Mineral Resource Estimation Kharmagtai Project Omnogovi Province, Mongolia

Prepared for

Xanadu Mines

by

Spiers Geological Consultants Pty Ltd (SGC)

Author:

R. Spiers, BSc (Hons) MAIG

28 February 2022

Co-Author/s:

M. Brown, BSc MAIG

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4 Summary

Spiers Geological Consultants (SGC) was engaged by Xanadu Mines (XAM) and / or nominees to produce a Global Mineral Resource Estimate (GMRE) for the Kharmagtai project areas (Stockwork Hill, Copper Hill, White Hill, Zaraa, Golden Eagle and Zephyr, in the Omnogovi Province of southern Mongolia).

Xanadu Mines Ltd (ASX: XAM, TSX: XAM) is an Exploration company that discovers and defines globally significant porphyry copper-gold deposits in Mongolia. We leverage the experience and relationships developed over >10 years in country to deliver low cost and effective discovery and resource growth.

The Mineral resources for the near surface oxide and deeper transitional to fresh mineralisation have been estimated using Ordinary Kriging (OK) with sectional interpretations provided by the Client geologists in accordance with the 2012 edition of the JORC Code and guidelines for the reporting of exploration results.

Geometry modelling and data / search criteria were optimised to align parallel to the strike and orthogonal to the dip (and plunge where applicable) of the mineralisation in accordance with discussions with the Client and supported by data and variogram analysis of each individual ore domain.

The domain strategy is predicated upon and in-line with the prevailing project context put forth by the Client according to the status of project development and to suit the scoping level internal investigation put forth by the Client and the Clients' representatives.

4.1 Kharmagtai Project Mineral Resource Estimate (IMRE)

The Kharmagtai IMRE is compiled in accordance with the guidelines defined in the National Instrument 43-101 for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("NI43-101").

Reported to the Client by SGC as at the 28th of December 2021, the Kharmagtai resources for the open pit at a 0.2% CuEqRec cut-off grade are estimated to contain an indicated resource of 379Mt at 0.4% CuEqRec for 1.0Mt of Copper below the current topographic surface and open pit inferred resources of 374Mt at 0.3% CuEqRec for 760Kt of Copper below the current topographic surface (for details as to CuEqRec, please refer to notes associated with Table 1.

In addition, the Kharmagtai resources for the underground at a 0.3% CuEqRec cut-off grade are estimated to contain an indicated resource of 76Mt at 0.5% CuEqRec for 250Kt of copper below nominated elevations by project area and underground inferred resources of 290Mt at 0.4% CuEqRec for 920Kt of copper below nominated elevations by project area.

Grades are estimated into parent blocks with dimensions of 20.0m (east) by 20.0m (north) by 10.0m (elevation). The resource extends down from the topographic surface locally (at or near 1355mRL) and extends to a maximum depth of -229mRL at the deepest block centroid in the Zaraa project area.

Ordinary Kriging (OK) estimation approach was chosen to interpolate copper, gold, molybdenum, and sulphur grades into a block model, although only copper and gold grades were used in the CuEqRec calculation. Dry bulk density values as noted in the datasets provided by the Client to SGC were globally estimated separately by project area for each primary domain and assigned to the model.

At this stage of the project development, the Mineral Resources are classified as Indicated and Inferred resources in-line with data/s provided by the Client in relation to the project development status, available data utilised, status of geological and mineralisation continuity as defined by geometry models and metallurgical considerations.

A summary of the resource estimate is presented in Table 1: Kharmagtai - Mineral Resource Estimates reported as at December 2021 at a CuEqRec 0.2% cut-off grade for the potential open pit resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client. and Table 2: Kharmagtai - Mineral Resource Estimates reported as at January 28th 2021 at a CuEqRec 0.3% cut-off grade for the underground resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client.

Figures 1 and 2 below shows examples of the resources on grade tonnage curves for Stockwork Hill and White Hill at a range of cut-off grades for both the potential open pit and underground resources by project area. The range of cut-off grades noted in the grade tonnage curve have been put forth by the Client as being consistent with the various ranges of likely economic scenarios. For full details of grade tonnage curves by open pit and underground by project area please refer to Appendix 9.

Table 1: Kharmagtai - Mineral Resource Estimates reported as at December 2021 at a CuEqRec 0.2% cut-off grade for the potential open pit resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client.

Deposit	Classification	Tonnes (Mt)	Grades			Contained Metal			
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (Mlbs)	CuEqRec (Kt)	Cu (Kt)	Au (Koz)
SH	Indicated	158	0.4	0.3	0.3	1,534	700	460	1,500
WH		188	0.3	0.2	0.2	1,424	650	460	1,100
CH		17	0.5	0.4	0.4	200	90	60	200
ZA		9	0.3	0.1	0.2	51	20	10	100
GE		3	0.3	0.1	0.4	25	10	-	-
ZE		4	0.3	0.2	0.2	26	10	10	-
Total Indicated		**379**	**0.4**	**0.3**	**0.2**	**3,260**	**1,480**	**1,000**	**3,000**
SH	Inferred	52	0.3	0.2	0.2	343	160	100	300
WH		211	0.3	0.2	0.1	1,418	640	490	1,000
CH		3	0.3	0.2	0.1	20	10	10	-
ZA		13	0.2	0.1	0.2	73	30	20	100
GE		51	0.3	0.1	0.3	325	150	70	500
ZE		44	0.3	0.1	0.3	271	120	70	400
Total Inferred		**374**	**0.3**	**0.2**	**0.2**	**2,450**	**1,110**	**760**	**2,300**

Notes:

- CuEq accounts for Au value and CuEqKt must not be totalled to Au ounces.
- Figures may not sum due to rounding.
- Significant figures do not imply an added level of precision.
- Resource constrained by 0.1%CuEqRec reporting solid in-line with geological analysis by XAM.
- Resource constrained by open cut above nominated mRL level by deposit as follows SH>=720mRL, WH>=915mRL, CH>=1100mRL, ZA>=920mRL, ZE>=945mRL and GE>=845mRL.
- CuEqRec equation (CuEqRec=Cu+Au*0.60049*0.86667) where Au at USD$1400/oz and Cu at USD$3.4/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=90% and Au rec=78% (rel Au rec=78/90=86.6667% with number according to the Clients' (XAM) direction.

Table 2: Kharmagtai - Mineral Resource Estimates reported as at January 28th 2021 at a CuEqRec 0.3% cut-off grade for the underground resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client.

Deposit	Classification	Tonnes (Mt)	Grades			Contained Metal			
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (Mlbs)	CuEqRec (Kt)	Cu (Kt)	Au (Koz)
SH	**Indicated**	25	0.6	0.4	0.5	323	150	90	400
WH		21	0.4	0.4	0.2	199	90	70	100
CH		3	0.4	0.3	0.2	24	10	10	-
ZA		27	0.5	0.3	0.3	272	120	80	200
GE		-	-	-	-	-	-	-	-
ZE		-	-	-	-	-	-	-	-
Total Indicated		**76**	**0.5**	**0.3**	**0.3**	**818**	**370**	**250**	**700**
SH	**Inferred**	21	0.4	0.3	0.3	197	90	60	200
WH		138	0.4	0.3	0.1	1,266	570	470	600
CH		2	0.3	0.3	0.2	12	10	-	-
ZA		129	0.4	0.3	0.2	1,214	550	390	1,000
GE		-	-	-	-	-	-	-	-
ZE		-	-	-	-	-	-	-	-
Total Inferred		**290**	**0.4**	**0.3**	**0.2**	**2,690**	**1,220**	**920**	**1,800**

Notes:

- CuEq accounts for Au value and CuEqKt must not be totalled to Au ounces.
- Figures may not sum due to rounding.
- Significant figures do not imply an added level of precision.
- Resource constrained by 0.1%CuEqRec reporting solid in-line with geological analysis by XAM.
- Resource constrained by open cut above nominated mRL level by deposit as follows SH>=720mRL, WH>=915mRL, CH>=1100mRL, ZA>=920mRL, ZE>=945mRL and GE>=845mRL, the remnant forms the underground resource/s.
- CuEqRec equation (CuEqRec=Cu+Au*0.60049*0.86667) where Au at USD$1400/oz and Cu at USD$3.4/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=90% and Au rec=78% (rel Au rec=78/90=86.6667% with number according to the Clients' (XAM) direction.

The above update estimates take into account updated long term metal prices, foreign exchange and cost assumptions, and mining and metallurgy performance to inform cut-off grades and physical mining parameters used in the estimates (where applicable) put forth by the Client.

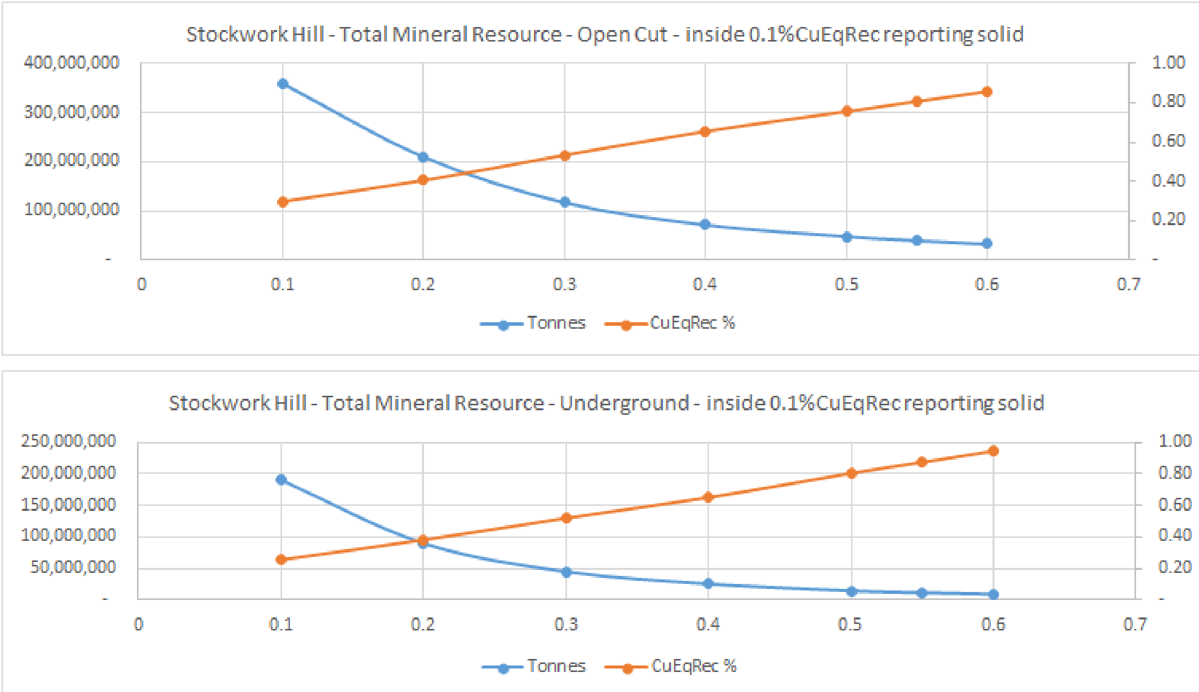


Figure 1: Kharmagtai open pit and underground grade-tonnage curve – Stockwork Hill Project Area and type.

The drill spacing is variable in each deposit but is typically on a predominantly 40m E-W line spacing, 40m N-S hole spacing grid pattern over the near surface mineralisation with infill on some key sections down to 20m E-W line spacing with further infill and alternative scissor drill holes and orientation to target particular zones of interest as defined by XAM.

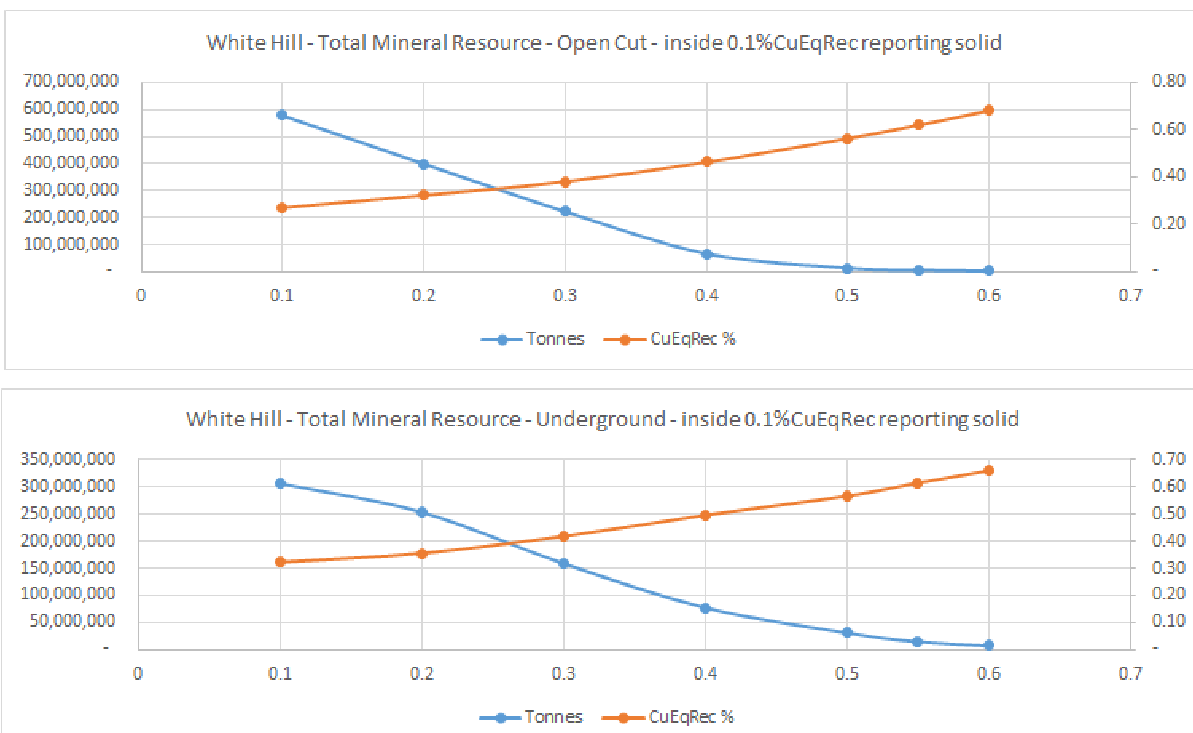


Figure 2: Kharmagtai open pit and underground grade-tonnage curve – White Hill Project Area and type.

4.2 Key Concepts Used in Modelling - Kharmagtai Deposits

A number of considerations and assumptions have been employed during the generation of the update resource models, which includes but is not limited to the following:

1. Assumed and interpreted primary domain controls developed by the Client in consultation with P. Dunham (geological consultant). Structural controls were included in the interpretation and subsequently resulted in domain controls over the estimation data in-line with the above consultation between parties and with consideration to eventual economic extraction and the project development phase.
2. Estimates are for public release and are to be employed in and to enable further scoping studies to commence. The estimates are designated constrained from the point of view of lithological and structural modelling and are reported within confining solids put forth by the Client at 0.1% CuEq (geological background).
3. Deposit (local) orientation analysis was completed during a several weeks of intense interpretation of grade populations at the Brighton Office. During this period the aforementioned parties settled upon the dominant mineralised orientations to be employed in the estimation passes.
4. Density data (collected from project inception through to close of database at or near the 30th of October 2021) and the subsequent density matrix constructed (and updated) was employed to define the density variability. Density was then modelled as an attribute of the model for all project areas. In areas of the block model where estimates were available, but density data was absent or scarce, average density values were employed by area, oxidation state and primary domain coding to establish complete representation of density to grade blocks.
5. Topographic surfaces and related survey data (including but not limited to grade solids 800ppm CuEq, 1500ppm CuEq, 4000ppm CuEq and related lithological solids as well as fault blocks, constraining solids and boundary solids) were supplied by the Client and remain the responsibility of the Client.

During the current investigation, as part of the due diligence process, SGC reviewed the available QAQC information provided to SGC by XAM representatives. The associated QAQC analysis which is detailed in this report are excerpts from the work by the Client which were reviewed and verified by SGC. At this time SGC take the content of those sections at face value and have no further comment.

In addition, the following sections were also furnished by the Client and are taken at face value. Those sections include (but are not limited to), Property Description and Location, Geology, QAQC and Sampling / Drilling together with all aspects pertaining to metallurgy.

SGC take responsibility for the estimates in conjunction with a Competent Person nominated by XAM taking responsibility for drilling, sampling, data quality, geological interpretation, structural context, and all items relating to mining and metallurgical assumptions and outcomes.

SGC have accepted in good faith the data provided by XAM in consideration of the Kharmagtai Project and have not conducted any independent checks into the quality control or quality assurance of the field sampling and drilling or laboratory analysis at this time.

At the time of writing this report and estimating the resources upon which the report is based SGC have not been able to visit the site in Mongolia due to COVID-19 travelling restrictions in order to satisfy visual and associated checks firsthand as is accepted as best practice. It is anticipated that SGC representative will visit the site in question at the first available opportunity as travel bans are lifted in conjunction with the COVID strategies internationally.

As soon as is practical, SGC will undertake the aforementioned site visit and associated functions in order to satisfy guidelines for the Reporting of Mineral Resource.

4.3 Conclusions and Recommendations

The continuity of mineralisation over the Kharmagtai deposit demonstrated by the historical drilling has defined considerable mineralised continuity. Recent infill and expansion drilling has produced data of a sufficiently high standard allowing the estimation of a reliable Mineral Resource for the project and has at this time allowed much of the deposit to be classified as Indicated and Inferred Estimates according to the NI43-101 guidance notes for the reporting of Mineral Resources and Ore Reserves.

The current resource classification represents a significant improvement when compared to the earlier public released resource estimate classification (as referenced later in this document CSA 2018) and marks a prominent development milestone for XAM moving into more advanced scoping studies going forward.

SGC believe that further effort should be focussed upon the validation of project sensitive information at or as close to source as possible to fully confirm the veracity of all data sets. Conclusions drawn from the project review are discussed below:

- Whilst the domain models have significantly evolved during this round of investigation and estimation, it is proposed by SGC that the geological databases / logs will continue to require further refinement and review to ensure that consistency in logging is achieved in relation to the key constraining attributes of the dataset, including but not limited to; structural, geological, veining and intrusive phases as well as geotechnical to ensure that the domain solid modelling captures the inherent local variability and continuity of the associated ore zones.
- During the production of the 2021 estimates by SGC, structural controls were incorporated into the final domain strategy, and it is understood by SGC that the Client is working on further detailed follow-up work in relation to structural complexity which is ear marked to be incorporated into the next round of estimation.
- Density measurements and the subsequent density database must be reviewed by lithology and oxidation state and compared to the historical informing dataset to ensure all outliers are accounted for and that values are within logical ranges for the known host units on a continuing basis.
- During the recent re-estimation by SGC, comparative geometry modelling primarily for copper and gold values within the mineralised domains was undertaken as a means of assessing the sensitivities of structure ranges and nugget to an alternative geometry modelling methodology. The geometry modelling highlighted the presences of a number of mixed populations within primary domains which were addressed by the Client once raised by SGC. To this end, it is recommended by SGC that continued vigilance be the standard during domaining stages to identify all sub-populations where applicable.
- Some ore domains displayed insufficient data to undertake adequate variogram modelling. In those circumstances a representative variogram model was used which appropriately reflected the ore domain orientation and habit. This was particularly prevalent in zones which suffered a lacked sufficient drilling such as some portions of the Zaraa deposit at depth and at the margins of both Copper Hill and White Hill.
- The variogram models produced by SGC for the individual project areas (and sectors within the project areas) according to the defined domain strategy by the Client exhibit structure ranges which are notionally shorter across all variogram directions when compared to the earlier CSA 2018 variogram models, this was particularly the case at the second and third structure ranges.

The sectional interpretation and subsequent domain solid model put forth by the Client in the 2021 investigation has evolved considerably when compared to the earlier iteration by SGC for internal purposes (2020) and even by comparison to the much earlier public release works by CSA in 2018.

Details pertaining to mineralogy, intrusive timing, veining types and intensity and cross cutting relationships, multi-element geochemistry, alteration and structural framework were incorporated during this round of domaining and subsequent estimation resulting in a complex and sophisticated domain strategy in-line with the Clients direction and the advanced nature of the project development.

SGC further considers that in relation to the currently available drilling coverage:

- Significant upside exists to extend and upgrade the Mineral Resources across the Kharmagtai Project with potential to increase tonnages and upgrade classifications with additional drill density at depth. The existing Resources are also amenable to infill and extension drilling nearer to surface, particularly if a lower cut-off grade can be justified.
- Numerous other priority exploration targets across the tenement would also benefit significantly from additional exploration, infill and extension drilling to a level that can potentially support the estimation of additional Resources on over other mineralised centres proximal to the existing Resources at Stockwork Hill, Copper Hill, Zaraa and White Hill.

4.4 Model Comparisons – CSA2018 to SGC 2021

In comparison to the earlier estimates by CSA Global in 2018 (Warren Potma, MSc, MAIG, MAUSIMM, Principal Geologist, CSA Global Pty Ltd), the recent 2021 SGC estimation (which includes resource classification to Indicated and Inferred level of confidence) has resulted in an overall shift in tonnage allocation to a dominantly Indicated resource status from Inferred and Exploration Potential in earlier iterations.

A direct comparison between the reported CSA 2108 resource and SGC 2021 resource is not straight forward due to the fact that CSA reported the estimates at different cut-off grades, inside optimised pits which were based on different economic criteria and using different cost and recovery structures for the formulation of the CuEqRec equation.

Further complicating the comparison is the fact that the 2021 SGC estimates were reported inside a 0.1% CuEqRec reporting solid thus eliminating peripheral resource from the 2021 estimates that may have been incorporated in the 2018 estimates. The following section breaks down the differences step by step to finally present a comparison within the CSA mega pit and at CSA reporting cut-off grades (It should be noted that whilst the pits shells noted in the CSA 2018 public release point toward the economic case having been used, this is not the case, the mega pit was used in the reporting of the resource).

As can be seen in Tables 3 to 4 which presents CSA 2018 vs SGC 2021 outcomes inside the CSA 2018 mega pit (for Stockwork Hill, White Hill and Copper Hill only, as this data was the only data available for the CSA estimates. Zaraa, Zephyr and Golden Eagle are all addition resource in the SGC 2021 estimates which are not discussed herein) and at 0.2% CuEqRec for open pit and 0.3% CuEqRec for underground.

Table 3: Kharmagtai – CSA to SGC open pit estimates comparison inside CSA 2018 mega pit and at CSA cut-off grades (CuEqRec formulas not consistent).

CSA Resource 2018

Deposit	Classification	Tonnes (t)	Grades			Contained Metal		
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	74,400,000	0.59	0.38	0.41	438,960	282,720	980,726
WH		45,200,000	0.42	0.30	0.23	189,840	135,600	334,239
CH		9,700,000	0.76	0.48	0.54	73,720	46,560	168,405
Total Indicated		**129,300,000**	**0.54**	**0.36**	**0.36**	**702,520**	**464,880**	**1,483,370**
SH	Inferred	55,400,000	0.47	0.30	0.34	260,380	166,200	605,591
WH		412,800,000	0.40	0.31	0.17	1,651,200	1,279,680	2,256,209
CH		700,000	0.39	0.31	0.16	2,730	2,170	3,601
Total Inferred		**468,900,000**	**0.41**	**0.31**	**0.19**	**1,914,310**	**1,448,050**	**2,865,401**
		598,200,000	**0.44**	**0.32**	**0.23**	**2,616,830**	**1,912,930**	**4,348,771**

Comparison of SGC 2021 to CSA 2018 inside CSA mega pit

Deposit	Classification	Tonnes (t)	Grades			Contained Metal		
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	111,412,633	0.57	0.36	0.39	631,063	405,252	1,395,009
WH		140,386,990	0.39	0.28	0.21	553,196	399,609	948,837
CH		10,007,374	0.75	0.47	0.55	75,283	46,810	175,994
Total Indicated		**261,806,997**	**0.48**	**0.33**	**0.30**	**1,259,542**	**851,672**	**2,519,840**
SH	Inferred	14,176,182	0.42	0.27	0.29	60,138	38,633	132,854
WH		197,139,333	0.40	0.31	0.16	785,960	620,384	1,022,918
CH		1,187,120	0.41	0.29	0.21	4,809	3,501	8,091
Total Inferred		**212,502,636**	**0.40**	**0.31**	**0.17**	**850,907**	**662,518**	**1,163,863**
		474,309,632	**0.44**	**0.32**	**0.24**	**2,110,449**	**1,514,190**	**3,683,702**

SH	Indicated	50%	-4%	-4%	-5%	44%	43%	42%
WH		211%	-6%	-5%	-9%	191%	195%	184%
CH		3%	-1%	-3%	1%	2%	1%	5%
Total Indicated		**102%**	**-11%**	**-10%**	**-16%**	**79%**	**83%**	**70%**
SH	Inferred	-74%	-10%	-9%	-14%	-77%	-77%	-78%
WH		-52%	0%	2%	-5%	-52%	-52%	-55%
CH		70%	4%	-5%	33%	76%	61%	125%
Total Inferred		**-55%**	**-2%**	**1%**	**-10%**	**-56%**	**-54%**	**-59%**
Total (Ind+Inf)		**-21%**	**2%**	**0%**	**7%**	**-19%**	**-21%**	**-15%**

As can be seen in Table 3 above, the comparison of the CSA 2018 open cut estimates to SGC 2021 open pit estimates inside the CSA 2018 mega pit and at CSA cut-off grades of 0.2% CuEqRec reveal many differences.

There is a notable shift of resource classification toward indicated during the 2021 estimation due to significant infill drilling and highly developed geological and structural re-interpretation by project area with an 83% increase in indicated contained Cu tonnes and a 70% increase in indicated contained Au ounces in the SGC 2021 estimates. At the same time the inferred estimates have declined overall in the SGC 2021 estimates as resources are shifted into the higher classification with a 54% decrease in inferred Cu tonnes and a 59% decrease in Au ounces in the SGC estimates.

Table 4: Kharmagtai – CSA to SGC underground estimates comparison inside CSA 2018 mega pit and at CSA cut-off grades (CuEqRec formulas not matching, see notes below).

CSA Resource 2018

Deposit	Classification	Tonnes (t)	Grades			Contained Metal		
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	1,200,000	0.68	0.45	0.46	8,160	5,400	17,747
WH		-	-	-	-	-	-	-
CH		200,000	0.63	0.46	0.33	1,260	920	2,122
Total Indicated		**1,400,000**	**0.67**	**0.45**	**0.44**	**9,420**	**6,320**	**19,869**
SH	Inferred	4,800,000	0.68	0.43	0.49	32,640	20,640	75,618
WH		3,500,000	0.56	0.46	0.19	19,600	16,100	21,380
CH		-	-	-	-	-	-	-
Total Inferred		**8,300,000**	**0.63**	**0.44**	**0.36**	**52,240**	**36,740**	**96,999**
		9,700,000	**0.64**	**0.44**	**0.37**	**61,660**	**43,060**	**116,868**

Comparison of SGC 2021 to CSA 2018 inside CSA mega pit

Deposit	Classification	Tonnes (t)	Grades			Contained Metal		
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	4,613,414	0.8	0.5	0.6	37,473	23,151	88,482
WH		500,393	0.6	0.5	0.2	2,783	2,327	2,818
CH		516,853	0.6	0.4	0.4	3,229	2,226	6,198
Total Indicated		**5,630,660**	**0.77**	**0.49**	**0.54**	**43,485**	**27,703**	**97,498**
SH	Inferred	6,859,713	0.7	0.3	0.6	44,892	23,218	133,895
WH		3,695,022	0.6	0.5	0.2	20,674	16,952	22,996
CH		50,619	0.6	0.4	0.4	319	220	614
Total Inferred		**10,605,354**	**0.62**	**0.38**	**0.46**	**65,885**	**40,390**	**157,504**
		16,236,014	**0.67**	**0.42**	**0.49**	**109,370**	**68,093**	**255,002**
SH	Indicated	284%	19%	12%	30%	359%	329%	399%
WH		N/A	N/A	N/A	N/A	N/A	N/A	N/A
CH		158%	-1%	-6%	13%	156%	142%	192%
Total Indicated		302%	15%	9%	22%	362%	338%	391%
SH	Inferred	43%	-4%	-21%	24%	38%	12%	77%
WH		6%	0%	0%	2%	5%	5%	8%
CH		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Inferred		28%	-1%	-14%	27%	26%	10%	62%
Total (Ind+Inf)		**67%**	**6%**	**-6%**	**30%**	**77%**	**58%**	**118%**

As can be seen in Table 4 above, the comparison of the CSA 2018 underground estimates to SGC 2021 underground estimates outside the CSA 2018 mega pit and at CSA cut-off grades of 0.3% CuEqRec again reveal many differences.

There is a notable shift of resource classification toward more material in both indicated and inferred resources during the 2021 estimation due to significant infill drilling and highly developed geological and structural re-interpretation by project area. There is a 338% increase in indicated contained Cu tonnes and a 391% increase in indicated contained Au ounces in the SGC 2021 estimates. At the same time the inferred estimates have increased overall in the SGC 2021 estimates as resources are added due to further drilling with a 10% increase in inferred Cu tonnes and a 62% increase in Au ounces in the SGC estimates.

In relation to the cost structures and recovery factors used by CSA 2018 the following was employed:

- CuEqRec equation (CuEqRec=Cu+Au*0.62097*0.8235) where Au at USD$1320/oz and Cu at USD$3.1/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=85% and Au rec=70% (rel Au rec=70/85=82.35% with number according to the Clients' (XAM) direction.

In relation to the cost structures and recovery factors used by SGC 2021 the following was employed:

- CuEqRec equation (CuEqRec=Cu+Au*0.60049*0.86667) where Au at USD$1400/oz and Cu at USD$3.4/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=90% and Au rec=78% (rel Au rec=78/90=86.667% with number according to the Clients' (XAM) direction

The differences observed above contribute to an overall 1.8% difference due to cost and recovery.

Broadly speaking the two estimates are quite different in the approach to domaining, with the CSA estimates incorporating significant complexity including intrusive domains and sub-domains, vein percentage sub-domains and breccia domains for each project area. The current 2021 estimates incorporate structural and lithological domains and grade domains to minimise the presence of mixed local grade populations and constrain the estimation.

Secondarily the CSA approach to the use of the geometry modelling outputs was significantly different to that of SGC. In the first pass CSA used the long range multiplied by 0.333 for search radii, in the second pass CSA used the long range multiplied by 0.667 for search radii and in the third pass CSA used the long range multiplied by 1 for the search radii. In addition, CSA continued to model all cells in the model using ever expanding ranges (search radii) until all cells in the model received estimates.

CSA also controlled the estimates by use of a minimum number of drill holes which could populated estimates. In the first three passes that minimum was only 2, in subsequent passes it was reduced to 1. Due to the broadly spaced nature of the local drilling overall project areas it is likely that estimates only referenced data from 2 drill holes or less in the local search neighbourhood. By contract SGC applied an octant search which allowed a minimum data as opposed to a minimum hole to be utilised in the estimates. Given the broad spaced drilling this would allow more local data to be referenced from more holes which would potentially result in a more locally and globally reliable estimate where homogeneity is observed.

In addition, the complex domaining by CSA would have preserved higher grade end members across all project areas and in turn increase the grade of the over-all estimates. This coupled with the expanded search radii has resulted in more tonnes at a higher grade than would be anticipated and then has been estimated into the 2021 SGC estimates. By contrast the search ranges employed by SGC were significantly shorter and akin to the first structure range of the variogram models across all project areas as opposed to the use of long ranges as the default in the CSA model. In the first pass SGC used an expansion factor of 1 on the first and second passes. SGC conducted a secondary pass to estimate Exploration potential estimates which employed a factor of 1.5 multiplier to the first structure range of the variograms which is generally still less than or equal to the CSA long ranges employed. The Exploration potential estimates are not included in this resource and were undertaken for scoping purposes only.

It is strongly recommended by SGC that significant efforts and time be put into continually resolving the geological and structure story for the deposit as more drilling is completed in order that the domain models continue to evolve in the next pass. It is envisaged by SGC that by including the ongoing appropriate level of detail into the domain strategy that there is opportunity for realistic grade to be built back into the final modelling pass and that this should be viewed as an opportunity to the project particularly as the project is on the lower grade end of the projects spectrum when compared to other similar deposits.

5 Introduction and Terms of Reference

Spiers Geological Consultants ("SGC") was engaged by Xanadu Mines ("XAM" and / or "the Client") to provide an estimate of mineral resources and to generate an NI43-101 Technical Report ("TR") for the Kharmagtai project, in the Omnogovi Province, Southern Mongolia. This Technical Report has been prepared in accordance with the requirements of Form NI 43-101F1 for release on the Toronto Stock Exchange.

The updated Mineral Resource Estimates were independently undertaken by SGC during the period September - December 2021 for the Kharmagtai deposit.

The resources for the near surface oxide and deeper transitional to fresh mineralisation have been estimated using Ordinary Kriging (OK). Search criteria were orientated parallel to the strike and orthogonal to the dip and plunge (where appropriate) of the mineralisation as nominated by the Client in-line with the prevailing geological and mineralisation models developed by XAM representatives.

At the time of writing this report and due to COVID restriction limitations, SGC were not able to undertake the conventional site and laboratory investigations which are regarded best practice and as such all aspects pertaining to data, sampling and assaying are taken at face value as supplied by the Client to SGC.

A site visit is planned during the next available field season in Mongolia in order for SGC to verify all aspects mentioned above.

6 Capability and Independence

The author of this report is an Independent Qualified Person and has relied on datasets and reports that were provided by XAM representatives and project consultants to support the interpretation of exploration results discussed in this report and the subsequently produced Global Mineral Resource Estimates.

SGC accepts responsibility for classification of the current Mineral Resource Estimates as Indicated and Inferred provided XAM nominates a Competent Person, or Persons, to accept responsibility for the data on which it is based, including the reasonableness of cut-off grades, geological interpretation, QA/QC, metallurgical considerations and geological inputs relating to the topographic surface and density determination and to attest to the reasonable prospect of eventual economic extraction of the mineral resources.

Information in this report that relates to the Mineral Resource Estimation reflects information compiled by Mr Robert Spiers and peer reviewed by SGC. Mr Spiers is a Members of the Australian Institute of Geoscientists and have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent (Qualified) Persons as defined the Securities Ruling NI43-101 and associated guidelines for the reporting of Mineral Resources and Ore Reserves.

The data that was provided to the author by the Client was deemed upon desk top review to be of sufficient quality by SGC to enable the review documented by this report. The author is not aware of any critical data that has been omitted so as to be detrimental to the objectives of this report. There was sufficient data provided to enable credible and un-constrained interpretations to be made in respect of the data in question.

XAM advises that there is no knowledge of any factors or liabilities associated with the project which are detrimental to its economic value. All aspect of the project (beyond the Mineral Resource Estimation completed by SGC) are the responsibility of the Client and are outside the scope of work for Spiers Geological Consultants.

Personnel of XAM (and its associates) with dominant input into the formulation of the domaining approach utilised in the estimation includes (but is not limited to) the following:

1. Mr Mat Brown – Chief Geologist of XAM.
2. Mr Paul Dunham – Consulting Geologist.

SGC has no prior association with XAM in regard to the mineral assets that are the subject of this report, other than as an independent consultant.

SGC is independent of XAM, its directors, senior management and advisers and have no economic or beneficial interest (present or contingent) in any of the assets being reported on. SGC will be remunerated on a time and materials basis which is not dependent on the findings of the Independent Technical Report. None of the individuals employed or contracted by SGC are officers, employees or proposed officers of XAM or any group, holding or associated company of XAM.

To the best Mr Spiers knowledge, neither SGC, himself and / or other related parties have any conflict of interest with by XAM in accordance with the transparency principle set out by the NI43-101 and supported by TSX rulings and guidance/s.

In relation to the above statement, Mr Spiers holds 750,000 ordinary shares in the ASX listed XAM entity purchased on market in accordance with the XAM trading policy (guidance notes 27). The aforementioned shareholding does not constitute a material holding in the company in question.

SGC give XAM permission to file this report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to provincial securities legislation. Except for the purposes legislated under provincial securities law, any other use of this report by any third party is at that party's sole risk.

6.1 Scope of Work

Southways Investments Pty Ltd, trading as Spiers Geological Consultants was engaged on the 1st of October 2020 by XAM (the Client) to provide geology services to the geology team located at the Kharmagtai Project, Mongolia or nominated related and third parties located internationally.

The scope of work took the form of a staged investigation whereby the following applied:

1. Stage One – Data familiarisation, validation, and compilation, QAQC review and drill-hole planning and review.
2. Stage two – Project geological interpretation, spatial analysis, and resource estimation with a view to public release by way of competent persons' status into the Australian and North American markets, including reporting according to the NI43-101 and CIM definition standards and guidelines for the reporting of Mineral Resources and Mineral Reserves.

6.2 Project Team

This Report was prepared by the Qualified Persons listed in the following section. The Qualified Persons nominated as key contributors for the report sections as noted:

- Robert Spiers, BSc Hons Double Major Geology & Geophysics is responsible for section/s 3, 4, 5, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24 and appendices 1 through to 11.
- Mat Brown, BSc Hons Major Geology is responsible for co-contributions to section/s 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 and appendices 4 and 11.
- Andrew Goulsbra, co-contributions to section/s 18, Metallurgical considerations.

Co-contributors associated with and under the direct employ of XAM included (but are not limited to) the following:

- Amarjargal Davaadorj MSc, Applied Earth Sciences, co-contributions to section/s 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 and appendices 4 and 11.
- Naran Judger, technical support and GIS administrator, co-contributions to section/s 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 and appendices 4 and 11.

- Enkhorgil Dashdeleg BSc Geology and Project Geologist of Kharmagtai project – co-contributions to section/s 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 and appendices 4 and 11.
- Ochirkhuyag Baatar, MSc of Geology, Certified Professional geologist of AIPG, and Exploration manager, external laboratory check sample result compilation – co-contributions to section/s 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 and appendices 4 and 11.

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

6.3 Reliance on Other Experts

The author of this report is an Independent Qualified Person and has relied on datasets and reports that were provided by XAM representatives and project consultants to support the interpretation of exploration results discussed in this report and the subsequently produced Global Mineral Resource Estimates.

The data that was provided to the author by the Client was deemed to be of sufficient quality upon desk top review by SGC to enable the review documented by this report. The author is not aware of any critical data that has been omitted so as to be detrimental to the objectives of this report. There was sufficient data provided to enable credible and un-constrained interpretations to be made in respect of the data in question.

XAM advises that there is no knowledge of any factors or liabilities associated with the project which are detrimental to its economic value. All aspect of the project (beyond the Mineral Resource Estimation completed by SGC) are the responsibility of the Client and are outside the scope of work for Spiers Geological Consultants.

Personnel of XAM (and its associates) with significant input into the formulation of the domaining approach utilised in the estimation includes (but is not limited to) the following:

1. Mr Mat Brown – Chief Geologist of XAM.
2. Mr Paul Dunham – Consulting Geologist.

6.4 Consents

6.4.1 Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement) and CIM Definition Standards which direct that any Mineral Resource and Mineral Reserve estimates and any supporting technical reports must be prepared by or under the direction of a Qualified Person, as that term is defined in NI 43-101.

6.4.2 Report name

Mineral Resource Estimation Kharmagtai Project, Mongolia

Supplier of Mineral Resource Estimates - Spiers Geological Consultants (SGC)

Kharmagtai Projects

February 2nd, 2022

6.4.3 Statement

I Robert Huon Spiers confirm that I am the Competent Person (and Qualified Person in relation to the CIM Definition Standards, 2014) for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I have read and understood the requirements of the 2014 Edition of the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Qualified Person(s) as defined by the CIM Definition Standards in that I am able to face peers and demonstrate competence and relevant experience in the commodity, type of deposit and situation under consideration. If doubt exists, the person must either seek or obtain opinions from other colleagues or demonstrate that he or she has obtained assistance from experts in areas where he or she lacked the necessary expertise.
- I am a Member of the Australian Institute of Geoscientists.
- I have reviewed the Report to which this Consent Statement applies.

I am a full-time employee of Spiers Geological Consultants and have been engaged by Xanadu Mines to prepare the documentation for Mineral Resource Estimates for the Kharmagtai Projects on which the Report is based, for the period ended as of 2nd of February 2022.

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and/or Ore Reserves.

I Mathew Brown confirm that I am the Competent Person (and Qualified Person in relation to the CIM Definition Standards, 2014) for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I have read and understood the requirements of the 2014 Edition of the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Qualified Person(s) as defined by the CIM Definition Standards in that I am able to face peers and demonstrate competence and relevant experience in the commodity, type of deposit and situation under consideration. If doubt exists, the person must either seek or obtain opinions from other colleagues or demonstrate that he or she has obtained assistance from experts in areas where he or she lacked the necessary expertise.
- I am a Member of the Australian Institute of Geoscientists.
- I have reviewed the Report to which this Consent Statement applies.

I am a full-time employee of Geological Analytica and have been engaged by Xanadu Mines on an on-going basis to prepare the documentation for Mineral Resource Estimates for the Kharmagtai Projects on which the Report is based.

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and/or Ore Reserves.

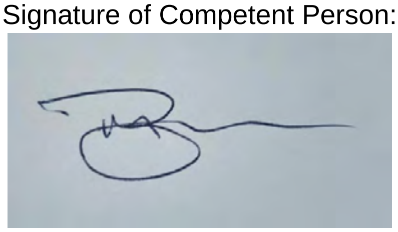
6.4.4 Consent

I consent to the use of this Report and the resource upon which the report is based as company internal documents (and associated) by the directors of Xanadu Mines

Signature of Competent Person:		Date:
		02/02/22
Professional Membership: (insert organisation name) Australian Institute of Geoscientists (MAIG)		Membership Number: 3027

Additional deposits covered by the Report for which the Competent Person signing this form is accepting responsibility: N/A

Additional reports related to the deposit for which the Competent Person signing this form is accepting responsibility: N/A

Signature of Competent Person:		Date:
		02/02/22
Professional Membership: (insert organisation name) Australian Institute of Geoscientists (MAIG)		Membership Number: 6543

Additional deposits covered by the Report for which the Competent Person signing this form is accepting responsibility: N/A

Additional reports related to the deposit for which the Competent Person signing this form is accepting responsibility: N/A

7 Property Description and Location

The Kharmagtai Project consists of multiple copper-gold porphyries within a ~60km^2 mining lease in the South Gobi region of Mongolia. This report summarises the geology of the Kharmagtai project, with a focus on features relevant to the current mining studies.

The Kharmagtai Project is located approximately 420km southeast of the capital, Ulaanbaatar and 120km northwest of the Oyu Tolgoi copper-gold deposit in the Southern Gobi District, Mongolia (Figure 3). The Project is access via sealed roads from Ulaanbaatar to Tsogt Ovoo and 60km of unsealed roads from Tsogt Ovoo to Kharmagtai and takes approximately six hours to drive. High voltage power transmission lines run 37km from the project and an active railway runs from Tavan Tolgoi to Sainshand, within 10km of the project.

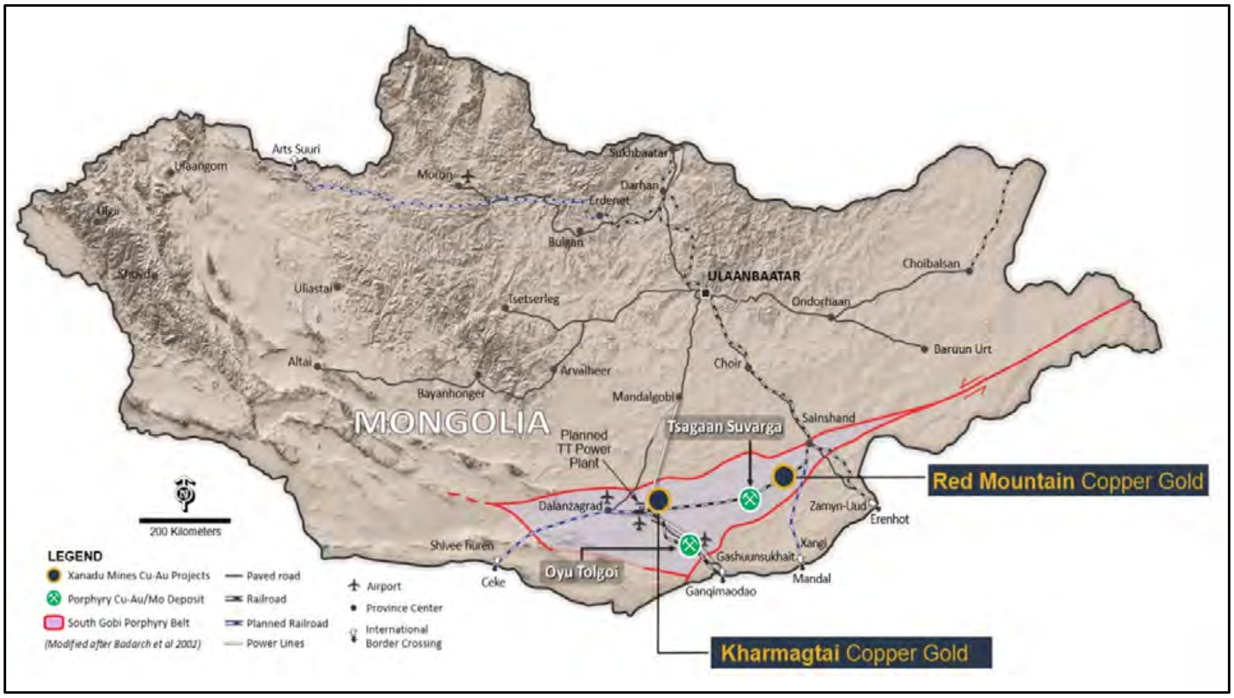


Figure 3: Xanadu Mining - Kharmagtai Project location plan.

Kharmagtai consists of a series of variably mineralised Carboniferous intrusive rocks hosted within Devonian to Carboniferous volcanoclastic sediments. These intrusive rocks form the Kharmagtai Intrusive Complex "KIC" emplaced during district scale deformation of the Middle Palaeozoic Gurvansaikhan Belt. Oscillation between north-south compression and transpression created a localised vertical dilational environment allowing space for the KIC and ultimately copper-gold mineralisation. Approximately 60% of the project area is covered by a shallow Permian basin of conglomerates, mudstones, and siltstones. This basin ranges up to 54m deep with an average depth of 18m.

Copper and gold mineralisation occurs as porphyry stockwork mineralisation (disseminated and veined copper sulphides), overprinted by copper bearing tourmaline breccias and finally late-stage gold rich epithermal carbonate base metal veins.

There are six discrete mineralised porphyry deposits identified to date and numerous additional exploration targets where the key features of mineralised porphyries have been identified (Cu-Au, veining and alteration). Three of these mineralised porphyries (Stockwork Hill, White Hill and

Copper Hill) have had historical resource estimations generated and the 2021 estimation will include a further three porphyry centres.

In 2018 the names for the three main deposits were anglicised. Altan Tolgoi became Stockwork Hill, Tsagaan Sudal became White Hill and Zesen Uul became Copper Hill. Some tables in this report refer to the original names.

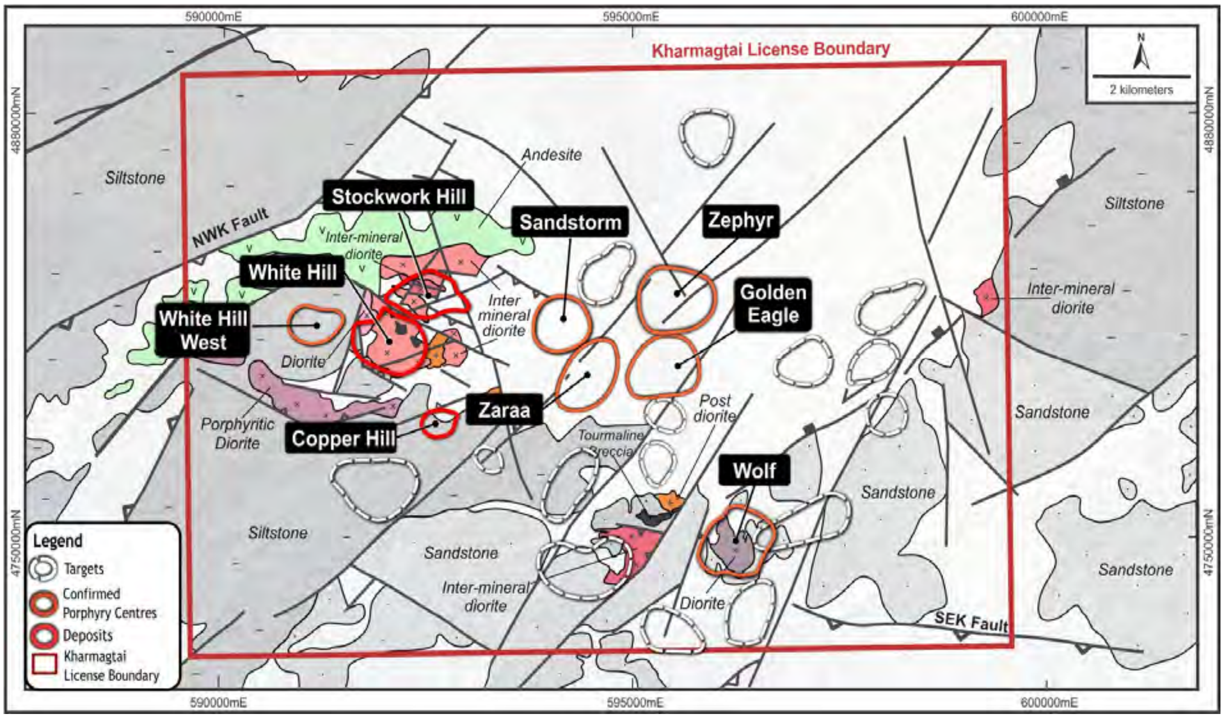


Figure 4: The Kharmagtai Project Mining Lease with geology and location of mineralised porphyry centres. XAM data, drafted by Naran Judger, 2021.

7.1 Mineral Tenure

The Property is covered by Mining Licence 17387A as shown in Figures 4, 5 and Table 5. The tenement's status has not been independently verified by SGC (Qualified Person/s).

Title to the Property is held by Oyut Ulaan LLC, a Mongolian registered company that is 90% owned by Xanadu's joint venture company, Mongol Metals LLC. The remaining 10% of Oyut Ulaan LLC is owned by QGX Ltd a private company registered in Canada.

In early 2014, 90% of the Kharmagtai project was acquired by Mongol Metals LLC from Turquoise Hill Resources. Xanadu was granted the right to earn up to 85% of Mongol Metals LLC by expenditure on the Property.

At the date of this report, Xanadu had met all expenditure necessary to own 85% of Mongol Metals, equal to a 76.5% beneficial interest in the whole project.

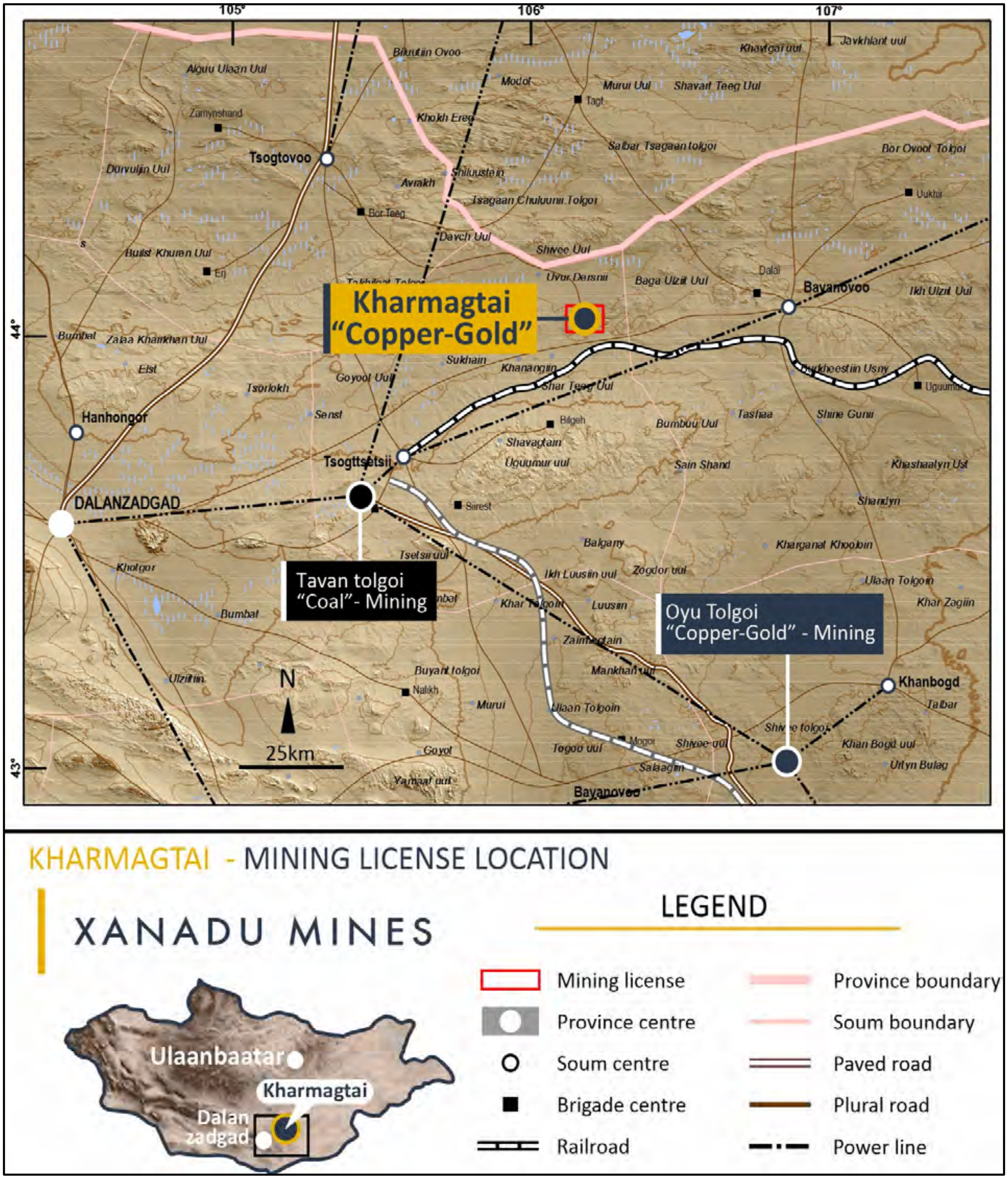


Figure 5: Exploration permits and location plan of Xanadu's Kharmagtai Project. XAM data and MRAM public data, drafted by Naran Judger, 2021.

The area and geographic coordinates for the Kharmagtai permit are summarised in Table 5.

Table 5: Kharmagtai Mining Licence details.

Kharmagtai		
Tenement type: Mining License (MV-017387) Company: Oyut-Ulaan LLC Date granted: 27 September 2013 Validity: 30 years Area: 6,647.05 ha (66.5 km^2)		
Point	**Longitude East (WGS-84)**	**Latitude North (WGS-84)**
A	106° 14’ 31.36”	44° 00’ 39.46”
B	106° 07’ 5.36”	44° 00’ 39.45”
C	106° 07’ 5.36”	44° 04’ 16.46”
D	106° 14’ 31.36”	44° 04’ 16.46”

7.2 Property Rights and Obligations

Rights and obligations for mineral tenure are governed by the Minerals Law of Mongolia introduced in 2006. Several amendments to the Law have been subsequently enacted, including some key changes in 2014.

Mining licences are granted for a period of 30 years, extendable twice, for 20 years each time. A mining license holder has the right to conduct mining activities throughout the licence area and to construct structures within the licence area that are related to its mining activities. All such activities must be conducted in compliance with the 2006 Minerals Law and relevant Mongolian laws pertaining to health and safety, environment protection and reclamation.

Upon the expiration of a mining licence, the licence and the rights under such licence revert to the Government of Mongolia. In the case of all minerals other than coal and common construction minerals (e.g., sand and gravel), annual licence fees of US$15.0 are payable per hectare of the relevant mining licence area. A mining licence is subject to cancellation if applicable licence fees are not paid on time or other requirements under the 2006 Minerals Law or other relevant laws are not satisfied.

To receive a mining licence, an exploration licence holder must submit an application to the MRPAM together with, among other documents, an environmental impact assessment and a resource report. Holders of mining licences must also prepare environmental protection and reclamation plans and satisfy various reporting and security deposit requirements. Obligations of a mining licence require submitting a feasibility study (as defined under Mongolian law) on the development of the deposit prepared by an accredited technical expert within one year of obtaining the mining licence; ensuring that those feasibility studies include detailed information on the transportation of mining products, development of infrastructure, and funds required for mine restoration and closure work.

7.3 Royalties and Encumbrances

Mongolia’s mining ministry imposes a 5% royalty on all minerals other than coal that are sold, shipped for sale, or used. In 2010, the Mongolian parliament introduced a new surtax royalty, effective from 1 January 2011. Under the new two-tier system, an incremental surtax royalty is imposed on the total sales value of 23 minerals in addition to the standard flat rate. The royalty amount varies depending on the mineral, its market price and the degree of processing. Surtax rates for copper and gold are shown in Table 6. It should be noted that that several companies operating mines in Mongolia and shipping concentrates have been able to renegotiate these terms to lower levels.

Table 6: Mongolian Government Surtax Royalty for Copper and Gold.

Mineral	Unit of measure	Future market price (US$)	Surtax Royalty rates (%)		
			Ore	Concentrate	Product
Copper	Tonnes	0-5000	0	0	0
		5000-6000	22	11	1
		6000-7000	24	12	2
		7000-8000	26	13	3
		8000-9000	28	14	4
		9000 and above	30	15	5
Gold*	Troy ounces	0-900			0
		900-1000			1
		1000-1100			2
		1000-1200			3
		1200-1300			4
		1300 and above			5

*Gold that is sold to the Mongol Bank is charged at a flat royalty rate of 2.5%, regardless of market price.

7.4 Environmental Liabilities

In regard to the potential for environmental liabilities, the Qualified Person/s takes at face value the information supplied to the Qualified Person/s by the Client (XAM).

In relation to the aforementioned statement above, the Client has indicated to the Qualified Person, that there are no known environmental liabilities on the Property.

7.5 Other Potential Significant Factors and Risks

In regard to the potential for other potential significant factors and risks, the Qualified Person/s takes at face value the information supplied to the Qualified Person/s by the Client (XAM).

In relation to the aforementioned statement above, the Client has indicated to the Qualified Person, that there are no other environmental, permitting, legal, title, taxation, socio-economic, marketing, and political or other relevant issues, liabilities and risks associated with the Project at this time that may affect access, title or the right or ability to perform the work recommended in this Report within the Project area.

8 Accessibility, Climate, Local Resources, Infrastructure and Physiography

8.1 Accessibility

Road access to the area follows a paved road from Ulaanbaatar requiring six hours of travel time, with the last 1.5 hours on approximately 60 km of unsealed roads. The soum (sub-province) centre of Tsogt Tsetsii is situated approximately 60 km southwest of the Project area and is serviced by daily flights from Ulaanbaatar requiring 45 minutes travel time, (Figure 6).

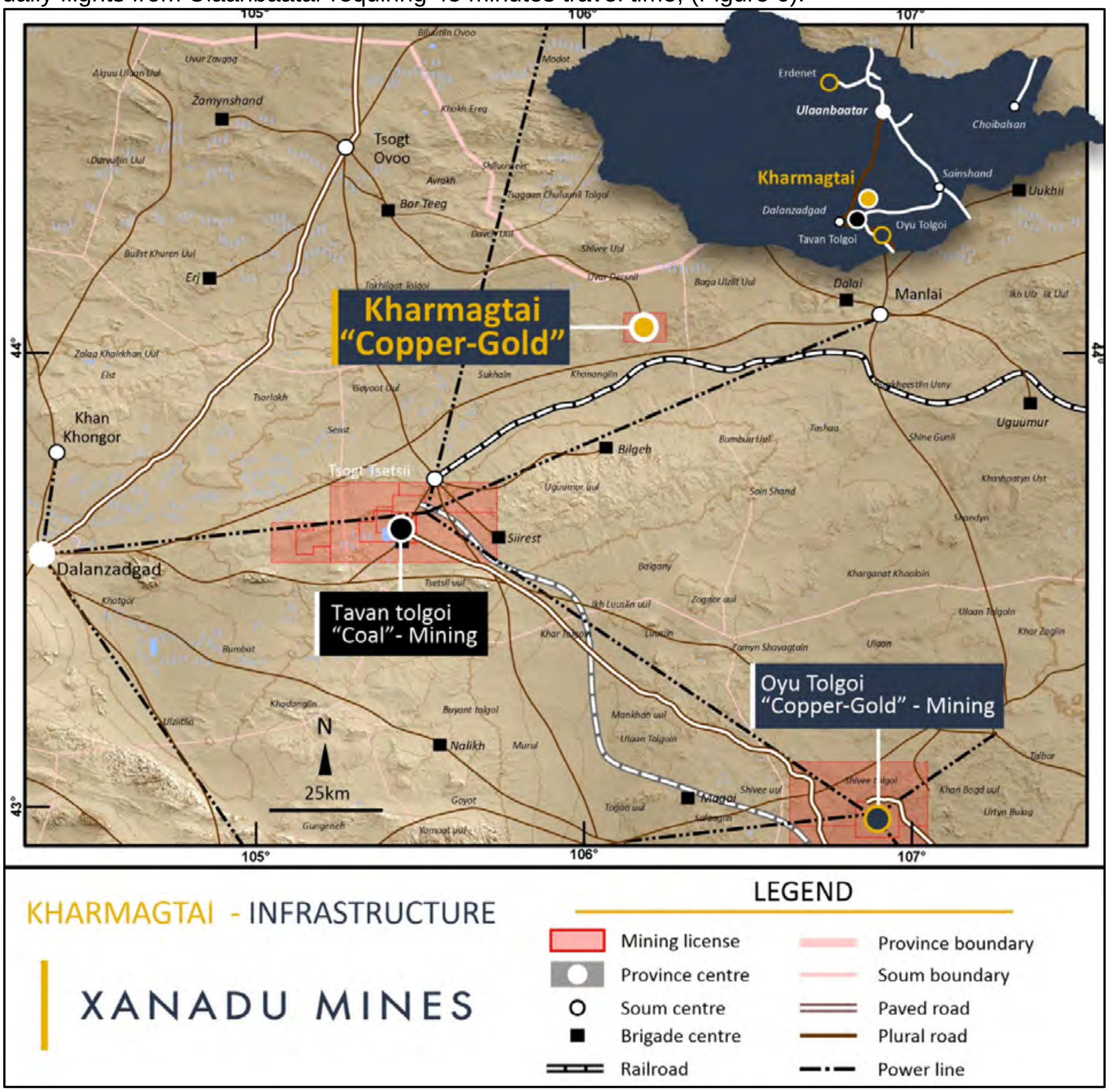


Figure 6: Kharmagtai Project access map. XAM data and MRAM public data, drafted by Naran Judger, 2021.

Xanadu exploration camp (Figure 7) is located approximately 5 km southwest of White Hill, just outside the southwest corner of the Mining Licence.

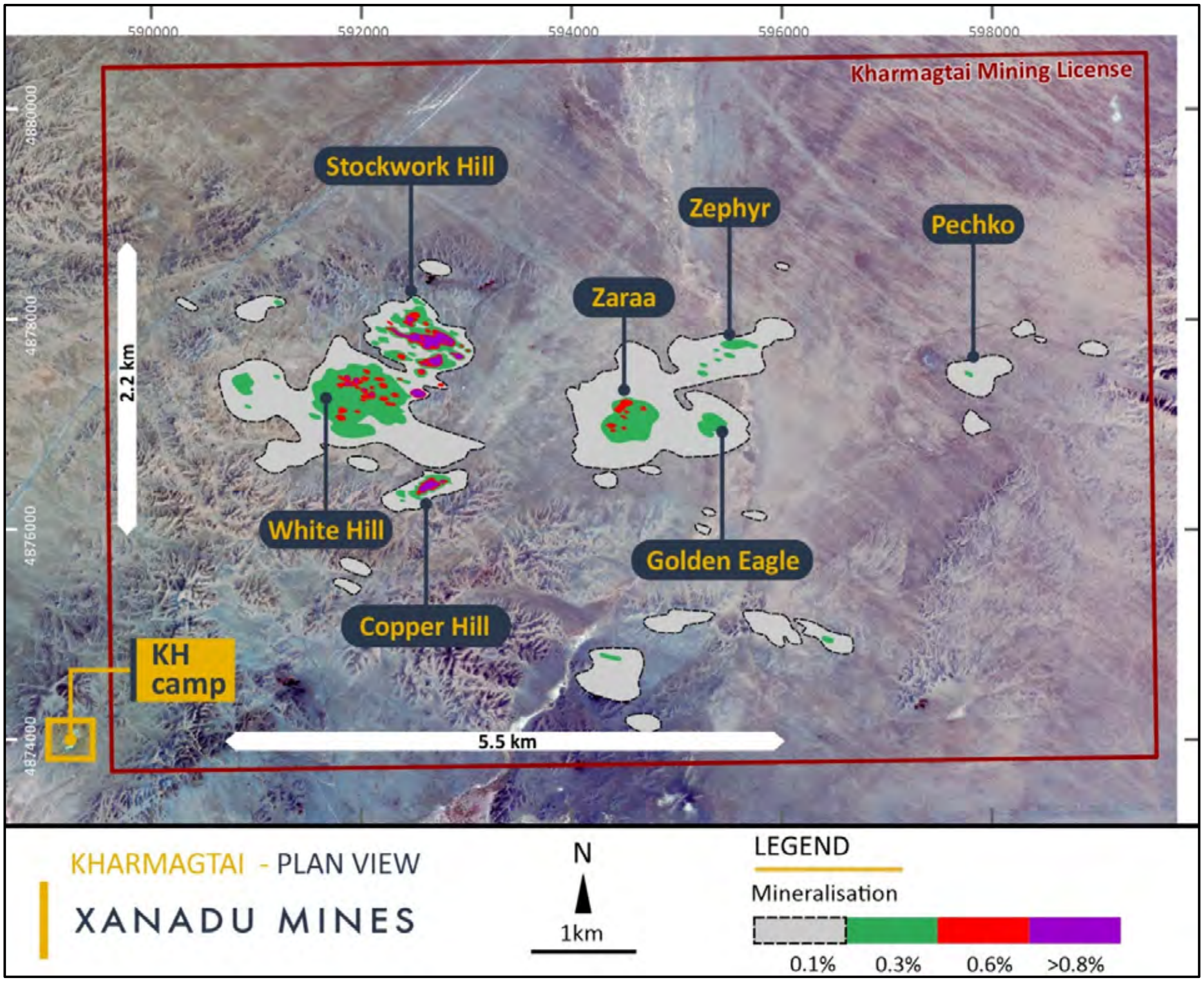


Figure 7: Location of Xanadu Exploration Camp (UTM WGS 84 Zone 48N). XAM data, drafted by Naran Judger, 2021.

8.2 Climate

The Property is located within the Gobi Desert, an area classified as a "cold desert" climate. The region experiences generally arid continental climatic conditions, with temperatures varying between +30°C and -30°C and average rainfall around 194 mm. Most rainfall occurs within the summer months from May to September. Due to low humidity and high winds, snow accumulation in winter is limited to isolated drifts, with generally very shallow to no snow cover away from these drifts.

The Qualified Person believes that the climate of the Project area presents no risk to the development of the Project. Exploration activities such as diamond drilling may be conducted year-round; however, some other ground exploration activities may be seasonally specific. Mine operations in the region can operate year-round with supporting infrastructure.

8.3 Physiography

Topography in the licence area is subdued and characterised by flat gravel covered plains and low undulating hills which range from 1,360 m to 1,250 m above sea level (Figure 8). Vegetation is sparse with low shrubs and grassy plains.

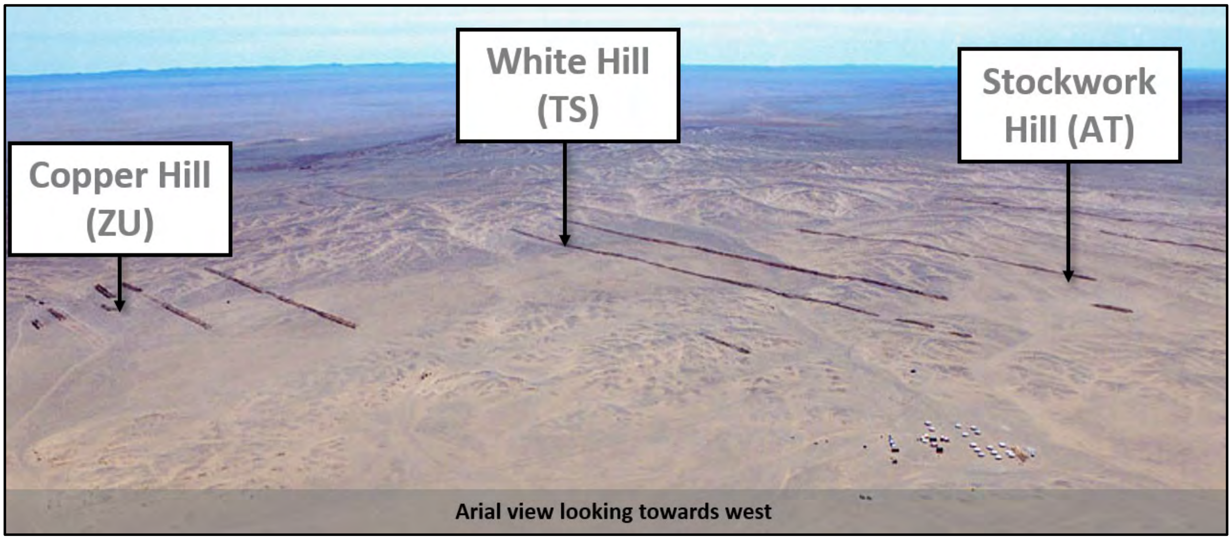


Figure 8: Typical terrain at Kharmagtai Project area. Photo by Douglas Kirwin, 2001.

8.4 Local Resources and Infrastructure

The Property lies approximately 140 km east-northeast of the Omnogovi Aimag capital, Dalanzagrad (population 19,400 in 2011). A paved road connects Dalanzagrad and Ulaanbaatar, and a new airport with a paved runway was constructed in 2007. Two major mining projects are also located within 150 km of the Property: The Tavan Tolgoi coking/thermal coal mine (65 km southwest) and the Oyu Tolgoi copper-gold mine (125 km south-southeast). A railway line from the Tavan Tolgoi Coal Mine to link to the Trans-Siberian Rail Line in Sainshand runs within 10km of the southern margin of Kharmagtai Lease.

