routine QAQC protocol for ongoing drilling
- A comprehensive density testing program to confirm the density value used in the Mineral Resource estimate
- Additional infill drilling to improve definition of the geology and mineralization and to support improved classification of additional Mineral Resources to the Measured or Indicated classification
- Integrated geological, structural, alteration, and litho-geochemical and hyperspectral study to support improved understanding, three-dimensional (3D) geological model, and a geometallurgical domain model
- Additional metallurgical testwork to confirm recovery and comminution parameters, deleterious element mitigation, with sample selection based on geometallurgical domains
- Follow up on regional targets with geophysics and prospect drilling
- Geotechnical drilling to confirm appropriate slope angles for future open pit design work and initial hydrogeological assessment
- Detail power and water sources, requirements, and begin all permitting processes
- Address any other gaps to be filled 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. The authors estimate that the total cost of the next phase work program is approximately US$5.7 million.

# 2 Introduction

## 2.1 Issuer

Silver Bull is a Canadian-based mineral exploration company engaged in exploring and developing the Sierra Mojada silver-zinc-lead project located in Coahuila, Mexico. Silver Bull is listed on the Toronto Stock Exchange (stock ticker SVB) and on the OTCQB Stock Exchange (stock ticker SVBL).

On 17 August 2020, Silver Bull announced that it had entered into an agreement to acquire a 100% interest in the Beskauga Copper-Gold Project located in in the Pavoldar Province in northeastern Kazakhstan from Copperbelt, a private mineral exploration company registered in Zug, Switzerland.

## 2.2 Terms of Reference

Silver Bull commissioned CSA Global 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, Silver Bull 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 author of this report is Serikjan Urbisinov, CSA Global Principal Resource Geologist. Mr Urbisinov has more than five years' experience in the field of porphyry copper-gold deposits and is a Qualified Person according to NI 43-101 standards.

The Effective Date of this report is 28 January 2020. The report is based on technical information known to the author and CSA Global 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 Silver Bull 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 the JORC Code (2012 Edition) by CSA Global in November 2013 and by Geosure Exploration and Mining Solutions Pty Ltd in January 2015. As Copperbelt is a private company, these estimates have not been publicly reported.

The various studies and reports have been collated and integrated into this report by the principal author (Serikjan Urbisinov) of CSA Global. The MRE has also been carried out by Serik Urbisinov. The authors have taken reasonable steps to verify the information provided, where possible.

The Qualified Persons have not conducted detailed land status evaluations, and have relied upon previous qualified reports, public documents and statements by Silver Bull regarding Property status and legal title to the Beskauga Project.

The authors also had discussions with the management and consultants of the Issuer, including Mr Tim Barry (Chief Executive Officer, Silver Bull) 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 2.

*Table 2: Qualified Persons – report responsibilities*

| Qualified Person | Report section responsibility |
|---|---|
| Serik Urbisinov (MAIG), Principal Resource Geologist, CSA Global | 1, 2, 3, 6, 7, 8, 11 and 14–27 inclusive |
| Andrew Sharp (P.Eng), Principal Mining Engineer, CSA Global | Sections 13 and 14.12 |
| Georgiy Freiman (FAIG), Chairperson, GeoMineProject LLP (Almaty) | Sections 4, 5, 9, 10, and 12; property visit in 2017 |

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

CSA Global conducted an internal check to confirm that there is no conflict of interest in relation to its engagement in this project or with Silver Bull and that there is no circumstance that could interfere with the Qualified Persons' judgement regarding the preparation of the Technical Report.

## 2.5 Qualified Person Property Inspection

A two-day visit to the Beskauga Project was completed by Georgiy Freiman on 22 and 23 January 2017 as detailed in Section 12.1. Serik Urbisinov and Andrew Sharp did not visit the Beskauga Project. No significant work has been conducted on the Project since 2017 and the Qualified Persons consider Georgiy Freiman's 2017 site visit current under section 6.2 of NI 43-101.

# 3 Reliance on Other Experts

The authors and CSA Global have relied upon Silver Bull 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 Silver Bull to CSA Global. 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)*

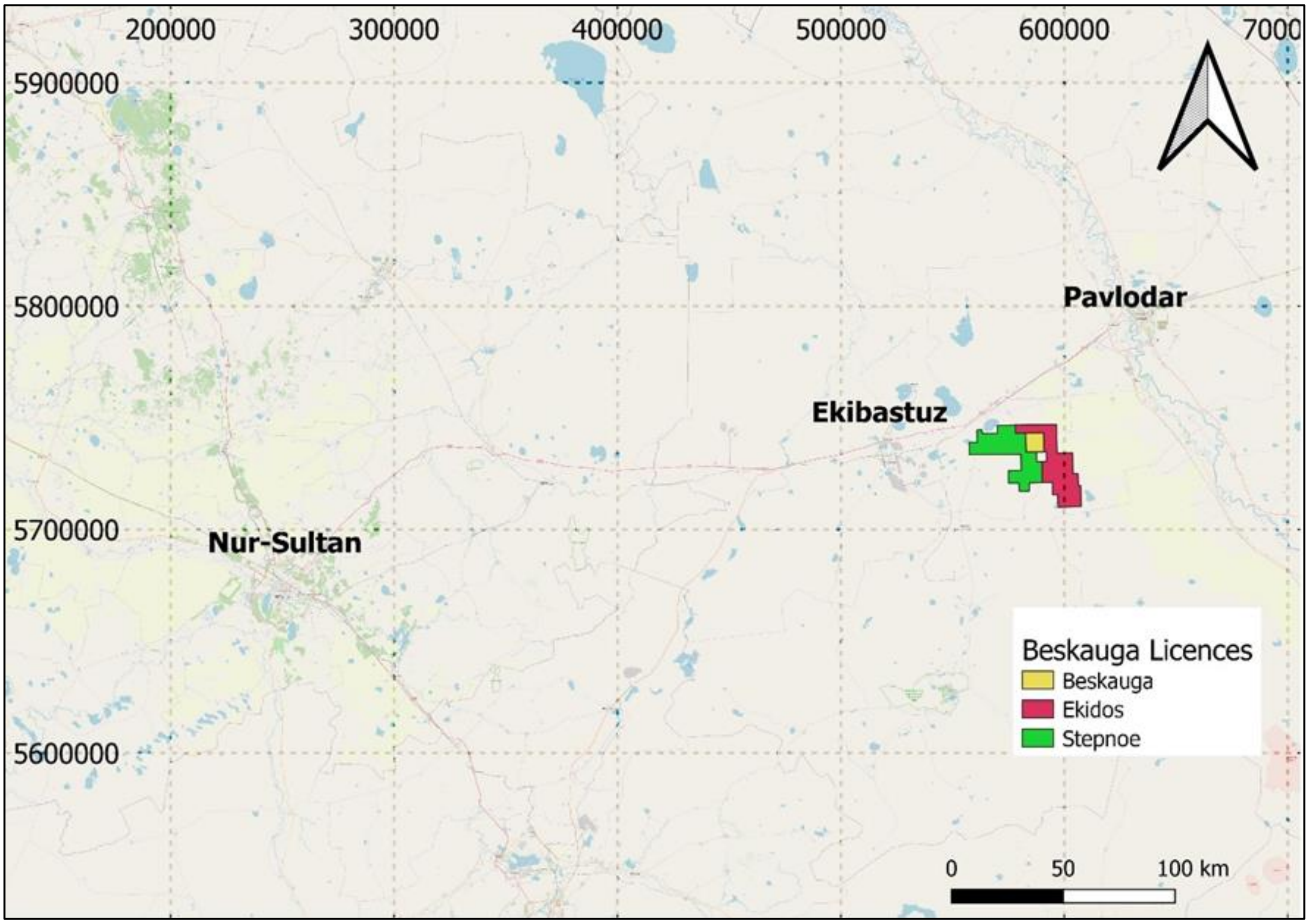



*Figure 2: Location of the Beskauga Project licences (coordinates are WGS84/UTM Zone 43N). The missing block is a salt mine not held by Silver Bull.*

## 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*

Silver Bull'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 Silver Bull has an option agreement (see Section 4.4.1). The Ekidos and Stepnoe licences are held by Ekidos LLP, a Kazakh entity 100% controlled by Silver Bull.

### *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, Silver Bull 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 14 January 2021, the Competent Authority, the MIID, granted an extension of the exploration rights to Dostyk until 31 December 2023. Under this addendum, Silver Bull via its agreement with Copperbelt will be required to spend the following over three years to keep the licence in good standing:

- 2021: US$1.801 million
- 2022: US$2.726 million
- 2023: US$4.7 million.

At the end of this three-year period in 2023, the Beskauga exploration licence will need to be converted to a mining licence. A mining licence has provision to allow for another three-year exploration period before an economic study needs to be completed on the Project.

### *4.3.4 Stepnoe and Ekidos Exploration Licences*

Silver Bull recently acquired two exploration licences, both of which were granted on 22 October 2020 to Ekidos LLP, a Kazakh entity 100% owned by Silver Bull. 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 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 2021 for the Stepnoe and Ekidos licences is calculated via a formula outlined in the mining code to be approximately US$15,584 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 in a given year can be covered by expenditure accrued over the years where exploration expenditure exceeds the calculated commitment amount. 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 Silver Bull and Copperbelt on the Beskauga licence is outlined below.

On execution of the option agreement, Silver Bull 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, Silver Bull 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 Silver Bull 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, Silver Bull 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 3. 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 Silver Bull’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 3: 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 Silver Bull and Copperbelt; (ii) upon the delivery of written notice by Silver Bull 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, Silver Bull also entered into an 80:20 joint venture with Copperbelt on the "Stepnoe" and "Ekidos" exploration licences. Under the terms of the agreement Silver Bull will manage and fund all exploration activities on the properties. Silver Bull 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 Silver Bull's US$15 million expenditure commitment under the Beskauga option agreement.

No other liens or royalties are reported by Silver Bull 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*

## 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 above sea level 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–Pavlodare 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, agriculture contributes 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).

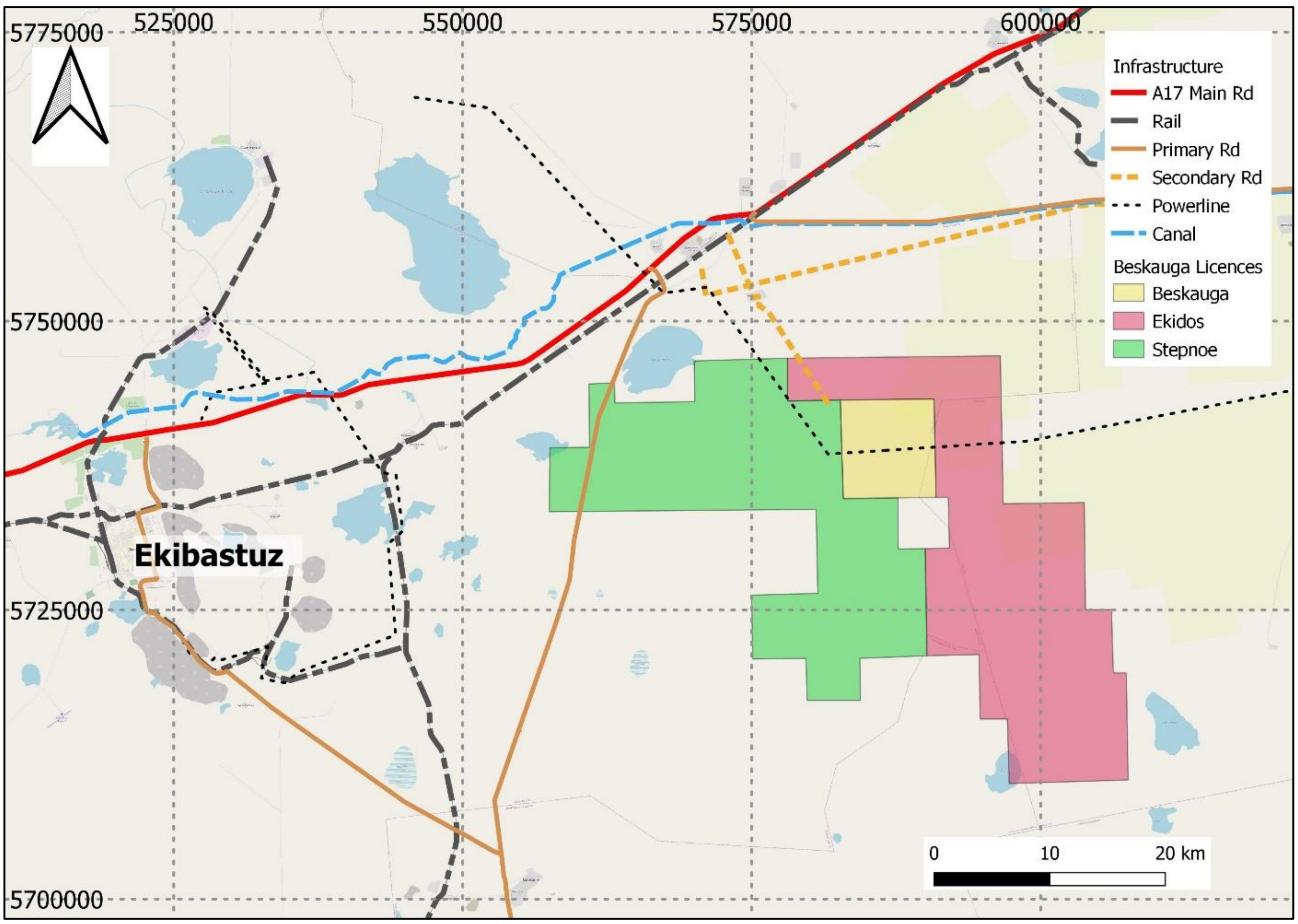



*Figure 4: Location of the town of Ekibastuz in relation to the mineral licences owned by Silver Bull*
*Also shown are roads, rail, and power infrastructure in the immediate area.*

### *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 a total of 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. The drilling method is not known.

A further 20 holes to depths of 100–200 m were also drilled during this period. These 20 holes totalled 3,818 m. Drilling was performed by ZIF-300, ZIF-650 and SBA-500 drill rigs and used tungsten carbide and diamond bits. The hole diameter was 59 mm. These drillholes 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 mineralized intercepts were obtained, and the area was not followed up until Dostyk commenced drilling in 2007.

Drillhole locations and drilling and analytical data from this period are not available and 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 prospects areas of interest and conducted work programs in these areas 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 any exploration at Beskauga by Goldbelt Resources. It is understood the exploration focus was on other targets within the extensive licence area and that no significant work was completed at Beskauga. Data from exploration by Goldbelt Resources have not been obtained and have 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

Two historical Mineral Resource estimates have previously been completed for Copperbelt on the Beskauga Project, namely by CSA Global in November 2013 and by Geosure Exploration and Mining Solutions Pty Ltd in January 2015 (Table 4). Both estimates were completed and reported in accordance with the JORC Code (2012 Edition). Neither Mineral Resource estimate was 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 current estimate based on additional drilling, the reader is cautioned that the Mineral Resource estimates presented in Table 4 are considered to be historical. They are presented for historical context and informational purposes only and the Issuer is not treating the historical estimates as current Mineral Resources.

*Table 4: Historical Mineral Resource estimates at the Beskauga Project*

| Author | Classification | Tonnes (Mt) | Au (g/t) | Cu (%) |
|---|---|---|---|---|
| CSA Global (2013) | Indicated | 226 | 0.4 | 0.25 |
| | Inferred | 273 | 0.36 | 0.15 |
| Geosure Exploration and Mining Solutions Pty Ltd (2015) | Indicated | 248 | 0.42 | 0.3 |
| | Inferred | 306 | 0.37 | 0.2 |

# 7 Geological Setting and Mineralization

## 7.1 Regional Geology and Metallogeny

The Beskauga Project is located in northeastern Kazakhstan, an area underlain by rocks forming part of the Altaid tectonic collage or CAOB (Sengör et al., 1993; Jahn et al., 2000) which extends eastwards into Russia, Mongolia and China as the Transbaikal-Mongolian orogenic collage (Yakubchuk, 2002). The CAOB is the most extensive and long-lived accretionary orogenic collage globally, progressively developed from the late Mesoproterozoic through the Paleozoic to the early Mesozoic by accretion of magmatic arcs, ophiolites, microcontinents, and accretionary wedges.

The CAOB collage formed during Rodinia break-up predominantly on the Paleotethys Ocean margin of the Siberian craton and proto-Asian continent, but also on the adjacent Paleo-Pacific margin and associated with the closure of rifted back-arc basins behind the ocean-facing margins (Seltmann and Porter, 2005). The CAOB collage is made up of fragments of sedimentary basins, island arcs, accretionary wedges and tectonically bounded terranes composed of Neoproterozoic to Cenozoic rocks (Figure 5), the product of a complex sequence of processes resulting from subduction, collision, transcurrent movement and continuing tectonism over the interval from the Neoproterozoic to the present (Seltmann and Porter, 2005). 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).

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 suggested, and Windley et al. (2007) suggests several independent and short-lived arc systems that were welded together by a process of consecutive collisions, and that many of these arcs appear to be characterized by relatively short periods of volcanic activity and were not synchronous.

The CAOB collage is highly endowed with mineral deposits, as is typical of accretionary orogenic belts, including volcanic and sedimentary massive sulphide deposits, epithermal and orogenic gold deposits, and porphyry copper-gold/molybdenum deposits.

The CAOB contains several major porphyry copper-gold/molybdenum and epithermal gold deposits formed over an extensive period from the Ordovician to the Jurassic and associated with the various magmatic arcs of this complex, including the huge Devonian Oyu Tolgoi deposit in Mongolia. Eastern Kazakhstan also hosts a cluster of large porphyry deposits including Kounrad in the Balkhash belt and Bozshakol in Pavolodar, ~180 km west of Beskauga. The Bozshakol deposit is currently mined by London Stock Exchange-listed KAZ Minerals and has a published resource of 991.9 Mt at 0.36% Cu, 0.15 g/t Au and 1.1 g/t Ag in Measured and Indicated classification (https://www.kazminerals.com/our-business/mineral-resources/).

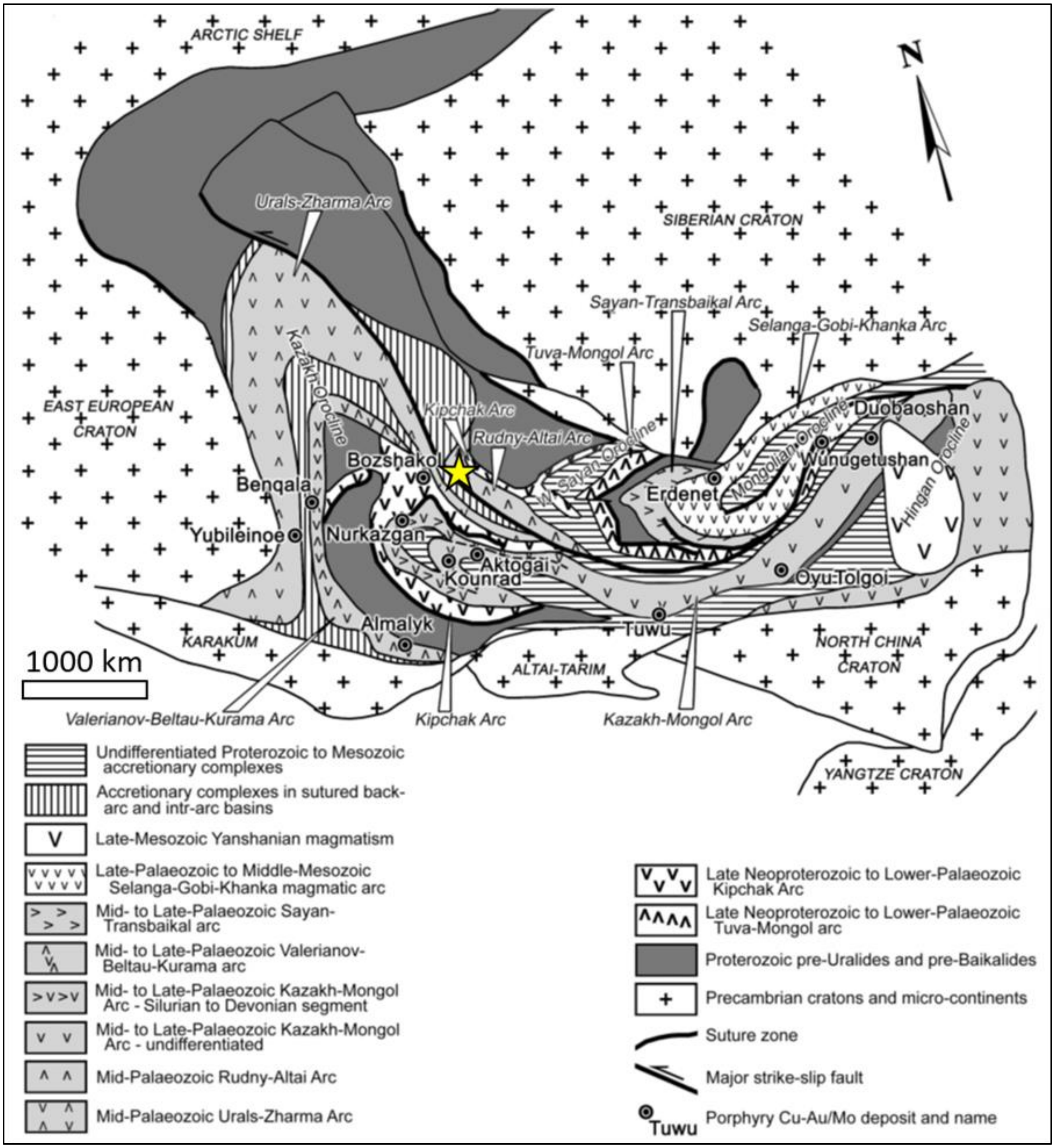



*Figure 5: Simplified tectonic map of the Altaid and Transbaikal-Mongolian orogenic collage in central Eurasia*

*Shows the location of selected porphyry copper-gold/molybdenum deposits, after removal of Mesozoic-Cenozoic basins and superficial cover (from Seltmann and Porter, 2005). Beskauga location shown by yellow star.*

### *7.1.1 Central Asian Orogenic Belt in Northeastern Kazakhstan*

In the region of northern Kazahkstan, several microcontinents and island arcs are separated by suture zones of deep, marine, volcanic, and sedimentary formations and ophiolites (Windley et al., 2007). The Maikain-Kyziltas ophiolitic suite (Figure 6) represents such as suture and comprises a serpentinite melange with abyssal and terrigenous siliceous sediments, tholeiitic, basalt and ferrobasalt, various gabbroids, eutaxic gabbro-amphibolitic bodies, representing oceanic crustal rocks. Sedimentary formations are represented by a thick pile of deformed volcanogenic-terrigenous strata, often having limestones at their base, and are typical of island arc settings.

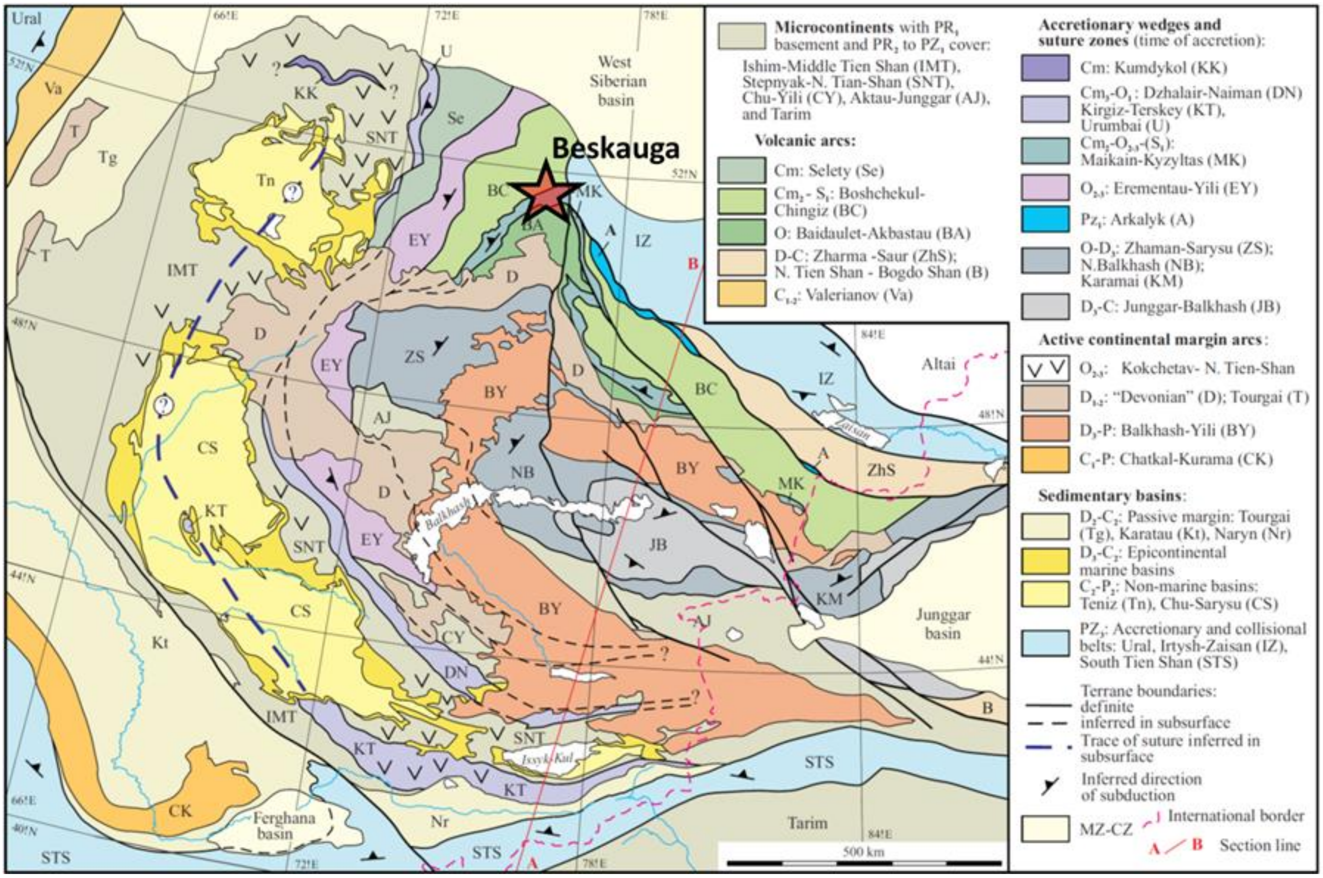



*Figure 6: Geotectonic map of the Paleozoic of Kazakhstan and contiguous China, showing the location of the Beskauga deposit (from Windley et al., 2007)*

*PR, Proterozoic; Cm, Cambrian; O, Ordovician; S, Silurian; D, Devonian; C, Carboniferous; P, Permian; PZ, Paleozoic; MZ, Mesozoic; CZ, Cenozoic. Subscripts 1, 2, 3 refer to Early, Middle, Late.*

Beskauga is thought to be located in the lower Boshchekul-Chingiz volcanic arc, part of the Kipchak arc system, marginal to the Maikain-Kyziltas ophiolitic melange belt. Island-arc volcanism was calc-alkaline in nature, evolving from are more sodic chemistry to more potassic in later stages and formed small hypabyssal intrusive bodies of gabbro, diorites, granodiorite, and sodic granite. These intrusives are responsible for the formation of the copper-gold porphyry systems in the magmatic arc belts. No significant porphyry-style deposits are found within the accretionary complexes of the sutured back-arc and intra-arc basins, although they do host large and giant, non-arc related orogenic gold deposits within fold and thrust belts (Seltmann and Porter, 2005).

These rocks being of early Ordovician age in Boschekulskaya zone (Chagan complex) and later Ordovician or Silurian age in Kendiktinskaya and Maikain-Aleksandrovskaya zones (Zharlikol complex). Often these intrusive systems are closely related to porphyry copper gold mineralization.

Within the Project area, later stage (early to late Permian age) granitic intrusive bodies are also present.

Owing to the fact that that the Beskauga area is overlain by a 10–40 m thick cover of younger sediments, and the fact that several belts of magmatic arc rocks and accretionary volcano-sedimentary units are juxtaposed in close proximity on northeastern Kazakhstan (Figure 7), the precise age of the rocks underlying the Beskauga area is unclear – the Bozshakol deposit 160 km to the west is Cambrian-Ordovician (481 Ma), but younger arc-related rocks are also found in the area. The Nukazgan porphyry deposit (290 km to the southwest) has been dated at lower Silurian and the Alktogai deposits (600 km to the southeast) are thought to be Carboniferous in age.

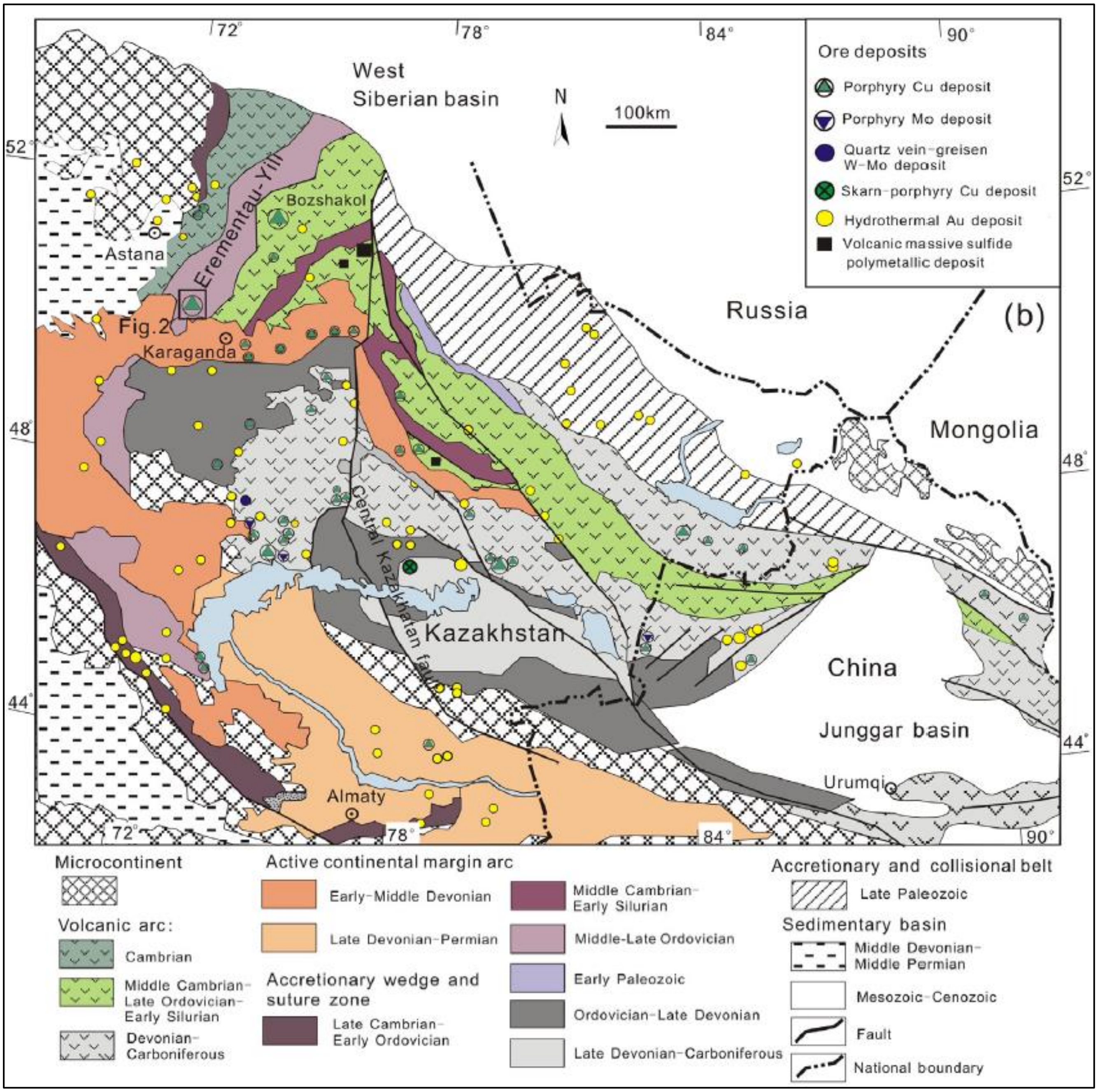



*Figure 7: Schematic tectonic map of the CAOB in northeast Kazakhstan showing mineral deposits*
*From Shen et al., 2016*

## 7.2 Property Geology

Beskauga is a copper-gold porphyry deposit with elevated grades of molybdenum and silver, related to granodiorite and plagiogranite porphyry intrusions. A map of the deposit area is shown in Figure 8 and a cross-section through the deposit is shown in Figure 9.