One major infrastructure project of relevance to the Property are in the planning/feasibility stage, a proposed 450 MW coal fired power station at Tavan Tolgoi, which is intended to supply power to the Oyu Tolgoi mine. Japan’s Marubeni Corporation was awarded the tender in February 2016 (The Asia Miner, 11 October 2016), and construction is expected to take four years.

A 50 MW wind farm is operational at Tsogt Tetsii (60 km southwest of the Property).

The current mining licence provides for sufficient surface rights for mining operations. Given the topography and climate, there are no expected impediments to the siting of mining infrastructure (process plant, tailings storage facilities, waste dumps etc). Xanadu has defined by drilling, and registered with the government, sufficient groundwater to support a mining operation.

It is anticipated that the workforce for the project would be a mixture of expatriate technical managers and locally trained mining and processing staff. As a result of significant mining in the region it is anticipated a competent local workforce will be available.

9 Project History

The Kharmagtai project has had an episodic history that is summarised in Figure 9. The Kharmagtai Project was identified by a joint Mongolian and Eastern Block exploration expedition between 1960 and 1975. The obvious outcropping porphyry system at White Hill “WH” was identified and drilled. A Russian resource estimate was completed with 193Mt @ 0.25% Cu based on seventeen shallow (max 250m) vertical drill holes.

Between1991 and 1995 the Japanese Government via JICA and MMAJ were invited by the Mongolian Government to explore in the Southern Gobi. Kharmagtai was re-identified as a potential porphyry project.

Between 1996 and 1999 Quincunx ("QGX") explored within the project area, originally for replacement style gold within the sediments in the south, but soon pivoted to the outcropping porphyries at WH and Stockwork Hill "SH".

In 2001 Ivanhoe Mines Mongolia ("IMMI") Joint Ventured into the project and began systematic rock-chip, trenching and drilling over the WH and SH Deposits. Copper Hill "CH" was discovered, and a combined internal resource estimate was produced for SH, WH and CH of 174Mt @ 0.5% CuEq was completed in 2005.

In 2007, Ivanhoe Mines shifted ownership of the project to a subsidiary Asia Gold, who conducted MIMDAS IP and followed this survey up by drilling several deep IP and Mag targets in the basin area.

Xanadu Mines acquired the project in December 2014 and set about expanding the existing resource. In 2015 a resource estimate was released containing 203Mt @ 0.34% Cu and 0.33g/t Au in open pit (0.3% CuEq cut-off) and 56Mt @ 0.47% Cu and 0.59g/t Au underground (0.5% CuEq cut-off).

In 2016 exploration turned to exploring for additional deposits under the shallow cover and in 2017 Golden Eagle "GE", Zaraa "ZA" and Zephyr "ZP" were discovered. In 2018 a mineral resource upgrade was estimated for SH, CH and WH to include an extra 52km of diamond and reverse circulation drilling and the expansion of these deposits. This estimate contained 598Mt @ 0.32% Cu and 0.23g/t Au in open pit (0.3% CuEq cut-off).

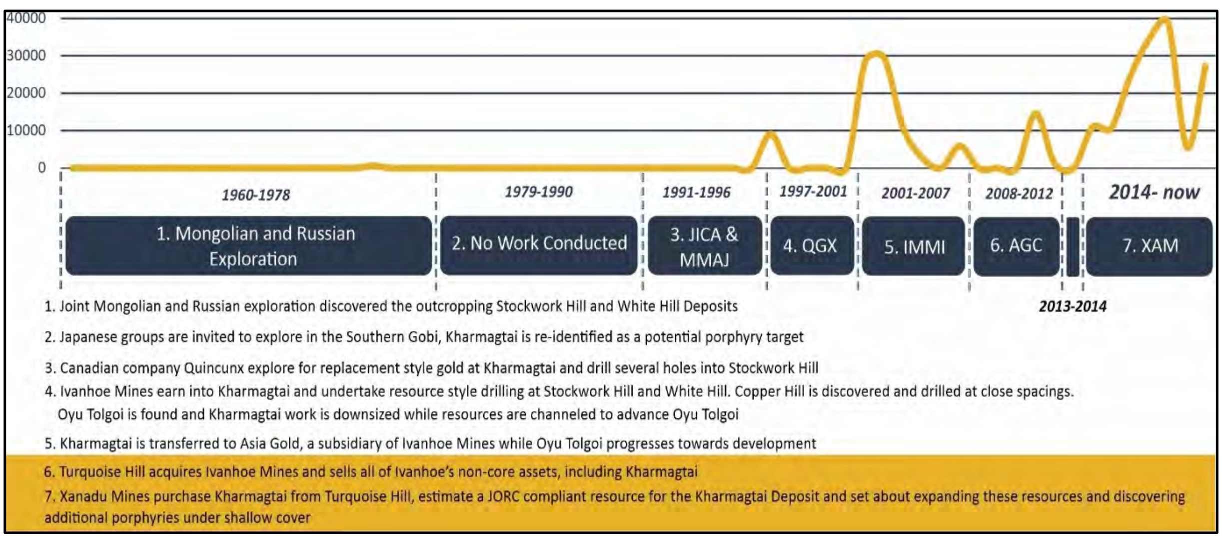


Figure 9: Summary of the exploration history of the Kharmagtai Project.

10 Geological Setting

The tectonics of Mongolia is interpreted as a series of fault-bounded accreted terranes (Badarch et al., 2002). Kharmagtai lies within the Gurvansaikhan terrane, which forms an arcuate belt 600 km long and up to 200 km wide through southern Mongolia (Figure 10).

Kharmagtai is located within the Central Asian Fold Belt (“CAFB”), one of the largest orogenic belts in the world, extending for over 5,000 km from northern China to the Urals in Russia. Contained within this orogenic belt is the southern Mongolian fold system (Ruzhentsev and Pospelov, 1992), which comprises a zone of arc-continent collision that was active during several episodes from the Silurian to Early Carboniferous along the southern margin of the Siberian Craton forming the southern Mongolian geological terranes.

Amalgamation of Mongolian terranes was followed by uplift and thrusting that unroofed the magmatic arcs. Late Carboniferous to early Triassic age continental sediments were deposited in thrust-controlled foreland basins (Edel et al., 2014). Extensive intracontinental rifting and subsidence with associated metamorphic core complex development occurred during the late Jurassic to early Cretaceous (Webb et al, 1999), forming syn-rift basins with up to 2 km of sediments, controlled by movement on northeast-southwest faults. These cover rocks preserved earlier formed porphyry deposits from further erosion, and alluvial plain and aeolian red bed deposition continued into the late Cretaceous.

The current geometry and distribution of volcanic belts in southern Mongolia is attributed to post-accretion disruption and dislocation by transpressional faulting related to the Himalayan collision (Cunningham, 2010).

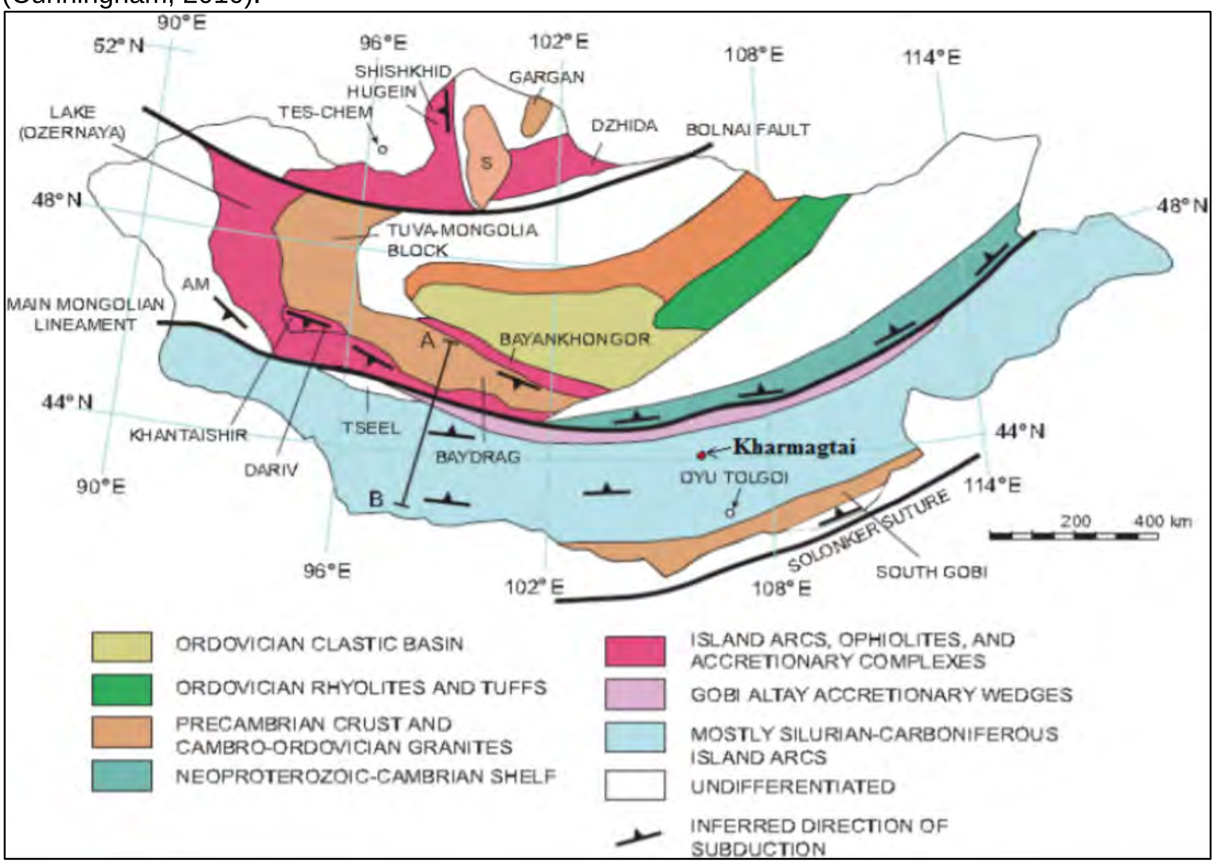


Figure 10: Major terranes and terrane-bounding structures of Mongolia (AMC, 2012).

10.1 Regional Geology

The Kharmagtai District is characterised by an extensive sequence of Devonian to Carboniferous volcanoclastic ash siltstone and sandstone units intruded by the lower to upper Carboniferous rocks of an intrusive nature which are referred to as the Kharmagtai Intrusive Complex (the “KIC”).

The volcano-sedimentary units dip gently to the south-southeast in the southern portions of the district and gently to the north-northwest in the north, ascribing an open antiform geometry likely induced by the intrusion of the Kharmagtai Intrusive Complex and rotation during brittle faulting.

The Kharmagtai Project lies within the Altai and Transbaikal-Mongolian Neoproterozoic to Paleozoic orogenic belts, which consist of accreted terrains of island arc, back arc, ophiolites, accretionary wedges and cratonic fragments between the Siberian Craton to the north, the North China Craton to the southeast, the Tarim Craton to the Southwest, and the East European Craton to the west, (Yakubchuk, 2005). The Transbaikal-Mongolian orogenic belts are thought to have been part of the circum-Pacific orogenic belt, detached from the Siberian craton in the Ordovician, resulting in strike-slip duplication, (Sengor, 1993).

10.2 Local / Project Geology

The Kharmagtai Project is hosted within the Gurvansayhan island arc terrane of the southern Mongolian orogenic belt, consisting of volcanic and sedimentary rocks ranging from Ordovician to Carboniferous in age. (Badarch, 2005).

During the Ordovician to Silurian, the area resided within an oceanic setting with mature sedimentation from a continental source or the eroded roots of an arc to the north. The Devonian to Carboniferous periods were dominated by island arc volcanism. The Paleo-Asian Ocean continued to close resulting in arc collision during the Carboniferous, (Lamb, 2001) and were consolidated by late Carboniferous to Permian continental granitic plutons suggesting that amalgamation took place not later than the Carboniferous time, (Yakubchuk, 2005).

Near surface, the Kharmagtai Intrusive Complex describes an ovoid body some 6km by 3km in dimensions elongated in an east-northeast orientation. North-south extension during the Permian has opened broad shallow basins resulting in approximately 60% of the Kharmagtai district being covered by 2 to 54m of conglomerates, siltstones, and mudstones.

Significant advances were made in the understanding of the intrusive history at Kharmagtai based on contribution from Legrasso, 2016 to 2017 (internal company documentation). Previously, intrusive rock types at Kharmagtai were lumped into a series of “monzodiorite” and “quartz-monzodiorite” buckets, despite quartz being invisible in hand specimen resulting in rock naming being arbitrary and dependant on the individual logger which in turn made constructing a 3D geological model challenging.

During 2016, Legrasso undertook an extensive review of the Kharmagtai core focusing on overprinting relationships, mineralisation and alteration and defined a series of intrusive phases with clear features for loggers to use in categorising the different rock types at Kharmagtai (Figure 11). Following this, a complete re-log of the Kharmagtai core library (+150km) was conducted with continual oversight on calibrating individual geologist during the re-log.

10.2.1 Property Intrusive Phases

The re-definition by Legrasso and associated consolidation of logged units broadly resulted in the definition of a chronology of intrusive phases.

The first intrusive phases at Kharmagtai are label Country Rock Porphyry “CRP” and Country Rock Diorite “CRD”. These form the main body of intrusive rock. The first two phases of mineralised intrusive are labelled P1 and P2 displaying the closest links to mineralisation with intense b-veining and texturally destructive alteration. Overprinting these sequences is P3, an orange to red more felsic monzodiorite with weak to moderate b-veining and finally P4, a pale grey, very weakly altered and mineralised monzodiorite as noted in Figure 11.

A series of narrow sills and dykes form late in the intrusive sequence as noted in Figure 11. These units (PMS1 to 4, ANDP, TAND and BAS) intrude into pre-existing structures which juxtapose and offset mineralisation. These dykes create an excellent opportunity to link structures between drill holes as many have clearly visible features distinct to specific dykes (stretched vesicles, trachytic phenocrysts and amygdaloids). These dykes have allowed a more complete understanding of the structural framework for Kharmagtai to be formed.

Figure 11: Chrono-lithostratigraphy of the Kharmagtai Project.

10.2.2 Property Structure

As a result of detailed structural investigations (Oliver, 2016 to 2018) it was observed that the Kharmagtai Intrusive Complex was emplaced in a predominantly compressional to weakly-transpressional (sinistral) deformational framework during the main orogenic stages of the Middle Paleozoic Gurvansaikhan Belt. The mineral system geometry and its internal features indicate a clear structural control dominated by WNW striking reverse faults, producing a 'pop-out' or positive flower structure.

Emplacement of the KIC was probably facilitated by vertical extension and dilation during shortening, rather than during transtension. However, magma generation may plausibly have commenced with transtension, reflected in a broader N-S array of the more felsic porphyry host rocks.

Oscillation between N-S shortening (with vertical extension) and E-W extension within the KIC was a 'transfer' response to cycles of NW-SE shortening and sinistral strike-slip movement on the regional faults (Figure 12).

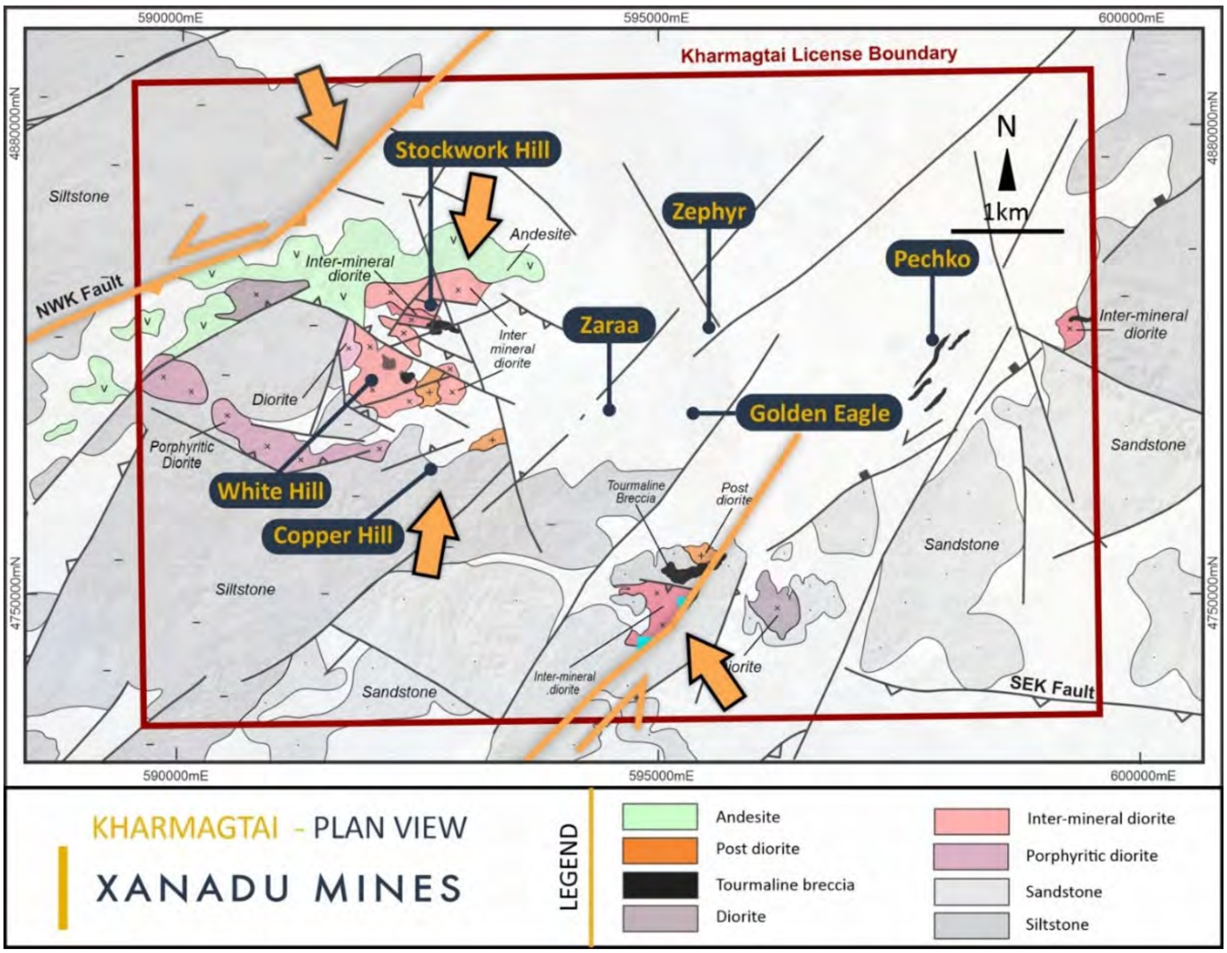


Figure 12: District scale structural framework for emplacement of the Kharmagtai Intrusive Complex. XAM data, drafted by Naran Judger, 2021.

Fault oscillations in turn are a likely reflection of somewhat oblique convergence relative to the orientation of these regional faults. These oscillations explain most of the intrusion and mineralization stages emplacement relating to porphyry stockwork and TBX.

The TBX mineralisation at Stockwork Hill developed by active reverse faulting within a dilatant fault-bend (striking WNW, dipping steeply south), periodically fed by boron-rich magmas, and showing breccia texture variations related to position within the breccia chamber.

Later faulting, again reverse but now including a set of ~ N-S striking faults (and some reactivation on older ones) offset the main Cu-Au mineralization and introduced an epithermal gold-carbonate-base metal (CBM) suite Figure 13.

Truncation of the eastern edge of the Stockwork Hill TBX mineralisation occurred along one or more of these faults, moving the hanging wall up and north-east, and dropping the footwall block down and south relative to the eastern edge.

Although the later faulting suggests a significant change in the deformation regime, this epithermal stage was linked to the final porphyry/TBX stages, as suggested by the spatial distribution of epithermal products and the presence of tourmaline and breccia pipes in telescoped alteration around epithermal conduits.

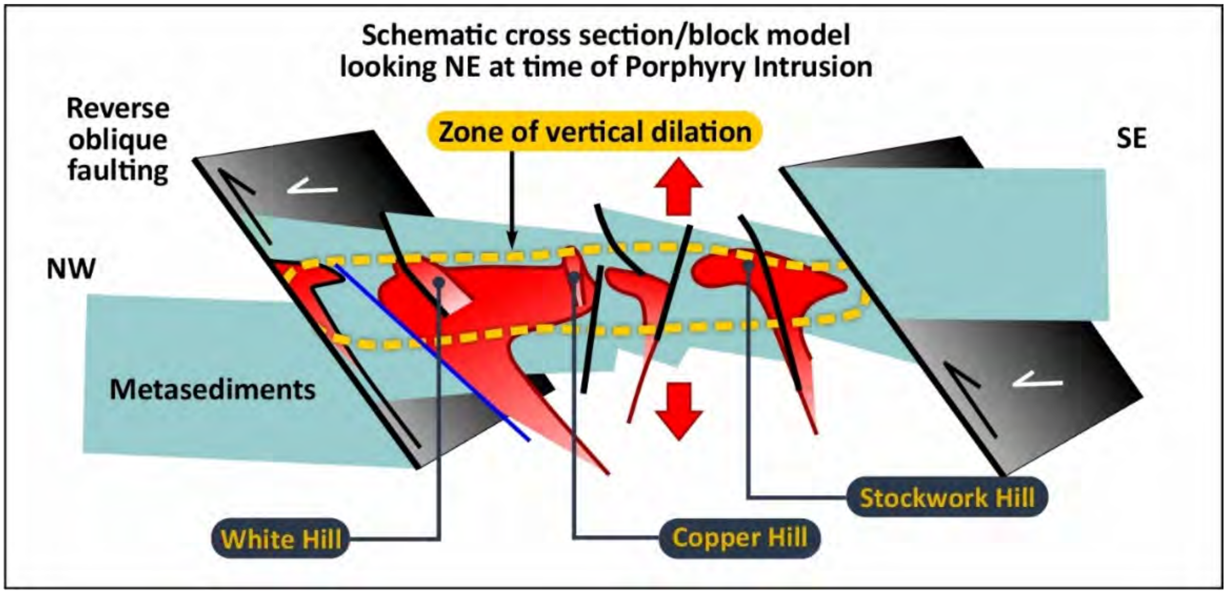


Figure 13: Schematic showing structural framework for emplacement of Stockwork Hill, White Hill and Copper Hill

As noted, oscillation between N-S shortening and E-W extension has created the framework for emplacement of the KIC, porphyry mineralisation at Stockwork Hill, White Hill and Copper Hill, the Tourmaline breccia mineralisation and later dykes and carbonate base mental veins, Figure 14.

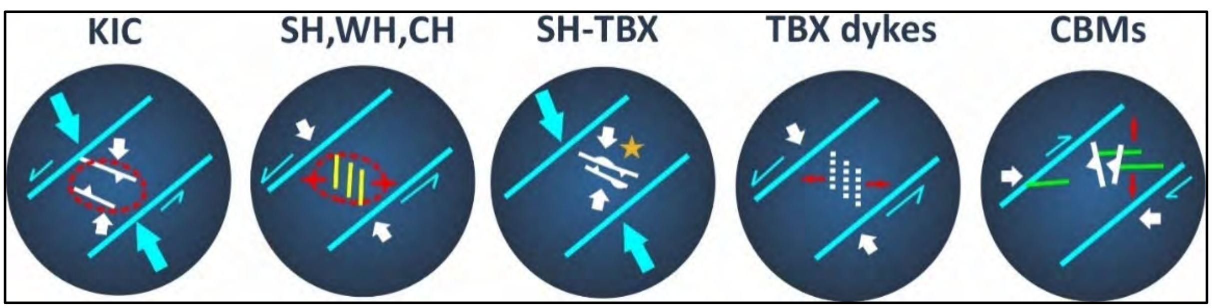


Figure 14: The structural framework for formation of mineralisation at Kharmagtai.

10.2.3 Property Alteration

The alteration observed at Kharmagtai fits broadly into the porphyry alteration model with potassic alteration associated with mineralised intrusive suites surrounded by a phyllic alteration halo and finally a broad propylitic wash, Figure 15.

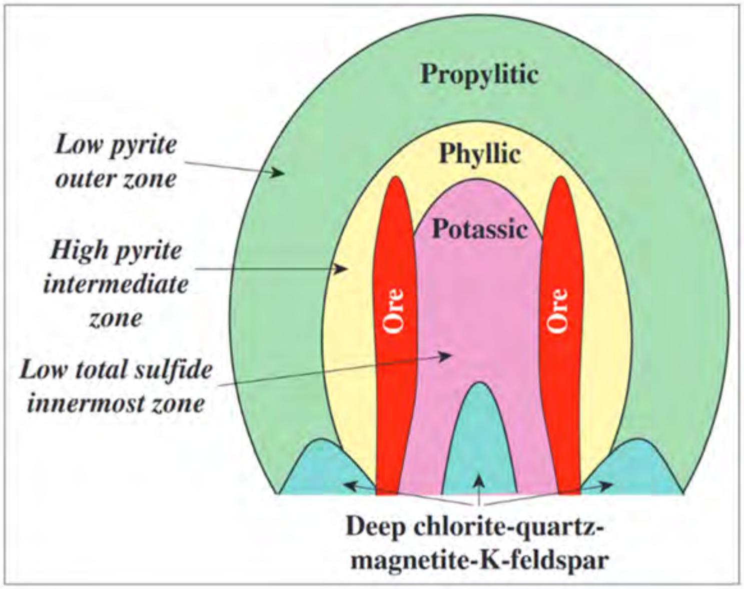


Figure 15: Classic porphyry alteration model adapted from Gilbert and Lowell 1970.

The multiple generations of faulting have juxtaposed these patterns mixing distal and proximal alteration zones making mapping these patterns difficult.

The potassic alteration is exhibited as replacement of mafic phenocrysts by raggy biotite and less commonly reddening of silicates to K-feldspar. Phyllic alteration occurs as moderate to strong replacement of feldspars by white mica, addition of disseminated pyrite and less commonly quartz. The propylitic alteration is most common and forms as chlorite-epidote replacement of mafic and silicates alike. More detail is given on the alteration of each deposit in the deposit geology section of this report.

10.2.4 Property Mineralisation

There are three main styles of mineralisation at Kharmagtai.

- Porphyry Stockwork Mineralisation,
- Tourmaline Breccia Mineralisation,
- Epithermal Mineralisation.

Mineralisation at Kharmagtai is directly related to typical porphyry-style vein and hydrothermal breccia assemblages. These assemblages demonstrate both spatial zonation and temporal overprinting relationships commonly associated with porphyry Cu-Au systems, with multiple overprinting phases of intrusions and mineralisation (“telescoping” characteristics).

All mineralisation occurrences across the Kharmagtai project area demonstrate some (if not all) of the aforementioned mineralisation characteristics.

The principal minerals of economic interest in all Kharmagtai deposits are chalcopyrite, bornite and gold, which occur primarily as infill within the veins and breccia cements, as well as minor chalcocite and gold is frequently intergrown with chalcopyrite and bornite.

Mineralised zones at Stockwork Hill, White Hill, Copper Hill and Zaraa are associated with paragenetically early-stage quartz veins that were intensely developed in and around quartz diorite intrusive rocks. The vein systems manifest as both sheeted vein arrays and stockwork zones, demonstrating clear structural and temporal controls on vein domain morphology.

Late-stage sulphide only veins (chalcopyrite ± pyrite ± bornite) overprint the quartz-sulphide vein assemblages and are commonly associated with higher Cu-Au grades. Visual overprinting relationships indicate that these sulphide-only veins both predate and are locally synchronous with the late-stage tourmaline and sulphide-rich hydrothermal breccias. At the deposit-scale, sulphide mineralisation is zoned from a bornite-rich core outward to chalcopyrite-rich and then outer pyritic haloes, with gold grades closely associated with chalcopyrite and bornite abundance.

10.2.4.1 Porphyry Stockwork Mineralisation

The porphyry deposit model is well understood. While each deposit is different in detail, most follow the typical porphyry theme whereby the copper sulphides are broadly associated with sheeted to stockwork quartz, pyrite, chalcopyrite and bornite veins which are surrounded by disseminated pyrite.

At Kharmagtai this pattern stands, although as the mineralisation is structurally controlled many of the deposits form as sheeted veining within wall rock rather than wrapping around a causative intrusive. There are discussions amongst the geology group at XAM if any causative intrusive has been drilled to date, which has significant implications for the potential scale of the project.

In the standard porphyry model the bulk of copper mineralisation occurs early in the intrusive history and copper input wains over time. At Kharmagtai there appears to be multiple copper events with an early system producing a broad halo of copper bearing quartz veining which has been overprinted by later stage chalcopyrite veins (c-veins). Examples of this are the Southern Stockwork Zone at Stockwork Hill and the Copper Hill deposit, where high-grade copper and gold occurs as earlier b-veins have been re-opened and crosscut by chalcopyrite only veining.

Sulphide species zonation within porphyry deposits is also well understood. In the standard model the core of a deposit is bornite mineralisation, grading outwards/upwards to chalcopyrite mineralisation with a broad halo of barren pyrite. This pattern presumably represents a down temperature chemical process and a relative lack of copper versus sulphur and iron in the system.

At Kharmagtai the zonation is broadly consistent with the accepted sulphide species zonation, although bornite mineralisation is only recently being drilled in the lower portions of Stockwork Hill and to date the other five deposits have very limited bornite. This strongly suggests the drilled portions of the deposits are only the tops of the system and the greater part of the system is yet to be drilled.

Copper to gold ratios of the porphyry stockwork mineralisation average 1% Cu = 1g/t Au in the early stockwork, 1% Cu = 2g/t Au in the higher-grade C-vein upgrade and 1% Cu = 3g/t Au in the bornite zone.

10.2.4.2 Tourmaline Breccia Mineralisation

Tourmaline Breccia “TBX” mineralisation occurs throughout the lease; however, the only mineralised tourmaline breccia of potentially economically significant size occurs at Stockwork Hill. The tourmaline breccia body at Stockwork Hill crosscuts the earlier porphyry mineralisation. The breccia is variably mineralised with a larger body of weakly mineralised breccia containing lozenges of much higher grade at the margins of the breccia. Three different models for formation of the TBX have been postulated and each has implications for resource definition and exploration.

As noted in works by Kirwin, 2020, the TBX has formed as an elongate breccia pipe. Internal variations in fragment size and matrix type within this pipe occur with larger slabby fragments on the ends of the lobe and fine rock flour within the matrix in the core. The model implies mineralisation will be focused around the larger slabby fragments due to increased porosity and less within the core (Figure 16). The aforementioned implied mineralisation geometry is based on observations from numerous mineralised and unmineralized tourmaline breccias from throughout the world.

Works completed by Cooke, 2018 over the Kharmagtai project have invoked a conceptual model closer to the Los Bronces Deposit in Chile within which multiple breccias occur within a cluster appearing to create a suitable host rock for later mineralisation.

Oliver, 2015 has postulated the TBX formed as classic dilatant cavity and related collapse in a bent reverse faulted regime. The investigations undertaken by Oliver, 2015 is based on several weeks of detailed geological logging and mapping at Kharmagtai wrapped around the structural framework provided by Woodcock and Mort (2008) (Figure 17).

Both Kirwin and Oliver's models provide a mechanism to explain the location of higher-grade tourmaline breccia mineralisation at Stockwork Hill, although the current dataset cannot falsify either.

Investigations which are currently underway are anticipated to provide sufficiently consistent data to define the 3D distribution of breccia facies and contribute to understanding the TBX origin. Exploration strategies for TBX style mineralisation would differ significantly depending on the model used to frame drill-hole targeting.

Copper to gold ratios within the tourmaline breccia average 1% Cu = 0.5g/t Au although the silver content of the TBX is generally higher than the stockwork mineralisation.

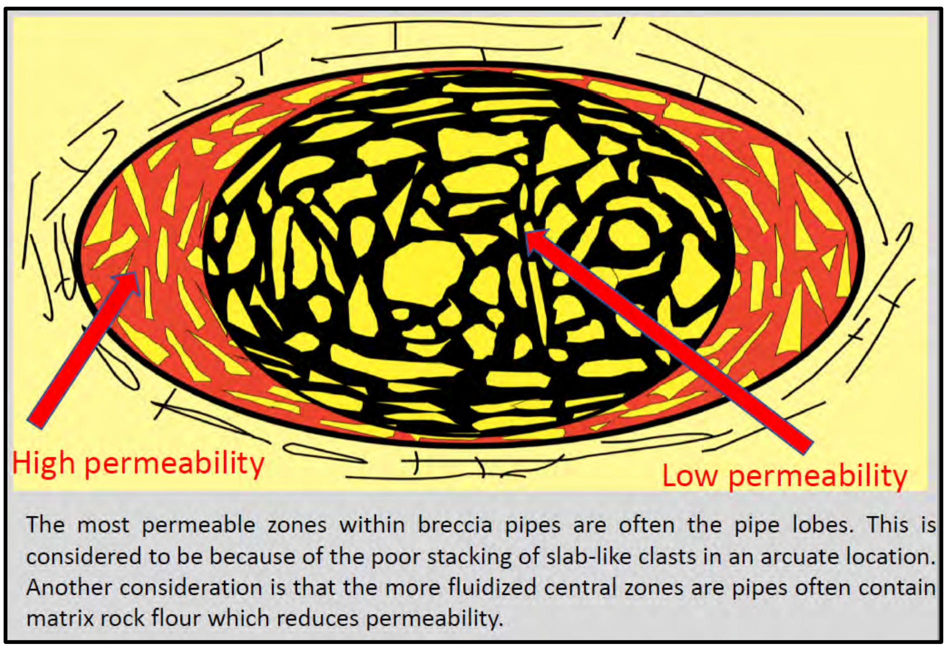


Figure 16: Slide from Kirwin's Frieberg Student Chapter conference, August 2020.

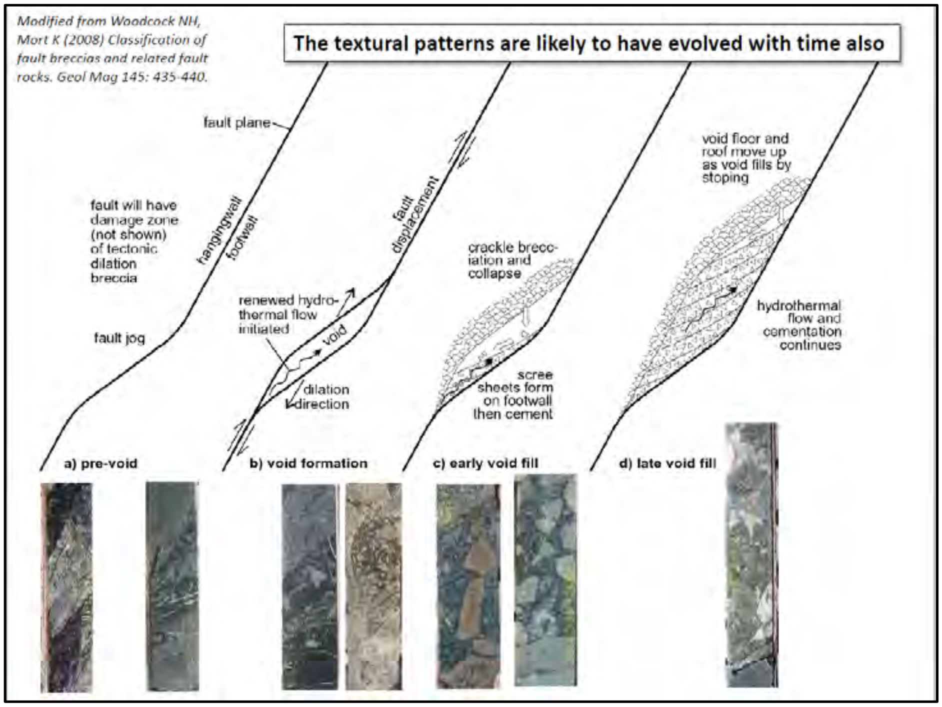


Figure 17: Oliver's model of TBX formation (from November 2015 field report).

10.2.4.3 Epithermal (Carbonate base metal Vein) Mineralisation

The final stage of mineralisation at Kharmagtai consists of carbonate base metal veins which form within late-stage structures cutting all rock types and mineralisation styles. These commonly occur as 10cm to 2m wide veins containing calcite-quartz-siderite-pyrite-chalcopyrite-galena and sphalerite.

Within the vein system, veins often run to 50-100g/t Au, although vein widths and continuity currently preclude economic interest. The chemical signature (Au-Cu-Ag-Pb-Zn-As) of the epithermal veins are useful fault markers and allow mapping of specific structures between disparate drill holes.

11 Deposit Types

There are six known porphyry deposits at Kharmagtai and numerous exploration targets where the key features of a porphyry system have been identified. The geology of the six deposits modelled in the 2021 MRE are described below.

The advances in understanding of intrusive phases, structural framework, and alteration systems at Kharmagtai combined with significant advances in modelling capacities afforded by Leapfrog Software has allowed detailed 3D geological and geometallurgical models to be constructed.

11.1 Geological Models

The following process was used to build the geological framework for the 2021 resource estimate;

1. Composite copper and gold grades to consistent 10m intervals
2. Define grade cut-offs using changes in slope of histograms and cumulative log plots
3. Create raw grade shells at these intervals using implicit numeric modelling (e.g., 800, 1500 and 4000ppm Cu)

4. Define the main geological features of consistent or continuous grade populations and highlight areas of rapid grade truncations indicating possible significant faulting or cross-cutting relationships.
5. Develop major dividing structures in detail using grade, lithology, and structural information. Compare against other available datasets including project geophysics results
6. For each compartment/fault block
    - Group the main lithologies into “like units”
    - Build geological volumes for each unit including country rock hosts and each intrusive ‘phase’ honouring the interpreted emplacement sequence
    - Re-build the grade shells within each compartment using information from the geological shapes to constrain the grade volumes to the major structural compartments.
7. Once each compartment was built, re-assess in context with each other and refined so that the models made geological sense. Ensure the compiled geological framework contains the key controls to the observed grade distributions wherever possible.

11.2 Geometallurgical Domain Models

The geometallurgical models being built for metallurgical sample selection post 2021 MRE have been developed using both alteration zones, sulphide species and oxidation state. The objective is to overlap lithology, alteration, oxidation state and sulphide species for each deposit and select samples from each deposit based on these overlapping domains. The geometallurgical models were not used in the estimation of the 2021 Mineral Resource.

11.3 Alteration Models

The following methodology has been used to define broad alteration domains for each deposit;

1. Composite Al, K and Na to 10m intervals
2. Use Scott Halley’s alteration Al/K/Na charts Halley *et.al*. 2005 to categorise into the following alteration groups for both raw and composite values (Figure 18).
    - Sericite
    - Potassic (K-feldspar + Potassic + Alkali Feldspar)
    - Propylitic (background albite-chlorite-epidote)
3. Compile ASD raw data and group mineralogy using Scott Halley’s grouping methodology
4. Import the alteration groups and ASD groupings into Leapfrog
5. Create interval selections in leapfrog to group “like areas” into the three main alteration types. Sericite takes preference as the presence of sericite is likely to have the strongest influence on metallurgical performance.
6. Build implicit geological models using these categories.
7. Fault these models using the structural frameworks defined by the geological domaining
8. Review and edit these models to ensure a geologically sensible product that honours the geology models.

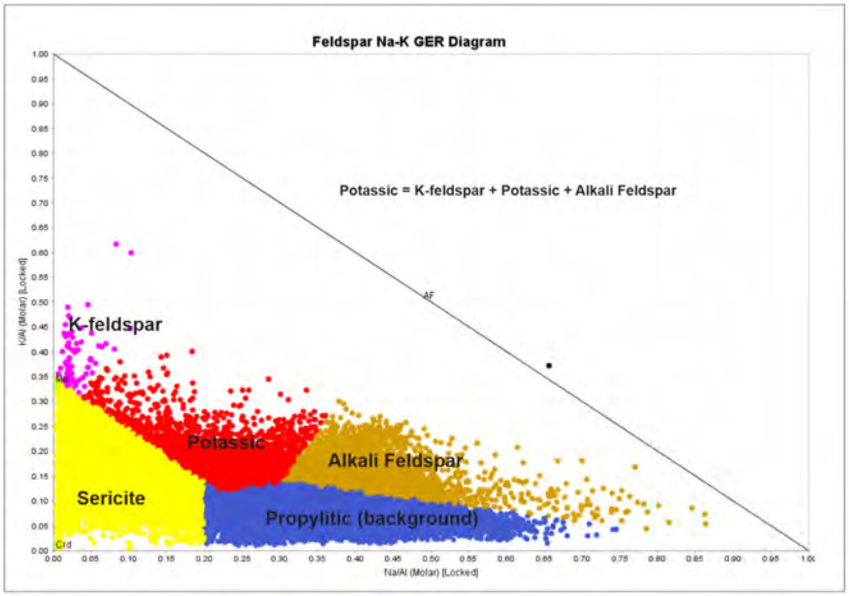


Figure 18: Halley Alteration Classification Scheme (adjusted for Kharmagtai).

11.4 Sulphide Species Models

The following methodology has been used to define the sulphide species for each deposit.

1. Composite Cu and Au values to 10m.
2. Plot both raw and composited Cu and S in ioGAS on x y charts and use the following molecular weight ratios to define domains (Figure 19);
   a. <0.05 = pyrite
   b. Between 0.05 and 0.2 = Pyrite plus chalcopyrite
   c. Between 0.2 and 0.5 = Chalcopyrite plus pyrite
   d. Between 0.5 and 1.2 = Chalcopyrite plus bornite
   e. Above 1.2 = Bornite
   f. Oxide selected based on low S and spatially from 3D review of geological model oxide boundaries.
3. Review these in 3D in Leapfrog and define domains using an interval selection.
4. Build implicit models of these domains.
5. Fault these domains using the structural models defined during the geological modelling process.
6. Review and edit these models to produce a geologically sensible product.

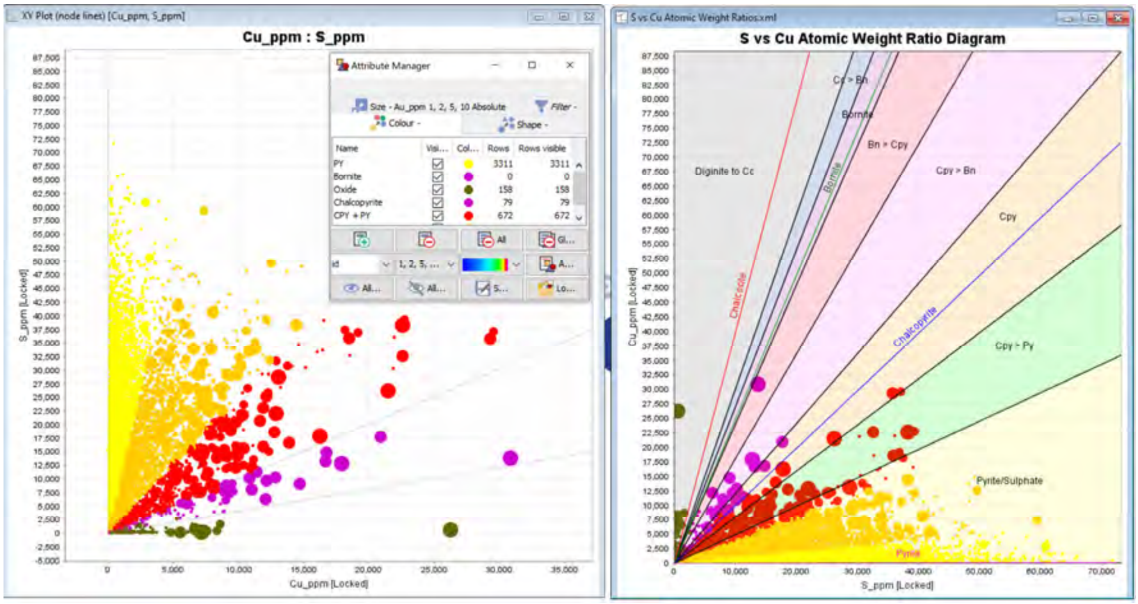


Figure 19: Sulphide Species categorisation scheme for Kharmagtai. Yellow = pyrite only, Orange = pyrite + chalcopyrite, Red = chalcopyrite + pyrite, Pink = Bornite + Chalcopyrite, Brown = Oxide.

11.4.1 Oxide versus Sulphide

Separating the oxide versus sulphide mineralisation is a difficult process as the boundary between domains are transitional and do not form a single narrow surface. The nature of this boundary is not well understood at Kharmagtai and might differ significantly from other parts of the world due to the nature of weathering processes in the Gobi Desert. It is not uncommon to find sulphide at surface and shallow weathering profiles due to the low rainfall and extremely low temperatures for up to six months of the year (0 to -50ºC).

Direct geological logging cannot be used due to intra geologist variations in defining a gradational boundary. For the 2021 resource models a simple sulphur exclusion boundary was selected based on a statistical review of the data combined with a review of the data in 3D. The logged top of fresh rock roughly corresponded with a sharp drop in sulphur content at approximately 2000ppm sulphur. Interval selections were made of oxidised rock based on these criteria then validated through detailed review of the core-photography. Small zones of sulphide/transitional material were included in the oxide zone and some internal variability will be seen due to these inclusions. However, this provides a single, uniform surface to divide oxide and sulphide. More detail will be given in the deposit geology sections below.

12 Deposit Mineralisation and Associated attributes

Section 10 details the approach taken by the Client to establish the scaffold upon which the structural and mineralisation models were attached in order to finalise the geological interpretation and subsequent three-dimensional models to be utilised in the estimation.

12.1 Stockwork Hill

Stockwork Hill is the most complex of the deposits at Kharmagtai and the resource domaining effort has resulted in ten discrete fault blocks of mineralisation. These fault blocks are defined by different mineralisation styles and copper and gold populations (Figure 20). The rationale for each domain and the methodology used to define them is described below.

12.1.1 Lithologies

Host lithologies have a strong control on copper and gold distribution throughout Stockwork Hill (Figures 21, 22 and Table 7). The new (post 2017) logging has sixteen separate lithological units in the primary lithology field. These units were grouped for the purposes of this model into seven blocks based on rock composition, texture and overprinting relationships. The SH_GM field in the lithology data file records this grouping.

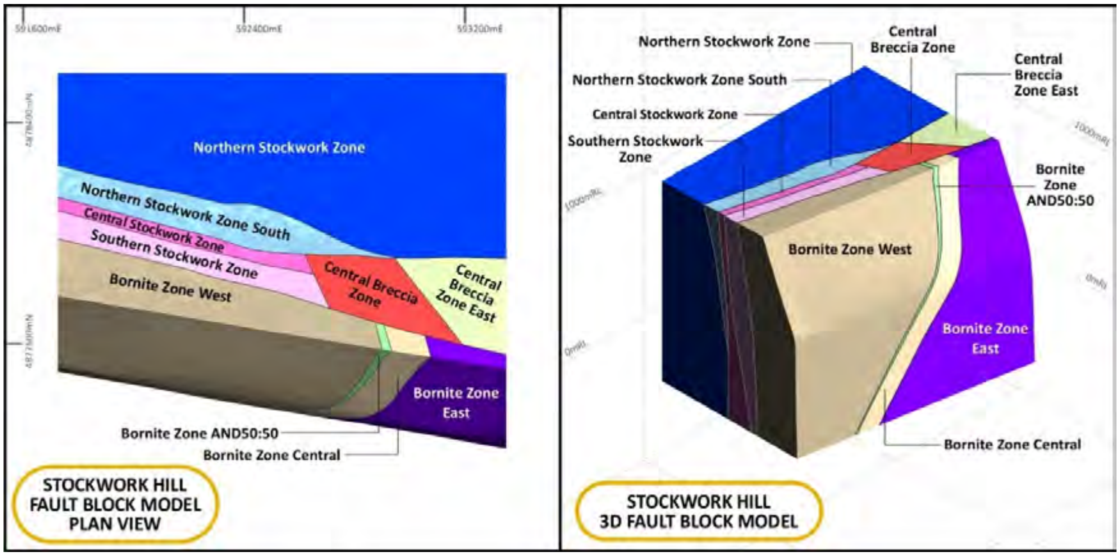


Figure 20: The ten modelled fault blocks within the Stockwork Hill Deposit Geological Domain Models.

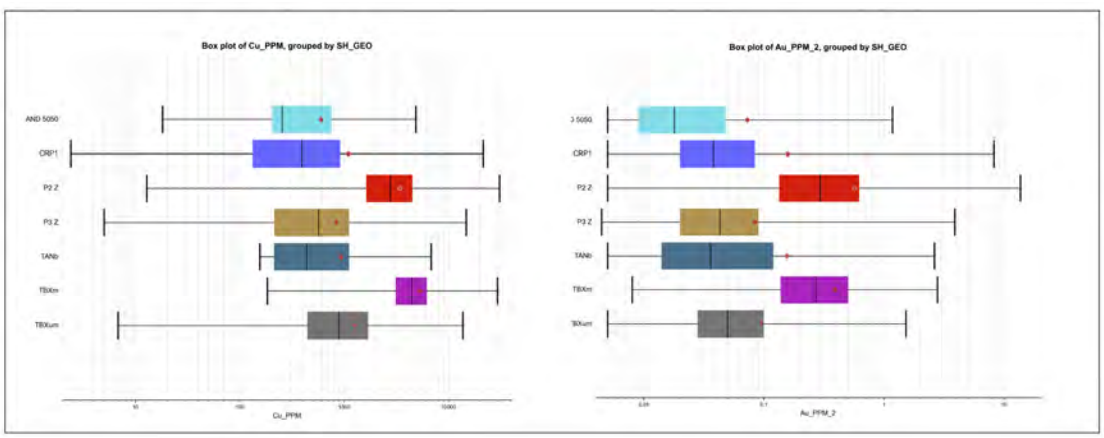


Figure 21: Copper and Gold box plots (log-scale) for the grouped lithological domains at Stockwork Hill based on 10m composite data.

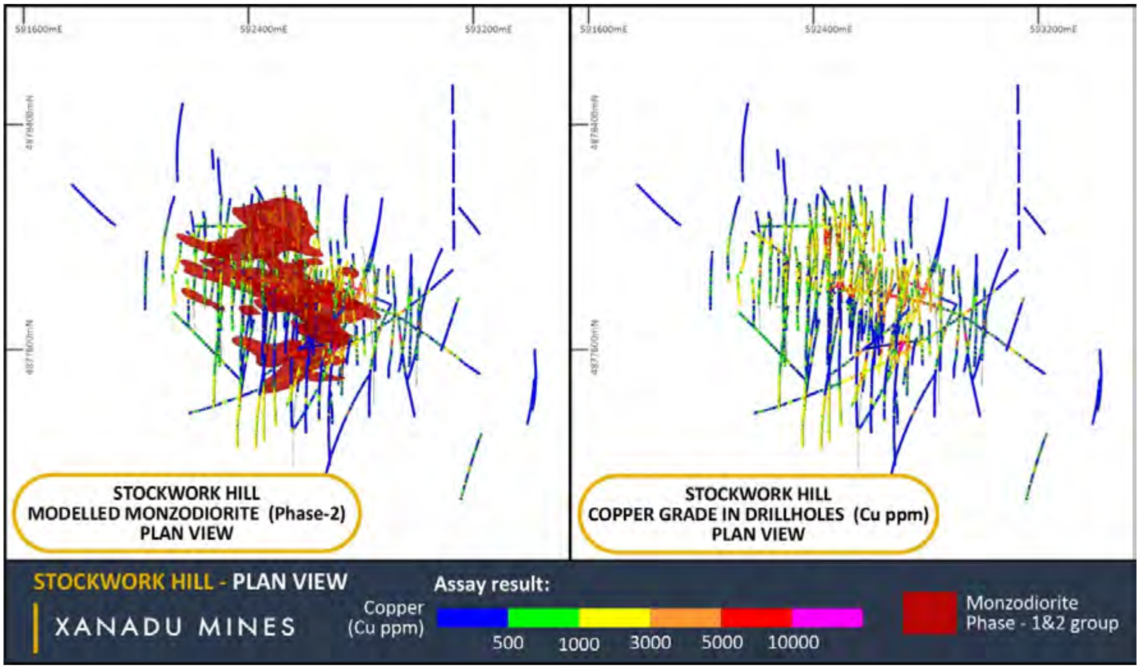


Figure 22: Plan view of modelled P2 vs copper grade in drill holes.

Table 7: Table of statistics (length weighted) for Cu % and Au g/t (raw data) grouped lithologies at Stockwork Hill. XAM data, drafted by Naran Judger, 2021.

	Name	Count	Length	Mean	SD	CV	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Gold ppm	Total	47462	87716	0.20	0.63	3.17	0.40	0.0030	0.02	0.05	0.15	63.5
	AND 5050	331	591	0.06	0.30	5.11	0.09	0.0050	0.01	0.01	0.04	4.96
	CRP1	4678	8858	0.16	0.60	3.81	0.36	0.0050	0.01	0.03	0.08	17.2
	P2 Z	8921	15942	0.57	1.20	2.09	1.44	0.0030	0.1	0.26	0.6	63.5
	P3 Z	17044	31741	0.08	0.30	3.64	0.09	0.0030	0.01	0.03	0.08	18.05
	TANb	408	703	0.11	0.31	2.85	0.09	0.0050	0.005	0.02	0.07	3.18
	TBXm	2926	5592	0.39	0.58	1.47	0.33	0.0050	0.09	0.21	0.47	13.5
	TBXum	9698	18040	0.09	0.18	1.93	0.03	0.0030	0.02	0.04	0.09	3.694
	*Inactive	3456	6248	0.05	0.09	1.78	0.01	0.0050	0.02	0.03	0.06	4.91
Copper Percent	Total	47461	87715	0.17	0.27	1.60	0.07	0.0001	0.0249	0.0774	0.206	14.85
	AND 5050	331	591	0.05	0.07	1.33	0.00	0.0005	0.0202	0.0208	0.051	0.563
	CRP1	4678	8858	0.11	0.23	2.12	0.05	0.0001	0.0117	0.0351	0.0887	3.45
	P2 Z	8919	15938	0.34	0.35	1.02	0.12	0.0004	0.131	0.257	0.454	14.85
	P3 Z	17044	31741	0.08	0.11	1.39	0.01	0.0001	0.017	0.0477	0.103	3.11
	TANb	408	703	0.07	0.10	1.50	0.01	0.0014	0.0198	0.0221	0.0693	0.71
	TBXm	2926	5592	0.53	0.53	0.99	0.28	0.0052	0.236	0.4	0.638	5.82
	TBXum	9696	18037	0.13	0.16	1.29	0.03	0.0001	0.0325	0.0734	0.164	3.1
	*Inactive	3459	6254	0.08	0.10	1.17	0.01	0.0004	0.0102	0.0425	0.137	1.61

12.1.2 Mineralisation

There are three main styles of mineralisation at Stockwork Hill that have formed under different geological processes at different times and therefore will have different geostatistical characteristics. These are;

1) Stockwork mineralisation;
2) Tourmaline breccia mineralisation;
3) Bornite mineralisation.

Stockwork mineralisation is characterised by quartz, chalcopyrite, pyrite veins (B-veins) and associated disseminated chalcopyrite, overprinted by a chalcopyrite only vein set (C-veins). Zones of stockwork mineralisation commonly have a strong structural control resulting in elongate sheets of mineralisation with typical anisotropy ratios of 5 to 3:2:1 (L:H:W). There are two main zones of stockwork mineralisation: the Northern Stockwork Zone and the Southern Stockwork Zone.

Tourmaline Breccia mineralisation is characterised by massive chalcopyrite and / or pyrite infill to tourmaline breccias which overprint the stockwork mineralisation. The main tourmaline breccia body forms a large (500m by 600m by 200m) vertical sheet-like body. Mineralisation within this sheet is variable. The majority of the breccia is low to moderate grade (TBXum) but several very high-grade zones exist. These have been modelled separately (TBXm) and have been modelled in the resource as distinct populations.

Bornite mineralisation is characterised by disseminated, veined and breccia infill bornite and chalcopyrite within a discrete zone called the Bornite Zone.

Texturally, tourmaline breccia mineralisation is significantly different to stockwork and bornite mineralisation and as such has been modelled as a separate lithological unit.

12.1.3 Oxide vs Sulphide Mineralisation

The oxide to sulphide surface was modelled using the criteria explained above. Stockwork Hill is unusual at Kharmagtai relative to the other deposits as this surface seems to have minimal influence on copper and gold grades and there appears little movement of copper and gold in the oxide domain.

12.1.4 Structure

The structural framework for the Stockwork Hill Deposit is complex. There are four main elements that may overlap/enhance each other (or not) and should be considered separately, depending on the required output (resource estimation, geological model, exploration targeting and mine planning)

1) Structural trend which represents the general structural fabric controlling the orientation of the intrusions and mineralised zones.
2) 'Dividers' - contacts between lithologies, structural breaks or late barren units reflected in 'step changes' between populations of grade data in the dataset.
3) True large-scale structures that truncate and /or offset mineralisation, across which new bodies of mineralisation may be found
4) The rock property characteristics of the deposit, zones of fractured rock that will be important for geotechnical evaluation when developing a mine plan.

An example of how these features interact is the relationship between large-scale structures and rock properties. Some large-scale structures have been healed and despite having had many hundreds of meters of displacement do not represent significant zones of fractured rock. The fault breccias within these structures have been annealed by later intrusive units and/or alteration and the rock is again moderately competent. For mine planning these structures may not have a significant impact. In exploration and resource definition these structures are of critical importance.

12.1.4.1 Structural Trend

Two structural trends have been applied to the model (Figure 23). The grey disc trend is a universal trend used for intrusive rocks built from contact and grade distribution specific to each fault block in the deposit. Five individual trends were used with equal weightings, the trend is strongest along the disc orientation and has a range of 100m.

A second trend (pink) was created for the TBX units built from an interpretation of the overprinting TBX mineralisation.

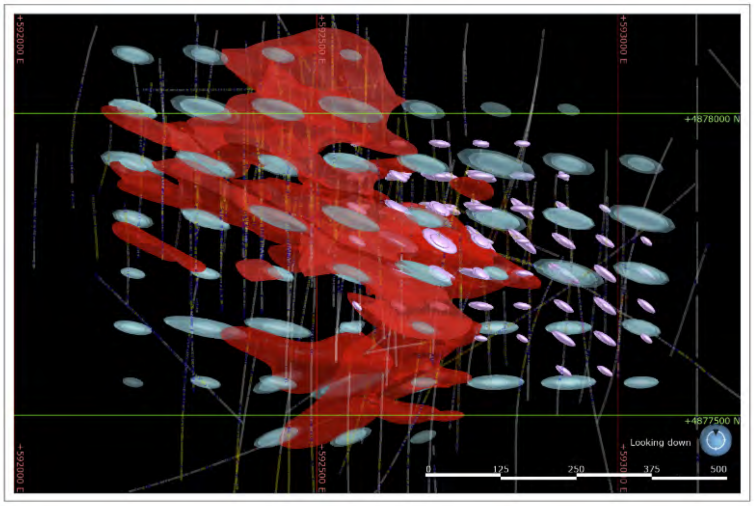


Figure 23: Structural trends applied to the domain model.

12.1.4.2 Dividers

Nine dividers have been defined using natural breaks in mineralisation identified during the modelling process (Figure 24). Numerous other internal dividers were identified but not modelled if there was insufficient separation between populations of data or the locations were ambiguous. Not all dividers are faults, some represent barren zones between natural populations of grade data and others represent contacts between key units.

There are two main east-west dividers that separate the three main blocks of mineralisation at Stockwork Hill. The Bornite Divide separates the bornite zone in the south from the rest of the model and the CBX_NSZ Divie separates the northern block of mineralisation called the Northern Stockwork Zone (Figure 24).

12.1.4.2.1 Bornite Divider

The Bornite Divider forms the main east-west trending dividing line between the bornite zone in the south and the bulk of Stockwork Hill (Figure 25). This divider takes advantage of the broadly east west TAND dyke structure in the shallower portions of the deposit and a zone of barren tourmaline breccias in the lower portion of the deposit.

12.1.4.2.2 CBX_NSZ Divie

The CBX_NSZ Divie forms the main east-west trending dividing line between the central portion of tourmaline breccia and stockwork mineralisation and the northern stockwork zone (Figure 20). This feature represents an amalgamation of several anastomosing fault splays.

12.1.4.3 Bornite Zone Internal Dividers

There are three internal dividers within the Bornite zone. These separate four discrete fault blocks (Figures 20 and 25).

The AND50:50 footwall and hanging wall dividers represent the footwall and hanging wall to the AND50:50 fault. This is a barren andesite dyke that fills a key structure in the bornite zone. The fault appears to have a throw of approximately 250m, west block up and 50m west block north.

The Bornite floor represents a parallel fault which terminates the high grade bornite zone (central bornite zone) to the east. There appears to be a similar offset of 250m west block up and 50-100m west block north across this structure which opens opportunities for additional zones of bornite mineralisation below the Bornite Floor.

An additional divider could have been chosen roughly 300m vertically above the AND50:50 fault block. This divider was not used as it created unnecessary additional fault blocks (and estimation domains) that did not add value to the modelling effort.

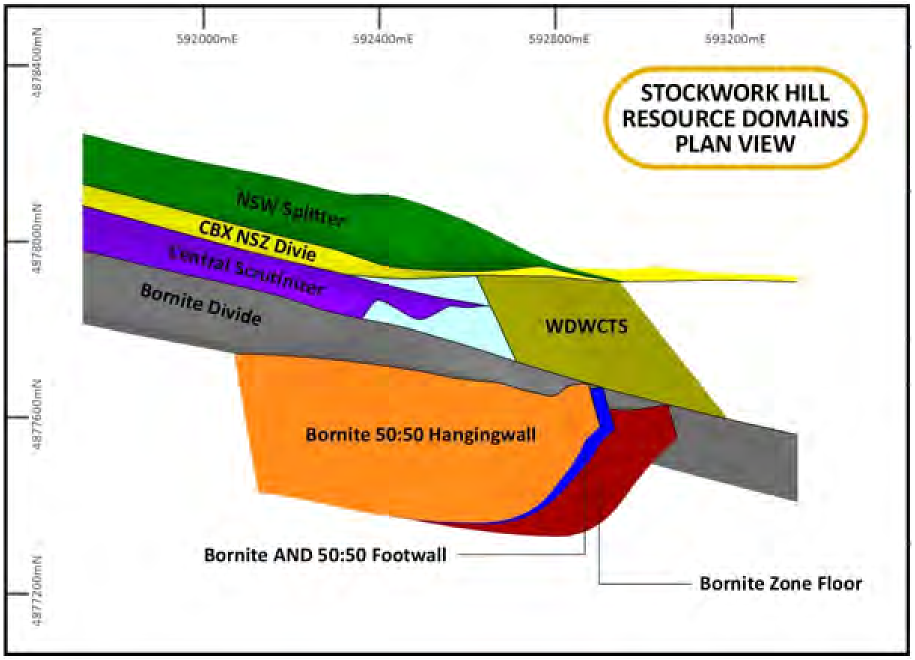


Figure 24: Dividers/structures used to segment the resource domains,

Plan view, surfaces dip steep to south or steep to west. XAM data, drafted by Naran Judger, 2021.

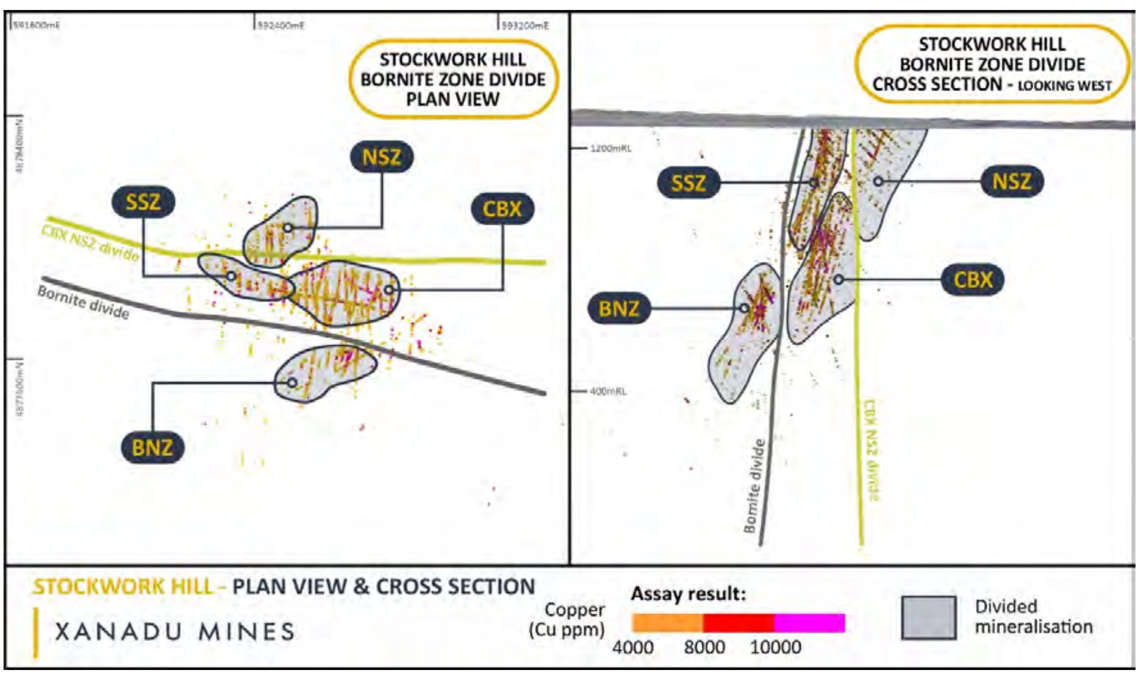


Figure 25: Bornite divide and CBX_NSZ Divie. Left: Plan view showing bornite divide and Divie and copper assays above 4000ppm Cu. Right: Cross section (looking towards 264 degrees) showing bornite divide and Divie and Cu assays above 4000ppm Cu. XAM data, drafted by Naran Judger, 2021.

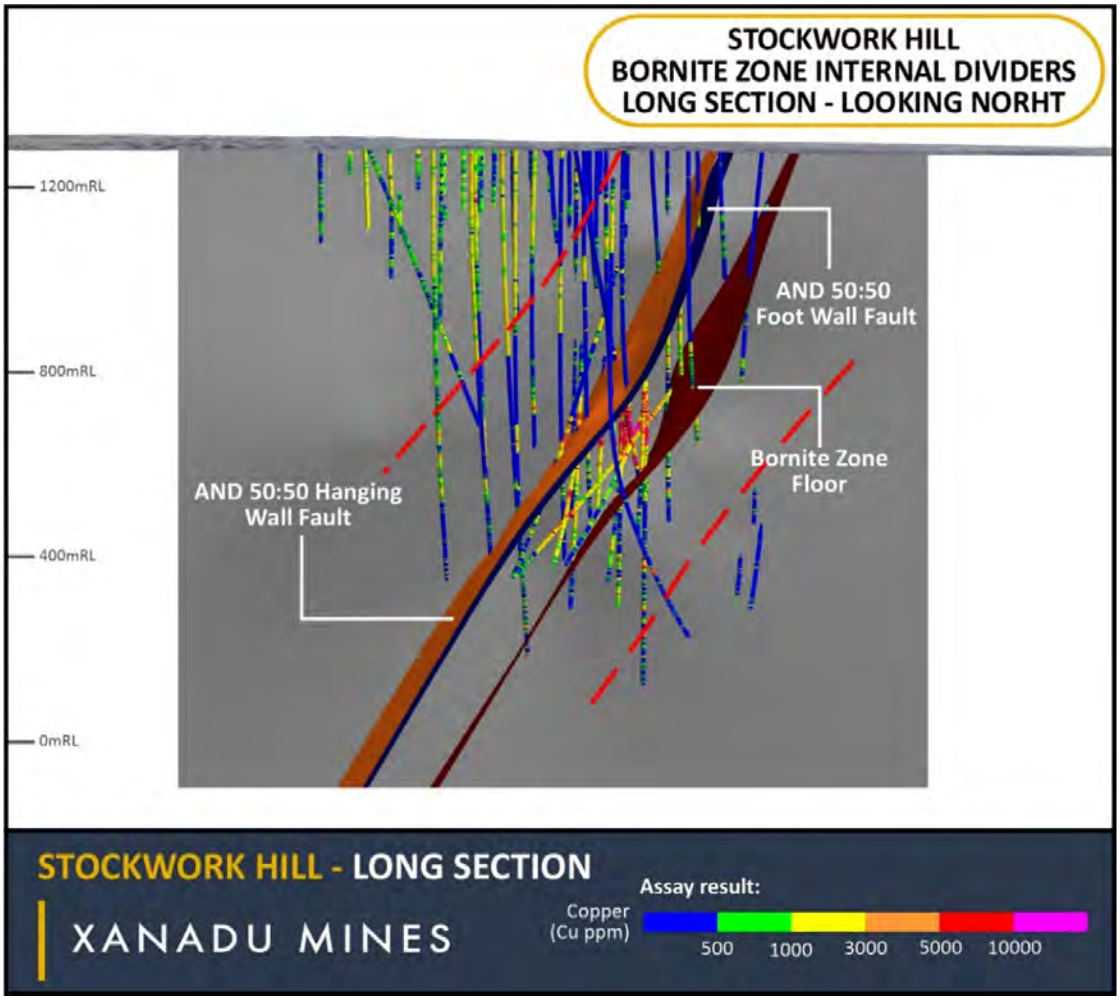


Figure 26: Long section though the bornite zone showing the main dividers and drill hole assays (Cu ppm). XAM data, drafted by Naran Judger, 2021.

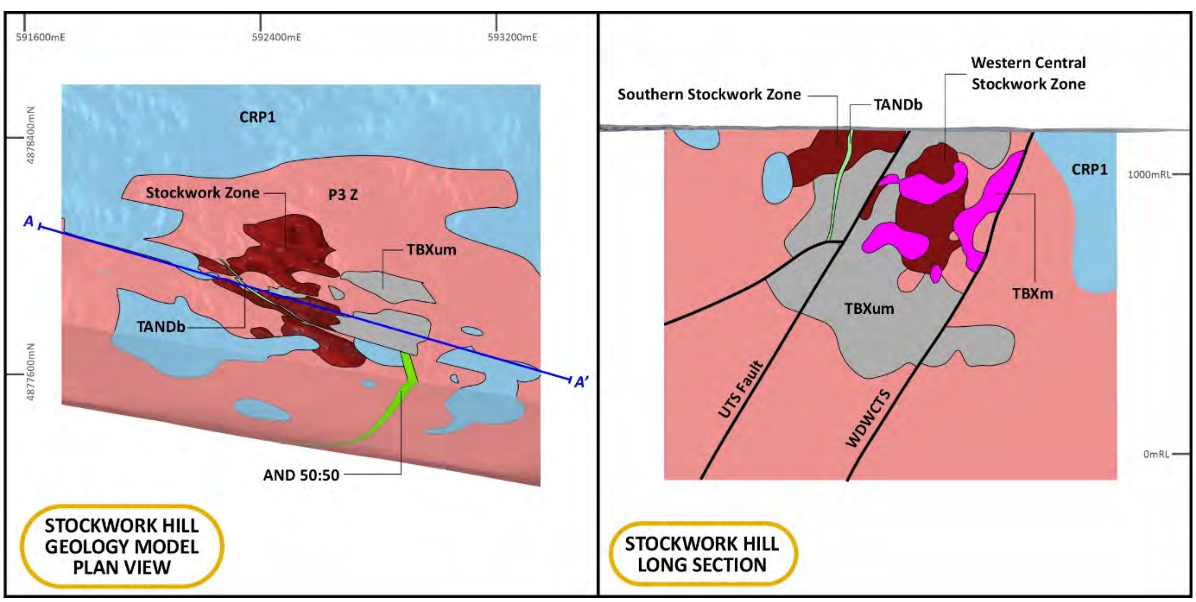


Figure 27: Plan view and long section through the central breccia zone showing the UTS and WDWCTS faults. XAM data, drafted by Naran Judger, 2021.