The project area is predominantly 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 small stock-like intrusive bodies of porphyry ranging in composition from gabbro-diorite to quartz diorite and granodiorite and referred to as the Shangirau complex. Thin (1–5 m), short (100–200 m) dikes of diorite porphyry, diabase and granite-porphyry (and rarely granodiorite and syenodiorite) also cut the host sequence. The host rocks are hornfelsed proximal to intrusive contacts.

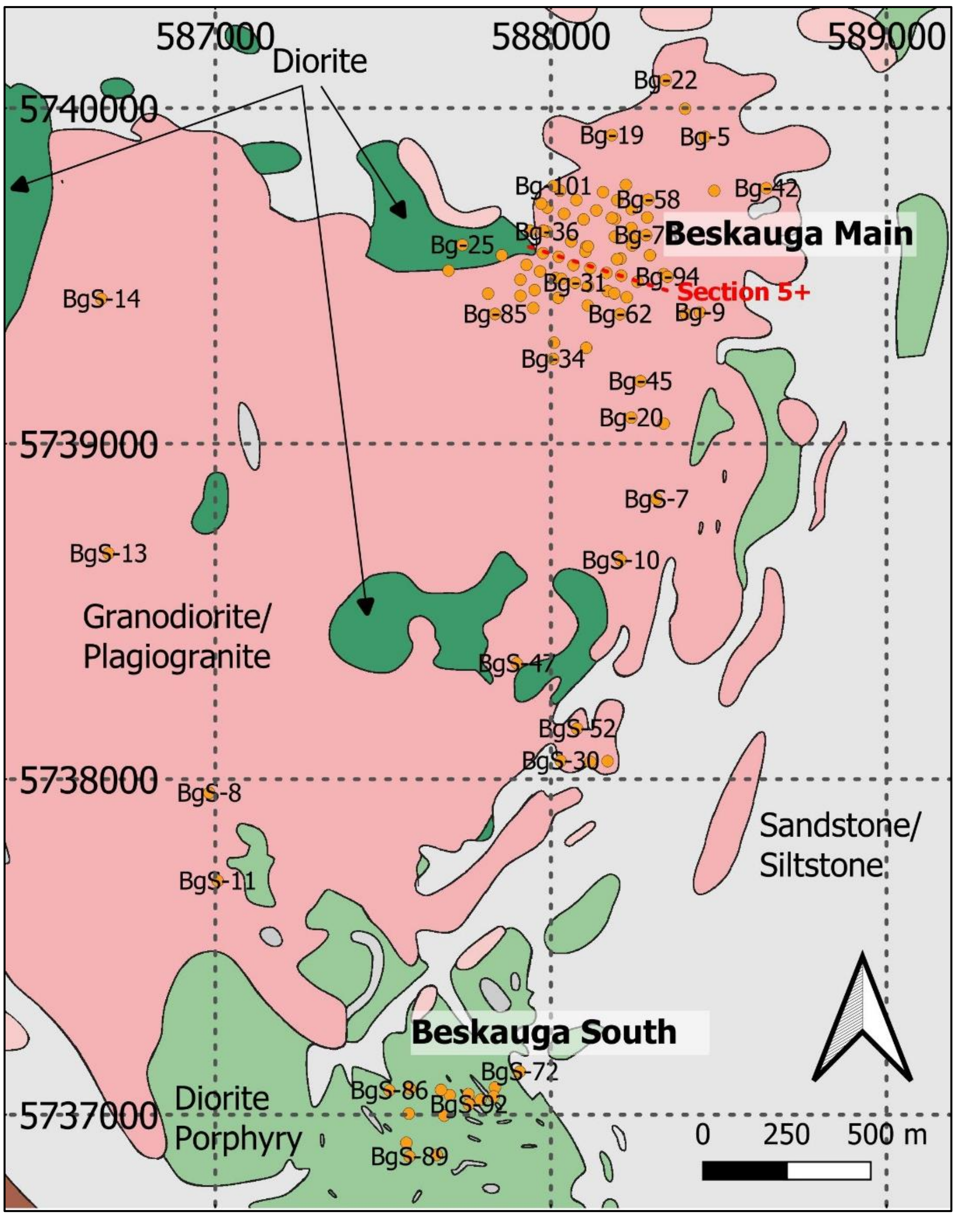



*Figure 8: Geological map of the Beskauga deposit area*

*Shows the location of the Beskauga Main and Beskauga South deposits and drillhole collars. Section line 5+ (Figure 9) is also shown.*

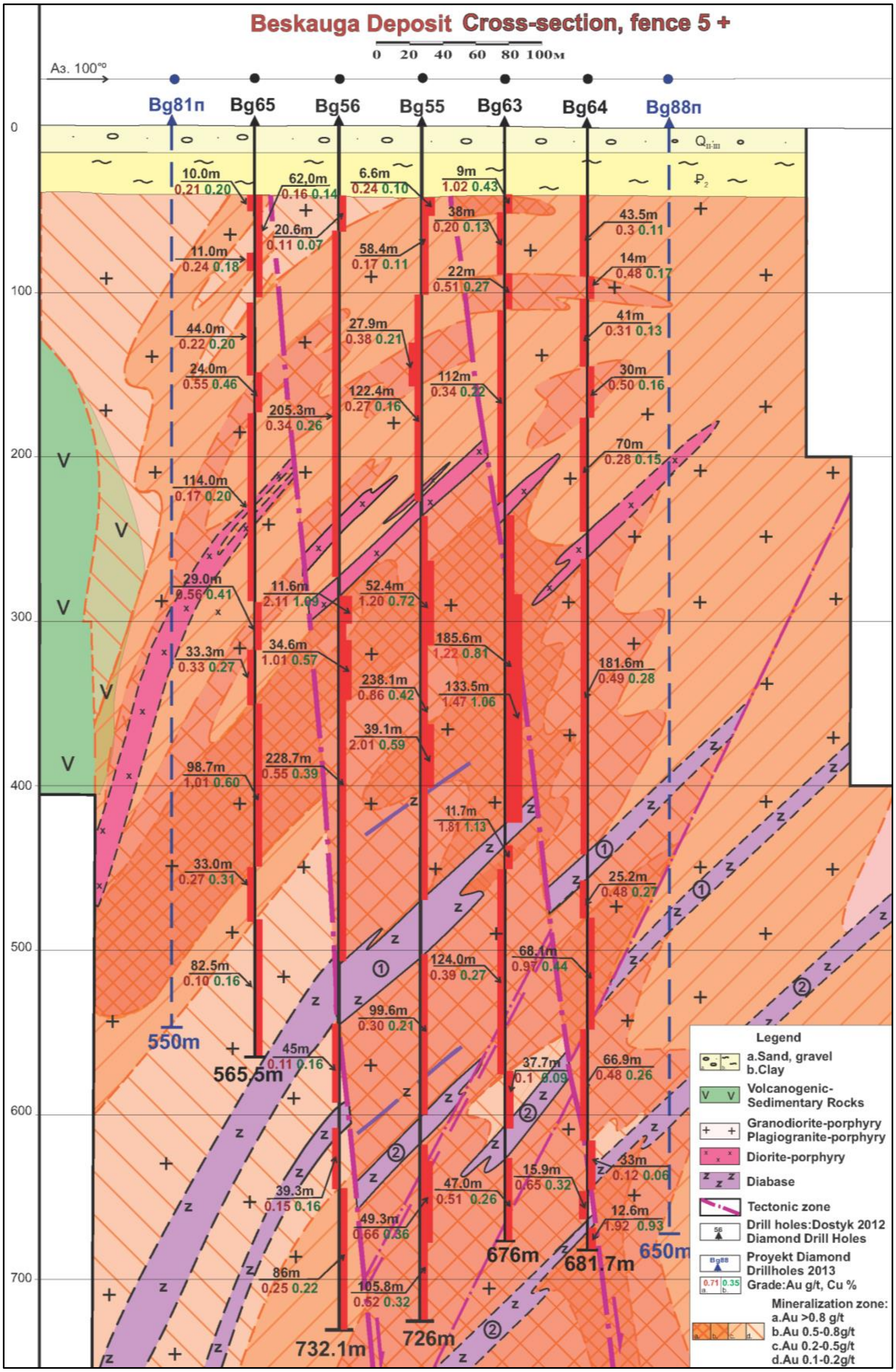



*Figure 9: Cross section through the Beskauga deposit – Fence 5 (section location is shown on Figure 8)*

The Beskauga Main porphyry-style copper-gold mineralization is largely hosted within granodiorite, whereas the Beskauga South gold mineralization is hosted within diorite porphyry and appears to represent an epithermal overprint within a telescoped mineralization system. Note that Beskauga South has been drilled but has not been included in the Mineral Resource estimate.

Intrusive rocks represent the major portion of the deposit area. The northern main zone of the deposit is represented by a complex hypabyssal intrusive body of granitoid composition with stockwork mineralization. The western, eastern, and southern parts of the area are mainly composed of sedimentary rocks of upper Ordovician age (siltstone, sandstone, and tuffaceous sandstone with rare conglomeratic and limestone interbeds) and minor andesite, andesitic tuff, andesite-dacite and basalt. The southern part of the deposit area (Beskauga South) is represented by hypabyssal-subvolcanic diorite porphyry and eruption breccia with gold mineralization.

The diorite is interpreted to cut and postdate the granodiorite. Diabase is also interpreted to cut granodiorite. Intrusive relationships and timing relative to mineralization have not been clearly established; however, it is possible that the diorite porphyry is the causative intrusion.

The Project area is 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-gray bluish-greenish clay with lignite and aleurolite (siltstone) with interlayers and lenses of inequigranular quartz sand. Younger lower to middle Quaternary cover consists of lacustrine-alluvial sand-gravel-pebble sediments.

The deposit is described as fresh beneath the young sedimentary cover, without weathering or oxidation.

## 7.3 Mineralization and Alteration

Porphyry-style mineralization is hosted in granodiorite and plagiogranite intrusions that have elongated sheet-like shapes, often with offshoots. Mineralized zones are affected by stockwork veining and hydrothermal alteration and dip steeply, broadly parallel with the contact zone of the granodiorite-plagiogranite stock (Figure 8). Alteration is represented by albitization, sericitization and pyritization, with the most intensive alteration at a depth of 250–500 m. Tourmaline has also been described.

Although potassic alteration is not included in the geological description of the deposit, mineralogy completed for metallurgy does describe potassic alteration (Section 13).

Sericite-pyrophyllite-quartz alteration and silicification in steeply dipping alteration zones is also described mostly affecting intrusive rocks (diorite, quartz diorite and plagiogranite) indicating a degree of epithermal overprint. The altered rocks form isolated bodies in the northwest and southeast portions of the area. Alteration affects the sedimentary host rocks to a lesser extent forming lenticular bodies of various dimensions and shapes.

In the northern portion of the mineralized area, mineralization and alteration has been drilled in an area up to 2.5 km east-west and up to 3.2 km north-south. In the southern portion of the mineralized area, gold and porphyry copper mineralization and alteration appears to be rimmed by gold mineralization that extends into the volcano-sedimentary host rocks. Note that wireframed mineralized shapes greatly depend on cut-off parameters and discontinuous zones at higher cut-off grades often merge into single bodies when cut-off grades are reduced.

The principal sulphide minerals at Beskauga include pyrite, chalcopyrite, tennantite, enargite, bornite and molybdenite, with magnetite and hematite also described. QEMSCAN mineralogy completed as part of metallurgical testwork indicates that pyrite and chalcopyrite are the dominant sulphides with subordinate tennantite and chalcocite. Analysis indicates a close correlation between gold and copper grades. Sulphides occur as fine-grained disseminations as well as in stockwork veins and veinlets, 3–5 mm thick, consisting of quartz-carbonate, quartz-carbonate-chlorite, and quartz-pyrite. Free gold has been identified in polished sections and microprobe analysis showed high fineness (gold – 83.41%, silver – 12.63%). Sulphides are also seen to a much lesser extent in weakly altered granitoids and near contacts with hornfelsed sedimentary rocks.

The work required to understand the geometry and zonation of alteration and mineralization at Beskauga has not been completed, as would normally be the case for a porphyry-epithermal mineralization system. This would ideally include detailed logging of alteration and veining with documentation of vein type, mineralogy, and vein density (ideally using an Anaconda-type approach), multi-element litho-geochemical data analysis, and hyperspectral data acquisition and analysis. This represents a substantial gap in the Project and presents an opportunity to improve modelling and resource extension targeting.

The occurrence of significant tennantite at Beskauga is not unusual for gold-rich porphyry systems but does have metallurgical implications as discussed in Section 13. The combination with enargite may also suggest a high level in the porphyry system or a high-sulphidation overprint. Higher sulphidation-state sulphides are generated progressively upward in porphyry systems with lower temperatures and hydrolytic alteration. The fact that potassic alteration has not been described during logging at Beskauga may also reflect that drilling has mainly been in the upper phyllic part of the system, although potassic alteration was identified in mineralogical studies.

# 8 Deposit Types

The Beskauga deposit is interpreted as a porphyry-style copper-gold system, associated with calc-alkaline intrusions related to island arc volcanism during the Lower Palaeozoic. Porphyry systems host majority of the world's major copper deposits and are typically high-tonnage and low-grade (Figure 10 and Figure 11). Several large porphyry deposits (including Kounrad, Bozshakol, Altogai, and Koksai) are located in Kazakhstan. Kounrad has been mined out while Bozshakol, Altogai and Koksai are currently in production or under development by KAZ Minerals.

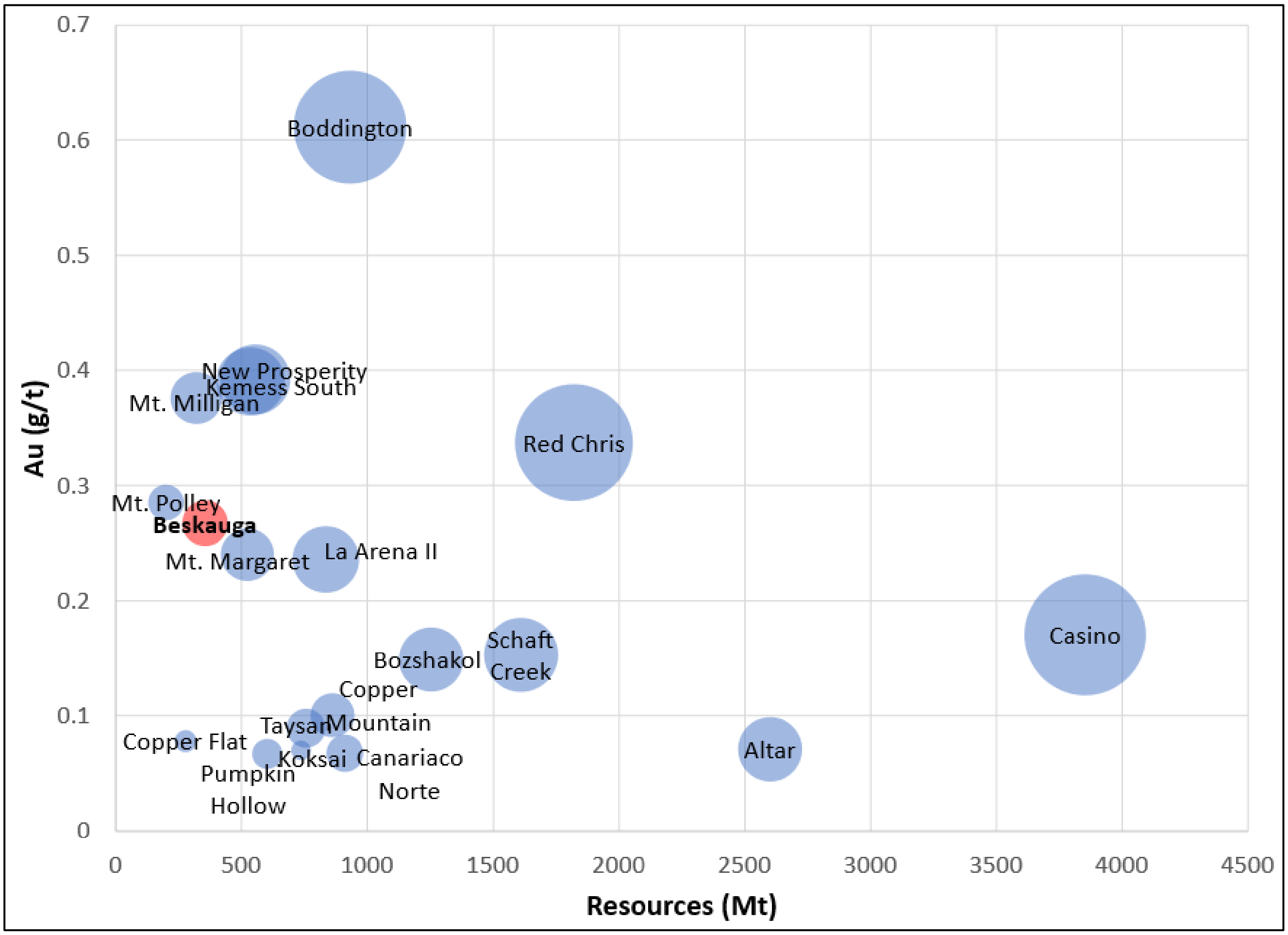



*Figure 10: Plot of gold grade vs total resources for selected gold-rich porphyry projects globally*

*Area of circles is proportional to contained gold. Company data acquired from reports files on SEDAR and/or other publicly available data.*

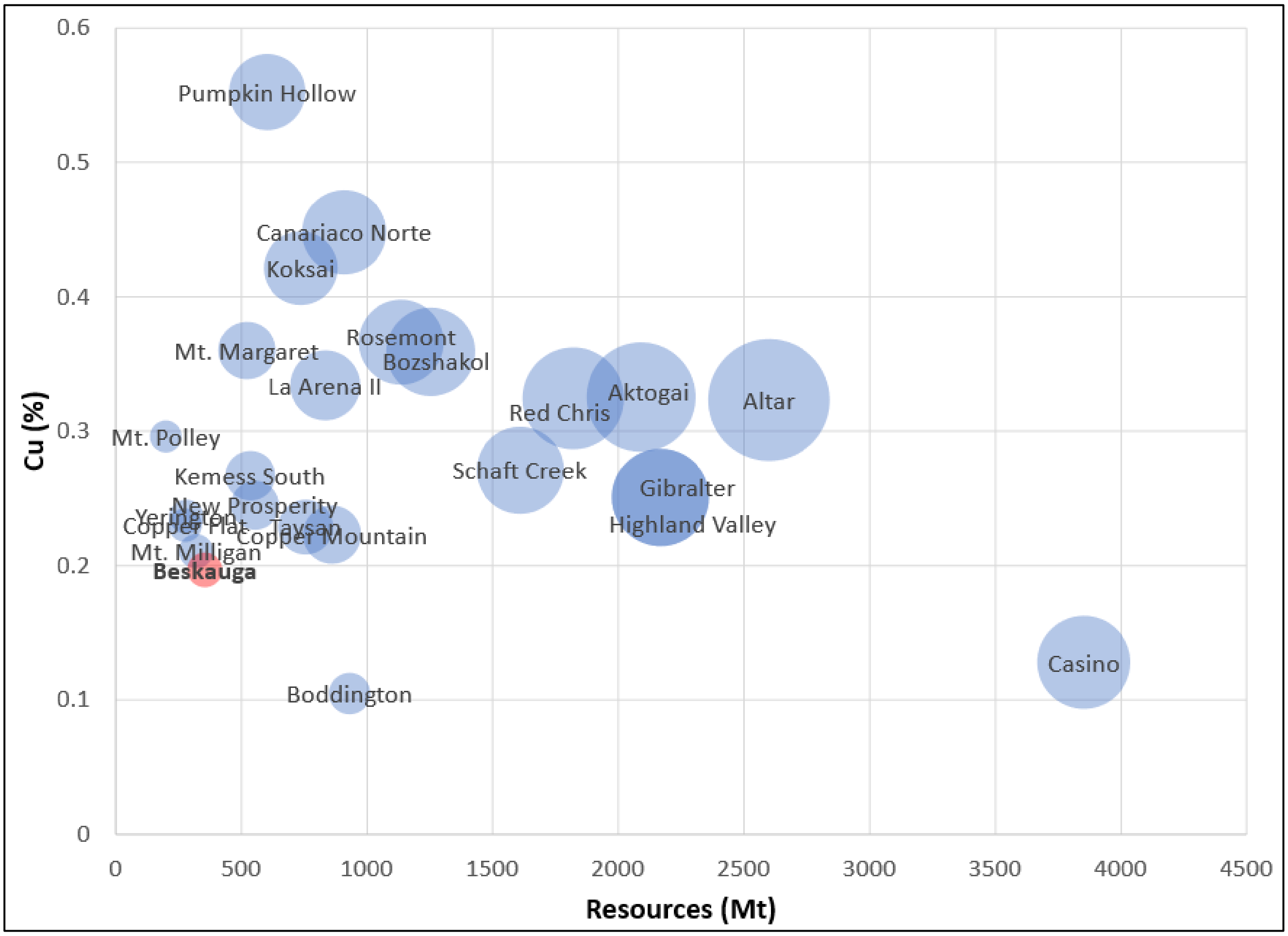



*Figure 11: Plot of copper grade vs total resources for selected gold-rich porphyry projects globally*

*Area of circles is proportional to contained copper. Company data acquired from reports files on SEDAR and/or other publicly available data.*

## 8.1 Mineralization Styles

In porphyry systems such as Beskauga, mineralization forms as vein stockworks and disseminations associated with a halo of hydrothermal alteration related to an intrusion, which may range in composition from diorite to granodiorite and granite. Owing to their relationship to hydrothermal fluids, porphyry copper deposits display a consistent, broad-scale alteration-mineralization zoning pattern related to the chemistry and evolution of these fluids.

This alteration typically comprises a core of potassic alteration (characterized by K-feldspar, biotite and muscovite) surrounded sequentially outwards by phyllic alteration (characterized by chlorite and sericite) and propylitic alteration (characterized by chlorite and epidote). The zone of potassic alteration being of primary importance for copper mineralization (Figure 12). Argillic alteration (characterized by kaolinite and montmorillonite). Mineralization occurs at shallow levels (in the upper 4 km of the crust), and the mineralizing system is closely related to underlying composite plutons at paleodepths of 5–15 km (Sillitoe, 2010). Porphyry deposits are generally large and low grade, and semicircular to elliptical in plan view.

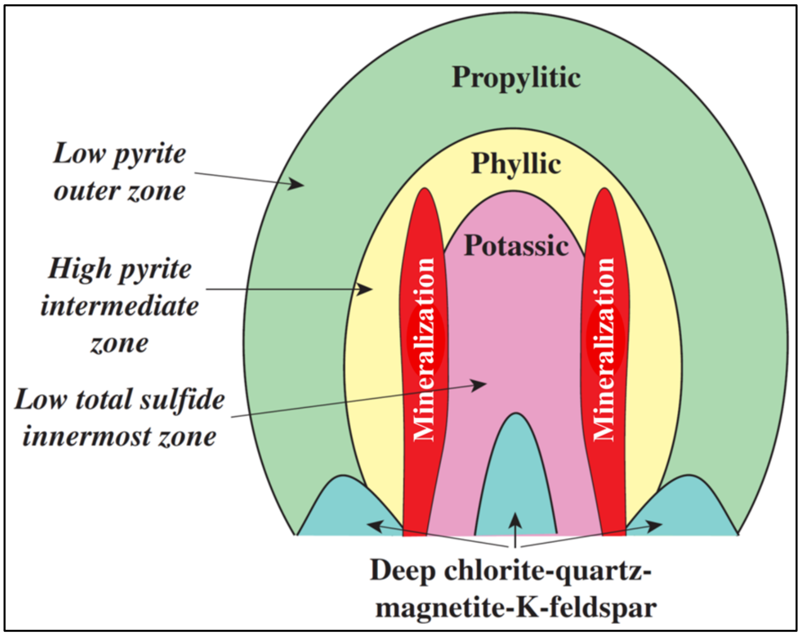



*Figure 12: Cartoon cross-section of a porphyry copper deposit*
*Shows idealized alteration zoning and relationship to mineralization (from Berger et al., 2008).*

Primary (hypogene) copper mineralization 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 form as a result of precipitation of mineralization 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 oxidized in order to suppresses magmatic sulfide 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 mineralization 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. 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).

A variety of other deposit types are spatially related to porphyry systems, including skarns, polymetallic veins and replacements, and epithermal veins (Figure 13), although none of these have yet been identified at Beskauga.

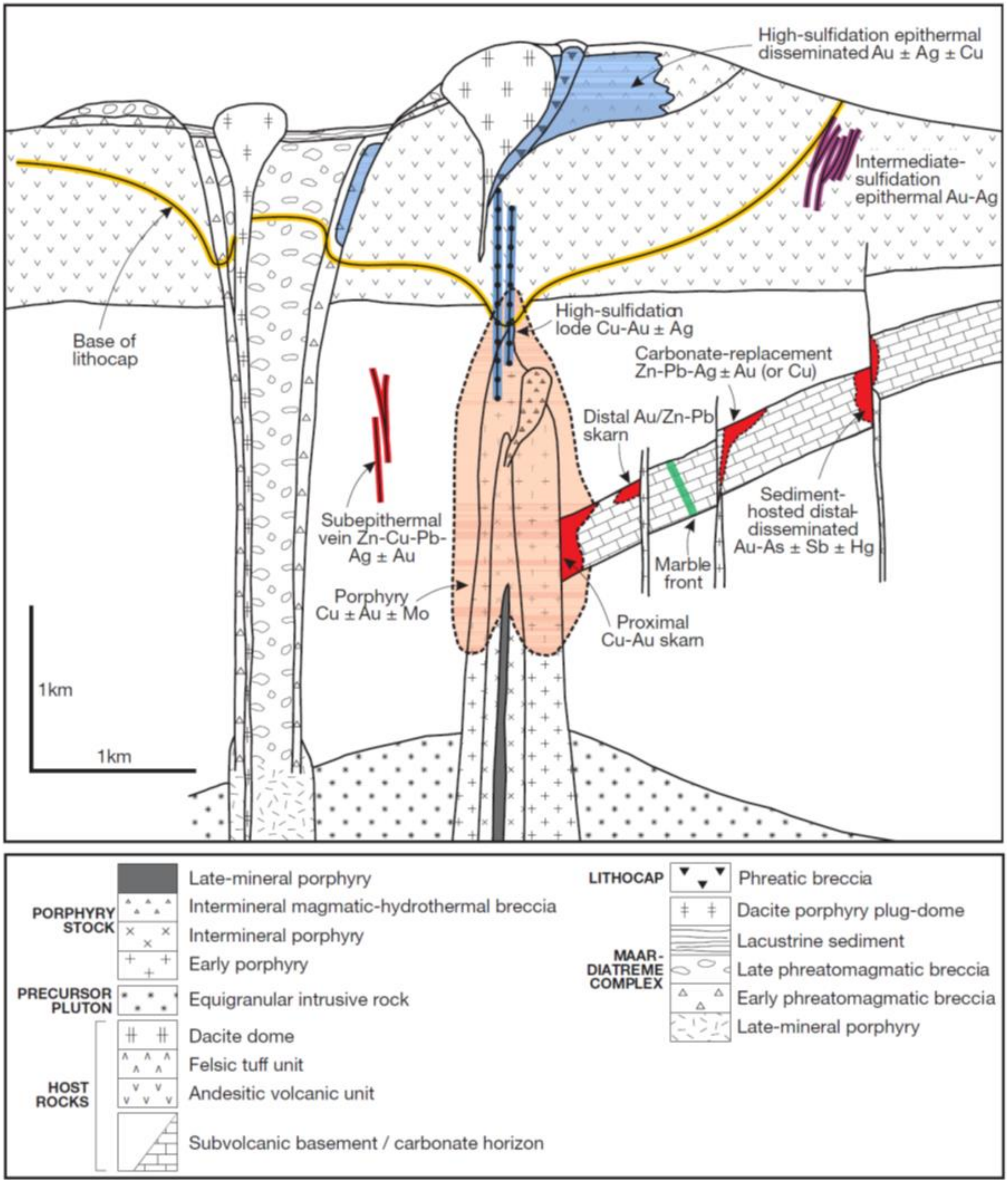



*Figure 13: Anatomy of a porphyry mineral system*

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

# 9 Exploration

The following section details exploration carried out at Beskauga between 2007 and 2017 by Dostyk. Apart from drilling (detailed in Section 10 below), the primary exploration technique was 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 survey 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 a number of relative magnetic highs >1000 nT (red in Figure 14 below) which present interesting targets for follow-up exploration. Further assessment is required to determine magnetic sources related to magnetic intrusions as opposed to magnetite alteration.