12.1.4.3.1 Central Zone Internal Dividers

The central zone can be split into east and west domains using the UTS divider (Figures 20 and 27). The UTS is a discrete zone of shearing and faulting that forms an eastern boundary to the Southern Stockwork Zone and separates this from the mineralised Tourmaline Breccias to the west. The UTS has a similar orientation to the AND50:50 fault and may represent the northern extensions of this structure across the bornite divider. The apparent offset on the UTS is similar to the AND50:50 structures with west block up by around 250m.

The WDWCTS structure terminates tourmaline breccia mineralisation in the west. There are small hints of TBXm on the western side of this that suggest a similar fault movement to the UTS.

To the west of the UTS fault lies the main southern stockwork zone, the highest grade stockwork zone at Stockwork Hill. The Western Central Zone is split by an east-west trending internal divider called the Central Scrutiniser. This structure divides the highest-grade portion of the Southern Stockwork Zone from a mixed zone of moderate to low grade stockwork and TBXum (Central Stockwork Zone).

The Central Scrutiniser extends across the UTS and into the Central Breccia zone but was terminated on the UTS for the purposes of this model as it plays little reliable role in changing the grade populations within the Central Breccia Zone. This reduced the number of fault blocks and additional complications.

12.1.4.3.2 Northern Stockwork Zone Internal Dividers

There is a single internal divider in the Northern Stockwork Zone that separates two lobes of stockwork with a low grade to barren zone between. This divider is likely a splay off the Central Scrutiniser (Figure 20).

12.1.5 Rock Properties

12.1.5.1 Density

The specific gravity data for Stockwork Hill describes a mostly normal population (Figures 28 and 29) with a mean of 2.74g/cm3. There may exist multiple overlapping populations of data (double peak) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

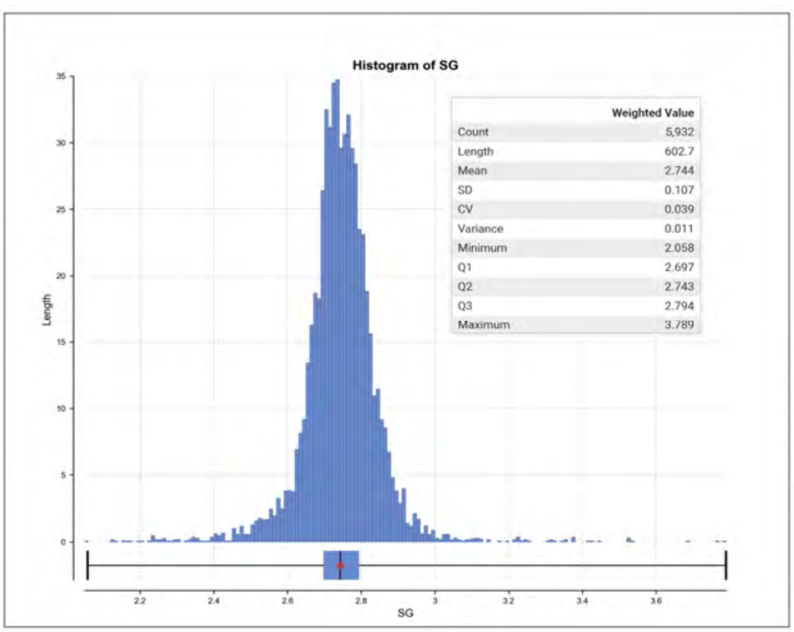


Figure 28: Specific Gravity data for Stockwork Hill.

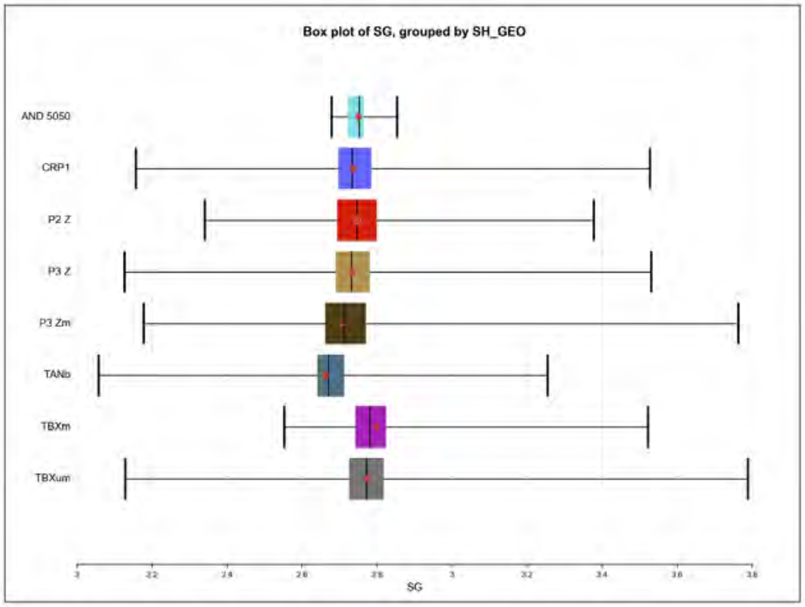


Figure 29: Lithology versus Specific Gravity Box Plots for Stockwork Hill.

12.2 White Hill

The White Hill Deposit is the largest deposit at Kharmagtai, but potentially the simplest. The geological framework modelling resulted in five discrete fault blocks of mineralisation (Figures 30 & 31). These fault blocks are defined by discrete copper and gold populations separated by key structures or lithological contacts. This rationale for each domain and the methodology used to define them is described below.

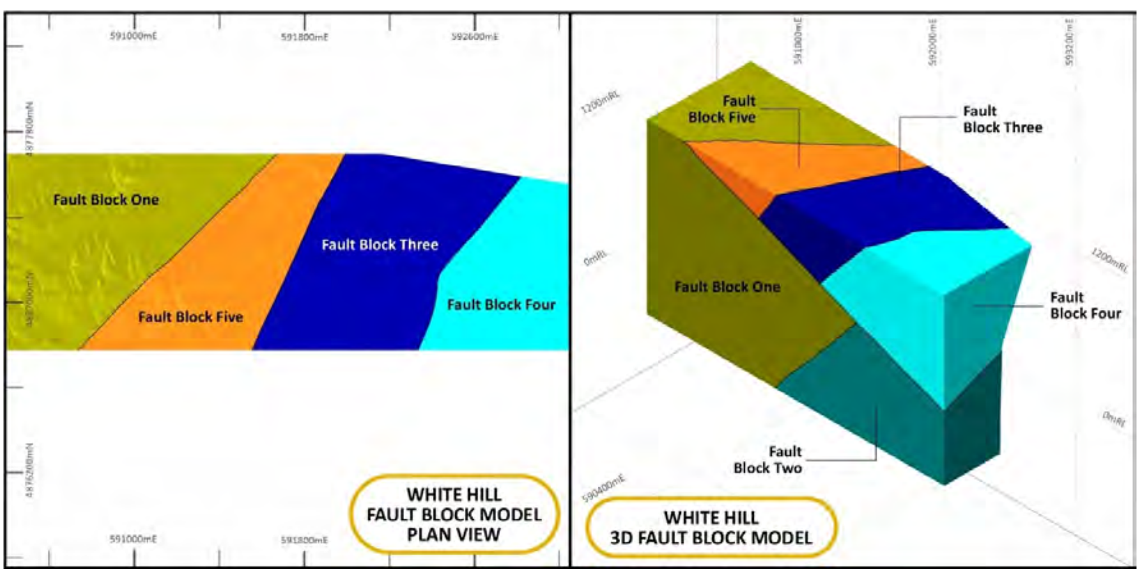


Figure 30: White Hill Resource Domain Fault Blocks. XAM data, drafted by Naran Judger, 2021.

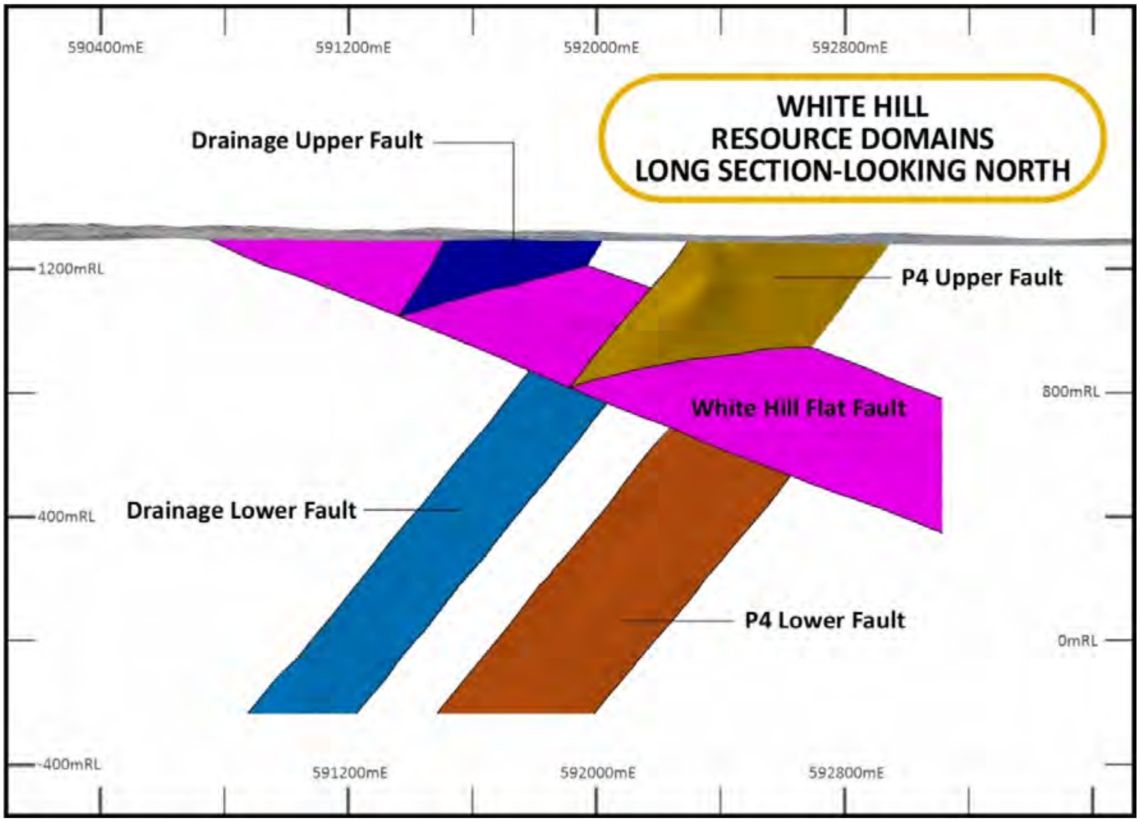


Figure 31: White Hill Domain Faults. XAM data, drafted by Naran Judger, 2021.

12.2.1 Lithologies

Host lithologies have a strong control on copper and gold distribution throughout White Hill (Figure 32 and Table 8). The new (post 2017) logging lithologies were grouped for the purposes of this modelling into six groups based on rock composition, texture and overprinting relationships. The P2 and PB1 phases appear to be the main control on copper and gold mineralisation with a halo of mineralisation within the CRP_1 and P3 Z phases where they contact P2 and PB1. The P4 phase is mostly barren.

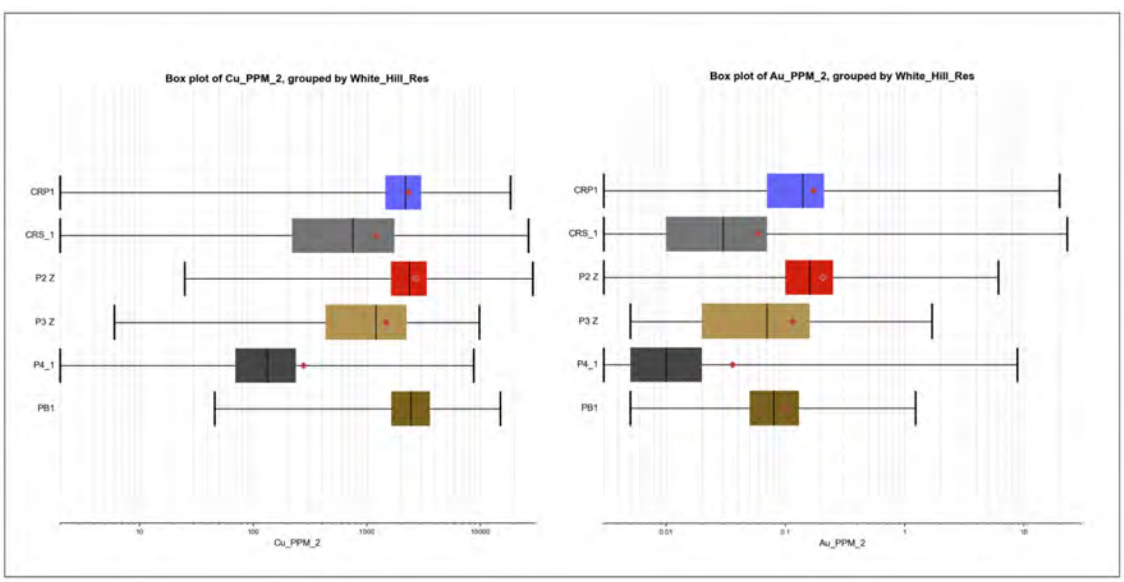


Figure 32: Box plot for raw Cu ppm and Au_ppm data against group lithology (log scale).

Table 8: Table of Statistics (Length weighted) for raw assay data for White Hill.

Name		Count	Length	Mean	Standard deviation	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Au_PPM		33118	54311	0.12	0.27	2.16	0.0716	0.003	0.02	0.08	0.17	23
	CRP1	13621	21053	0.17	0.29	1.69	0.0831	0.003	0.07	0.14	0.21	19.9
	CRS_1	7410	13074	0.06	0.30	5.06	0.0891	0.003	0.01	0.03	0.07	23
	P2 Z	4271	6624	0.21	0.23	1.12	0.0548	0.003	0.1	0.16	0.25	6.1
	P3 Z	2143	3406	0.12	0.14	1.17	0.0183	0.005	0.02	0.07	0.16	1.69
	P4_1	1508	2685	0.04	0.25	7.03	0.0641	0.003	0.005	0.01	0.02	8.8
	PB1	865	1552	0.10	0.09	0.87	0.0079	0.005	0.05	0.08	0.13	1.23
	*Inactive	3300	5917	0.05	0.17	3.09	0.0281	0.003	0.01	0.02	0.04	3.967
Cu_PPM		32481	52148	1828.50	1616.35	0.88	2612572	2	499	1620	2670	29000
	CRP1	13328	20122	2341.60	1353.05	0.58	1830747	2	1460	2192	3020	18400
	CRS_1	7260	12546	1214.23	1366.28	1.13	1866721	2	221	757	1760	26500
	P2 Z	4271	6624	2693.67	1696.89	0.63	2879442	25	1640	2370	3380	29000
	P3 Z	2142	3402	1494.44	1294.99	0.87	1676996	6	436	1200	2250	9800
	P4_1	1457	2534	277.63	543.98	1.96	295916	2	70	133	238	8740
	PB1	865	1552	2860.55	1875.24	0.66	3516524	46	1650	2460	3620	15050
	*Inactive	3158	5368	918.77	1803.54	1.96	3252747	6	104	248	959	20000

12.2.2 Oxide vs Sulphide Mineralisation

The oxide to sulphide surface was modelled using the criteria explained in the above sections. White Hill has a strong and shallow apparent enrichment in oxide in the north-western portion of the deposit. As such, separate oxide domains will be needed for variography at White Hill.

12.2.3 Structure

There are three key structures at White Hill that impact the geological domaining (Figure 31). A flat lying, east dipping structure (White Hill Flat Fault) separates a shallow grade population from a deeper population and offsets two steeper structures with the upper block displaced up-dip to the west. A steep, west dipping structure (P4 Fault) in the eastern portion of the deposit separates the barren P4 intrusive from the mineralised portion of the deposit. A second steep west dipping structure (Drainage Fault) separates grade populations above the Flat Fault but appears to have less impact below the Flat Fault. This may be due to a paucity of drilling data in the area of the Drainage Fault below the Flat Fault.

12.2.3.1 Structural Trend

Two different structural trends have been applied. A global trend of 65 degrees dip towards 195 degrees dip azimuth with an ellipsoid ratio of 5:5:1 has been applied to P2, P3 and P4 intrusive units. A global trend of 75 degrees dip towards 184 degrees dip azimuth with an ellipsoid ratio of 3:2:1 has been applied to the PB intrusive unit. No trend has been applied to the CRP and CRS units.

12.2.3.2 Dividers

Four dividers have been defined using natural breaks in mineralisation identified during the modelling process (Figure 31). These have been discussed in the structure section above.

12.2.4 Rock Properties

12.2.4.1 Density

The specific gravity data for White Hill describes a mostly normal population (Figures 33 and 34) with a mean of 2.72g/cm3. There may exist multiple overlapping populations of data (double peak) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

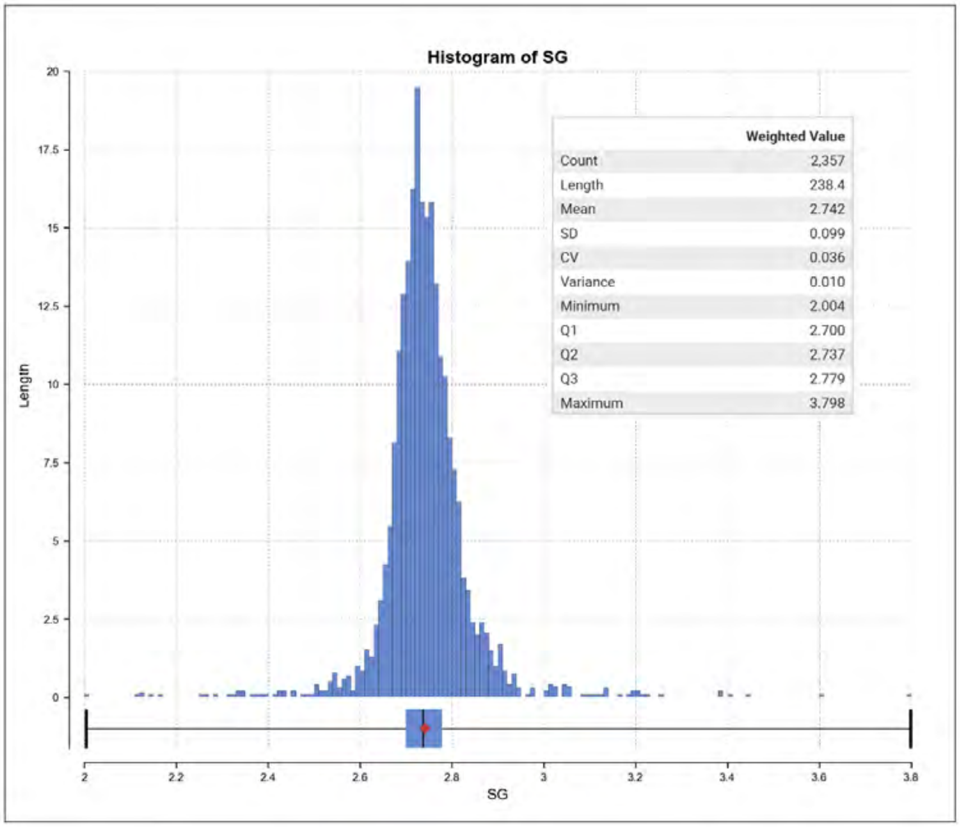


Figure 33: Specific Gravity Data for White Hill.

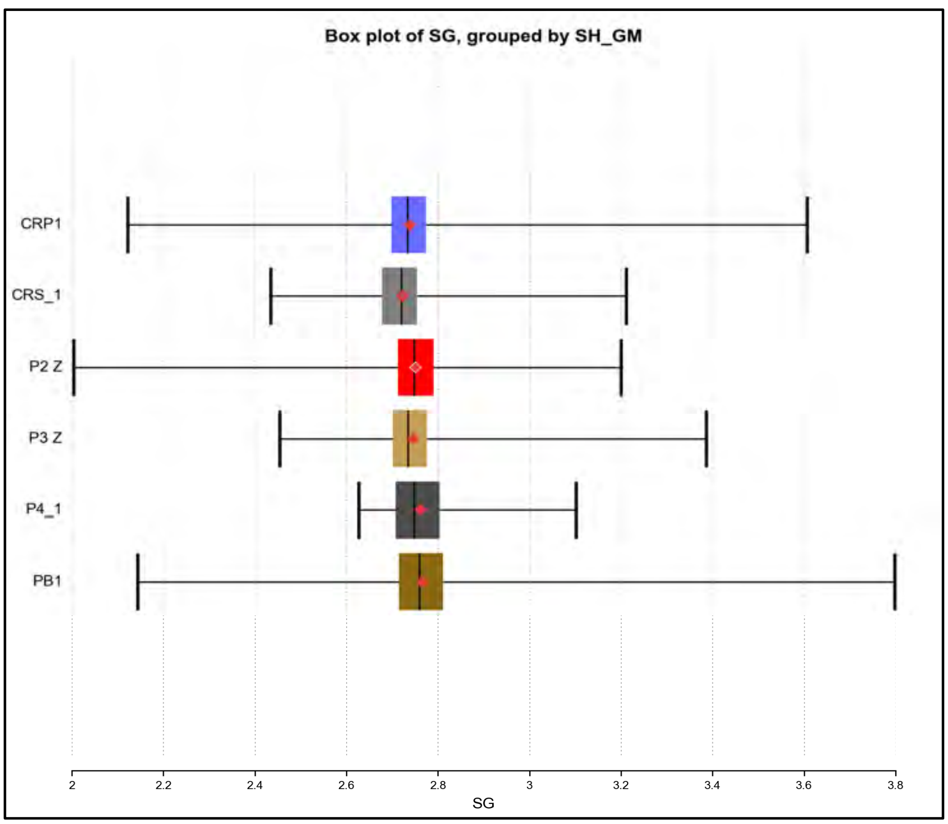


Figure 34: Lithology Box plot for White Hill specific gravity data.

12.3 Copper Hill

The Copper Hill Deposit is a smaller, discrete body of higher-grade porphyry mineralisation 2km south of Stockwork Hill. The geological framework modelling resulted in five separate fault blocks of mineralisation. These fault blocks are defined by copper and gold populations of that differ separated by key structures or lithological boundaries (Figures 35, 36 and 37). This rationale for each domain and the methodology used to define them is described below.

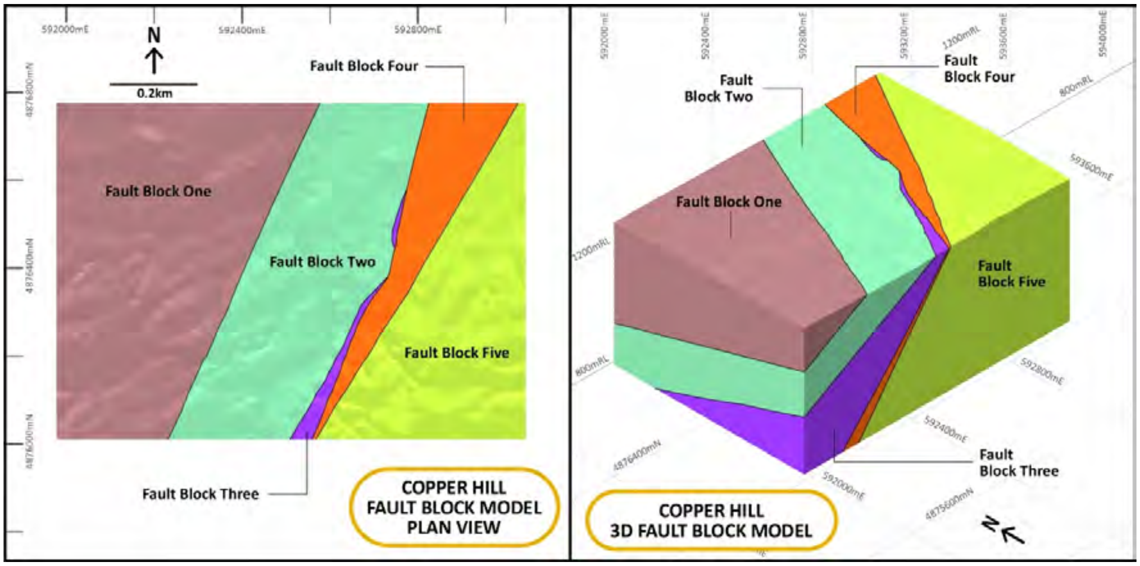


Figure 35: Fault Block diagram for Copper Hill. XAM data, drafted by Naran Judger, 2021.

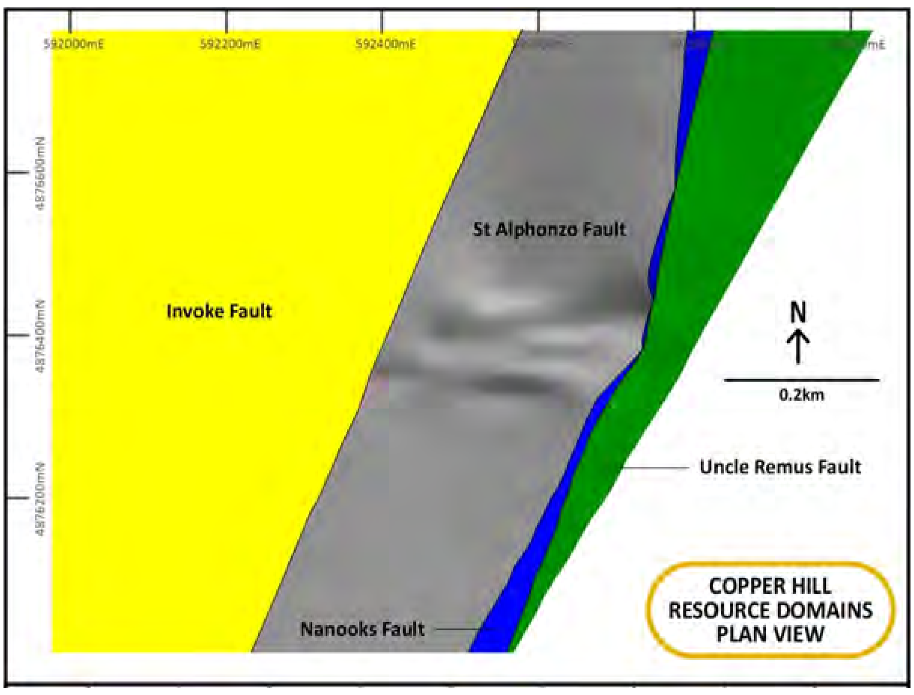


Figure 36: Copper Hill Domain Faults – plan view. XAM data, drafted by Naran Judger, 2021.

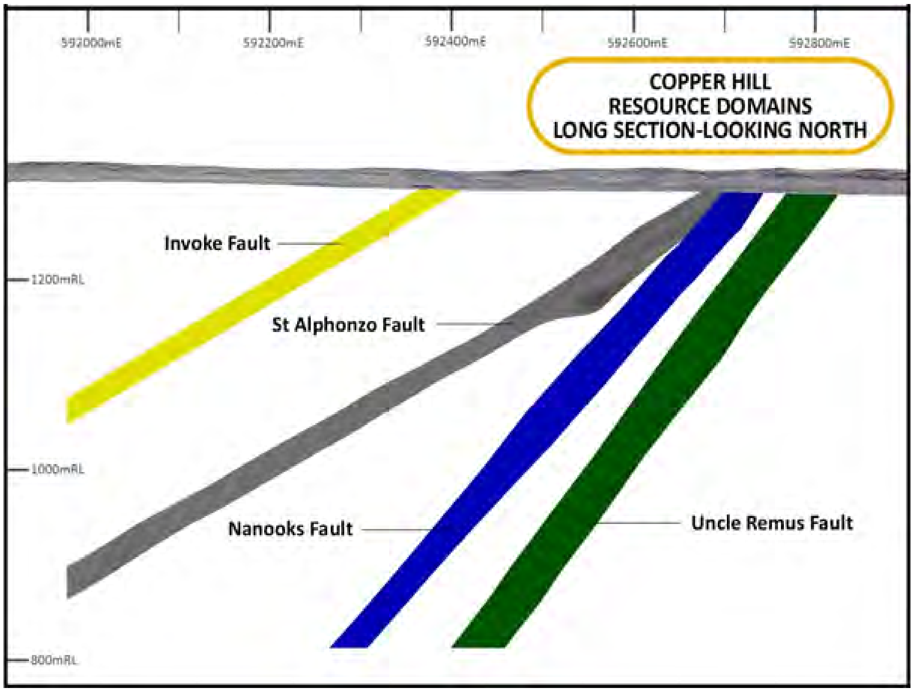


Figure 37: Copper Hill Domain Faults – sectional view. XAM data, drafted by Naran Judger, 2021.

12.3.1 Lithologies

Host lithologies have a strong control on copper and gold distribution throughout Copper Hill (Figure 38 and Table 9). The new (post 2017) logging lithologies were grouped for the purposes of this modelling into three groups based on rock composition, texture and overprinting relationships. The SH_GM field in the lithology data file details these groupings. The P2 phase appears to be the main control on copper and gold mineralisation with a halo of mineralisation within the P3 phase where is contacts P2. The background rock at Copper Hill is CRS (Country Rock Siltstone).

There is an obvious structural control on mineralisation which is described in the structure section below.

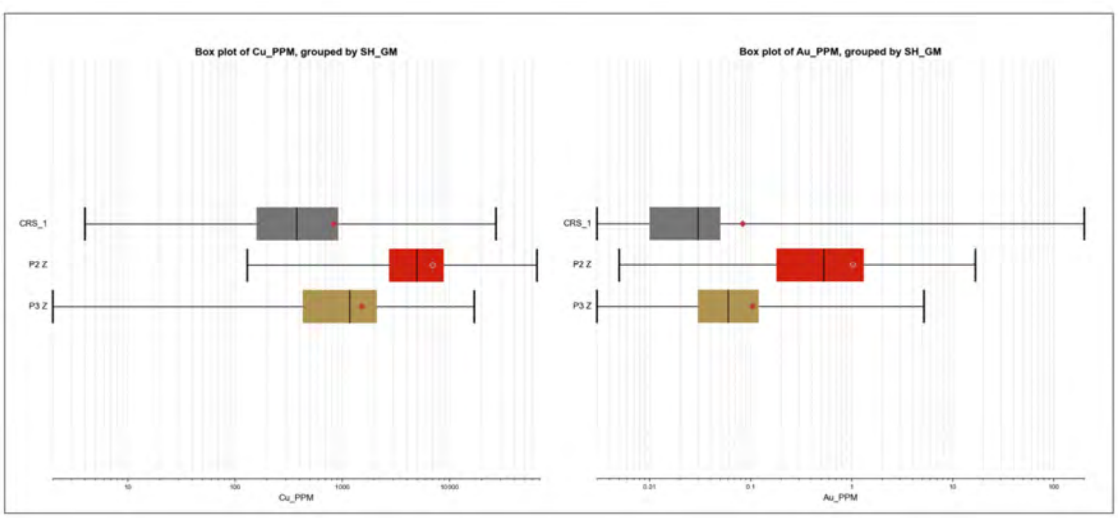


Figure 38: Box plot for raw Cu_ppm and Au_ppm data against group lithology (log scale) for Copper Hill.

Table 9: Table of Statistics (Length weighted) for raw assay data for Copper Hill.

Name		Count	Length	Mean	Standard deviation	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Au_PPM		19162	32556.46	0.16	1.64	10.34	2.70	0.003	0.02	0.03	0.07	199.5
	CRS_1	8403	14310.14	0.08	2.37	28.21	5.59	0.003	0.01	0.03	0.05	199.5
	P2 Z	1910	2928.13	1.03	1.34	1.30	1.80	0.005	0.18	0.53	1.32	16.75
	P3 Z	3290	5447.09	0.10	0.18	1.75	0.03	0.003	0.03	0.06	0.12	5.2
Cu_PPM		19111	32319.66	1442.20	3011.70	2.09	9070314.75	1	159	509	1490	65500
	CRS_1	8403	14310.14	839.51	1371.02	1.63	1879694.01	4	159	377	920	27200
	P2 Z	1910	2928.13	6993.52	7022.33	1.00	49313155.09	130	2740	4980	8860	65500
	P3 Z	3290	5447.09	1522.53	1496.85	0.98	2240549.97	2	429	1180	2110	17040

12.3.2 Oxide vs Sulphide Mineralisation

The oxide to sulphide surface was modelled using the criteria explained in the above sections. There appears no significant change in the grade distribution for copper across the oxide-sulphide surface. Gold generally follows the same pattern, however, there are several high gold values (+100g/t Au) in the shallow drilling that should be isolated or excluded from the resource to ensure a realistic output.

12.3.3 Structure

Detailed structural work has been completed at Copper Hill. The deposit is relatively small, well drilled and a structural review of the deposit might provide an opportunity to understand the relationship between structure and mineralisation at Kharmagtai.

There are four key structures at Copper Hill that impact the geological domaining (Figure 37). Three of these structures interact with the mineralisation and require discussion (Figure 39). These structures are moderately dipping (northwest) features with multiple apparent movement senses.

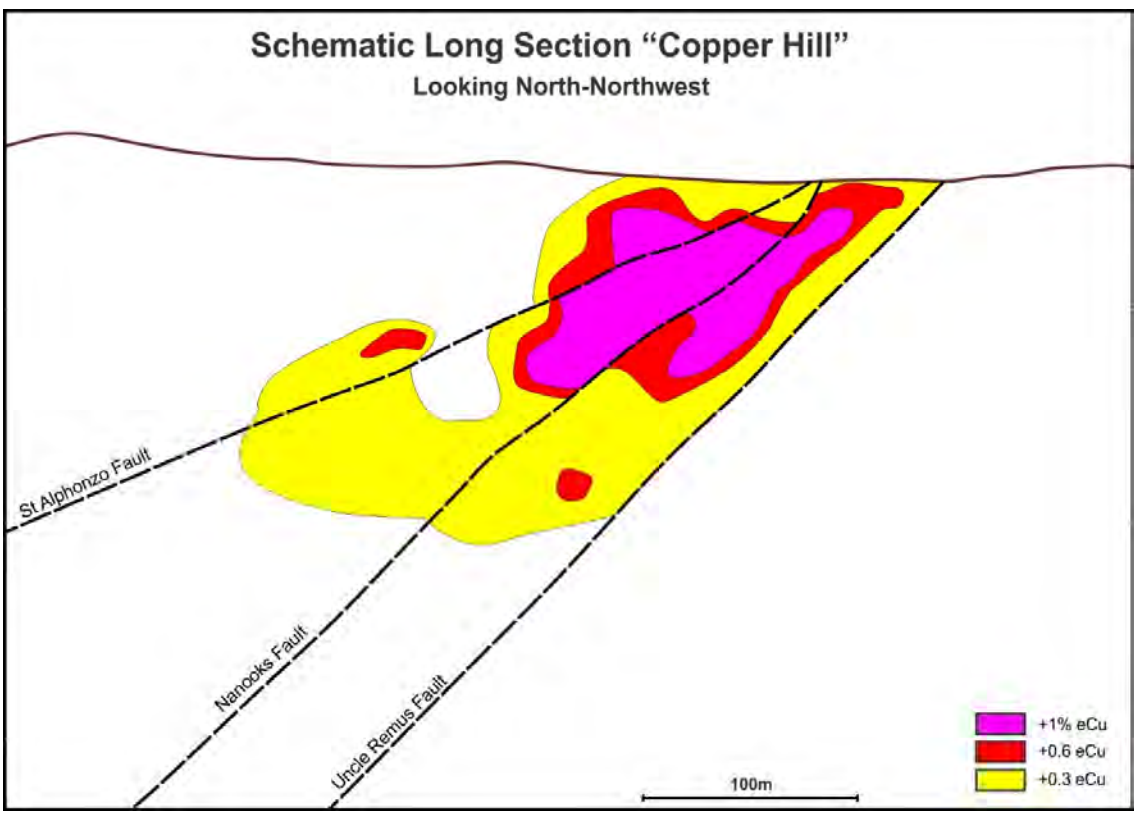


Figure 39: Schematic long section through Copper Hill showing grade distribution and fault locations. XAM data, drafted by Naran Judger, 2021.

12.3.3.1 Uncle Remus Fault

The Uncle Remus fault forms the basal fault to the Copper Hill Deposit. Mineralisation terminates against this structure (Figure 39). The Uncle Remus Fault forms a 10-20m wide zone of highly fractured hornfelsed siltstone. Significant work has been conducted attempting to understand the offset of the Uncle Remus Fault, but the true offset is yet to be understood. This aspect is critical as Copper Hill is the highest-grade deposit at Kharmagtai and the faulted offset to the deposit could represent a significant target.

12.3.3.2 Nanooks Fault

Nanooks Fault lies roughly parallel to and 60m above the Uncle Remus Fault. There are three observations that link Nanooks fault to the mineralising event at Copper Hill:

1) The highest-grade mineralisation at Copper Hill straddles Nanooks Fault (Figure 40)
2) Mineralised porphyry veining is zoned symmetrically around Nanooks Fault (Figures 40 and 41)
3) Orientation of B veining is zoned symmetrically around Nanooks Fault (Figure 40).

Vein kinematics and shear sense indicators suggest Nanooks Fault was active as a reverse fault during mineralisation and connected to sheets veins and stockworks and is plausibly the main feeder fault allowing access of deeper-seated porphyry fluids.

12.3.3.3 Saint Alphonso's Fault

The Saint Alphonso's Fault lies approximately 100m above Nanooks Fault (Figure 40). St Alphono's Fault is shallower and may represent a splay off Nanooks Fault.

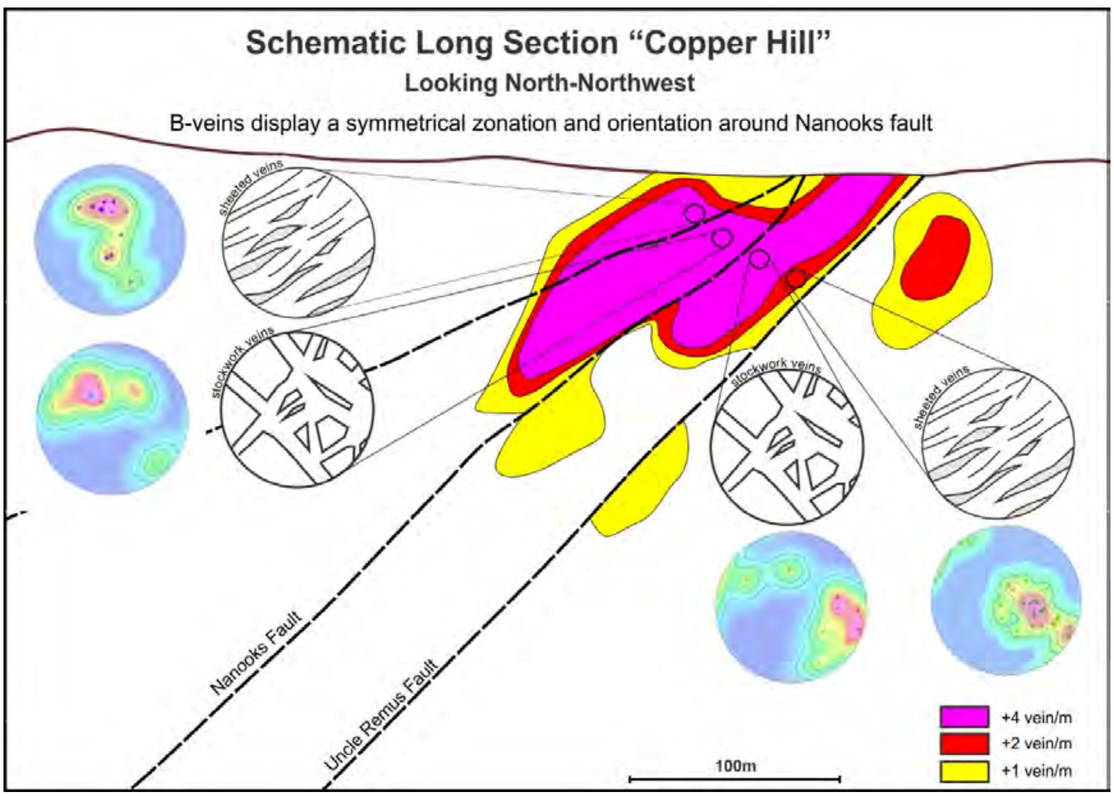


Figure 40: Schematic long section through Copper Hill showing B vein density and vein orientation symmetry around Nanooks Fault. XAM data, drafted by Naran Judger, 2021.

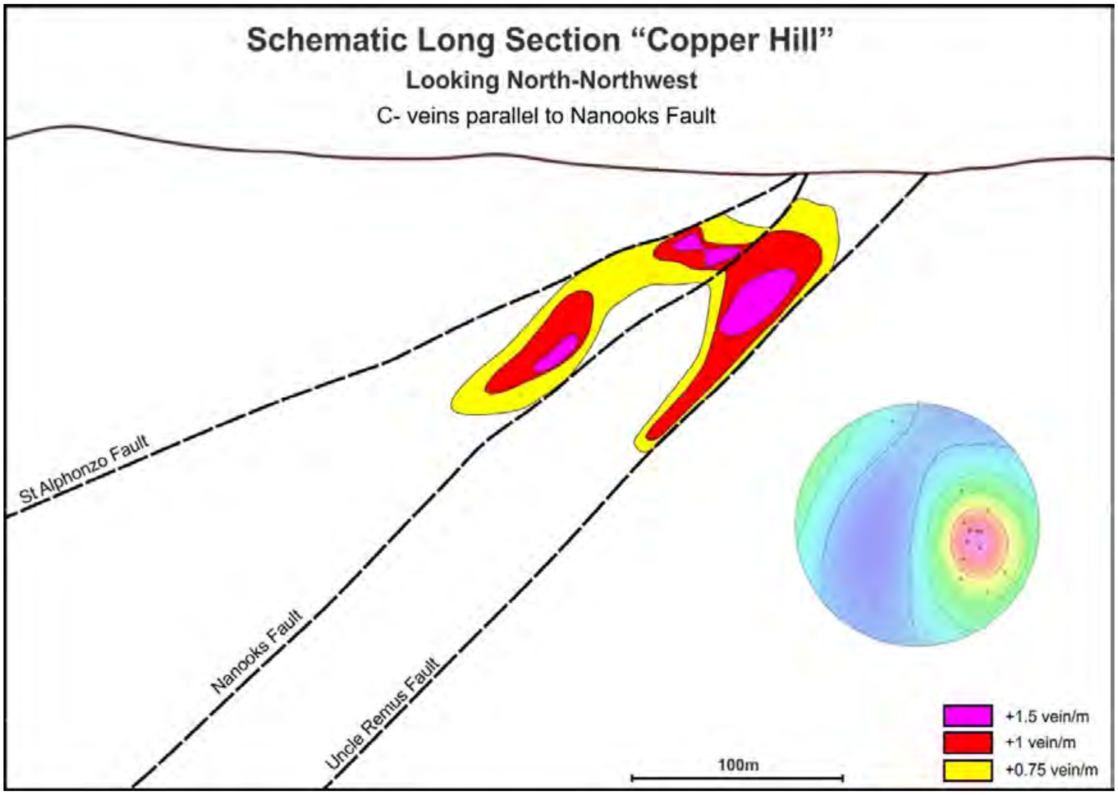


Figure 41: Schematic long section through Copper Hill showing C vein density and vein orientations. XAM data, drafted by Naran Judger, 2021.

12.3.3.4 Structural Trend

A single structural trend has been applied to the P2 intrusive unit at Copper Hill. This trend dips at 55 degrees towards 176 degrees with a pitch of 90 degrees. The trend is strongest long the centre line and dissipates over 100m distance.

12.3.3.5 Dividers

Four dividers have been defined using natural breaks in mineralisation identified during the modelling process (Figure 37). Three of these have been discussed in the structure section above. The fourth and final structure (Invoke Fault) was applied due to an obvious offset in the surface geology and solved several geological and grade modelling issues by terminating weak mineralisation.

12.3.4 Rock Properties

12.3.4.1 Density

The specific gravity data for Copper Hill describes a slightly skewed normal population (Figures 42 and 43) with a mean of 2.74g/cm3. There may exist multiple overlapping populations of data (double peak and small peaks on the higher density flank) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

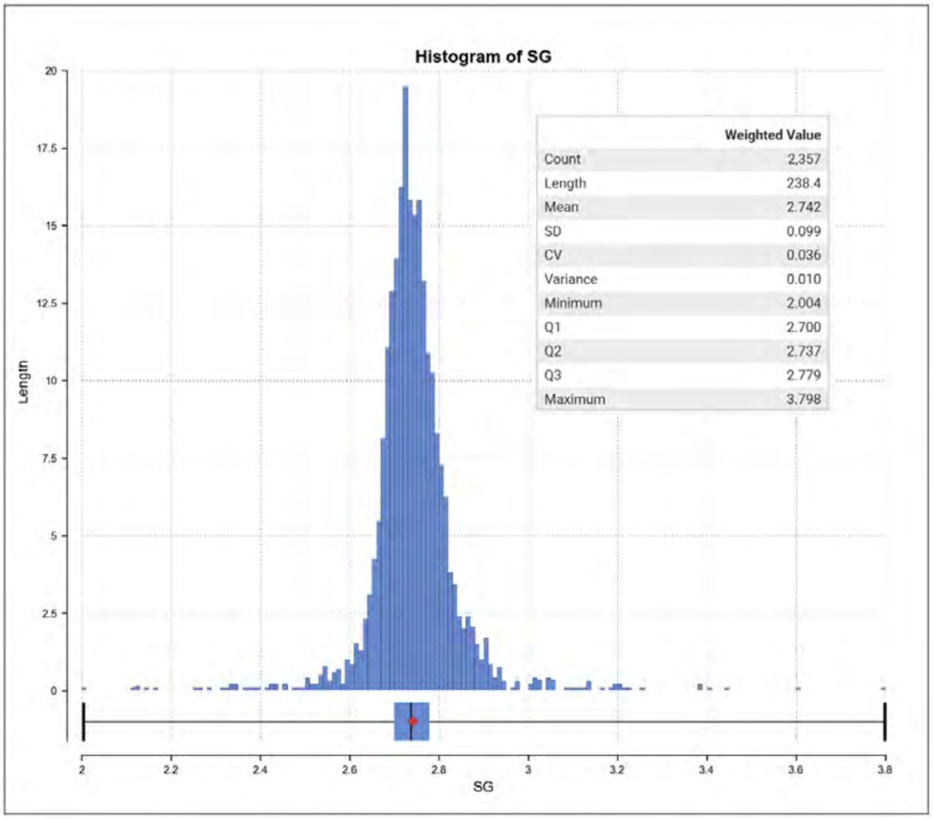


Figure 42: Specific Gravity Data for Copper Hill.

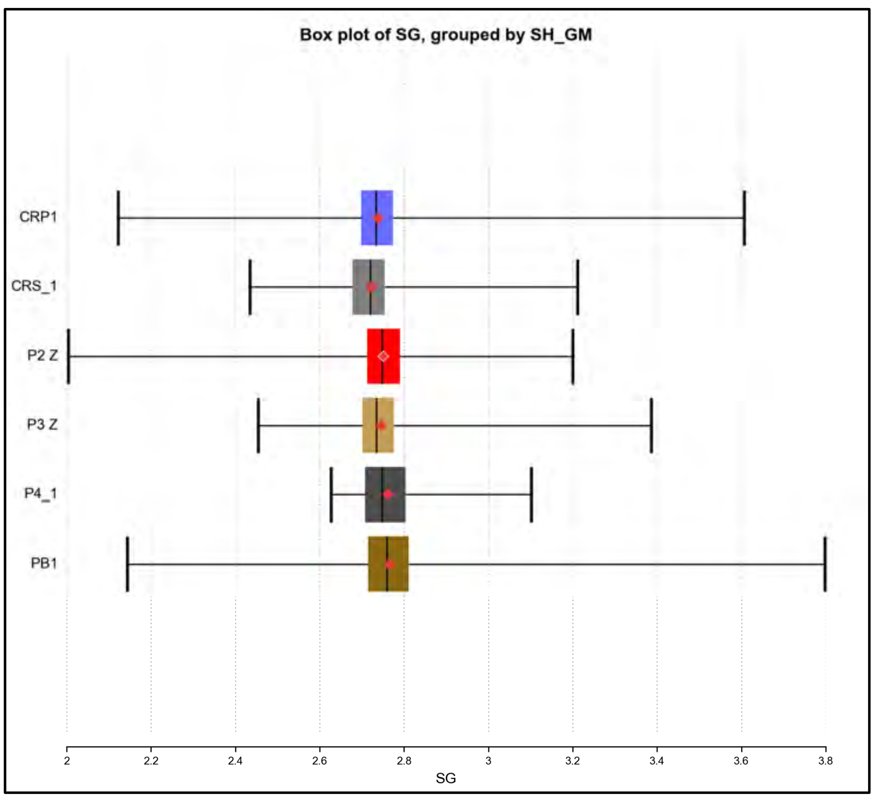


Figure 43: Lithology Box plot for Copper Hill specific gravity data.

12.4 Zaraa

The Zaraa deposit lies 2km east of White Hill, beneath 27m of shallow cover. Zaraa was a blind discovery made in 2017 using the standard porphyry vein model and the porphyry geochemical footprint model. Three historic drill holes were relogged and assayed and these gave vectors from which the discovery drill hole was targeted. The 2021 MRE adds Zaraa to the Kharmagtai Global Resource.

12.4.1 Lithologies

There is a strong correlation between individual lithological groups and mineralisation at Zaraa. Logging has defined six key lithologies. The intrusive Phases (P1, P2) correlate well with the mineralisation (Figure 44 and Table 10). The P3, CRP (Country Rock Porphyry) and CRS (Country Rock Siltstone) all form host rocks to the mineralisation. Red Dog Dyke is a late phase and is barren. The cover sequence was modelled separately and trimmed to topography. The cover sequence should be excluded from the models or assigned background grade.

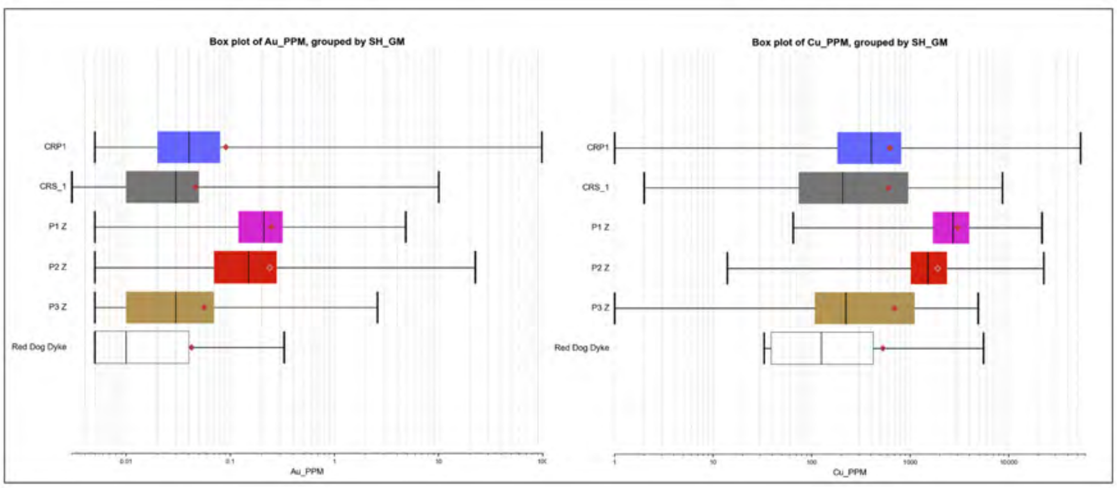


Figure 44: Box plot for raw Cu_ppm and Au_ppm data against group lithology (log scale) for Zaraa

Table 10: Table of Statistics (Length weighted) for raw assay data for Zaraa.

	Lithology	Count	Length	Mean	Standard deviation	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Au_PPM		24409	44552.86	0.11	0.73	6.64	0.54	0.003	0.02	0.05	0.108	98.5
	CRP1	11989	21725.31	0.09	0.98	10.80	0.97	0.005	0.02	0.04	0.08	98.5
	CRS_1	3676	7042.35	0.05	0.17	3.64	0.03	0.003	0.01	0.03	0.05	10.05
	P1 Z	985	1833.80	0.25	0.25	1.01	0.06	0.005	0.12	0.21	0.32	4.83
	P2 Z	4404	7637.05	0.24	0.46	1.94	0.22	0.005	0.07	0.15	0.28	22.6
	P3 Z	1644	3118.30	0.06	0.09	1.69	0.01	0.005	0.01	0.03	0.07	2.59
	Red Dog Dyke	74	100.40	0.04	0.07	1.75	0.01	0.005	0.005	0.01	0.04	0.33
Cu_PPM		24274	44093.86	918.25	1242.93	1.35	1544864.22	1	159	485	1240	53800
	CRP1	11995	21737.31	622.33	889.74	1.43	791632.50	1	182	404	814	53800
	CRS_1	3592	6784.25	601.38	799.45	1.33	639119.45	2	74	206	957	8660
	P1 Z	985	1833.80	3049.37	2044.20	0.67	4178762.92	65	1710	2730	3960	21800
	P2 Z	4404	7637.05	1909.03	1449.71	0.76	2101646.99	14	1020	1510	2380	22700
	P3 Z	1644	3118.30	695.60	889.00	1.28	790325.22	1	108	222	1110	4900
	Red Dog Dyke	74	100.40	528.15	1044.55	1.98	1091082.30	33	39	126	424	5550

12.4.2 Oxide vs Sulphide Mineralisation

The modelled body of mineralisation at Zaraa does not interact with the oxide sulphide surface and this aspect has not been accounted for in this resource estimate.

12.4.3 Structure

There is one observed structural feature that interacts with the mineralisation at Zaraa. The Red Dog Dyke is a low angle west dipping structure cross cutting the deposit (Figure 45). The Red Dog fault has been filled with a distinctive, brick red andesite unit which simplifies mapping the structure in drill core. There is an apparent normal, top block down (to the northwest) offset of 45m on the Red Dog fault relative to the mineralised intrusive units.

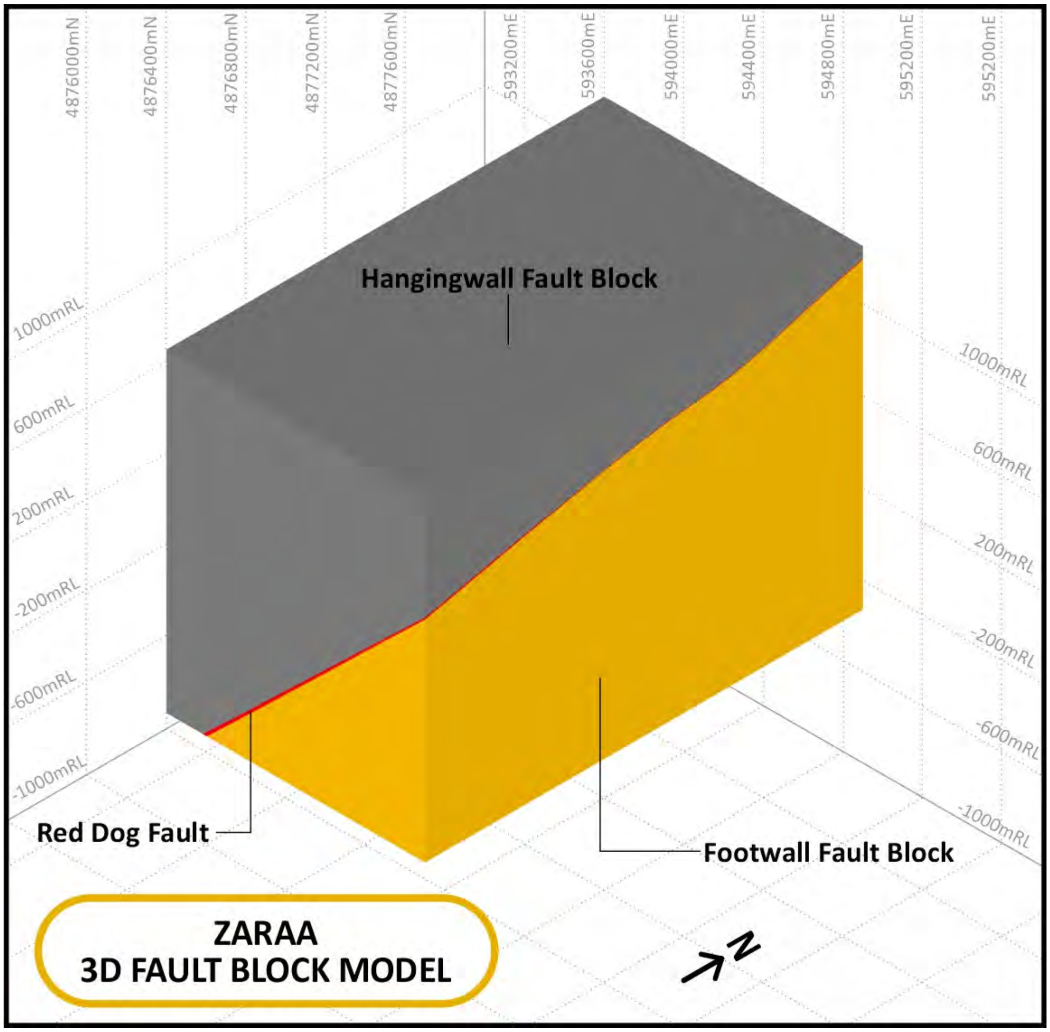


Figure 45: Fault Block Model for the Zaraa Deposit. XAM data, drafted by Naran Judger, 2021.**Structural Trend**

A single structural trend has been applied to the P1 and P2 intrusive units at Zaraa. This trend dips at 80 degrees towards 290 degrees with a pitch of 86 degrees with ellipsoid ratios of 3:3:1. This trend was determined using a 3D analysis of both the lithological units and grade.

12.4.3.1 Dividers

A single divider (Red Dog Fault) has been defined using natural breaks in mineralisation identified during the modelling process (Figure 45). As the fault has volume (approximately 10m thick) its hanging wall and footwall are also defined as dividers allow it to be domained out separately and its barren volume excluded from the estimations.

12.4.4 Rock Properties

12.4.4.1 Density

The specific gravity data for Zaraa describes a slightly skewed normal population (Figures 46 and 47) with a mean of 2.73g/cm3. There may exist multiple overlapping populations of data (double peak and small peaks on the higher density flank) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

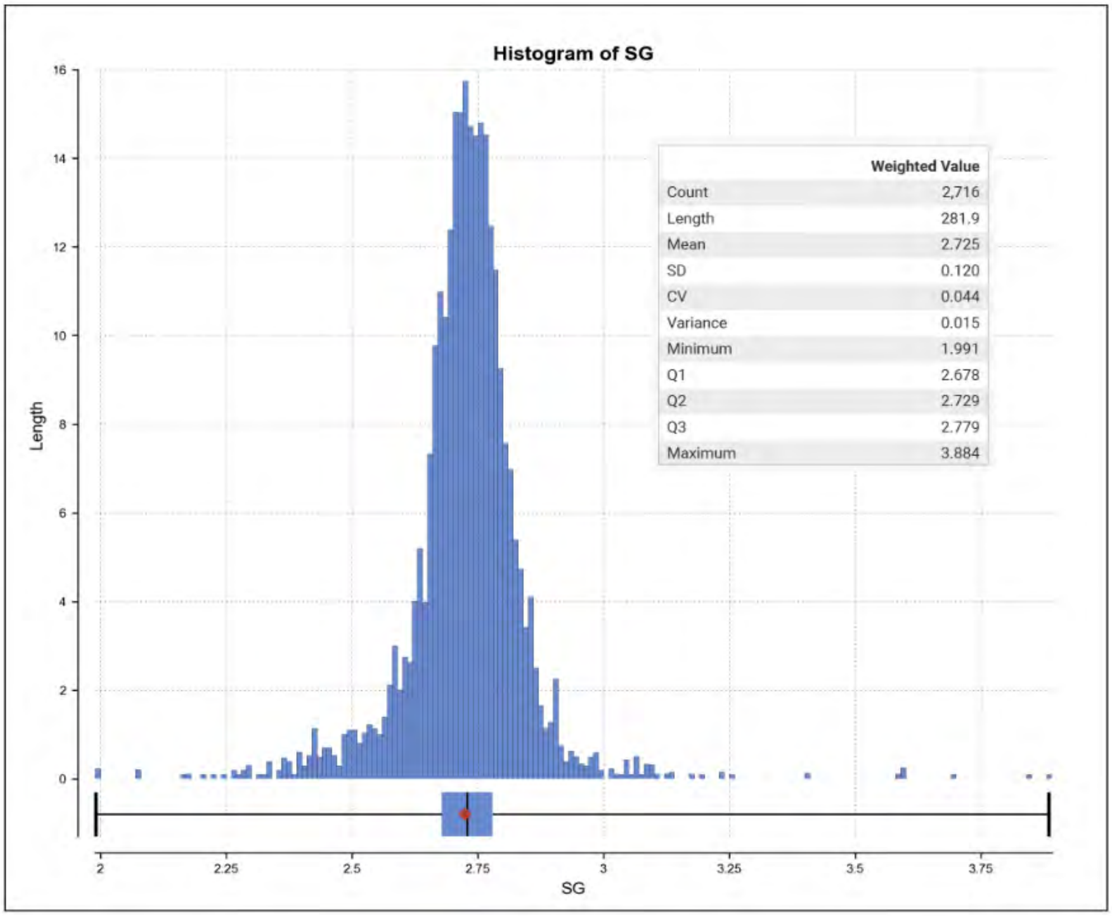


Figure 46: Specific Gravity Data for Zaraa.

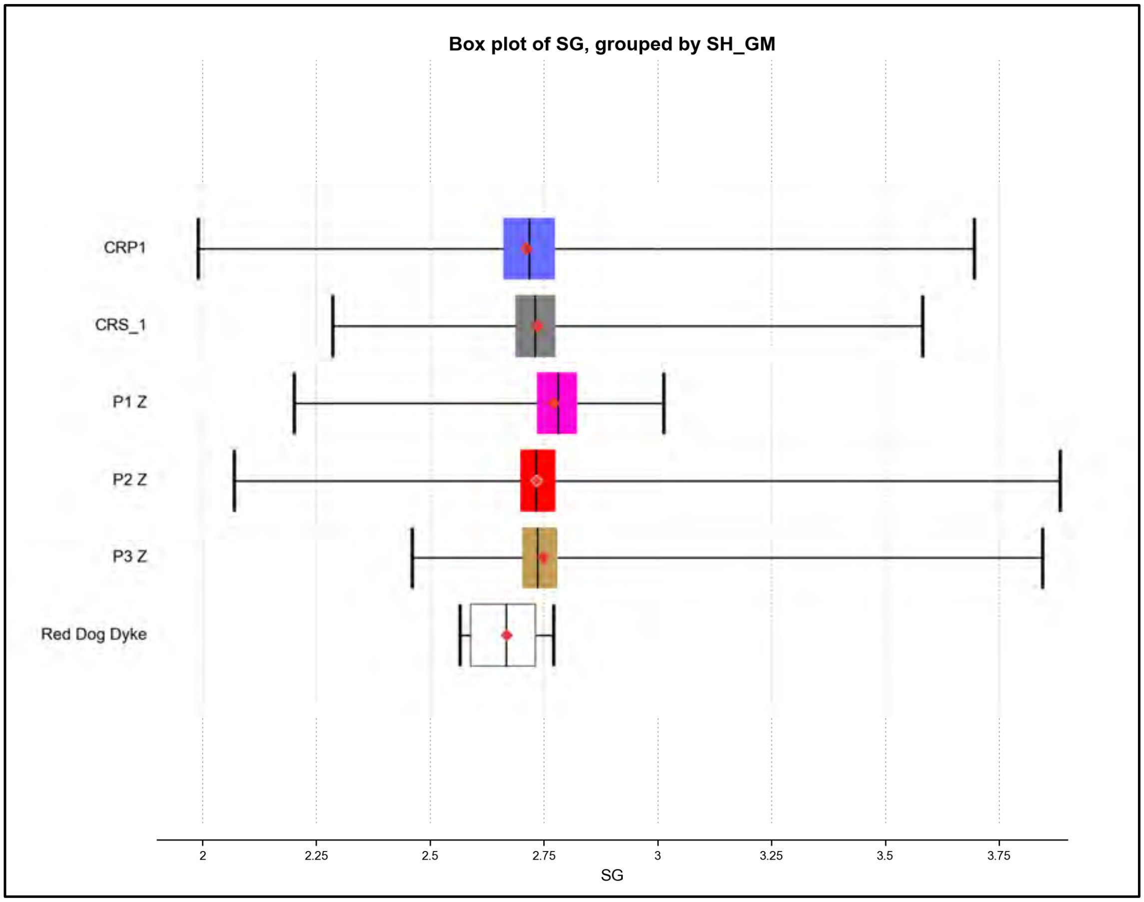


Figure 47: Lithology Box plot for Zaraa specific gravity data.

12.5 Golden Eagle

The Golden Eagle deposit was discovered in 2016 during the top of basement geochemical drilling program. Top of basement drill holes returned high-density porphyry b-veins and significant gold results. The deposit lies below 22m of cover.

12.5.1 Lithologies

The Golden Eagle deposit geology appears to be simple with only two modelled lithologies, CRP (Country Rock Porphyry) as host rock and the main mineralised intrusive phase P2 (Figure 48 and Table 11). Initial models were built using separate P1 and P2 volumes to evaluate if different grade populations are present. As the drill direction is broadly parallel to the boundaries of these intrusive units there are few contacts within the drill holes between the units. Contacts fall between drill holes. Placing a boundary between P1 and P2 was difficult and obtaining Boolean volumes of realistic shapes impossible. P1 and P2 were combined into a single intrusive unit. Small pods/inclusions of this unit created by narrow one drill-hole intercepts were removed in the SE and N fault blocks for simplicity. The cover sequence has been modelled separately and trimmed to topography. The cover sequence should be assigned a background grade value.

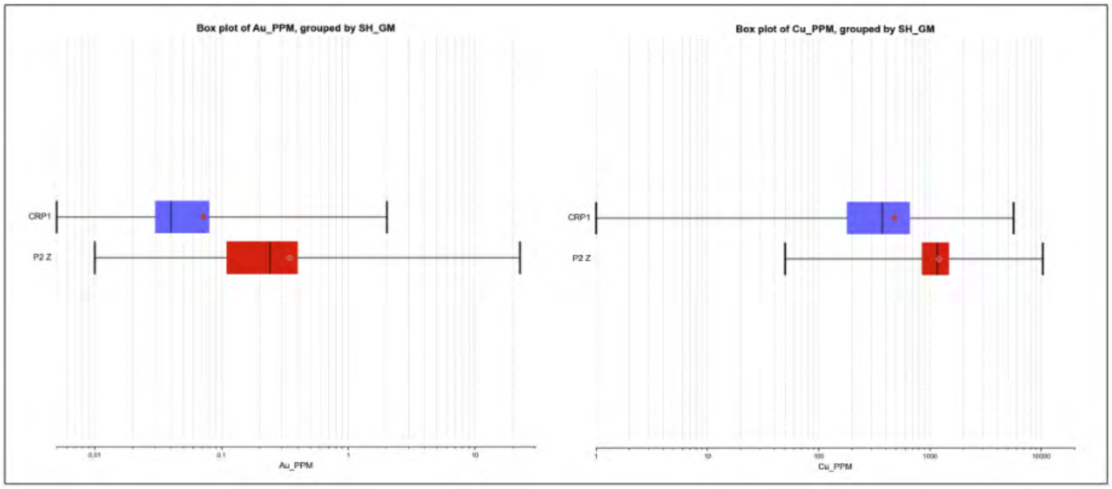


Figure 48: Box plot for raw Cu_ppm and Au_ppm data against group lithology (log scale) for Golden Eagle.

Table 11: Table of Statistics (Length weighted) for raw assay data for Golden Eagle.

	Lithology	Count	Length	Mean	Standard deviation	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Au_PPM		4606	6859.70	0.20	0.45	2.23	0.20	0.005	0.04	0.08	0.25	22.6
	CRP1	1795	2860.35	0.07	0.12	1.60	0.01	0.005	0.03	0.04	0.08	2.02
	P2 Z	2366	3333.55	0.35	0.60	1.74	0.36	0.01	0.11	0.24	0.4	22.6
Cu_PPM		4606	6859.70	809.29	642.15	0.79	412358.62	1	282	710	1200	10300
	CRP1	1795	2860.35	482.70	442.12	0.92	195474.00	1	179	373	661	5630
	P2 Z	2366	3333.55	1206.03	589.80	0.49	347869.72	50	848	1160	1480	10300

12.5.2 Oxide vs Sulphide Mineralisation

The oxide to sulphide surface was modelled using the criteria explained in the above sections. Small kernels of fresh rock were included in the oxide domain to ensure a realistic and simple oxide to fresh domain boundary. Mineralisation volumes were modelled separately for gold and copper and separately for oxide and sulphide. There is a strong control on gold grade across the oxide surface with gold appearing to be enriched in the oxide domain. Copper appears to be depleted in the oxide zone.

12.5.3 Structure

Two main faults were identified during the modelling process defining three fault blocks. The Pauls Fault and the East West Fault (Figure 49). Pauls Fault was identified based on grade and lithological terminations. Offsets in magnetics indicate this is a large offset structure. This feature could be used as a hard boundary in the estimation process. The East West Fault was identified based on lithological terminations and apparent grade offsets. Magnetics confirms this fault terminates against Pauls Fault, so it interpreted to be older. Grade appears to 'leak' across this fault in places so may be pre-mineralisation and considered a soft boundary for estimation purposes.