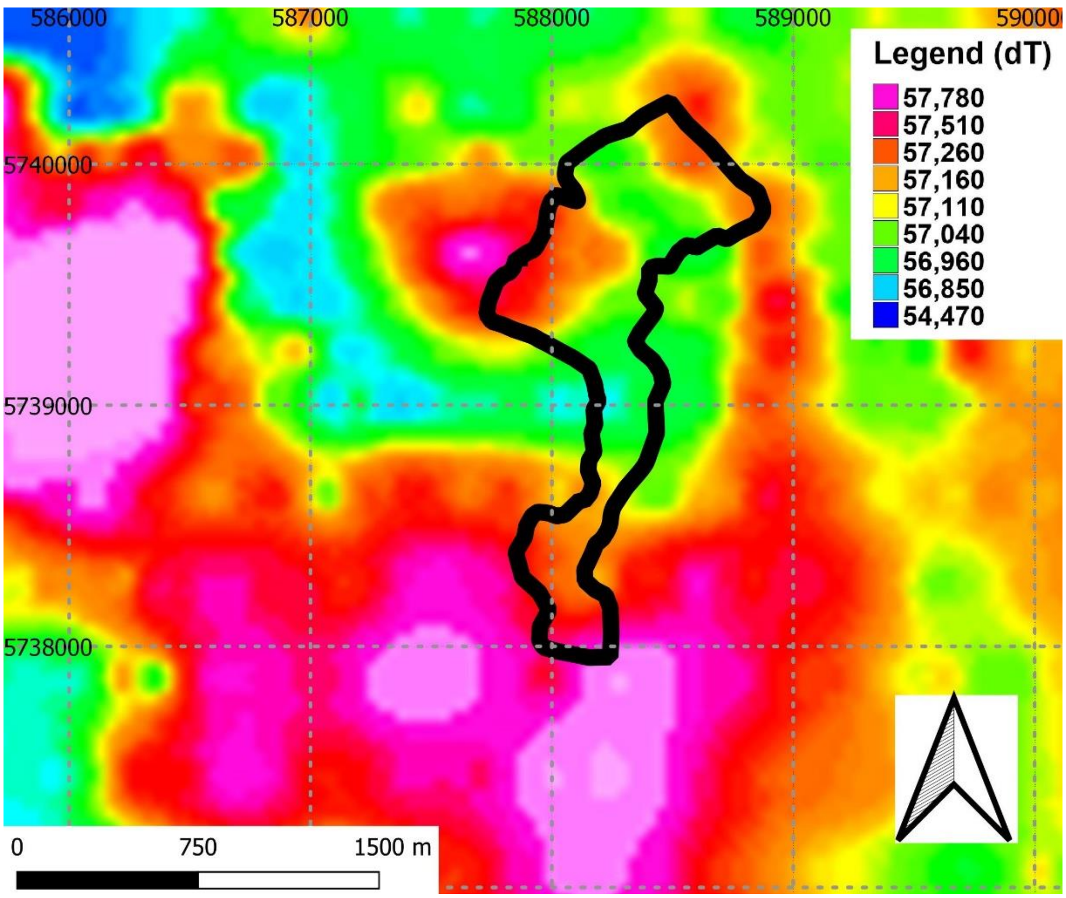



*Figure 14: Magnetic anomaly map (Total Magnetivc Intensity) and grid points for the magnetic survey*
*Yellow outline indicates area of the main deposit*

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 IP survey showed a good correlation with the mineralization defined by the drilling and indicated the mineralizing system may be much larger. The anomalous area is ~9 km$^2$, comparable to known large gold-bearing copper porphyry deposits of the world.

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. The deeper extensions of the deposit have however never been drill-tested. This accords with the mineralogy and alteration types identified in drilling to date which suggest the upper part of a system has been tested.

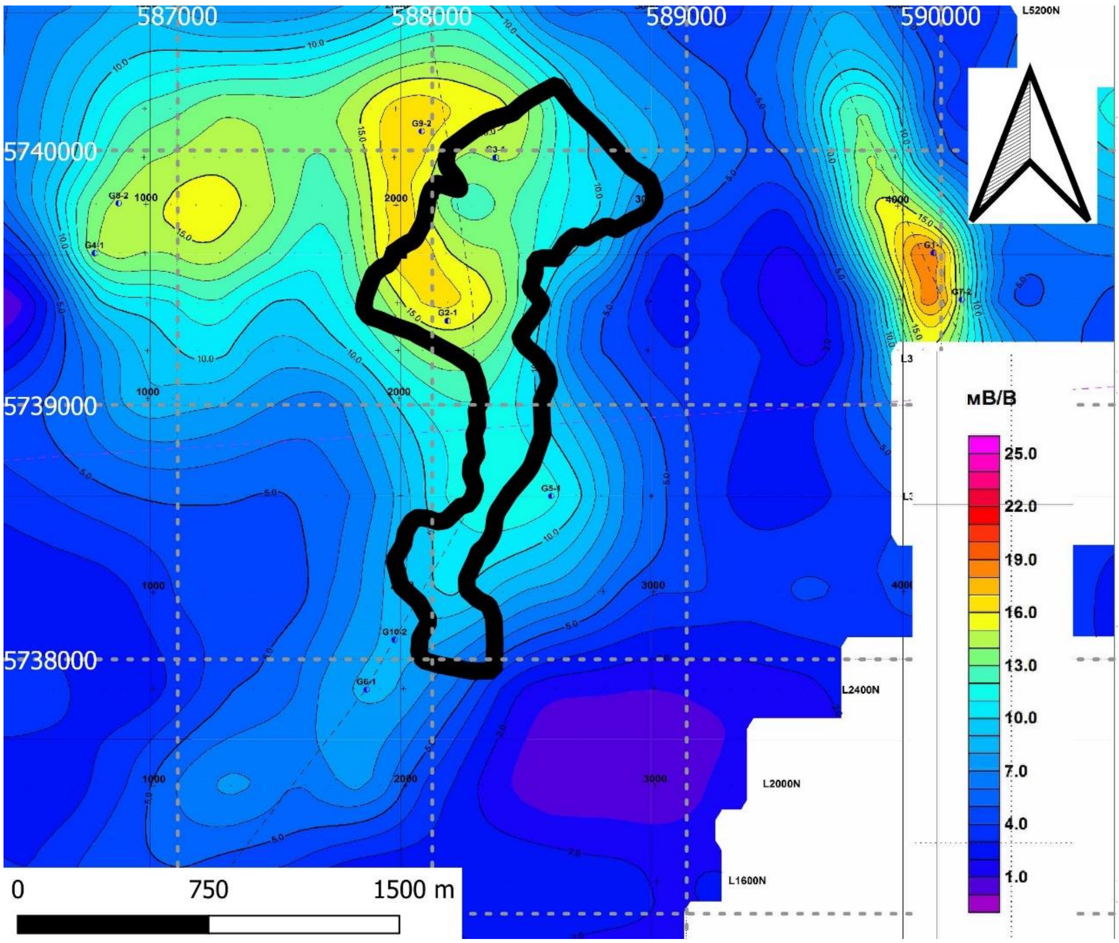



*Figure 15: IP anomaly map of chargeability over the Beskauga deposit – depth slice at 300 m.*
*Yellow outline indicates area of the main deposit*

The geophysical data have not yet been acquired and reprocessed by Silver Bull. This is a priority for the next phase of work and will guide collection of additional data.

## 9.2 Regional Evaluation

Silver Bull is currently integrating an abundance of information and data, both public and private, on the greater regional area around Beskauga. From the public side, the information from work conducted during the Soviet era including regional geophysical surveys and 1:250,000 geological mapping is a valuable initial basis for prospect evaluation when used with targeted stratigraphy and structural analysis. In addition, Silver Bull has employed SRTM and Landsat ASTER images to develop remote sensed hydrothermal alteration models of selected target areas. Silver Bull also intends to fly a high resolution airborne magnetic survey to act as a base for regional licence targeting and exploration.

Silver Bull, via its 100% owned subsidiary Ekidos LLP, has staked two additional large exploration licences, the Stepnoe and Ekidos exploration licences, each 450 km in area with the intention of exploring the area on a more regional basis. At the time of writing, work has yet to commence on this ground.

# 10 Drilling

## 10.1 Diamond Drilling

A total of 118 diamond drillholes, totaling 45,605.8 m, were completed by Dostyk between 2007 and 2017 (Table 5). Diamond drilling was performed by SKB-5M drill rigs using Boart Longyear tooling by drilling contractor CenterGeolSyomka LLP. Drilling was done at either HQ or NQ diameter depending on the depth of the hole, which ranged from 150 m to 815 m. Core recovery was on average >90%.

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

*Table 5: 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 6: Collar positions, lengths, and orientations of all 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 |

| Hole ID | X | Y | Z | Length | Azimuth | Dip | Year |
|---|---|---|---|---|---|---|---|
| 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 |
| 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 |

| Hole ID | X | Y | Z | Length | Azimuth | Dip | Year |
|---|---|---|---|---|---|---|---|
| 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 |

### *10.1.1 Collar Surveying*

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

### 10.1.2 Downhole Surveying

All drillholes, including vertical drillholes, 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.

### 10.1.3 Core Logging and Photography

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

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

Intervals to be sampled were determined b the logging geologist on the basis of geological core logging. 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 is sent for splitting and sampling.

### 10.1.4 Core Sampling

Core sampling was performed by splitting 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 hat could be used for future duplicate sampling, for additional testwork, or for petrography and mineralogy studies.

Between 1981 and 1990, core was divided using a manual core splitter (578 samples) whereas from 2007 to 2013 core was divided using a diamond core sawing machine (19,540 samples). Drill data prior to 2007 has not been used in the Mineral Resource estimate.

### 10.1.5 Significant Intervals

*Table 7: Significant intervals drilled at Beskauga (>100 m intervals at >0.3 g/t Au)*

| Drillhole name | From (m) | To (m) | Core length (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 |

| Drillhole name | From (m) | To (m) | Core length (m) | Au (g/t) | Cu (%) |
|---|---|---|---|---|---|
| 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 |

*Note that since mineralization occurs as a broad dissemination, actual core length is considered to represent true thickness.*

### *10.1.6 Interpretation*

#### *Mineralization Orientation*

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

#### *True Thickness*

The zone of disseminated mineralization at Beskauga is varied between approximately 50 m and 600 m wide, extends for approximately 2.2 km along a north-northeast strike, with a depth of between 300 m and 800 m.

## 10.2 KGK Drilling

KGK or hydraulic-core lift drilling is a system designed to drillholes for geochemical sampling and geological mapping of cover sediments and basement rocks. 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 for the purpose of better defining "blind" mineralized targets through the Quaternary cover. The depths of drillholes ranged from 22 m to 65 m in length and averaged around 35 m. Often the holes were terminated within 5 m of intersecting bedrock. A total of 1,606 holes were drilled for a total of 52,580 m within the area regional Beskauga area. Some 2,496 samples were taken and analysed. A summary table of the metres drilled each year and the locations of the drillholes are shown in the map below.

### *10.2.1 Sampling and Results*

The purpose of KGK drilling was to define areas of mineralization below the overburden, and hence these holes were only sampled at or near the contact with the underlying bedrock. Details of sampling procedures for this phase of drilling are unclear; however, these drill results have not been used for mineral resource estimation and the lack of sampling information is not considered material.

The copper and gold results show strong anomalism that is coincident with known mineralization and extends into area that remain poorly drilled or undrilled (Figure 17 and Figure 18).

*Table 8: Summary table of the KGK drilling conducted by Dostyk between 2011 and 2014*

| Year | Holes | Samples | Drilled (m) |
|---|---|---|---|
| 2011 | 801 | 1,207 | 28,281 |
| 2012 | 556 | 813 | 16,948 |
| 2014 | 249 | 476 | 7,351 |
| **Total** | **1,606** | **2,496** | **52,580** |

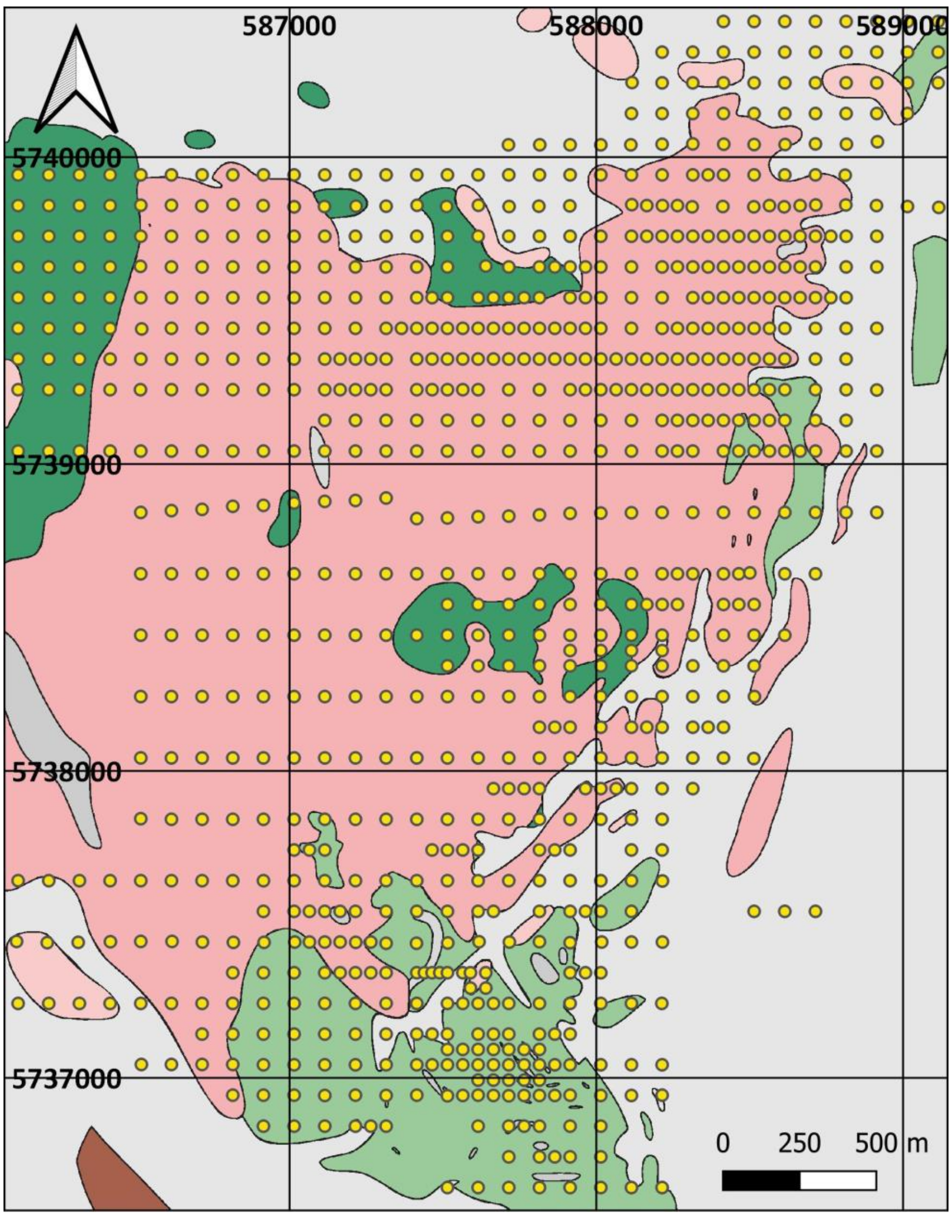



*Figure 16: Location of the shallow KGK holes drilled by Dostyk between 2007 and 2017*

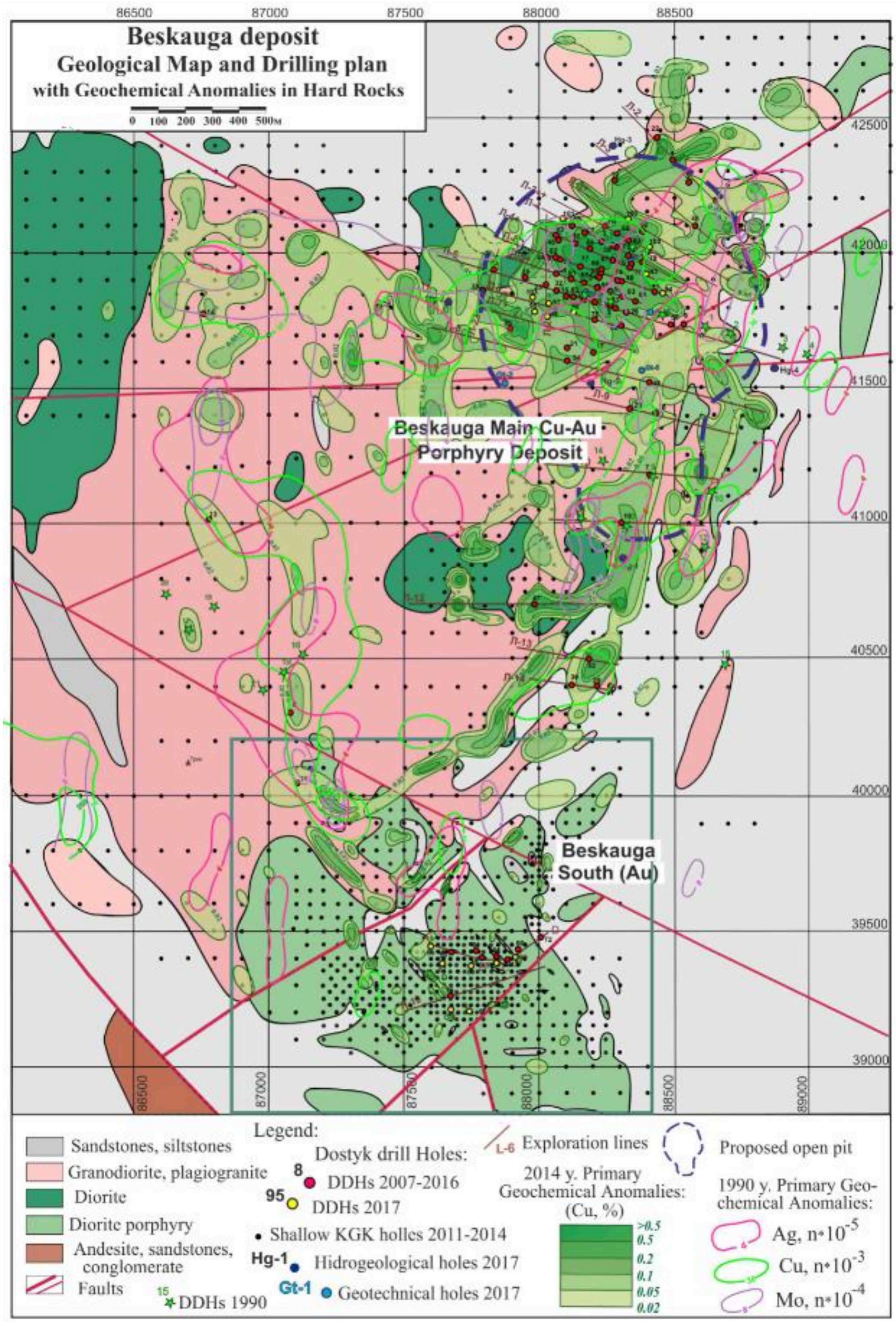



*Figure 17: Cu geochemical anomalies from KGK drilling and Soviet drilling*

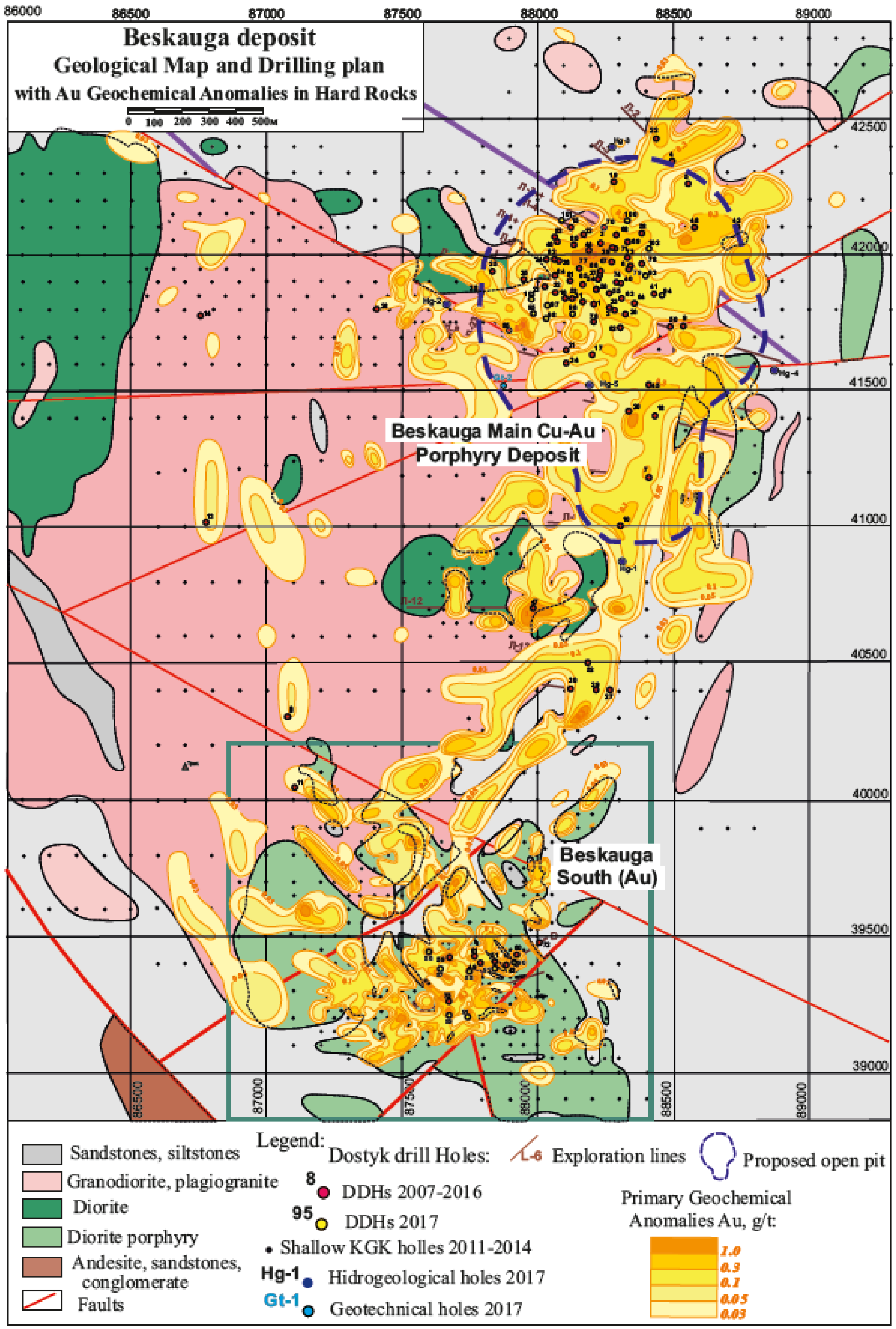



*Figure 18: Au geochemical anomalies from KGK drilling*

# 11 Sample Preparation, Analyses and Security

## 11.1 Sample Preparation and Security

During the 2007–2013 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, and weights were registered in the 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. The bulk of the sample was stored as a crush reject, and ~1 kg was milled using cup vibration mills to 200 mesh fineness (-90 µm).

The samples were then split again, with one portion sent to the 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 are stored in the specifically equipped sample storage facility, a hangar with shelves (Figure 19). This facility can be locked and has on-site security.

*Figure 19: Dostyk LLP storage facility with core and crushed duplicate samples*

## 11.2 Analytical Method

Between 2007 and 2017, Dostyk utilized various laboratories for its analytical requirements. These laboratories include:

- Quartz Chemical/Analytical Laboratory, Semipalatinsk, Kazakhstan (2007–2008)
- Jetysugeomining Laboratory LLP, Almaty, Kazakhstan (2009–2011)
- HelpGeo Laboratory, Almaty, Kazakhstan (2012–2014)
- SAEL LLC, Kara-Balta, Kyrgyzstan (2007–2017).

SAEL has been utilized by Dostyk as the primary laboratory since the commencement of the 2007 exploration program until the present. It should be noted that all results used for the Mineral Resource estimate were provided by SAEL.

Samples were analyzed at SAEL for gold using FA with an AAS finish. A 30 g bead was used in the FA process. A further 33 elements were determined by an aqua regia digest followed by ICP-OES measurement of elemental concentrations. The Qualified Person notes that only copper, gold, molybdenum, and silver data has been provided by Copperbelt.

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

## 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. QAQC 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.

QAQC may be implemented through several steps, which may include but is 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. CSA Global 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 QAQC checks, the SAEL Laboratory conducted internal QAQC checks and Dostyk completed second laboratory checks at Genalysis Laboratories.

### *11.3.1 Internal Laboratory QAQC*

The following is an outline of QAQC checks carried out by SAEL:

- All the measuring equipment is regularly tested. Daily, before work, all scales are checked with the special set of weights, and the temperature of the oven is measured by thermocouple unit.
- All standard materials are acquired from reliable suppliers that are accredited in accordance with ISO Guide 34:2000. The laboratory has 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 are inserted every 50 samples.
- SAEL performs several routine quality control checks during the analytical process to monitor contamination, accuracy and precision. Contamination is monitored by the insertion of a blank and standard at standard intervals. Accuracy is monitored using appropriate CRMs. Precision is monitored by the duplication of samples.
- SAEL operates a three-tier quality control system. Instrument operators store data in job files, and they peruse the data to ensure analytical sequences are correct, standard values are correct and other controls also confirm that the analytical run has not been beset with problems. These staff members initiate checking of suspicious results. The second phase of quality control checking is performed either by quality control staff in each department or by the head of the department. Lastly, and before any batch of results are reported, senior staff in charge of reporting of results also peruse the data. These staff members are not directly associated with the laboratory sections generating the results; however, they may also initiate queries in relation to any work which has been carried out on a sample and they may return work for re-analysis if they are dissatisfied with analytical quality.
- All laboratory quality control data is reported within the structure of the final reports.
- Quality control limits for the CRM, blank and duplicate samples are determined according to the analytical technique employed and are automatically flagged by the laboratory information management system (LIMS) as being erroneous if they fall outside these limits by the laboratory information management system. Prior to their release, laboratory personnel validate all results and flagged errors are assessed and, if possible, the sample batch is re assayed, or the errors are reported. All data generated from quality control samples are captured for assessment.
- Quality control reports are generated and despatched 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 2014. 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.

### *11.3.2 Certified Reference Materials*

Several CRMs were submitted for analysis together with samples, namely OREAS 209, OREAS 501b, OREAS 502b, OREAS 503b, and OREAS 54Pa. 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 9. A total of 187 gold CRMs and 124 copper CRMs were analysed, representing 0.52% and 0.34% of the 36,271 samples in the database, below the recommended amount of 5% of CRMs.

*Table 9: CRM grades*

| CRM | Company | Element/Test type | Grade | SD | No. of analyses |
|---|---|---|---|---|---|
| 209 | OREAS | Au, FA (ppm) | 1.58 | 0.044 | 52 |
| | | Cu, aqua regia (ppm) | 76 | 3.7 | 0 |
| 501b | OREAS | Au, FA (ppm) | 0.248 | 0.01 | 45 |
| | | Cu, four-acid digestion (%) | 0.26 | 0.011 | 40 |
| 502b | OREAS | Au, FA (ppm) | 0.494 | 0.015 | 11 |
| | | Cu, four-acid digestion (%) | 0.773 | 0.02 | 11 |
| 503b | OREAS | Au, FA (ppm) | 0.695 | 0.021 | 65 |
| | | Cu, four-acid digestion (%) | 0.531 | 0.023 | 63 |
| 54Pa | OREAS | Au, FA (ppm) | 2.90 | 0.11 | 14 |
| | | Cu, four-acid digestion (%) | 1.55 | 0.02 | 10 |

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 that exceeds three times the SD. This represents an out-of-control situation. When a point appears outside the mean ±3 SD range, it is recommended that action be taken.

Figures below show Shewhart Control Charts for the analysed CRMs. Figure 20 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.

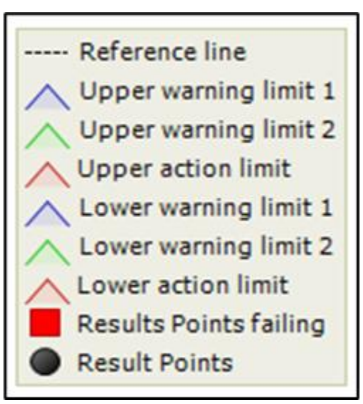



*Figure 20: Legend for Shewhart control charts*

*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. Mineralization 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 21). 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).

*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 22). 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 23). There was one sample that was outside of three SDs and this was possibly due to the erroneous database entry.

*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.

*OREAS 503b*

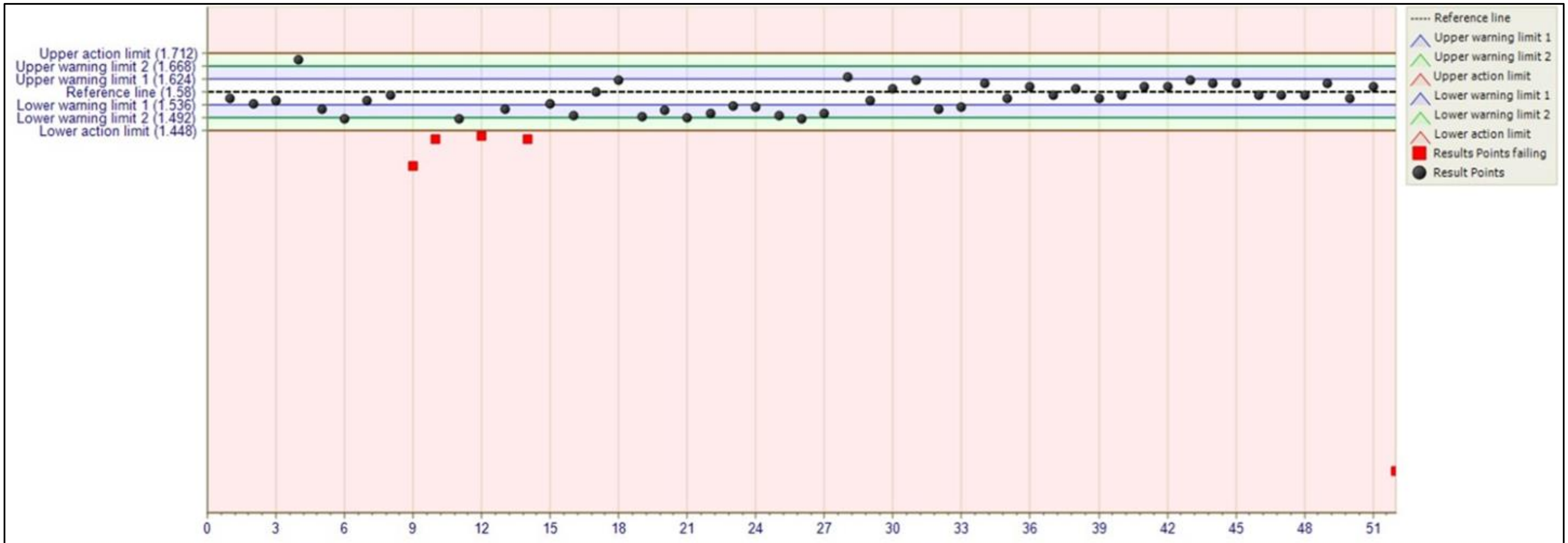
OREAS 503b was prepared from porphyry copper-gold ore and waste samples from a mine located in central western New South Wales, Australia with the addition of a minor quantity of copper-molybdenum concentrate.