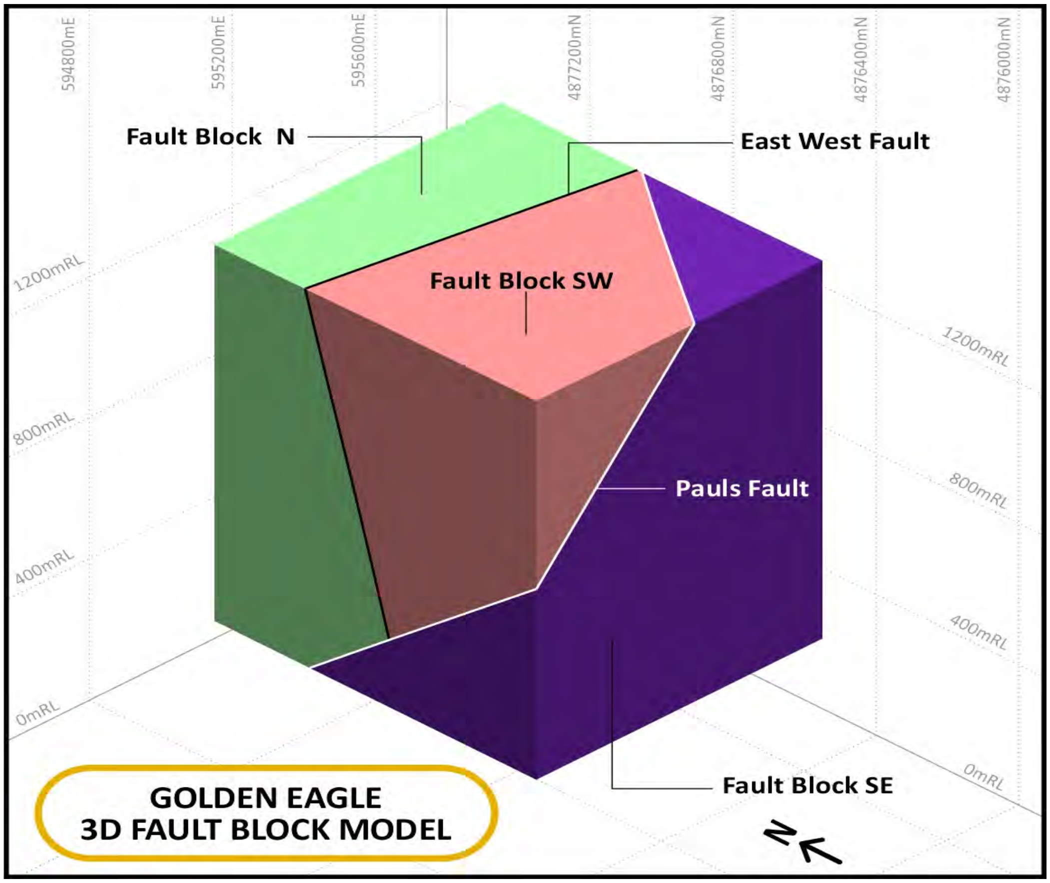


Figure 49: Fault block model for Golden Eagle. XAM data, drafted by Naran Judger, 2021.

12.5.4 Rock Properties

12.5.4.1 Density

The specific gravity data for Golden Eagle describes a slightly skewed normal population (Figures 50 and 51) with a mean of 2.73g/cm3. There appear to be multiple overlapping populations of data (double peak and small peaks on the higher density flank) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

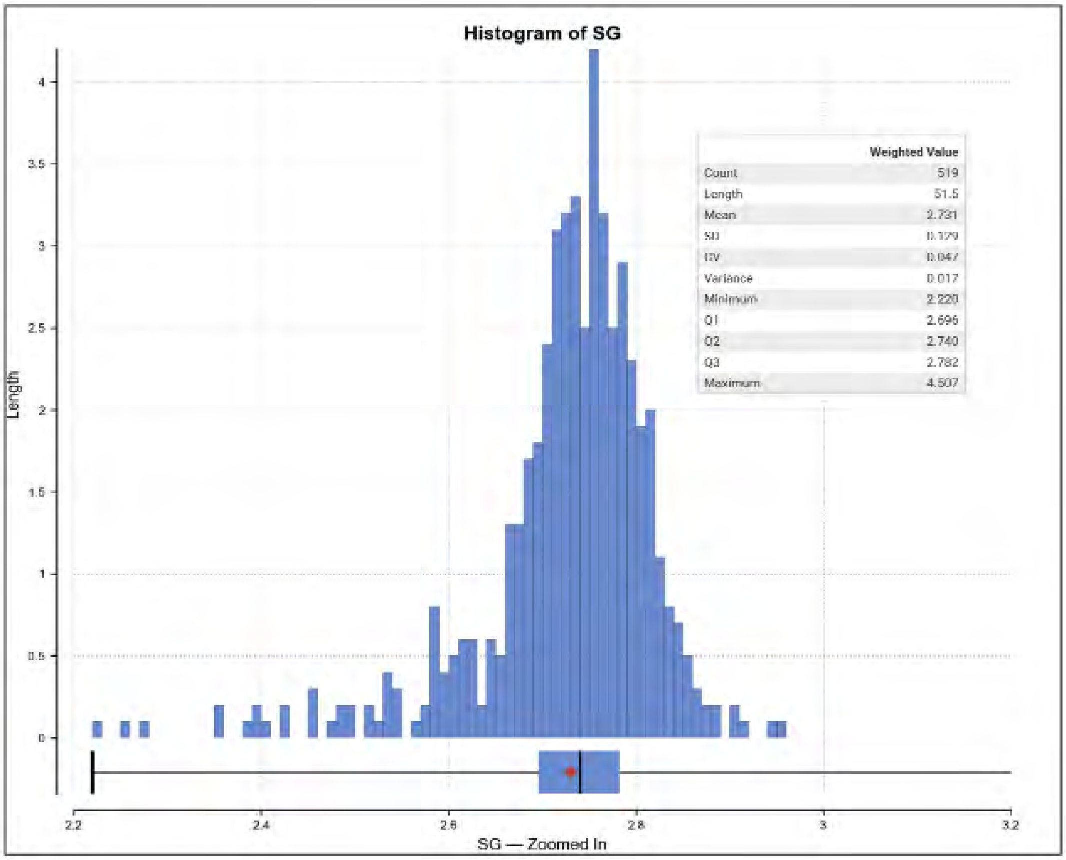


Figure 50: Specific Gravity Data for Golden Eagle.

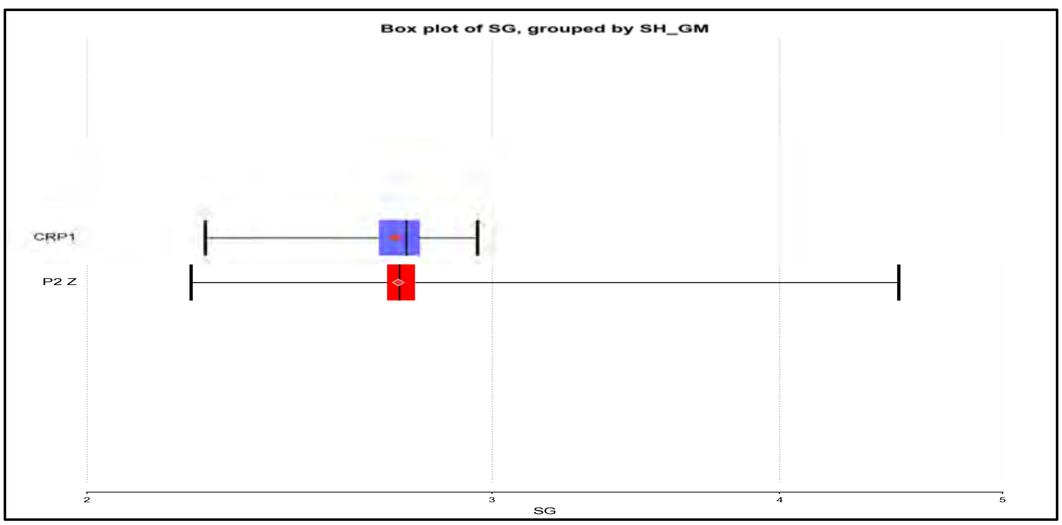


Figure 51: Lithology Box plot for Golden Eagle specific gravity data.

12.6 Zephyr

The Zephyr Deposit was discovered in 2016 during the top of basement geochemical drilling program. Top of basement drill holes returned porphyry b-veins and significant copper and gold results. The deposit lies below 20m of shallow cover.

12.6.1 Lithologies

The Zephyr Deposit geology appears to be relatively simple with three main lithologies modelled P2, P3 and Country Rock Porphyry (CRP). The cover units were modelled separately, trimmed to topography and should be excluded from the estimation. There is a strong correlation between mineralisation and the P2 intrusive (Figure 52 and Table 12).

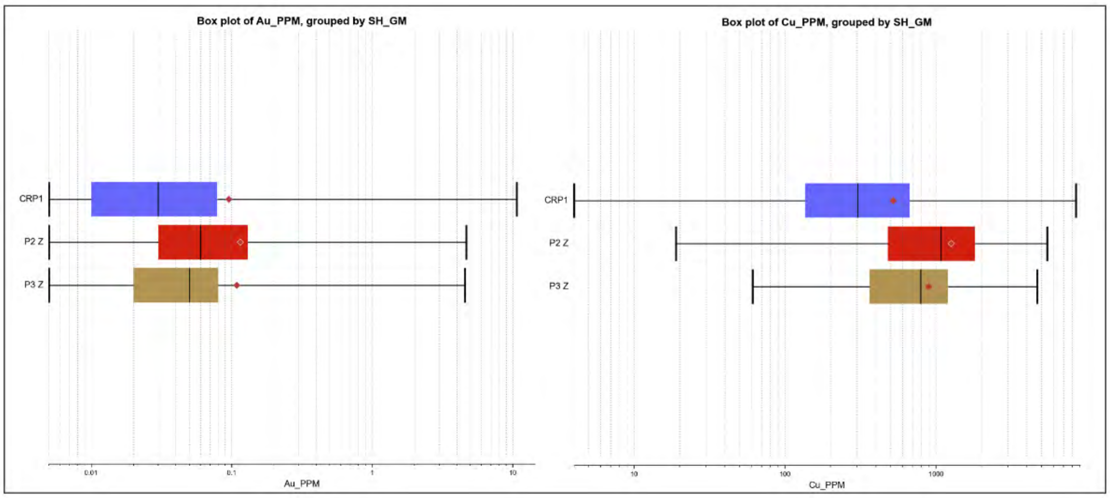


Figure 52: Box plot for raw Cu_ppm and Au_ppm data against group lithology (log scale) for Zephyr.

Table 12: Table of Statistics (Length weighted) for raw assay data for Zephyr.

	Lithology	Count	Length	Mean	Standard deviation	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Au_PPM		3262	5946.4	0.1002	0.325745	3.249341644	0.1061099	0.005	0.02	0.04	0.09	10.7
	CRP1	1731	3231.1	0.0957	0.397978	4.15997173	0.1583862	0.005	0.01	0.03	0.079	10.7
	P2 Z	1104	2009.7	0.1151	0.174424	1.515951227	0.0304237	0.005	0.03	0.06	0.13	4.69
	P3 Z	294	425.3	0.1088	0.363568	3.342454075	0.1321813	0.005	0.02	0.05	0.08	4.57
Cu_PPM		3268	5958.4	789.8	845.1944	1.070141619	714353.63	4	183	482	1130	8450
	CRP1	1734	3237.1	521.76	648.8268	1.243536324	420976.17	4	136	303	668	8450
	P2 Z	1107	2015.7	1263.9	957.2498	0.757354738	916327.21	19	481	1080	1820	5460
	P3 Z	294	425.3	898.41	695.4465	0.774085784	483645.78	61	363	793	1200	4690

12.6.2 Oxide vs Sulphide Mineralisation

The oxide to sulphide surface was modelled using the criteria explained in the above sections. Copper and gold grade shells were separated at this surface.

12.6.3 Structure

There is a single structure impacting the lithological and grade models for Zephyr (the Zephyr Fault). This structure was identified via lithological and grade 'breaks' and supported by the project scale magnetics. The offset and movements sense on this structure is not yet defined as there appears to be multiple movement events.

12.6.4 Rock Properties

12.6.4.1 Density

The specific gravity data for Zephyr describes a slightly skewed normal population (Figures 53 and 54) with a mean of 2.72g/cm3. There appear to be multiple overlapping populations of data (double peak and small peaks on the higher density flank) presumably relating to the addition of sulphide. The higher and lower sample values are being reviewed for accuracy.

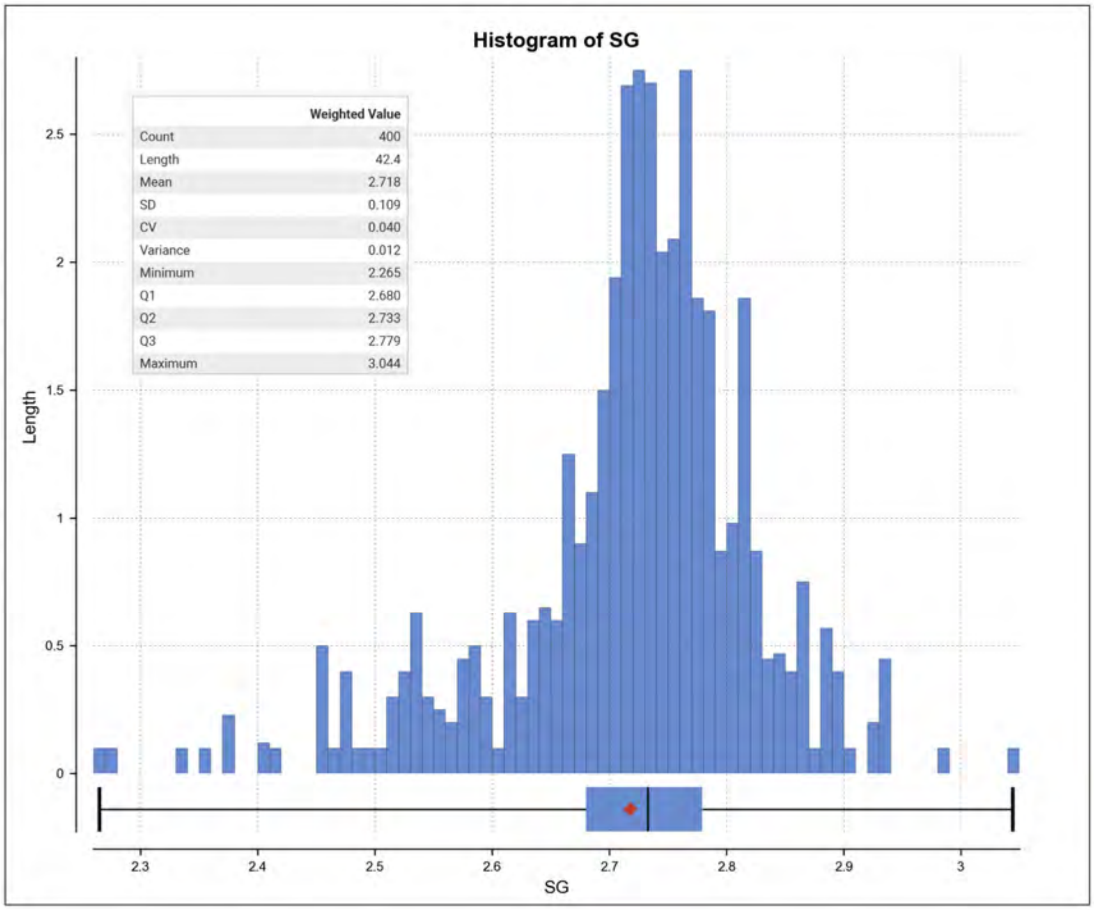


Figure 53: Specific Gravity Data for Zephyr.

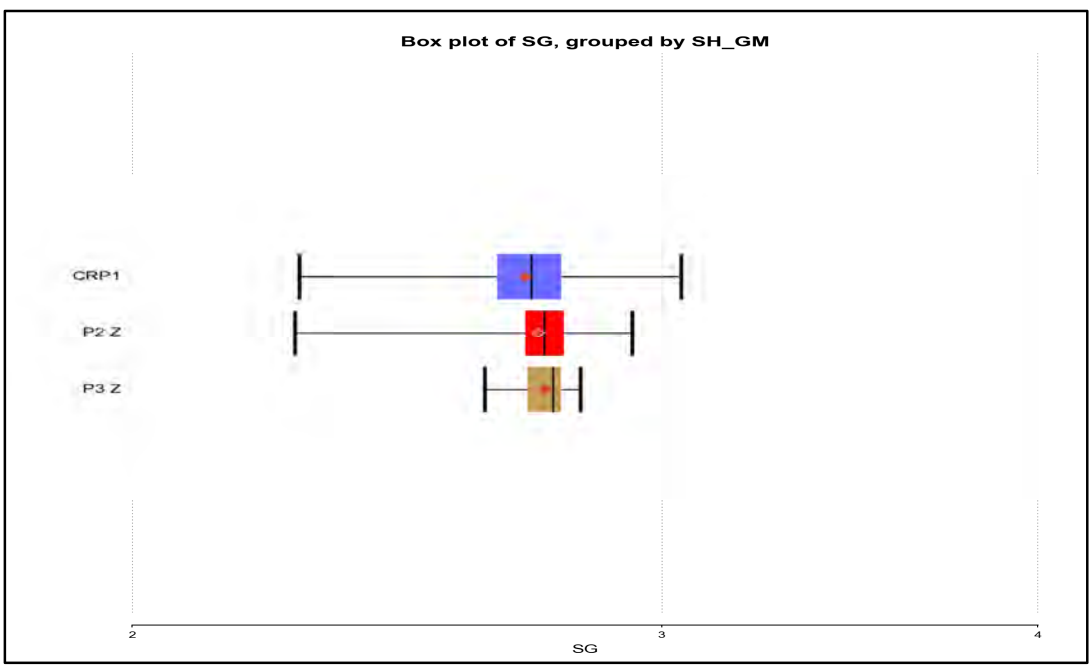


Figure 54: Lithology Box plot for Zephyr specific gravity data.

13 Exploration

A significant amount of exploration work has been conducted by XAM since the acquisition of the Kharmagtai Project in late 2014. Initially, work was directed towards data compilation and review, re-logging previously drilled holes and surface validation via mapping. Historical geophysics was re-processed using modern geophysical processing methods.

Preliminary drill programs in early 2015 were focused on extending known mineralisation at Stockwork Hill targeting the tourmaline breccia system, previously thought to be barren and diluting stockwork mineralisation. This led to the discovery of the high-grade tourmaline breccia system at Stockwork Hill. A maiden JORC mineral resource was released in 2015.

In 2016 exploration turned to the basin east of the three existing deposits. A program of pattern geochemistry was conducted by drilling rotary mud through the barren cover and 6m of diamond core into the top of basement rocks. This allowed for the main features of porphyry systems to be mapped and logged under the basin and for whole rock geochemistry to be conducted. This program led to the immediate discovery of Golden Eagle and Zephyr and the identification of many new geochemical targets.

In 2017 a full re-log of all drill core at Kharmagtai was conducted using the Anaconda Logging Method. This was to assist in building 3D geological models of the deposits and exploration under cover. At the same time a program of ASD data collection was conducted on all previous drilling using 'TerraSpec' to assist in mapping the porphyry related alteration systems at Kharmagtai. This work led to the discovery of the Zaraa deposit in late 2017.

In 2018 the entire Kharmagtai lease was remapped using the Anaconda Mapping method, focusing on the visible features of porphyry systems (vein densities, feldspar and mafic mineral alteration etc).

Exploration has continued with additional drilling targeting extensions to existing deposits and new zones of mineralisation, geophysics (CSAMT) and continued data collection from previous drilling. In 2018-19 the high-grade bornite zone was discovered at Stockwork Hill via a combination of 3D geological interpretations based off this new data and detailed structural reviews of the deposit. In 2020 two GeoTek 'Boxscans' were installed at Kharmagtai to re-image all the previously drilled and new drill core collecting high resolution imagery, laser scans, mag-sus, and other data. Machine learning algorithms are currently being developed to automatically log the core for lithology, alteration, sulphide abundance, vein types and abundance and rock property data. This is being conducted to allow highly accurate 3D geological, geochemical, geophysical and rock property models to be built to assist the study phases at Kharmagtai.

13.1 Data Compilation and Drill Hole Locations

All drill holes at Kharmagtai have been relogged using the Anaconda Logging Method, standardizing the logging outputs. This work was conducted by a small group of geologists being supervised by a highly experienced senior geologist who calibrated the loggers daily ensuring inter geologist variability was reduced. Some drill holes were logged multiple times to standardise lithological and alteration logging between holes and loggers.

All drill holes at Kharmagtai have been re-surveyed/located using a professional Mongolian Surveyor via differential global positioning system.

13.2 Trenching

Trenching is a common exploration technique in Mongolia where shallow alluvium covers outcrops. A significant amount of trenching was conducted at Kharmagtai by previous explorers (Figure 55). This trenching is mostly focused on the three first discovered deposits.

Trenching was conducted by XAM at White Hill and Stockwork Hill where strong visible oxide copper was seen at surface when only limited drilling had been completed. Seventeen trenching totalling 5,618m were excavated. Trenches were dug, sampled, logged and backfilled in the same day due to safety and environmental concerns.

All trenches were surveyed using a DGPS, logged for lithology, alteration and structure by a certified geologist. Sampling was conducted by laying a plastics sheet on the trench floor and channel sampling using hammer and chisel into a halved piece of large gauge PVC pipe to reduce contamination. Samples were collected from approximately 10cm above the toe of the trench and consisted of 2m intervals.

While chip channel sampling is less precise (in terms of sample support) than drill core, in the opinion of the Qualified Person, the strict sampling protocols employed, coupled with all trench samples being taken from oxide material, 2m sample intervals, and the distributed nature of porphyry copper-gold oxide domain mineralisation, in combination with significant spatially coincident drill hole data, provides sufficient sample support to justify the inclusion of the trench sample data into the oxide component of the MRE.

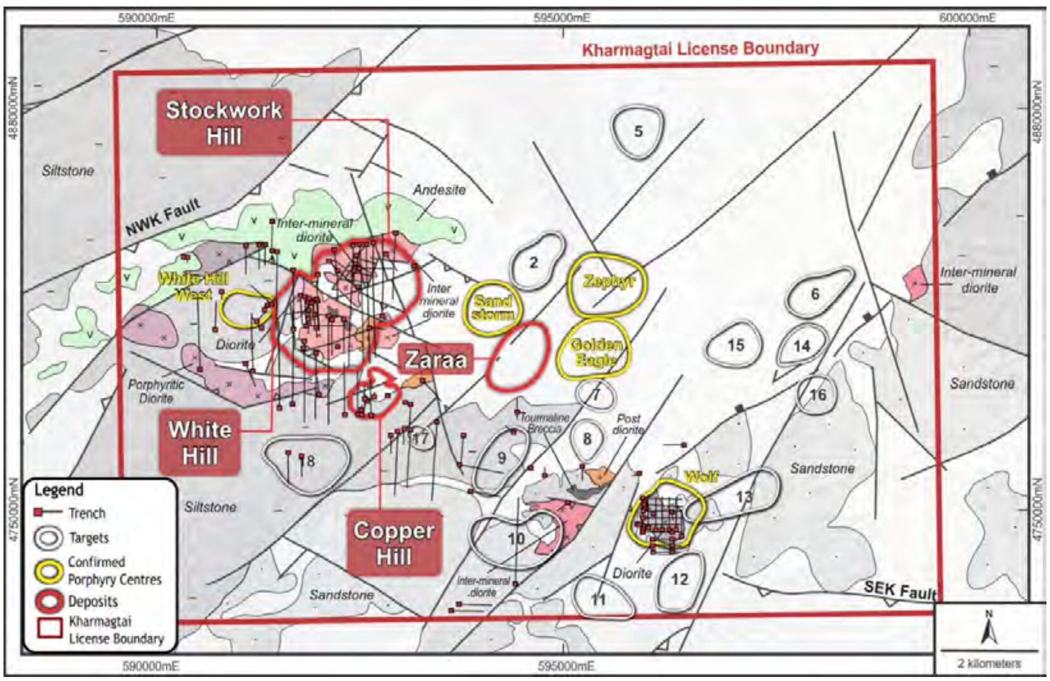


Figure 55: Trench locations over summary geology. XAM data, drafted by Naran Judger, 2021.

13.3 Geophysics

A large amount of detailed geophysical work was conducted by IMMI and AGC. This work has been re-processed by XAM using modern geophysical processing. The previous geophysics includes 25m spaced ground magnetics, ground gravity, airborne gravity, gradient array IP and 3D MIMDAS IP.

XAM contracted Fathom Geoscience to reprocess this data and produce 3D geophysical inversions constrained by geology. In 2015 an additional 1,200-line km of ground magnetics was conducted by XAM, infilling previous surveys. The entire Kharmagtai lease was covered with 100m gravity in 2016 for 2,225 gravity stations.

In 2017 the 3D inversions we’re reprocessed by Barry de Wet to produce highly detailed 3D magnetic and gravity models. These were combined into self-organising maps “SOMs” to help constrain the geophysical properties of known mineralisation and search for similar properties in un-explored areas.

In 2020 a large scale CSAMT survey was conducted to image the regional scale structures across the lease. This survey consisted of 60.5-line kilometres of CSAMT (19 lines and 603 stations). Receiver spacings were set at 100m to allow a high-resolution product and a depth of investigation to 1000m.

Each deposit at Kharmagtai displays a different geophysical characteristic. The Stockworks zones at Copper Hill, White Hill, Golden Eagle and Stockwork Hill are magnetic features in the regional dataset, however, Zaraa and Zephyr fall on the flanks of magnetic features. The tourmaline breccia zone at Stockwork Hill is a zone of magnetic destruction. White Hill, particularly the western edge of White Hill has a strong IP Chargeability response, however other deposits do not show a strong or consistent IP response. Zaraa has a large halo of IP chargeability, however the mineralised zone does not.

13.4 Geochemistry

Previous workers (IMMI) conducted a significant amount of rock-chipping across the Kharmagtai lease with 3,158 samples collected across the Kharmagtai Lease and assayed for seven elements (Au, Cu, Ag, As, Pb, Zn, Mo). Additional rock chipping was conducted by XAM with 187 samples collected and assayed for the same element suite used by the drilling.

In 2016 a program of whole rock geochemistry was conducted in conjunction with the top of basement whole rock drilling to allow a complete geochemical map of the Kharmagtai lease to be generated. Samples were submitted for four-acid ICPMS analysis for 61 elements and major elements via XRD and gold by fire assay. The objective of the whole rock geochemical work was to use the pathfinder elements footprint model developed by Cohen (2011) and reported by Halley et al (2015).

13.5 Targeting

Targeting methodologies focus on using the outputs of the Anaconda Logging and Mapping combined with geochemistry supported finally by geophysics. The current target locations and ranking can be seen in Figure 56 and are summarised in Appendix 10.

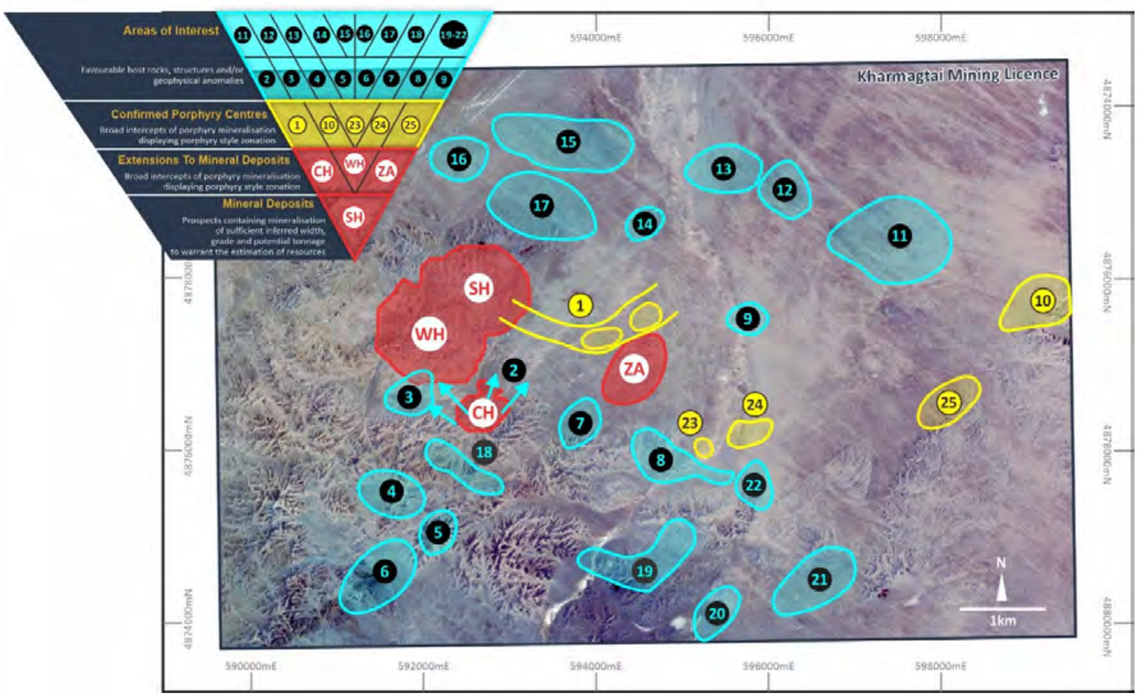


Figure 56: Target and deposit locations. XAM data, drafted by Naran Judger, 2021.

13.6 Topographic Survey and Satellite Imagery

The project topography is based on 1m contours from satellite imagery acquired in 2020 with an accuracy of ± 0.1m.

14 Drilling Data

At the time of writing this report and due to COVID restriction limitations, SGC were not able to undertake the conventional site and laboratory investigations which are regarded best practice and as such all aspects pertaining to data, sampling and assaying are taken at face value as supplied by the Client to SGC.

14.1 Grid Convention

All data were supplied by the Client in the form of UTM_48N grid convention with drilling sites located using non specified DGPS methods.

14.2 Drill Hole Data

A summary showing database drilling details for Kharmagtai, and associated areas is presented in Table 13. The assay file was subsequently composited to 4m composites as deemed appropriate by the Client for use in geometry modelling and subsequent resource estimation.

The drilling database contains historical data from July 1996 through to the present (October 2021). The close off of the database was staggered based on delivery of final drill-hole data and on the basis on the completion of each area interpretation phase. The final data/s were supplied to SGC on the 27th of October 2021. It is understood by SGC that drilling continued beyond the close off of the database as noted above, these data/s will be incorporated in the next iteration.

It should be noted that although the database contains data spanning as far back as 1996, some of the historical data was deemed by the investigation team to be unfit for use in the estimation phase of the work. The data which was used in the estimates is addressed in sections 18, 19 and 20 of this report in detail.

In total there are 1522 records in the collar file which cover a range of sampling methods as noted in Table 13.

Table 13: Collar file Data by method (Kharmagtai and associated) – closed off database October 2021.

Method	***Count***	***Sum (m)***	***Average (m)***	***Description***
DDH	*481*	*212840.71*	*442.5*	*Diamond Drilling*
Hydro	*1*	*80*	*80*	*Hydraulic Drilling*
PCD	*664*	*26136.6*	*39.36*	*Percussion Drilling - nonspecific*
RC	*228*	*38773.7*	*170.06*	*Reverse Circulation*
RCDH	*24*	*6662.85*	*277.62*	*Reverse Circulation with Diamond Tail*
TR	*123*	*45392.65*	*369.05*	*Surface Trenching*
NO RECORD	*1*	*154.1*	*154.1*	*No record*

The assay file contains 138,450 records as at the 27th of October 2021 and assay results generally cover a full suite of 34 elements (for XAM) as follows Au_PPM, Cu_PPM, Mo_PPM, Ag_PPM, Al_PPM, Ba_PPM, Be_PPM, Bi_PPM, Ca_PPM, Cd_PPM, Co_PPM, Cr_PPM, K_PPM, La_PPM, Li_PPM, Mg_PPM, Mn_PPM, Na_PPM, Ni_PPM, P_PERCENT, V_PPM, Sb_PPM, Sc_PPM, Sn_PPM, Sr_PPM, Ti_PPM, As_PPM, Pb_PPM, Zn_PPM, W_PPM, Y_PPM, Fe_PERCENT, Zr_PPM and S_PPM.

The survey file contains 10,923 records as at the 27th of October 2021 with numerous measurements down hole at regular interval which varies from hole to hole generally at or near every 30m down hole.

The lithology file contains 49,040 records as at the 27th of October 2021 with intervals being logged at geological intervals and samples broadly speaking (for DDH drill holes) at 2m sample intervals.

For details pertaining to file structures please see section 15.6 of this report.

14.3 Drill hole Spacing

At Kharmagtai, drilling was completed on approximately 40m section spacing and holes spaced approximately 40m apart along sections, although many holes are drilled off section and at a range of azimuths. In some areas where the mineralisation is of particular interest and in-line with the historical approach to delineation a number of sections are drilled down to 20m on sections.

The drill spacing (Figure 57) is considered appropriate at this stage of development to appropriately define the geometry and extent of the larger to medium scale continuity and smaller scale local variability of the mineralisation for the purpose of estimating of Cu, Au, Mo and S given the understanding of the local project geology, structure and confining formations.

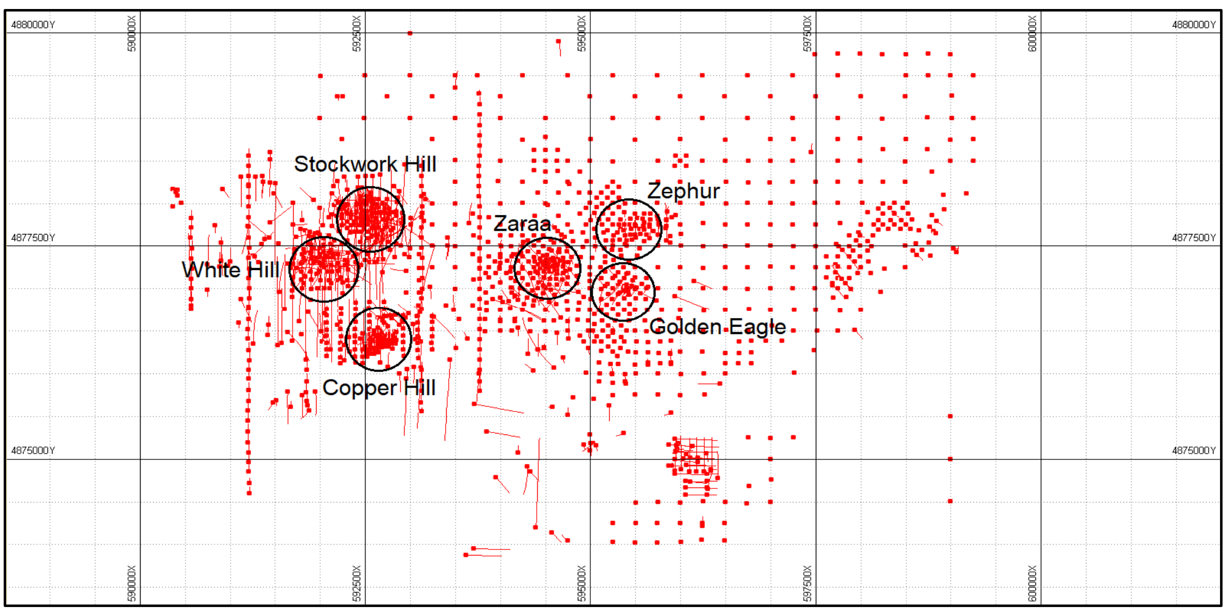


Figure 57: Plan of drill collars at the Kharmagtai deposit. XAM data, drafted by Robert Spiers, 2021.

As can be seen in Figure 57, the bulk of the drilling has been focussed over three main zones, Stockwork Hill, White Hill and Copper Hill. In addition, significant drilling has also been undertaken over other important mineral occurrences of Zaraa, Zephyr and Golden Eagle project areas.

It is understood by SGC that drilling is ongoing over the Kharmagtai project scheduled for completion first quarter of 2022 in-line with company strategy.

SGC recommend further drill testing be undertaken to define more clearly the limits, geometry and style of the short scale mineralisation continuity present in all project areas with particular emphasis on the ore zones which contribute most significantly to the resource and for which structural complexity is significant such as Stockwork Hill TBX zones on the north-eastern flank of the Mid Area.

14.4 Collar and down-hole surveys

Down-hole surveys are conducted at regular interval and are recorded by Gyro (no specific information is present in the database as to what form of Gyro is being employed).

All survey records within the survey file pertaining to historical drilling are taken at face value. SGC have not undertaken any validation with respect to the survey data and are not aware of the extent to which XAM have taken steps to account for the accuracy of the survey database.

The recent infill drilling was combined with the historical dataset and the combined survey dataset now consists of 10,923 records.

14.5 Bulk Density

A comprehensive database of density measurements was supplied to SGC by the XAM geologists which incorporates both historical and recent data.

During this round of estimation density was modelled as an attribute of the model utilising the local informing data assigned block by block. In instances where there are element estimates but that density estimates are absent (due to a lack of available local data) averaged density values by project areas and oxidation state were employed through the analysis of the informing dataset. Please refer to Appendix 5 for a summary of average density values by project area and oxidation state.

Due to COVID-19 restrictions SGC were not able to complete a site visit and cannot comment further on the process of delivery of density data and as such these data remain the responsibility of the Client. SGC take the data provided at face value at this time.

As at the 27th of October 2021, the density dataset contains 14,058 bulk density measurements from the 2021 compilation. As is industry best practice and in accordance with the standard operating procedures for bulk density as employed at the Kharmagtai site, density sampling is ongoing. Please refer to Appendix 4 for details as to the XAM density sampling SOP.

An assessment of outliers was completed by SGC in consultation with the Client. Outliers were resolved to be replaced during the assessment of the bulk density dataset on an area by area basis which saw the minimum / maximum value set as follows:

- Stockwork Hill and White Hill: Minimum density of 1.297gm/cc and a maximum value of 3.789gm/cc;
- Copper Hill: Minimum density of 2.115gm/cc and a maximum value of 3.773gm/cc;
- Golden Eagle: Minimum density of 2.22gm/cc and a maximum value of 4.507gm/cc;
- Zephyr: Minimum density of 2.22gm/cc and a maximum value of 4.507gm/cc;
- Zaraa: Minimum density of 1.991gm/cc and a maximum value of 3.406gm/cc.

SGC recommend that further work be undertaken to further refine the density variability on an area-by-area basis prior to leading into mining studies.

14.5.1 Topography

The Client provided SGC with a topographic surface, a base of oxidation surface and a top of fresh rock surface, Figure 58 illustrate the topographic surface as of 2021.

To the best of SGC's knowledge the topographic surface was produced by an Airborne Laser Scanning (LiDAR) survey was carried out over the Kharmagtai and adjacent areas as seen in

Figure 58. SGC are not aware of the details of the processing and production of the aforementioned surfaces and as such take the surfaces at face value from the Client.

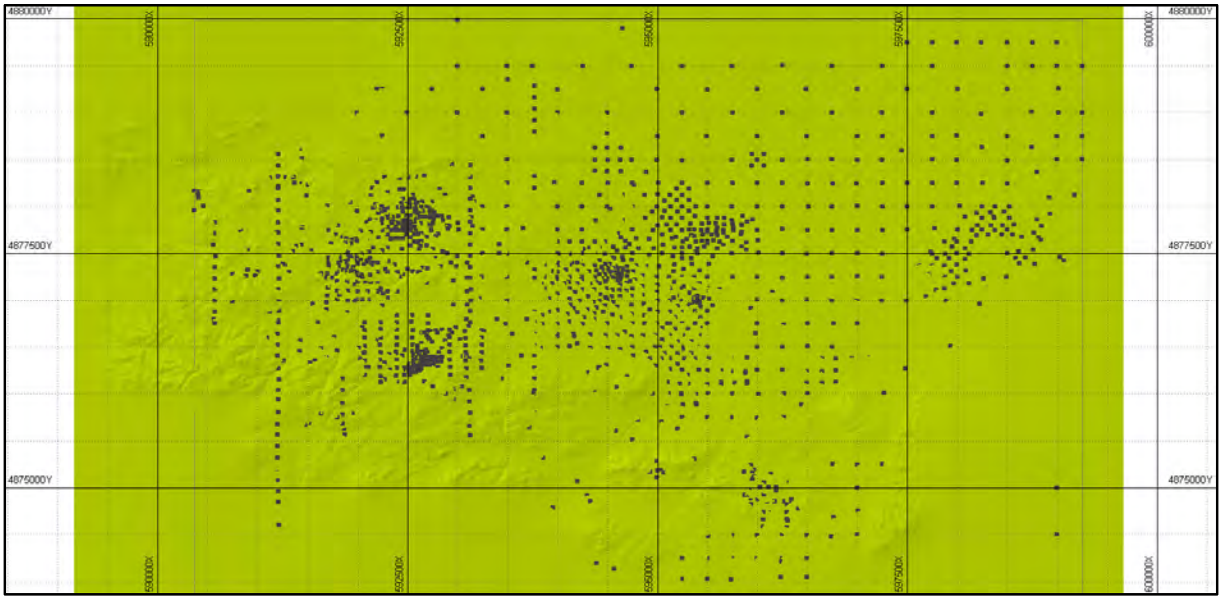


Figure 58: Topographic surface for the Kharmagtai deposit. XAM data, drafted by Robert Speirs, 2021.

15 Sampling Method and Approach

There are six discrete deposits within the updated MRE with differing data densities (Figure 59), these will be discussed separately below.

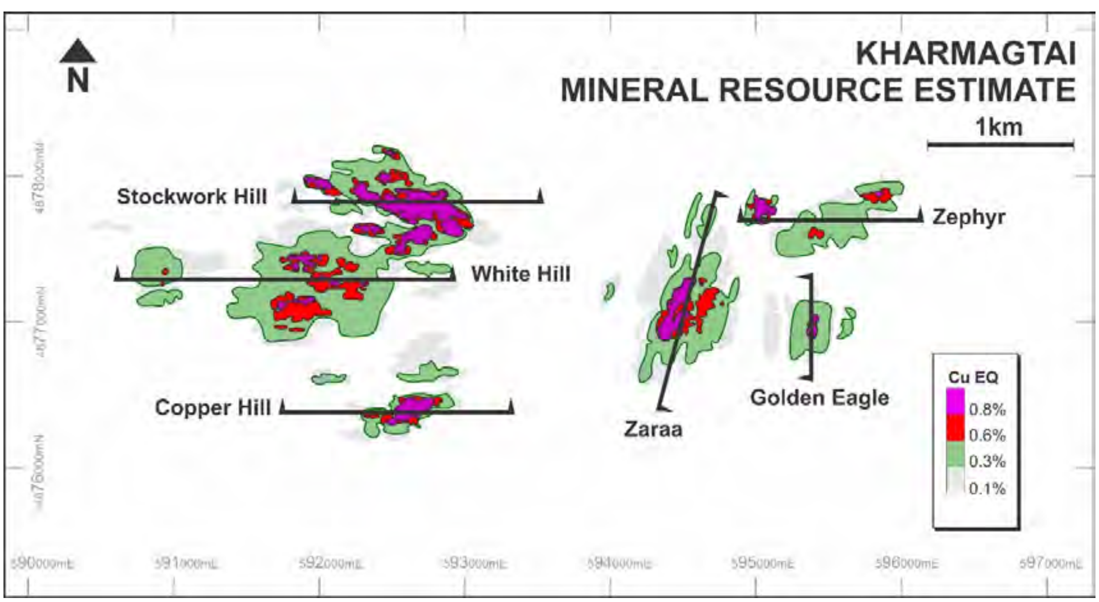


Figure 59: Plan view of the Kharmagtai district, displaying the Mineral Resource Estimate, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

15.1 Stockwork Hill

The stockwork Hill deposit describes broadly east-west trending, vertical tabular body of mineralisation above 0.1% CuEq that is 1075m long (at surface), 380m wide and is drilled to 1125m from surface (Figure 60).

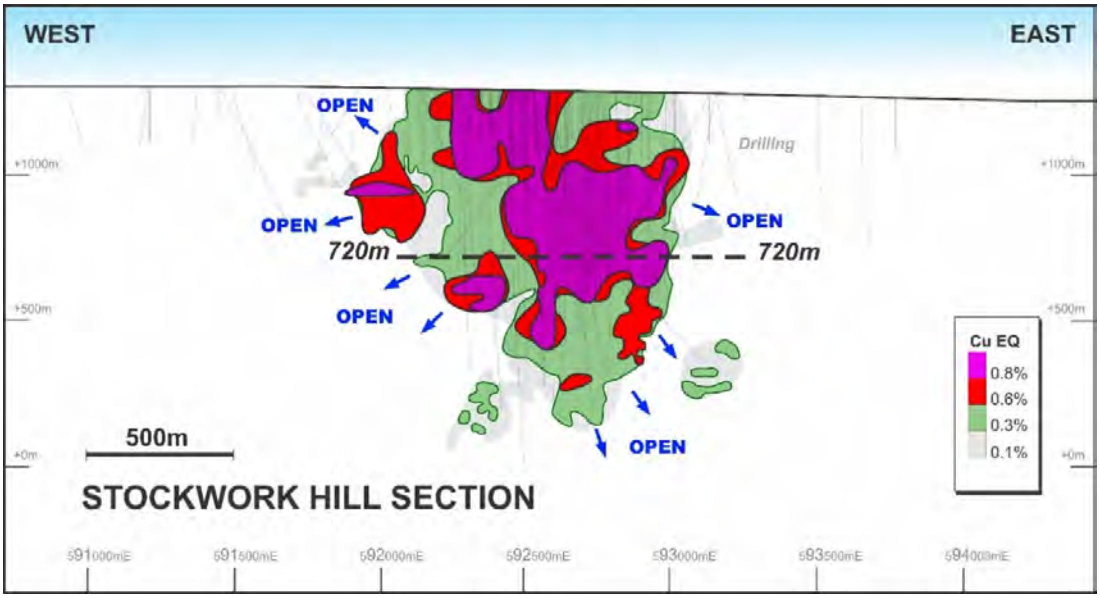


Figure 60: Long section of the Stockwork Hill Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

The drilling meters and sample numbers for drilling at Stockwork Hill are detailed in Table 14.

Table 14: Drill Statistics for Stockwork Hill.

Stockwork Hill		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	99443.46m	46040 samples
RC	4491m	2221 samples
Rotary Mud	120.2m	18 samples
Trenching	10468.9m	3013 samples
Total	114523.56m	51292 samples

Note: Rotary mud samples are diamond drilling samples taken from the base of a rotary mud collar

Stockwork Hill has been the focus of most of the drilling of all deposits at Kharmagtai with ~100km of diamond drilling and 46,000 samples assayed. Drill spacings within the mineralised zone average ~50m. Drill directions range from south to north for most of the early IMMI, to variable drill orientations during XAM drilling. Variable orientations were used to help understand structural features.

The drill-hole dips are generally steep (60 to 70 degrees) which introduces a potential sample bias by drilling at a low to moderate angle to the mineralised body. Steep orientations were used as the drilling equipment is not capable of drilling at a low angle to the mineralised body and drill-hole deviations increase at low angles.

Sample intervals are nominally 2m composites. Prior to 2016 sampling was conducted on regular 2m intervals with no regard to geology. In 2016 the sampling protocol was changed to sample to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

15.2 White Hill

The White Hill Deposit describes a body of mineralisation above 0.1% CuEq that is 1000m long (at surface), 800m wide and is drilled to 1000m from surface (Figure 61). There is a separate body of mineralisation to the west (350m X 250m x 600m) that with drilling could be joined to the main body of mineralisation.

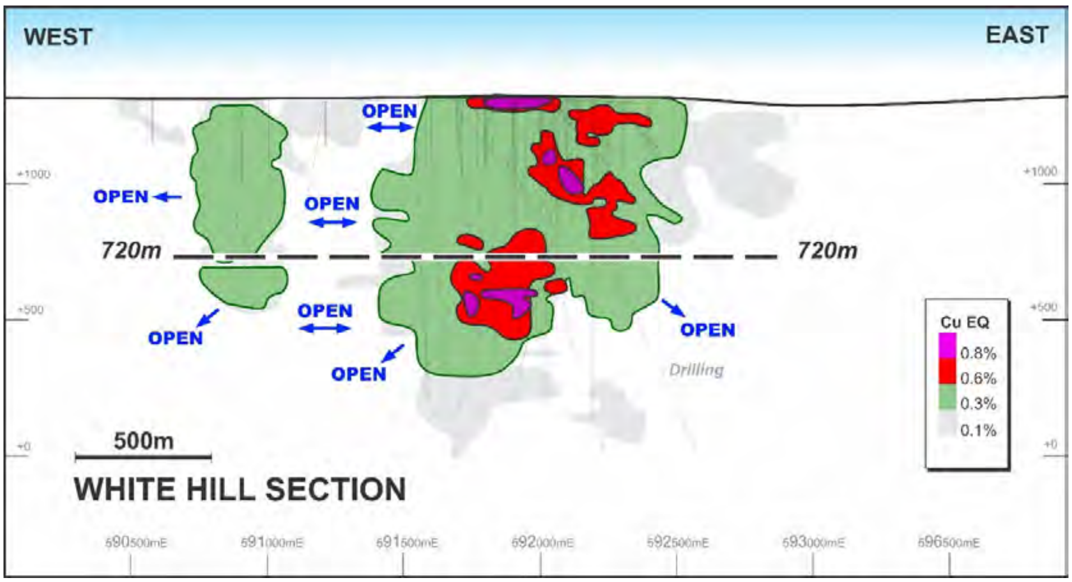


Figure 61: Long section of the White Hill Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

White Hill drilling statistics are detailed in Table 15.

Table 15: Drill Statistics for White Hill.

White Hill		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	39183.81m	16450 samples
RC	9995.3m	5006 samples
Rotary Mud	33.0m	6 samples
Trenching	14389.1m	5301 samples
Total	63601.21m	26763 samples

Note: Rotary mud samples are diamond drilling samples taken from the base of a rotary mud collar

Drill spacings within the mineralised zone at 1200mRL (80m from surface) average ~50m. This spacing broadens to ~75m at 900mRL (400m from surface) and to greater than 150m below 700mRL (600m from surface). Drill directions range from south to north and east to west for most of the early IMMI. Post 2015 drilling is generally directed from the south to the north. Variable orientations were used to help understand structural features. Drill dips are generally shallower than Stockwork Hill (55 to 65 degrees) which introduces less of a potential sample bias by drilling at a low to moderate angle to the mineralised body. Shallow orientations were used by IMMI as the drill rig type was capable of shallower angles (Longyear, LM40's). Steep orientations were used by XAM as the drilling equipment (UDR style rigs) are not capable of drilling at a low angle to the mineralised body and drill hole deviations increase at low angles.

Sample intervals are nominally 2m composites. Prior to 2016 sampling was conducted on regular 2m intervals with no regard to geology. In 2016 the sampling protocol was changed to sample to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

15.3 Copper Hill

Copper Hill is a smaller, but higher-grade zone of mineralisation describing a plunging flattened cigar shaped body. This body plunges at ~50 degrees towards 240 degrees. The plunge length of Copper Hill is approximately 600m long and is 150m by 200m in cross section.

The drilling statistics for Copper Hill are detailed in Table 16.

Table 16: Drill Statistics for Copper Hill.

Copper Hill		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	23648.71m	11258 samples
RC	8527.0m	4227 samples
PCD	18.0m	3 samples
Trenching	4555m	1430 samples
Total	36748.71m	16918 samples

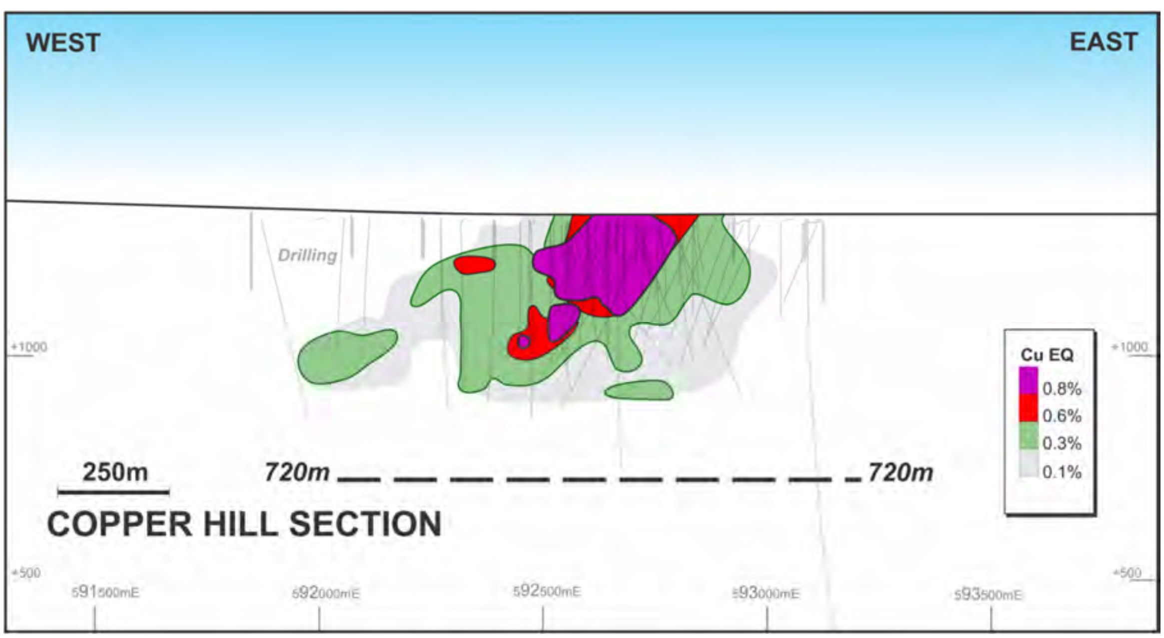


Figure 62: Long section of the Copper Hill Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

Drill spacings within the mineralised zone at Copper Hill average ~25m. Drill are dominantly from south to north. Post 2015 drilling variable. Variable orientations were used to help understand structural features. Drill dips are generally shallower than Stockwork Hill (55 to 65 degrees) which introduces less of a potential sample bias by drilling at a low to moderate angle to the mineralised body.

Shallow drilling orientations were used by IMMI due to the drill rig type being capable of shallower angles (Longyear, LM40's) Steep orientations were used by XAM as the drilling equipment (UDR style rigs) are not capable of drilling at a low angle to the mineralised body and drill hole deviations increase at low angles.

Sample intervals are nominally 2m composites. Prior to 2016 sampling was conducted on regular 2m intervals with no regard to geology. In 2016 the sampling protocol was changed to sample to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

15.4 Zaraa

Zaraa describes a broadly tabular body of mineralisation that strikes NNE-SSW and plunges at approximately 58 degrees. The dimensions of mineralisation above 0.1% CuEq is ~1000m along strike, 600m across strike and 1000m down plunge (Figure 63).

Drilling statistics for Zaraa and detailed in Table 17.

Table 17: Drill Statistics for Zaraa.

Zaraa		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	32273.56m	15840 samples
RC	6705.65m	3103 samples
PCD	5432.5m	856 samples
Trenching	1638m	597 samples
Total	46049.71m	20396 samples

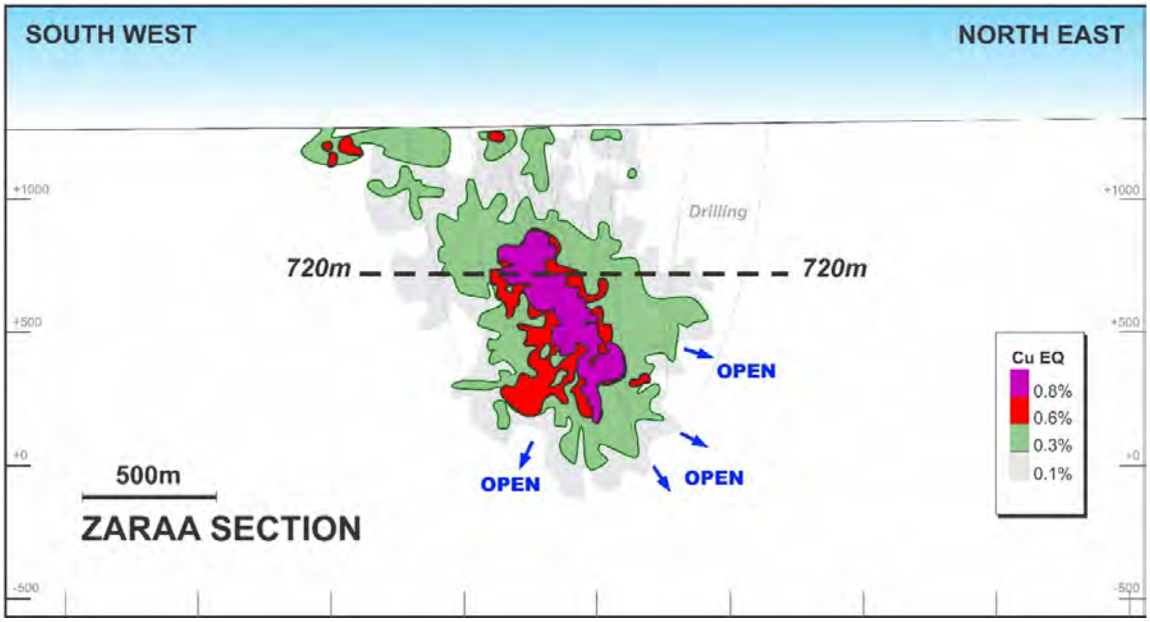


Figure 63: Long section of the Zaraa Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

Zaraa is a more recent discovery and as the top of the main body of mineralisation is several hundred meters below surface drill spacings are generally broader. Drilling has been directed from all angles and scissor holes employed to assist in determining the true orientation of the mineralised body. As such the drill spacings vary depending on RL.

The top of basement sampling above Zaraa is drilled to 50m spacings. At the 900mRL (400m from surface) the top of the higher-grade portion of Zaraa drill spacings are ~100m. In the core of the high-grade portion of Zaraa at 700mRL drill spacings average 75m. The deeper portions of Zaraa, drill spacings average 100m.

Variable orientations were used to help understand structural features and determine the orientation of the mineralisation.

The drill-holes dips are generally steeper (60 to 70 degrees) which introduces a potential sample bias by drilling at a low to moderate angle to the mineralised body. Steep orientations were used as the drilling equipment (UDR style rigs) are not capable of drilling at a low angle to the mineralised body and drill hole deviations increase at low angles.

Sample intervals are nominally 2m composites constrained to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

15.5 Golden Eagle

The Golden Eagle Deposit describes a body of mineralisation above 0.1%eCu of 300m long by 300m wide drilled to a depth of 450m (Figure 64).

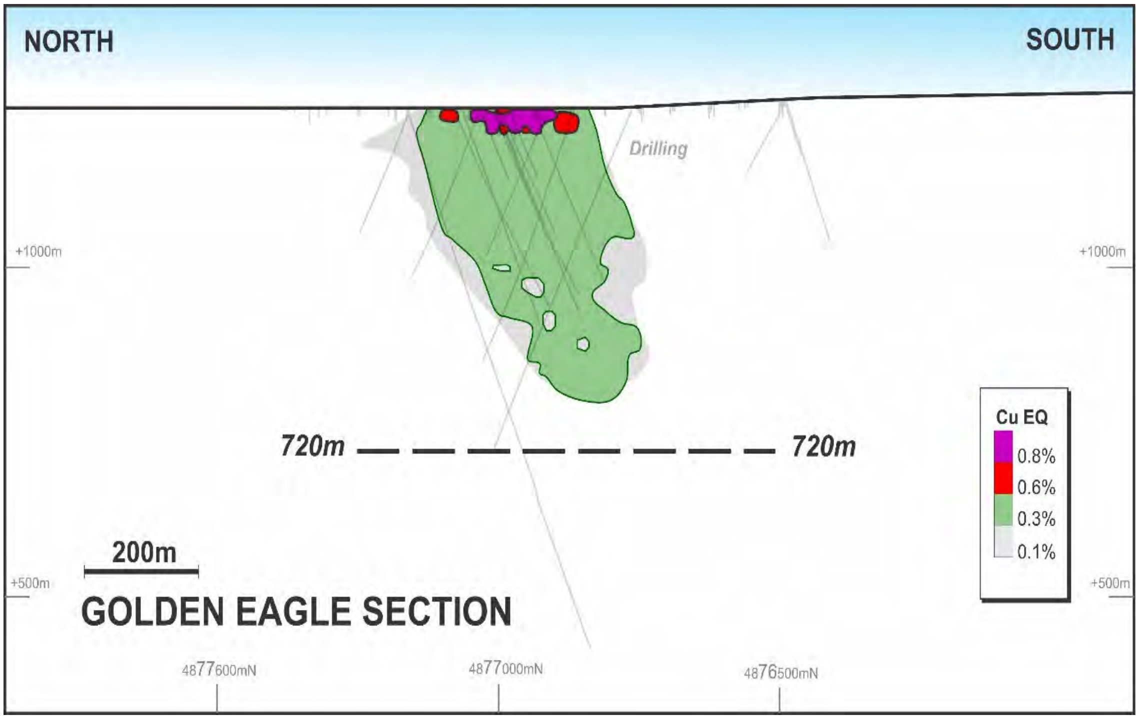


Figure 64: Long section of the Golden Eagle Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

The drilling statistics for Golden eagle are detailed in Table 18.

Table 18: Drill Statistics for Golden Eagle.

Golden Eagle		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	5871m	4875 samples
RC	1325.5m	1230 samples
PCD	2689.6m	593 samples
Trenching	0m	0 samples
Total	9886.1m	6698 samples

Drill spacings at Golden Eagle are dependent on depth. The initial top of basement drilling which discovered the deposit are drilled at approximately 25m spacings over the higher-grade gold portion of the deposit. Spacings broaden to 50m spacings at 1100mRL and +100m below 1000mRL. Drill orientations are generally from northwest to southwest and after modelling appear to be parallel to the main trend of mineralisation which has potential to introduce a bias in sampling and geological modelling as discussed in sections 8, 9 and 10 of this document.

Sample intervals are nominally 2m composites constrained to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

15.6 Zephyr

The Zephyr deposit describes a broadly tabular body that strikes approximately 1000m to the west-northwest, is 250m wide and plunges 400m approximately 60 degrees to the south (Figure 65).

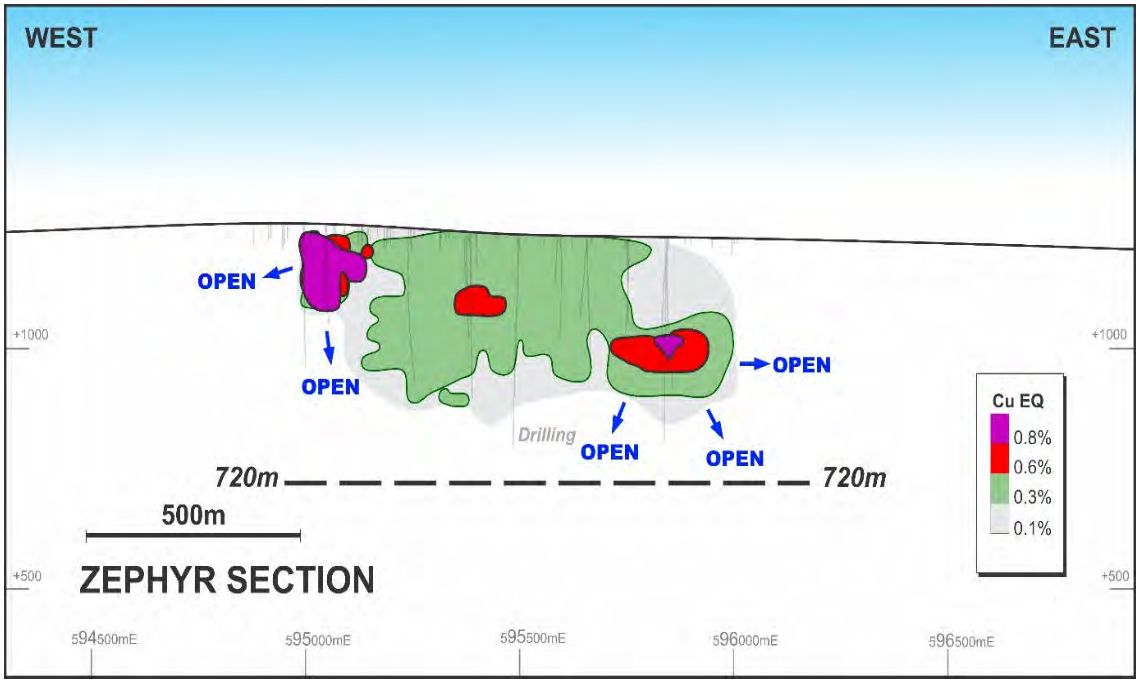


Figure 65: Long section of the Zephyr Deposit, displaying the Mineral Resource Estimate extents in relation to drilling, where legend CuEq=CuEqRec. XAM data, drafted by Naran Judger, 2021.

The drilling statistics for Zephyr are detailed in Table 19.

Table 19: Drill Statistics for Zephyr.

Zephyr		
Drilling Type	**Meters Drilling**	**Number of Assays/Samples**
Diamond	4538m	2146 samples
RC	1460.6m	617 samples
PCD	3277.2m	304 samples
Trenching	0m	0 samples
Total	9275.8m	3067 samples

Drill spacings at Zephyr are dependent on depth. The initial top of basement drilling which discovered the deposit are drilled at approximately 50m spacings. Spacings broaden to 100m at 1100mRL. Drill orientations are generally from south to north and cross the mineralisation at a high angle.

Sample intervals are nominally 2m composites constrained to geological/lithological boundaries. Samples start or finish at lithological contacts. Sampling remains nominally at 2m but for narrower geological features can be brought down to 30cm.

Lithologies and geological controls to mineralisation are described in detail in sections 8, 9 and 10 of this report.

ALS and SGS are independent accredited laboratories operating in Ulaanbaatar, Mongolia. Their relationship to XAM is a simple commercial relationship providing sample analysis.

16 Sample Preparation, Analysis and Security

Historical drilling data from 1996 through to 2018 has been conducted by a range of companies including but not limited to QGX during 1996 to 1997, IMMI during 2002 to 2007 and AGC during 2001 through to 2012. The more recent drilling from 2014 through to the close off of database in October 2021 has been undertaken by XAM. Pre - XAM data utilised in this investigation are historical in nature with trenching / drilling, sampling and assaying processes undertaken by a number of different entities and by a range of representatives within each entity over time. The continuity of processes and procedures has been assumed in this instance.

SGC conducted an analysis of the QAQC outcomes to establish confidence in the data. The integrity and appropriateness of the trench / drilling data will remain the responsibility of the Client until such a time as the entire investigation from first principles can be undertaken including a site visit to be scheduled once the COVID restrictions on travel are eased and upon request by the Client.

Xanadu has adopted similar protocols and procedures for sample preparation, analyses and security as those historically used by IMMI and AGC as described in the following subsections.

16.1 Onsite Sample Preparation – Diamond Core

Diamond core sample preparation procedure is as follows:

- The uncovered core boxes are transferred from the logging area to the cutting shed.
- Long pieces of core are broken into smaller segments with a hammer.
- Core is cut with a diamond saw. The orientation of the cut line is controlled using a standard rotation from the core orientation line, ensuring uniformity of core splitting wherever the core has been successfully oriented. The rock saw is regularly flushed with fresh water.
- Both halves of the core are returned to the box in their original orientation.
- The uncovered core boxes are transferred from the cutting shed to the adjacent sampling area. Standard 2 m sample intervals are defined and subsequently checked by geologists, with sample intervals locally modified to honour geological contacts. The minimum allowed sample length is 30 cm.
- Sample tags are attached (stapled) to the plastic core trays for every sample interval, and sample intervals are marked on both the core and the core box with permanent marker; sample tags are stapled to the box at the end of each 2 m sample interval, sample numbers are pre-determined and account for the insertion of QAQC samples (core field duplicates, certified reference materials (CRMs), blanks).
- Samples are individually bagged. Each sample is routinely identified with inner tags and outside marked numbers. Samples are regularly transferred to a sample preparation facility in Ulaanbaatar.
- The unsampled half of the core is retained in the core box, in its original orientation, as a permanent record. It is transferred to the on-site core storage area.

Prior to 2015 barren dykes that extend more than 10 m along the core length are generally not sampled. Post 2015 all core drilled is sampled.

16.2 Onsite Sample Preparation – RC

Xanadu RC drillholes are sampled on 2 m intervals and subsamples taken using a 25:75 riffle splitter at the drill rig. RC samples are uniform 2 m samples formed from the combination of two quarter-split 1 m samples and are not sampled to geological boundaries.

16.3 Sample Analyses

Until recently, routine sample preparation and analyses of IMMI, AGC and Xanadu samples were carried out by SGS Mongolia LLC (SGS Mongolia), which operates an independent sample preparation and analytical laboratory in Ulaanbaatar.

Between 2002 and June 2016, three sample preparation facilities were used. During 2002 and 2003, samples were prepared at SGS Mongolia LLC (SGS Mongolia), who operate an independent sample preparation facility at Manlai. The preparation facility was installed in 2002 as a dedicated facility for Ivanhoe's Kharmagtai Project during their exploration and resource definition stages. Although the facility mostly dealt with samples from the Property, it also prepared some samples from other IMMI projects in Mongolia. From 2004 to June 2016, samples were sent to SGS Mongolia facilities at Oyu Tolgoi (IMMI and AGC samples) and Ulaanbaatar (Xanadu samples).

Since June 2016, Xanadu has sent samples to ALS Mongolia LLC for analysis. ALS Mongolia LLC (ALS Mongolia) operate an independent sample preparation and analytical laboratory in Ulaanbaatar.

Sample comminution/preparation and analysis protocols have varied slightly over time with different laboratories. These variations are minor and are highly unlikely to impart any bias to assay results. Prior to June 2016 samples were prepared by SGS Mongolia in line with the following protocols:

- Drying
- Pre-preparation weighing
- Crushed to 75% passing 3.35 mm
- Split to 500 g
- Pulverised to >85% passing 200 mesh (75 microns)
- Split to 150 g.

Prior to 2014, Cu, Ag, Pb, Zn, As and Mo were routinely determined using a three-acid-digestion of a 0.3 g subsample followed by an AAS finish (AAS21R) at SGS Mongolia. Samples were digested with nitric, hydrochloric and perchloric acids to dryness before leaching with hydrochloric acid to dissolve soluble salts and made to 15 ml volume with distilled water. The lower detection limit (LDL) for copper using this technique was 2 ppm. Where copper was over-range (>1% Cu), it was analysed by a second analytical technique (AAS22S), which has a higher upper detection limit (UDL) of 5% copper. The gold analysis method prior to 2014 was essentially from the same as that used between 2014 and 2016 as described below.