A total of 65 samples were analysed for gold (Figure 26) and copper (Figure 27) 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.

*OREAS 54Pa*

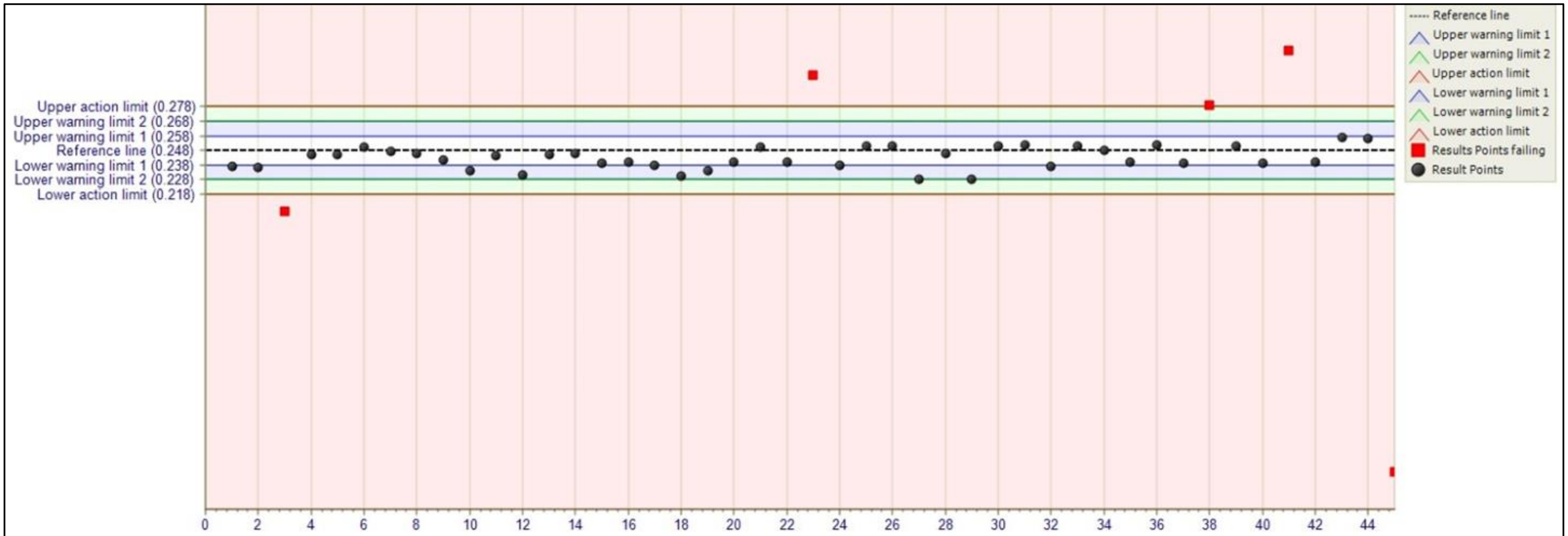
Reference material OREAS 54Pa is a porphyry copper-gold standard prepared from ore and waste rock samples from a porphyry copper-gold deposit in central western New South Wales, Australia. Copper-gold mineralization occurs as stockwork quartz veins and disseminations associated with potassic alteration. 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 28, Figure 29). There was one sample for both gold and copper that was outside of three SDs.



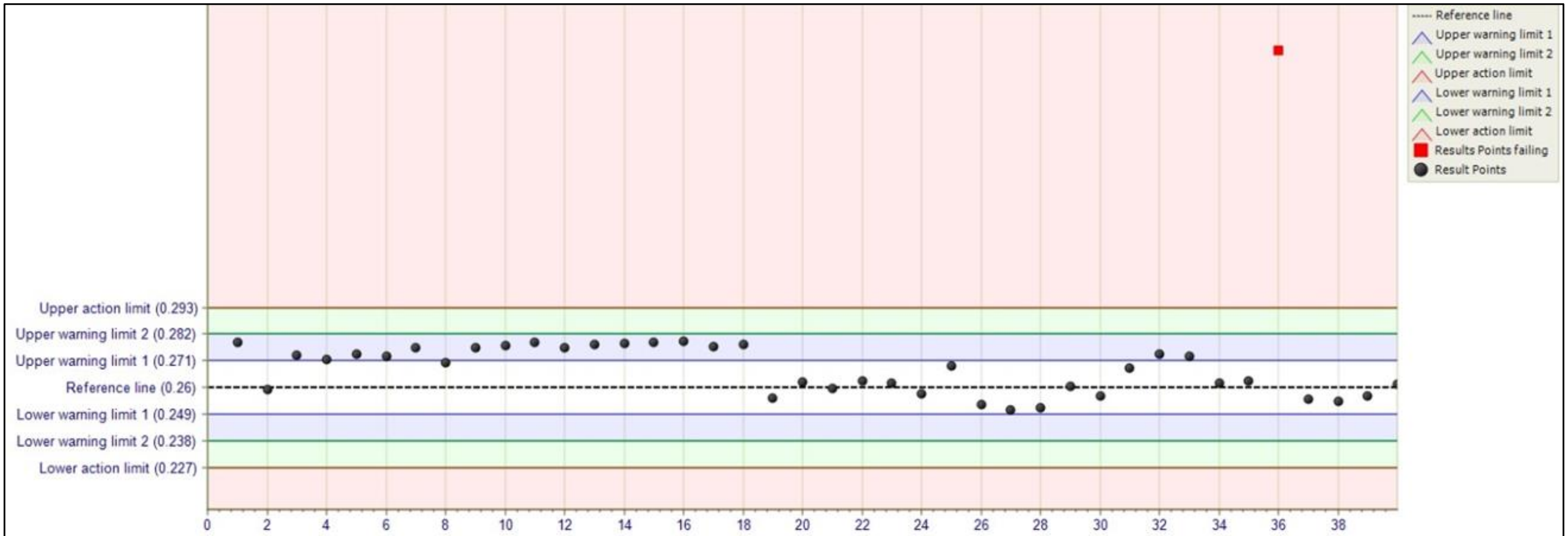

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 52 | Kurtosis | 36.3100 | Expected to -1SD | 15 (28.85%) | 2SD to 3SD | 5 (9.62%) |
| Field Name | Au g/t (FA)1 | Median | 1.5550 | Skewness | -5.8267 | Inside 1SD | 29 (55.77%) | +3SD | 0 (0.00%) |
| 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 21: OREAS 209 Shewhart Control Chart for gold*




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 22: OREAS 501b Shewhart Control Chart for gold*

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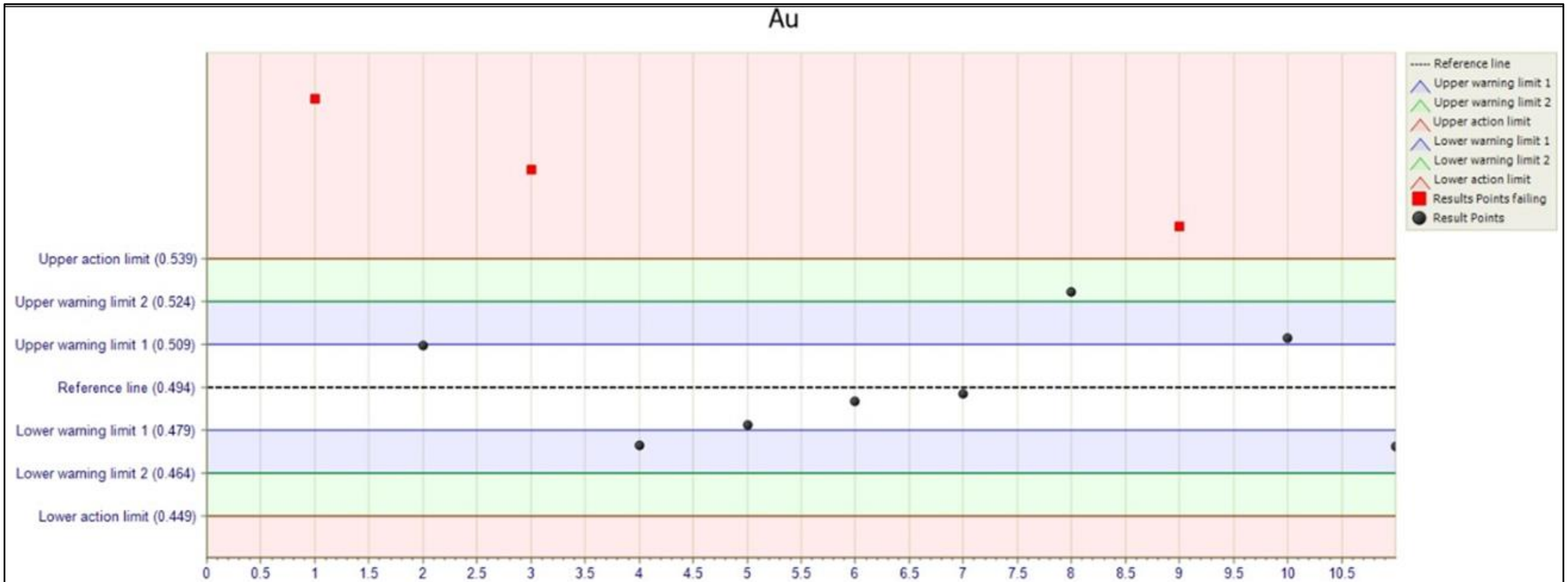
|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 40 | Kurtosis | 23.5378 | Expected to -1SD | 11 (27.50%) | 2SD to 3SD | 0 (0.00%) |
| Field Name | Cu ppm (ICP)1 | Median | 0.2698 | Skewness | 4.5493 | Inside 1SD | 21 (52.50%) | +3SD | 1 (2.50%) |
| Action Level | 99.7300 | 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 23: OREAS 501b Shewhart Control Chart for copper*

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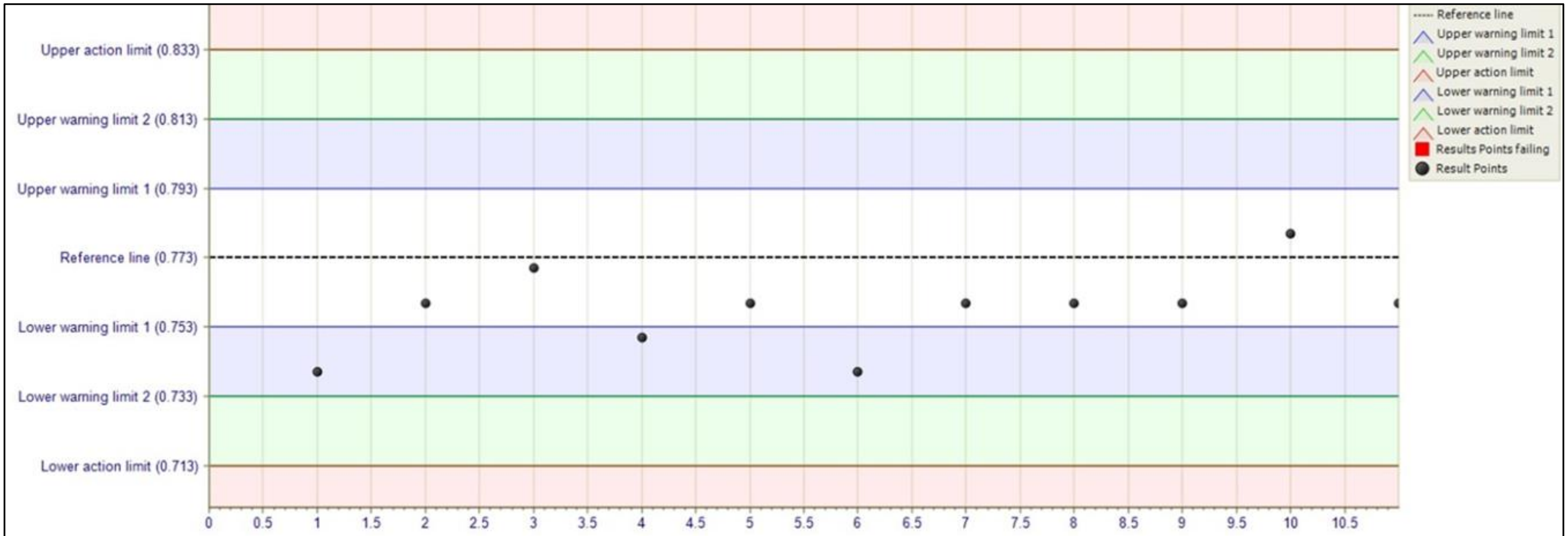
|---|---|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 11 | Kurtosis | -0.6848 | Expected to -1SD | 3 (27.27%) | 2SD to 3SD | 1 (9.09%) |
| Field Name | Au g/t (FA)1 | Median | 0.5085 | Skewness | 0.7455 | Inside 1SD | 4 (36.36%) | +3SD | 3 (27.27%) |
| Action Level | 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 24: OREAS 502b Shewhart Control Chart for gold*

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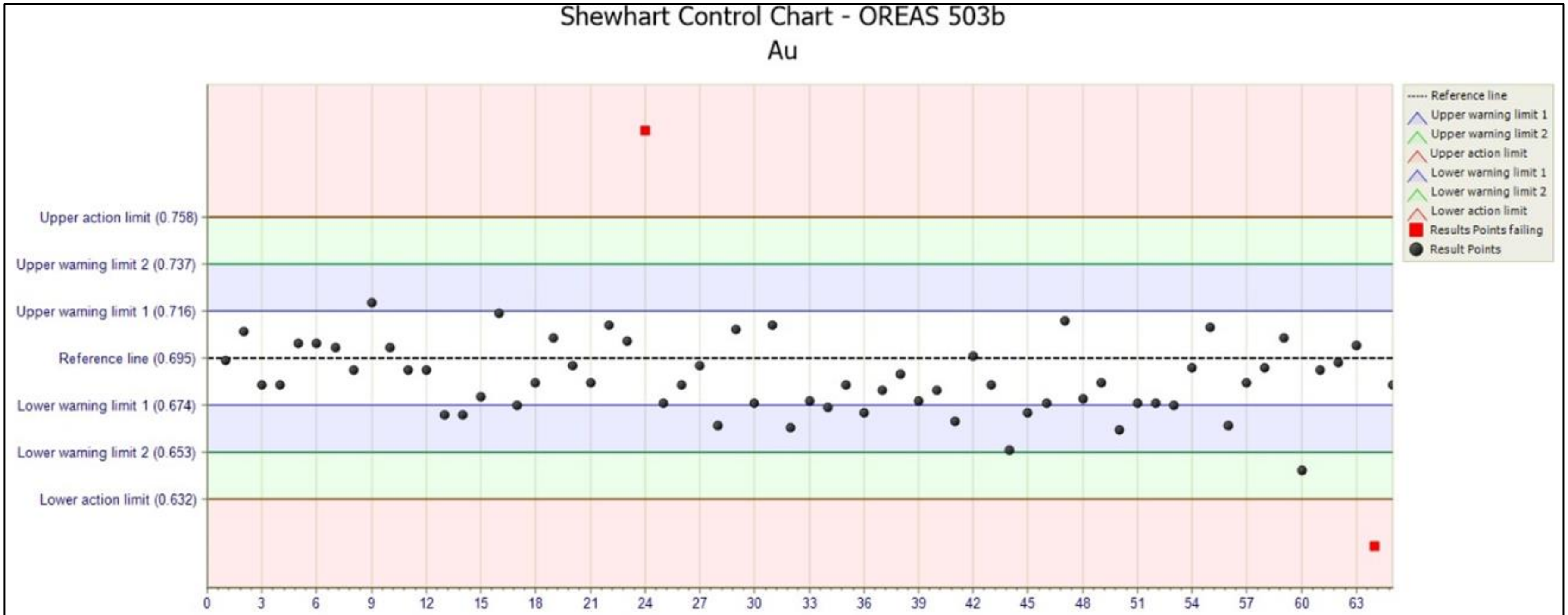
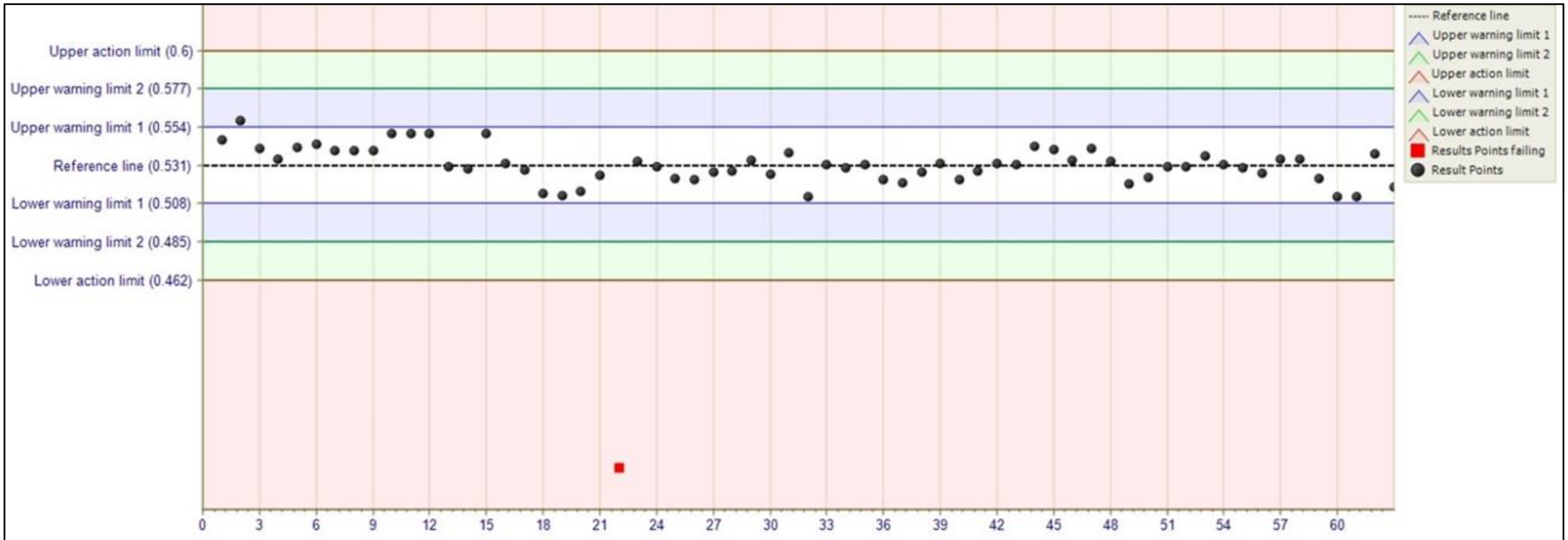
|---|---|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 11 | Kurtosis | -0.2243 | Expected to -1SD | 7 (63.64%) | 2SD to 3SD | 0 (0.00%) |
| Field Name | Cu ppm (ICP)1 | Median | 0.7600 | Skewness | -0.0327 | Inside 1SD | 8 (72.73%) | +3SD | 0 (0.00%) |
| Action Level | 99.7300 | Mode | 0.7602 | Range | 0.0400 | +1SD to +2SD | 0 (0.00%) | -3SD | 0 (0.00%) |
| Groups | 11 | Mean | 0.7582 | Minimum | 0.7400 | -1SD to -2SD | 3 (27.27%) | Outside 3SD | 0 (0.00%) |

*Figure 25: OREAS 502b Shewhart Control Chart for copper*



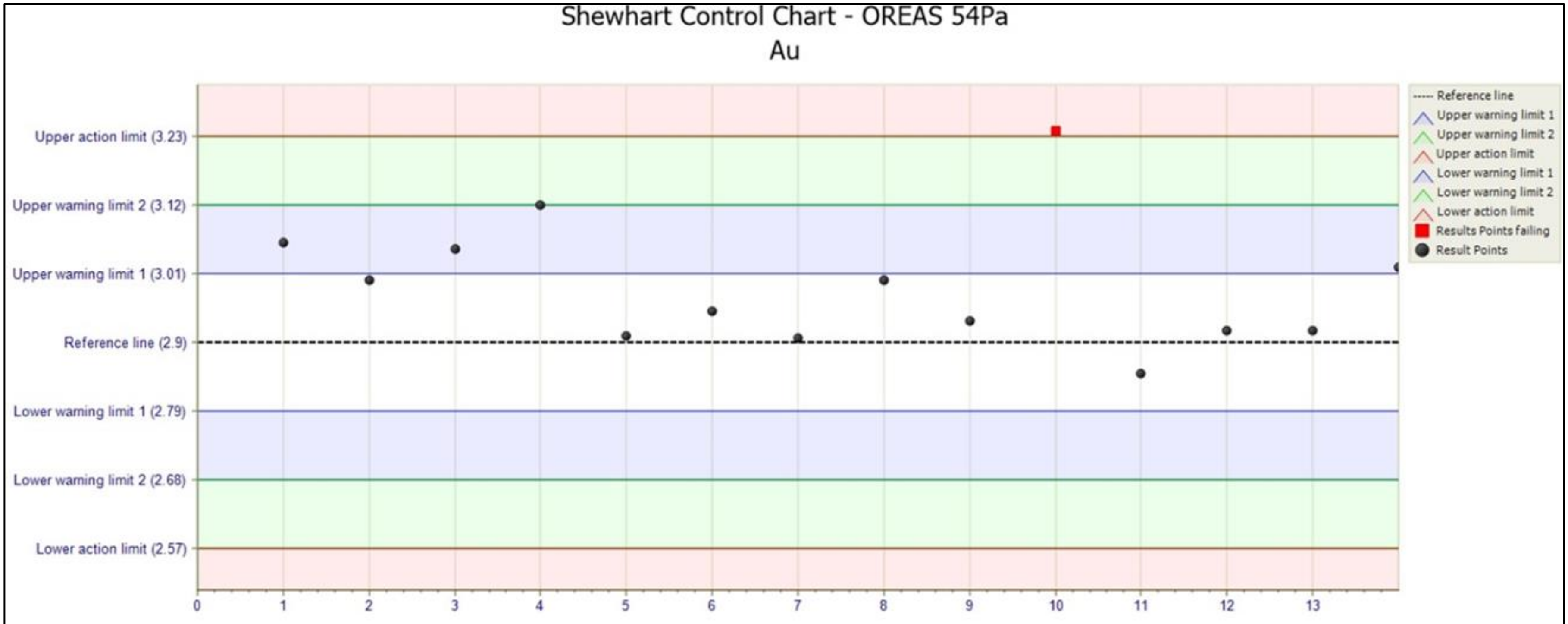

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 65 | Kurtosis | 8.3520 | Expected to -1SD | 34 (52.31%) | 2SD to 3SD | 1 (1.54%) |
| Field Name | Au g/t (FA)1 | Median | 0.6840 | Skewness | 1.2066 | Inside 1SD | 50 (76.92%) | +3SD | 1 (1.54%) |
| 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 26: OREAS 503b Shewhart Control Chart for gold*



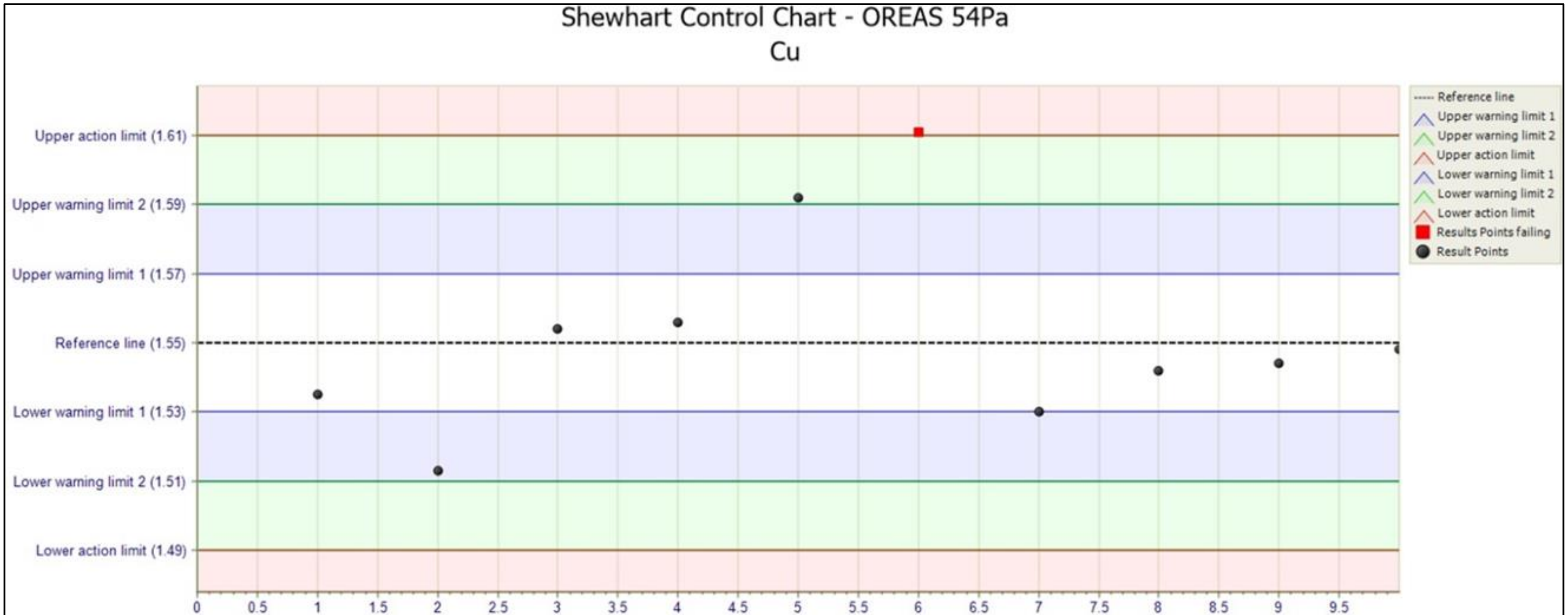

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| File Name | QAQC\Standards | Count | 63 | Kurtosis | 39.7569 | Expected to -1SD | 30 (47.62%) | 2SD to 3SD | 0 (0.00%) |
| Field Name | Cu ppm (ICP)1 | Median | 0.5314 | Skewness | -5.8547 | Inside 1SD | 61 (96.83%) | +3SD | 0 (0.00%) |
| 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 27: OREAS 503b Shewhart Control Chart for copper*




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 28: 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 29: OREAS 54Pa Shewhart Control Chart for copper*

### *11.3.3 Blanks*

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 (~5% of all samples) would be expected.

*Table 10: Blank assay results*

| 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 |

### *11.3.4 Duplicates*

A total of 97 pulp duplicates were submitted in 2013. The main goal of this analysis was to estimate the laboratory assay precision and to evaluate the risk of the laboratory assay precision on the estimation. 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 were conducted with a precision of ±4.05% for gold (Figure 30), ±2.91% for copper (Figure 31), ±2.36% for silver (Figure 32), which are within the acceptable limits and poses a low risk on the assay precision. However, the available dataset represents one year and a small proportion of the complete database (only 0.27% of all assays) so that it is not possible to draw conclusions on the quality of the entire assay dataset.

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

The poor duplicate database represents a significant gap in QAQC for the Beskauga Project.

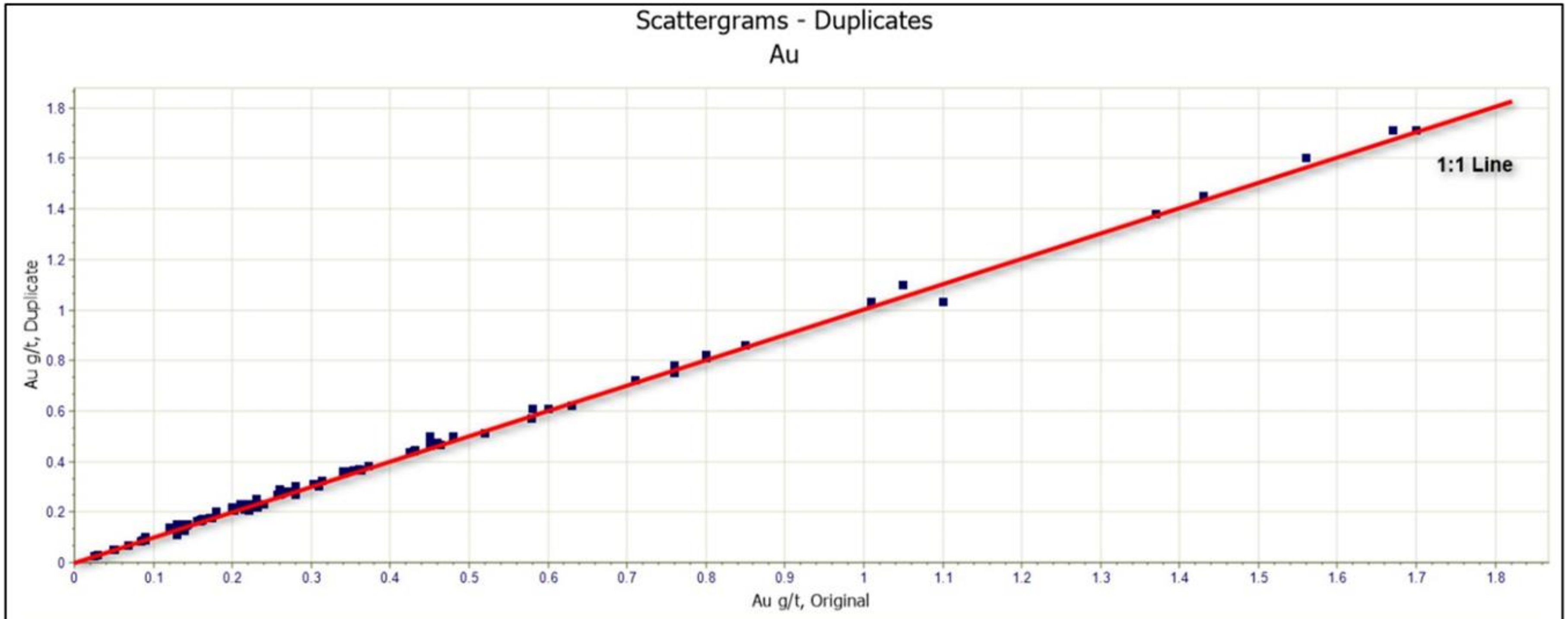
### *11.3.5 Laboratory Umpire Analysis*

CRMs and blanks can only partially cover the question related to potential sample bias. Therefore, 966 sample pulps (2.7% of all assays) were selected for external control check assays and were sent to a certified Genalysis laboratory in Australia.

Table 11 shows duplicate correlation coefficient and precision results and Figure 30 to Figure 32 show linear regression graphs for umpire samples. Both precision results and graphs show relatively good repeatability and similar distribution for gold and copper; however, there is a slight positive bias towards the original results, especially for the copper grades.

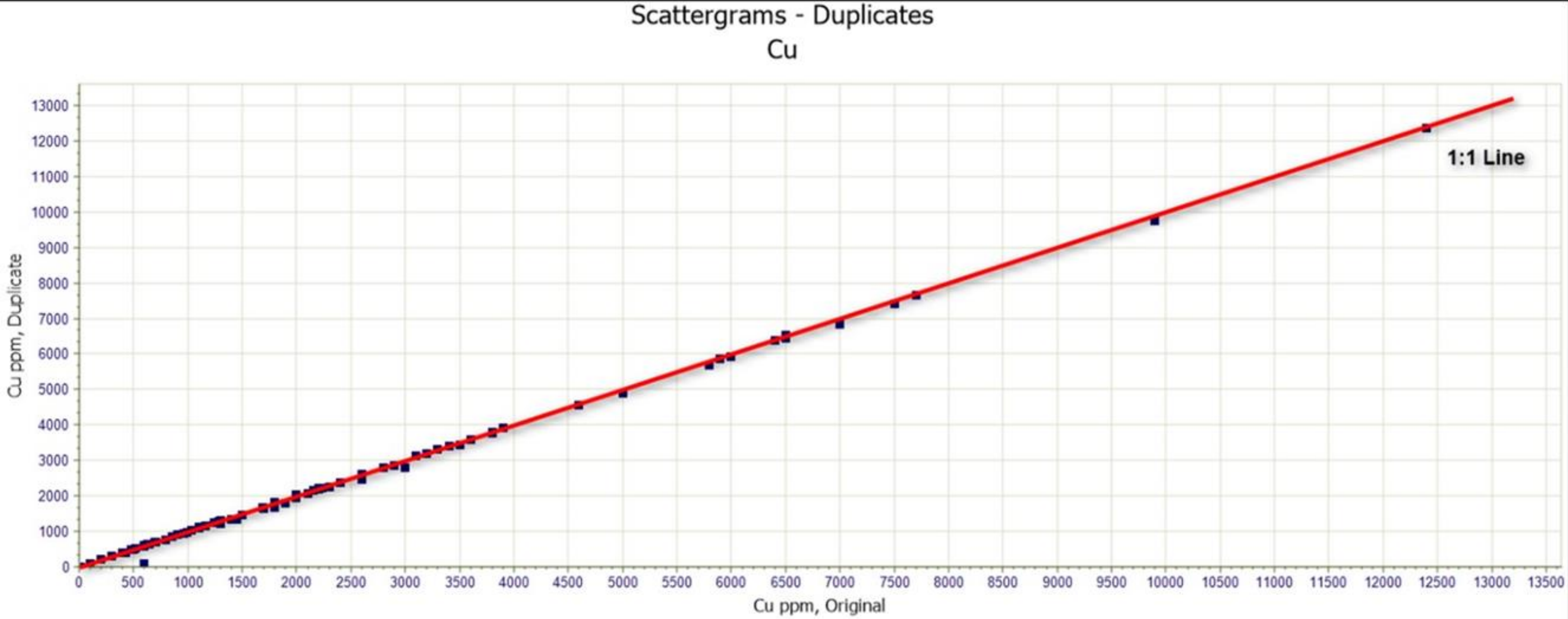
*Table 11: Correlation coefficient and precision values for pulp duplicates*

| Element | No. of tests | Minimum grade | Maximum grade | Correlation coefficient | Precision |
|---|---|---|---|---|---|
| Au (ppm) | 966 | 0.061 | 3.88 | 0.97 | ±13.17 |
| Cu | 968 | 0.014 | 2.21 | 0.99 | ±12.35 |



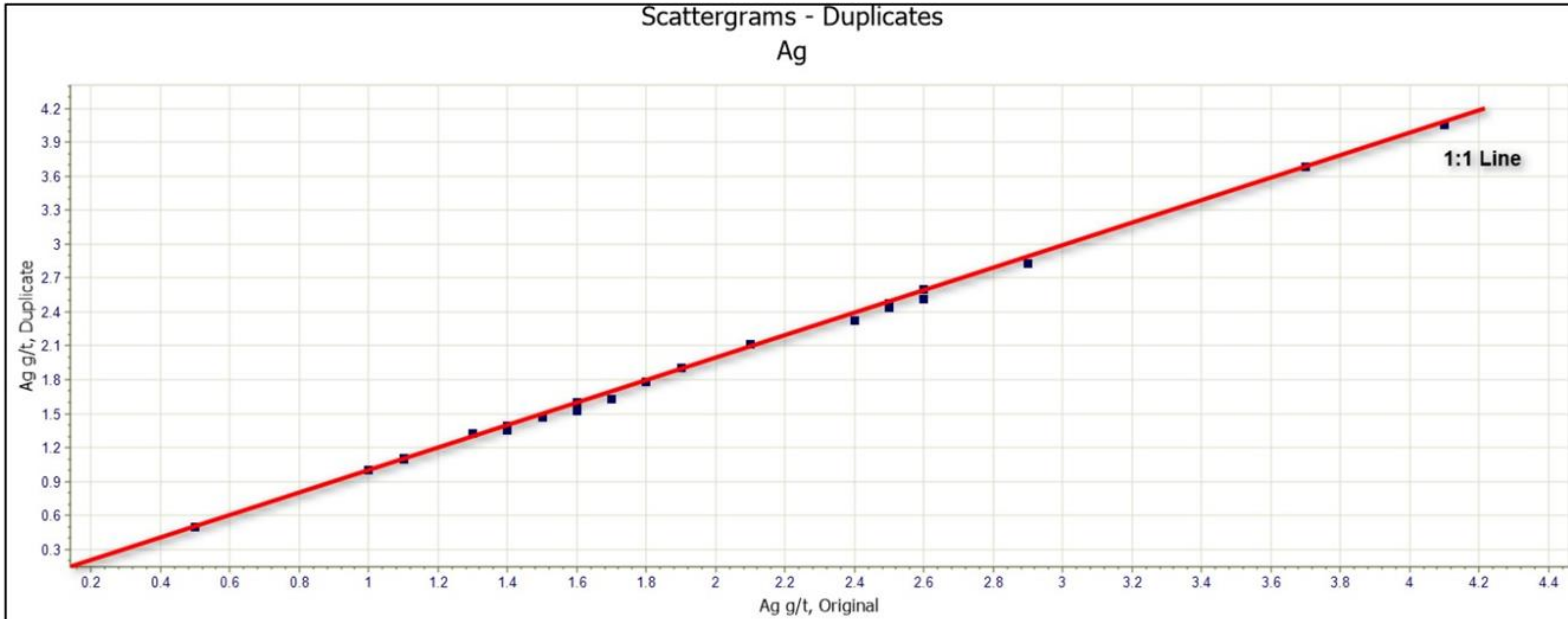

| | | | | | |
|---|---|---|---|---|---|
| **Chart:** | | Y Variance | 0.13 | X Std Dev | 0.36 |
| File Name | QAQC\Duplicates | Y Standard Deviation | 0.37 | X Var / Y Var | 0.98 |
| Sample N | 97 | **X:** | **Au g/t (FA)1** | Covariance | 0.132807 |
| **Y:** | **Au g/t (FA)** | X Mean | 0.37 | Precision % | 4.051316 |
| Y Mean | 0.38 | X Variance | 0.13 | Rank Corr Coef (%) | 0.996680 |

*Figure 30: Linear regression of gold for duplicates*




| | | | | | |
|---|---|---|---|---|---|
| **Chart:** | | Y Variance | 4935799.05 | X Std Dev | 2236.61 |
| File Name | QAQC\Duplicates | Y Standard Deviation | 2221.67 | X Var / Y Var | 1.01 |
| Sample N | 97 | **X:** | **Cu ppm (ICP)** | Covariance | 4966924.767075 |
| **Y:** | **Cu ppm (ICP)1** | X Mean | 2266.40 | Precision % | 2.913223 |
| Y Mean | 2232.80 | X Variance | 5002409.83 | Rank Corr Coef (%) | 0.998271 |

*Figure 31: Linear regression of copper for duplicates*




| | | | | | |
|---|---|---|---|---|---|
| **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 32: Linear regression of silver for duplicates*

## 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 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.

# 12 Data Verification

## 12.1 Site Visit

A site visit was carried out by G.G. Freiman, Qualified Person, between 22 and 23 January 2017, during which drill rigs and core storage sites were visited, and logging and sample preparation facilities and procedures inspected. All procedures observed were considered appropriate.

## 12.2 Data Validation

During the site visit, G.G. Freiman 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.

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 mineralization 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 totalling 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 totalling 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 totalling 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 testwork.

## 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 a mineralogy typical of a copper-gold porphyry. Mineralization comprised 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. Mineralization was hosted in a strongly potassic-altered granite to granodiorite that was often overprinted with later silicification, sericitization, and argillic alteration.

QEMSCAN® testwork was carried out on the "Starter Pit" composite by as part of the 2015 WAI metallurgical testwork 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 testwork showed that sulphide mineralization comprises predominantly pyrite and chalcopyrite, with lesser copper arsenides, bornite, chalcocite (in slightly varying proportions depending on grain size – Figure 33), with gangue mineralogy comprising predominantly quartz and muscovite with minor K-feldspar, plagioclase feldspar, ankerite, iron/manganese carbonate, chlorite and biotite and trace barite, ilmenite, rutile, apatite, and zircon. "Cu arsenides" is assumed to include tennantite and possibly enargite.

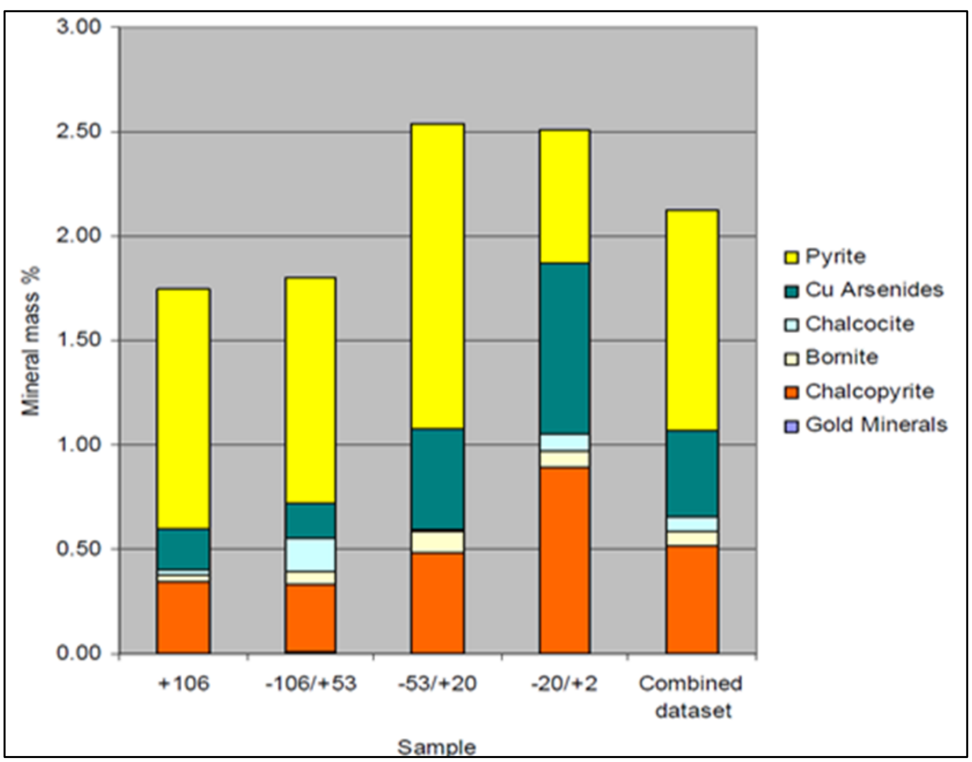



*Figure 33: QEMSCAN® modal mineralogy for the sulphide phases*

### *13.2.2 Bench-Scale Testwork*

The laboratory testing program completed at Ammtec in 2010 provided encouraging copper recovery results (78.44 %). However, 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 ($Cu_{12}As_4S_{13}$). Molybdenum grades in the feed were too low to produce a saleable molybdenum concentrate.

Subsequent bench-scale testwork 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 mineralization 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. Regrind optimization tests showed that the optimum concentrate regrind size was a $P_{80}$ 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 testwork 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 Testwork*

Flotation optimization testwork 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 testwork. 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*

Ammtec results show that highest rougher recovery (copper recovery of 90.0%) was achieved at a primary grind size $P_{80}$ of 75 µm (Figure 34), 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 as a result of high throughput rates, a standard primary grind size $P_{80}$ 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 34).

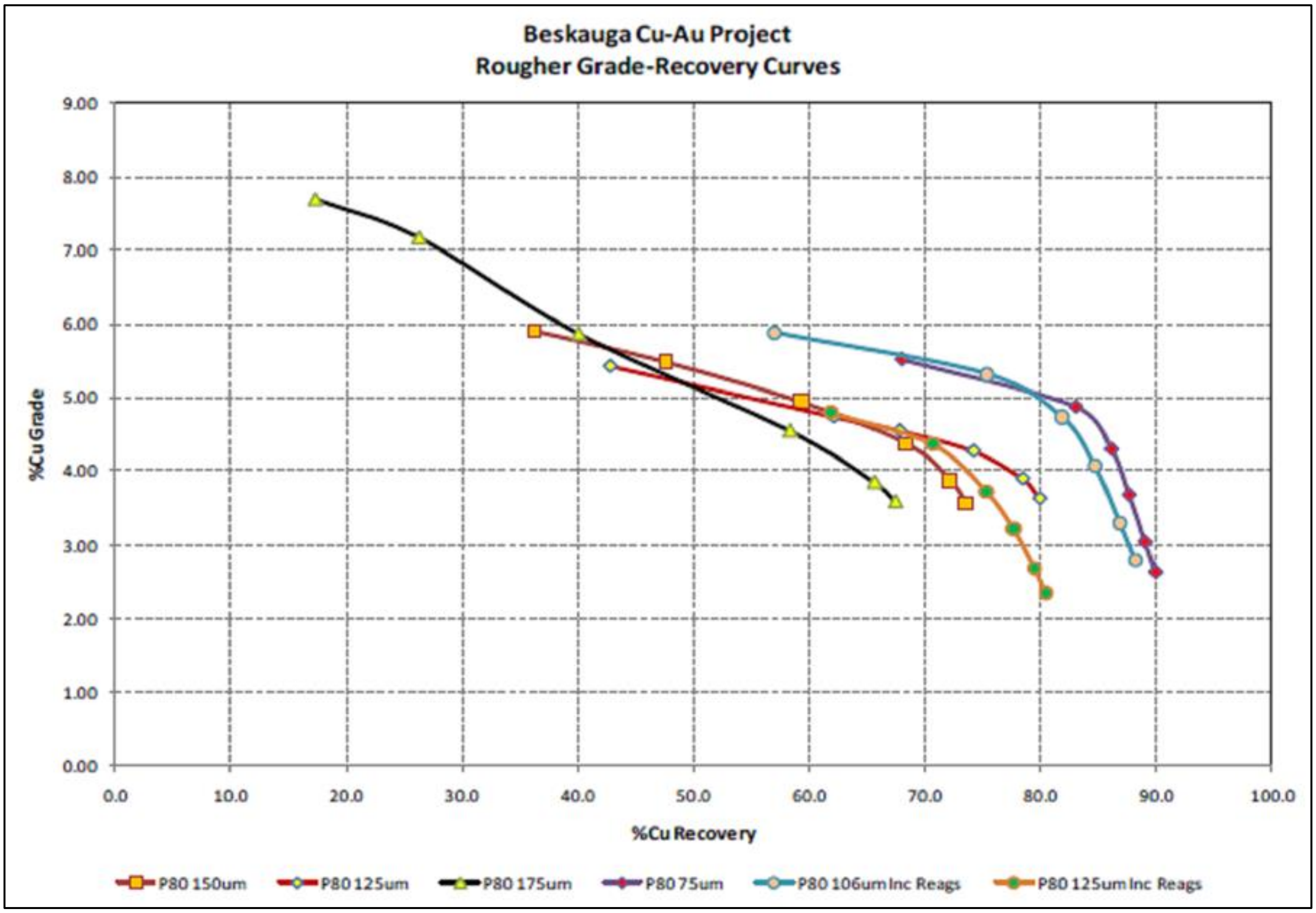



*Figure 34: Ammtec "Average Grade" rougher/scavenger grade-recovery curves*

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 35), 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.

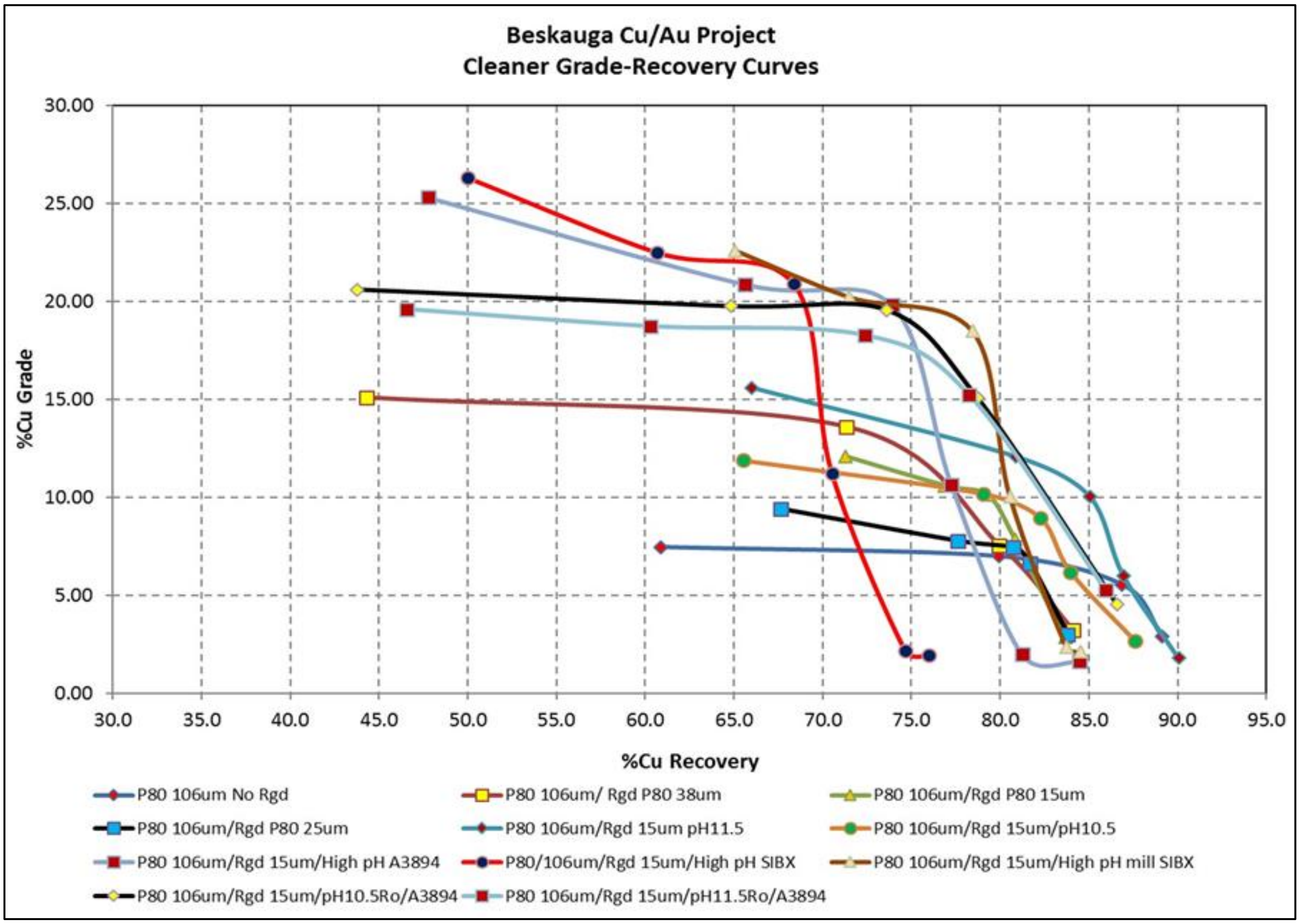



*Figure 35: Ammtec "Average Grade" cleaner grade-recovery curves*

### *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 12), at a grind size $P_{80}$ of 120 µm (coarser than that used for the 2010 testwork).

*Table 12: Results of optimal WAI rougher tests for three different samples*

| Composite ID | Test no. | $P_{80}$ µm | Concentrate mass wt.% | Grade | | | Recovery | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cu % | Au g/t | % TS | % Cu | % Au | % 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 13).

*Table 13: 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 | % 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 14). 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 14: Summary of WAI locked cycle test results for all samples*

| Composite | Product | Copper | | Gold | | Total sulphur | |
|---|---|---|---|---|---|---|---|
| | | Grade (%) | Recovery (%) | Grade (ppm) | Recovery (%) | Grade (%) | Recovery (%) |
| Starter Pit | 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*

Gold at Beskauga Main is primarily associated with chalcopyrite, with minor pyrite and non-sulphide gangue associations, based on mineralogical investigation. 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 testwork 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 testwork was used to test the amenability of Beskauga concentrate for the Toowong process. Preliminary benchtop leaching testwork 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.

## 13.3 Conclusions, Risks and Other Factors

Several stages of testwork 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 $P_{80}$ 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.

The high levels of deleterious elements such as arsenic, antimony and mercury in the final copper concentrate require this material to be further treated using the Toowong Process to produce a saleable copper concentrate with arsenic levels <0.5% As. Amenability tests using the Toowong Process showed that the arsenic content in the final copper concentrate was reduced from 3.69% As to 0.3% As after 24 hours of leaching. Other smelter penalty elements such as antimony and mercury were also leached from the copper concentrate during the Toowong Process.

# 14 Mineral Resource Estimates

## 14.1 Data Import and Validation

The database for the Beskauga deposit comprised the following tables:

- Drillhole collar coordinate file
- Downhole survey data file
- Analytical data file (sampling intervals)
- Dike intervals data file.

The database was provided to CSA Global in Microsoft Excel format.

The analytical databases were validated by specially designed processes in Micromine software.

The database was then checked using macros and processes designed to detect any of the following errors:

- Duplicate drillhole names
- One or more drillhole collar coordinates missing in the collar file
- FROM or TO missing or absent in the assay file
- FROM > TO in the assay file
- Sample intervals are not contiguous in the assay file (gaps exist between the assays)
- Sample intervals overlap in the assay file
- First sample is not equal to 0 m in the assay file
- First depth is not equal to 0 m in the survey file
- Several downhole survey records exist for the same depth
- Azimuth is not between 0 and 360° in the survey file
- Dip is not between 0 and 90° in the survey file
- Azimuth or dip is missing in survey file
- Total depth of the holes is less than the depth of the last sample.

No issues were found with the provided data. The list of the database files for the Beskauga deposit is given below and summarized in Table 15.

*Table 15: Drillhole database files*

| File | Description | No. of records |
|---|---|---|
| DH_Collar.DAT | Drillhole collars | 101 |
| DH_Survey.DAT | Drillhole survey | 1,939 |
| DH_Assay.DAT | Assay data | 36,270 |
| DH_Dykes.DAT | Dike intervals | 841 |

## 14.2 Geological Interpretation

Modelling of the geology and mineralized domains was undertaken by CSA Global using Micromine 2016.1 software (version 16.1.1251.2).

### 14.2.1 Lithology

The Qualified Person was provided with lithological descriptions of the drillhole sample intervals and constructed a set of strings for the major lithological units, such as barren dikes and overburden zones. Open strings were digitized for the overburden boundary and closed strings for the dikes. Although additional lithologies are present, these were not modelled, and mineralization was constrained using grade-shell wireframes as described below.

### 14.2.2 Mineralization

The appropriate mineralization cut-off was determined using a statistical analysis of all samples. Copper grades show a negative lognormal distribution; a 0.12% Cu cut-off was used as the mineralization boundary, where there is a clear break between populations (Figure 36). Gold grades show a positive lognormal distribution, and a 0.15 g/t Au cut-off grade was used as a mineralization boundary, based on a population break (Figure 37).

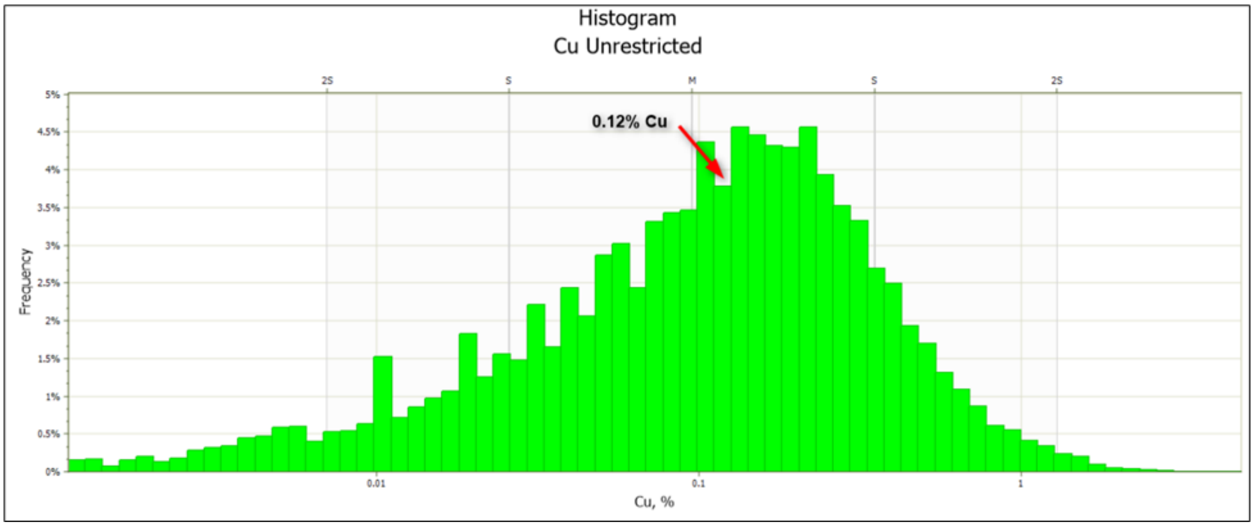



*Figure 36: Histogram of unrestricted copper grade distribution*

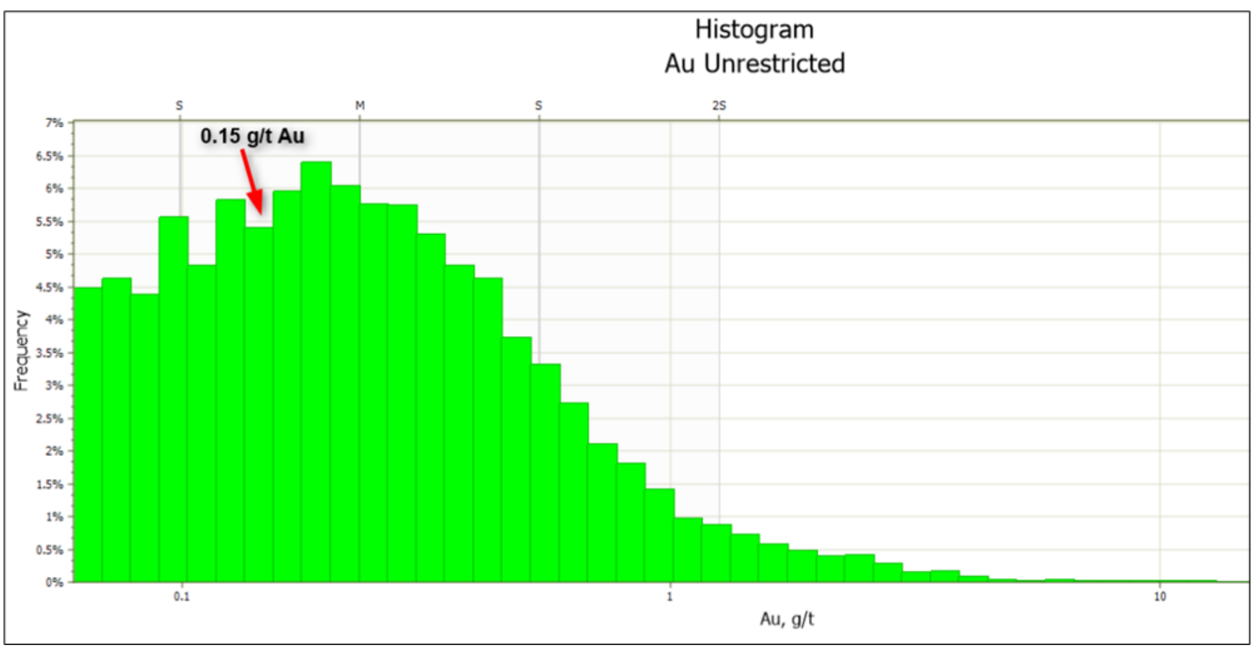



*Figure 37: Histogram of unrestricted gold grade distribution*

Following determination of copper and gold grades to use for mineralization boundaries, the Beskauga deposit was interactively interpreted using 18 cross sections, and grade composites were used to assist with interpretation.

Cross sections were generated in an east-southeast direction, perpendicular to the strike of the interpreted geological structures and mineralized bodies. Distances between section vary from 50 m in densely drilled areas up to 250–400 m in sparsely drilled area. The grade composites were generated using the following parameters:

- Cut-off grade: 0.12% Cu; 0.15 g/t Au
- Minimum composite length: 5 m
- Minimum grade of final composite: 0.12% Cu; 0.15 g/t Au
- Maximum total length of waste: not limited
- Maximum consecutive length of waste: 5 m
- Maximum gap between samples: 5 m
- Minimum grade * length for short intervals: 0.25% Cu * m; 0.3 g/t Au * m.

Each section was displayed in Micromine's Vizex display environment together with drillhole traces colour-coded according to the sample grades and sample grade values (Figure 38). All drillhole traces were also colour coded as hatches for the grade composites on one side and as the lithological units on the other side. Also, the interpretation was carried out in 3D (i.e. the string points were snapped to the corresponding drillhole intervals).

The following techniques were employed while interpreting the mineralization:

- Each cross section was displayed on screen with a clipping window equal to a half distance from the adjacent sections.
- All interpreted strings were snapped to the corresponding drillhole intervals (i.e. the interpretation was constrained in the third dimension).
- Internal waste within the mineralized envelopes was not interpreted and modelled. It was included in the interpreted envelopes, providing that internal waste was part of the grade composites.
- The interpretation was extended perpendicular to the corresponding first and last interpreted cross section to the distance equal to a half distance between the adjacent exploration lines.
- If a mineralized envelope did not extend to the adjacent drillhole section, it was projected halfway to the next section and terminated. The general direction and dip of the envelopes was maintained.
- If the mineralized lens was at the topographic or overburden surface, it was extended above the surface to make sure there would not be any gaps between the lens and the topographic surface when the block model is built.