Between 2014 and 2016, all samples were routinely assayed by for gold and a four-acid ICP-AES multi-element suite of 34 elements including copper, silver, lead, zinc, arsenic and molybdenum. The SGS assay suite and detection limits are presented in (Table 20).

- Gold was determined at SGS using a 30 g fire assay fusion, cupelled to obtain a bead, and digested with aqua regia, followed by an atomic absorption spectroscopy (AAS) finish, with an LDL of 0.01 ppm Au.
- Multi-element analysis (SGS code ICP40B) used a four-acid digest (perchloric, nitric, hydrofluoric and hydrochloric acids) with the resulting solution analysed by ICP-AES. The digest used is able to dissolve most minerals in a sample and the analytical technique is considered "near-total".

Copper reporting above the UDL of 1% for four-acid ICP-AES was re-analysed using an "ore grade" assay procedure (SGS AAS43B/40C). The sample was dissolved in aqua regia, diluted with de-ionised water and analysed using either ICP-AES, or AAS.

Table 20: Summary of analytical techniques (SGS Mongolia, 2014 to June 2016).

Method	Element	Detection limit	Element	Detection limit
FAA303	Au	0.01-1000 ppm		
ICP40B	Ag	2-50 ppm	Mo	2-10000 ppm
	Al	0.3-15 %	Na	0.01-15 %
	As	5-10000 ppm	Ni	2-10000 ppm
	Ba	5-10000 ppm	P	0.01-15 %
	Be	0.5-2500 ppm	Pb	2-10000 ppm
	Bi	5-10000 ppm	S	0.01-15 %
	Ca	0.01-15 %	Sb	5-10000 ppm
	Cd	1-10000 ppm	Sc	0.5-10000 ppm
	Co	1-10000 ppm	Sn	10-10000ppm
	Cr	10-10000 ppm	Sr	5-5000 ppm
	Cu	2-10000 ppm	Ti	0.01-15 %
	Fe	0.1-15 %	V	2-10000 ppm
	K	0.01-15 %	W	10-10000ppm
	La	1-10000 ppm	Y	1-10000 ppm
	Li	1-10000 ppm	Zn	5-10000 ppm
	Mg	0.02-15 %	Zr	3-10000 ppm
	Mn	5-10000 ppm		
AAS43B	Cu	0.01-40%	Fe	0.1-100%
AAS40C	Cu	0.001-2%		

Since June 2016, all samples have been prepared by ALS Mongolia in line with the following protocols:

- Drying (66°C)
- Pre-preparation weighing
- Entire sample crushed to 90% passing 3.54 mm
- Split to 500 g
- Pulverised to >90% passing 200 mesh (75 microns)
- Split to 150 g sample pulp.

All samples were routinely assayed by for gold and a four-acid ICP-AES multi-element suite of 34 elements including copper, silver, lead, zinc, arsenic and molybdenum. The ALS assay suite and detection limits are presented in (Table 21).

- Gold was determined at SGS using a 25 g fire assay fusion, cupelled to obtain a bead, and digested with Aqua Regia, followed by an atomic absorption spectroscopy (AAS) finish, with a lower detection (LDL) of 0.01 ppm Au.
- Multi-element analysis (ALS code ME-ICP61) used a four-acid digest (perchloric, nitric, hydrofluoric and hydrochloric acids) with the resulting solution analysed by ICP-AES. The digest used is able to dissolve most minerals in a sample and the analytical technique is considered “near-total”.

Copper reporting above the UDL of 1% for four-acid ICP-AES was re-analysed using an “ore grade” assay procedure (ALS ME-OG46). The sample was dissolved in aqua regia, diluted with de-ionised water and analysed using either ICP-AES, or AAS.

Table 21: Summary of analytical techniques (ALS Mongolia, post-June 2016).

Method	Element	Detection limit	Element	Detection limit
Au-AA26	Au	0.01-1000 ppm		
ME-ICP61	Ag	0.5-100 ppm	Mo	1-10000 ppm
	Al	0.01-50 %	Na	0.01-10 %
	As	5-10000 ppm	Ni	1-10000 ppm
	Ba	10-10000 ppm	P	10-10000 ppm
	Be	0.5-1000 ppm	Pb	2-10000 ppm
	Bi	2-10000 ppm	S	0.01-10 %
	Ca	0.01-50 %	Sb	5-10000 ppm
	Cd	0.5-500 ppm	Sc	1-10000 ppm
	Co	1-10000 ppm	Sr	1-10000 ppm
	Cr	1-10000 ppm	Th	20-10000 ppm
	Cu	1-10000 ppm	Ti	0.01-10%
	Fe	0.01-50 %	Tl	10-10000 ppm
	K	0.01-10 %	U	10-10000 ppm
	La	10-10000 ppm	V	1-10000 ppm
	Mg	0.01-50 %	W	10-10000 ppm
	Mn	5-100000 ppm	Zn	2-10000 ppm
	Cu	0.01-40%		
Cu-OG62	Cu	0.001-40%		

16.4 Sample Security

After sampling, bagged samples are stored on site within locked containers. Samples are dispatched using secure Xanadu vehicles to the assay laboratory in Ulaanbaatar. Consignments are signed for at the laboratory and a confirmation of receipt email is sent to the Xanadu. Samples are stored at the laboratory for analysis and returned pulps are stored in a secure site.

16.5 Laboratory Independence and Certification

Both SGS Mongolia and ALS Mongolia LLC are independent laboratories located in Ulaanbaatar, Mongolia. Laboratories are accredited by the Mongolian Agency for Standardisation and Metrology to ISO 17025 standards. For further details into the laboratory quality assurance and quality control please refer to section 15 of this report.

16.6 Database structure

A rolling close off of the dataset by project area was adopted so as to incorporate as much up to the minute data into the estimates whilst drilling, sampling and assaying continued into late 2021. The data handover commenced with the Zaraa project area on or near the 23rd of July 2021 and consisted of the following files in Table 22 that presents the lithology, survey datum, assay (with and without XRF), collar, SG (bulk density), survey, oxidation surface data (BOCO – base of complete oxidation, BOX – base of oxidation (partial) and TOP – top of fresh rock) file together. SGC loaded and validated all files into its preferred software for pre-processing ahead of estimation.

Table 22: Zaraa closed off database files as of 23rd July 2021.

Name	Date modified	Type	Size
KH_ALM_LITHOLOGY.csv	6/07/2021 7:49 PM	CSV File	36,111 KB
KH_ASD.csv	28/06/2021 2:50 PM	CSV File	17,145 KB
KH_ASSAY without XRF.csv	5/07/2021 7:43 PM	CSV File	49,034 KB
KH_ASSAY.csv	5/07/2021 7:40 PM	CSV File	51,622 KB
KH_COLLAR.csv	3/07/2021 6:49 PM	CSV File	258 KB
KH_SG.csv	29/06/2021 4:16 PM	CSV File	925 KB
KH_STRUCTURE.csv	10/06/2021 11:43 AM	CSV File	855 KB
KH_SURVEY.csv	5/07/2021 7:14 PM	CSV File	555 KB
KH_WX_HOR.csv	7/07/2021 11:26 AM	CSV File	132 KB
KH_WX_HOR_BOCO.csv	7/07/2021 11:26 AM	CSV File	24 KB
KH_WX_HOR_BOX.csv	7/07/2021 11:27 AM	CSV File	23 KB
KH_WX_HOR_TOP.csv	7/07/2021 11:26 AM	CSV File	74 KB

The data handover continued project area by project area until all areas databases were closed off by the 7th of October 2021. Tables 23 through to 27 present the data made available to SGC as of the close of the database for project areas Zephyr, Golden Eagle, Copper Hill, White Hill and Stockwork Hill.

Table 23: Zephyr closed off database files as of 7th October 2021.

Name	Date modified	Type	Size
Zephyr_ASD.csv	20/09/2021 1:03 PM	CSV File	517 KB
Zephyr_ASSAY.csv	20/09/2021 1:02 PM	CSV File	1,390 KB
Zephyr_COLLAR.csv	20/09/2021 1:01 PM	CSV File	18 KB
Zephyr_LITHOLOGY.csv	20/09/2021 1:02 PM	CSV File	872 KB
Zephyr_RQD.csv	30/09/2021 11:00 AM	CSV File	176 KB
Zephyr_SG.csv	30/09/2021 10:59 AM	CSV File	27 KB
Zephyr_Structure.csv	30/09/2021 11:03 AM	CSV File	19 KB
Zephyr_SURVEY.csv	20/09/2021 1:01 PM	CSV File	18 KB

Table 24: Golden Eagle closed off database files as of 7th October 2021.

Name	Date modified	Type	Size
GE_ASD.csv	20/09/2021 1:09 PM	CSV File	498 KB
GE_ASSAY.csv	20/09/2021 1:08 PM	CSV File	1,645 KB
GE_COLLAR.csv	20/09/2021 1:04 PM	CSV File	18 KB
GE_LITHOLOGY.csv	20/09/2021 1:05 PM	CSV File	1,036 KB
GE_RQD.csv	30/09/2021 11:01 AM	CSV File	183 KB
GE_SG.csv	30/09/2021 10:58 AM	CSV File	34 KB
GE_Structure.csv	30/09/2021 11:02 AM	CSV File	66 KB
GE_SURVEY.csv	20/09/2021 1:04 PM	CSV File	19 KB

Table 25: Copper Hill closed off database files as of 7th October 2021.

Name	Date modified	Type	Size
CH_ASD.csv	8/09/2021 2:56 PM	CSV File	946 KB
CH_ASSAY.csv	8/09/2021 2:56 PM	CSV File	6,084 KB
CH_COLLAR.csv	8/09/2021 2:53 PM	CSV File	28 KB
CH_LITHOLOGY.csv	8/09/2021 2:56 PM	CSV File	4,491 KB
CH_RQD.csv	30/09/2021 11:01 AM	CSV File	375 KB
CH_SG.csv	30/09/2021 10:58 AM	CSV File	130 KB
CH_Structure.csv	30/09/2021 11:02 AM	CSV File	51 KB
CH_SURVEY.csv	8/09/2021 2:53 PM	CSV File	53 KB

Table 26: White Hill closed off database files as of 7th October 2021.

Name	Date modified	Type	Size
WH_ASD.csv	8/09/2021 2:49 PM	CSV File	4,125 KB
WH_ASSAY.csv	8/09/2021 2:48 PM	CSV File	10,381 KB
WH_COLLAR.csv	8/09/2021 2:45 PM	CSV File	28 KB
WH_LITHOLOGY.csv	8/09/2021 2:48 PM	CSV File	7,098 KB
WH_RQD.csv	30/09/2021 11:01 AM	CSV File	623 KB
WH_SG.csv	30/09/2021 10:59 AM	CSV File	147 KB
WH_Structure.csv	30/09/2021 11:03 AM	CSV File	246 KB
WH_SURVEY.csv	8/09/2021 2:45 PM	CSV File	99 KB

Table 27: Stockwork Hill closed off database files as of 7th October 2021.

Name	Date modified	Type	Size
SH_ASD.csv	22/09/2021 4:11 PM	CSV File	7,392 KB
SH_ASSAY.csv	7/10/2021 12:01 PM	CSV File	19,620 KB
SH_COLLAR.csv	1/10/2021 6:45 PM	CSV File	41 KB
SH_LITHOLOGY.csv	6/10/2021 7:55 PM	CSV File	13,843 KB
SH_RQD.csv	30/09/2021 11:01 AM	CSV File	1,436 KB
SH_SG.csv	30/09/2021 10:57 AM	CSV File	391 KB
SH_Structure.csv	30/09/2021 11:02 AM	CSV File	307 KB
SH_SURVEY.csv	6/10/2021 6:19 PM	CSV File	214 KB

The database structure was standardised overall project areas, *Table 28* through to *Table 32* illustrate the standardised structure as at 7th of October 2021.

Table 28: Closed off database Collar file standardised structure as of 7th October 2021 – all project areas.

	FIELD NAME	TYPE	WIDTH<256	DECIMALS
1	SITE_ID	C	50	
2	EASTING	N	50	5
3	NORTHING	N	50	5
4	HEIGHT	N	50	5
5	END_DEPTH	N	50	5
6	PROJECT	C	50	
7	PROSPECT	C	50	
8	SITE_TYPE	C	50	
9	START_DEPTH	N	50	5
10	COORDSYS	C	50	
11	SURVEY_TYPE	C	50	
12	SURVEY_METHOD	C	50	
13	DATE_STARTED	C	50	
14	DATE_COMPLETED	C	50	
15	COMPANY	C	50	
16	YEAR_DRILLED	N	50	5
17	AREA_CODE	N	50	5

Table 29: Closed off database Survey file standardised structure as of 7th October 2021 – all project areas.

	FIELD NAME	TYPE	WIDTH<256	DECIMALS
1	SITE_ID	C	50	
2	DEPTH	N	50	5
3	INCLINATION	N	50	5
4	INCLINATION_AMEND	N	50	5
5	AZIMUTH	N	50	5
6	CODE	N	50	5

Table 30: Closed off database density file standardised structure as of 7th October 2021 – all project areas.

	FIELD NAME	TYPE	WIDTH<256	DECIMALS
1	east	N	25	5
2	north	N	25	5
3	rl	N	25	5
4	PROJECT	C	25	
5	SITE_ID	C	25	
6	DEPTH_FROM	N	25	5
7	DEPTH_TO	N	25	5
8	INTERVAL	N	25	5
9	WET_WEIGHT	N	25	5
10	DRY_WEIGHT	N	25	5
11	VOLUME	N	25	5
12	SG	N	25	5
13	SG_CUTOUTLIERS	N	25	5
14	COMMENTS	C	25	
15	CODE	N	25	0
16	OXIDATION_CODE	N	25	0
17	LITH_CODE	C	25	

Table 31: Closed off database lithology file standardised structure as of 7th October 2021 – all project areas.

	FIELD NAME	TYPE	WIDTH<256	DECIMALS
1	SITE_ID	C	55	
2	DEPTH_FROM	N	55	5
3	DEPTH_TO	N	55	5
4	PROJECT	C	55	
5	RECOVERY_KG	N	55	5
6	MOISTURE	C	55	
7	LITH	C	55	
8	LITH2	C	55	
9	COLOUR	C	55	
10	COLOUR_MUNSEL	C	55	
11	GRAINSIZE	C	55	
12	WEATHERING	N	55	5
13	PHENOCRYST_RATIO	N	55	5
14	GROUNDMASS_RATIO	N	55	5
15	PHASE	C	55	
16	EARLY_ALT_ZONE	C	55	
17	EARLY_ALT_ZONE_INT	N	55	5
18	LATE_ALT_ZONE	C	55	
19	LATE_ALT_ZONE_INT	N	55	5
20	MAF_BIOTITE_INT	N	55	5
21	MAF_MAGNETITE_INT	N	55	5
22	MAF_CHL_AFT_BIO_INT	N	55	5
23	MAF_SER_SIL_INT	N	55	5
24	MAF_SER_CLY_INT	N	55	5
25	MAF_CHLORITE_INT	N	55	5
26	MAF_TOURMALINE_INT	N	55	5
27	FSP_KFELDSPAR_INT	N	55	5
28	FSP_HEM_DUST_ALB_INT	N	55	5
29	FSP_SER_SIL_INT	N	55	5
30	FSP_SER_CLY_INT	N	55	5
31	FSP_EPIDOTE_INT	N	55	5
32	Fe_Ox_HEMATITE	N	55	5
33	Fe_Ox_JAROSITE	N	55	5
34	Fe_Ox_GEOTHITE	N	55	5

Table 31 continued

35	Fe_Ox_INT	N	55	5
36	Cu_Ox_TENORITE	N	55	5
37	Cu_Ox_CHRYSOCOLLA	N	55	5
38	Cu_Ox_MALACHITE	N	55	5
39	SULF_TOTAL_PCT	N	55	5
40	SULF_DISSEMINATED_PCT	N	55	5
41	SULF_VEINING_PCT	N	55	5
42	SULF_MATRIX_PCT	N	55	5
43	SULF_CPY_RATIO	N	55	5
44	SULF_PY_RATIO	N	55	5
45	SULF_CHALCOSITE_PCT	N	55	5
46	SULF_BORNITE_PCT	N	55	5
47	SULF_CHALCOPYRITE_PCT	N	55	5
48	SULF_CPY_PCT_VEIN	N	55	5
49	SULF_CPY_PCT_DISS	N	55	5
50	SULF_CPY_PCT_MATRIX	N	55	5
51	SULF_PYRITE_PCT	N	55	5
52	SULF_PY_PCT_VEIN	N	55	5
53	SULF_PY_PCT_DISS	N	55	5
54	SULF_PY_PCT_MATRIX	N	55	5
55	SULF_MOLYBDENUM_PCT	N	55	5
56	SULF_COPPER_OXIDE_PCT	N	55	5
57	SULF_CPY_PY_RATIO	N	55	5
58	SULF_Cu_Est	N	55	5
59	VN_UST_VOL_PCT	N	55	5
60	VN_UST_AVG_THICK_CM	N	55	5
61	VN_UST_SPACING_CM	N	55	5
62	VN_M_VOL_PCT	N	55	5
63	VN_M_AVG_THICK_CM	N	55	5
64	VN_M_SPACING_CM	N	55	5
65	VN_AB_VOL_PCT	N	55	5

Table 31 continued

66	VN_AB_AVG_THICK_CM	N	55	5
67	VN_AB_SPACING_CM	N	55	5
68	VN_C_VOL_PCT	N	55	5
69	VN_C_AVG_THICK_CM	N	55	5
70	VN_C_SPACING_CM	N	55	5
71	VN_D_VOL_PCT	N	55	5
72	VN_D_AVG_THICK_CM	N	55	5
73	VN_D_SPACING_CM	N	55	5
74	VN_CARB_VOL_PCT	N	55	5
75	VN_CARB_AVG_THICK_CM	N	55	5
76	VN_CARB_SPACING_CM	N	55	5
77	VN_ABC_VOL_PCT	N	55	5
78	BX_TOTAL_PCT	N	55	5
79	BX_TOURMALINE_PCT	N	55	5
80	BX_CHLORITE_PCT	N	55	5
81	BX_EPIDOTE_PCT	N	55	5
82	BX_CAR_ANH_PCT	N	55	5
83	BX_SILICA_PCT	N	55	5
84	BX_ANH_GYPSUM_PCT	N	55	5
85	STR_DEPTH	N	55	5
86	STR_TYPE	C	55	
87	STR_DIP	N	55	5
88	STR_DIP_DIRECTION	N	55	5
89	DATE_LOGGED	C	55	
90	LOGGED_BY	C	55	
91	COMMENTS	C	55	
92	PROSPECT	C	55	
93	W_BOCO	N	55	5
94	W_BOX	N	55	5
95	BBS	C	55	
96	Fifty50_1	C	55	
97	TAND	C	55	
98	LIthModel	C	55	
99	Golden_Eagle_Lithology	C	55	
100	Copper_Hill_Lithology	C	55	
101	SH_GM	C	55	
102	changed	N	55	5
103	CODE	N	55	5

Table 32: Closed off database assay file standardised structure as of 7th October 2021 – all project areas.

	FIELD NAME	TYPE	WIDTH<256	DECIMALS
1	SITE_ID	C	55	
2	DEPTH_FROM	N	55	5
3	DEPTH_TO	N	55	5
4	PROJECT	C	55	
5	SAMPLE_ID	C	55	
6	Au_PPM	N	55	5
7	Cu_PPM	N	55	5
8	Mo_PPM	F		5
9	Ag_PPM	F		5
10	Al_PPM	F		5
11	Ba_PPM	F		5
12	Be_PPM	F		5
13	Bi_PPM	F		5
14	Ca_PPM	F		5
15	Cd_PPM	F		5
16	Co_PPM	F		5
17	Cr_PPM	F		5
18	K_PPM	F		5
19	La_PPM	F		5
20	Li_PPM	F		5
21	Mg_PPM	F		5
22	Mn_PPM	F		5
23	Na_PPM	F		5
24	Ni_PPM	F		5
25	P_PERCENT	F		5
26	V_PPM	F		5
27	Sb_PPM	F		5
28	Sc_PPM	F		5
29	Sn_PPM	F		5
30	Sr_PPM	F		5
31	Ti_PPM	F		5
32	As_PPM	F		5
33	Pb_PPM	F		5
34	Zn_PPM	F		5
35	W_PPM	F		5

Table 32 continued

36	Y_PPM	F		5
37	Fe_PERCENT	F		5
38	Zr_PPM	F		5
39	S_PPM	F		5
40	Ga_PPM	F		5
41	Th_PPM	F		5
42	Tl_PPM	F		5
43	U_PPM	F		5
44	Ce_PPM	F		5
45	Cs_PPM	F		5
46	Dy_PPM	F		5
47	Er_PPM	F		5
48	Eu_PPM	F		5
49	Gd_PPM	F		5
50	Hf_PPM	F		5
51	Ho_PPM	F		5
52	Lu_PPM	F		5
53	Nb_PPM	F		5
54	Nd_PPM	F		5
55	Pr_PPM	F		5
56	Rb_PPM	F		5
57	Sm_PPM	F		5
58	Ta_PPM	F		5
59	Tb_PPM	F		5
60	Tm_PPM	F		5
61	Yb_PPM	F		5
62	Hg_PPM	F		5
63	In_PPM	F		5
64	Re_PPM	F		5
65	Se_PPM	F		5
66	Te_PPM	F		5
67	SiO2_PERCENT	F		5
68	Al2O3_PERCENT	F		5

Table 32 continued

69	Fe2O3_PERCENT	F		5
70	CaO_PERCENT	F		5
71	MgO_PERCENT	F		5
72	Na2O_PERCENT	F		5
73	K2O_PERCENT	F		5
74	Cr2O3_PERCENT	F		5
75	TiO2_PERCENT	F		5
76	MnO_PERCENT	F		5
77	P2O5_PERCENT	F		5
78	SrO_PERCENT	F		5
79	BaO_PERCENT	F		5
80	LOI_PERCENT	F		5
81	C_PERCENT	F		5
82	Cu_Zn	F		5
83	Cu_S	F		5
84	Au_Cu	F		5
85	Na_K	F		5
86	V_Cr	F		5
87	Ti_Cr	F		5
88	Ti_V	F		5
89	Al_Cr	F		5
90	Cu_Mo	F		5
91	Au_Mo	F		5
92	eCu	F		5
93	PROSPECT	C	55	
94	COMPANY	C	55	
95	SSq_Cu	F		5
96	CODE	F		5
97	Cu_code	N	25	0
98	Mo_code	N	25	0
99	Cu_Mo_code	N	25	0

All aspects pertaining to the database construction, integrity, chain of custody, archiving and management and control are the responsibility of the Client. At the time of writing the report a site visit had not been conducted by SGC due to COVID restrictions. SGC plan to complete a site visit at the first possible opportunity to assess project sensitive data at the source.

17 Data Verification

17.1 QAQC Discussion of historical and recent 2021 infill drilling control sample outcomes.

SGC undertook a review of a representative section of the QAQC data as well as a review of the QAQC procedures conducted by the site personnel and the following section is a summary of observations.

17.2 Quality Assurance and Quality Control Programs

Quality assurance (QA) concerns the establishment of measurement systems and procedures to provide adequate confidence that quality is adhered to. Quality control (QC) is one aspect of QA and refers to the use of control checks of the measurements to ensure the systems are working as planned.

The QC terms commonly used to discuss geochemical data are:

- Precision: How close the assay result is to that of a repeat or duplicate of the same sample, i.e., the reproducibility of assay results. Assessed by insertion of duplicate samples at various stages of subsampling, from initial sample split (field duplicate) to final assay pulp (pulp duplicate).
- Accuracy: How close the assay result is to the expected result (of a CRM). Assessed by the insertion of CRMs within sample batches, for which the laboratory does not know the expected grade.
- Bias: The amount by which the analysis varies from the correct result. Also assessed using CRM.
- Contamination: Accidental inclusion of target elements into a sample, which can occur at any sampling stage. Assessed by the insertion of “blank” material into a sample batch that is known to contain very low, levels of target elements.

QAQC procedures and protocols are well described in reports supplied by Xanadu. SGC reviewed the reports (SOPS) and summarises them in this section of the report.

According to historical reports provided by XAM to SGC, Xanadu implemented QAQC protocols for all drill-hole sampling undertaken since acquiring the Kharmagtai Project in 2014 (according to earlier reviews by Mining Associates 2015).

Prior to 2014, IMMI and AGC used similar QAQC protocols for drill-hole sampling. IMMI’s QAQC program was reviewed by AMC (2012) and reported in accordance with NI 43-101 technical reporting standards.

QAQC protocols have evolved at Kharmagtai during the various phases of exploration. A summary of the QAQC protocols applicable to different drill-hole series included in the resource estimate are outlined in Table 33.

The QAQC protocols adopted by Xanadu are very similar to those used by IMMI and AGC from 2011 onwards, although no pulp or coarse reject duplicates were used. Prior to 2011, the majority of drillhole samples were monitored using CRMs and blanks, with field duplicates inserted from 2004 onwards.

17.3 Quality Control Program

Xanadu implemented QAQC protocols for all drillhole sampling undertaken since acquiring the Property in 2014. Prior to this, IMMI and AGC used similar QAQC protocols for drill sampling.

QAQC protocols evolved at Kharmagtai during the various phases of exploration. A summary of the QAQC protocols applicable to different drillholes included in the resource estimate are outlined in (Table 33).

In addition to Xanadu’s QAQC, SGS Mongolia and ALS Mongolia both conduct their own internal QAQC consisting of CRM testing, duplicate assaying and repeats along with the primary sample analysis. In addition to this XAM undertook a third-party laboratory analysis of selected 2021 drilling samples the results of which are presented later in this section of the report.

Table 33: Historical QAQC protocols by drillhole series.

Drillhole series	Date range	Company	QAQC protocols
KHDDH001 to KHDDH003	Early 2002	IMMI	No QC samples used
KHDDH004 to KHDDH261	Mid-2002 to 2004	IMMI	CRMs and blanks used in non-uniform sized batches
KHDDH262 to KHDDH317	2004 to mid-2007	IMMI	Two CRMs, one blank and one field duplicate used in batches of 40 samples
KHDDH318 to KHDDH335 (and KHDDH313A), metallurgical holes	2011-2012	AGC	Two CRMs, two blanks, one core duplicate, one pulp duplicate and one reject duplicate inserted randomly in batches
KHDDH336 to KHDDH385	2014 to mid-2016	XAM	Two CRMs, two blanks and one field duplicate inserted randomly in batches of 45 samples and sent to SGS laboratory
KHDDH386 onwards	mid-2016 to present	XAM	Two CRMs, two blanks and one field duplicate inserted randomly in batches of 45 samples and sent to ALS laboratory

Table 34 shows a summary of historical QC sample insertion for the main drilling samples. XAM have adopted the same insertion rate protocol as is noted in the historical works by CSA Global. Upon review of the available information SGC believes that the insertion rate of CRMs, blanks and field duplicates are adequate and in accordance with industry standard practices for exploration projects.

Table 34: QC sample insertion summary.

	QGX (1997 to 1998)	IMMI (2002 to 2007)	AGC (2011 to 2012)	XAM SGS (2014 to mid-2016)	XAM ALS (mid-2016 to present
Number of routine samples	3,754	21699	3947	16,992	35,080
Number of CRM		776	223	851	1,574
CRM insertion rate		3.6%	5.6%	5.0%	4.5%
Number of blanks		692	219	809	1,381
Blanks insertion rate		3.2%	5.5%	809	3.9%
Number of field duplicates		378	101	391	728
Field duplicate insertion rate		1.7%	2.5%	2.3%	2.1%

17.3.1 Historical Use of Blanks

Blanks have been inserted routinely in all sample batches for all drilling since mid-2002 (KHDDH004). Blank material was sourced locally from outcrops of Khanbogd Mountain granite and coarse crushed to 1 cm particle size.

Monitoring of blanks by IMMI and Xanadu initially defined a failure as results more than five to 10 times the lower detection limit for the element analytical method were revealed. Subsequently various failures over the period from June 2002 to June 2004 were related mostly to sampling errors caused by switches with CRMs rather than systematic contamination. According to the investigation by CSA as reported in their 2018 report, these errors were corrected using stored data and the database utilised by Xanadu is considered correct. According to CSA at that time, there has been no indication of systematic assaying errors due to contamination.

SGC has subsequently reviewed the available data analysis provided by XAM including charts and related documents and considers that the results are adequate to support the integrity of the Mineral Resource estimate.

17.3.2 Historical Use of Pulp Duplicates

Pulp duplicates were utilised by IMMI in 2011 and were assessed using scatter plots, ranked scatter plots (Q-Q plots) and relative percentage difference (RPD) plots by AMC (AMC, 2012). AMC (2012) found that more than 98% of gold samples and 92% of copper samples reported an RPD value less than 10% and at that time the results were considered adequate to support the integrity of the Mineral Resource estimate by XAM and AMC.

17.3.3 Use of Field Duplicates

Field duplicates for drill core samples have been included as part of QAQC protocols since 2011 and continue to be utilised today. Duplicates were created by splitting routine half-core samples using a diamond saw and submitting each resulting quarter-core sample under separate sample numbers.

SGC has reviewed the current XAM analysis of the field duplicate data put forth by the Client from both historical and recent drilling samples, including scatterplots and relative percent difference plots. Scatter plots show generally tight distribution (R2 >0.8) about regression lines with slopes more than 0.95. Field duplicate data for Cu shows higher precision than for Au, reflecting more homogenous distribution of copper minerals compared to gold (particularly at Stockwork Hill). Analysis of RPD plots shows that for gold 80% of duplicate pairs have a relative difference less than 30%, and for copper 80% of duplicate pairs have a relative difference less than 20–25%. Results for IMMI/AGC data and Xanadu data are very similar, although Xanadu Cu analyses show more scatter at high grades (>5,000 ppm) compared with IMMI/AGC. The results reported are considered adequate by SGC to support their use in the estimation of the Mineral Resource estimates presented in this report.

17.3.4 Use of Certified Reference Materials

CRMs (or standards) have been inserted routinely in sample batches for all drilling after mid-2002. CRMs were sourced from two main commercial suppliers: Ore Research & Exploration in Australia (OREAS) and CDN Resource Laboratories Ltd in Canada (CDN). OREAS CRMs were derived from homogenised porphyry Cu-Au ore material with included Cu-Mo concentrate. CDN CRMs were derived by mixing and homogenising barren granitic material with Cu-Au concentrate. In addition to commercially supplied CRMs, IMMI used a number of internally produced CRMs from 2002 to 2003. The exact nature and source of these CRMs is unknown. Details of CRMs used throughout the history of drilling at Kharmagtai are shown in Table 35.

Table 35: Summary of CRM used at the Kharmagtai Project.

CRM code	Au (ppm)	Cu (%)	Usage period	Source
OREAS 501b	0.248	0.26	XAM (2014-2017)	OREAS
OREAS 501c	0.221	0.276	XAM (2017-2021)	OREAS
OREAS 503b	0.695	0.531	XAM (2014-2017)	OREAS
OREAS 503c	0.698	0.538	XAM (2017-2021)	OREAS
OREAS 504b	1.61	1.11	XAM (2014-2017)	OREAS
OREAS 50P	0.727	0.691	XAM (2014-2017)	OREAS
OREAS 51P	0.43	0.728	IMMI (2003-2007)	OREAS
OREAS 52P	0.183	0.387	IMMI (2003-2007)	OREAS
OREAS 53P	0.38	0.413	IMMI (2003-2007)	OREAS
CGS-6	0.26	0.318	AGC (2011)	CDN
CGS-21	0.99	1.3	AGC (2011)	CDN
CGS-22	0.64	0.725	AGC (2011)	CDN
CGS-23	0.218	0.182	AGC (2011)	CDN
CGS-24	0.487	0.486	AGC (2011)	CDN
CGS-25	2.4	2.19	AGC (2011)	CDN
STD3	1.269	1.29	IMMI (2002-2003)	IMMI internal
STD5	0.099	0.811	IMMI (2002-2003)	IMMI internal
STD6	0.203	0.254	IMMI (2002-2003)	IMMI internal
STD7	0.499	0.508	IMMI (2002-2003)	IMMI internal
STD8	2.211	0.869	IMMI (2002-2003)	IMMI internal
STD9	3.308	0.953	IMMI (2002-2003)	IMMI internal
STD10	0.215	0.853	IMMI (2002-2003)	IMMI internal

The certified reference material (CRM) analyses have been routinely monitored on receipt of laboratory results, and IMMI/AGC and Xanadu defined CRM failures as follows in accordance with international standard practices:

- If 1 sample in 1000 exceeds 3 standard deviations from the mean accepted value as defined by the CRM certificate, then it is considered as a process out of control and requires attention / action.
- If 2 CRM's fall between 2 standard deviations and 3 standard deviations on the same side of the mean value, then this suggests a trend is emerging which could be considered as a bias which warrants close attention over the following sample analysis. If the trend continues then the preceding batches require attention / action.

As reported by Wilson in 2005, any batch of samples with a CRM failure were routinely re-assayed until it passed. IMMI and Xanadu included a protocol whereby a geological override was applied for barren batches or marginal failures with low impacts (Wilson, 2005). SGC confirmed with XAM that this course of action continues to present with XAM.

In earlier investigations by Mining Associates and CSA Global, certified reference material control charts for IMMI/AGC and Xanadu drilling were reviewed which at the time of the investigation noted that multiple CRM failures in the earliest stages of QC monitoring from 2002 to 2004 could all be traced to CRM handling errors, where the one CRM was recorded in the database, but a different CRM or blank was inserted in the assay batch. SGC take this earlier analysis at face value.

In general, the performance control charts demonstrate acceptable levels of accuracy in the analytical procedures being used, with the majority of assays falling within ±2 standard deviations of the certified means. In many cases a slight positive or negative bias is apparent when comparing analyses to the certified values.

Taking into account earlier commentary surrounding the performance of CRM's in conjunction with the recent review of data and works completed by XAM, SGC does not consider the data exhibits a consistent bias and as such deem that the assayed results lie within acceptable limits. In SGC's opinion, the results of CRM analyses provide confidence in the assay data and are adequate to support their use in a Mineral Resource estimate in accordance with international best practices.

17.4 Discussion on Sampling, Quality Assurance and Quality Control Programs

As noted in earlier works by CSA Global, the sampling preparation, security, and analytical procedures used by Xanadu and historically by IMMI/AGC are consistent with generally accepted industry best practices and are therefore adequate for the purpose of Mineral Resource estimation.

The application of total digest multi-element geochemistry and SWIR spectral mineralogy provides additional rigor to geological models and exceeds current industry standards.

A report prepared by AMC (AMC, 2012) provided a comprehensive review of QAQC for sampling by IMMI up to the end of 2011. SGC have reviewed this report and the historic QC results and concur with the conclusion reached by AMC that the historical assay data is considered to have sufficient accuracy and precision to support a mineral resource estimate. Additional drilling undertaken since the end of 2011 has been monitored by similar QAQC protocols. To date no on-site validation has been possible by SGC due to COVID travel restrictions. It is envisaged that at the first possible opportunity SGC representatives will visit site in Mongolia once travel bans are lifted and the COVID state has stabilised internationally.

The general level of diligence and supervision of sample preparation and analytical QC carried out by IMMI/AGC, and Xanadu was in accordance with the site defined standard operating procedures (SOP's). The frequency of insertion of CRM, blanks and pulp duplicates is considered by SGC to be of sufficient standard to assure quality of assay data. The SOP for Sample Handling (including QAQC) (as presented in Appendix 11) addresses all industry best practice fail criteria for assay batches used by IMMI/AGC and Xanadu and are considered by SGC to be appropriate.

17.5 Standards Reference Material

SGC were provided with the analysis undertaken by site personnel for Stockwork Hill and looked at a range of standard reference material performance charts for the key elements (Cu, Au and As).

Historically a broad range of SRM's have been used which cover appropriate grade ranges for each element (dominantly Cu and Au).

A general observation on the use of the various standard reference material by XAM is that XAM have tended to use standards at or lower than the lower cut-off for Cu and Au. Some higher grade standards have been employed, however on average lower grade standards dominate.

SGC undertook a review of the existing QAQC protocols and outcomes completed by the Client which included assessments of a range of standard control samples over a range of time, performance of blank control material and laboratory and field duplicate analysis.

17.6 Standard Control charts by XAM

A broad range of standard reference material has been used during the various drilling programmes over the Kharmagtai project from 2003 through to 2021.

The following control charts; Figures 66 through to 80 show a cross section review of the dataset by SGC (with associated commentary).

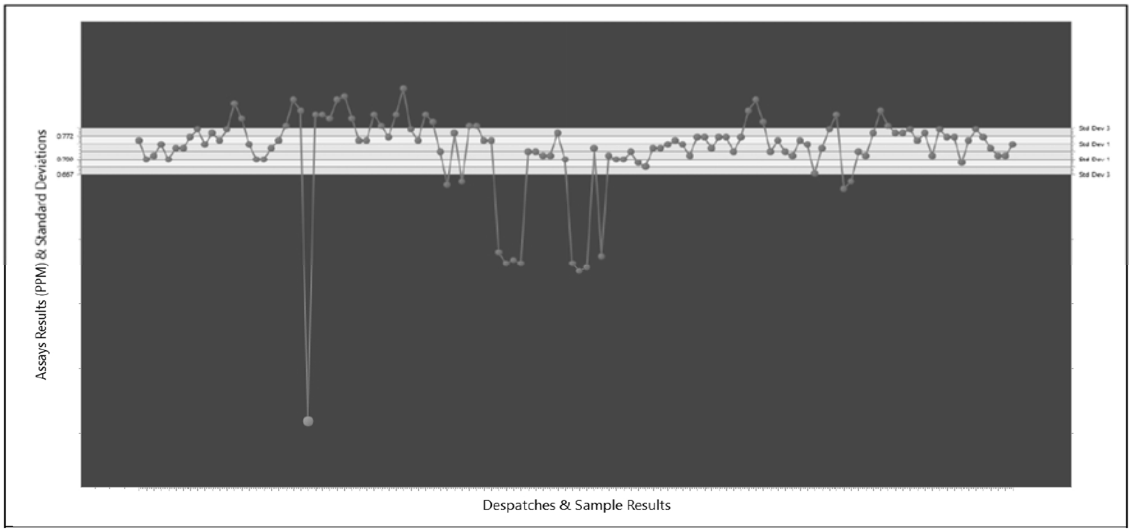


Figure 66: Analysis by XAM for standard 50p for Au.

Standard 50P (mean expected value of 0.73g/t Au) from 2003 illustrating many samples falling outside of 3SD from the mean expected value of the standard. 34 out of 120 samples (28.3%) analysed are at or below the expected value, 86 out of 120 samples (71.7%) analysed are at or above the expected value which indicates a trend toward higher-than-expected determinations on average. In addition, 25 samples analysed are out of control high and 13 low.

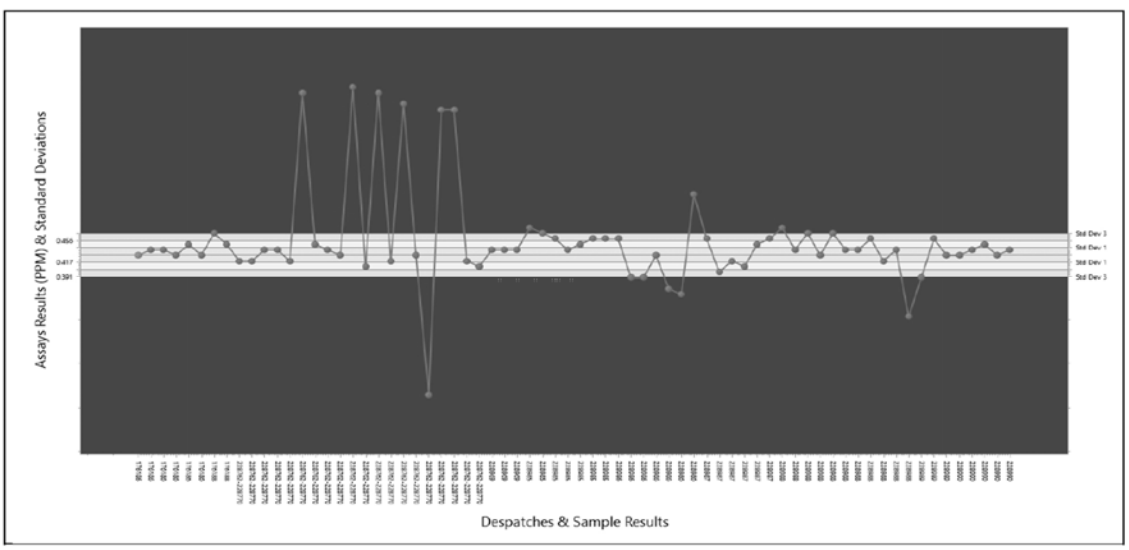


Figure 67: Analysis by XAM for standard 51p for Au.

Standard 51P (mean expected value of 0.43g/t Au) from 2003 illustrating many samples falling outside of 3SD from the mean expected value of the standard. 18 out of 70 samples (25.7%) analysed are at or below the expected value, 52 out of 70 samples (74.3%) analysed are at or above the expected value which indicates a trend toward higher-than-expected determinations on average. In addition, 13 samples analysed are out of control high and 7 low.

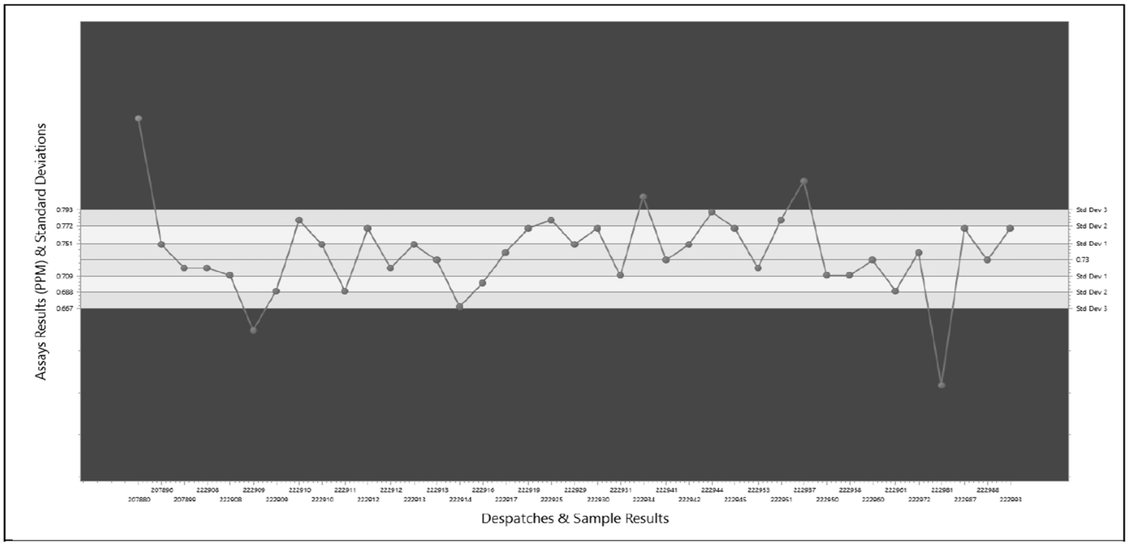


Figure 68: Analysis by XAM for standard 50p for Au.

Standard 50P (mean expected value of 0.73g/t Au) from 2004 illustrating only 5 samples falling outside of 3SD from the mean expected value of the standard. 15 out of 39 samples (38.5%) analysed are at or below the expected value, 24 out of 39 samples (61.5%) analysed are at or above the expected value which indicates a trend toward higher-than-expected determinations on average. 3 samples analysed are out of control high and 2 low.

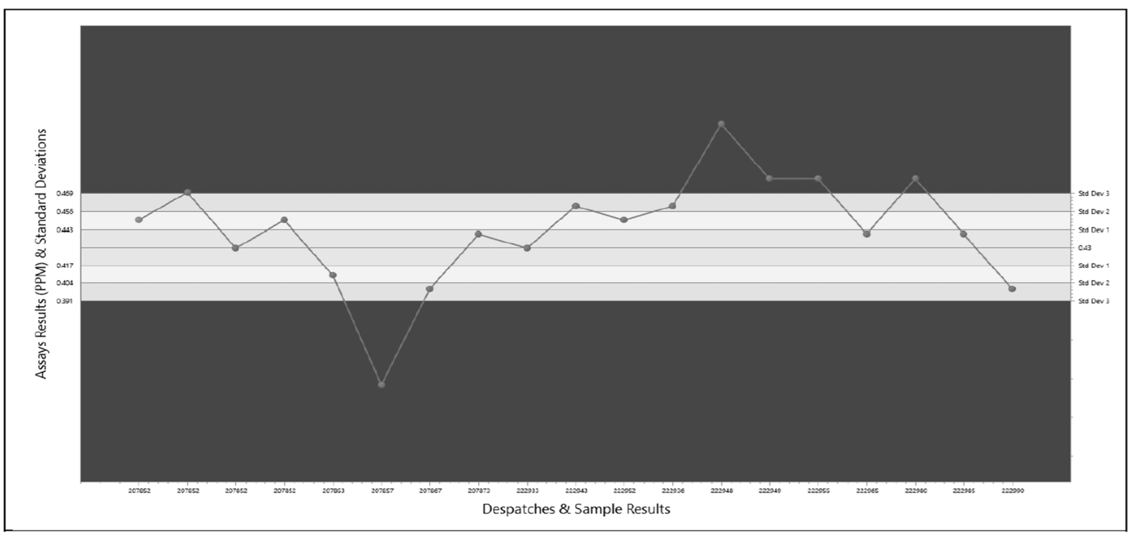


Figure 69: Analysis by XAM for standard 51p for Au.

Standard 51P (mean expected value of 0.43g/t Au) from 2004 illustrating few samples falling outside of 3SD from the mean expected value of the standard. 4 out of 19 samples (21.0%) analysed are at or below the expected value, 15 out of 19 samples (79.0%) analysed are at or above the expected value which indicates a trend toward higher-than-expected determinations on average. In addition, 5 samples analysed are out of control high and 1 low.

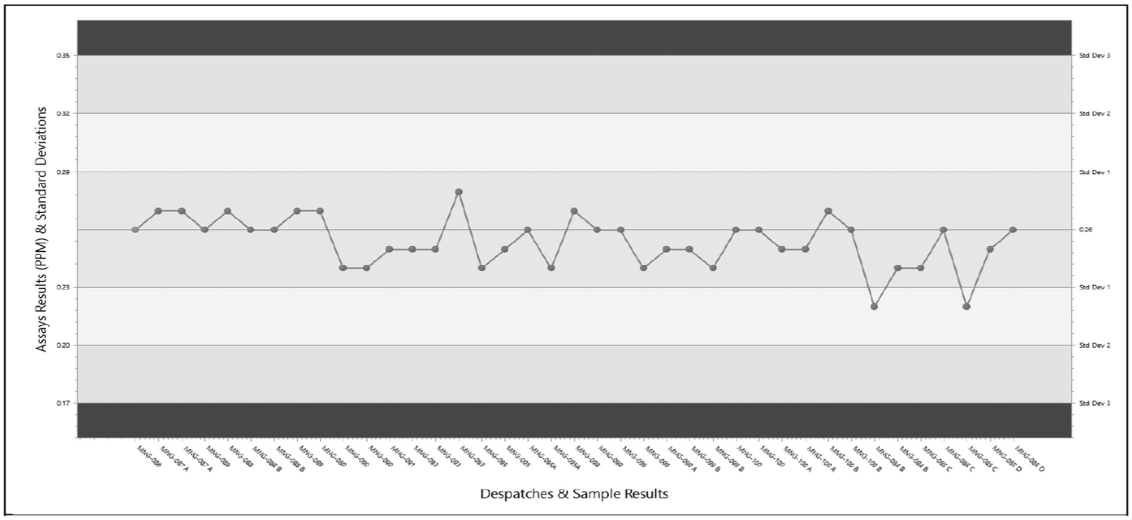


Figure 70: Analysis by XAM for standard CDN-CGS-6 for Au.

Standard SGS CDN-CGS-6 Au (mean expected value of 0.26g/t Au) from 2011 illustrating no samples falling outside of 3SD from the mean expected value of the standard and only 2 samples returning values between 1 and 2SD. This standard shows a tendency towards lower outcomes than expected values.

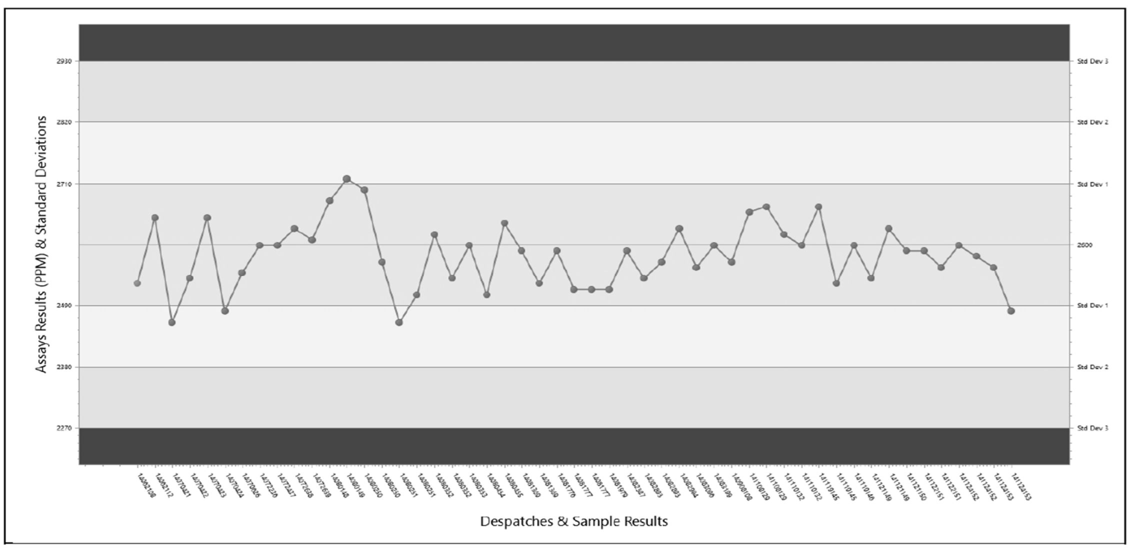


Figure 71: Analysis by XAM for standard 501b for Cu.

Standard SGS 501b Cu (mean expected value of 2600ppm Cu) from 2014 illustrating no samples falling outside of 3SD from the mean expected value of the standard. 29 out of 51 samples (56.9%) analysed are at or below the expected value, 21 out of 51 samples (43.1%) analysed are at or above the expected value which does not indicate a significant trend in either direction.

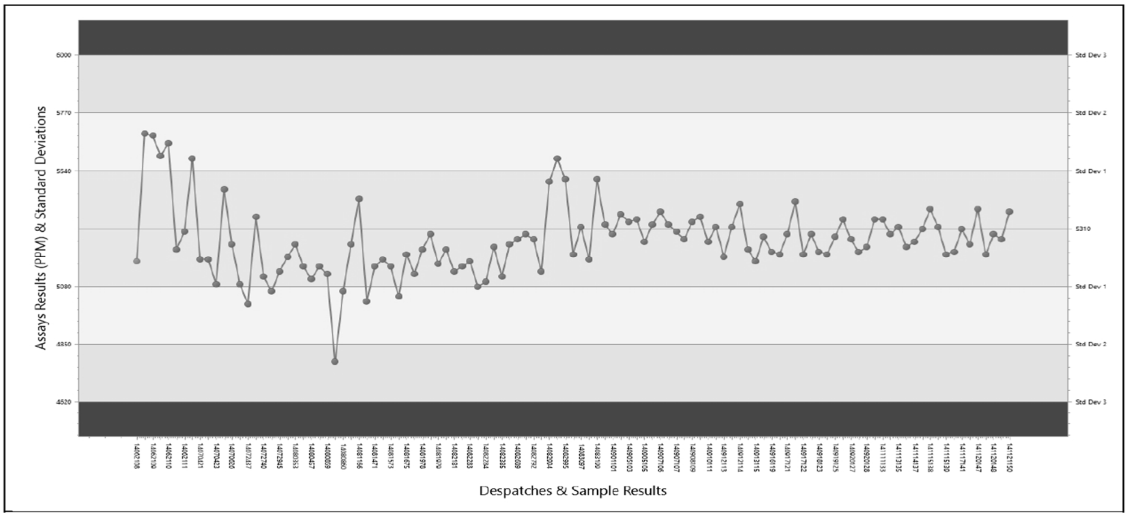


Figure 72: Analysis by XAM for standard 503b for Cu.

Standard SGS 503b Cu (mean expected value of 5310ppm Cu) from 2014 illustrating no samples falling outside of 3SD from the mean expected value of the standard. 75 out of 111 samples (67.6%) analysed are at or below the expected value, 25 out of 111 samples (32.4%) analysed are at or above the expected value which indicate a moderate trend toward lower-than-expected values.

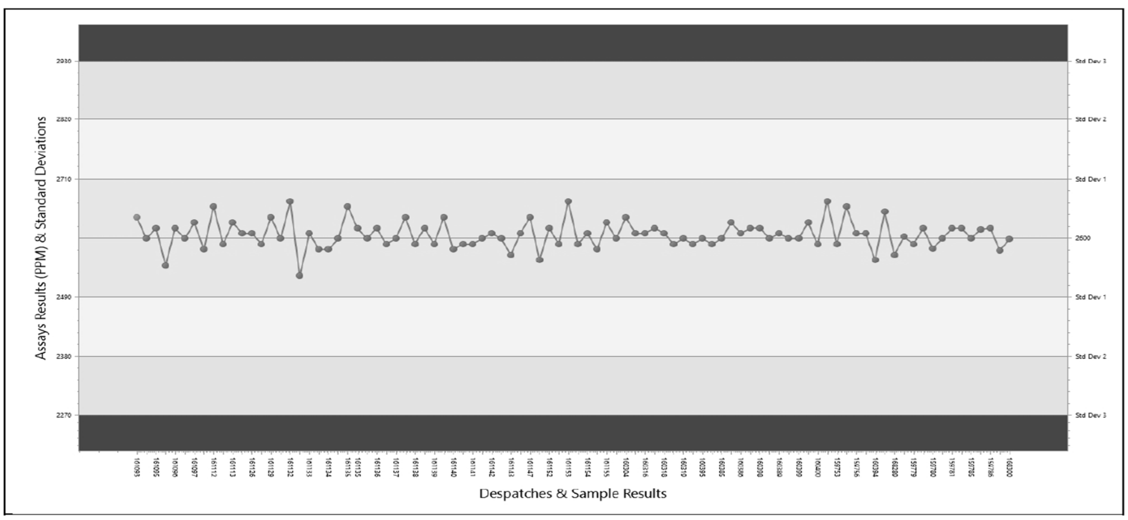


Figure 73: Analysis by XAM for standard 501b for Cu.

Standard SGS 501b Cu (mean expected value of 2600ppm Cu) from 2015 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Twenty-nine out of 92 samples (31.5%) analysed are at or marginally below the expected value, 63 out of 92 samples (68.5%) analysed are at or marginally above the expected value which does not indicate a significant trend for expected values.

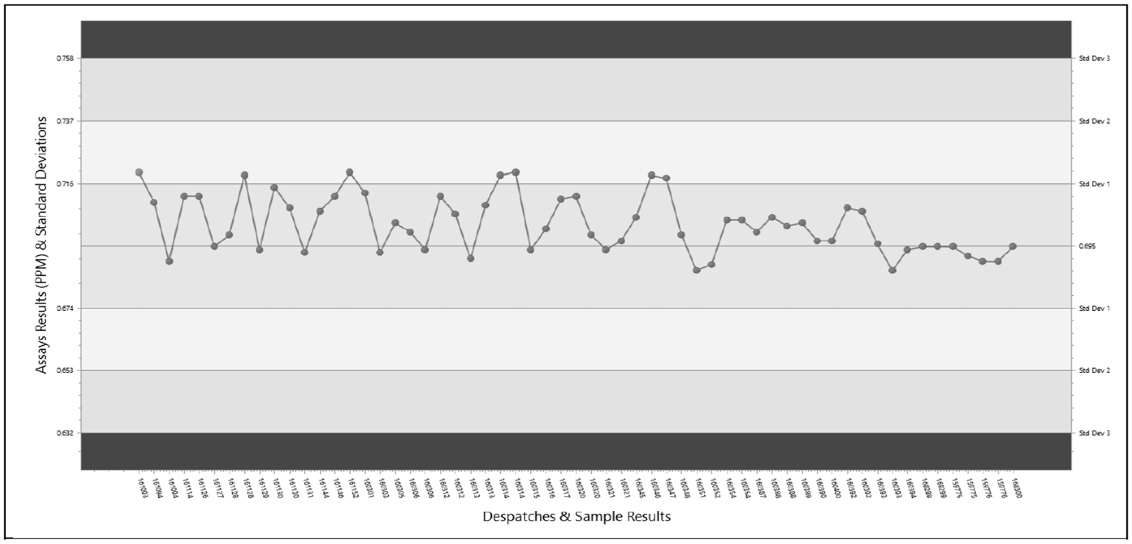


Figure 74: Analysis by XAM for standard 503b for Au.

Standard SGS 503b Au (mean expected value of 0.695g/t Au) from 2015 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Fifteen out of 59 samples (25.4%) analysed are at or marginally below the expected value, 44 out of 59 samples (74.6%) analysed are at or marginally above the expected value which indicates a weak trend toward higher than expected values.

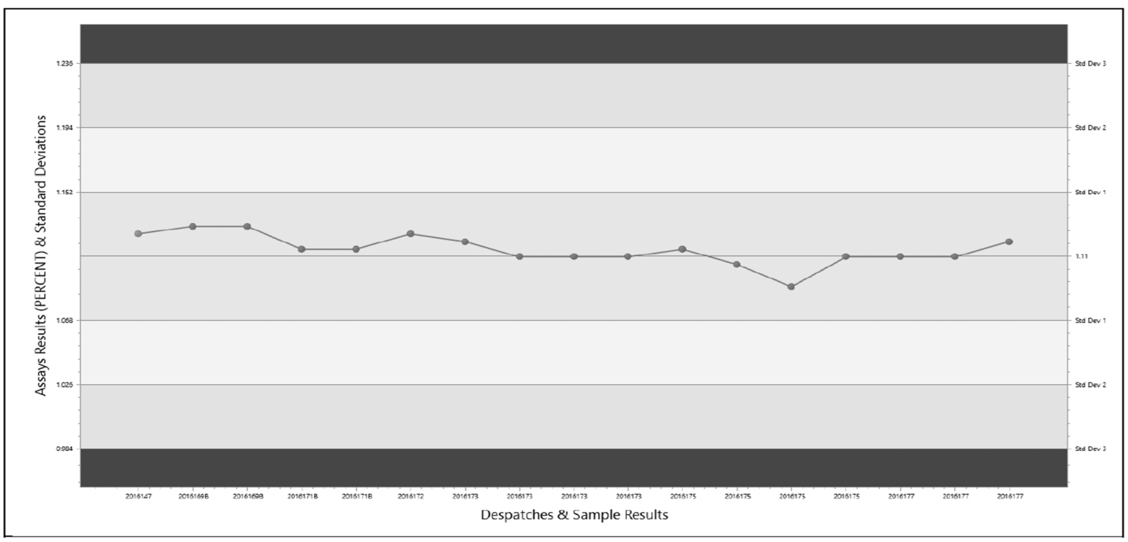


Figure 75: Analysis by XAM for standard 504b for Cu.

Standard SGS 504b Cu (mean expected value of 1.11% Cu) from 2016 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Two out of 17 samples (11.8%) analysed are at or marginally below the expected value, 15 out of 17 samples (88.2%) analysed are at or marginally above the expected value which does not indicate any trend for expected values.

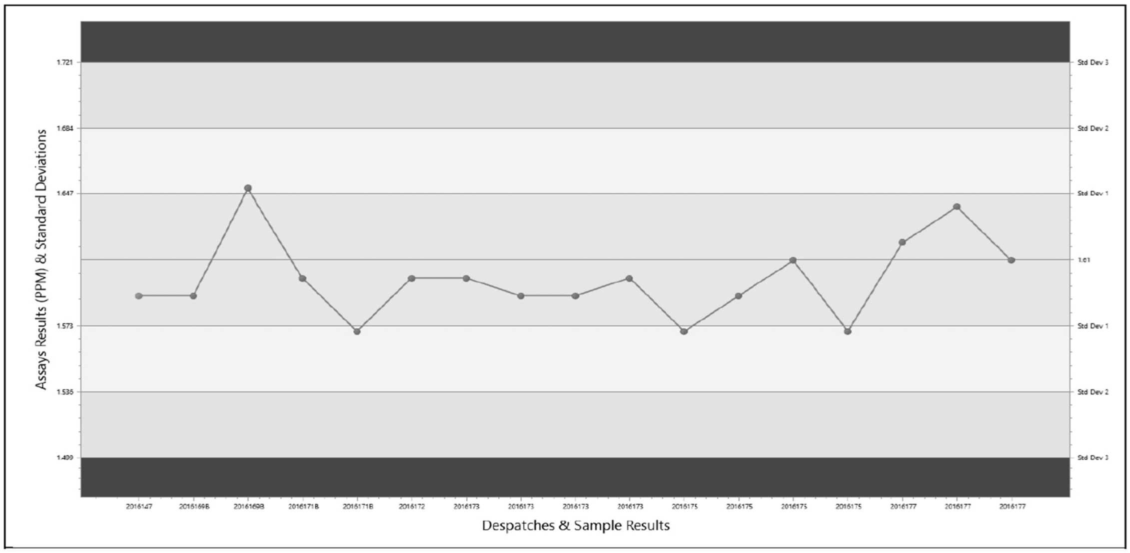


Figure 76: Analysis by XAM for standard 504b for Au.

Standard SGS 504b Au (mean expected value of 1.61g/t Au) from 2016 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Twelve out of 17 samples (70.6%) analysed are at or marginally below the expected value, 5 out of 17 samples (29.4%) analysed are at or marginally above the expected value which indicates a weak trend toward lower-than-expected values.

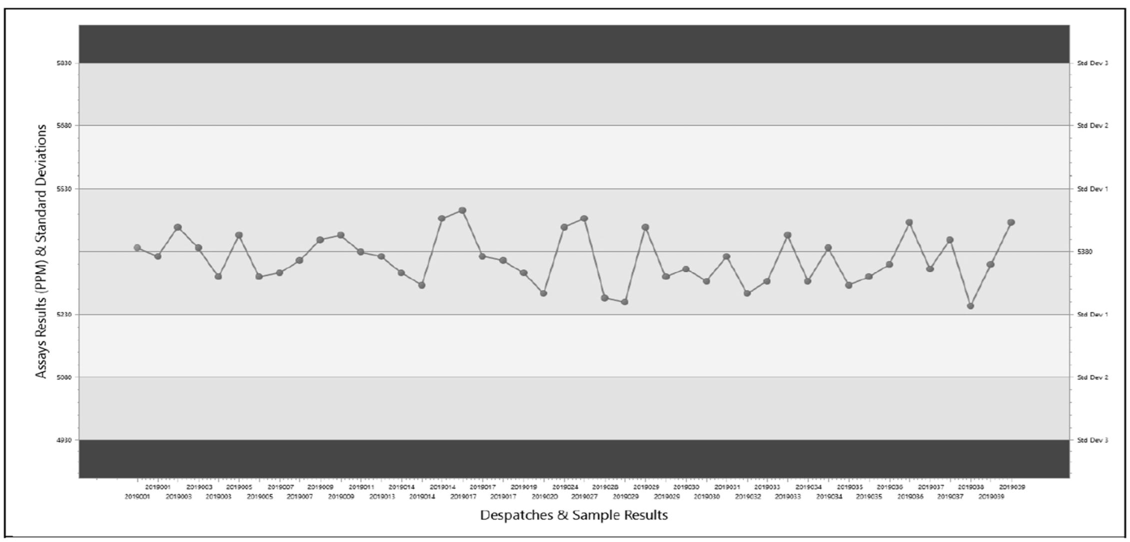


Figure 77: Analysis by XAM for standard 503b for Cu.

Standard SGS 503b Cu (mean expected value of 5380ppm Cu) from 2019 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Twenty-seven out of 44 samples (61.4%) analysed are at or marginally below the expected value, 17 out of 44 samples (38.6%) analysed are at or marginally above the expected value which does not indicate a significant trend for expected values.

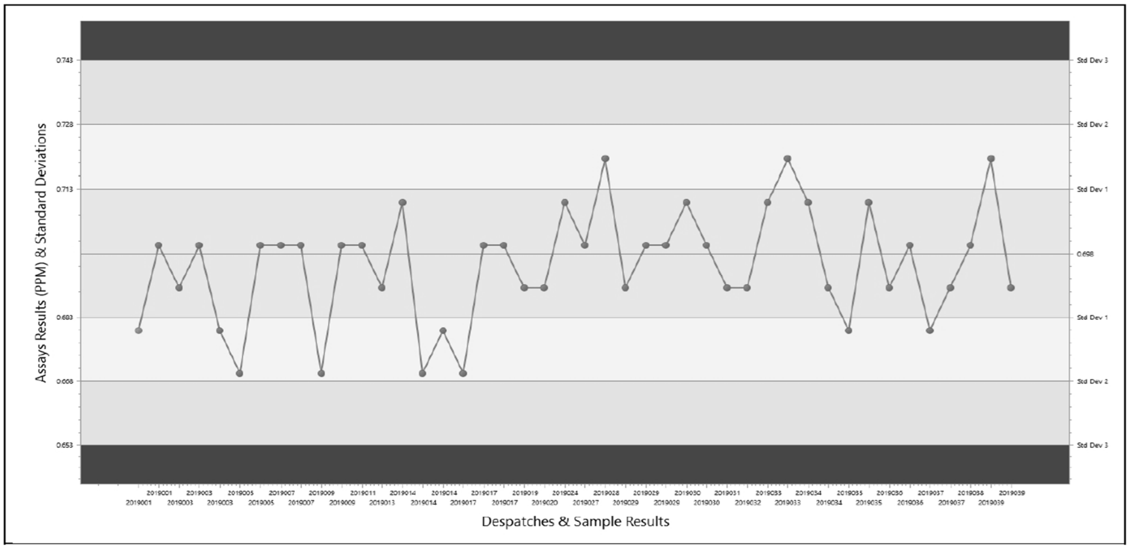


Figure 78: Analysis by XAM for standard 503b for Au.

Standard SGS 503b Au (mean expected value of 0.695g/t Au) from 2019 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a moderately tight distribution of outcomes around the mean expected values. Twenty out of 44 samples (45.5%) analysed are at or marginally below the expected value, 24 out of 44 samples (54.5%) analysed are at or marginally above the expected value which does not indicate a significant trend for expected values.

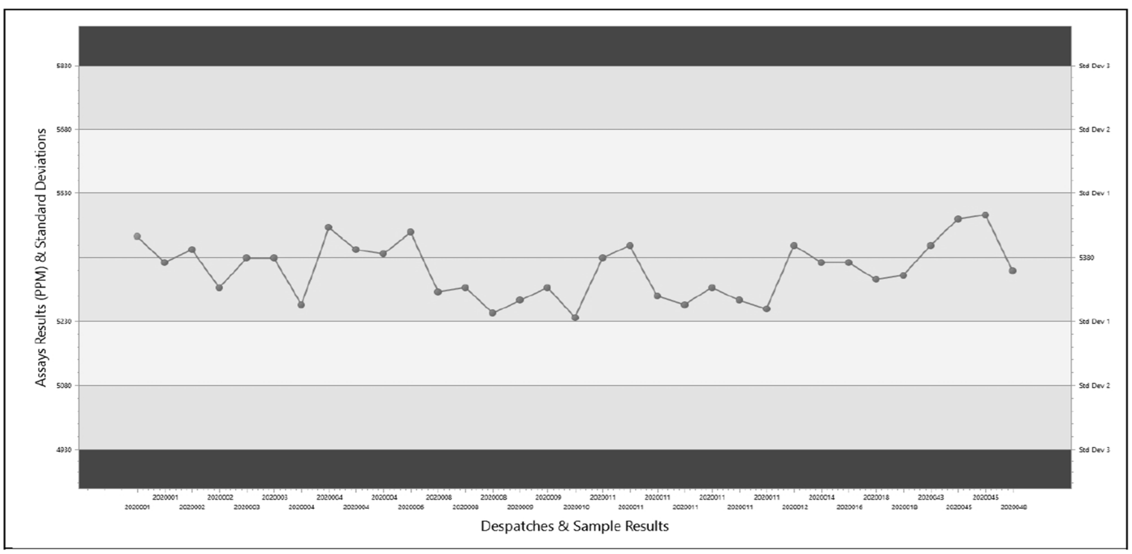


Figure 79: Analysis by XAM for standard 503c for Cu.

Standard SGS 2020 Field ALS 503c Cu (mean expected value of 5380ppm Cu) from 2020 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a very tight distribution of outcomes around the mean expected values. Nineteen out of 33 samples (57.6%) analysed are at or marginally below the expected value, 14 out of 33 samples (46.4%) analysed are at or marginally above the expected value which does not indicate a significant trend for expected values.

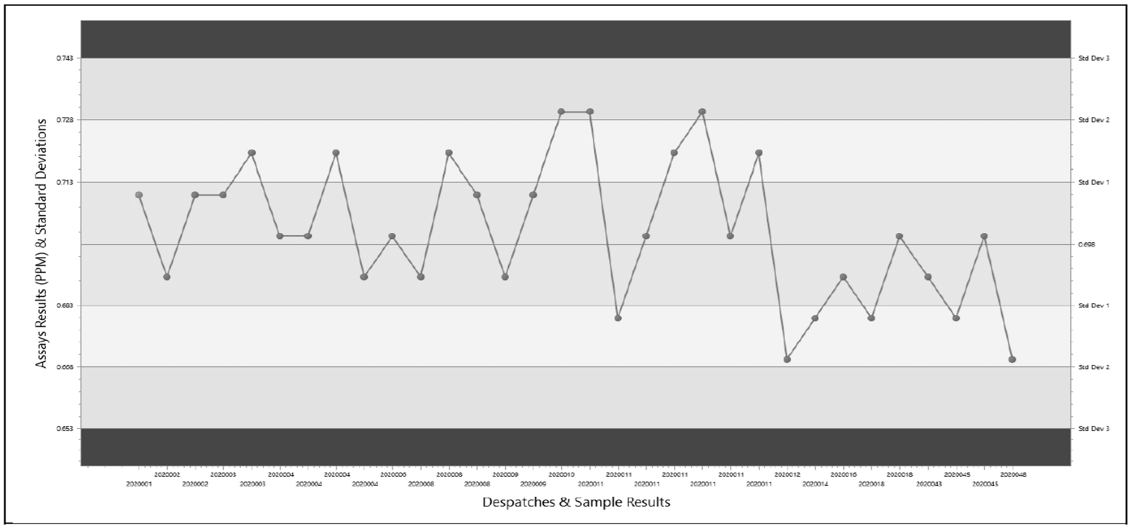


Figure 80: Analysis by XAM for standard 503c for Au.

Standard SGS 503c Au (mean expected value of 0.698g/t Au) from 2020 illustrating no samples falling outside of 3SD from the mean expected value of the standard and a scattered distribution of outcomes around the mean expected values. Twelve out of 32 samples (37.5%) analysed are at or marginally below the expected value, 20 out of 32 samples (62.5%) analysed are at or marginally above the expected value which does not indicate a significant trend for expected values but does see Many samples outcomes moving into 2 and 3SD from the mean both high and low.

17.7 Standard Control charts by XAM – Summary and Comments

There are five key observations made by SGC during the review of standard reference material outcomes which are:

1. On average the outcomes for both Cu and Au across the board are generally in control with a number of instances of out-of-control results which tended to be in the earlier years 2003 through to 2007.
2. When gold values departed from the expected value, they were marginally higher than the expected mean on average with some earlier examples showing a stronger trend toward higher outcomes.
3. When copper values departed from the expected values, they were only marginally lower than the expected mean on average with some earlier examples showing a slightly stronger trend toward lower outcomes.
4. The reports provided from the laboratories show fewer decimals than are expressed in the expected values which can result in rounding effects which may marginally shunt outcomes one way or another depending on the grade of the expected values. At the higher grade this presents little to no impact, at the lower grade this is more pronounced but still only weakly significant and not material.
5. Over the range of years presented, there is a tendency to preferentially use lower grade standards at or near the mean grade of the deposit for both Au and Cu. SGC saw fewer references to high grade standards having been used.

The above noted items are all worthy of continued observation and continual improvement.

17.8 Blank analysis

To date SGC have not been furnished with any historical data pertaining to the performance of blank material either as stand-alone samples or within the sample stream analysis. It is understood by SGC that XAM and earlier owners did insert blanks into the sample stream.

A review of the recent umpire laboratory results of blank analysis by SGS and ALS revealed the following:

1. Copper values were routinely returned at very low levels at or near the expected values (defined by XAM as “low” across all multi-element data for the use of barren granitic material from the Khanbogd Mountain granite) for drill-holes KHDDH347 and KHDDH321 respectively (Table 36 and Figures 81 and 82).
2. Gold values were routinely returned at very low levels at or near the expected (defined by XAM as “low” across all multi-element data for the use of barren granitic material from the Khanbogd Mountain granite) for drill-holes KHDDH347 and KHDDH321 respectively, however many gold readings show no records (Table 37 and Figures 83 and 84).

In SGC’s view it is not satisfactory to use barren material without knowing the confidence interval and what the material elements assay rather than just stating “low”. Further clarification is recommended by SGC on this matter.

Table 36: KHDDH347 Cu and Au umpire outcomes by ALS.

PROJECT	SITE_ID	SAMPLE_ID	DEPTH_FROM	DEPTH_TO	QC_TYPE	STANDARD_ID	PARENT_SAMPLE_ID	Au_PPM	Expected Au	Cu_PPM	Expected Cu
Kharmagtai	KHDDH347	RE55777			BLANK	KH-BLANK			<0.01	40	low
Kharmagtai	KHDDH347	RE55785			BLANK	KH-BLANK			<0.01	4	low
Kharmagtai	KHDDH347	RE55799			STANDARD	503b		0.67	<0.01	5470	low
Kharmagtai	KHDDH347	RE55809			BLANK	KH-BLANK		0.01	<0.01	66	low
Kharmagtai	KHDDH347	RE55815			STANDARD	505		0.56	<0.01	3190	low
Kharmagtai	KHDDH347	RE55844			STANDARD	503b		0.69	<0.01	5250	low
Kharmagtai	KHDDH347	RE55854			BLANK	KH-BLANK			<0.01	36	low
Kharmagtai	KHDDH347	RE55860			BLANK	KH-BLANK			<0.01	6	low
Kharmagtai	KHDDH347	RE55867			BLANK	KH-BLANK		0.01	<0.01	160	low
Kharmagtai	KHDDH347	RE55889			STANDARD	503b		0.69	<0.01	5290	low
Kharmagtai	KHDDH347	RE55899			BLANK	KH-BLANK		0.01	<0.01	99	low
Kharmagtai	KHDDH347	RE55905			STANDARD	504b		1.55	<0.01	11150	low
Kharmagtai	KHDDH347	RE55912			BLANK	KH-BLANK			<0.01	80	low
Kharmagtai	KHDDH347	RE55934			STANDARD	504b			<0.01	11050	low
Kharmagtai	KHDDH347	RE55950			STANDARD	503c		0.69	<0.01	5490	low
Kharmagtai	KHDDH347	RE55957			BLANK	KH-BLANK			<0.01	43	low
Kharmagtai	KHDDH347	RE55979			BLANK	KH-BLANK			<0.01	7	low
Kharmagtai	KHDDH347	RE55989			BLANK	KH-BLANK			<0.01	21	low
Kharmagtai	KHDDH347	RE55995			BLANK	KH-BLANK			<0.01	10	low
Kharmagtai	KHDDH347	RE56002			BLANK	KH-BLANK			<0.01	32	low
Kharmagtai	KHDDH347	RE56034			STANDARD	505		0.55	<0.01	3150	low
KHARMAGTAI	KHDDH347	XD55875	384	386	CHECK		XD55874	0.12	<0.01	5680	low
KHARMAGTAI	KHDDH347	XD55920	452	454	CHECK		XD55914	0.37	<0.01	3190	low
Kharmagtai	KHDDH347	XD55965	532	534	CHECK		XD55964	1.54	<0.01	9830	low
KHARMAGTAI	KHDDH347	XD56010	612	614	CHECK		XD56009	1.04	<0.01	5990	low

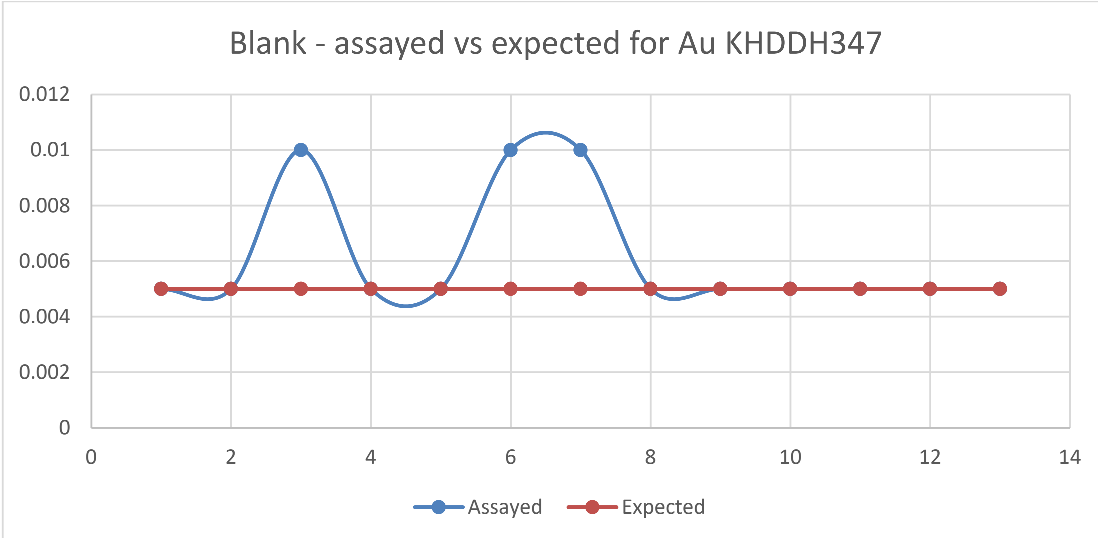


Figure 81: Performance chart of KHDDH347 Au umpire outcomes by ALS.

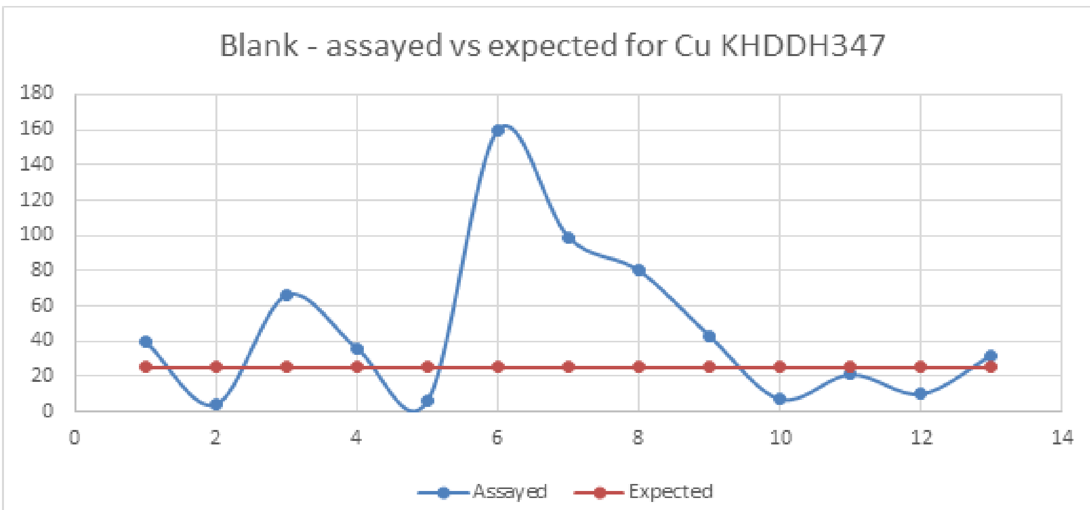


Figure 82: Performance chart of KHDDH347 Cu umpire outcomes by ALS.

Table 37: KHDDH421 Cu and Au umpire outcomes by SGS.

PROJECT	SITE_ID	SAMPLE_ID	DEPTH_FROM	DEPTH_TO	QC_TYPE	STANDARD_ID	PARENT_SAMPLE_ID	Au_PPM	Expected Au	Cu_PPM	Expected Cu
Kharmagtai	KHDDH421	RE102509			BLANK	KH-BLANK			<0.01	1.7	low
Kharmagtai	KHDDH421	RE102519			BLANK	KH-BLANK			<0.01	2.1	low
Kharmagtai	KHDDH421	RE102549			BLANK	KH-BLANK			<0.01	1.7	low
Kharmagtai	KHDDH421	RE102559			STANDARD	504b		1.61	<0.01	11100	low
Kharmagtai	KHDDH421	RE102569			BLANK	KH-BLANK			<0.01	2.2	low
Kharmagtai	KHDDH421	RE102579			BLANK	KH-BLANK			<0.01	1.7	low
Kharmagtai	KHDDH421	RE102599			STANDARD	505		0.55	<0.01	3300	low
Kharmagtai	KHDDH421	RE102619			BLANK	KH-BLANK			<0.01	1.2	low
Kharmagtai	KHDDH421	RE102629			BLANK	KH-BLANK			<0.01	1.4	low
Kharmagtai	KHDDH421	RE102649			STANDARD	503c		0.69	<0.01	5280	low
Kharmagtai	KHDDH421	RE102659			BLANK	KH-BLANK			<0.01	1.3	low
Kharmagtai	KHDDH421	RE102669			STANDARD	501b		0.25	<0.01	2590	low
Kharmagtai	KHDDH421	RE102679			BLANK	KH-BLANK			<0.01	1.2	low
Kharmagtai	KHDDH421	XD102529	52	54	CHECK		XD102528	0.64	<0.01	7170	low
Kharmagtai	KHDDH421	XD102589	160	162	CHECK		XD102588	0.4	<0.01	2320	low
Kharmagtai	KHDDH421	XD102639	250	252	CHECK		XD102638	1.6	<0.01	2780	low

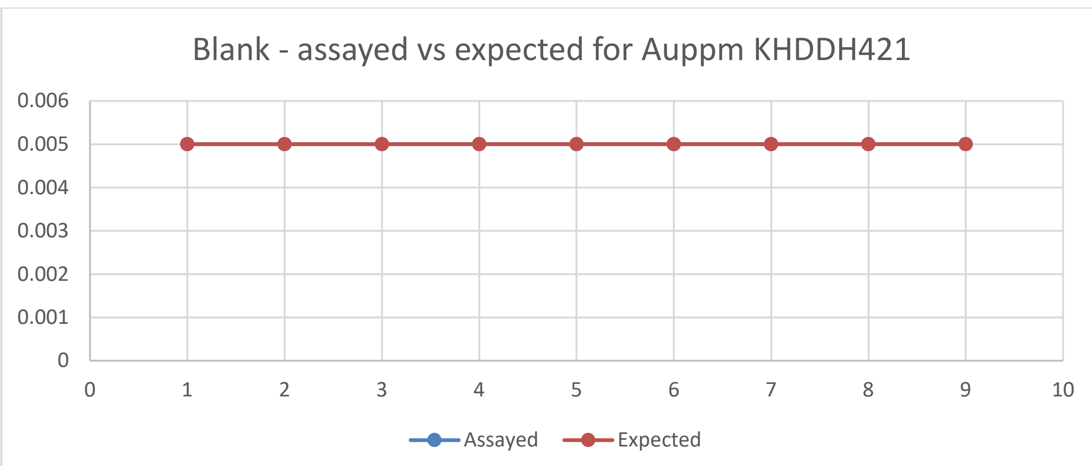


Figure 83: Performance chart of KHDDH421 Au umpire outcomes by SGS.

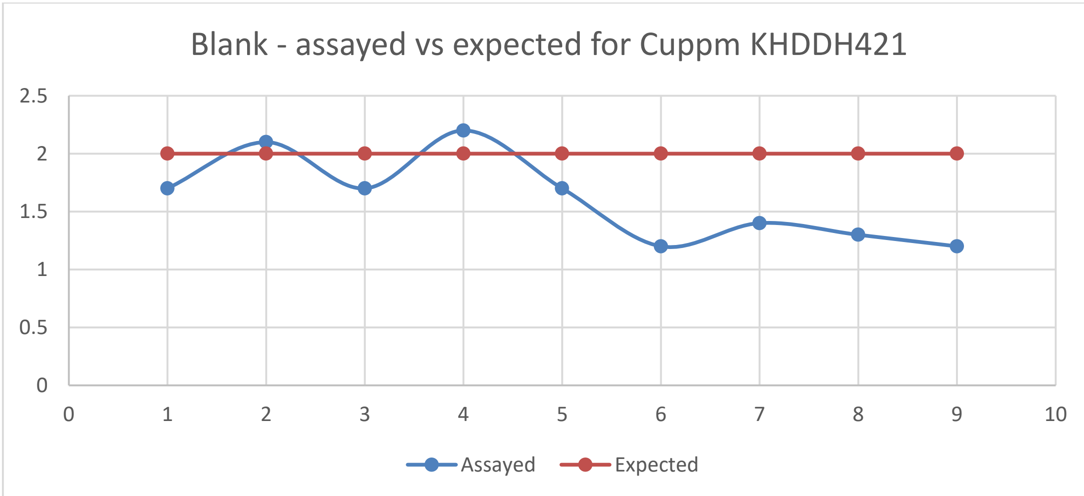


Figure 84: Performance chart of KHDDH421 Cu umpire outcomes by SGS.

17.9 Field and laboratory duplicate analysis

This section of the report tables the field and laboratory duplicate analysis undertaken by the Client and reviewed by SGC (Figures 85 through 91).

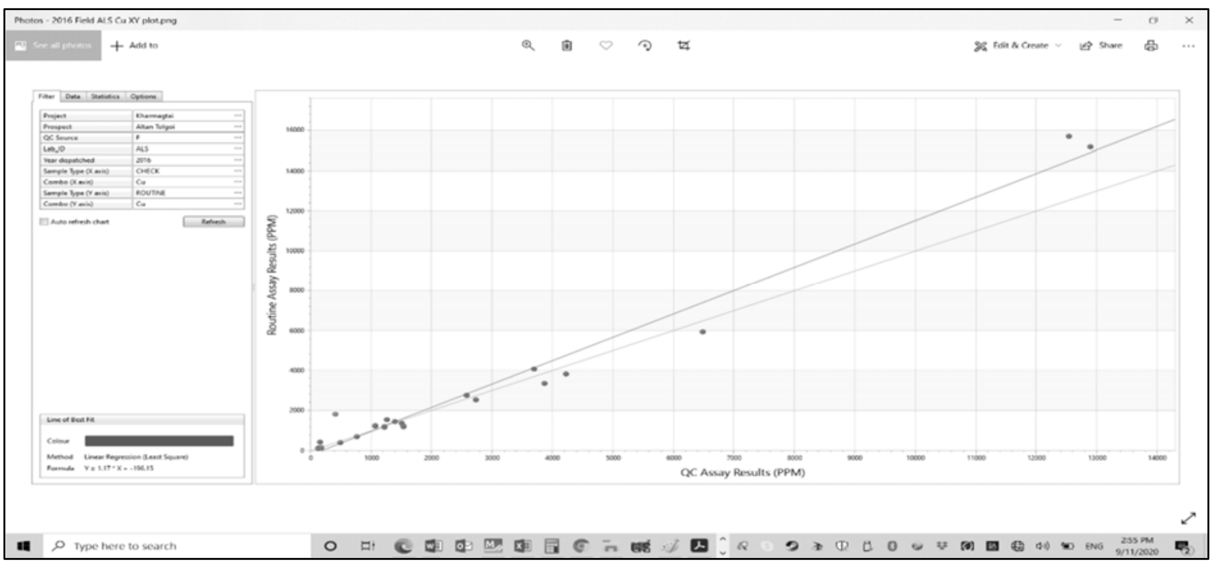


Figure 85: Field Duplicate Cu analysis - ALS 2016.

The 2016 ALS Cu values shows a strong correlation with the slope of regression at 1.17. This population is clearly marginally influenced by two high end members and one outlier near the lower cut-off for Cu ~0.38%.

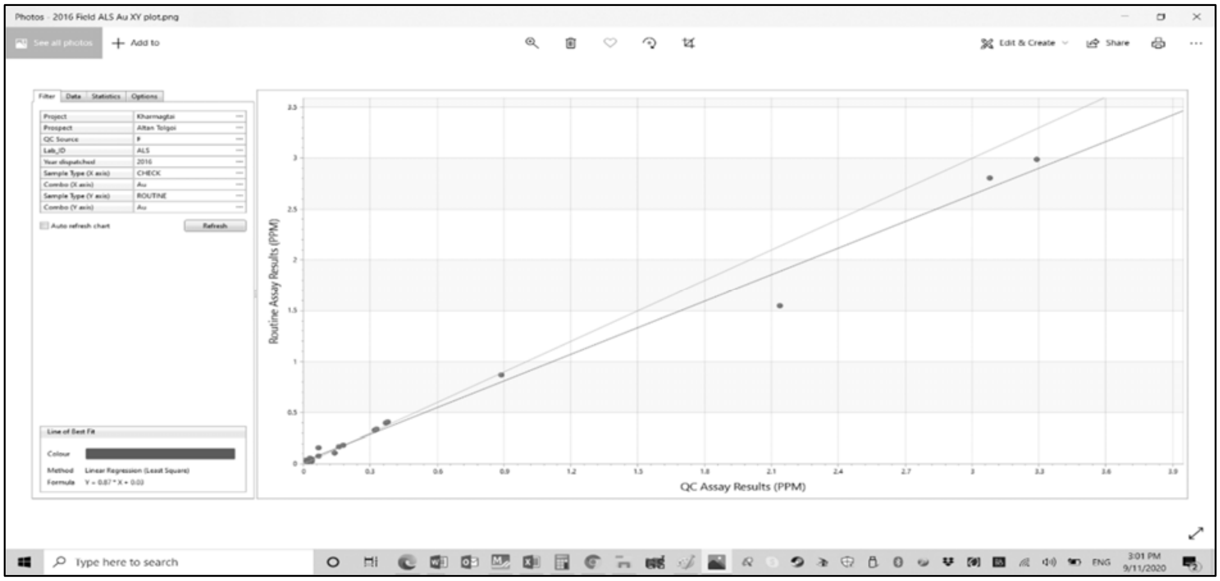


Figure 86: Field Duplicate Au analysis - ALS 2016.

The 2016 ALS Au values shows a strong correlation with the slope of regression at 0.87. This population is marginally influenced by the lower end of the population presenting higher duplicate values than the original values.

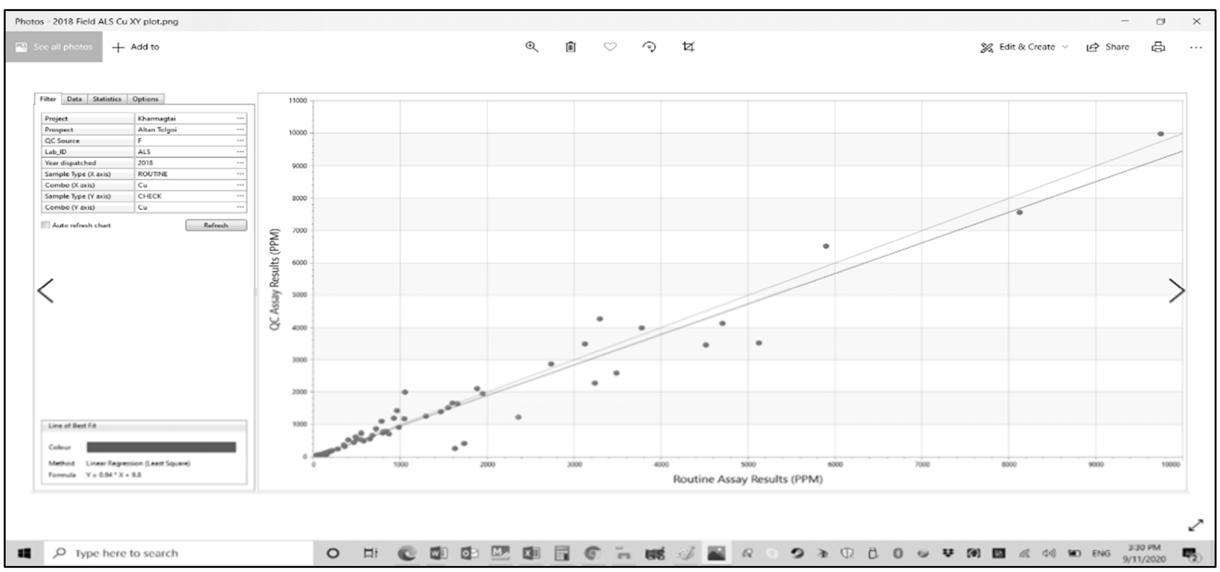


Figure 87: Field Duplicate Cu analysis - ALS 2018.

The 2018 ALS Cu values shows a strong correlation with the slope of regression at 0.94. This population is marginally influenced by the tendency for a spread around the upper end of the population with the original samples assaying higher than the duplicate samples.

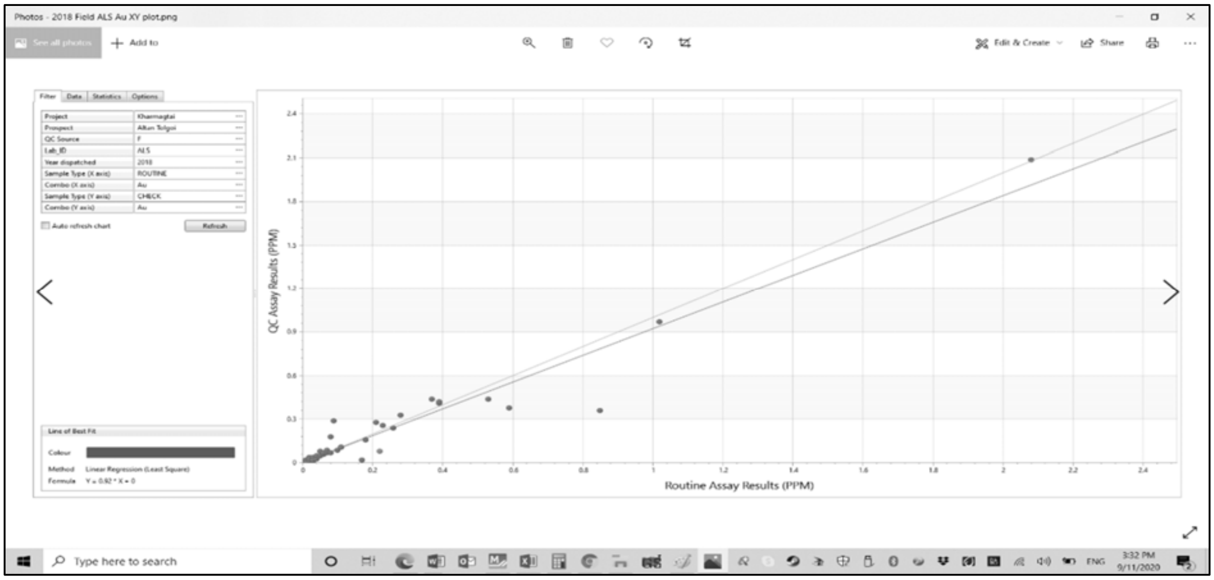


Figure 88: Field Duplicate Au analysis - ALS 2018.

As per the above Cu analysis the 2018 ALS Au values shows a strong correlation with the slope of regression at 0.92. This population is marginally influenced by the tendency for a spread around the upper end of the population with the original samples assaying higher than the duplicate samples.

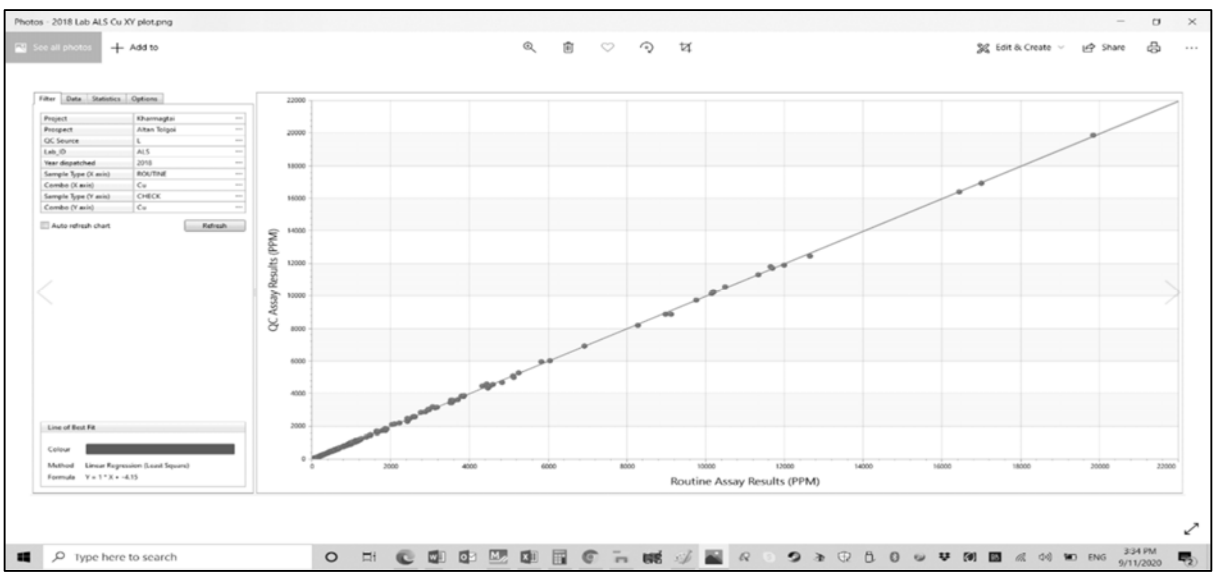


Figure 89: Laboratory Duplicate slope of regression Cu analysis - ALS 2018.

Laboratory duplicate analysis shows a perfect correlation with the R2 (Slope of regression) equal to 1.00. There is no influence from either high end members or outliers on the population.

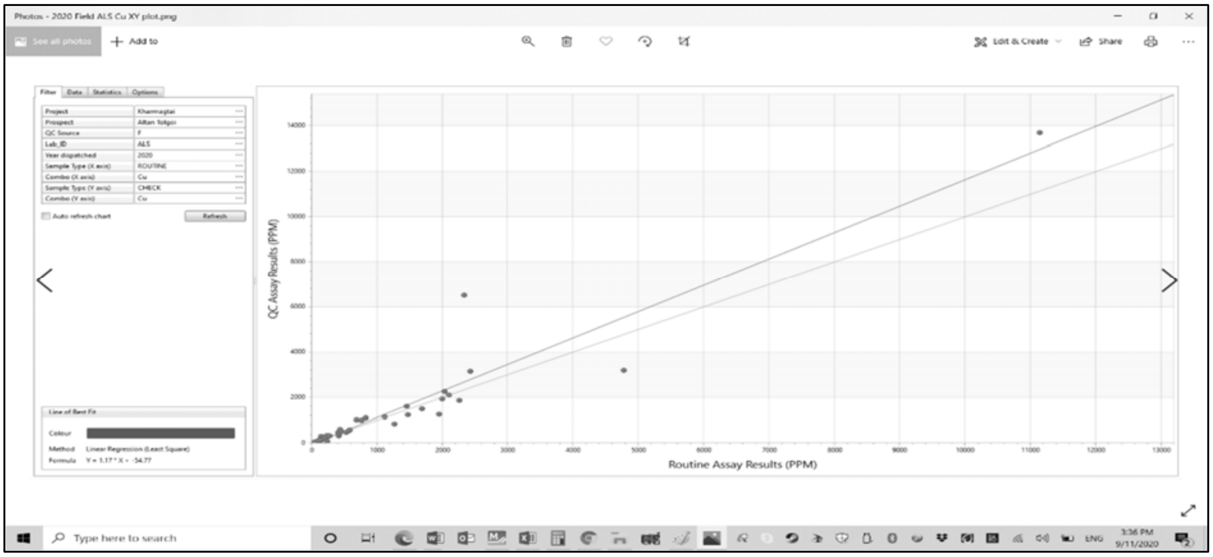


Figure 90: Field Duplicate Cu analysis - ALS 2020.

Analysis of Cu for field duplicates for 2020 again shows a strong correlation with the slope of regression being 1.17 and like earlier examples the 2020 duplicate data for Cu shows higher duplicate values than original values which are affected by high end members and outliers alike.

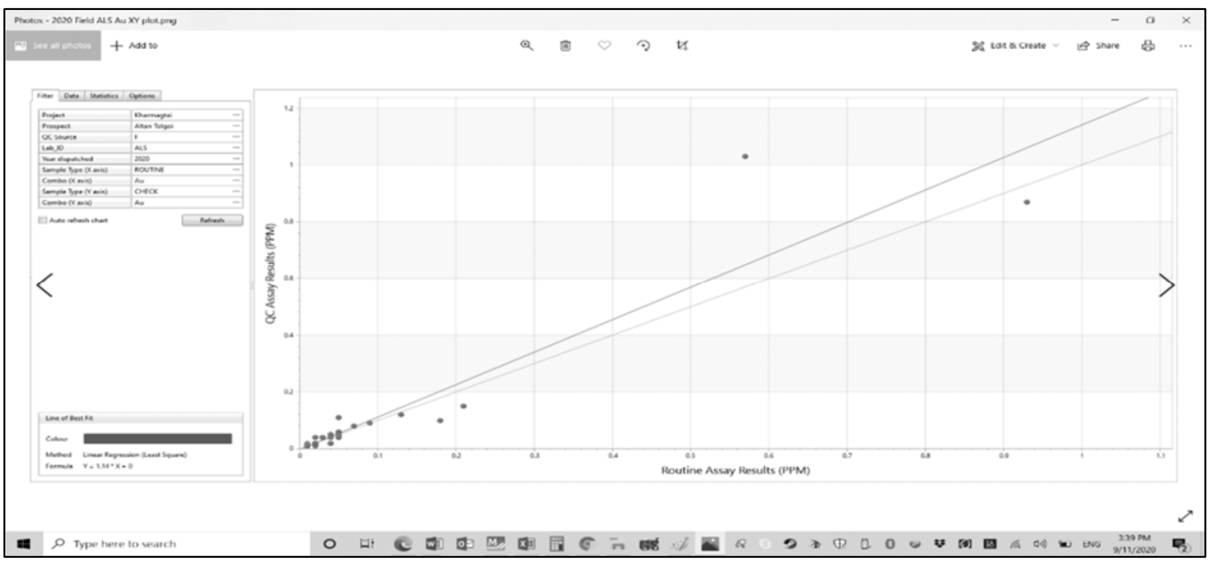


Figure 91: Field Duplicate Au analysis - ALS 2020.

For the 2020 duplicate analysis for Au the same result is obtained as for Cu with the slope of regression being 1.14 and the second determinations being higher. This dataset is strongly affected by skewed high end members.

17.10 Duplicate analysis by XAM and the Laboratory – Summary and Comments

Overall, the outcomes for the duplicate analysis by both XAM and the preferred laboratories are good to very good with the slope of regression nearing 1.00 in all cases observed by SGC (reviewed a 10% cross section of the total data).

With the above noted there are a number of high-end members which do influence the outcomes. When this is taken into consideration in conjunction with the standard outcomes and the observed lack of higher-grade standards across the board, some further investigation is warranted to ensure that:

1. The higher-grade population of the deposit is being accurately represented.
2. Where outliers of high grades are encountered for Cu and Au (but perhaps more for Au due to observation from standard analysis) that they are routinely reviewed again with a second or third split from the remaining coarse rejects.

Overall, the data handling and procedures undertaken by XAM are to industry standards in respect of QAQC.

17.11 Third Party Laboratory analysis of selected XAM samples - 2021

Two drill-holes (KHDDH347 by ALS and KHDDH421 by SGS) were submitted for analysis at both SGS and ALS. As can be seen in the following Figures 92 to 95, the outcomes for the multi element data were in very close agreement across the entire populations.

In respect to the analysis of KHDDH347, it is clear from the comparative plot Figure 92 and the regression plot Figure 93 for Cu that the R^2 is at 0.99 which is a very strong correlation. The minor differences which are observed of a slightly higher overall trend associated with the SGS outcomes are driven by a number of high-end members above 10000ppm. SGS assays higher in KHDDH347 according to the trend line by ~5%.

In respect to the analysis of KHDDH421, it is as per KHDDH347 clear from the regression plot of Cu that the R^2 is at 0.99 which is a very strong correlation. The minor differences which are observed of a slightly higher overall trend associated with the SGS outcomes are again driven by a number of high-end members above 23000ppm. ALS assays higher in KHDDH421 according to the trend line by ~1%.

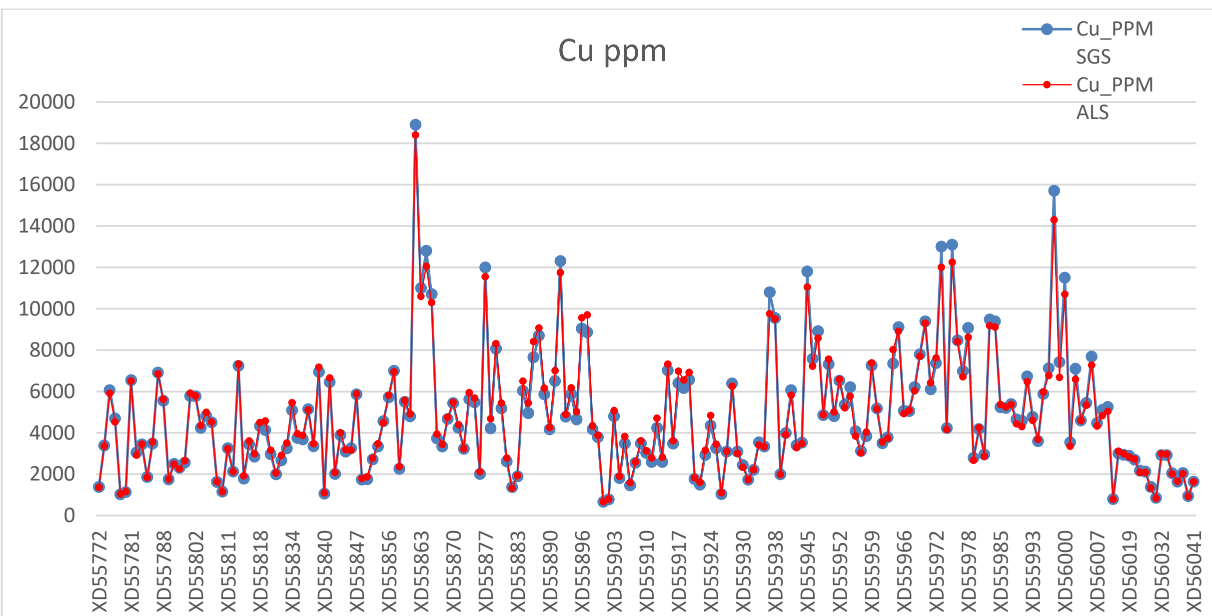


Figure 92: KHDDH347 Down drill-hole comparative line plot for Cu – ALS vs SGS.

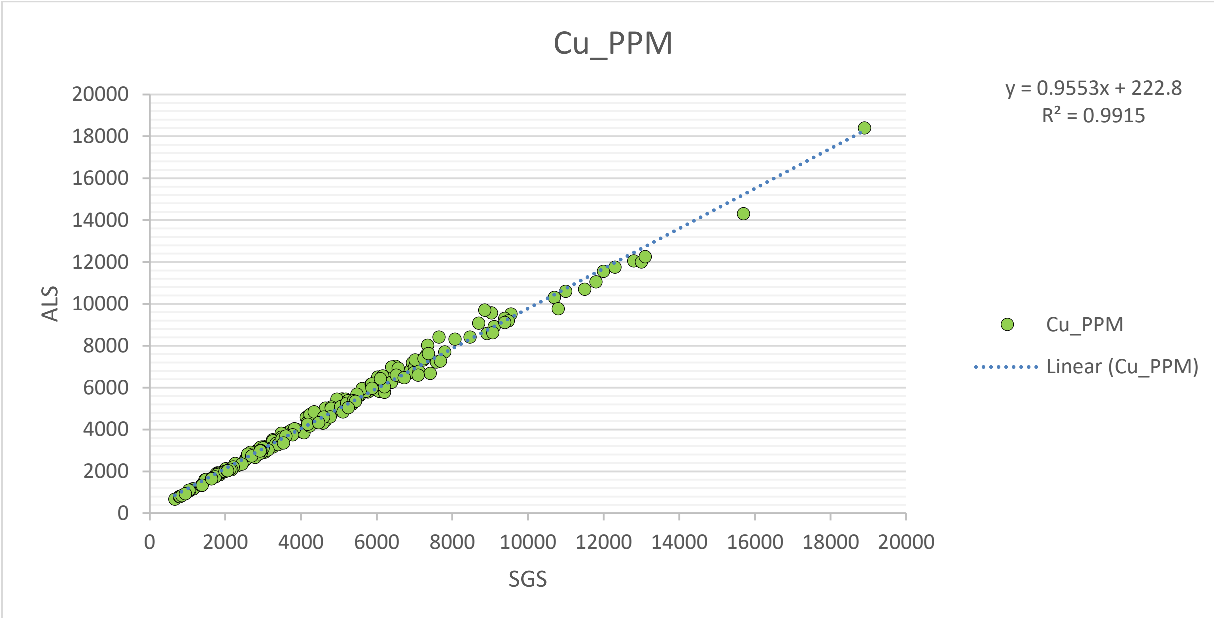


Figure 93: KHDDH347 Down drill-hole comparative regression plot for Cu – ALS vs SGS.

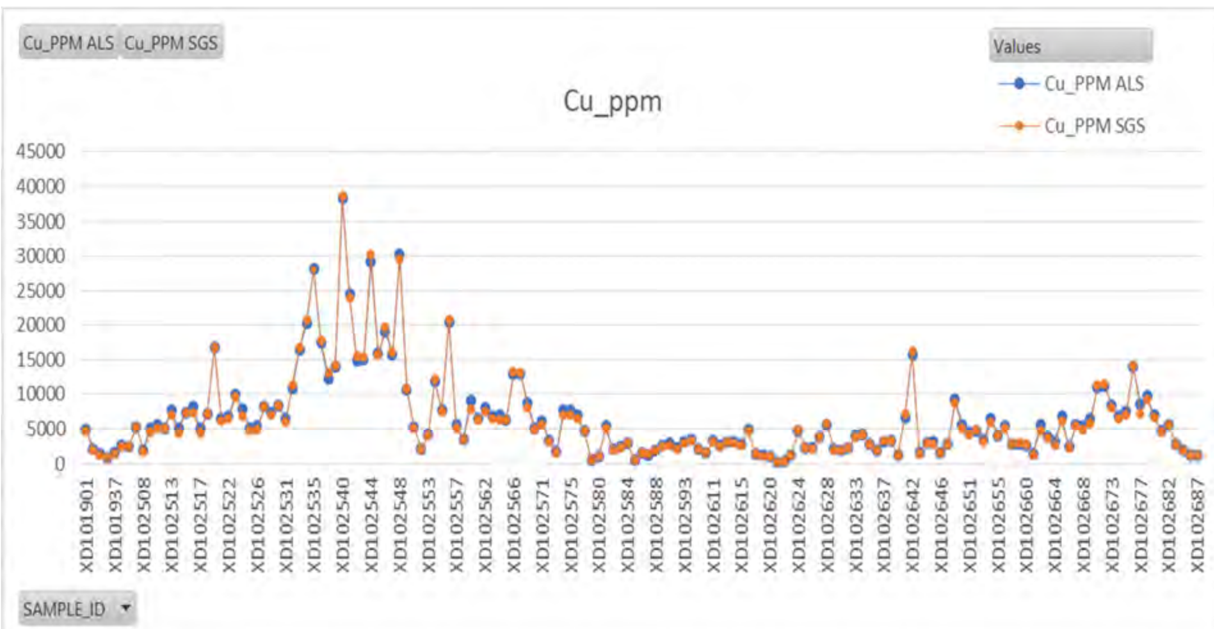


Figure 94: KHDDH421 Down drill-hole comparative line plot for Cu – ALS vs SGS.

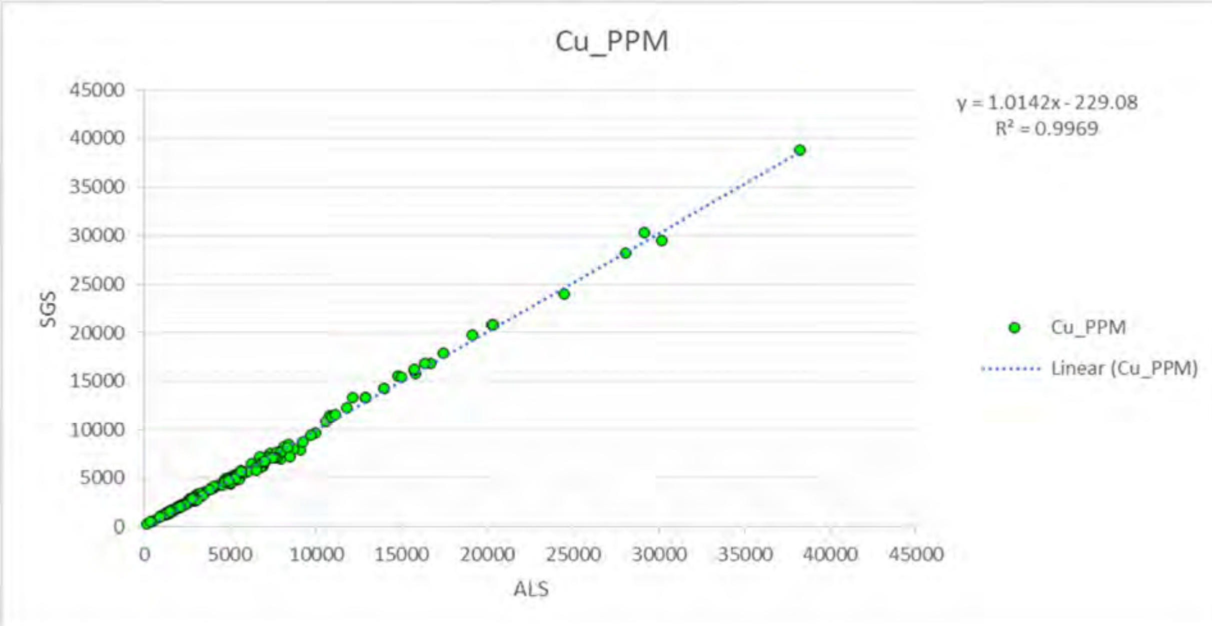


Figure 95: KHDDH421 Down drill-hole comparative regression plot for Cu – ALS vs SGS.

As can be seen in Figures 96 to 99, for gold in drill-hole KHDDH347 and KHDDH421, the regression plot figures show strong correlation across both drill holes and within the populations with R^2 being 0.93 and 0.98 respectively.

The slightly lower correlations are as a result of one high end member in the KHDDH347 population as well as a number of outliers associated with the grade range between 1.25g/t Au through to the upper limit of the population at or near 2.5g/t Au. For KHDDH421 the correlation is reduced only by two high end members. ALS is higher by 4% and 12% respectively for the two drill-holes KHDDH347 and KHDDH421 respectively for gold which is approaching a material difference in drill-hole KHDDH421.

To better understand the KHDDH421 outcomes, it is recommended that further analysis of the outliers / high end members be completed to assess if the remainder of the population correlations improve.

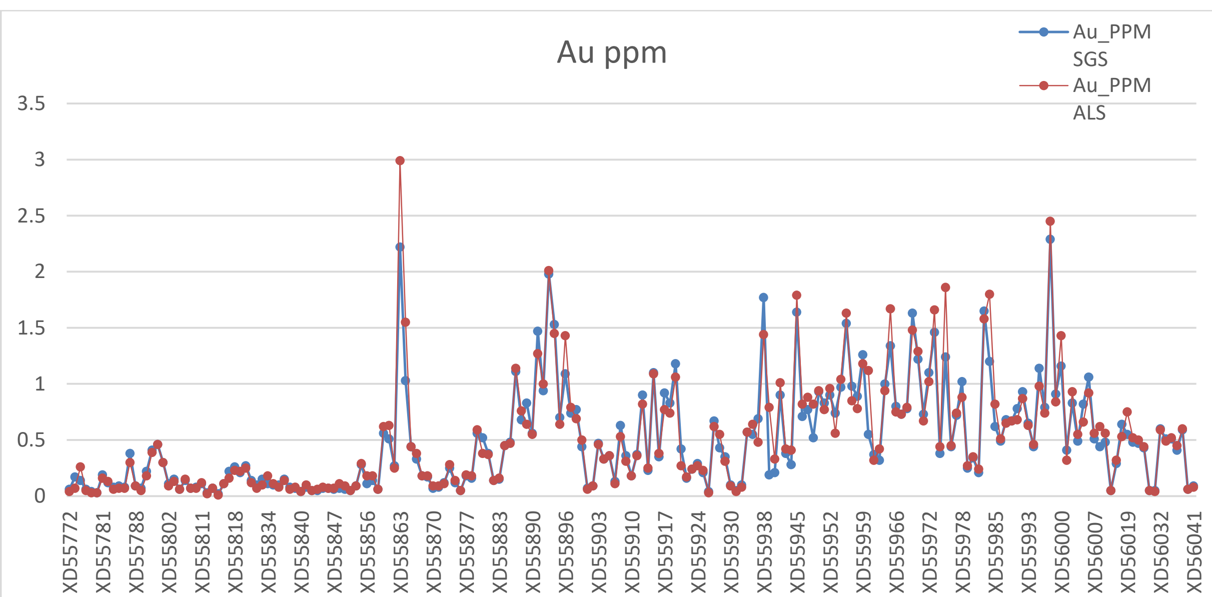


Figure 96: KHDDH347 Down drill-hole comparative line plot for Au – ALS vs SGS.

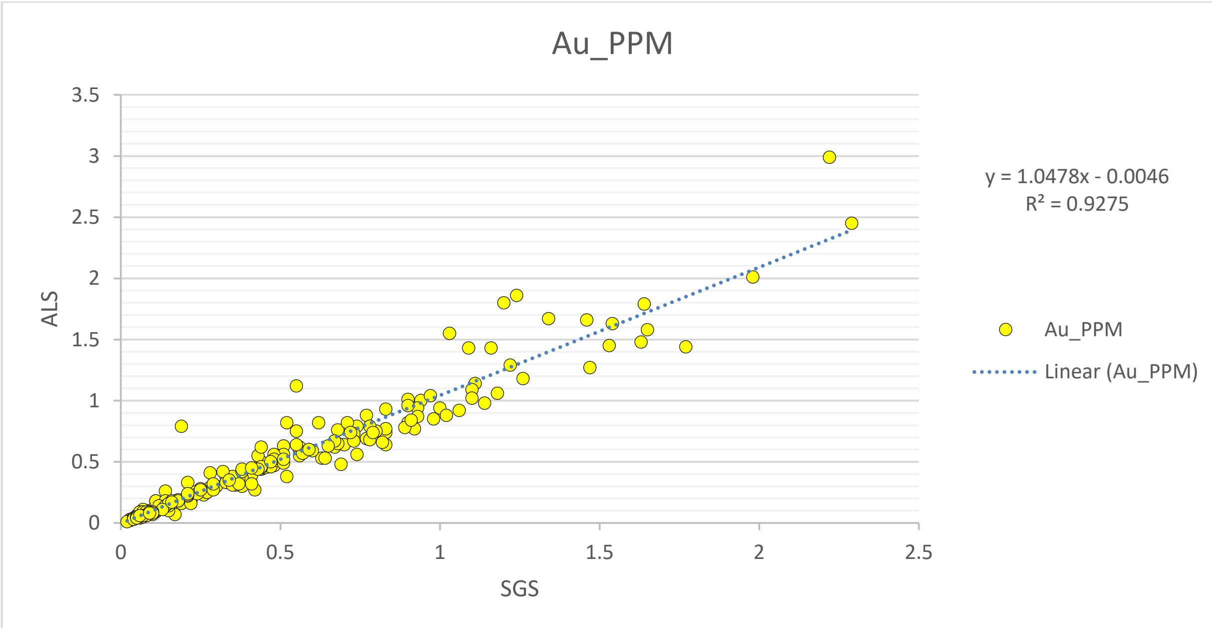


Figure 97: KHDDH347 Down drill-hole comparative regression plot for Au – ALS vs SGS.

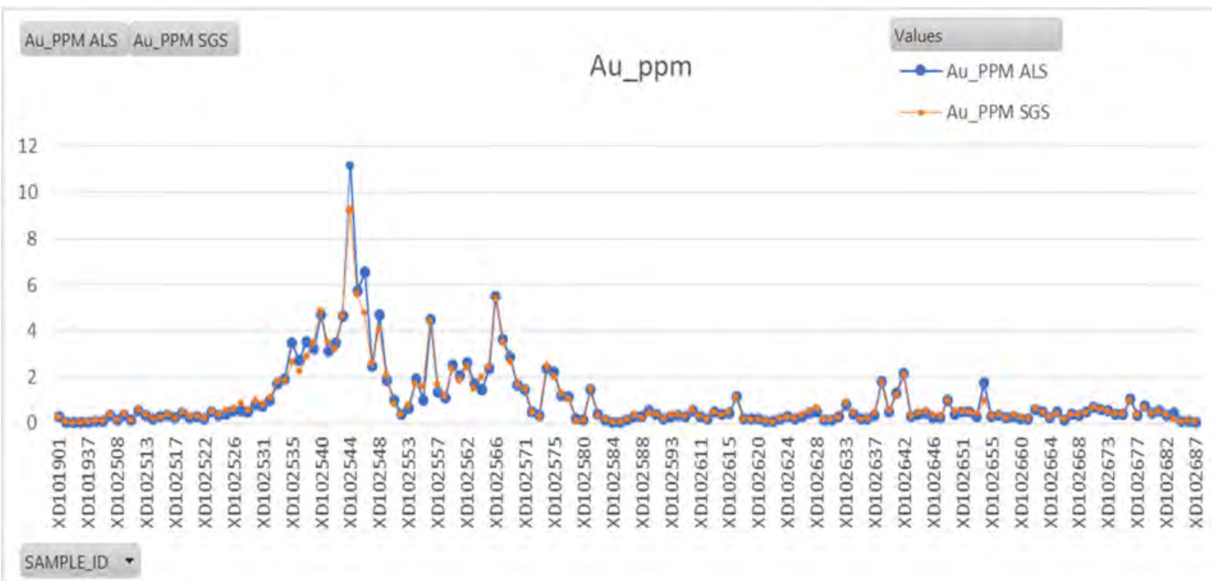


Figure 98: KHDDH421 Down drill-hole comparative line plot for Au – ALS vs SGS.

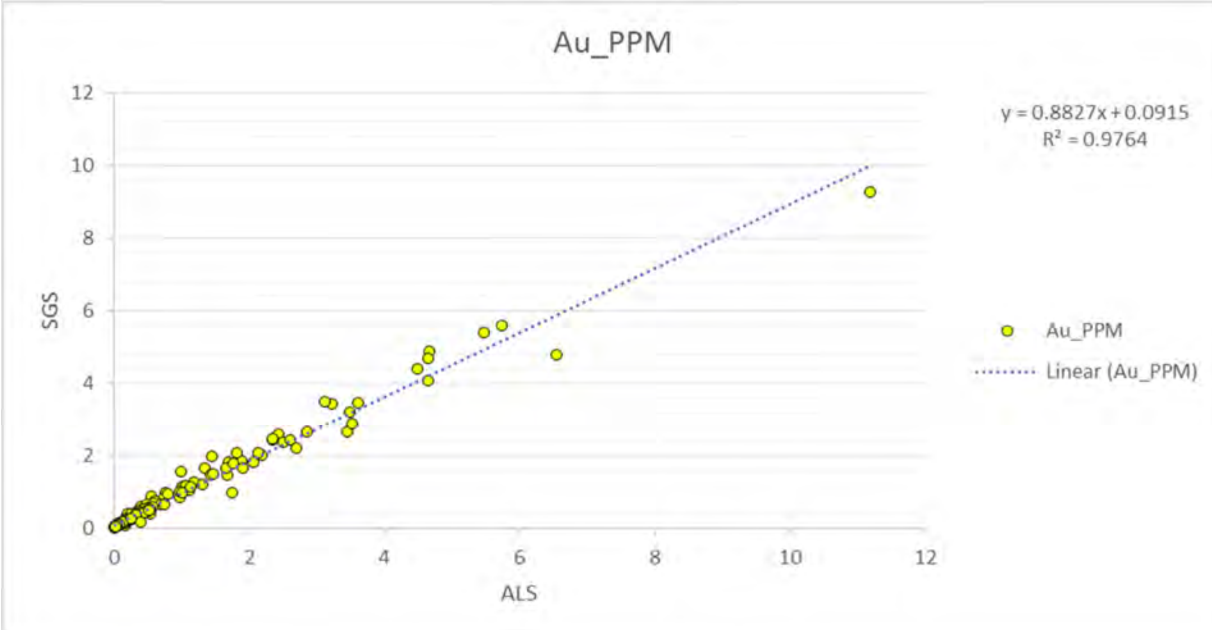


Figure 99: KHDDH421 Down drill-hole comparative regression plot for Au – ALS vs SGS.

As can be seen in Figures 100 and 101, for Mo the slope of regression plot for ASL vs SGS displays a very strong correlation with the R2 at 0.996 for KHDDH347. For drill-hole KHDDH421 the analysis is not as strong but still consistently high at 0.92 with the trend being driven by two high end members.

That noted, the two populations are influenced by a single high-end member in KHDDH347 and two high end members in KHDDH421. The resolution of these samples will improve the outcomes to within a higher level.

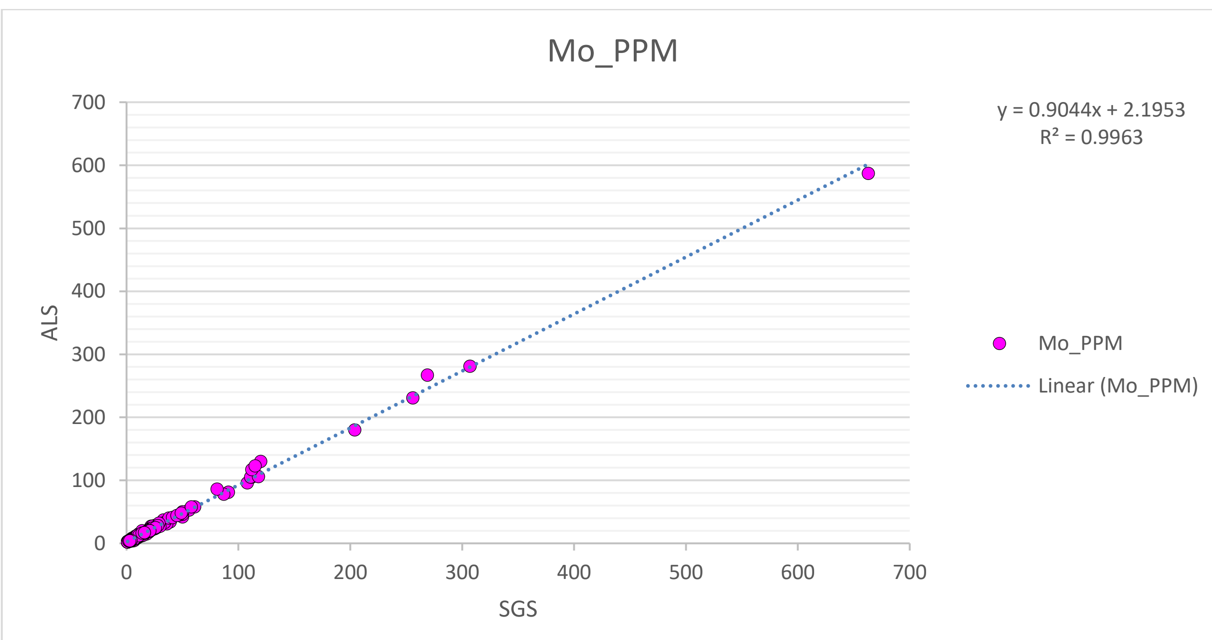


Figure 100: KHDDH347 Down drill-hole comparative line plot for Mo – ALS vs SGS.

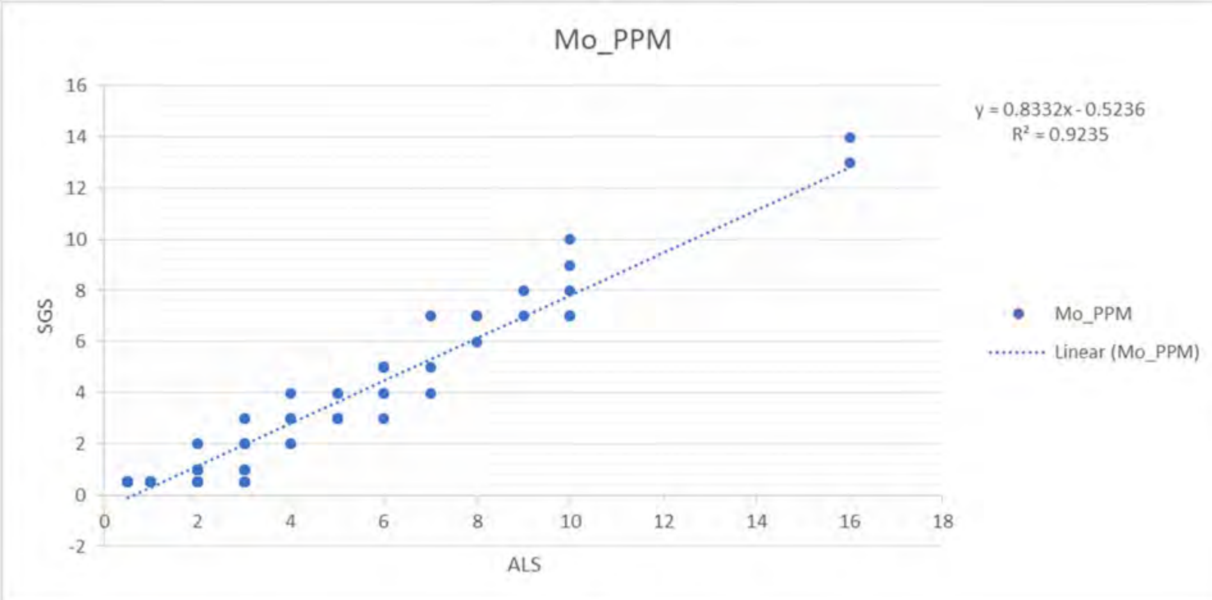


Figure 101: KHDDH421 Down drill-hole comparative line plot for Mo – ALS vs SGS.

Overall, the correlations between the two datasets are strong to very strong, with deviation due largely to higher end members in both datasets. It is recommended by SGC that further attention be given the high end members of each population in order to better understand the cause of the differences and the impact of their removal.

18 Adjacent Properties

At the time of writing this report, XAM had informed the author/s that they were not aware of "any significant exploration activity or results on immediately adjacent third-party mineral properties".

In accordance with the aforementioned advice from the Client and taking into account that due to COVID conditions the author/s were not able to visit the site, all aspects pertaining to adjacent properties remain the responsibility of XAM (the Client).

19 Mineral Processing and Metallurgical Testwork

Three programs of sulphide flotation metallurgy have been conducted for the Stockwork Hill, Copper Hill and White Hill Deposits at the Kharmagtai Project. No sulphide metallurgical work has been conducted as yet for the Zaraa, Golden Eagle or Zephyr Deposits.

In 2008, Turquoise Hill sent five samples from Kharmagtai for sulphide flotation metallurgical testing as a part of a larger program for Oyu Tolgoi. In 2016 XAM sent a single sample of the newly discovered high-grade tourmaline breccia mineralisation for flotation and grindability testing. In 2018-19 XAM sent nine composite samples for sulphide float metallurgy and comminution testing.

In aggregate, this sulphide flotation work has demonstrated that the sulphide ore responds well to conventional copper/gold flotation techniques to produce a concentrate free of deleterious elements.

In 2018-19 a single program of copper oxide leach and transitional flotation test work was conducted for the Stockwork Hill, Copper Hill and White Hill deposits. Six samples of oxide to transitional material were run for rougher flotation and bottle roll leaching. This work suggested that the oxide to transitional material responds poorly to flotation without the addition of sulphidising agents.

Two programs have been conducted focused on gold recoveries from oxide material from Stockwork Hill, Copper Hill, and Golden Eagle. Samples were run for gravity separation with leaching of the tails and column leach tests. This work suggested gravity separation and leaching of tails may be viable, with moderately high cyanide consumption due to copper oxides in the tails. The column leach work returned mixed recoveries suggesting heap leaching may not be viable for this material.

Details for these programs are described below.

All testwork and reviews conducted on data indicate that Kharmagtai mineralisation is amenable to copper recovery by large tonnage conventional sulphide flotation and gold recovery by gravity and the Mineral Resource can be estimated on this basis.

The 2021 MRE utilises a constant copper recovery of 90% and gold recovery of 78% in the CuEqRec equation in response to direction by the Client on the basis of independent metallurgical analysis of in-situ head grade and copper speciation. At the time of writing the report, the authors are not aware of any potential factors which may materially impact the Mineral Resource Estimates".

19.1 Turquoise Hill Metallurgy (2008)

Preliminary metallurgical work was conducted on Kharmagtai samples as a part of a larger program for Oyu Tolgoi in 2008. Five composite samples were collected from Kharmagtai and run for flotation and grindability using the Oyu Tolgoi flowsheet.

19.1.1 Sample Selection

Samples were selected from Stockwork Hill (n=3), White Hill (n=1) and Copper Hill (n=1) (Table 38). Sample selection for this program was deemed as being problematic as samples were selected without consideration of oxide or sulphide domains. Sample number AT002 was selected from the Southern Stockwork Zone and contained approximately 20% of the sample from the oxide zone. Sample number AT003 was selected from the Northern Stockwork Zone and +50% of the sample had come from the oxide zone. The Copper Hill Sample (number ZU001) also contained approximately 20% of material from the oxide zone. In addition to the mixed sulphide domains, the average head grade of 1.2% Cu is considered to be substantially higher than the average grade of the deposit.

Table 38: 2008 Metallurgical Samples from Kharmagtai.

Sample ID	Deposit	% Cu	g/t Au	% Fe	% S	% Cu_{ox}	g/t F	Mass (kg)
AT 001	Stockwork Hill	0.53	1.62	7.55	3.17	0.062	525	17.2
AT 002		1.58	2.15	6.05	1.92	0.025	415	28.5
AT 003		0.57	0.46	4.48	0.42	0.329	585	15.4
TS 001	White Hill	0.25	0.24	0.25	1.94	0.01	368	16.8
ZU 001	Copper Hill	1.4	2.18	7.45	1.52	0.152	225	20.7

Note – samples taken from Oyu Tolgoi have been removed from this table as they are not relevant to the project.

19.1.2 Mineralogy

Modal mineralogy was run for each sample (Table 39) after grinding to ~80% passing 150 microns. The dominant copper mineral was chalcopyrite with a moderate amount of bornite in sample AT003 from Stockwork Hill. Pyrite is the dominant sulphide in all but AT003. At this grind size approximately 50% of the sulphide was liberated from gangue and these results suggest no significant improvements would be achieved with finer grind sizes.

Table 39: Modal Mineralogy from 2008 samples,

Sample ID	Chalcopyrite	Bornite	Chalcocite	Pyrite	Gangue	Grind, microns
AT 001	1.5	<0.1	<0.1	8.5	90	140
AT 002	1.7	<0.1	<0.1	4.6	94	148
AT 003	0.7	0.6	<0.1	0.7	98	120
TS 001	0.7	<0.1	<0.1	2.6	97	159
ZU 001	3.7	0.1	0.2	0.9	95	167

19.1.3 Grindability

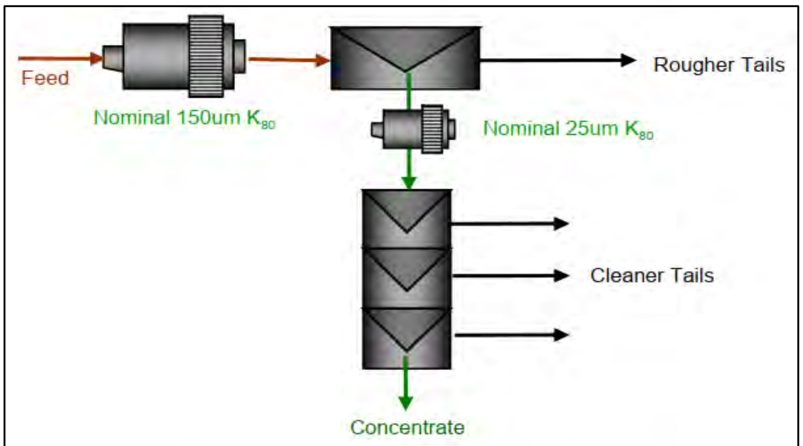
Grindability work was done via estimates rather than measured due to sample size limitations and suggested the samples are medium to hard (Table 40).

Table 40: Grindability Estimates.

Sample ID	BWi (kWh/t)
AT 001	14.6
AT 002	18.9
AT 003	22.4
TS 001	25.0
ZU 001	26.0

19.1.4 Flotation

Flotation work included rougher and cleaner tests with no locked cycle testing. Test conditions are found in Figure 102.



NOMINAL CLEANER TEST CONDITIONS

Stage	size µm K_{80}	Regents - g/t			pH
		Lime	3418A	MIBC	
Grind	132 - 166	-	10	-	7.8 - 9.4
Rougher	-	-	0 - 18	8 - 45	7.8 - 9.4
Regrind	10 - 60	200 - 500	-	-	8.3 - 10.5
Cleaners	-	50 - 400	0 - 15	45 - 90	10.5 - 10.8

Figure 102: Schematic of cleaner test conditions.

The selective copper sulphide collector used was Aerophine 3418A and flotation frother used was MIBC (Methyl Iso Butyl Carbinol). Moderate pyrite flotation was achieved via adjustment of the pH using lime. No significant optimisations were conducted. Samples were run through open rougher and cleaner test with none of the intermediate products recycled.

As noted above, despite the samples containing mixed oxidation states, a saleable grade (~30% Cu) concentrate was produced with recoveries of between 75% and 90% except AT003 which returned a 30% recovery (Figure 103, Table 41).

The concentrates produced were generally free of deleterious elements except for some elevated levels of As and Bi.

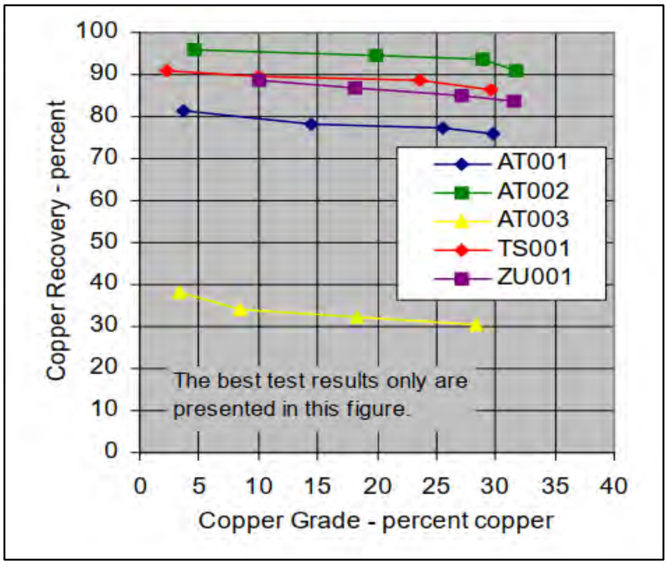


Figure 103: Grade vs recovery flotation testwork.

Table 41: Summary of payable and deleterious elements in copper concentrates.

Element	Unit	Composite							
		AT001	AT002	TS001	ZU001	Met001	Met002	Met003	Met004
Copper	%	26.4	23.9	19.3	31.0	17.4	18.2	28.7	22.4
Gold	g/t	63.1	86.3	18.7	43.5	8.3	101.5	55.9	8.4
Molybdenum	%	-	-	-	-	1.1	0.36	0.14	1.70
Silver	g/t	76	72	28	105	24	42	68	56
Antimony	g/t	144	410	218	94	188	200	160	122
Arsenic	g/t	264	199	160	101	77	62	18	18
Bismuth	g/t	**480**	**474**	**470**	**468**	**390**	**376**	**434**	**418**
Cadmium	g/t	14	<10	<10	<10	10	14	18	10
Cobalt	g/t	52	54	104	40	98	60	62	36
Fluorine	g/t	83	102	111	44	**1430**	**770**	**770**	**452**
Iron	%	29.1	28.7	30.4	25.9	26.4	29.0	28.0	28.9
Lead	%	0.04	0.04	0.03	0.04	0.10	0.11	0.55	0.05
Mercury	g/t	0.6	0.3	4.7	<.1	0.3	0.1	0.1	0.1
Nickel	g/t	102	96	128	80	64	60	406	72
Phosphorus	g/t	69	114	90	47	412	162	49	78
Selenium	g/t	110	152	87	193	109	147	274	112
Sulphur	%	34.6	33.1	39.6	31.3	27.6	31.3	33.5	33.4
Zinc	%	0.46	0.07	0.05	0.03	0.09	0.14	0.12	0.11
Silica	%	2.15	5.55	7.46	4.61	14.8	13.8	4.25	9.58
Aluminum Oxide	%	0.64	1.10	1.72	1.19	4.14	3.53	1.11	2.21
Calcium Oxide	%	0.50	0.91	0.39	0.19	0.70	0.37	1.35	0.96
Magnesium Oxide	%	0.21	0.34	0.25	0.32	1.19	0.56	0.44	0.20
Manganese Oxide	g/t	0.02	0.03	0.01	0.02	0.05	0.02	0.01	0.01

Notes: a) Copper, iron, sulphur molybdenum and gold are calculated values.