The interpreted strings were used to generate 3D solid wireframes for the mineralized envelopes (Figure 39) and lithological units. Every section was displayed on the screen along with the closest interpreted section.

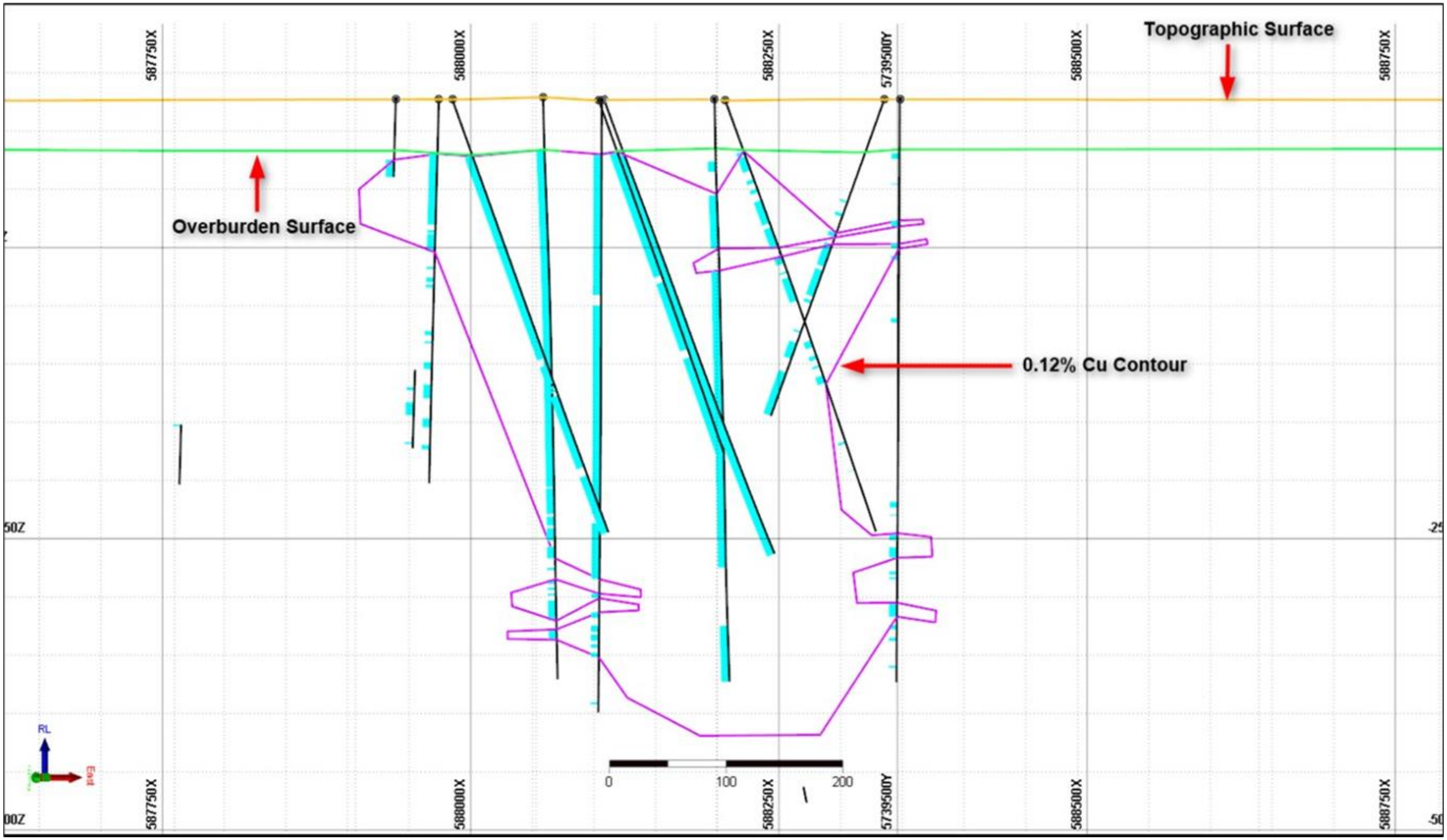



*Figure 38: Example of interpreted strings*

*The bright purple line represents the interpreted mineralization zone at a 0.12% Cu cut-off grade. The green line represents the interpreted overburden zone. The cyan coloured intervals along drillhole traces represent the 0.12% Cu composite.*

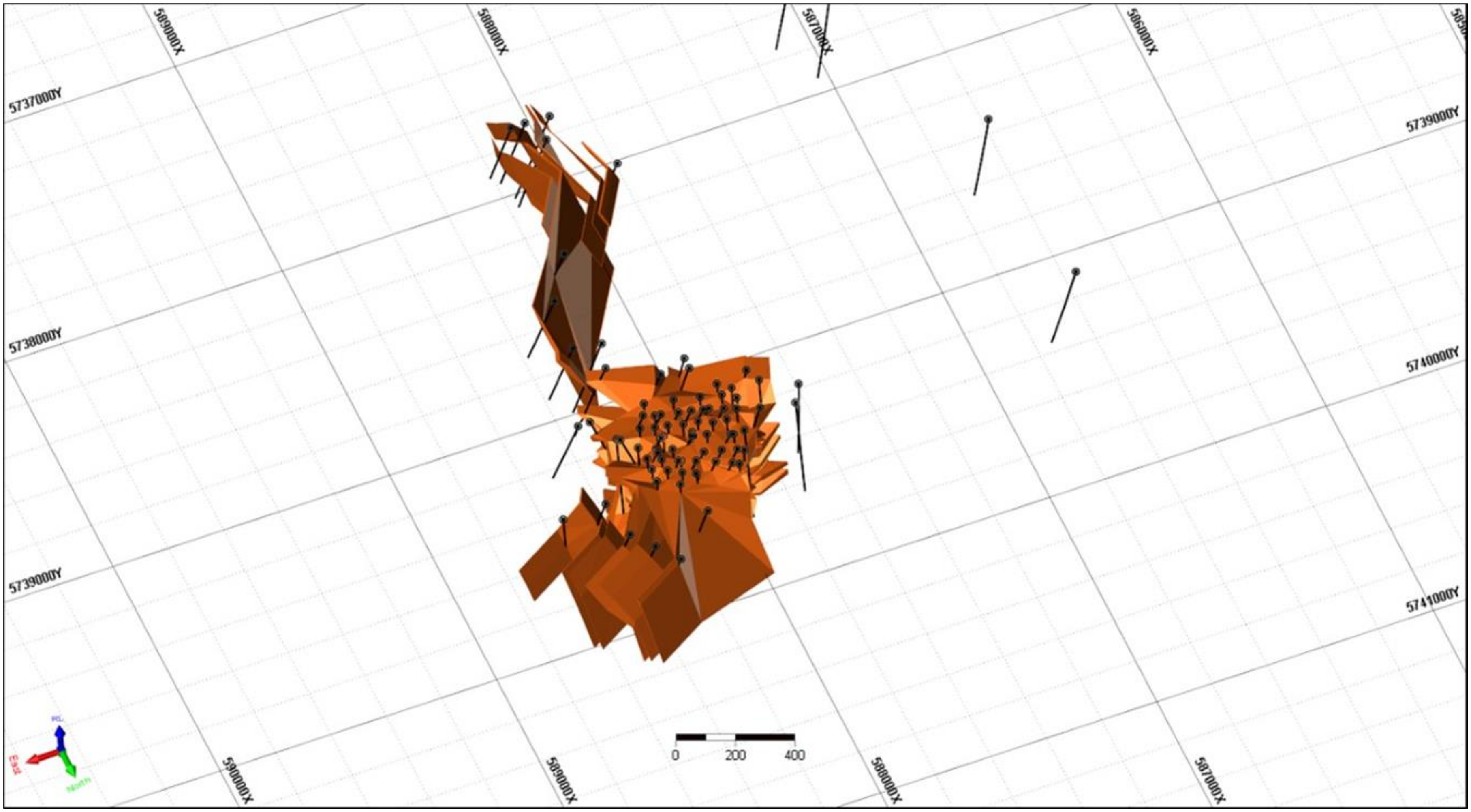



*Figure 39: Example of the gold wireframe model – oblique view looking towards the southwest*

The total number of wireframe models and their volume is shown in Table 16.

*Table 16: Number of wireframe models and their volume*

| Element | No. of wireframes | Volume ('000 m³) |
|---|---|---|
| Copper mineralization | 10 | 89,465 |
| Gold mineralization | 16 | 192,054 |

### *14.2.3 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.

## 14.3 Sample Domaining

When interpretation of mineralization and wireframing was completed, all samples were coded by wireframe models to flag samples that lie inside and outside interpreted mineralized zones.

### *14.3.1 Domain Coding*

Based on the coding of samples as lying inside or outside mineralized wireframes, samples from within the mineralized wireframes were used to conduct a sample length analysis.

### *14.3.2 Sample Length Analyses*

The most common sampling interval was 1 m, with >75% of all samples between 1.0 m and 1.1 m in length (Figure 40).

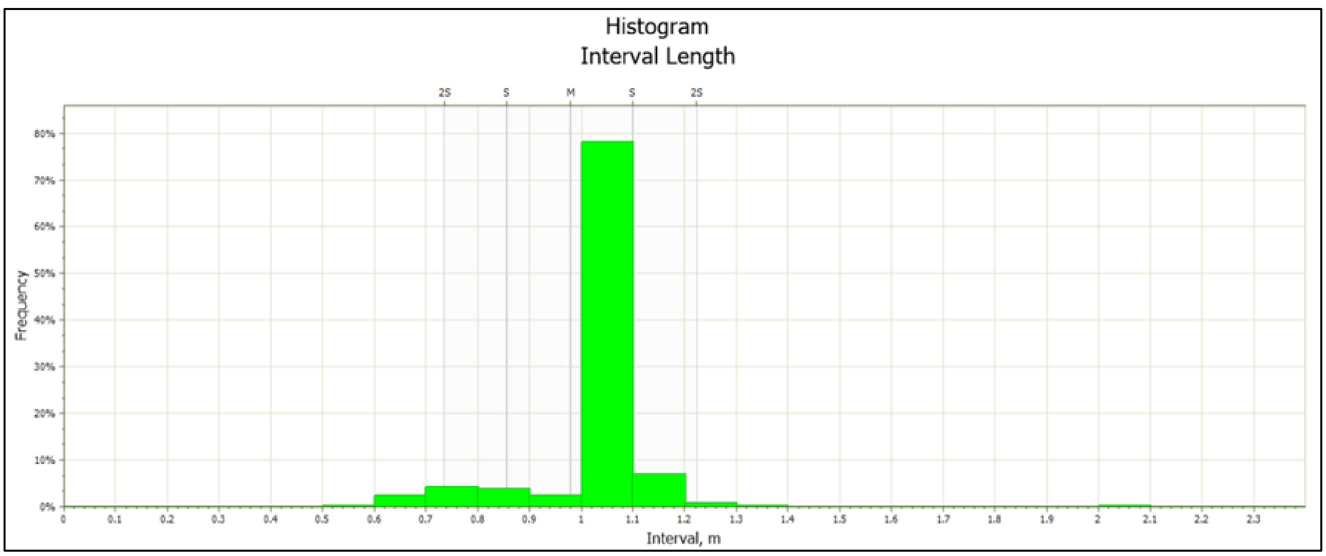



*Figure 40: Histogram of sample lengths*

## 14.4 Sample Compositing

Drillhole interval compositing is a standard procedure which is used to set all sampling intervals to the same length ("volume support") so that all the samples will have the same weight during grade interpolation and geostatistical analysis. Usually the composite interval length is selected to be close to the standard or mean sampling length, and in this case a 1.0 m composite length was used. The selected samples within each mineralized envelope were separately composited over the defined intervals, starting at the drillhole collar and progressing downhole. Compositing was stopped and restarted at all boundaries between mineralized envelopes and waste material. If a gap of less than 10 cm occurred between samples, it was included in the sample composite. If the gap was longer than 10 cm the composite was stopped, and another composite was started from the next sample.

## 14.5 Statistical Analyses

Classical statistical analysis was carried out for samples within the mineralization wireframe domains. The aim of the analysis was:

- To determine the type of grade distribution within mineralized zones
- To obtain statistical parameters for element grades within each domain
- To review the possible mixing of grade populations within each zone
- To review the necessity and possibility of separation of grade populations if more than one population exists
- To determine top cut values for grade interpolation
- To assess the validity of using kriging interpolation techniques.

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 (Figure 41). The log histogram for gold values within the mineralization is close to a lognormal distribution with a slightly positive skew (Figure 42). There is no evidence for mixing of either gold or copper grades, supporting the selected cut-off grades.

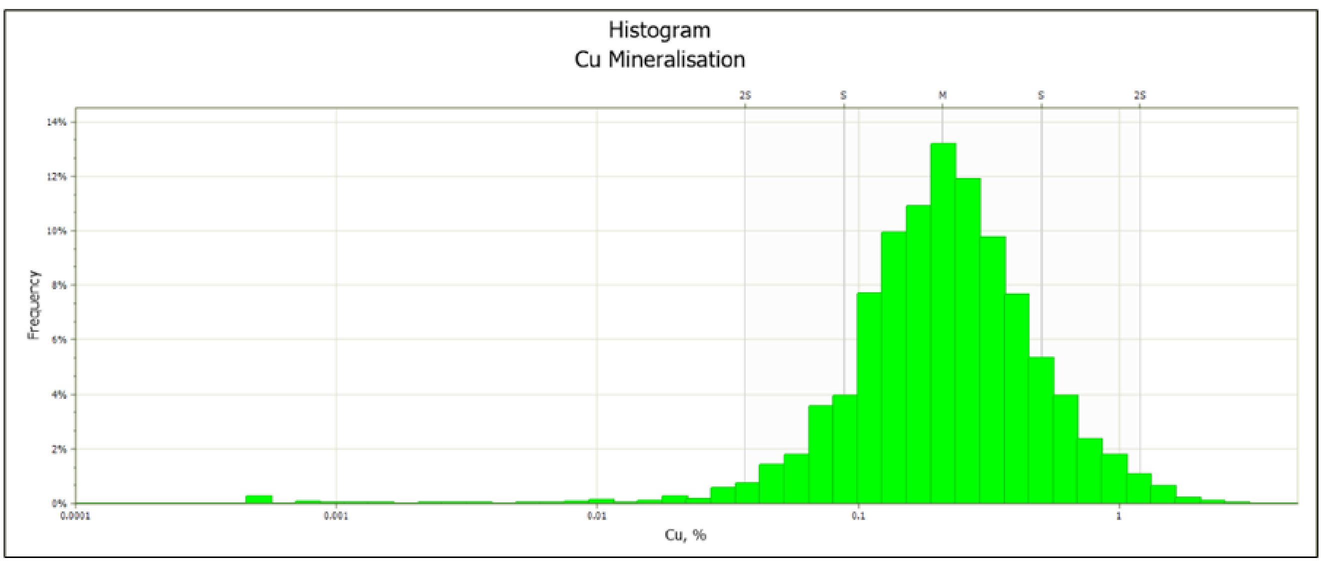



*Figure 41: Log histogram for copper values within copper mineralization wireframes*

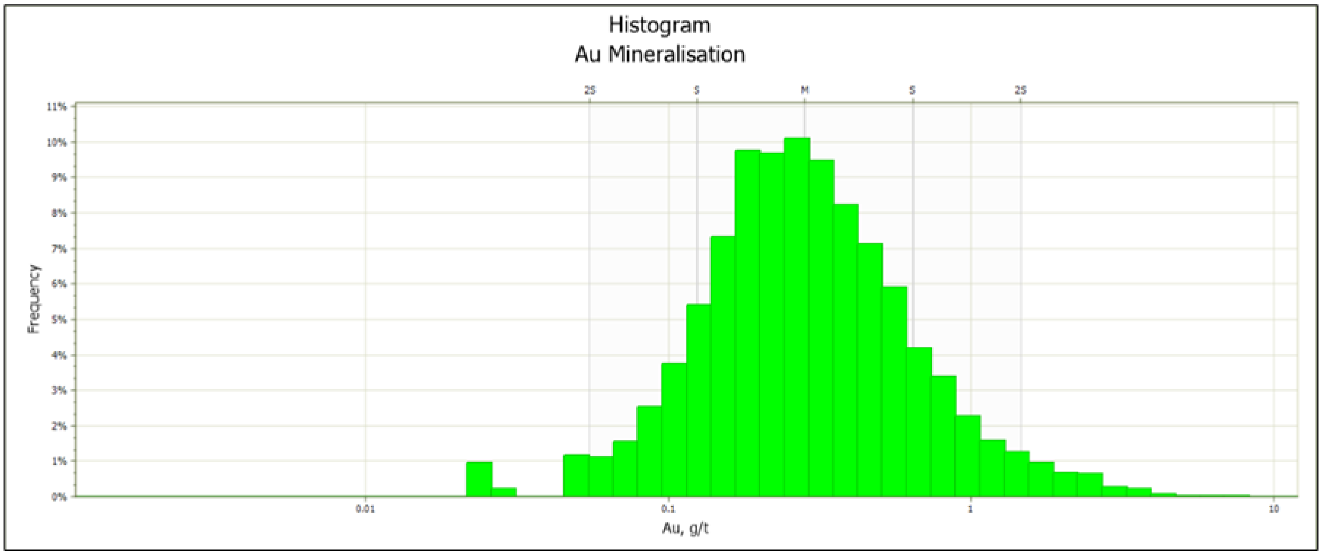



*Figure 42: Log histogram for gold values within gold mineralization wireframes*

A review of grade outliers was undertaken to ensure that extreme grades are treated appropriately during grade interpolation. Although extreme grade outliers within the grade populations of variables are real, they are potentially not representative of the volume they inform during estimation. If these values are not cut, they have the potential to result in local over-estimation of grade.

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, with the aim of determining if there were any very high-grade sample results that had the potential to bias block model estimates. COV values (Table 17) are a measure of skewness, and high values (greater than 1.5) may suggest that cutting is required. The histograms were then used to identify the point at which the high-grade tail disintegrates. Following review of the histograms, a top cut value of 5 g/t was applied to gold where the histogram tails disintegrated (*Figure* 43). No top cuts were applied for copper.

*Table 17: COV values for copper and gold within mineralized domains*

| Domain | COV |
|---|---|
| Copper mineralization (Cu) | 0.886 |
| Gold mineralization (Au) | 2.92 |

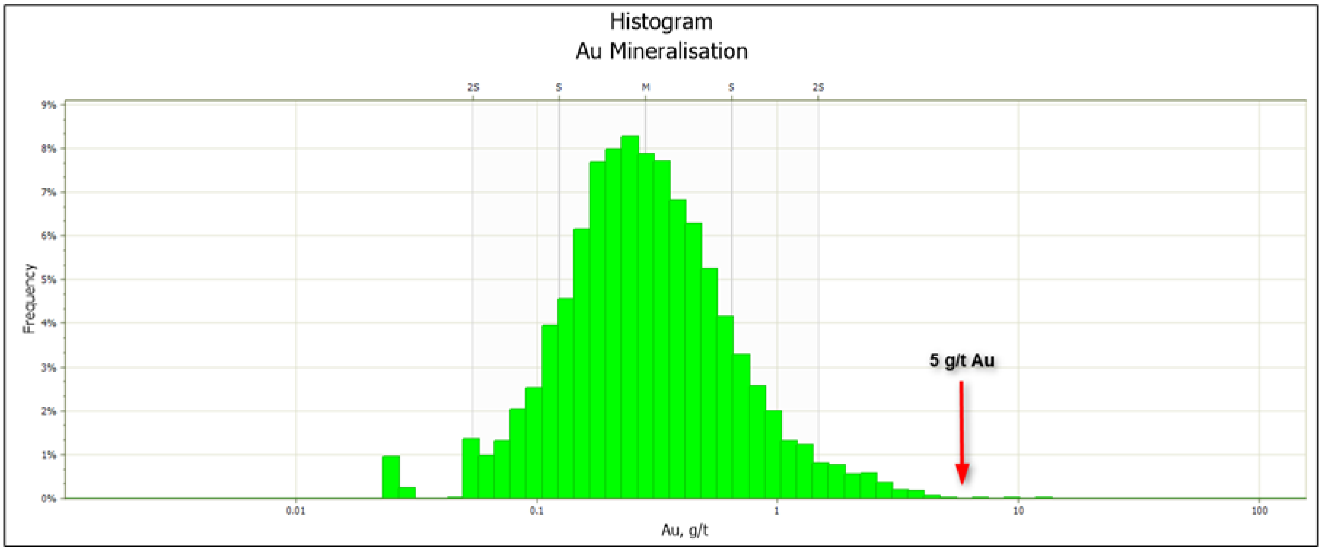



*Figure 43: Histogram of gold grade distribution within the gold mineralized domain showing the chosen top cut of 5 g/t Au*

## 14.6 Geostatistical Analysis

The purpose of geostatistical analysis is to generate a series of semi-variograms that can be used as the input weighting mechanism for kriging algorithms. The semi-variogram ranges determined from this analysis contribute heavily to the determination of the search neighbourhood dimensions. Therefore, geostatistical analysis was conducted to meet the following objectives:

- To estimate the presence of directional anisotropy of mineralization. This can be estimated by studying the directional semi-variograms. There is a directional anisotropy if semi-variograms reach the total sill at different distances in different directions.
- To estimate the spatial continuity in the main directions of anisotropy. The continuity of grades can be estimated using the semi-variogram ranges, i.e. the distance at which the semi-variogram reaches the total sill (plateau). Accordingly, grades cannot be estimated reliably if the search radius for grade interpolation is greater than the semi-variogram range. When the semi-variogram reaches the sill, there is no correlation between the pairs of samples at that sample separation distance.
- To obtain the semi-variogram parameters (nugget effect, total sill and ranges) to be input into the interpolation process.

All variograms were calculated and modelled for the composited sample file constrained by the corresponding mineralized envelopes. Geostatistical analysis was carried out separately for the copper and gold mineralization.

Copper variogram parameters are shown in Table 18. Semi-variogram models for the main, secondary, and tertiary directions are shown in Figure 44, Figure 45, and Figure 46, respectively.

*Table 18: Semi-variogram (relative) parameters – copper mineralization*

| Axis | Azimuth | Dip | Nugget effect | Partial sill | | Ranges (m) |
|---|---|---|---|---|---|---|
| First | 108° | 0° | 0.0792 | Structure 1 (Exponential)<br>Structure 2 (Spherical) | 0.133<br>0.161 | 27.6<br>130 |
| Second | 198° | 66° | | | | 20.3<br>245 |
| Third | 18° | 24° | | | | 20.3<br>80 |

Gold variogram parameters are shown in Table 19. Semi-variogram models for the main, secondary, and tertiary directions are shown in Figure 47, Figure 48, and Figure 49, respectively.

*Table 19: Semi-variogram (relative) parameters – gold mineralization*

| Axis | Azimuth | Dip | Nugget effect | Partial sill | | Ranges (m) |
|---|---|---|---|---|---|---|
| First | 48° | 0° | 0.0681 | Structure 1 (Exponential)<br>Structure 2 (Exponential) | 0.144<br>0.183 | 50<br>200 |
| Second | 138° | 66° | | | | 50<br>200 |
| Third | 318° | 24° | | | | 50<br>200 |

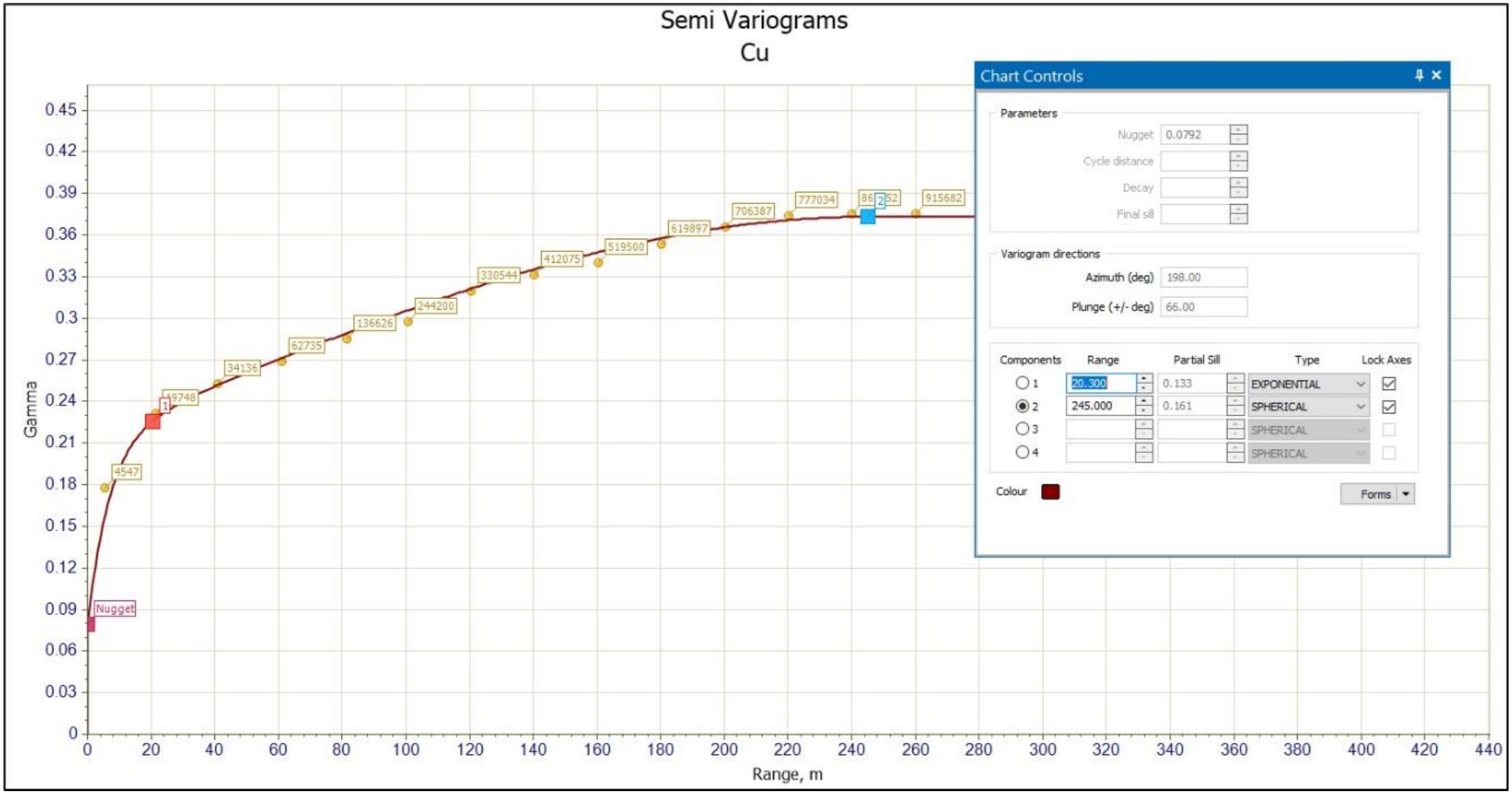



*Figure 44: Semi-variogram model for the second direction – copper mineralization*

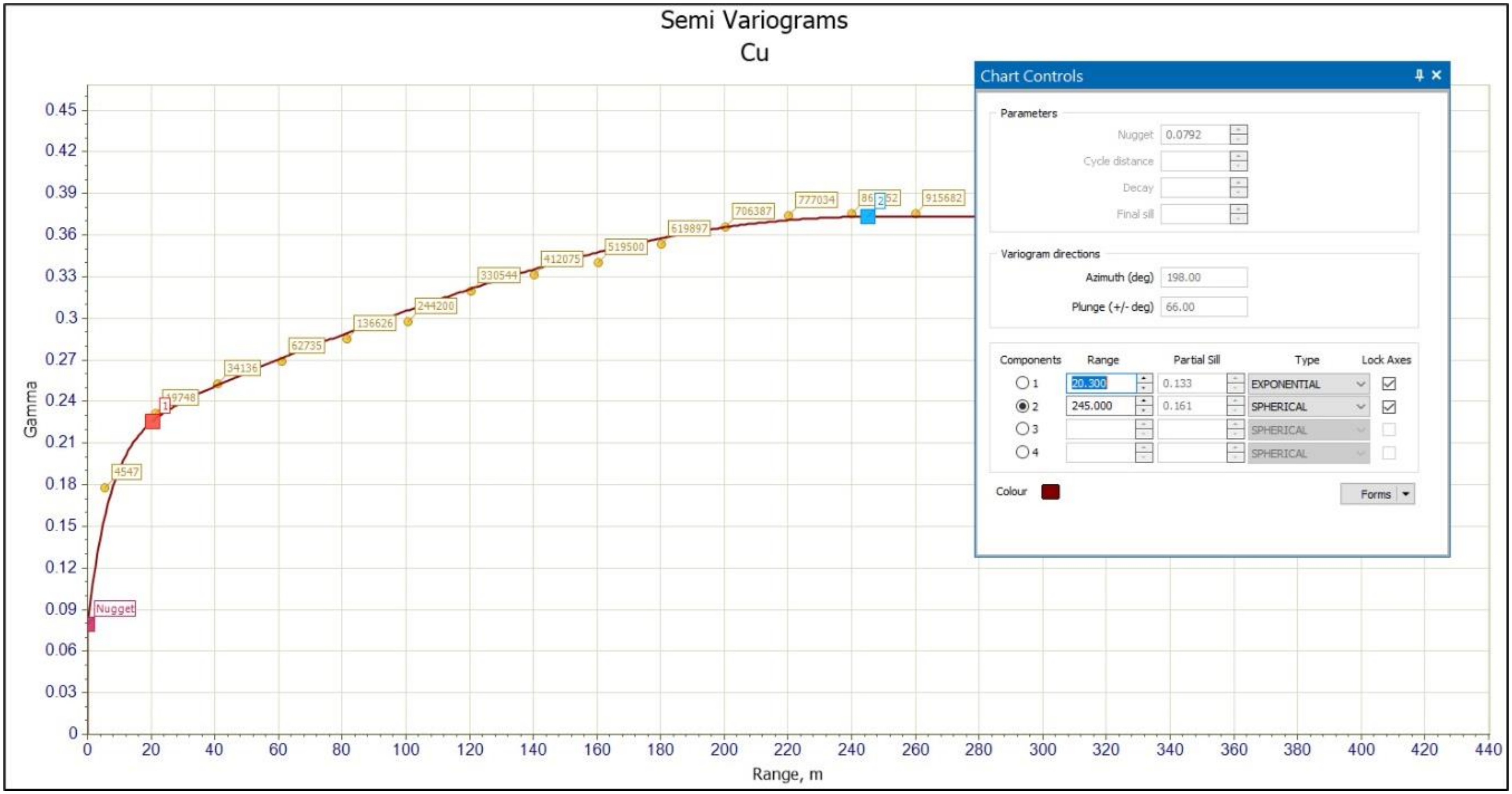



*Figure 45: Semi-variogram model for the second direction – copper mineralization*