19.2 XAM Flotation Testwork (2016)

In 2016 a single sample of high-grade tourmaline breccia from Stockwork Hill was sent for flotation and grindability testing to Core Research Laboratory (Queensland Australia) after the discovery of this ore type.

19.2.1 Sample Selection

This sample is only considered representative of the high-grade tourmaline breccia (4.2% Cu) which is significantly higher grade than the average resource grade. The composite had the following chemical characteristics (Table 42).

Table 42: Tourmaline Breccia Float Sample assays and copper speciation.

Sample ID	Au (g/t)	Ag (g/t)	% Fe	% S	% Cu CN	% Cu HAS	%CN RES
AT 001	1.86	14.1	7.77	7.2	0.076	0.082	4.21

19.2.2 Grindability

Grindability work was conducted using a screen size of 150 microns. Bond Work Index for this test returned a BWi of 18.9 kWh/t which parallels the earlier estimates.

19.2.3 Flotation

Rougher flotation work was conducted using three grind sizes (80% passing 125um, 150um and 180um, Table 43) using similar reagents to the 2008 testwork. Rougher recoveries were high (over 93%) across three grind sizes with good recoveries in the coarser grind range. Concentrate grades ranges between 17.5% and 18.9% Cu.

Table 43: Kharmagtai Flotation Sighter Tests - June 2016.

FT1 - 125µm Grind

	Feed Grade	Recovery to Rougher Concentrate	Concentrate Grade
Cu	4.07	95.3	18.9
Au	1.83	93.4	8.33
Ag	12.7	86.7	53.7

FT2 - 150µm Grind

	Feed Grade	Recovery to Rougher Concentrate	Concentrate Grade
Cu	3.99	94.8	18.2
Au	1.62	95.1	7.37
Ag	11.4	89.6	48.9

FT3 - 180µm Grind

	Feed Grade	Recovery to Rougher Concentrate	Concentrate Grade
Cu	4.13	93.6	17.5
Au	1.69	95.4	7.28
Ag	11.6	89.9	47.2

19.3 XAM Flotation Testwork (2018-2019)

In 2018-19 a series of composite samples were sent for flotation and comminution testwork to SGS in Vancouver, Canada.

19.3.1 Sample Selection

Nine composites were selected based on geometallurgical models built for Copper Hill, White Hill and Stockwork Hill by Warren Potma from CSA Global. CSA Global used the porphyry alteration domaining process described by Scott Halley to define potassic, sericite and albite-chlorite alteration domains from four acid digest multielement assay data and short wave infra-red data acquired via Terraspec. Samples were selected from these alteration domains as multi-hole composites separated by deposit, rock type and alteration type. The composite details are listed in Table 44 and composite characterisation is listed in Table 45.

Three master composites were built from a selection of variability composites. The Master Composite Recipe can be found in Table 46.

Table 44: 2018 sample selections.

Hole ID	From	To	Sample ID	Met Composite	Received Weight	Total	Comp Name
KHDDH024	472	474	MD026776	TS_Potassic_Dio	4.00	36.80	Comp 1
KHDDH430	254	256	XD120324	TS_Potassic_Dio	3.95		
KHDDH430	262	264	XD120329	TS_Potassic_Dio	4.30		
KHDDH430	272	274	XD120334	TS_Potassic_Dio	3.70		
KHDDH430	472	474	XD120463	TS_Potassic_Dio	4.10		
KHDDH430	474	476	XD120465	TS_Potassic_Dio	4.05		
KHDDH437	480.3	481.3	XD122462	TS_Potassic_Dio	1.90		
KHDDH437	496	498	XD122472	TS_Potassic_Dio	4.05		
KHDDH437	590.3	592	XD122725	TS_Potassic_Dio	3.10		
KHDDH437	638	639.9	XD122753	TS_Potassic_Dio	3.65		
KHDDH024	332	334	MD026705	TS_Potassic_Slt	2.25	38.35	Comp 2
KHDDH024	392	394	MD026735	TS_Potassic_Slt	4.10		
KHDDH437	534	536	XD122494	TS_Potassic_Slt	3.90		
KHDDH437	550	552	XD122703	TS_Potassic_Slt	3.90		
KHDDH437	558	560	XD122707	TS_Potassic_Slt	3.65		
KHDDH450	640	642	XD126963	TS_Potassic_Slt	4.10		
KHDDH450	644	646	XD126965	TS_Potassic_Slt	3.90		
KHDDH450	648	650	XD126968	TS_Potassic_Slt	4.25		
KHDDH450	660	662	XD126974	TS_Potassic_Slt	4.20		
KHDDH450	680	682	XD126985	TS_Potassic_Slt	4.10		
KHDDH430	68	70	XD120221	TS_Ser-Chl	4.40	49.45	Comp 3
KHDDH430	82	84	XD120229	TS_Ser-Chl	3.95		
KHDDH430	156	158	XD120270	TS_Ser-Chl	3.85		
KHDDH437	74	76	XD122028	TS_Ser-Chl	4.15		
KHDDH437	940	942	XD123725	TS_Ser-Chl	2.05		
KHDDH450	92	94	XD125747	TS_Ser-Chl	6.70		
KHDDH450	252	254	XD125840	TS_Ser-Chl	7.50		
KHDDH450	258	260	XD125843	TS_Ser-Chl	6.25		
KHDDH450	364	366	XD126806	TS_Ser-Chl	5.90		
KHDDH450	382	384	XD126816	TS_Ser-Chl	4.70		
KHDDH430	188	190	XD120288	TS_Alb	3.80	53.15	Comp 4
KHDDH430	198	200	XD120293	TS_Alb	3.80		
KHDDH430	218	220	XD120304	TS_Alb	4.35		
KHDDH437	92	94	XD122038	TS_Alb	4.05		
KHDDH437	190	192	XD122097	TS_Alb	3.90		
KHDDH444	400	402	XD124753	TS_Alb	4.10		
KHDDH450	73	75	XD125736	TS_Alb	7.65		
KHDDH450	110	112	XD125758	TS_Alb	7.10		
KHDDH450	216	218	XD125820	TS_Alb	7.95		
KHDDH450	218	220	XD125822	TS_Alb	6.45		
KHDDH383	102	104	XD76360	ZU_Ser-Chl	2.85	34.35	Comp 5
KHDDH421	210	212	XD102616	ZU_Ser-Chl	3.80		
KHDDH421	240	242	XD102633	ZU_Ser-Chl	4.05		
KHDDH421	242	244	XD102634	ZU_Ser-Chl	3.65		
KHDDH421	370	372	XD101915	ZU_Ser-Chl	3.55		
KHDDH434	86	88	XD121247	ZU_Ser-Chl	4.00		
KHDDH434	126.6	128	XD121274	ZU_Ser-Chl	3.05		

Hole ID	From	To	Sample ID	Met Composite	Received Weight	Total	Comp Name
KHDDH434	128	130	XD121275	ZU_Ser-Chl	3.75		
KHDDH434	182	184	XD121405	ZU_Ser-Chl	3.90		
KHDDH434	187.3	188	XD121409	ZU_Ser-Chl	1.75		
KHDDH117	184	186	XD58660	ZU_Alb	3.80	38.80	Comp 6
KHDDH117	186	188	XD58661	ZU_Alb	3.95		
KHDDH117	202	204	XD58670	ZU_Alb	4.05		
KHDDH421	252	254	XD102640	ZU_Alb	3.60		
KHDDH434	114	116	XD121264	ZU_Alb	3.60		
KHDDH434	152	154	XD121288	ZU_Alb	4.20		
KHDDH434	176	178	XD121401	ZU_Alb	3.90		
KHDDH434	232	234	XD121435	ZU_Alb	4.15		
KHDDH434	252	254	XD121447	ZU_Alb	3.80		
KHDDH434	268	270	XD121458	ZU_Alb	3.75		
KHDDH338	72	74	XD54154	AT_Ser-Chl	3.85	51.30	Comp 7
KHDDH341	70	72	XD54757	AT_Ser-Chl	3.65		
KHDDH341	92	94	XD54770	AT_Ser-Chl	3.75		
KHDDH359	246	248	XD60465	AT_Ser-Chl	3.95		
KHDDH394	84	86	XD83265	AT_Ser-Chl	7.35		
KHDDH394	88	90	XD83267	AT_Ser-Chl	7.15		
KHDDH394	160	162	XD83307	AT_Ser-Chl	7.05		
KHDDH394	170	172	XD83313	AT_Ser-Chl	7.50		
KHDDH415	26	28	XD109065	AT_Ser-Chl	3.15		
KHDDH415	158	160	XD109138	AT_Ser-Chl	3.90		
KHDDH338	144	146	XD54194	AT_Alb	3.25	39.95	Comp 8
KHDDH338	160	162	XD54203	AT_Alb	4.70		
KHDDH338	172	174	XD54210	AT_Alb	3.75		
KHDDH341	52	54	XD54747	AT_Alb	3.55		
KHDDH394	350	352	XD83413	AT_Alb	7.05		
KHDDH394	572	574	XD83735	AT_Alb	2.75		
KHDDH394	638	640	XD83772	AT_Alb	3.75		
KHDDH394	650	652	XD83778	AT_Alb	3.80		
KHDDH394	684	686	XD83797	AT_Alb	4.15		
KHDDH394	710	712	XD83812	AT_Alb	3.20		
KHDDH338	236	238	XD54246	AT_TBX	3.50	49.30	Comp 9
KHDDH338	264	266	XD54261	AT_TBX	3.95		
KHDDH338	272	274	XD54266	AT_TBX	3.65		
KHDDH394	250	252	XD83357	AT_TBX	7.80		
KHDDH394	254	256	XD83359	AT_TBX	8.45		
KHDDH415	206	208	XD109205	AT_TBX	4.40		
KHDDH415	216	218	XD109211	AT_TBX	4.85		
KHDDH415	218	220	XD109212	AT_TBX	4.20		
KHDDH415	242	244	XD109225	AT_TBX	4.00		
KHDDH415	274	276	XD109242	AT_TBX	4.50		

Table 45: Head Characterization Summary.

Sample	Au Ave g/t	Ag g/t	Cu %	Fe %	S %
Comp 1	0.16	0.70	0.31	6.10	3.02
Comp 2	0.12	0.60	0.31	3.70	1.42
Comp 3	0.33	0.80	0.32	7.04	2.41
Comp 4	0.18	0.50	0.24	5.22	0.93
Comp 5	0.40	3.20	0.45	7.06	2.85
Comp 6	0.60	2.10	0.36	6.35	0.86
Comp 7	0.57	1.30	0.28	8.07	3.86
Comp 8	0.50	0.90	0.28	5.98	0.97
Comp 9 (TBX MC)	0.50	1.00	0.27	7.37	2.27
Alb MC	0.42	1.30	0.29	5.89	0.93
Ser Chl MC	0.42	2.20	0.35	7.44	3.03

Table 46: Master Composite Recipe.

Master Composite	Weight	Units
Alb Master Composite	51.0	kg
TS_Alb (Comp 4)	17.0	kg
Zu_Alb (Comp 6)	17.0	kg
AT_Alb (Comp 8)	17.0	kg
Ser_Chl Master Composite	51.0	kg
TS_Ser_Chl (Comp 3)	17.0	kg
Zu_Ser_Chl (Comp 5)	17.0	kg
AT_Ser_Chl (Comp 7)	17.0	kg
TBX Master Composite	41.3	kg
AT_TBX (Comp 9)	41.3	kg

19.3.2 Mineralogy

Modal mineralogy was conducted on all variability samples using QEMSCAN. Chalcopyrite was the main copper bearing sulphide, with pyrite also present along with other sulphide minerals. Quartz was the dominant non-sulphide mineral. Copper deportment shows chalcopyrite as the main copper-bearing mineral followed by bornite with trace chalcocite/covellite and enargite (Table 47).

Table 47: Modal Analysis of Variability Samples.

Mineral Mass (wt%)	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Comp 7	Comp 8	Comp 9
Pyrite	5.29	2.47	4.59	1.44	4.72	1.18	6.02	1.13	4.09
Chalcopyrite	1.15	0.99	1.01	0.90	1.56	0.93	1.11	0.85	0.83
Other Sulphides	0.02	0.02	0.02	0.00	0.05	0.00	0.00	0.00	0.00
Quartz	26.2	27.4	33.4	25.8	35.9	25.0	32.8	21.1	26.4
Plagioclase	18.5	22.3	8.09	31.8	8.18	27.1	4.29	33.6	17.9
K-Feldspar	7.87	12.6	1.30	5.19	0.96	3.71	0.94	2.11	0.63
Sericite/Muscovite	18.0	13.2	23.6	10.3	15.2	12.2	16.6	6.82	14.6
Biotite	3.39	3.67	0.77	1.29	1.25	0.45	1.51	0.46	1.15
Amphibole	0.30	0.32	0.39	0.43	0.36	2.28	0.67	0.68	0.65
Epidote Group	0.12	0.12	0.60	0.51	0.40	1.21	2.83	5.84	3.10
Chlorite	8.21	8.59	11.6	11.4	19.9	15.5	23.4	17.6	19.0
Clays	2.36	1.87	5.90	2.69	1.86	2.26	1.73	1.72	2.31
Other Silicates	0.05	0.19	0.11	0.20	0.11	0.52	0.53	0.97	0.53
Oxides	3.75	1.94	3.07	4.93	1.86	4.88	1.92	3.95	3.10
Carbonates	3.70	3.77	4.95	2.52	7.06	2.16	4.71	2.37	4.98
Apatite	0.49	0.38	0.37	0.46	0.32	0.44	0.76	0.50	0.55
Other	0.62	0.26	0.15	0.11	0.23	0.16	0.21	0.37	0.21
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

19.3.3 Grindability

Comminution testing was conducted on the three master composites by Bond Ball Mill Grindability testing (BWI). The samples were categorized as hard to very hard with a ball mill work index of 17.3 to 19.8 kWh/t (Table 48).

Table 48: BWI Summary.

Sample Name	Mesh of Grind	F_{80} (µm)	P_{80} (µm)	Gram per Revolution	Work Index (kWh/t)	Hardness Percentile	Feed passing(%)	Bulk Density (kg/m3)
Alb Master Composite	100	2,497	118	1.11	19.8	91.6	7.6	1842.0
Ser Chl Master Composite	100	2,482	113	1.30	16.9	76.1	8.8	1860.4
TBX Master Composite	100	2,583	113	1.25	17.3	78.8	7.6	1842.7

19.3.4 Flotation Testwork

The variability composites were run for baseline rougher and cleaner flotation work using previously established conditions. These tests resulted in final copper recoveries in the range of 79.6 to 89.2% with grades in the range of 22 to 32.4%. Copper stage recoveries from the rougher to the final concentrate were in the range of 93.4 to 96.6%, with good upgradability on all composites.

Final gold recoveries to the copper concentrate ranged between 51.3 to 74.1% with grades ranging between 8.1 to 45.3 g/t. Gold stage recoveries from the rougher to the final cleaner concentrate ranged between 63.2 to 89.6% (Table 49).

Optimization testing was conducted on Master Composites Alb, Ser Chl, and TBX (Comp 9) focusing on primary grind and regrind size, collector type and dosage, flotation time, and other variables. The optimized Alb Master Composite test returned copper recovery of 87.0% (95.0%

stage recovery) with a grade of 28.7% and a final gold recovery of 75.8% (88.0% stage recovery) with a grade of 35.4 g/t.

The optimized Ser Chl Master composite test yielded a final copper recovery of 82.7% (88.9% staged) with a grade of 29.5% and a final gold recovery of 57.9% (64.7% stage recovery) with a grade of 25.3 g/t. The optimized TBX Master Composite test yielded a final copper recovery of 84.4% (89.8% stage recovery) with a grade of 27.3% and a final gold recovery of 70.7% (82.4% stage recovery) with a grade of 43.5 g/t.

Locked cycle testing was conducted on Master Composites Alb and Ser Chl based on optimized batch cleaner conditions.

The Alb Master Composite test returned a final copper recovery of 89.7% at a grade of 25.6% and final gold recovery of 78.7% at a grade of 30.0 g/t. The Ser Chl Master Composite test returned a final copper recovery of 89.3% at a grade of 24.8% and final gold recovery of 60.8% at a grade of 24.8 g/t. The final flowsheet used is depicted in Figure 104.

Table 49: Variability Baseline Cleaner Flotation Summary.

Test	Product	Wt.	Assay				Distribution				Stage Distribution			
		%	%	%	g/t	%	%				%			
			Cu	Fe	Au	S	Cu	Fe	Au	S	Cu	Fe	Au	S
Comp1-CF1	3rd Cleaner Con	1.0	25.4	31.6	8.94	36.0	83.2	5.5	51.3	13.5	93.7	15.1	78.1	17.0
	2nd Cleaner Con	1.3	20.3	31.0	7.32	35.0	85.7	6.9	54.1	16.8	96.5	19.0	82.3	21.3
	1st Cleaner Con	2.2	12.5	26.3	4.61	28.7	87.0	9.7	56.5	22.9	98.0	26.7	86.0	29.0
	Rougher Con	11.5	2.45	33.2	0.54	5.10	88.8	36.3	65.7	78.9	100	100	100	100
	Rougher Tail	88.5	0.04	4.30	0.07	0.66	11.2	63.7	34.3	21.1				
	Head (calc.)	100	0.32	5.98	0.18	2.77	100	100	100	100				
Comp2-CF1	3rd Cleaner Con	0.8	30.3	29.7	8.06	33.2	81.0	6.7	55.7	20.9	95.0	21.4	72.1	25.2
	2nd Cleaner Con	0.9	28.3	29.0	7.43	32.3	82.2	7.1	55.7	22.0	96.3	22.7	72.1	26.6
	1st Cleaner Con	1.3	20.0	23.6	5.40	25.5	83.3	8.2	58.1	25.0	97.6	26.5	75.3	30.2
	Rougher Con	9.2	2.88	27.6	0.30	2.47	85.3	31.2	77.3	82.8	100	100	100	100
	Rougher Tail	90.8	0.05	2.79	0.03	0.25	14.7	68.8	22.7	17.2				
	Head (calc.)	100	0.31	3.68	0.12	1.32	100	100	100	100				
Comp3-CF1	3rd Cleaner Con	1.1	23.3	32.1	16.6	36.6	80.7	5.1	61.8	17.3	93.4	16.5	73.6	19.5
	2nd Cleaner Con	1.4	19.4	32.0	14.2	36.2	82.9	6.3	65.1	21.1	95.9	20.3	77.6	23.8
	1st Cleaner Con	2.1	13.2	28.2	9.87	30.7	83.9	8.2	67.4	26.6	97.1	26.6	80.3	30.0
	Rougher Con	11.2	2.52	43.9	0.44	2.38	86.4	30.9	83.9	88.9	100	100	100	100
	Rougher Tail	88.8	0.05	5.53	0.06	0.30	13.6	69.1	16.1	11.1				
	Head (calc.)	100	0.33	7.11	0.30	2.39	100	100	100	100				
Comp4-CF1	3rd Cleaner Con	0.7	27.6	30.9	17.3	34.5	81.1	4.0	70.7	26.0	95.9	21.5	81.7	29.2
	2nd Cleaner Con	0.8	23.6	29.7	15.1	33.0	82.2	4.5	73.4	29.4	97.2	24.4	84.7	33.0
	1st Cleaner Con	1.3	14.7	22.9	9.61	24.0	82.9	5.7	75.4	34.7	98.0	30.6	87.1	39.0
	Rougher Con	7.9	2.54	55.9	0.29	1.27	84.6	18.5	86.6	89.1	100	100	100	100
	Rougher Tail	92.1	0.04	4.83	0.03	0.11	15.4	81.5	13.4	10.9				
	Head (calc.)	100	0.24	5.45	0.17	0.93	100	100	100	100				
Comp5-CF1	3rd Cleaner Con	1.3	28.6	29.9	19.3	33.2	87.0	5.4	59.3	16.2	94.6	16.4	71.6	19.6
	2nd Cleaner Con	1.7	23.2	29.4	16.3	32.2	89.1	6.7	63.0	19.8	96.8	20.3	76.0	23.9
	1st Cleaner Con	2.8	14.3	25.8	10.5	26.8	90.3	9.7	66.7	27.1	98.1	29.3	80.5	32.8
	Rougher Con	12.3	3.29	40.2	0.61	3.86	92.0	33.0	82.8	82.7	100	100	100	100
	Rougher Tail	87.7	0.04	5.62	0.09	0.54	8.0	67.0	17.2	17.3				
	Head (calc.)	100	0.44	7.36	0.43	2.74	100	100	100	100				
Comp6-CF1	3rd Cleaner Con	1.0	32.4	30.4	45.3	33.3	89.2	4.7	74.1	40.3	96.6	27.4	89.6	46.5
	2nd Cleaner Con	1.2	27.2	27.8	38.8	29.8	90.6	5.2	76.7	43.5	98.0	30.3	92.7	50.2
	1st Cleaner Con	2.0	16.5	20.8	23.7	20.1	91.2	6.4	77.9	48.9	98.7	37.7	94.2	56.4
	Rougher Con	9.3	3.59	57.7	1.13	1.18	92.4	17.1	82.7	86.7	100	100	100	100
	Rougher Tail	90.7	0.03	5.88	0.12	0.12	7.6	82.9	17.3	13.3				
	Head (calc.)	100	0.36	6.43	0.60	0.82	100	100	100	100				
Comp7-CF1	3rd Cleaner Con	1.0	24.1	32.5	25.2	35.4	85.7	4.1	54.4	9.6	94.4	10.3	63.2	11.0
	2nd Cleaner Con	1.4	18.3	31.1	19.8	33.8	87.7	5.3	57.6	12.4	96.5	13.3	66.9	14.2
	1st Cleaner Con	2.5	9.89	26.4	11.2	27.5	88.6	8.4	61.1	18.8	97.5	21.1	71.0	21.6
	Rougher Con	13.3	1.94	36.5	0.49	3.59	90.8	39.6	86.1	87.2	100	100	100	100
	Rougher Tail	86.7	0.03	5.59	0.08	0.55	9.2	60.4	13.9	12.8				
	Head (calc.)	100	0.28	8.03	0.47	3.72	100	100	100	100				
Comp8-CF1	3rd Cleaner Con	0.8	29.8	29.9	34.7	32.7	79.6	3.9	69.6	27.2	94.9	23.2	86.3	34.5

Test	Product	Wt. %	Assay % Cu	Assay % Fe	Assay g/t Au	Assay % S	Distribution % Cu	Distribution % Fe	Distribution % Au	Distribution % S	Stage Distribution % Cu	Stage Distribution % Fe	Stage Distribution % Au	Stage Distribution % S
	2nd Cleaner Con	1.0	23.8	27.2	27.9	28.8	81.7	4.5	71.8	30.8	97.5	27.1	89.1	39.0
	1st Cleaner Con	1.6	14.7	21.1	17.4	20.5	82.4	5.7	73.1	35.8	98.3	34.5	90.7	45.3
	Rougher Con	7.5	3.22	66.4	0.99	2.60	83.9	16.6	80.6	78.9	100	100	100	100
	Rougher Tail	92.5	0.05	5.36	0.08	0.21	16.1	83.4	19.4	21.1				
	Head (calc.)	100	0.29	5.94	0.38	0.92	100	100	100	100				
Comp9-CF1	3rd Cleaner Con	1.0	22.0	32.5	32.7	36.5	85.2	4.5	70.0	16.1	94.5	14.7	83.6	18.3
	2nd Cleaner Con	1.5	15.7	30.2	23.6	33.3	87.3	6.0	72.3	21.0	96.9	19.7	86.4	23.8
	1st Cleaner Con	2.6	8.98	24.6	13.7	25.2	88.3	8.6	74.1	28.2	98.0	28.4	88.6	32.0
	Rougher Con	12.4	1.93	42.0	0.63	2.25	90.1	30.3	83.7	88.1	100	100	100	100
	Rougher Tail	87.6	0.03	5.97	0.09	0.32	9.9	69.7	16.3	11.9				
	Head (calc.)	100	0.27	7.50	0.48	2.35	100	100	100	100				

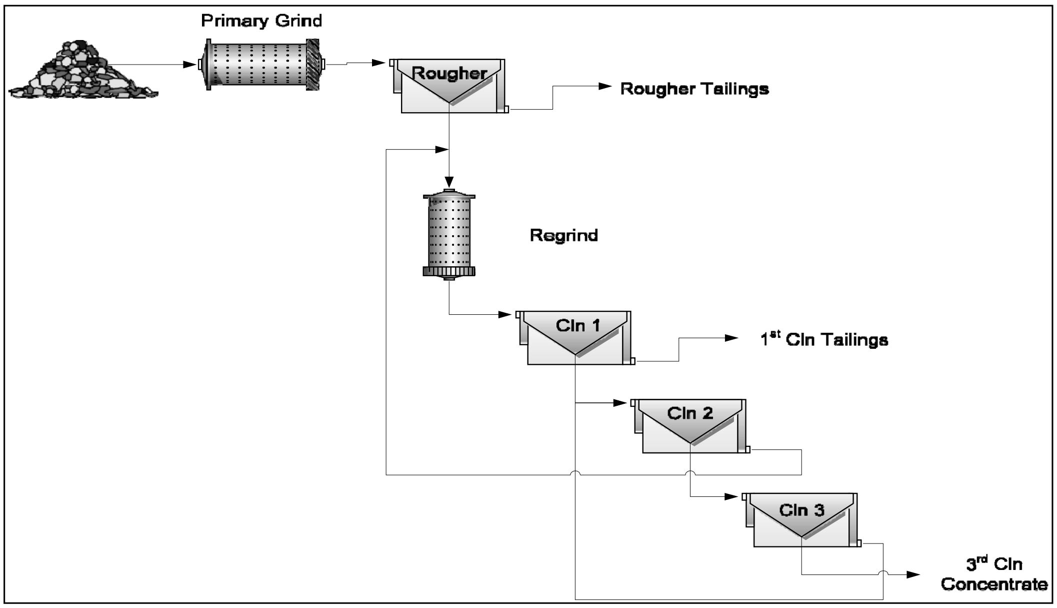


Figure 104: Process Flowsheet.

The main differences between the 2008 and 2019 flotation tests revolves around head grade of samples. In the 2008 work the average Cu grade was 0.62% Cu versus 0.31% Cu in 2019. The gold grades in 2008 averaged 1.2g/t Au versus 0.39g/t Au in 2019. The grades of the 2019 samples are considered to be closer to the average ore grade.

Despite this significant difference in grade between 2008 and 2019 tests due to sample selection, the 2019 work produced saleable concentrates with little to no decrease in recoveries.

19.4 Gold Deportment Studies (2018)

In 2018, twelve samples were selected from the sulphide zones within Stockwork Hill, Copper Hill and Stockwork Hill. These samples were sent for thin section preparation, petrography and scanning electron microprobe work to Sarah Mulling at UWA.

Table 50: Samples selected for gold deportment studies.

Drill Hole	Depth (m)	Cu (%)	Au (ppm)	Ag (ppm)
AT-346	413.5	4.58	3.8	13.0
AT-394A	456.8	0.51	2.4	1.3
AT-419	622.5	0.38	1.4	2.0
AT-419	681.9	1.36	3.2	1.6
ZU-383	76.2	1.7	3.4	17.0
ZU-383	138.4	0.73	2.6	8.0
ZU-416	115.7	1.42	4.4	6.5
TS-340	219.65	1.19	1.3	3.0
TS-345	332.6	0.79	1.5	2.0
TS-430	766.5	0.7	0.27	2.0
AB-395	84.8	0.93	4.5	1.1
AB-398	133.8	0.52	2.76	2.3

Chalcopyrite was the dominant copper sulphide observed. Bornite was observed in many samples, but as small inclusions within magnetite or as small flame structures within chalcopyrite. Chalcopyrite sometimes occurs as fine fractures within magnetite or as small inclusions within pyrite (potential losses in recovery).

Gold occurs as electrum (>20 wt% Ag) in grains that range between 1um to 70um. Most electrum grains are enclosed in chalcopyrite and pyrite, although some occur as intergrowths with gangue (potential losses in float only process).

19.5 Oxide Test Work (2018-2020)

Between 2018 and 2020 three rounds of oxide test work were conducted at Kharmagtai, as discussed below.

19.6 Copper Oxide-Transition Test Work (Blue Coast Met, BC)

In late 2018 samples of oxide to transitional material were selected for flotation test work conducted at Blue Coast Metallurgy, British Columbia, Canada.

19.6.1 Sample Selection

Six samples of oxide to transitional material were collected from Stockwork Hill, White Hill and Copper Hill. Samples ranged in head grade from 0.28% Cu to 0.38% Cu and 0.07g/t Au to 0.25g/t Au. Sample details are presented in Table 51 and sample compositions in Table 52.

Table 51: Sample details.

Composite	Sample ID	Comp ID	Additional Identifiers	Tared Mass (kg)
KH_WH_01	MD066630	White Hill (Oxide)	Barrel 1	3.7
	XD121788			6.4
	MD064646			3.54
	XD1200093			2.45
	MD064783			3.67
	XD130372			2.88
	MD005495			2.78
	MD82008			1.87
	MD067130			1.56
			TOTAL MASS	**28.86**
Composite	**Sample ID**	**Comp ID**	**Additional Identifiers**	**Tared Mass (kg)**
KH_CH_02	MD020587	Copper Hill (Oxide Transition)	Barrel 2	3.02
	MD023748			1.92
	MD003629			3.63
	MD004619			3.08
	MD004625			1.22
	MD023847			4.46
	MD020316			6.13
	MD004863			3.31
	XD71353			2.9
	MD020242			3.04
			TOTAL MASS	**32.69**
Composite	**Sample ID**	**Comp ID**	**Additional Identifiers**	**Tared Mass (kg)**
KH_SH_02	MD067797	Stockwork Hill (Oxide Transition)	Barrel 3	3.33
	MD004521			3.83
	MD068912			3.11
	MD069208			2.36
	XD129209			3.71
	MD068911			3.81
	XD54943			3.44
	XD103204			2.93
	XD73786			6.87
	MD008534			4.7
			TOTAL MASS	**38.08**
Composite	**Sample ID**	**Comp ID**	**Additional Identifiers**	**Tared Mass (kg)**
	XD54938	Stockwork Hill (Oxide)		2.76
	XD56270			3.55
	XD113246			5.93
	MD78508			3.61
	XD60332			4.2

Composite	Sample ID	Comp ID	Additional Identifiers	Tared Mass (kg)
KH_SH_01	XD54719		**Barrel 4**	2.36
	MD069201			1.88
	XD101971			2.32
	MD070735			2.72
			TOTAL MASS	**29.33**
Composite	**Sample ID**	**Comp ID**	**Additional Identifiers**	**Tared Mass (kg)**
KH_CH_01	MD022182	**Copper Hill (Oxide)**	**Barrel 5**	1.9
	MD020312			6.41
	XD54869			3.09
	XD71361			2.76
	XD109159			2.3
	XD121205			5.16
	XD53002			3.19
	XD102503			2.85
	XD53011			3.58
			TOTAL MASS	**31.23**
Composite	**Sample ID**	**Comp ID**	**Additional Identifiers**	**Tared Mass (kg)**
KH_WH_02	XD130376	**White Hill (Oxide Transition)**	**Barrel 6**	3.81
	XD130038			3.19
	XD80512			1.91
	XD130044			3.28
	XD80761			2.17
	XD80520			2.02
	XD80533			1.63
	XD80757			2.32
	XD79355			2.4
	XD120181			3.73
			TOTAL MASS	**26.45**

Table 52: Composite Head Assays.

Composite ID	Cu (%)	Fe (%)	Au (g/t)	Ag (g/t)	Stot (%)
KH_CH_01	0.28	5.66	0.07	0.63	0.01
KH_CH_02	0.38	5.07	0.25	2.10	0.05
KH_SH_01	0.29	4.28	0.17	0.57	0.01
KH_SH_02	0.34	5.41	0.17	0.87	0.03
KH_WH_01	0.28	5.87	0.17	0.85	0.01
KH_WH_02	0.30	5.64	0.15	0.67	0.05

19.6.2 Mineralogy

Mineralogy was conducted on all samples via semi-quantitative XRD. The gangue minerals were quartz (31 to 36%) and albite (23 to 34%). Sulphide abundances were low, with pyrite dominating in two samples. No copper sulphides were detected due to the high lower detection limit of XRD (Table 53).

Table 53: Summary of XRD Results.

Mineral	CH_01 M190021	CH_02 M190022	SH_01 M190023	SH_02 M190024	WH_01 M190025	WH_02 M190026
Quartz	34.2	33.9	31.3	35.0	35.7	33.8
Albite	24.1	33.8	24.9	24.2	22.6	23.3
Oligoclase	17.8	0.0	0.0	0.0	0.0	0.0
Orthoclase	7.0	14.7	10.8	10.9	14.8	14.1
Clinochlore	2.1	10.6	12.6	12.7	10.4	12.0
Kaolinite	0.3	0.3	0.4	0.4	0.4	0.7
Vermiculite	0.5	0.2	0.3	0.4	0.3	0.4
Actinolite	6.7	0.0	0.0	0.0	0.0	0.0
Pyrite	0.0	0.0	0.0	0.2	0.0	0.9
Micas	7.3	5.0	16.1	13.4	14.1	13.2
Calcite	0.0	1.6	3.6	2.7	1.6	1.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

19.6.3 Flotation Testwork

Bench scale rougher flotation was conducted using a conventional sulphide flotation flowsheet without sulphidising agents and similar reagents to the previous flotation work.

Rougher flotation work returned poor recoveries 21.3% to 35.8% Cu and 51.3% to 64.5% Au with concentrate grades averaging 1% Cu (Table 54). Flotation is considered to not be a viable process for this material without sulphidising agents.

Table 54: Flotation Test F-1 to F-6 Summary of Results.

Test ID	Composite	Copper Rougher Concs 1-4				
		Mass Pull (%)	Cu Grade (%)	Au Grade (%)	Cu Rec.(%)	Au Rec.(%)
F-1	KH_CH_02	8.0	1.12	1.24	**24.5**	51.3
F-2	KH_SH_02	16.5	0.44	0.51	**21.3**	52.1
F-3	KH_WH_02	21.7	0.43	0.43	**32.6**	55.6
F-4	KH_CH_02	12.5	1.04	1.12	**35.5**	64.5
F-5	KH_SH_02	17.1	0.49	0.63	**25.1**	56.0
F-6	KH_WH_02	23.6	0.44	0.38	**35.8**	54.2

19.6.4 Diagnostic Leach Work

Diagnostic tests were conducted on all six composites (Table 55). Results indicate that 30 to 54% of the copper in the samples were present as copper oxides and 15% as secondary copper sulphides and bornite and 33 to 62% as chalcopyrite.

The aforementioned work contrasts with the rougher flotation work and suggests that any floatable sulphide must be extremely fine grained and not amenable to flotation at the coarse grind sizes used.

Furthermore, the data presented in Table 55 also suggests leaching will only yield recoveries of 40-50% with potential increases with the addition of ferric sulphate.

Table 55: Summary of Diagnostic Copper Leach Results.

Test ID	Comp ID	Total Copper		4-Acid	Diagnostic Leach		
		Blue Coast	Au Tec Aqua Regia		Acid Soluble Cu	Cyanide Soluble Cu	Others
		%	%	%	%	%	%
1	KH_CH_01	0.28	0.27	0.25	**33.9**	**6.2**	**60.0**
5	KH_CH_02	0.38	0.38	0.36	**52.9**	**14.5**	**32.6**
9	KH_SH_01	0.29	0.30	0.29	**45.4**	**4.6**	**50.0**
13	KH_SH_02	0.34	0.33	0.31	**53.5**	**3.8**	**42.8**
17	KH_WH_01	0.28	0.28	0.26	**30.2**	**8.2**	**61.7**
21	KH_WH_02	0.30	0.30	0.26	**41.7**	**10.8**	**47.5**

19.6.5 Bottle Roll Leach Tests

Bottle roll leach test work supported the above with recoveries ranging between 40 and 61% Cu. Test work was halted as the data suggested limited opportunities for increases in recoveries with finer grinding and agitated leaching at production scales.

A summary of the Diagnostic Leach vs Bottle Roll Results can be found in Table 56.

Table 56: Diagnostic Leach vs. Bottle Roll Test Results.

Comp ID	Acid+NaCN Diag. Leach Recovery %	Acid+Ferric Bottle Roll Recovery %
KH_CH_01	40.0	48.9
KH_CH_02	67.4	63.5
KH_SH_01	50.0	45.7
KH_SH_02	57.2	49.2
KH_WH_01	38.3	40.1
KH_WH_02	52.5	55.8

19.7 Oxide Gold Test Work (MAK Lab Ulaanbaatar)

Three composite samples of oxide were sent to MAK lab in Ulaanbaatar for grindability and gravity separation with leaching of tails.

19.7.1 Sample Selection

Samples were selected from Copper Hill, Stockwork Hill and Golden Eagle with gold grades ranging between 1.92g/t to 3.14g/t Au, see Table 57.

Table 57: Oxide Gold Testwork Sample Details.

Fraction size,mm	SHOX-01		CHOX-02		GEOX-03	
	Yield	Au	Yield	Au	Yield	Au
	%	ppm	%	ppm	%	ppm
-50+25	25.49	1.97	43.72	2.77	37.18	2.31
-25+12.5	32.95	3.76	29.49	2.36	31.99	1.90
-12.5+6.3	17.60	3.12	12.21	2.73	13.21	1.80
-6.3+1	17.56	2.61	9.89	2.67	12.05	1.50
-1+0	6.40	2.79	4.69	5.62	5.57	2.57
Total	**100**	**2.93**	**100**	**2.77**	**100**	**2.03**
Composite		**3.14**		**2.65**		**1.92**

19.7.2 Grindability

Bond Work Index tests returned hard ore (14 to 17kWh/t) and low to medium abrasiveness (0.07 to 0.45). See Tables 58 and 59.

Table 58: Comminution Testwork.

Parameter	Composite		
	SHOX-01	CHOX-02	GEOX-03
Feed F_{80}, mic	1709.05	1884.55	1750.11
Product P_{80}, mic	125.05	130.20	115.16
Grinding, g/rev	1.83	1.44	1.50
Bond Work index, kW·h/t	14.50	17.71	16.00
Hardness classification	**Hard**	**Hard**	**Hard**

Table 59: Abrasion Indices.

Parameter	Composite		
	SHOX-01	CHOX-02	GEOX-03
Bond Abrasion index	0.0725	0.3644	0.4549
Ore type	**Not abrasive**	**Slightly abrasive**	**Medium abrasive**

19.7.3 Gravity Separation Test Work

Gravity test work via Knelson concentrator (Figure 105) returned recoveries of 13 to 40% with a gravity concentrate ranging between 77g/t to 109g/t Au. (See Table 60).

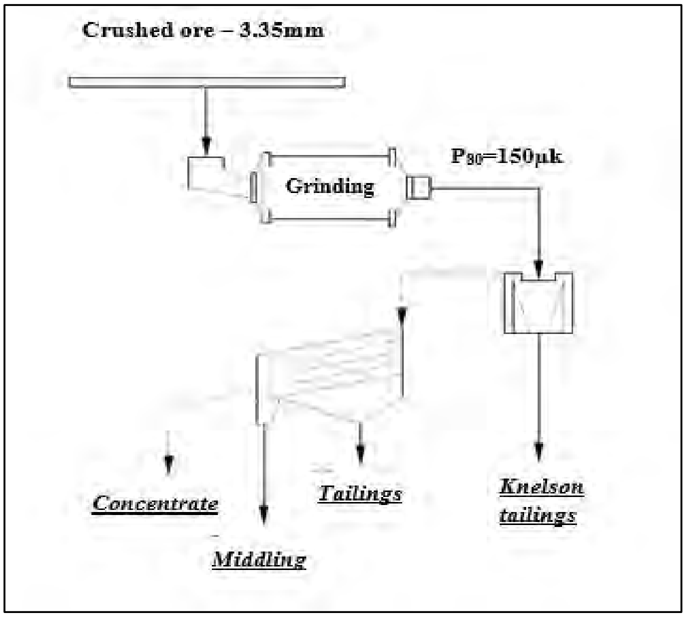


Figure 105: Gravity Testwork Flowsheet.

Table 60: Gravity Recovery.

Product	SHOX-01			CHOX-02			GEOX-03		
	Yield	Au grade	Au recovery	Yield	Au grade	Au recovery	Yield	Au grade	Au recovery
	%	g/t	%	%	g/t	%	%	g/t	%
Concentrate /Concentration table/	0.26	115.50	9.76	1.08	77.72	33.73	0.65	109.70	27.99
Middling /Concentration table/	0.07	34.31	0.81	0.33	27.79	3.71	0.10	30.71	1.20
Tailings /Concentration table/	1.36	5.48	2.47	1.58	4.67	2.96	1.27	8.80	4.34
Tailings /Knelson/	98.31	2.67	86.96	97.01	1.53	59.59	97.98	1.74	66.47
Total	**100**	**3.02**	**100**	**100**	**2.49**	**100**	**100**	**2.56**	**100**
Concentrate /Knelson/	1.69	23.31	13.04	2.99	33.62	40.41	2.02	42.57	33.53

19.7.4 Bottle Roll Leach Testwork

Leaching on the gravity tails returned recoveries of 46% to 96% to give a combined recovery of 67% to 97% Au. Cyanide consumptions were high, due to the presence of cyanide soluble copper. (See Tables 61 and 62).

Table 61: Cyanide Leaching Results.

Composite	P_{80}	Duration	Head grade (Au)	Tailings Au grade	Au recovery		KCN Consumption,	Cu (pregnant solution)
	μk	hours	g/t	g/t	(%)	g/t	kg/t	g/t
	150		2.38	0.44	81.51	1.94	1.89	728.90

SHOX-01	100		2.26	0.38	83.19	1.88	1.85	752.30
	70		2.15	0.53	75.35	1.62	1.9	750.20
CHOX-02	150	48	1.31	0.75	42.75	0.56	2.10	747.10
	100		1.31	0.75	42.75	0.56	2.11	781.90
	70		1.26	0.68	46.03	0.58	2.08	794.20
GEOX-03	150		2.12	0.12	94.34	2.00	0.85	96.88
	100		1.65	0.09	94.55	1.56	0.41	120.60
	70		1.62	0.06	96.30	1.56	0.41	126.50

Table 62: Combined Gravity and Leach Results.

Composite	Gravity concentrate Au recovery, %	P_{80}, mic	Leaching Au recovery, %		Total recovery, %
			Actual	Primary	
SHOX-01	13.04	150	81.51	70.88	83.92
		100	83.19	72.33	85.38
		70	75.35	65.52	78.56
CHOX-02	40.41	150	42.75	25.48	65.88
		100	42.75	25.48	65.88
		70	46.03	27.43	67.84
GEOX-03	33.53	150	94.34	62.71	96.24
		100	94.55	62.84	96.37
		70	96.30	64.01	97.54

19.8 2020 Oxide Gold Heap Leach test work

19.8.1 Sample Selection

In 2019-20 the same samples used in the MAK lab oxide test work were run for column leach test work at MAK lab in Ulaanbaatar. Assays and the degree of oxidation of the copper species are shown in Table 63.

Table 63: Assays and Degree of Oxidation.

Sample	Au g/t	Ag g/t	Cutotal %	Cuoxide %	Oxidation degree %
SHOX-01	3.14	2.13	0.98	0.51	52
CHOX-02	2.65	8.76	1.86	0.33	17.7
GEOX-03	1.92	1.65	0.2	0.04	20

19.8.2 Column Leach Testwork

Samples were run using close cycle column leaching. 80Kg of each sample was crushed to -50mm, loaded into columns and leached with cyanide for 60 days.

Gold recoveries were mixed and ranged from 14 to 60% Au, see Table 64. The modest gold recoveries, combined with the relatively high cyanide consumptions led to the conclusion that heap leaching was not a viable gold recovery method.

Table 64: Integrated results of Column leaching testwork.

Parameters	Unit	SHOX-01	CHOX-02	GEOX-03
Head Au grade /assay/	g/t	3.14	2.65	1.92
Head Au grade/calculation/	g/t	2.99	2.59	2.02
Au recovery	%	60.58	13.83	47.99
Au recovery	g/t	1.81	0.37	0.99
Solid remainder's Au grade	g/t	1.18	2.23	1.05
Head Ag grade /assay/	g/t	2.13	9.72	1.25
Head Ag grade/calculation/	g/t	1.93	7.89	1.51
Ag recovery	%	5.26	2.77	17.55
Ag recovery	g/t	0.10	0.22	0.27
Solid remainder's Ag grade	g/t	1.83	7.67	1.25
NaCN consumption	kg/t	1.68	2.65	0.62
NaCN consumption	kg/g Au	0.93	7.40	0.64

20 Mineral Resources and Mineral Reserve Estimates

20.1 Preparation of geological model and Interpretations

The interpretation foundation was completed by XAM representative M. Brown and XAM engaged independent consultant P. Dunham prior to estimation.

The first point of contact in the foundation interpretation was for the Stockwork Hill data which was to assess the domain strategy in relation to the informing data in order to gain a further understanding of the controls over the mineralisation and to understand the local and regional spatial distribution (geometry) of the mineralisation.

Discussions with the Client and subsequent sectional review/s highlighted the very strong relationship between grade, lithology and structure. However as in many porphyry systems, mineralisation is typically diffusive decreasing from the higher-grade core (either presumed causative intrusive phase or most receptive host / structure) into the surrounding country rock that may result in complex geology / grade relationships. In addition, the presence of tourmaline breccia plays a potential roll in the localisation of mineralisation adjacent to dominant structural fabric.

20.1.1 Context for Estimations – Stockwork Hill

The below is a summary of the modelled geological features of each fault block, the observed grade associations and their potential use for resource estimation.

20.1.1.1 Bornite West

In general, this zone is low grade. Bound by the model boundary in the south, the Bornite Divide in the North and AND50:50 in the east. The main modelled lithologies are P2, CRP1, TBXum and P3 as background. Grade shells were generated for Cu 800 ppm (outer limit of significant mineralisation) and 1500ppm. Box plots show that while P2 is generally higher grade than the other lithologies there is significant overlap (Figure 106).

As Cu grade extends outside P2 in places and P2 extends outside grade in others, the 800ppm Cu and 1500ppm Cu shells should be evaluated as estimation domains as P2 cannot be used to define the limits of grade. Modelled lithologies do not appear to constrain Cu and Au grade distributions.

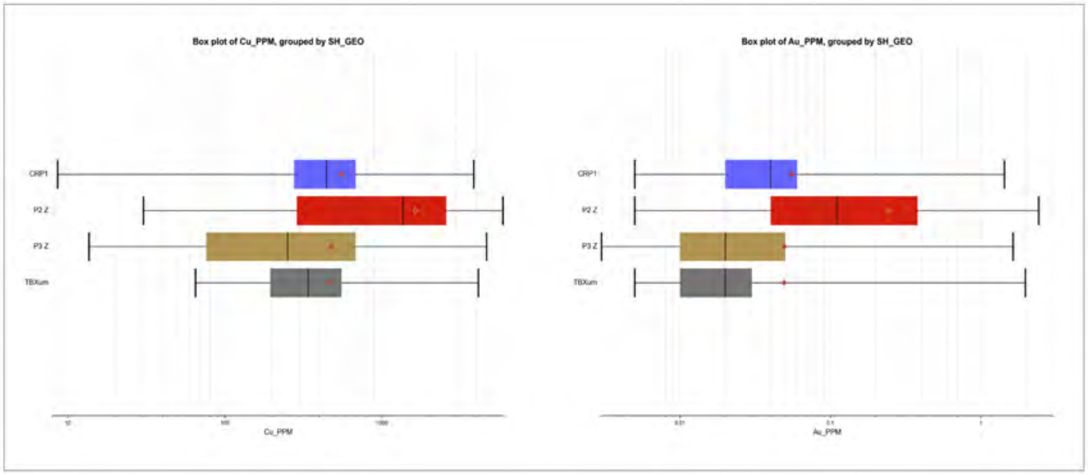


Figure 106: Box plots for lithology versus Cu and Gold, Bornite Zone West.

20.1.1.2 Bornite Zone AND50:50

The AND50:50 should be considered a barren zone and treated as such. The assay population within this domain is low to very low grade and high end members should be removed and / or modified to minimise skewness within this domain.

20.1.1.3 Bornite Central

Bound by the model boundary in the south, the Bornite divide in the north, the AND50:50 in the west and bornite floor in the east. The main modelled lithologies are P2, CRP1, TBXum and P3 as background. Grade shells have been generated for 800, 1500 and 4000ppm Cu and 1% veining. The highest grades sit on the contact between the P2 and CRP.

As seen in the box plots below (Figure 107), CRP1 has similar grade to P2 indicating mineralisation extends significantly across the intrusive / host contact. Modelled lithologies do not appear to constrain Cu and Au grade distributions. Accordingly, consideration should be given to the 1% vein shape (high grade zone) and 800ppm (outer limit of significant mineralisation) as estimations domains. The Cu 1500ppm shell may be required dependent on geostatistical assessments.

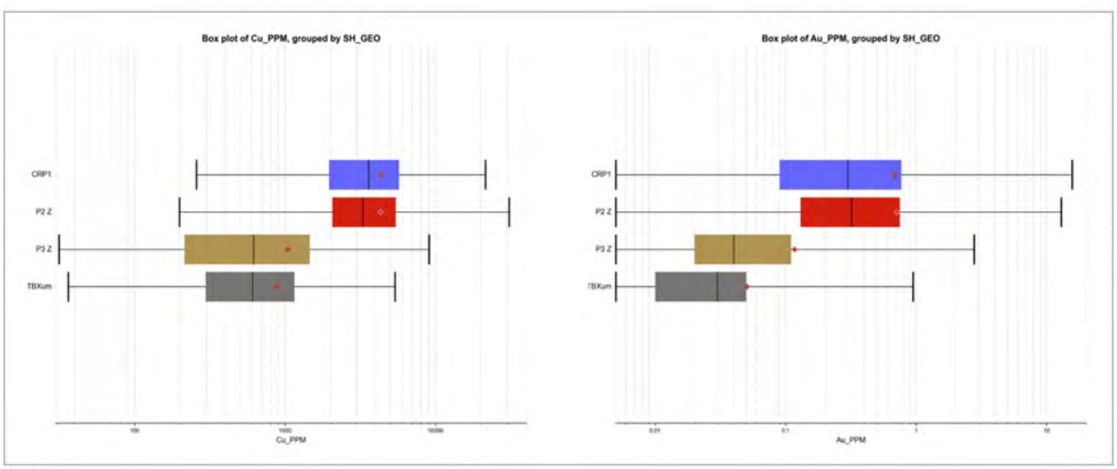


Figure 107: Box plots for lithology versus Cu and Gold, Bornite Zone Central.

20.1.1.4 Bornite Zone East

In general, this zone is lower grade. Bound by the model boundary in the south, the Bornite divide in the north, the AND50:50 in the west and bornite floor in the east. The main modelled lithologies are

P2, CRP1, TBXum and P3 as background. Grade shells have been generated for 800 and 1500ppm Cu. Box plots show that while P2 is generally higher grade than the other lithologies there is significant overlap (Figure 108). As modelled lithologies do not appear to constrain Cu and Au grade distributions, it is suggested that the 800ppm Cu domain is evaluated as an estimation domain. P2 cannot be used to define the limits of grade. Grade extends outside P2 in places and P2 extends outside Cu grade shells in others.

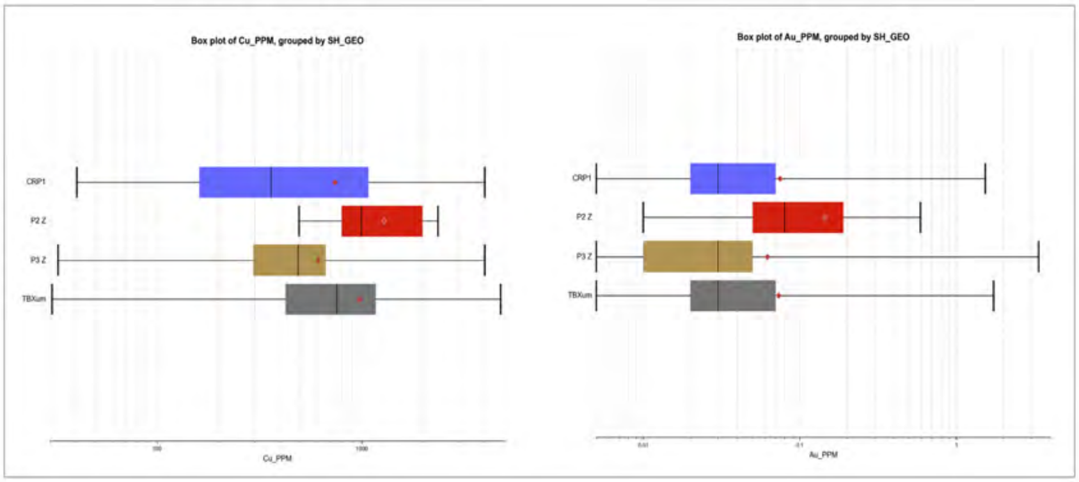


Figure 108: Box plots for lithology versus Cu and Gold, Bornite Zone East.

20.1.1.5 Central Breccia Zone (CBX)

Bound by the Bornite divide in the south, CBX-NSZ_Divie the in the north, UTS in the west and WDWCTS in the east. The main modelled lithologies are P2, CRP1, TBXum, TBXm and P3 as background. Grade shells have been generated for 800, 1500 and 4000ppm Cu. Box plots show that P2 and TBXm are the main grade contributors (Figure 109). A simple estimation was run on these domains separately showing the P2 is behaving like P2 in other areas of Stockwork Hill with a ‘diffusive’ grade transition, but the TBXm has very patchy and variable grade and needs to be treated with caution. Suggested estimation domains are P2, TBXm and Cu 800ppm shell outside these lithologies.

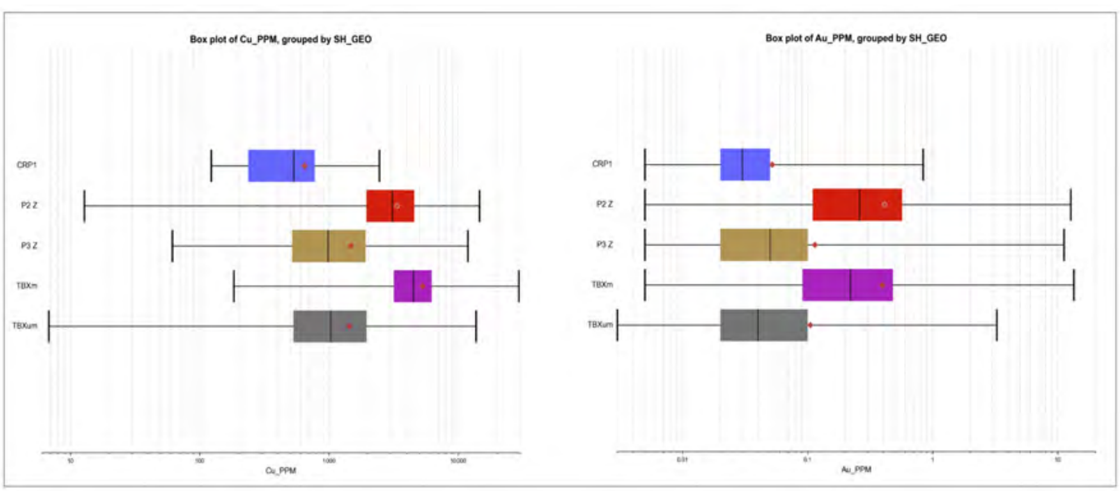


Figure 109: Box plots for lithology versus Cu and Gold, CBX.

20.1.1.6 Central Breccia Zone East

Bound by the Bornite Divide in the south, CBX-NSZ_Divie the in the north, WDWCTS in the west and the model boundary in the east. The main modelled lithologies are CRP1, TBXum, TBXm and P3 as background. Grade shells have been generated for 800 and 1500ppm Cu. Box plots show TBXm is the main grade contributor (Figure 110). Suggested estimation domains are the same as CBX (sans P2).

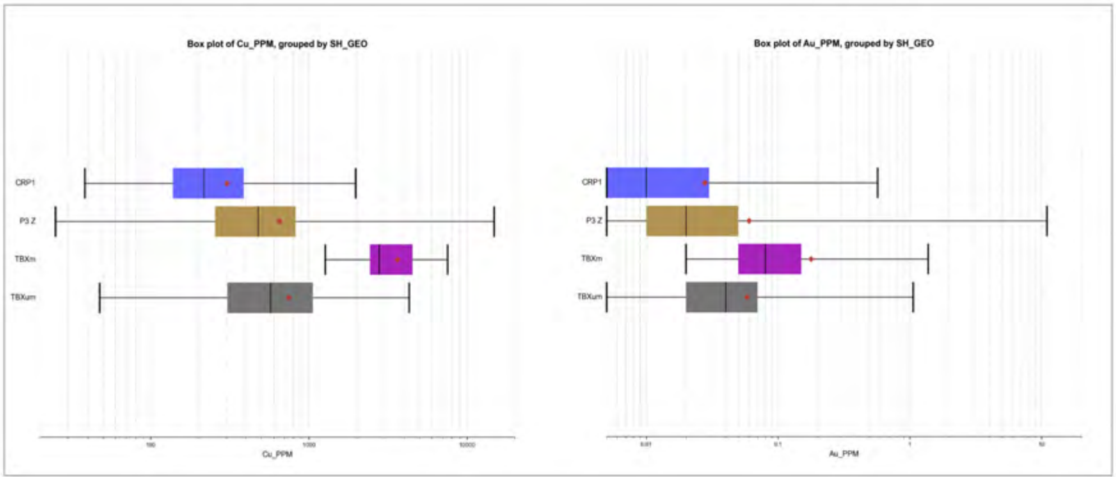


Figure 110: Box plots for lithology versus Cu and Gold, CBX East.

20.1.1.7 Northern Stockwork Zone South

Bound by the CBX_NSZ_Divie in the south, model boundary in the north, model boundary in the east and west and has one internal divider NSWSplitter. The main modelled lithologies are P2, CRP1, TBXum, and P3 as background. Grade shells have been generated for 800, 1500ppm Cu. Box plots show P2 is the main grade contributor (Figure 111). Suggested estimation domains are P2 and Cu 800ppm within all other lithologies.

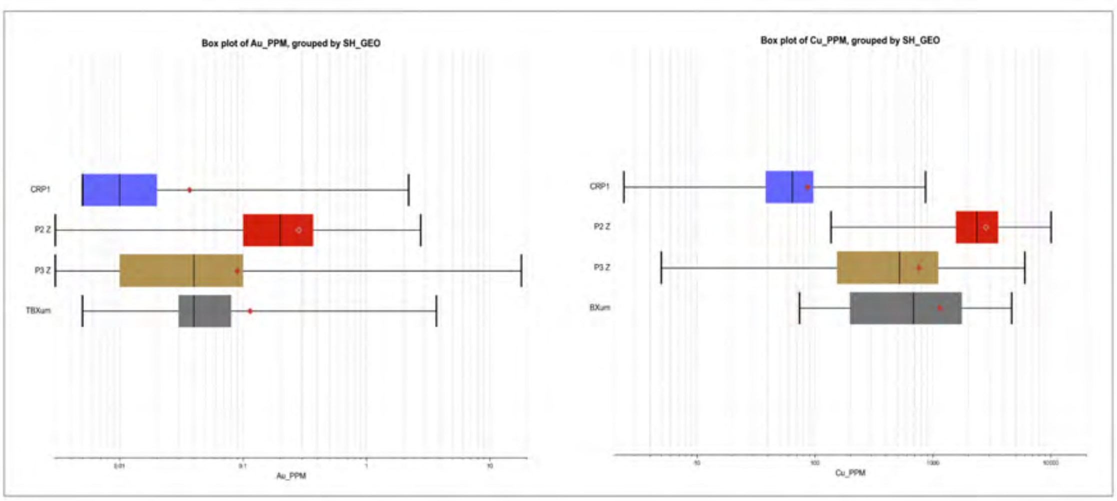


Figure 111: Box plots for lithology versus Cu and Au, Northern Stockwork Zone South.

20.1.1.8 Northern Stockwork Zone

Bounded by the CBX_NSZ_Divie in the south and the model boundary in the north, east and west with one internal divider NSWSplitter. The main modelled lithologies are P2, CRP1, P3m and P3 as background. During the estimation process the modeller noticed two distinct populations within P3 and these were separated for the estimation process into P3 and P3m. P3m represents a halo of mineralisation around the P2 domain. Grade shells have been generated for 800, 1500ppm Cu. Box plots show P2 is the main grade contributor (Figure 112). Suggested estimation domains are P2 and 800 within all other lithologies although P3m may be required as well.

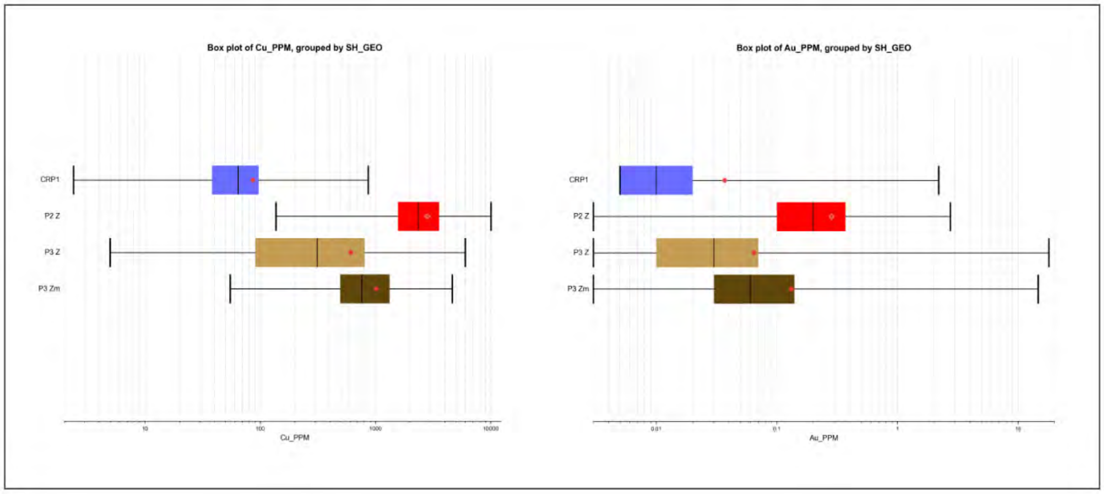


Figure 112: Box plots for lithology versus Cu and Gold, Northern Stockwork Zone and Northern Stockwork Zone South.

20.1.1.9 Central Stockwork Zone

Bounded by the central scrutiniser in the south, CBX-NSZ_Divie in the north, UTS in the east and model boundary in the west. The main modelled lithologies are P2, CRP1, TBXum, TAND and P3 as background. Grade shells have been generated for 800, 1500ppm Cu. Box plots show P2 is the main grade contributor but overlaps with P3.

TAND should be set to background grade (Figure 113). Suggested estimation domains are P2 and 800 within all other lithologies.

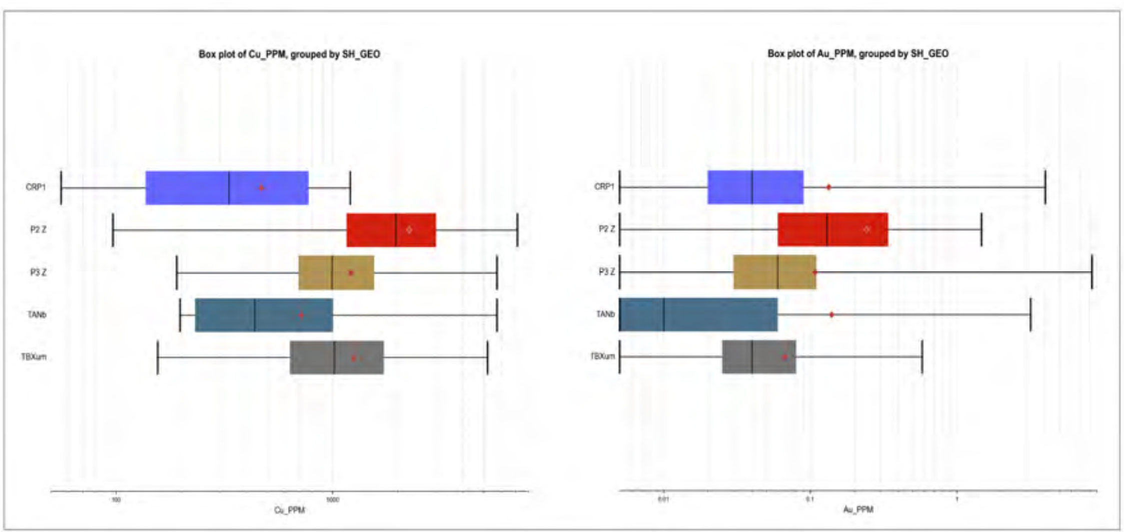


Figure 113: Box plots for lithology versus Cu and Gold, Central Stockwork Zone.

20.1.1.10 Southern Stockwork Zone

Bounded by the Bornite Divide in the south, Central Scrutiniser in the north, UTS in the east and model boundary in the west. The main modelled lithologies are P2, CRP1, TBXum, TAND and P3 as background. Grade shells have been generated for 800, 1500 and 4000ppm Cu. Box plots show P2 is the main grade contributor. TAND should be set to background grade (Figure 114). Suggested estimation domains are P2 and 800 within all other lithologies.

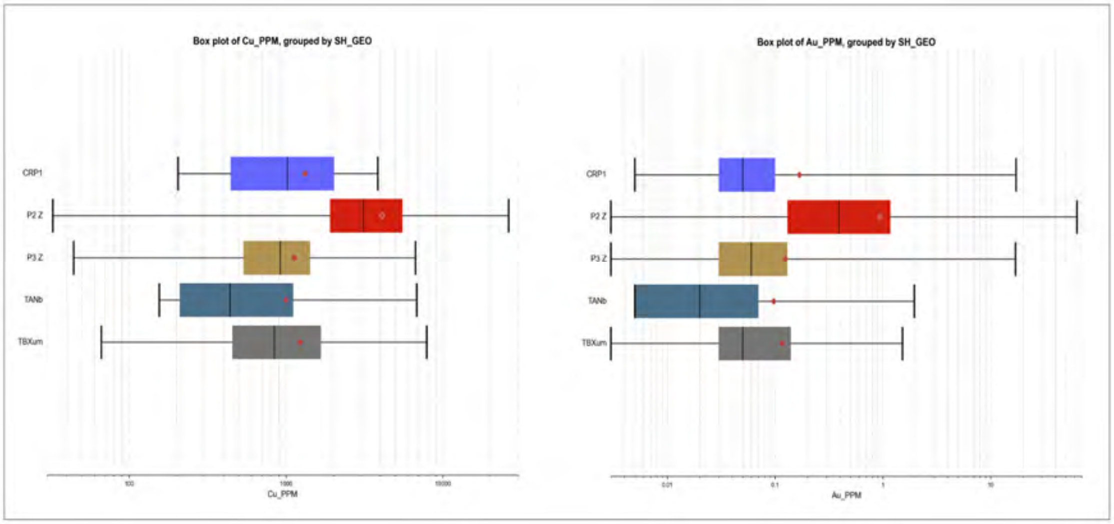


Figure 114: Box plots for lithology versus Cu and Gold, Southern Stockwork Zone.

20.1.2 Context for Estimations – White Hill

The below is a summary of the geological modelled features of each fault block, the observed grade associations and their potential use for resource estimation.

20.1.2.1 Fault Block One

Bound by the model boundary in the north, south and west and by the Flat Fault and P4 Fault in the east. The main modelled lithologies are P2, P3, P4, PB, CRP and CRS. Grade shells were generated for Au 0.1g/t (oxide and sulphide separately), Cu at 800ppm, 1500ppm and 4000ppm (oxide and sulphide separately). There is little variability of lithological control of grade between fault blocks in White Hill. Accordingly, it is suggested that the 800ppm Cu and 1500ppm Cu shells are evaluated as estimation domains as P2 cannot be used to define the limits of grade. Grade extends outside P2 in places and P2 extends outside grade in others.

20.1.2.2 Fault Block Two

Bound by the model boundary in the north, south and east and by the Flat Fault and P4 Fault in the west. The only modelled lithology is P4, modelled as background to fill the entire fault block. No grade shells were modelled for Fault Block 2 as this is designated as a barren domain.

20.1.2.3 Fault Block Three

Bound by the model boundary in the north and south by the Flat Fault below, P4 Fault in the east and Drainage Fault in the west. The main modelled lithologies are P2, P3, P4, PB and CRP. Grade shells were generated for Au 0.1g/t (oxide and sulphide separately), Cu at 800ppm, 1500ppm and 4000ppm (oxide and sulphide separately). There is little variability of lithological control of grade between fault blocks in White Hill. Again, it is suggested that the 800ppm Cu and 1500ppm Cu grades shells are evaluated as estimation domains as P2 cannot be used to define the limits of grade. Grade extends somewhat outside P2 in places and P2 extends outside grade in others.

20.1.2.4 Fault Block Four

Bound by the model boundary in the north, south and east and by the Flat Fault and P4 Fault in the west. The only modelled lithology is P4, modelled as background to fill the entire fault block. No grade shells were modelled for Fault Block Four as this is designated as a barren domain.

20.1.2.5 Fault Block Five

Bound by the model boundary in the north and south by the Flat Fault below and Drainage Fault in the east. The main modelled lithologies are P3, CRP and CRS. Grade shells were generated for Au 0.1g/t (oxide and sulphide separately), Cu at 800ppm and 1500ppm (oxide and sulphide separately). There is little variability of lithological control to grade between fault blocks in White Hill. It is suggested that the 800ppm Cu and 1500ppm Cu shells are evaluated as estimation domains.

20.1.3 Context for Estimations – Copper Hill

The below is a summary of the geological modelled features of each fault block, the observed grade associations and their potential use for resource estimation.

20.1.3.1 Fault Block One

Bound by the model boundary in the north, south and west and by the Invoke Fault in the east. The main modelled lithologies are P3 and CRS. This fault block should be modelled as background grade.