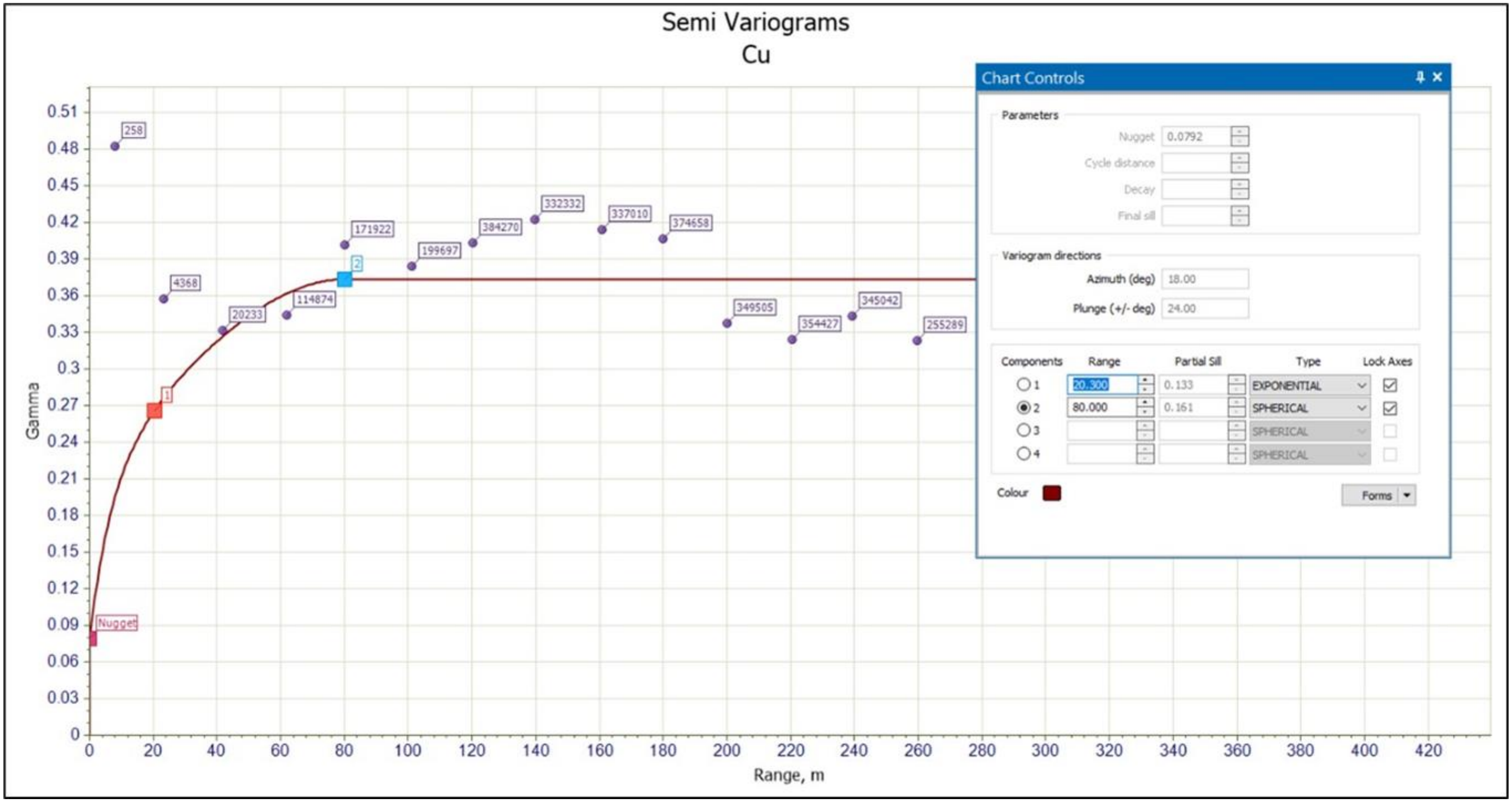



*Figure 46: Semi-variogram model for the third direction – copper mineralization*

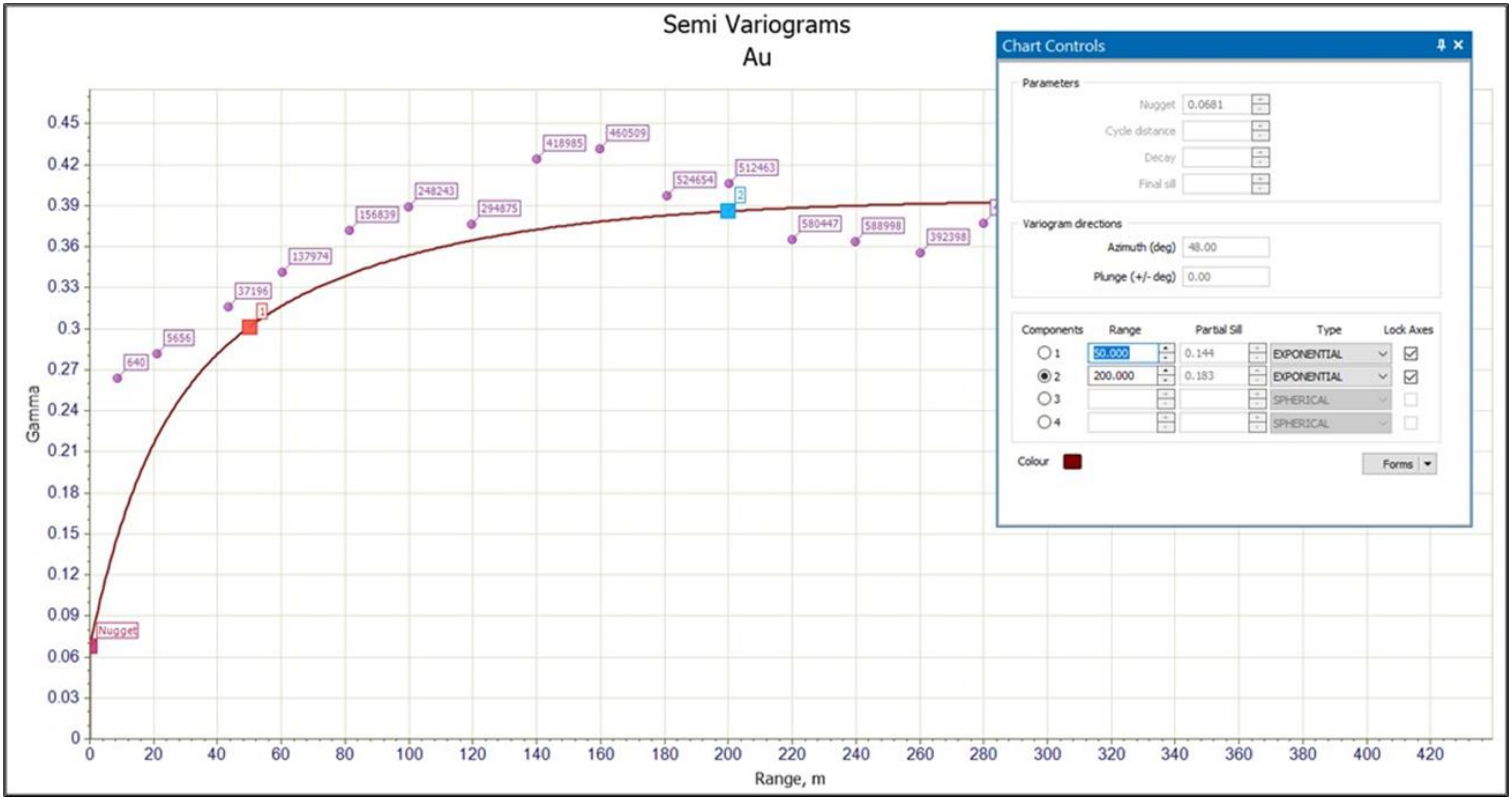



*Figure 47: Semi-variogram model for the first direction – copper mineralization*

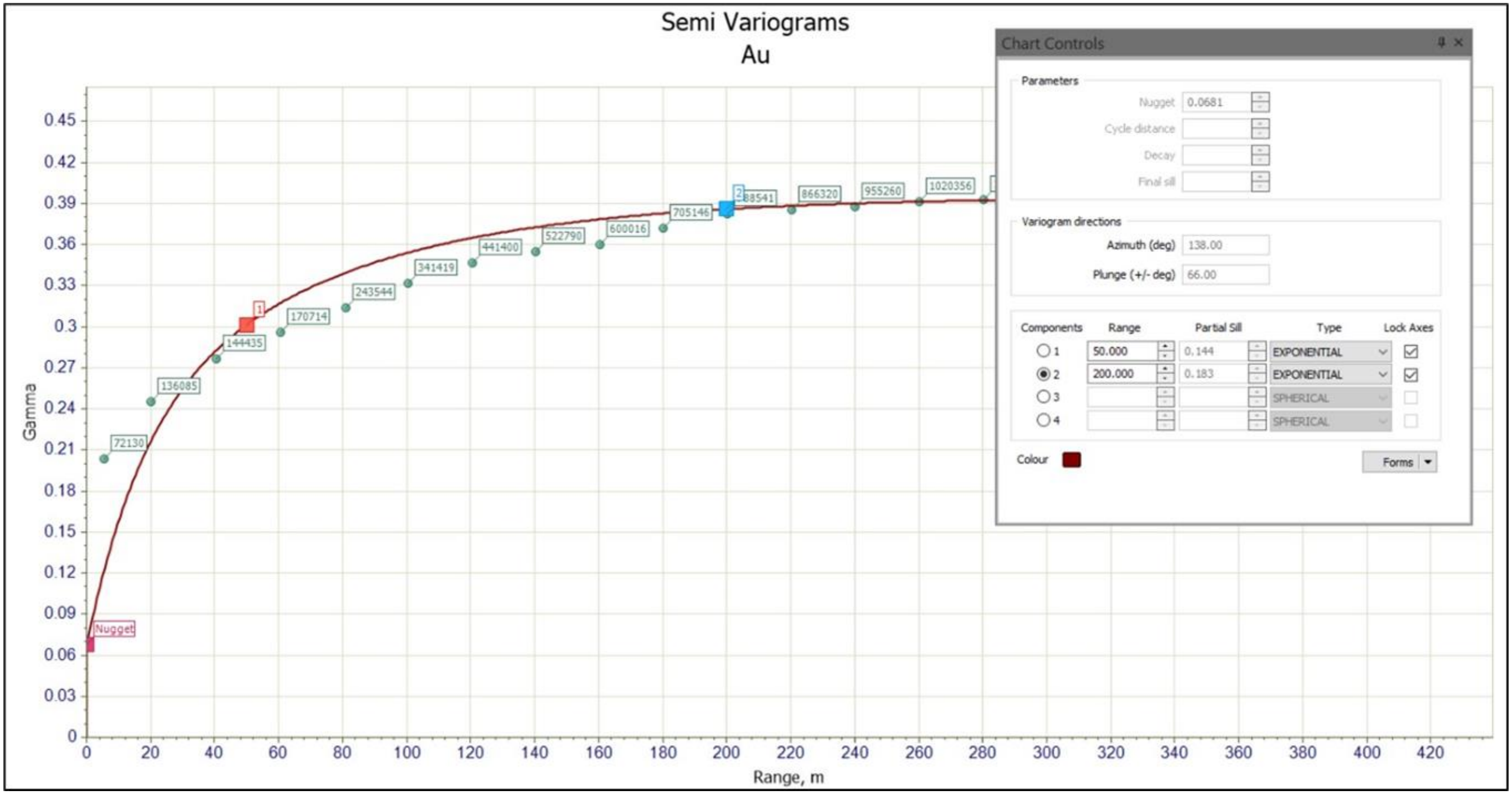



*Figure 48: Semi-variogram model for the second direction – copper mineralization*

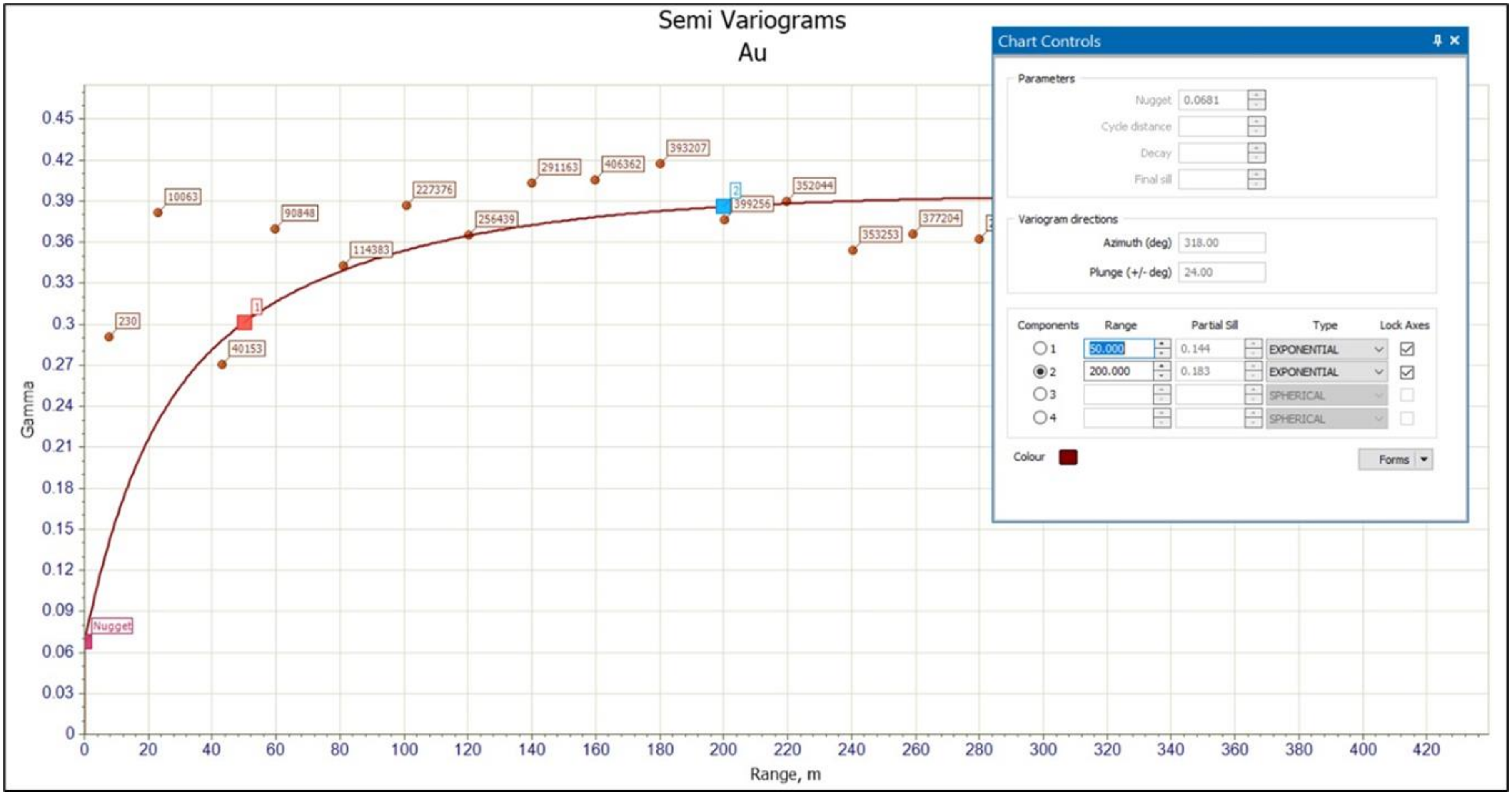



*Figure 49: Semi-variogram model for the third direction – gold mineralization*

### 14.7 Density

Bulk density values were assigned to block model cells using a single bulk density value for the Beskauga deposit of 2.78 t/m$^3$. This density value is based upon densities measured by Dostyk. Densities were collected using the water immersion method. Density is determined by weighing a sample and measuring (using a graduated cylinder) the volume of water displaced when the sample is immersed in water.

A plot of specific grade vs grade (Figure 50) shows no trend related to either the gold or copper grade of the samples, and the density value used is consistent with the expected density range of granodiorite and is considered appropriate for use in the Mineral Resource estimate.

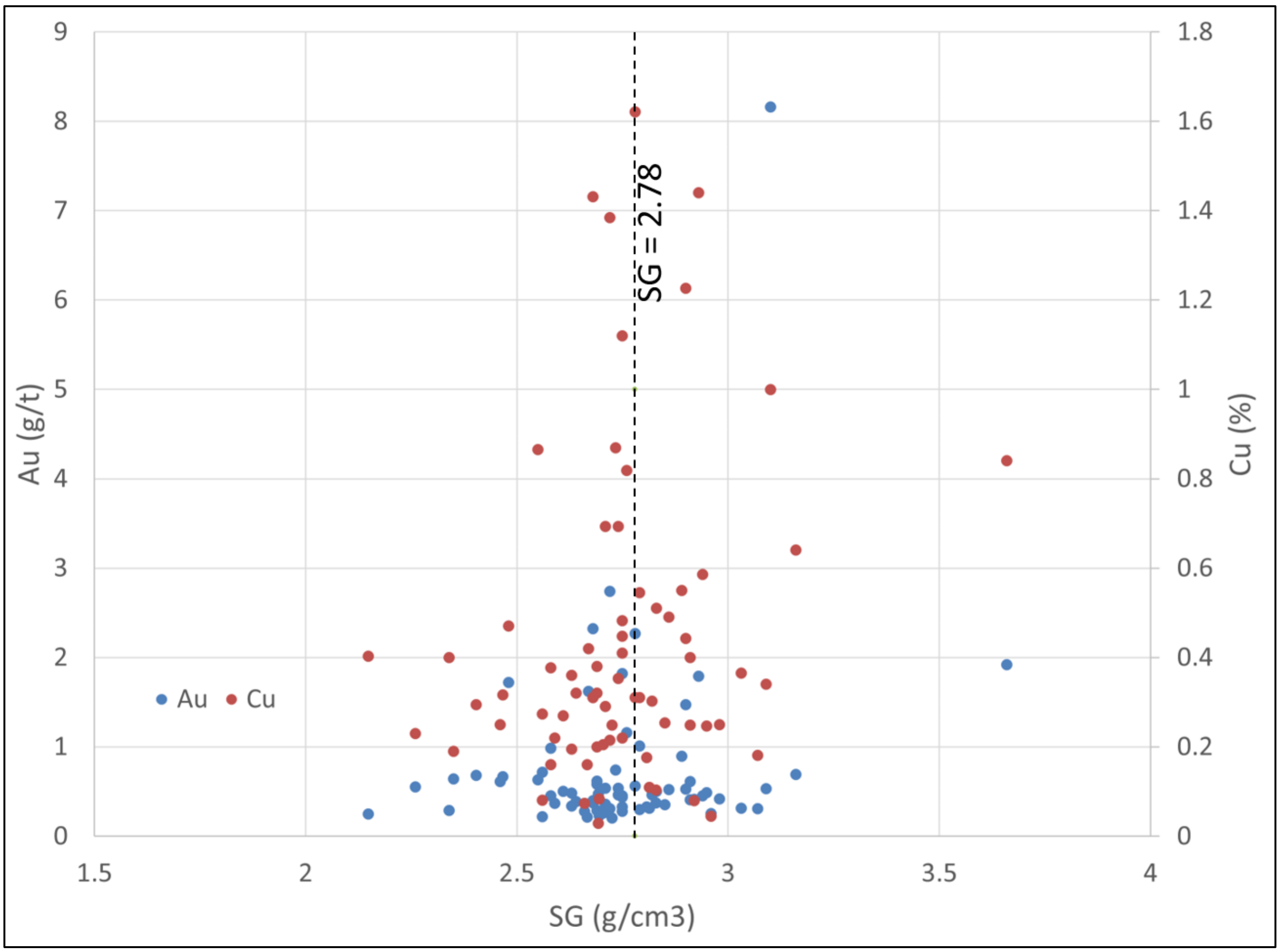



*Figure 50: Plot of specific gravity vs gold and copper values*

### 14.8 Block Model

Block modelling was carried out using Micromine 2016.1 software (version 16.1.1251.2) and included several stages. Firstly, an empty block model was created within the closed wireframe models for the mineralized envelopes interpreted and modelled using a 0.12% Cu cut-off grade and 0.15 g/t Au. All blocks that fell into the boundaries of the copper domain were coded as copper mineralization blocks and all the blocks that fell into the boundaries of gold domain were coded as gold mineralization blocks – coding of the block model was based on the separate wireframe models for deposit. The block model was then restricted with the overburden digital terrain models (DTMs)~~DTM~~ (i.e. all model cells above the overburden surface were deleted from the model file).

Initial filling with parent cell size was followed by sub-celling where necessary. The sub-celling occurred near the boundaries of the mineralized bodies or where models were truncated with the DTMs of the topographic surface and/or overburden. The parent cell size was chosen based on the general morphology of mineralized bodies and in order to avoid the generation of too large block models. The sub-celling size was chosen to maintain the resolution of the mineralized bodies. The sub-cells were optimized in the models where possible to form larger cells.

The block model dimensions and parameters are shown in Table 20.

*Table 20: Block model dimensions and parameters*

| Axis | Extent (m) | | Block size (m) | Minimum sub-celling size (m) |
|---|---|---|---|---|
| | Minimum | Maximum | | |
| Easting | 587729 | 588890 | 20 | 2 |
| Northing | 5737950 | 5740240 | 20 | 2 |
| RL | -710 | 150 | 20 | 2 |

## 14.9 Grade Interpolation

Copper and gold grades were interpolated into the empty block model using both OK and IDW. The IDW method with a power of two and three was used to support and validate the kriged estimates. Silver grades were interpolated using the same parameters as gold grades.

Interpolation was carried out separately for copper and gold and was conducted for the blocks that fell within the boundaries of the copper or gold mineralization. The radii of the search ellipsoid and orientation of axes were selected based on the results of geostatistical analysis.

Where copper and gold mineralized domains do not coincide, the interpolation of copper within the gold mineralization domain and outside the copper mineralization domain was conducted with the use of the samples that did not fall into the copper domain. A similar approach was used to interpolate gold within the copper domain, but outside the gold domain.

The first search radii for all mineralized envelopes were selected to be equal to two-thirds 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 the semi-variogram ranges in all directions. The model cells that did not receive grades from the first two passes were then estimated using a third pass with search radii equal to twice the semi-variogram ranges.

For the first two passes, when model cells were estimated a restriction of at least three samples from at least two drillholes was applied to increase the reliability of the estimates. This was relaxed for the third pass. Interpolation parameters are presented in Table 21.

*Table 21: Interpolation parameters for OK*

| Search radii | Minimum no. of samples | Maximum no. of samples | Minimum no. of drillholes |
|---|---|---|---|
| Less or equal to two-thirds of semi-variogram ranges | 3 | 16 | 2 |
| Less of equal to two semi-variogram ranges | 3 | 16 | 2 |
| Greater than two semi-variogram ranges | 1 | 16 | 1 |

The blocks were interpolated using only assay composites restricted by the wireframe models, and which belonged to a corresponding wireframe (i.e. each wireframe was estimated individually).

De-clustering was performed during the interpolation process by using four sectors within the search neighbourhood. Each sector was restricted to a maximum of four points. The maximum combined number of samples allowable for the interpolation was therefore 16. Change of support was honoured by discretizing to 5-point x 5-point x 5-point kriged estimates. These point estimates are simple averages of the block estimates.

## 14.10 Model Validation

Validation of the Beskauga grade interpolation was completed using:

- Comparison of the block model and composite mean grades for each domain (Table 22)
- Visual checks on screen in sectional view to ensure that block model grades honour the general grade of downhole composites (Figure 51)
- Generation of swath plots to compare input and output grades in a semi-local sense, by easting, northing and elevation (copper – Figure 52 to Figure 54; gold – Figure 55 to Figure 57)
- Comparison of the block model volume with the combined wireframe volume.

*Table 22: Comparison of grades between block model and composites*

| Average grade | Block model | Composites |
|---|---|---|
| Cu – within copper mineralization | 0.25 % | 0.28 % |
| Au – within gold mineralization | 0.32 g/t | 0.39 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.

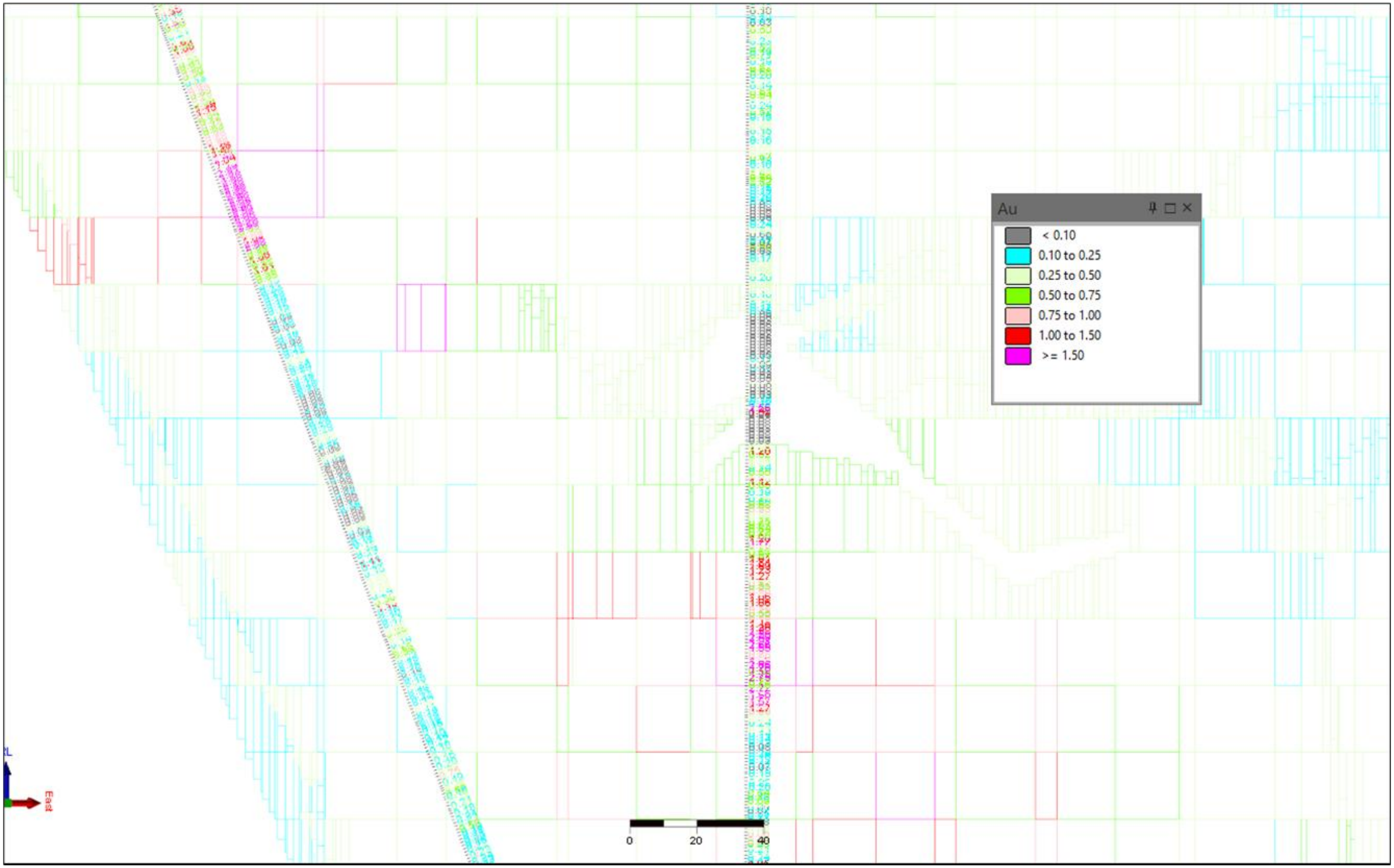



*Figure 51: Visual validation of block model grades vs drillhole grades*


*Figure 52: Swath plot by easting (copper)*

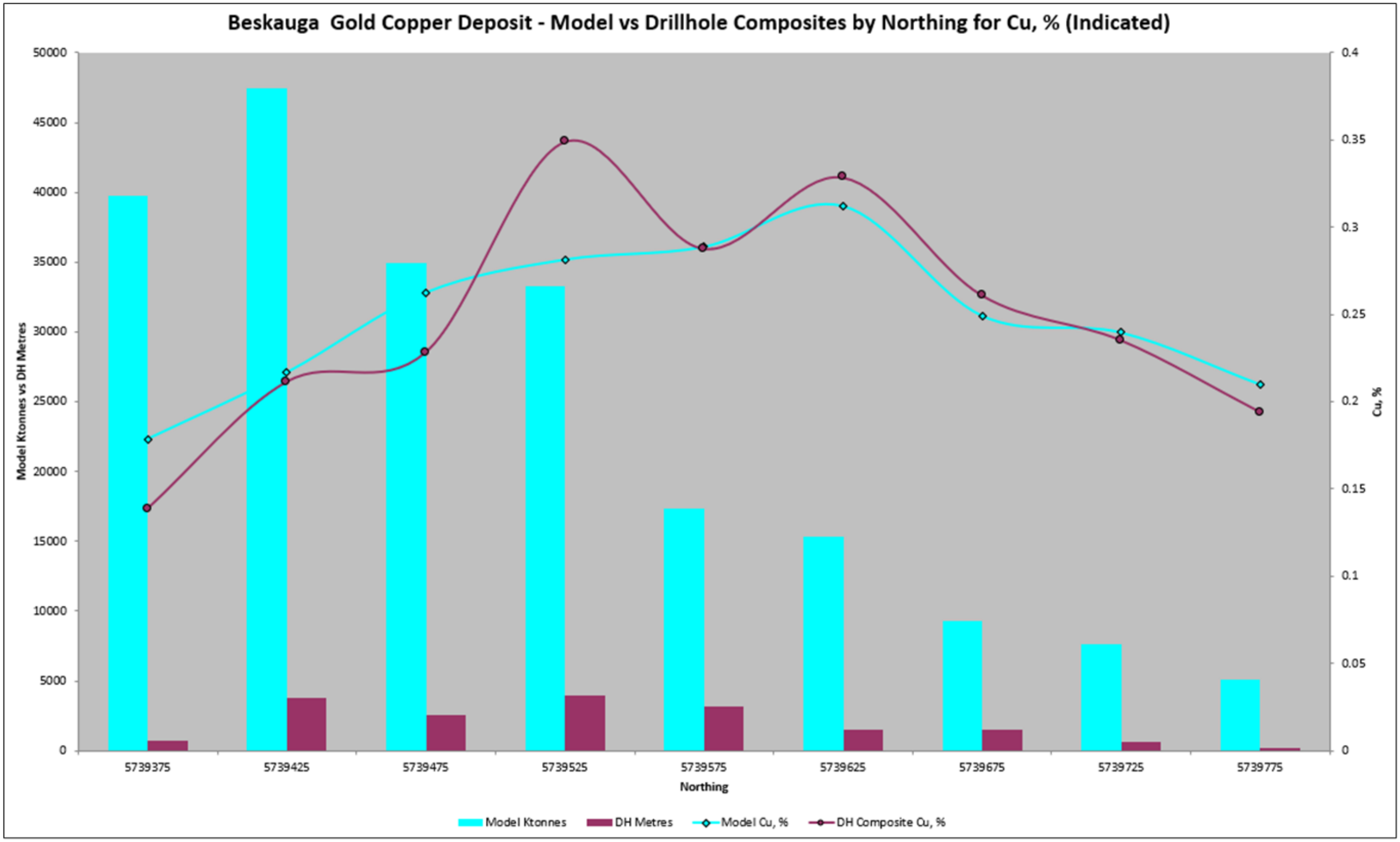



*Figure 53:* *Swath plot by northing (copper)*

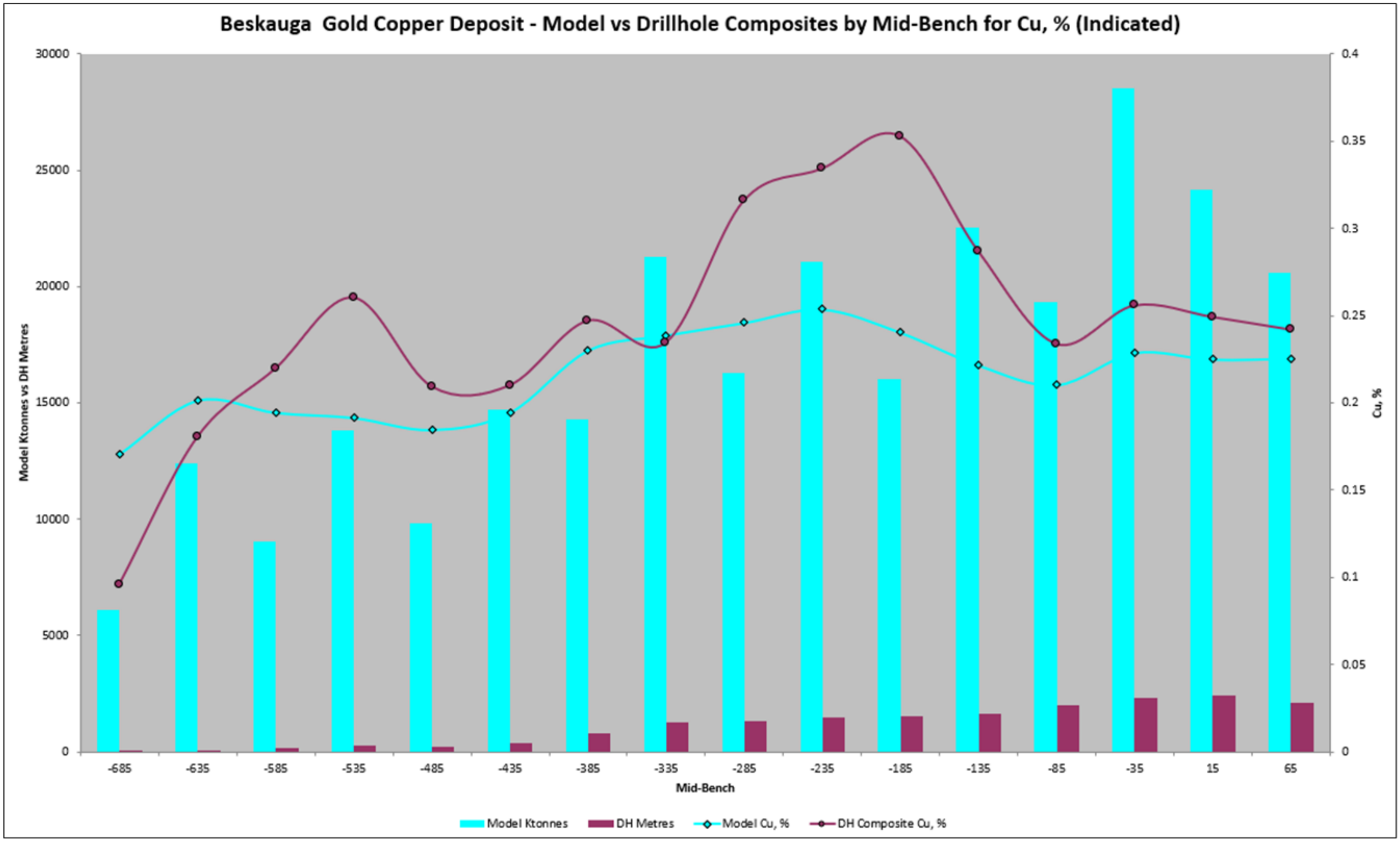



*Figure 54: Swath plot by 20 m bench (copper)*

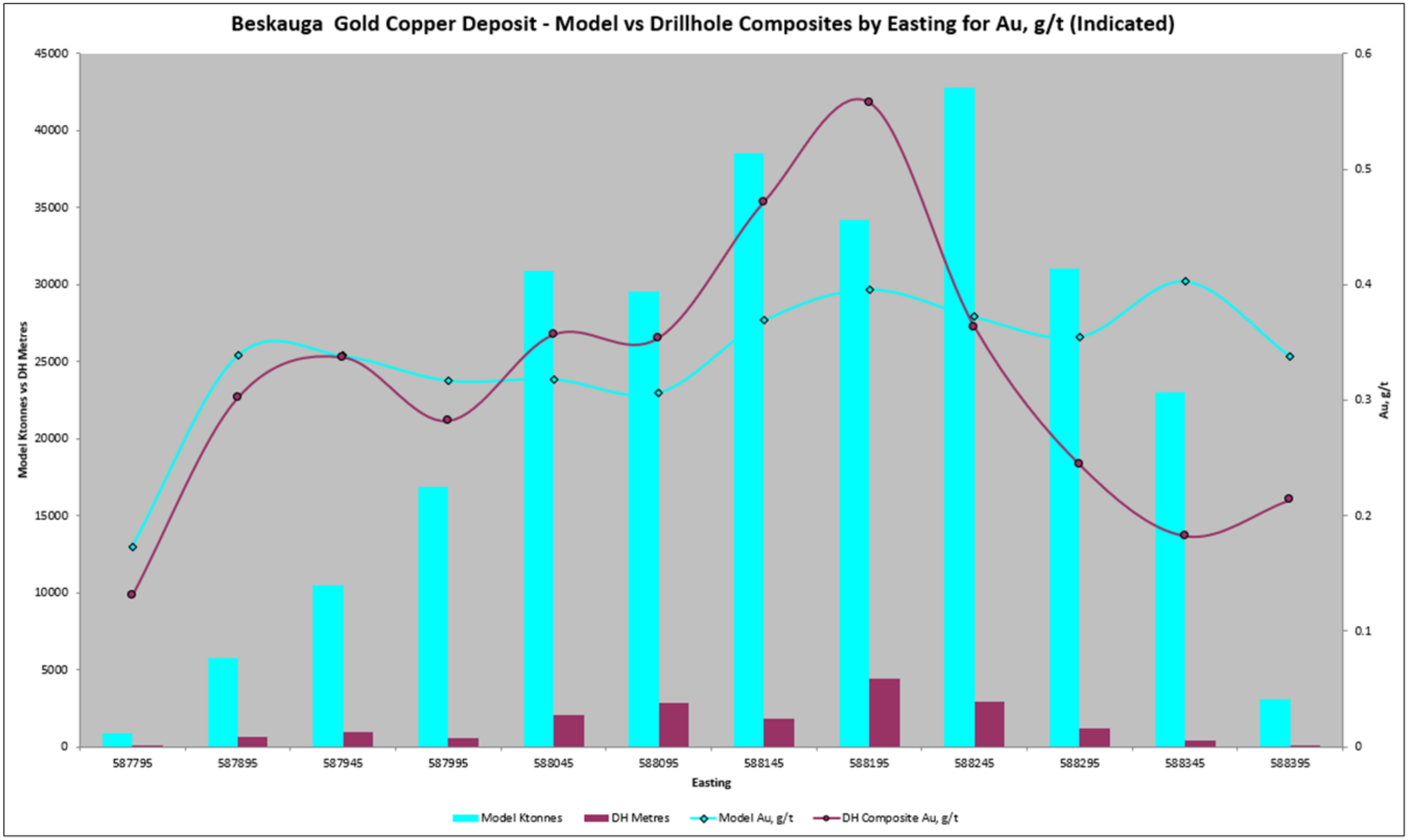



*Figure 55: Swath plot by easting (gold)*

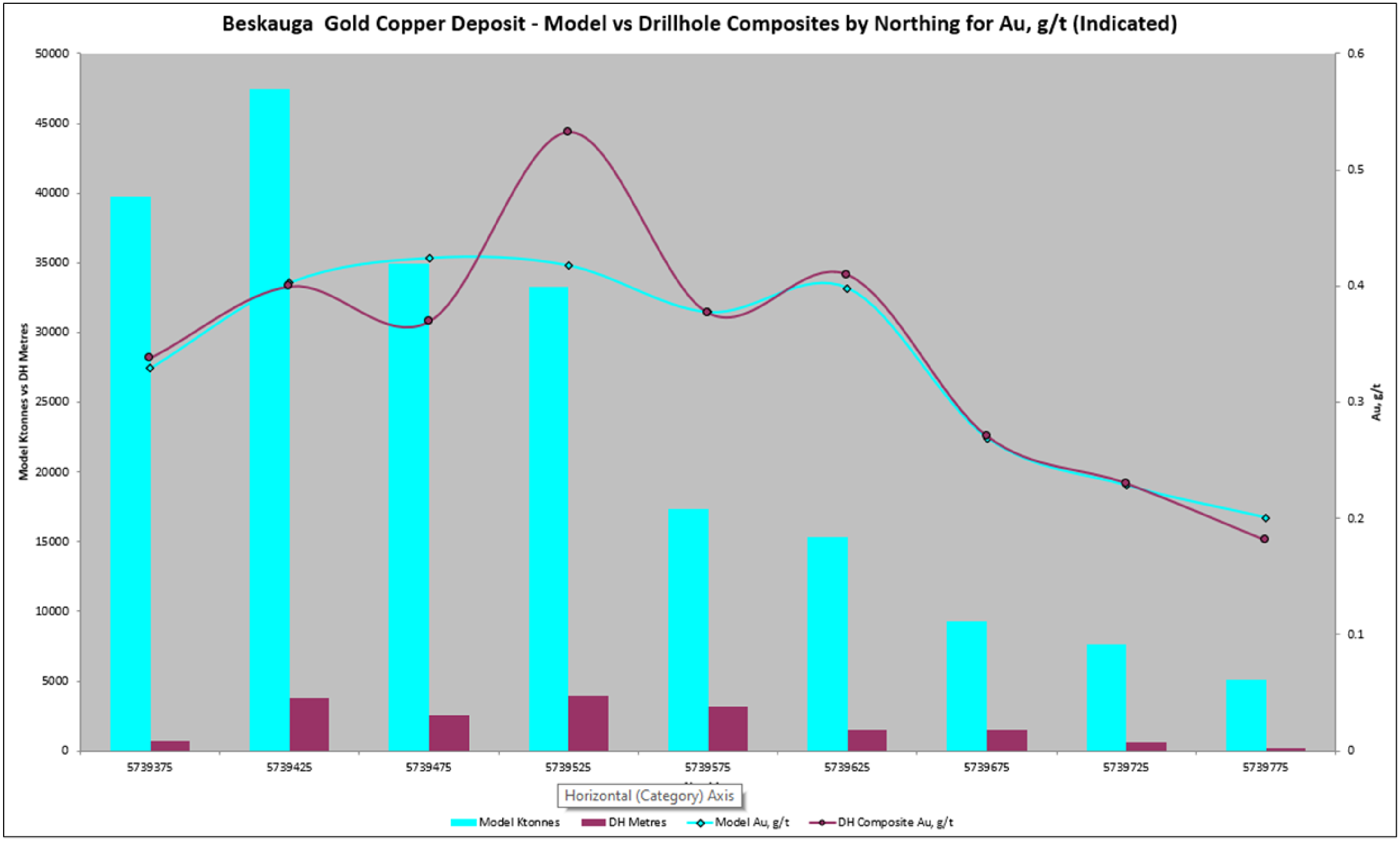



*Figure 56: Swath plot by northing (gold)*

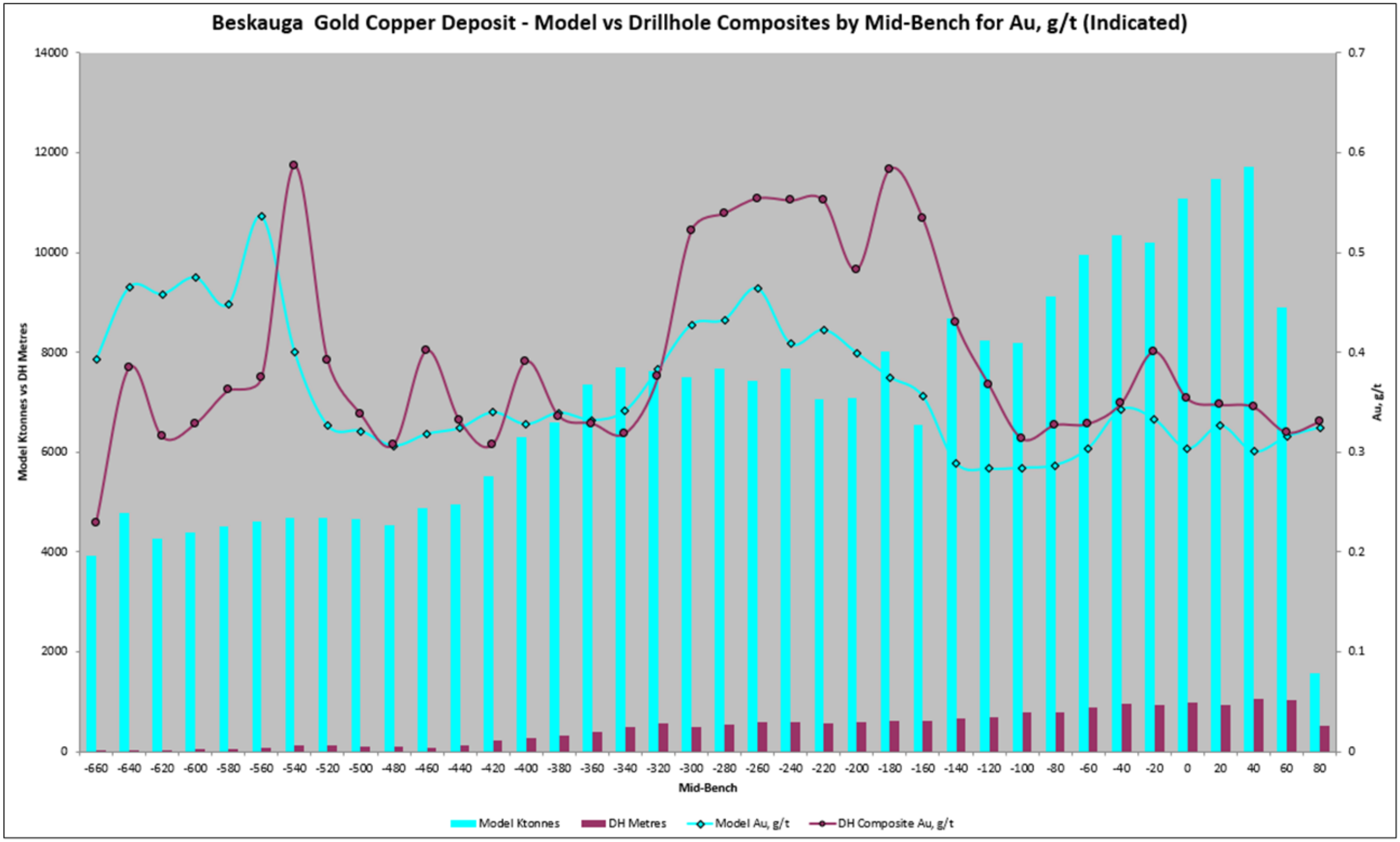



*Figure 57:* *Swath plot by 20 m bench (gold)*

## 14.11 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 in Table 21.

The model cells were displayed on screen, colour coded according to the interpolation run, along with the drillhole samples and traces, and the boundary between the resource classes were then interpreted interactively for both plans and cross sections. The interpreted boundaries were then wireframed and used to code the block model for the Indicated Mineral Resource class.

Generally, the Indicated Mineral Resource class was assigned for the model cells that were within a full semi-variogram range from the recent drillholes (i.e. within the first or second pass). All other model cells were classified as Inferred.

CSA Global recommends that Silver Bull attempts to upgrade the Mineral Resources to the Measured or Indicated classification category for some of the areas and prospects of the deposit by carrying out additional infill drilling.

## 14.12 Prospects for Eventual Economic Extraction

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

The block model for the deposit was developed by CSA Global in November 2020 and all input economic parameters for the pit optimization process were developed by Andrew Sharp, Principal Mining Engineer at CSA Global and Qualified Person for this Technical Report.

Basic pit optimization produces the following information about each block in the block model:

- It determines whether the block is inside or outside the optimal (ultimate) pit
- It determines whether the block should be processed for metal extraction (and if so, by what processing method if several methods could be used) or sent to the waste dump.

The main objective of the study was to define the potential of the Mineral Resource to be classified and ultimately mined, and if the project could potentially be profitable.

CSA Global 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.

### *14.12.1 Input Parameters*

The pit optimization study was based on the following information:

- Classified block model
- Topographic surface
- Input economic parameters developed and based on metallurgical testwork results completed on the deposit as well as from the review of similar mines in Kazakhstan and worldwide, in particular KAZ Minerals' Bozshakol operations which provided several regional cost confirmations
- Formula for NSR (estimated by CSA Global).

The input parameters for the base case are shown in Table 23 (all costs and prices are in US$).

*Table 23: Pit optimization parameters (base case)*

| Parameter | | Unit |
|---|---|---|
| **Metal prices** | | |
| Calculated NSR as per the formulas | per cell | $/t |
| **Mining and transport** | | |
| Mining cost | 1.50 | $/t for all material except overburden |
| Mining cost | 1.00 | $/t for overburden |
| Mining losses | 0 | % |
| Mining dilution | 0 | % |
| **Processing cost** | | |
| Processing cost (including G&A) | 5.70 | $/t |
| Processing recovery | included in NSR | % |
| **Administration costs and pit slopes** | | |
| Administration costs | 0 | $ per annum |
| Pit slope for overburden | 35 | ° |
| Pit slope between overburden and -300 m RL | 45 | ° |
| Pit slope between -300 and -450 m RL | 42 | ° |
| Pit slope below -450 m RL | 40 | ° |
| Density for model and waste | 2.76 | t/m³ |
| Density for overburden | 1.50 | t/m³ |

The NSR formula applied was:

- NSR $/t = (38.137+11.612 x Cu%) x Cu% + (0.07 + 0.0517 x Ag g/t) x Ag g/t + (19.18 + 12.322 x Au g/t) x Au g/t.

The formula incorporates metal prices, metals concentrates sales terms and metallurgical recoveries that were developed from metallurgical reports available for the project. Several process methodologies have already been investigated and currently the flotation of a copper-gold concentrate is showing best performance. The concentrate is high in arsenic content due to the presence of tennantite, but hydrometallurgical extraction of the arsenic from the concentrate using the Toowong process has been demonstrated to be a potentially viable process option to produce a marketable concentrate.

Copper recovery was estimated using a formula as:

- Curec = 0.227 x Cu % + 0.7741 (0.24% copper = 82.7% recovery).

Gold recovery was similarly estimated using a formula depending on head grade as:

- Aurec = 0.425+0.2718*Au g/t (0.39 g/t = 53.1% recovery).

Metal concentrate sales terms were selected based on average values for copper-gold concentrate. Metal prices used were $2.80/lb copper, $17.25/oz silver, and $1,500/oz gold.

### *14.12.2 Pit Optimization Process*

The pit optimization was carried out using the Mining module of the Micromine version 18.0 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.

Pit optimization requires that a fixed cost/value be associated with each block. The value of a waste block usually defines the cost of mining and disposal (dumping, reclaiming, etc.). A negative value indicates a loss. The value of a block selected for mineral extraction is usually defined by the profit from the mineral sale, minus the costs associated with mining and processing. A block will have a negative value if the costs are greater than the profit. It makes sense to consider a block selected for mineral extraction if the loss is less than it would be if it was treated as a waste block. In general, the pit optimization process treats negative blocks as waste, and positive blocks as selected for mineral extraction.

The pit optimization process involves the following steps:

- Block model preparation, i.e. metallurgical recoveries were calculated for copper and gold grades using provided formulas.
- A solid wireframe model was generated for the overburden material and for elevations between the overburden and -300 m RL, between -300 mRL and -450 mRL, and between -450 mRL and -1000 mRL so that correct slope angles and density values were applied.
- NSR values were calculated for each model cell as per the formulas.
- Tonnage for each cell and sub-cell was calculated, and the NSR values were then multiplied by the tonnage to calculate the block values.
- Pit optimiser set up. All provided economic parameters and output data files were set up in the process.
- Reporting of blocks within the pit shell.

## 14.13 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 for an alternative case with NSR multiplied by factor 1.25 and NSR value exceeding $5.70/t. The entire 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 24: Mineral Resource estimate for the Beskauga Project with an effective date of 28 January 2021.*

| Category | Tonnage (Mt) | Cu % | Au g/t | Ag g/t |
|---|---|---|---|---|
| Indicated | 207 | 0.23 | 0.35 | 1.09 |
| Inferred | 147 | 0.15 | 0.33 | 1.02 |

*Notes:*

- *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% + (0.07 + 0.0517 x Ag g/t) x Ag g/t + (19.18 + 12.322 x Au g/t) x Au g/t*
- *The NSR formula incorporates variable recovery formulae. Average copper recovery was 81.7% copper and 51.8% for both gold and silver.*
- *Base metal prices considered were $2.80/lb copper, $17.25/oz silver, and $1,500/oz gold.*
- *The Mineral Resource is stated within a pit shell that considers a 1.25 factor above the base-case metal prices (i.e., metal prices of $3.50/lb copper, 21.50/oz silver and 1875/oz gold).*
- *Mineral Resources are estimated and reported in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted 10 May 2014.*
- *Serik Urbisinov (MAIG), CSA Global Principal Resource Geologist, 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 (Figure 58).

There are no other mineral licences adjacent to the licence package.

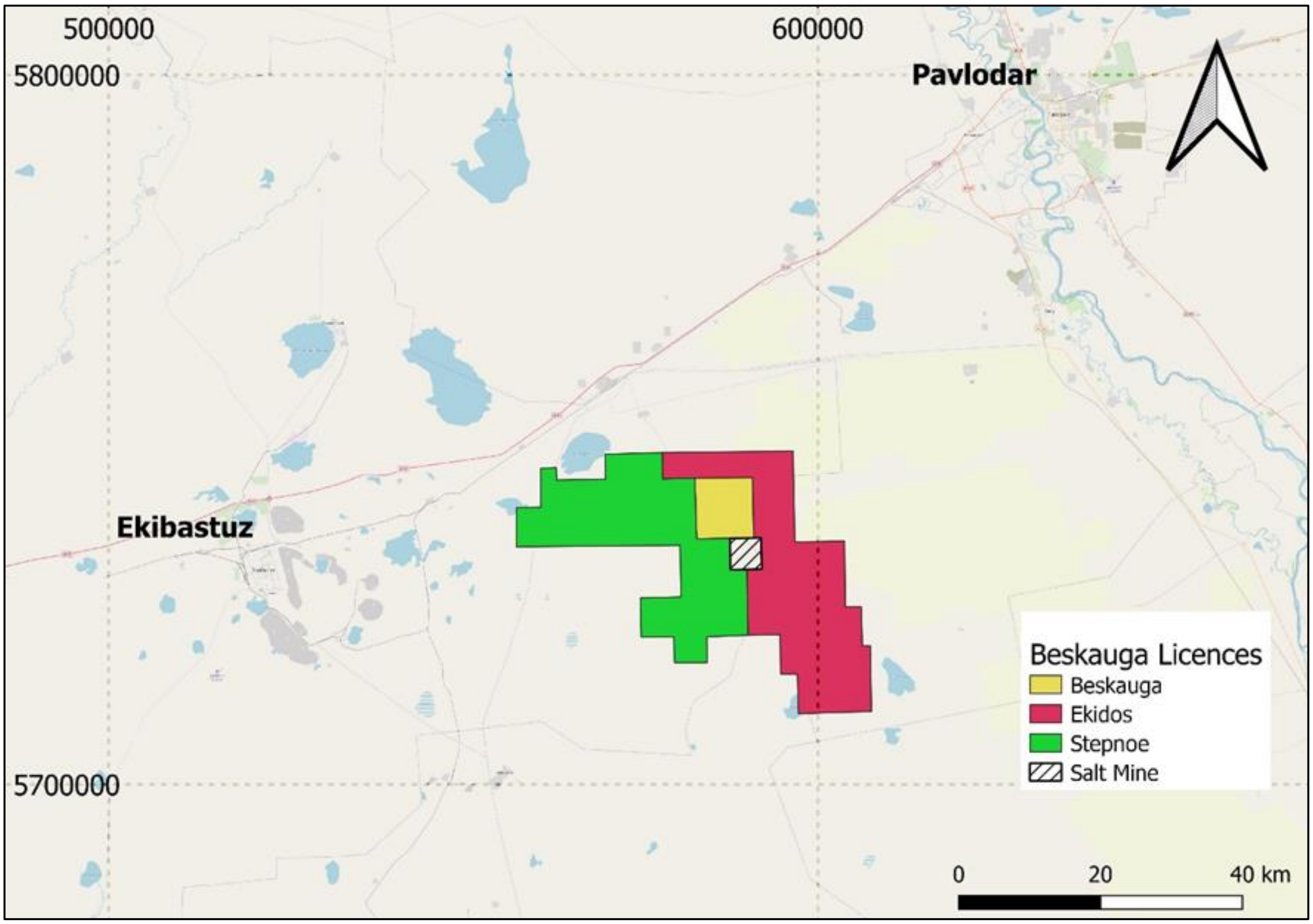



*Figure 58: Location of the salt mine within the Beskauga Project area (coordinates are WGS/UTM Zone 43N)*

# 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 Beskauga porphyry copper-gold deposit within a magmatic arc terrain of the CAOB that has demonstrated pedigree for economic porphyry deposits, notably KAZ Minerals operating Bozshakol mine 160 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 for the Beskauga Main porphyry-style mineralization, not for the Beskauga South mineralization which is gold only and may represent an epithermal overprint to the system.

The work completed in preparation of this Mineral Resource estimate has highlighted gaps that will be addressed in the next phase of work.

The indications of epithermal overprint, with minor enargite, and the apparently limited potassic alteration and predominant phyllic alteration, suggest that drilling to date may only have tested the upper part of the porphyry system. However, the work required to understand the geometry and zonation of alteration and mineralization at Beskauga has not been completed, as would normally be the case for a porphyry-epithermal mineralization system. This would ideally include detailed logging of alteration and veining with documentation of vein type, mineralogy, and vein density (ideally using an Anaconda-type approach), multi-element litho-geochemical data analysis, and hyperspectral data acquisition and analysis.

This represents a substantial gap in the Project and presents an opportunity to improve modelling and resource extension targeting. The deposit is not well understood and has not been drill tested thoroughly based on understanding the architecture 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.

These work programs 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.
- Density measurement procedures and data have not been reviewed and a single density value of 2.78 g/cm$^3$ has been used, which although appropriate for the granodioritic host rock, represents a potential source of risk to the estimated tonnage.
- Limited numbers of QAQC samples have been submitted – CRMs for gold and copper represent 0.52% and 0.34% of the total samples, respectively, blanks represent 0.9% of all samples, duplicates 0.27% of all samples and umpire samples 2.7%. Although the results of QAQC are acceptable, the low number of QAQC samples represents a risk to the Project.
- 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 Silver Bull on the Beskauga Project that should include:

- An extensive exploration program in the immediate area to fully test the entire mineralizing system at Beskauga.
- Collection of multi-element litho-geochemical data and hyperspectral data from a selection of historical pulps and drill core and, on this basis, design of routine analytical protocol for all additional drilling
- Relogging of all available drill core including detailed alteration and vein-type and density logging, and development of a Standard Operating Procedure for logging to optimize data collection and understanding in a porphyry-epithermal system
- Review and re-processing of IP and magnetic data collected by Copperbelt
- Submission of additional QAQC samples (~5% pulp duplicates and 5% umpire samples), together with CRMs in order to improve the QC data and design of a routine QAQC protocol for ongoing drilling
- A comprehensive density testing programme to confirm the density value used in the Mineral Resource estimate
- Completion of additional infill drilling to improve definition of the geology and mineralization and to support improved classification of additional Mineral Resources to the Measured or Indicated classification
- Integrated geological, structural, alteration, and litho-geochemical and hyperspectral study to support an improved understanding of deposit architecture, an improved 3D geological model, and an initial geometallurgical domain model to guide additional metallurgical sampling
- Complete additional metallurgical testwork on both the copper and gold to confirm recovery and comminution parameters, deleterious element mitigation, with sample selection based on geometallurgical domains
- Follow up on regional targets with geophysics and prospect drilling
- The next phase work program should include geotechnical drilling to confirm appropriate slope angles for future open pit design work and initial hydrogeological assessment
- Detail power and water sources, requirements, and begin all permitting processes
- Address any other gaps to be filled to advance the project towards a Mineral Resource update and Preliminary Feasibility Study.

These items should be carried out concurrently as a single phase of work.

The authors estimate that the total cost of the next phase work program is approximately US$5.8 million.

*Table 25: Work program estimate*

| Item | Cost in US$ |
|---|---|
| Drilling of 10,000 m at Beskauga (exploration and geotechnical) and associated studies | 2,000,000 |
| Infill drilling (10,000 m) | 2,000,000 |
| Geophysics and drilling of 5,000 m to test regional targets | 1,000,000 |
| Study of infrastructure | 20,000 |
| QAQC sampling and density testing | 50,000 |
| Additional metallurgical testing | 200,000 |
| In-country general and administration and logistics | 400,000 |
| **Total** | **5,670,000** |

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# 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 |
| CSA Global | CSA Global 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 |
| Silver Bull | Silver Bull 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 | Silver Bull Resources Inc. |
| the Project | Beskauga Copper-Gold Project |
| US$ | United States dollars |
| WAI | Wardell Armstrong International |

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35 YEARS

•1984 - 2019•