20.1.3.2 Fault Block Two

Bound by the model boundary in the north and south and by Invoke Fault in the west and St Alphonso's in the east. The main modelled lithologies are CRS, P3 and P2. Grade shells were generated separately for oxide and sulphide. For copper grade shells were generated at 1000ppm and 2000ppm intervals, however as the relationship between P2 and mineralisation is strong it is recommended that the P2 unit be evaluated as the estimation domain.

20.1.3.3 Fault Block Three

Bound by the model boundary in the north and south and by St Alphonso's Fault in the west and Nanooks Fault in the east. The main modelled lithologies are P2, P3 and CRS. Grade shells were generated separately for oxide and sulphide. For copper grade shells were generated at 1000ppm and 2000ppm intervals, however as the relationship between P2 and mineralisation is strong it is recommended that the P2 unit be evaluated as the estimation domain.

20.1.3.4 Fault Block Four

Bound by the model boundary in the north and south, Nanooks Fault in the west and Uncle Remus Fault in the east. The main modelled lithologies are P2, P3 and CRS. Grade shells were generated separately for oxide and sulphide. For copper grade shells were generated at 1000ppm and 2000ppm intervals, however as the relationship between P2 and mineralisation is strong it is recommended that the P2 unit be evaluated as the estimation domain.

20.1.3.5 Fault Block Five

Bound by the model boundary in the north, south and east, Uncle Remus Fault in the west. The main modelled lithologies are P2, P3 and CRS. Grade shells were generated separately for oxide and sulphide. For copper grade shells were generated at 1000ppm and 2000ppm intervals, however as the relationship between P2 and mineralisation is strong it is recommended that the P2 unit be evaluated as the estimation domain.

20.1.4 Context for Estimations - Zaraa

The below is a summary of the geological modelled features of each fault block, the observed grade associations and their potential use for resource estimation.

20.1.4.1 Hanging wall Fault Block

Bound by the model boundary in the north, south, east and west and by the Red Dog Fault at depth. The main modelled lithologies are P1, P2, P3, CRP and CRS. Multiple grade shells were produced (800ppm, 1000ppm and 2000ppm Cu and 0.1ppm Au) but it is suggested that the P1 and P2 lithological volumes are evaluated as estimation domains due to their strong correlation with grade.

20.1.4.2 Red Dog Fault Block

Bound by the hanging wall and footwall fault blocks, The Red Dog Fault is barren and should be assigned background grade in the estimation.

20.1.4.3 Footwall Fault Block

Bound by the model boundary in the north, south, east and west and by the Red Dog Fault above. The main modelled lithologies are P1, P2, P3, CRP and CRS. Multiple grade shells were produced (800ppm, 1000ppm and 2000ppm Cu and 0.1ppm Au) but it is suggested that the P1 and P2 lithological volumes are evaluated as estimation domains due to their strong correlation with grade.

20.1.5 Context for Estimations – Golden Eagle

The below is a summary of the geological modelled features of each fault block, the observed grade associations and their potential use for resource estimation.

20.1.5.1 Fault Block North

Bound by the model boundary in the north and west, by the East West Fault in the north and Pauls Fault in the east. Mineralisation correlated directly with the P2 Domain. Mineralisation shells were modelled separately for gold and copper and separately for oxide and sulfide. Au was modelled on a 0.08ppm Au cut-off based on a statistical review of the Au population.

There appears a weak inflection point at this value. Cu was modelled on a 1000ppm Cu cut-off based on a statistical review of the GE Cu population. There appears to be an inflection point at this value.

20.1.5.2 Fault Block Southwest

Bound by the model boundary in the west and south and Pauls Fault in the northwest. Mineralisation is correlated directly with the P2 Domain. Mineralisation shells were modelled separately for gold and copper and separately for oxide and sulfide. Au was modelled on a 0.08ppm Au cut-off based on a statistical review of the Au population. There appears a weak inflection point at this value. Cu was modelled on a 1000ppm Cu cut-off based on a statistical review of the GE Cu population. There appears to be an inflection point at this value.

20.1.5.3 Fault Block Southeast

Bound by the model boundary in the east and south and Pauls Fault in the northwest. This Fault should be designated a background grade value as mineralisation terminates against Paul's Fault.

20.1.6 Context for Estimations – Zephyr

The below is a summary of the key features of each fault block relevant to the estimations.

20.1.6.1 Fault Block One

Bound by the model boundary in the east and south and by the Zephyr Fault in the West. Mineralisation correlated directly with the P2 Domain. Mineralisation shells were modelled separately for gold and copper and separately for oxide and sulfide. Copper grade shells were modelled at 800ppm Cu and Gold at 0.1ppm Au. The suggested estimation domain is the P2 intrusive volume.

20.1.6.2 Fault Block Two

Bound by the model boundary in the west and north and by the Zephyr Fault in the East, Figure 115. Mineralisation correlated directly with the P2 volume. Mineralisation shells were modelled separately for gold and copper and separately for oxide and sulfide.

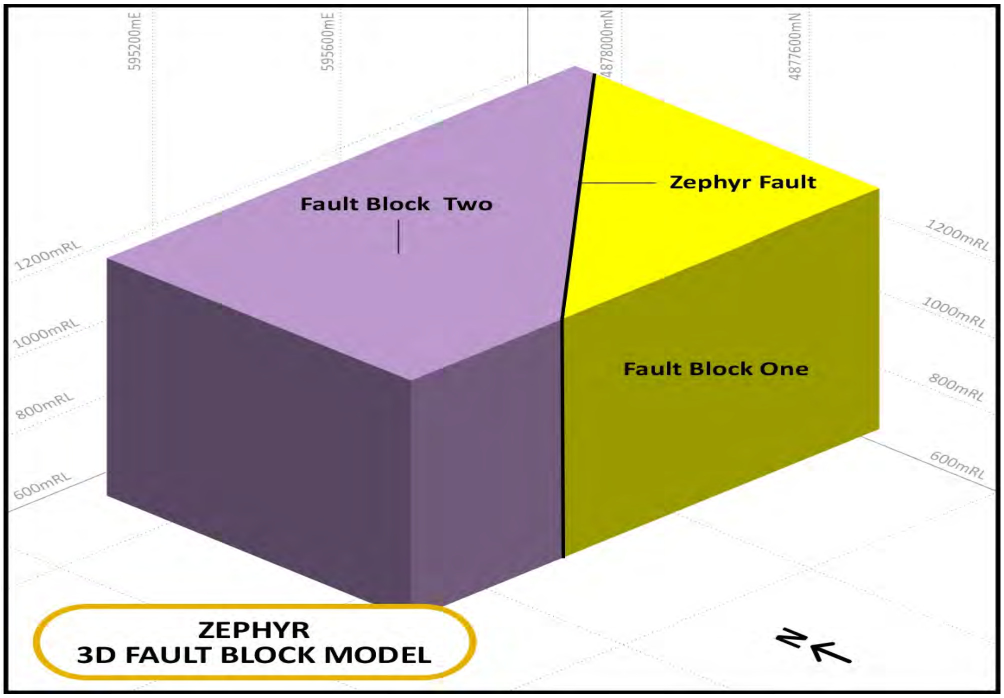


Figure 115: The Zephyr Fault Block Model.

Copper grade shells were modelled at 800ppm Cu and Gold at 0.1ppm Au. The suggested estimation domain is the P2 intrusive.

20.1.7 Geological Context and Informing data

Taking into consideration the geological context put forth by the Client, SGC assessed each project area on a section-by-section basis to ensure the geological models honour the informing data.

Figure 116 illustrates a typical representation of the mineralised distribution (in this instance over Stockwork Hill) capturing the foundation phase geological context as defined by the Client with fault blocks (noted in grey linework on section) and combined grade shells at 800, 1400 and 5000ppm CuEqRec represented (noted in magenta linework on section).

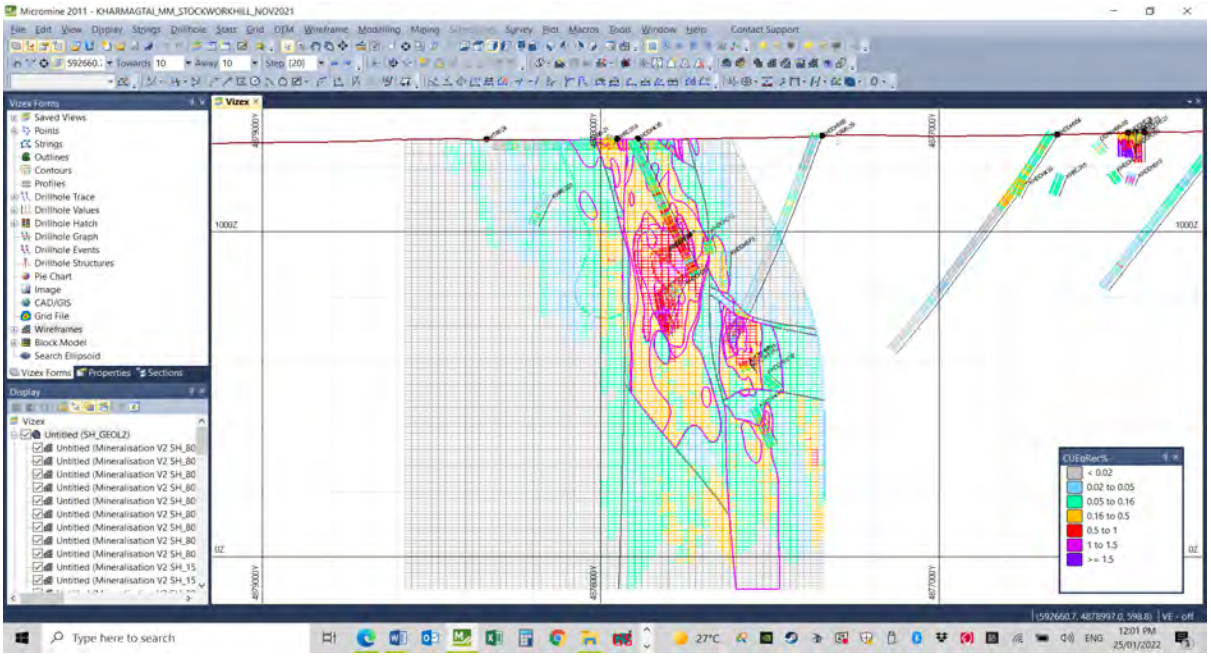


Figure 116 Foundation phase of interpretation - Stockwork Hill sectional view 592660mE – looking East with CuEqRec% on LHS.

Figure 116 shows the various intrusive domains, cut by tourmaline breccias, and again cut by intersecting structures to produce a complex interaction of associated primary domains.

Most of the structural control and the effects of the intrusive phases were incorporated (P2, P3 and P4 phases) into the global estimation interpretation at the request of XAM and XAM representatives. A similar theme was employed across all Kharmagtai project areas, Stockwork Hill, White Hill, Copper Hill, Zaraa, Golden Eagle and Zephyr.

The regional mineral occurrences known locally as Wolf and Anomoly 6 were not addressed during this estimation investigation as deemed appropriate by the Client and supported by SGC. The project was sub-divided into project quadrants within which were the individual project area referred to above and as noted in Figure 117 below.

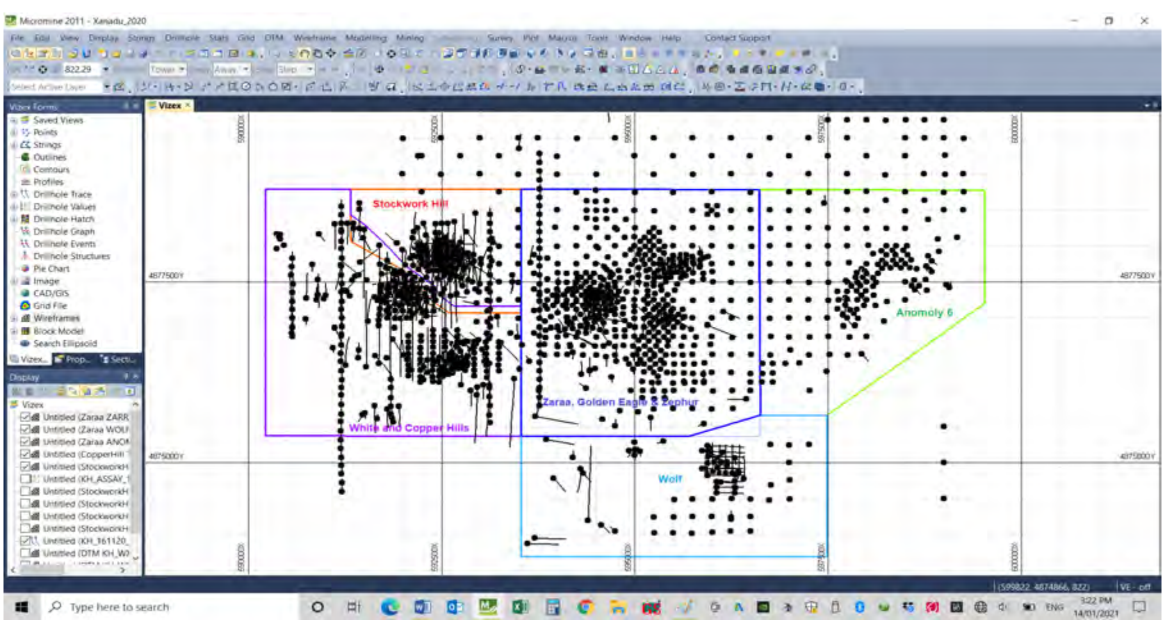


Figure 117 Kharmagtai project area Quadrants.

All strings were then tidied up to ensure that overlaps and gaps were eliminated ahead of solid modelling. This phase of the process was a collaboration between XAM and P Dunham and was undertaken by XAM over the 3-month period during August 2021 through to October 2021 ahead of resource modelling.

A domain strings and subsequent solid model (for quadrants and sectors) and interpretation was constructed in leapfrog by M Brown and was based on earlier discussions and export to SGC for incorporation into Micromine software for data coding.

SGC recommend that grade definition be ongoing as more drilling is completed and during the next round of interpretation to further capture the inherent variability and mixed populations which may continue to exist within the project area sectors and broader quadrants in order to better confine the estimates within the primary domains and to minimise the smoothing of grades from high to low grade samples which is inherent of the global estimation approach employed.

20.2 Oxidation intensity and profiles

The Client provided SGC with oxidation surface depicting the base of complete oxidation and the top of fresh rock as illustrated in Figure 118 below (example from Zephyr illustrating depleted sulphur above the BOCO surface).

The oxidation surfaces were used to code the final block model for oxidation state whereby oxide=1 above the base of complete oxidation, transition=2 below the base of complete oxidation and above the top of fresh rock and fresh=3 below the top of fresh rock. In some instances, elements were confined by the base of oxidation in conjunction with the domain solids (where appropriate and defined in the multi element data review).

Over the Golden Eagle project area where molybdenum was noted in the multi element data to be depleted above the base of oxidation the oxidation surface served to further constrain the estimates. Oxidation was not modelled independently as an attribute of the resource model.

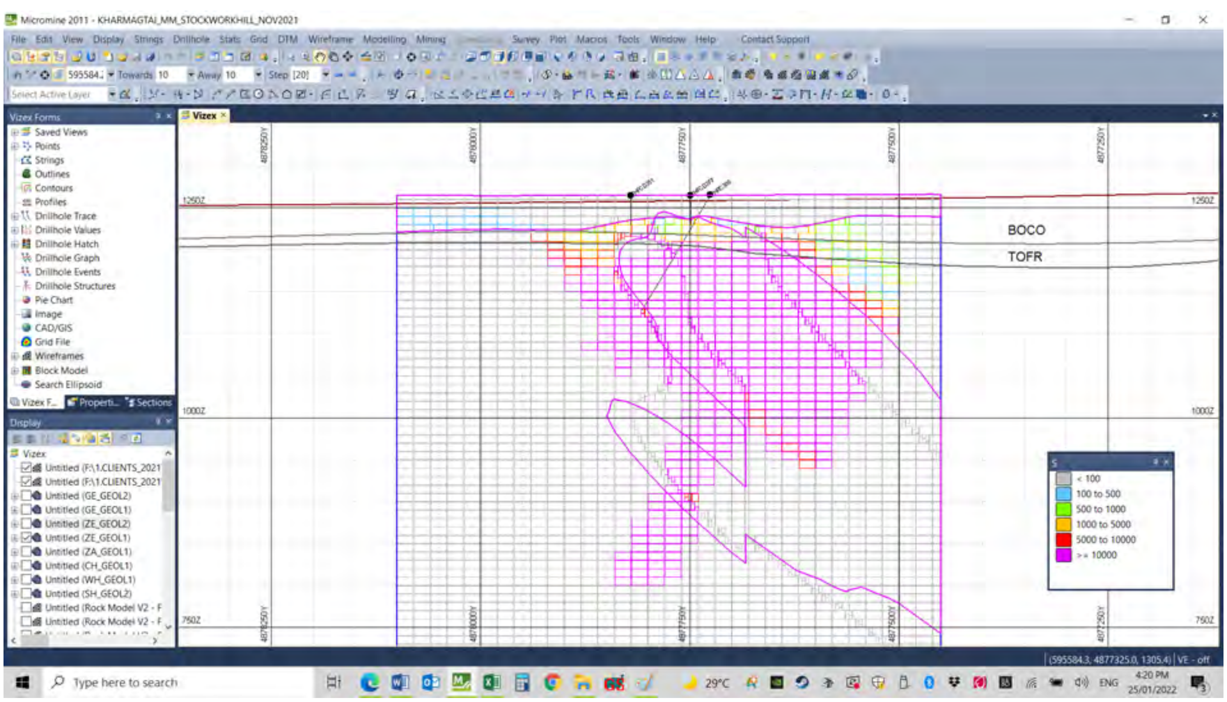


Figure 118 Zephyr - Oxidation surfaces (BOCO).

20.3 Treatment of un-sampled intervals

The assay data file was composited to 4 metres with end of drill-hole samples retained where they were no less than 2m metres. Compositing was conducted prior to geological and domain coding. Missing data for the Kharmagtai datasets was addressed prior to modelling.

Substitutions were applied prior to compositing to the primary assay data for each of the multi-elements in question (Au, Cu, Mo and S), in general (unless otherwise stipulated) included replacing < values with half lower detection limit (HLDL) values, 0.00 values with -99 (inside ore domains), Au <0.005ppm with 0.005ppm Au, Mo <0.25ppm with 0.25ppm Mo, S <25ppm with 25ppm S and <5ppm Cu with 5ppm Cu. Details of the data substitutions are presented in Table 65 by project area.

Table 65: Data substitutions.

Project Area	Element	No of Data	Substitution
Zaraa	Cu	N/A	replace <1ppm with HLDL 0.5ppm
	Au	N/A	replace missing data inside of ore domains with -99
		N/A	replace <0.01ppm with HLDL 0.005ppm
	Mo	N/A	replace missing data outside of ore domains with -99
		N/A	replace <0.5ppm with HLDH 0.25ppm
	S	N/A	replace missing data outside of ore domains with -99
		N/A	replace <5.0 with HLDH 2.5
Zephyr	Cu	N/A	replace missing with 0.000ppm
	Au	2	replace <0.01ppm with 0.005ppm
	Mo	1	replace <0.5ppm with 0.25ppm
	S	N/A	replace missing with 0.000ppm
Copper Hill	Cu	N/A	replace missing data inside of ore domains with -99
	Au	N/A	replace missing data inside of ore domains with -99
		N/A	replace <0.001ppm with 0.0005ppm
	Mo	N/A	replace missing data inside of ore domains with -99
		N/A	replace <0.05ppm with 0.025ppm
	S	N/A	replace missing data inside of ore domains with -99
Golden Eagle	Cu	N/A	replace missing data inside of ore domains with -99
	Au	N/A	replace missing data inside of ore domains with -99
	Mo	N/A	replace missing data inside of ore domains with -99
	S	N/A	replace missing data inside of ore domains with -99
White Hill	Cu	N/A	replace missing data inside of ore domains with -99
	Au	N/A	replace missing data inside of ore domains with -99
	Mo	N/A	replace missing data inside of ore domains with -99
	S	N/A	replace missing data inside of ore domains with -99
Stockwork Hill	Cu	N/A	replace missing data inside of ore domains with -99
	Au	N/A	replace missing data inside of ore domains with -99
	Mo	N/A	replace missing data inside of ore domains with -99
	S	N/A	replace missing data inside of ore domains with -99

In instances where missing samples are observed to fall inside of primary ore domains, but sampling was not conducted in the field, then all are replaced with -99 for modelling on advice from the Client and on the assumption that the interval could have contained potential mineralisation which was not visually identifiable.

21 Spatial Continuity Analysis

Many resource estimation methods use a measure of spatial continuity to estimate the grade of blocks in a resource model. In some methods, the measure is implicit; for example, a polygonal method assumes that the grade is perfectly continuous from the sample to its surrounding polygon boundary.

Geostatistical methods like Ordinary Kriging and Indicator Kriging are among those methods for which the continuity measure is explicit and is customised to the data set being studied.

Geostatistics provide several measures for describing spatial continuity: the variogram, the covariance, the correlogram and many others. All are valid descriptions but not all provide a basis for constructing kriging models of mineralisation. Whatever the method of description used, it is common to use the term variogram in a generic sense to describe contour plots and directional plots of spatial continuity measures.

The various parameters of the variogram model, such as the nugget effect and ranges in different directions, describe properties of the statistical continuity of metal grades. For example, a variogram with high nugget may indicate that there is a high level of error in the sample grades being used to construct the variograms or that there is a high degree of variability in the grade over very short distances in the mineralisation. A different range in one direction compared to another is likely to be indicating that grade is more continuous in one direction than another. Practitioners must inherently understand the data upon which assumptions are levelled in order to undertake successful data preparation and subsequent estimation.

For the Kharmagtai Project spatial analysis variograms were calculated in GS3 using directions which follow the trigonometric convention; with east being 0° and north being 90°. As seen in Figure 119 provides a screen shot of a typical ellipsoidal representation (with respect to data coordinates) of the 3-dimensional orientation associated with the variogram model for the Kharmagtai Project.

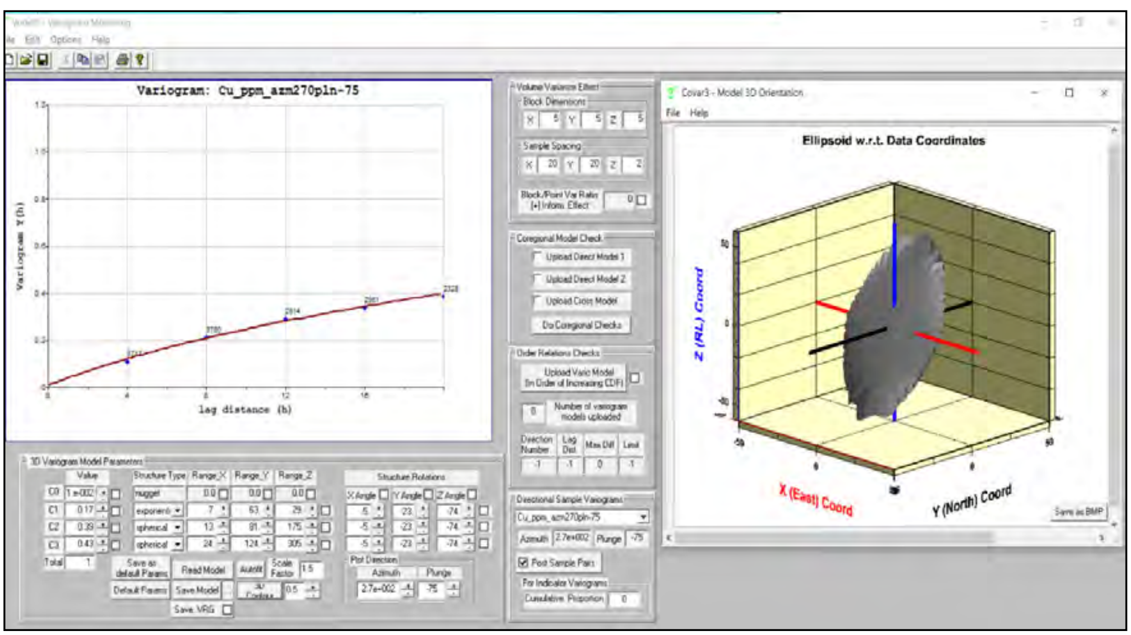


Figure 119 Stockwork Hill primary domain 1 for copper.

All experimental variogram details utilised in the construction of the resource estimates for Kharmagtai Project areas are summarised in Appendix 1 at the end of this report. Variogram models were completed for copper, gold, molybdenum, sulphur and density for all primary and sub-domains (as deemed appropriate by SGC in-line with the informing data).

22 Resource Estimation Methodology

The Kharmagtai resource models have been estimated by Ordinary Kriging (OK) using GS3 software and are post processed in Micromine software. An internal process review was also conducted by SGC, and no third-party modelling was undertaken at this time.

Data searches were aligned consistent with the strike, dip and plunge (where appropriate) of the mineralisation and consistent with the domain modelling and geometry modelling.

According to the Client's interpretation the host of the mineralisation exhibit geometries which are consistent with those geometries defined by the spatial analysis of grade (in this instance copper, gold, molybdenum and sulphur).

A number of fields were estimated during the course of the recent investigation which included (but is not limited to and in no particular order of priority), and the model structure is as follows in Table 66:

Table 66: Model structure and estimated elements – Kharmagtai.

Field Name	Field Type	Field Width	Field Decimal Places
east	R	4	3
_east	R	4	0
north	R	4	3
_north	R	4	0
rl	R	4	3
_rl	R	4	0
Cu_ppm	R	4	3
Au_ppm	R	4	3
Mo_ppm	R	4	3
S_ppm	R	4	3
ResCat	R	4	0
SG	R	4	0
pdom	R	25	0
Oxidation	R	4	3
Cu_%	R	4	3
CuEqRec	R	4	3
Inside_0p1_rpt_solid	R	4	0
Area	C	4	3

A nominal composite length of 4 metre down hole was used for inputs which was settled upon during consultation with the Client and the Clients preferred Geological Consultant (P Dunham). The 4m composite is two times larger than the dominant sampling interval spacing of 2m in the informing data and as such a larger composite was not considered appropriate or consistent with the local short-range variability inherent in the informing dataset.

Several iterations of the modelling process were undertaken to assess the sensitivity of estimates to estimation parameters. Post processing, model validation and reporting were undertaken in Micromine software.

To provide some context to the modelling approach selected by SGC for the Kharmagtai Project, in deposits where the coefficient of variation (CV) in samples is low to moderate (0 to 2.5), Ordinary Kriging (OK) is one method that may be used to provide reliable estimates. If the CV is moderate to high (above 2.5) indicating a more skewed distribution and data has the tendency toward a higher degree of spread, then non-linear modelling methodologies which account for the skewness are implemented such as Multiple Indicator Kriging (MIK) or simulation.

A number of the primary and secondary domains put forth by the Client exhibited CV's which were at or near 2.5 indicating that further resolution of the domain solids was required to capture the potential mixed populations and reduce the inherent skewness. See Appendix 3 for details of coefficients of variation by project area.

The estimation error is inversely related to the size of the volume being estimated. To take the extreme case, the estimate of the average grade of a deposit generated from a weighted average grade of the entire sample data set is much more reliable than the estimate of the average grade of a small block of material within the deposit generated from a local neighbourhood of data, (Isaaks, E.H. & Srivastava, R.M., 1989).

The estimation has been performed using Ordinary Kriging (OK) at this time in line with and supported by the geological modelling and population statistical analysis.

In future as further resolution of confining solids is achieved (in accordance with statistical analysis) and population are further defined, iteration of the model may employ alternative linear / non-linear modelling methodologies for the potential resource estimates with data composites and block sizes chosen that are compatible with the available sample data and potential future mining considerations.

Following is a general summary of the methodology used:

1. Attributes were compiled for CuEqRec%, Cu%, Auppm, Moppm and S% as well as density across all domain objects.
2. The data was provided by the Client to SGC (and taken in good faith) in the UTM_48N grid projection for modelling.
3. The three-dimensional solids and interpretation were compiled by the Client and the Clients preferred geological Consultant P Dunham in Leapfrog and third-party software and subsequent domaining was undertaken on section and in plan drawing on evolved geological, lithological, structural and oxidation constraints.
4. Recent interpretations put forth by the Client and Client's representatives have sought to capture considerable additional detail in the geological framework model which are reflected in the estimation approach and has resulted in material changes to the interpretation and subsequent solid model.
5. Datasets are composited to a 4m composite for domain coding.
6. Statistical distribution analysis was completed, and high-grade end members and outliers were analysed. Top cut analysis of the primary data was reviewed. Data substitutions were undertaken, and dataset was coded by domain objects for further detailed statistical analysis.
7. Statistical analysis was undertaken utilising univariate and conditional statistics (where appropriate) to provide guidance to the population distributions both globally and locally within estimation domains and domain boundary conditions were analysed.
8. Where appropriate data was transformed and experimental variograms of the variables were modelled.
9. Ordinary kriging of the variables was performed in the UTM_48N grid. Block dimensions were selected in line with data density and modelling methodology and with previous modelling in mind.
10. Search and data criteria were assessed and implemented, in-line with modelling strategy.
11. Models were constructed and iteration undertaken to assess modelling sensitivities to data and search criteria.
12. The block estimates were validated against the informing data to ensure that they were consistent with the original data in a three-dimensional sense and within the search neighbourhood via data analysis.
13. The block estimates were exported to Micromine and where appropriate a topographic surface was applied as were other surfaces and solids which may have acted upon the

estimates. Each area model was then compiled into a global model where all fields were cleaned, and missing data assigned as well as coding for primary and secondary domain and calculation of CuEq and CuEqRec completed.

14. Final densities were assigned where necessary and model validation completed ahead of final reports preparation.

22.1 Modelling parameters

The details of the model grid framework and search parameters used to construct the current resource models are shown in Tables 67 to 72.

Search radii were selected on the basis of the local dominant data spacing and generally reflected an incremental value equivalent to the dominant drill hole spacing in the central portion of the deposit and are consistent with the first structure ranges defined by the geometry modelling.

Extended search and estimation passes were employed within a number of primary and secondary domains as deemed appropriate by the Qualified Person in-line with first and second structure ranges in cases where estimation domains were highly constrained and local data availability was constricted. For details concerning all estimation search and data criteria please refer to Appendices 1, 2 and 3 as well as details presented in Tables 67 through to 72 below.

Data criteria employed took into account the clustering of the local data and the geometry and continuity of local grade in-line with geometry modelling as noted in Section 19 of this report with details of geometry model attributes compiled in Appendices 1, 2 and 3 as well as Tables 67 through to 72.

Estimation iteration was completed over all project areas pre final estimation passes to ascertain the effects (if any) of the search and data criteria on model outcomes. Modelling sensitivity to modelling search and data criteria was observed to have minimal impact on the outcomes of the estimates both locally and globally.

Table 67: Kharmagtai Model framework and criteria – Stockwork Hill Mineral Resource Estimates.

Field_Name	Minimum Centroid	Maximum Centroid
EAST	591726.00	593350.00
NORTH	4877222.00	4878578.00
RL	-45	1325
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

Table 68: Kharmagtai Model framework and criteria – White Hill Mineral Resource Estimates.

Field_Name	Minimum Centroid	Maximum Centroid
EAST	590402.00	593050.00
NORTH	4876778.00	4877698.00
RL	-49	1327
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

Table 69: Kharmagtai Model framework and criteria – Copper Hill Mineral Resource Estimates.

Field_Name	Minimum Centroid	Maximum Centroid
EAST	591978.00	593046.00
NORTH	4876010.00	4876774.00
RL	813	1322
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

Table 70: Kharmagtai Model framework and criteria – Zaraa Mineral Resource Estimates.

Field_Name	Minimum Centroid	Maximum Centroid
EAST	593702.00	594998.00
NORTH	4876002.00	4877898.00
RL	-229	1351
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

Table 71: Kharmagtai Model framework and criteria – Zephyr Mineral Resource Estimates.

Field_Name	Minimum Centroid	Maximum Centroid
EAST	595002.00	595998.00
NORTH	4877450.00	4878098.00
RL	639	1355
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

Table 72: Kharmagtai Model framework and criteria – Golden Eagle Mineral Resource Estimates

Field_Name	Minimum Centroid	Maximum Centroid
EAST	595002.00	595798.00
NORTH	4876550.00	4877450.00
RL	205	1345
_EAST	4	20
_NORTH	4	20
_RL	2	10

Parent cell dimension	x=20 y=20 and z=10
Search radius Z	First pass 55 (extended pass 75)
Search radius Y	First pass 75 (extended pass 95)
Search radius X	First pass 10 (extended pass 20)
Expansion Factor	1
Discretisation	5x5x2
Data Criteria	
Minimum Data	12
Minimum Octants	4
Maximum Data	32
Search rotations are applied according to ore domain geometry	

For details of estimation domain search rotations see Appendix 2. For Kharmagtai, the resource has been estimated between block centroids of 590402.00mE – 595998.00mE and 4876002.00mN – 4878578.00mN and between the current ground surface at or near 1355.00mRL (at its peak near Zephyr) down to the deepest block at -229mRL associated with the Zaraa project area.

For Kharmagtai a number of domains required some degree of high-end member manipulation in order for the high CV's to be reduced to an acceptable level for ordinary kriging. On average the CV's across most domains were low to moderate and required no attention across the main elements of Cu%, Auppm, Moppm and S% as noted in Table 73 below.

The use of top-cuts has an immaterial impact on the MRE as no Cu samples were cut, only 17 Au samples reduced, four Mo samples and no S% samples.

The following Tables 73 to 78 detail the extent of high-end member and outlier treatment ahead of modelling by project area. For relationship between geological domains, primary domains and variogram analysis by primary domain please see header variogram name details in Appendix 1.

Table 73: Kharmagtai data manipulation – modification of high-end members – Stockwork Hill.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	Domain code
Stockwork Hill	Cu	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Au	KHDDH316	144	148	Kharmagtai	MD105917	0.9575	0.5	83
		KHDDH565	1424	1428	Kharmagtai	XD159311	1.25804	0.75	17
		KHDDH565	1428	1432	Kharmagtai	XD159314	1.47796	0.75	17
		KHDDH461A	416	420	Kharmagtai	XD112067	2.1076	0.75	17
		KHRC194	68	72	Kharmagtai	MD61010	1.29	1.1	73
		KHDDH559B	32	36	Kharmagtai	XD154342	2.04519	1.75	72
		KHDDH527	84	88	Kharmagtai	XD140661	2.16159	1	66
		KHDDH394A	816	820	Kharmagtai	XD84445	5.20706	2.5	552
		KHDDH360	124	128	Kharmagtai	XD57755	7.7677	1.75	93
	Mo	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	S	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A

Table 74: Kharmagtai data manipulation – modification of high-end members – White Hill.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	pdom
White Hill	Cu	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Au	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Mo	KHRC317	224	228	Kharmagtai	XD112277	1443.5	1000	44
	S	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A

Table 75: Kharmagtai data manipulation – modification of high-end members – Copper Hill.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	pdom
Copper Hill	Cu	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Au	KHDDH008	4	8	Kharmagtai		49.9475	2.9475	N/A
		KHDDH008	8	12	Kharmagtai	MD023658	49.975	2.9475	N/A
	Mo	KHRC317	220	224	Kharmagtai	XD112273	798.75	561.64063	N/A
		KHRC317	224	228	Kharmagtai	XD112276	805.75	561.64063	N/A
	S	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 76: Kharmagtai data manipulation – modification of high-end members – Zaraa.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	pdom
Zaraa	Cu	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Au	KHPCD478	24	28	Kharmagtai	XD115173	9.44	5.635	N/A
		KHDDH335	196	200	Kharmagtai	25890	12.43375	5.635	N/A
		KHDDH335	200	204	Kharmagtai	25892	37.0625	5.635	N/A
	Mo	KHDDH469	604	608	Kharmagtai	XD116566	1044.0249	296.67499	N/A
	S	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 77: Kharmagtai data manipulation – modification of high-end members – Zephyr.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	pdom
Zephyr	Cu	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Au	KHDDH454	300	304	Kharmagtai	XD127183	4.2072	2.60651	4
		KHDDH305	56	60	Kharmagtai	MD103285	5.635	2.60651	4
	Mo	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	S	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A

Table 78: Kharmagtai data manipulation – modification of high-end members – Golden Eagle.

Project Area	Elements	Hole Id	from	to	Project	Sample No	Original value	Cut value	pdom
Golden Eagle	Cu	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Au	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	Mo	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A
	S	N/A	N/A	N/A	Kharmagtai	N/A	N/A	N/A	N/A

Spatial models (variograms) have been used to establish the short scale continuity, structures ranges and over-all attribute continuity of the mineralisation and associated attributes.

Variogram models which represent the local spatial grade distributions were produced and employed during estimation in accordance with the geological domains defined in the foundation interpretation. For details of variogram models for each domain please see Appendix 1. The resource has been trimmed to the available topographic surface supplied by the Client and is believed by SGC to be a fair depiction of the known ground surface at the time of the investigation.

The resource models have been built using GS3M software employing an octant search with the first pass using a minimum of 4 octants. The octant search constraint approach is classically employed as a declustering function to ensure that the local search neighbourhood is not unduly impacted by local clustered drilling data.

In conjunction with the octant search, a declustering function was run on the input data to provide a declustered weights file for additional review of the sensitivity of the informing data to local spatial distribution.

The first pass estimation employed a minimum of 12 data across 4 octants and a maximum of 32 data. The second pass engaged an expansion factor of 1 whereby the search radius was expanded by 100% and the data criteria remained the same at 12 data across 4 octants and a maximum of 32 data. The third as pass used the same conditions established during the second pass in respect of search radius but with a halving of the data criteria to a minimum of 6 data in a minimum of 2 octants and a maximum of 32 data.

The resources are reported at a series of cut-off grades as requested by XAM representatives from 0.1% CuEqRec through to 1.0g/t CuEqRec at 0.1% Cu intervals. For detailed breakdown of grade tonnage curves and associated data by project area please refer to Appendix 9.

23 Resource Classification

Blocks in the individual Project Area resource models have been classified as Measured, Indicated or Inferred confidence category based primarily on the number and location of data used to estimate the grade of each block. Estimation was conducted in line with the modelling orientations put forth by XAM and XAM's preferred consulting Geologist defined during the foundation interpretation phase of the investigation.

Secondary considerations include other modelling inputs such as but not limited to the confidence in the geological model continuity and constraints, oxidation profile development, structural modelling data and density modelling. Also, all of the aforementioned attributes were considered within the context of the overall interpretation (primary, secondary and tertiary domains) defined by the Client and took into account aspects of project evolution on an area by area basis. At the time of writing this report no Measured resource estimates were achieved.

In line with GS3 software, resource classification is firstly defined on the basis of the data criteria by model pass. The principal search radii in the easting, northing and vertical directions for the ordinary kriged (OK) model in the first pass were 55mE, 75mN and 10mRL respectively. Minimum data were set at 12 with a minimum number of octants set to 4 with a maximum data of 32. Estimation took place in three primary passes using an octant search with minimum data and maximum points per octant to define the data that is utilised.

At the current level of detail all estimates are classified as either Indicated or Inferred according to the CIM Definition Standards, 2014 for the Reporting of Mineral Resources and Mineral Reserves.

It is envisaged that with further economic viability analysis and detailed core investigation, additional mineralogical analysis and improved understanding of the deposit's geological and structural setting a higher level of confidence will be obtained in future resource estimates.

Figures 120 through to Figure 125 illustrate a selection of typical sections through Stockwork Hill, Copper Hill and White Hill, Zaraa, Zephyr and Golden Eagle project areas respectively showing the resource classification.

As seem in Figures 120 through to 125, blocks are colour coded for resource classification Indicated (green) and Inferred (light blue). The remaining coloured blocks which contain two shades of grey are not classified at this time. The light grey blocks could represent exploration potential estimates and are colour coded separate to the background blocks (dark grey) which are not estimated for internal scoping purposes only at the time of writing this report.

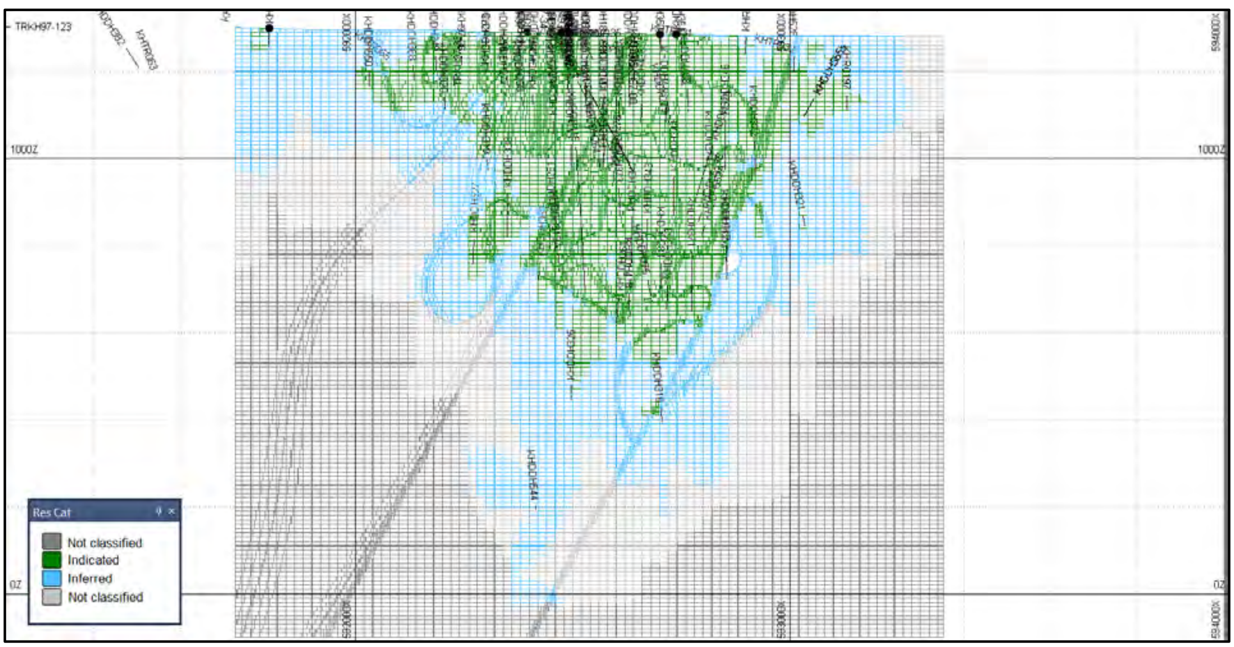


Figure 120: Stockwork Hill north looking section 4877800mN - block model displaying block resource classification.

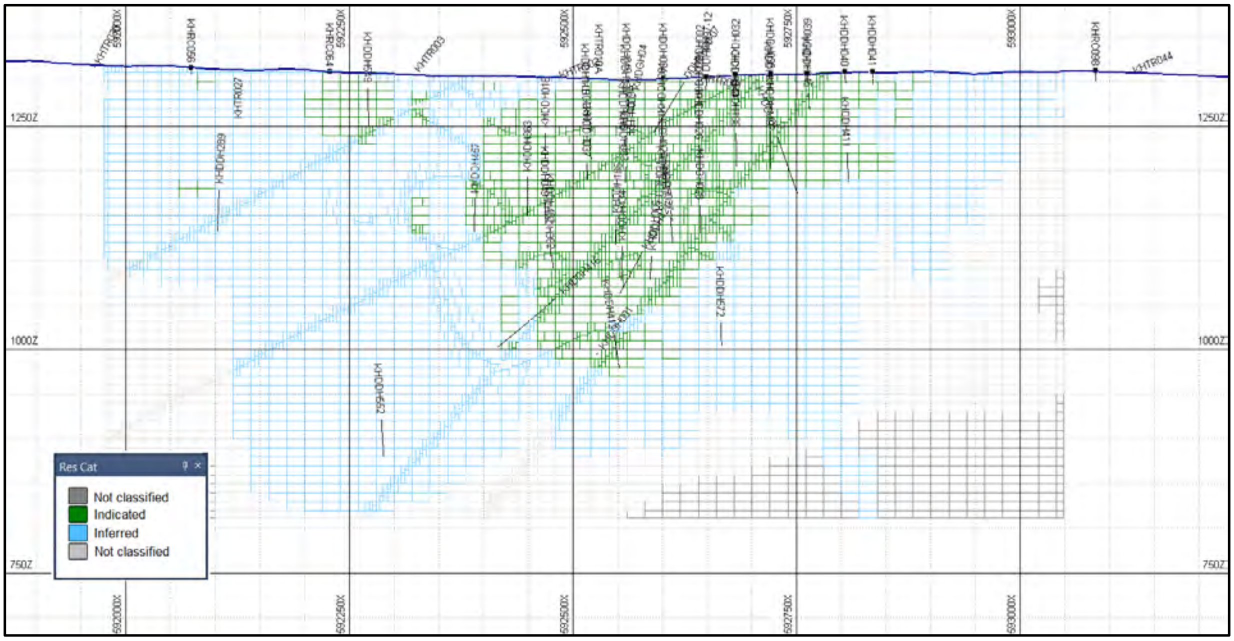


Figure 121: Copper Hill north looking section 4876350mN - block model displaying block resource classification.

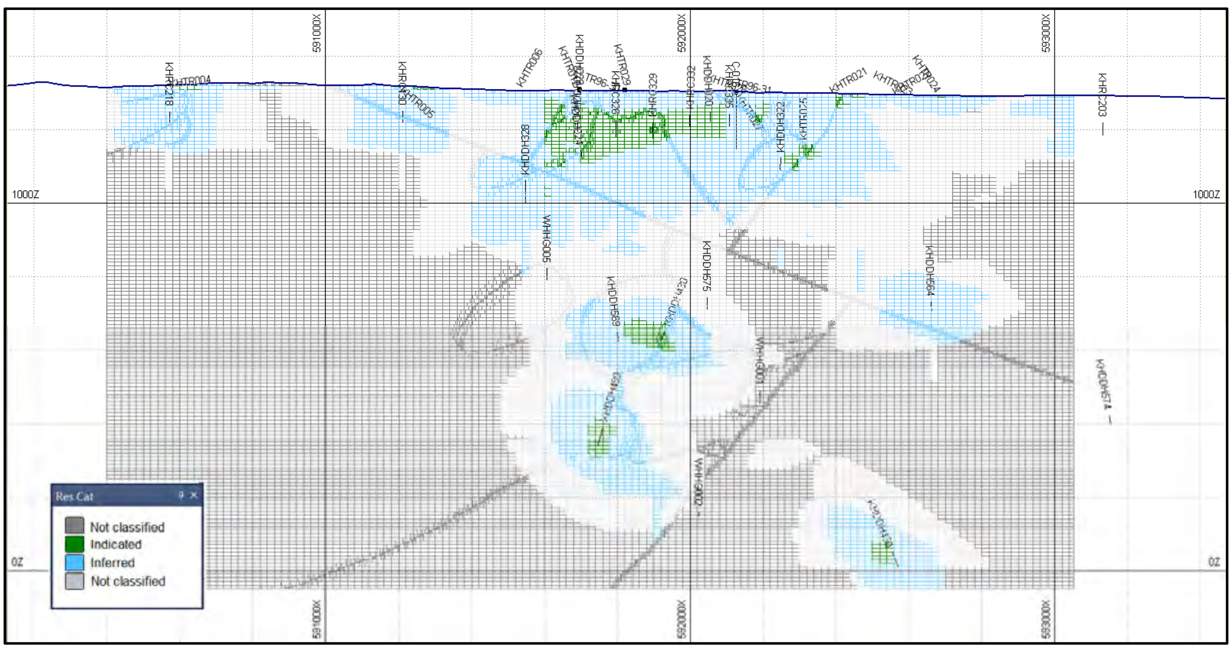


Figure 122: White Hill north looking section 4877050mN - block model displaying block resource classification.

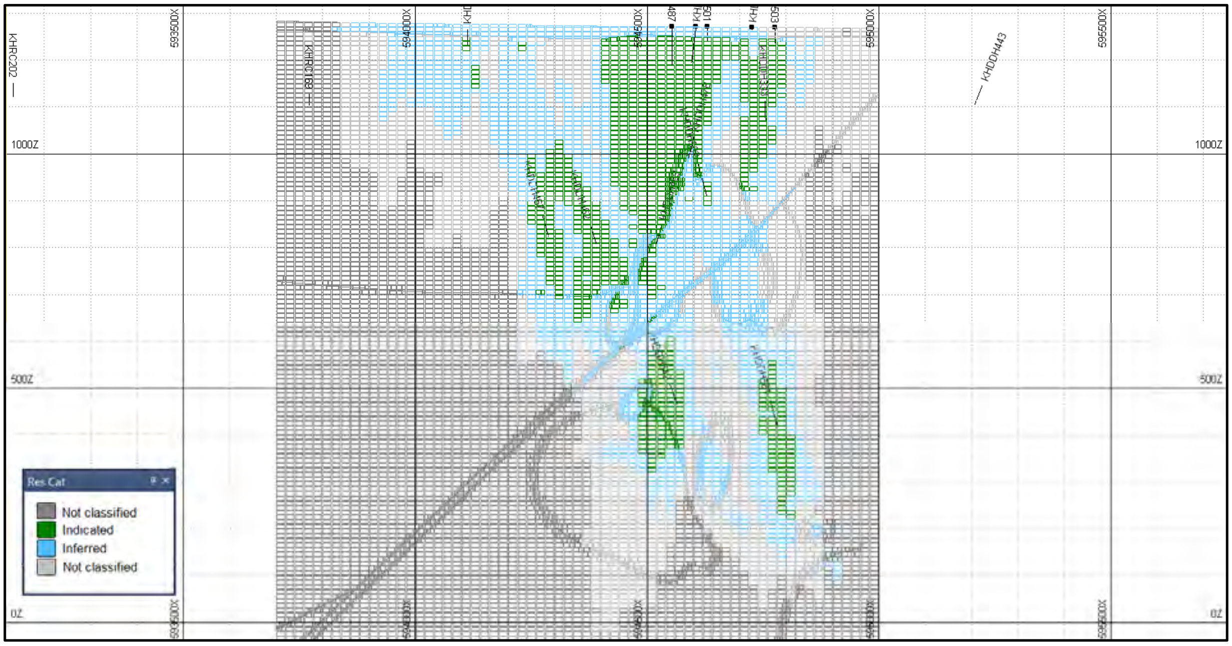


Figure 123: Zaraa north looking section 4877800mN - block model displaying block resource classification.

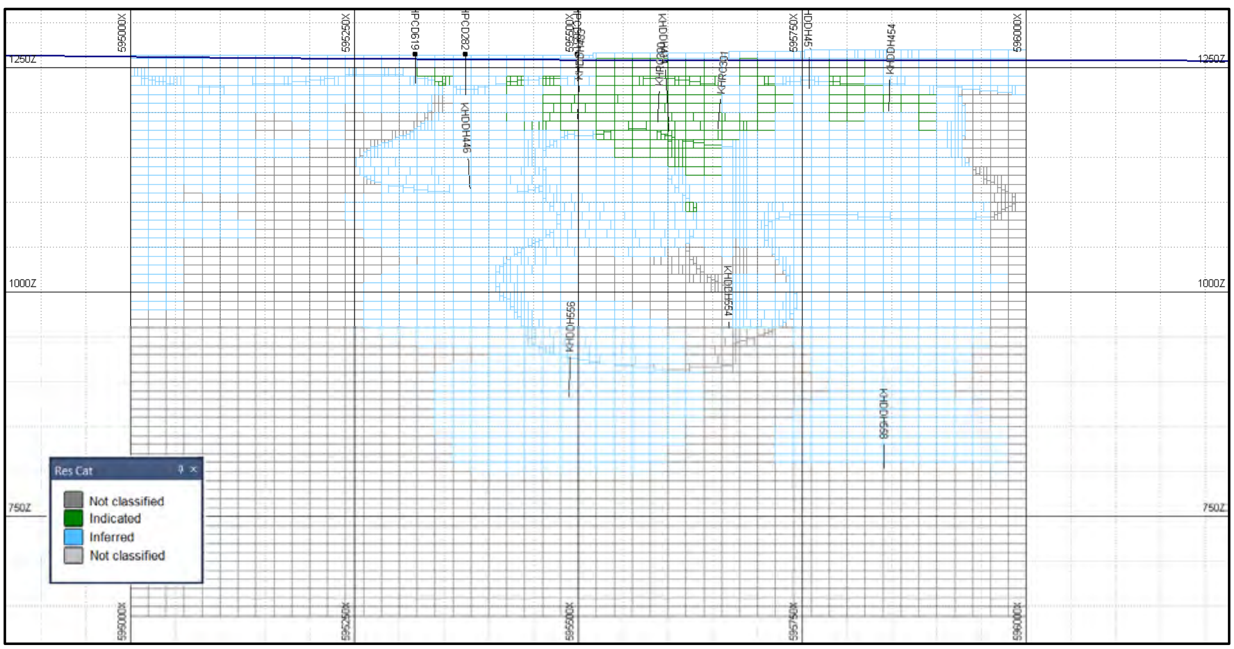


Figure 124: Zephyr north looking section 4877760mN - block model displaying block resource classification.

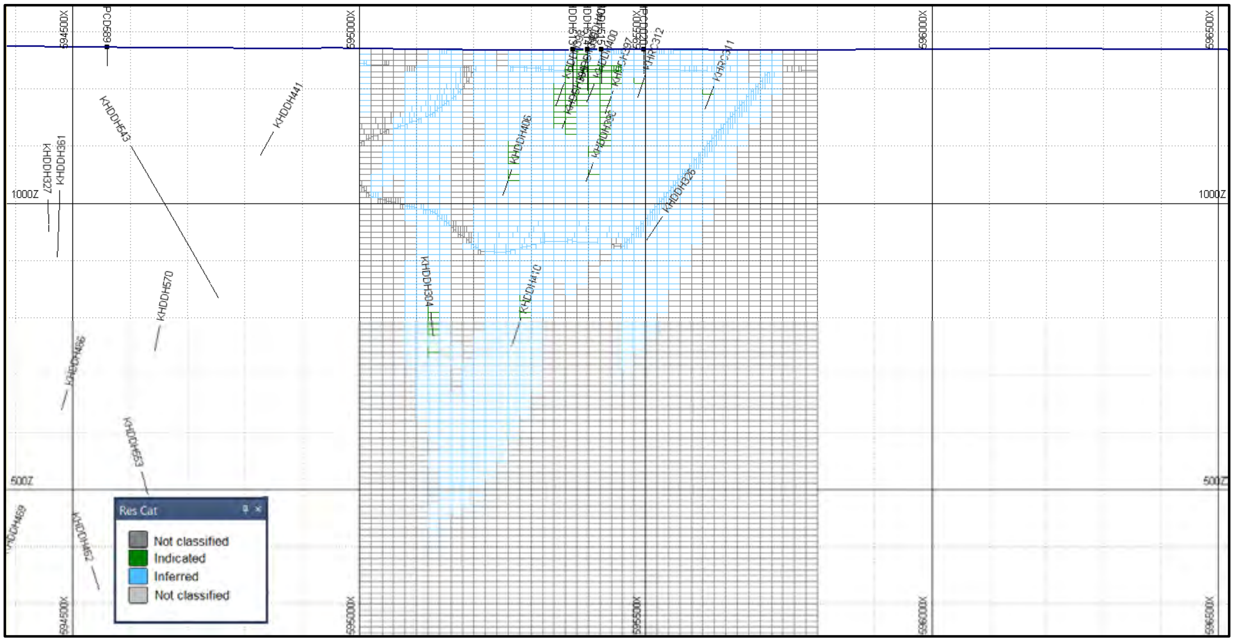


Figure 125: Golden Eagle north looking section 4876980mN - block model displaying block resource classification.

24 Resource Estimates

The resource estimates have been constructed from the inclusion of all sampling data which has been verified as exhibiting adequate standard to be employed during estimation, this includes all resource drill-hole information available as of the 27th of October 2021 for the Kharmagtai Project – closed off database with the exception of the following conditions:

1. White Hill and Stockwork Hill – cut all drill-hole data equal to or older than 1997 on advice from XAM due to difficulties in assessing the adequacy of field and laboratory practice over this period.
2. White Hill and Stockwork Hill – Utilise surface trenches data where available with the exception of 1997 and pre 1997 data. Where trench samples are not sampled substitute 0.00 values for every element on advice from XAM representatives that no mineralisation is present supported by geological observations.
3. Zaraa – No trench data was present in the domain coding and estimation datasets due to basin sediment coverage over the entire Zaraa project area. All pre 1997 data was cut from the dataset for Zaraa on advice from XAM due to difficulties in assessing the adequacy of field and laboratory practice over this period.
4. Zephyr – No trench data was present in the domain coding and estimation datasets. All pre 1997 data was cut from the dataset for Zephyr on advice from XAM due to difficulties in assessing the adequacy of field and laboratory practice over this period.
5. Copper Hill – No trench data was used in the domain coding or estimation. All pre 1997 data was cut from the dataset for Copper Hill on advice from XAM due to difficulties in assessing the adequacy of field and laboratory practice over this period.
6. Golden Eagle - No trench data was used in the domain coding or estimation. All pre 1997 data was cut from the dataset for Golden Eagle on advice from XAM due to difficulties in assessing the adequacy of field and laboratory practice over this period.

The Mineral Resource Estimation numbers noted earlier in this report in Tables 1 and 2 (represented here in Tables 79 and 80 with complete decimal places as per the raw data) may not sum due to rounding and significant figures do not imply and added level of precision or accuracy of estimates.

The location, quantity and distribution of the current data are sufficient to allow the classification of Measured, Indicated, Inferred and Exploration Potential Resources on the basis of the available data and modelling constraints applied by the competent persons involved in the estimation process and associated inputs.

For the potential near surface mineralisation where OK modelling methodology was employed, resource estimates are reported above an economic CuEqRec cut-off grade defined by economic criteria provided by XAM analysis and engineering studies, with open pit resources being reported at a 0.2% CuEqRec cut-off grade and underground resources being reported at a 0.3% CuEqRec cut-off grade.

The 2021 MR is based on mining of open pits by conventional large tonnage, drill-blast load-haul operations delivering to conventional sulphide flotation and gravity recovery processing. Underground mining is based on bulk methods (block cave / sub-level cave) delivering to the similar recovery circuit. There are no known current risks that could materially affect the potential development of the Mineral Resource.

The range/s presented do not in any way suggest the range of potential economic environments. Economic factors implemented during the consideration of economic cut-off grades were supplied by and are the responsibility of the Client. For a detailed breakdown of the Mineral Resource at incremental cut-off grades by project area please refer to Appendix 9.

Summary results are presented in the following section of this report. The estimates tabled below need to be taken in context and as such the following further clarification is provided by SGC in-line with the scope of works.

The 2020-2021 geological investigations are predicated on geology logs by site and remotely based geologists which incorporate an evolving understanding of the overall geological and structural regime.

The detailed geology / lithology logs put forth by the Client representatives and the resulting interpretation upon which the block model estimated are deemed adequate and are classified accordingly. Further definition drilling is recommended and understood by SGC to be ongoing to infill and close of mineralised internal trends.

Table 79: Kharmagtai - Mineral Resource Estimates reported as at December 2021 at a CuEqRec 0.2% cut-off grade for the potential open pit resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client.

Deposit	Classification	Tonnes (t)	Grades			Contained Metal			
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (lbs)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	158,003,674	0.4	0.3	0.3	1,534,289,817	695,943	460,328	1,455,553
WH		188,139,015	0.3	0.2	0.2	1,424,484,220	646,136	464,466	1,122,295
CH		16,715,813	0.5	0.4	0.4	200,284,471	90,848	59,160	195,623
ZA		8,798,057	0.3	0.1	0.2	51,400,387	23,315	13,021	63,927
GE		3,319,760	0.3	0.1	0.4	24,955,676	11,320	4,396	42,773
ZE		4,097,916	0.3	0.2	0.2	25,928,574	11,761	7,212	27,931
Total Indicated		**379,074,235**	**0.4**	**0.3**	**0.2**	**3,261,343,146**	**1,479,322**	**1,008,584**	**2,908,103**
SH	Inferred	51,852,366	0.3	0.2	0.2	343,024,309	155,593	101,164	336,269
WH		211,045,705	0.3	0.2	0.1	1,418,335,195	643,347	486,126	971,244
CH		2,793,700	0.3	0.2	0.1	19,966,580	9,057	6,898	13,293
ZA		13,368,144	0.2	0.1	0.2	72,500,324	32,886	19,116	84,240
GE		50,975,258	0.3	0.1	0.3	324,781,303	147,318	66,778	499,862
ZE		44,185,407	0.3	0.1	0.3	270,805,451	122,835	65,394	355,148
Total Inferred		**374,220,580**	**0.3**	**0.2**	**0.2**	**2,449,413,163**	**1,111,036**	**745,477**	**2,260,056**

Notes:

- CuEqRec accounts for Au value and CuEqRecKt must not be totalled to Au ounces.
- Figures may not sum due to rounding.
- Significant figures do not imply an added level of precision.
- Resource constrained by 0.1%CuEqRec reporting solid in-line with geological analysis by XAM.
- Resource constrained by open cut above nominated mRL level by deposit as follows SH>=720mRL, WH>=915mRL, CH>=1100mRL, ZA>=920mRL, ZE>=945mRL and GE>=845mRL, the remnant resource within the reporting solids forms the basis of the underground resources.
- CuEqRec equation (CuEqRec=Cu+Au*0.60049*0.86667) where Au at USD$1400/oz and Cu at USD$3.4/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=90% and Au rec=78% (rel Au rec=78/90=86.6667% with number according to the Clients' (XAM) direction.

Table 80: Kharmagtai - Mineral Resource Estimates reported as at December 2021 at a CuEqRec 0.3% cut-off grade for the underground resources – reported to the topographic surface and inside the 0.1%CuEq reporting solid provided by the Client.

Deposit	Classification	Tonnes (t)	Grades			Contained Metal			
			CuEqRec (%)	Cu (%)	Au (g/t)	CuEqRec (lbs)	CuEqRec (t)	Cu (t)	Au (Oz)
SH	Indicated	24,653,854	0.6	0.4	0.5	323,005,324	146,513	87,918	361,975
WH		20,788,755	0.4	0.4	0.2	198,633,946	90,099	73,050	105,322
CH		2,636,536	0.4	0.3	0.2	24,410,468	11,072	8,091	18,394
ZA		26,761,354	0.5	0.3	0.3	271,983,620	123,370	84,566	239,190
GE		-	-	-	-	-	-	-	-
ZE		-	-	-	-	-	-	-	-
Total Indicated		**74,840,499**	**0.5**	**0.3**	**0.3**	**818,033,358**	**371,054**	**253,625**	**724,882**
SH	Inferred	20,644,947	0.4	0.3	0.3	197,035,801	89,374	56,373	203,877
WH		138,192,930	0.4	0.3	0.1	1,266,238,566	574,357	470,626	640,814
CH		1,578,876	0.3	0.3	0.2	12,040,711	5,462	4,187	7,868
ZA		128,709,056	0.4	0.3	0.2	1,214,469,516	550,875	387,414	1,013,832
GE		38,414	0.3	0.1	0.3	270,239	123	54	424
ZE		361,120	0.4	0.1	0.6	2,993,458	1,358	246	6,885
Total Inferred		**289,525,344**	**0.4**	**0.3**	**0.2**	**2,693,048,290**	**1,221,548**	**918,900**	**1,873,700**

Notes:

- CuEqRec accounts for Au value and CuEqRecKt must not be totalled to Au ounces.
- Figures may not sum due to rounding.
- Significant figures do not imply an added level of precision.
- Resource constrained by 0.1%CuEqRec reporting solid in-line with geological analysis by XAM.
- Resource constrained by open cut above nominated mRL level by deposit as follows SH>=720mRL, WH>=915mRL, CH>=1100mRL, ZA>=920mRL, ZE>=945mRL and GE>=845mRL, the remnant resource within the reporting solids forms the basis of the underground resources.
- CuEqRec equation (CuEqRec=Cu+Au*0.60049*0.86667) where Au at USD$1400/oz and Cu at USD$3.4/lb was employed according to the Clients' (XAM) direction.
- Au recovery is relative with Cu rec=90% and Au rec=78% (rel Au rec=78/90=86.6667% with number according to the Clients' (XAM) direction.

24.1 Model Validation – Kharmagtai sections

The following figures present an example of the resource and inform data by project area. For details of the full range of cross sections looking east across all project areas (grade only) please refer to Appendix 8.

Figures 126 through to Figure 131 displays a selection of the block model estimates for CuEqRec% looking East in a north south section projection displaying drill-hole traces. Copper Equivalent recovered % is displayed on the left-hand side (LHS) of the trace and topographic surface represented (Brown section line is the topographic surface and the magenta linework captures the grade and / or lithological / intrusion related domains put forth by XAM (as deemed appropriate on a project area by area basis) and the grey linework is the interpreted and measure fault trends.

Model validation was conducted by way of visual on screen review of the informating data against the block model grades on section and in plan. SGC consider that the block models honour the point data locally and maintain a low degree of smoothing of grades across the model extent for the OK modelling approaches given the detailed and evolved structural, lithological and grade shell domaining provided by XAM.

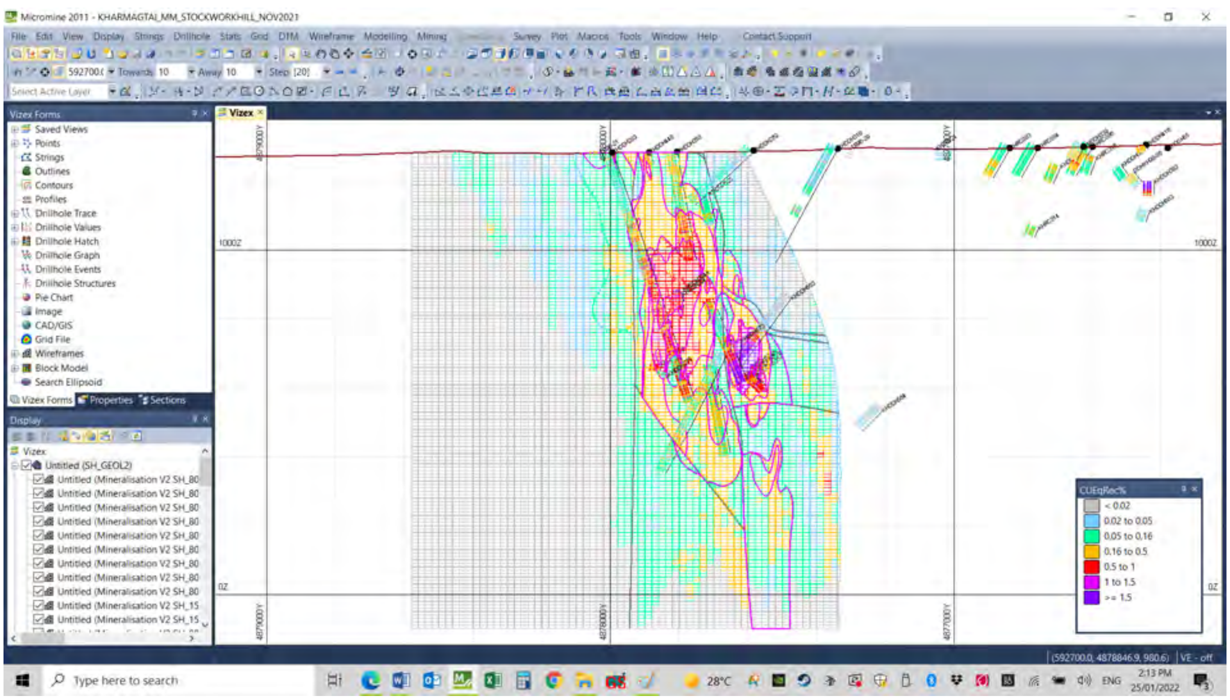


Figure 126: Kharmagtai Stockwork Hill - Resource model sectional view 592700mE displaying block model CuEqRec% looking East.

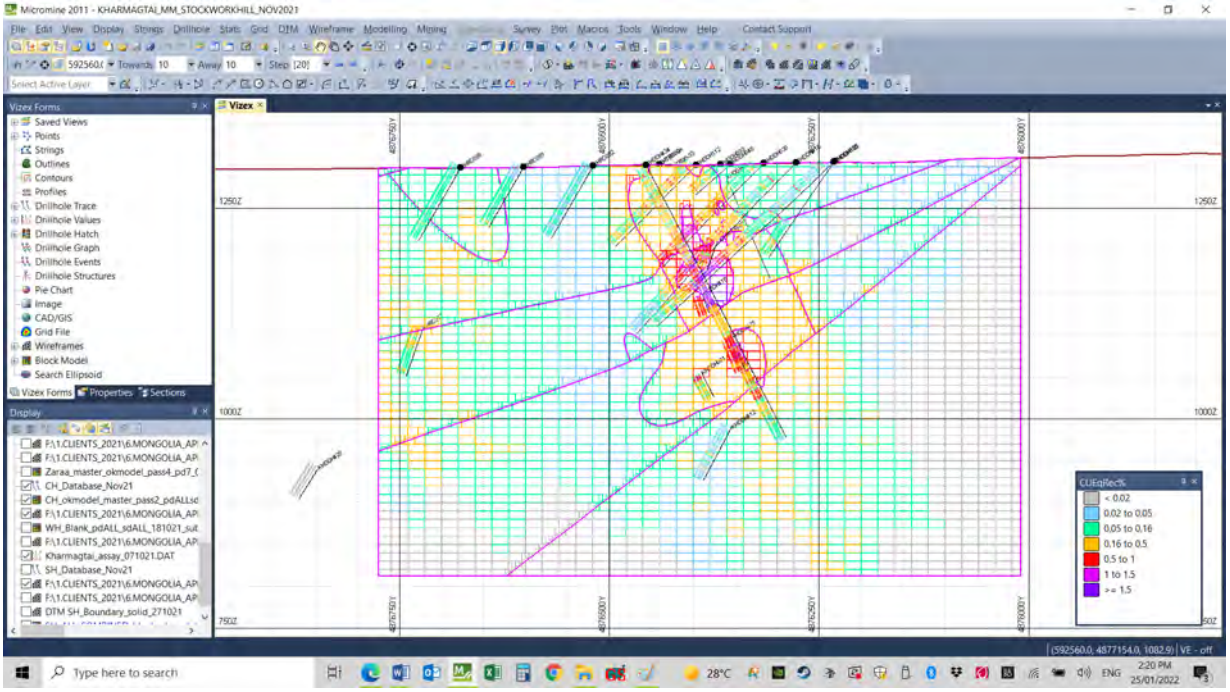


Figure 127: Kharmagtai Copper Hill - Resource model sectional view 592560mE displaying block model CuEqRec% looking East.

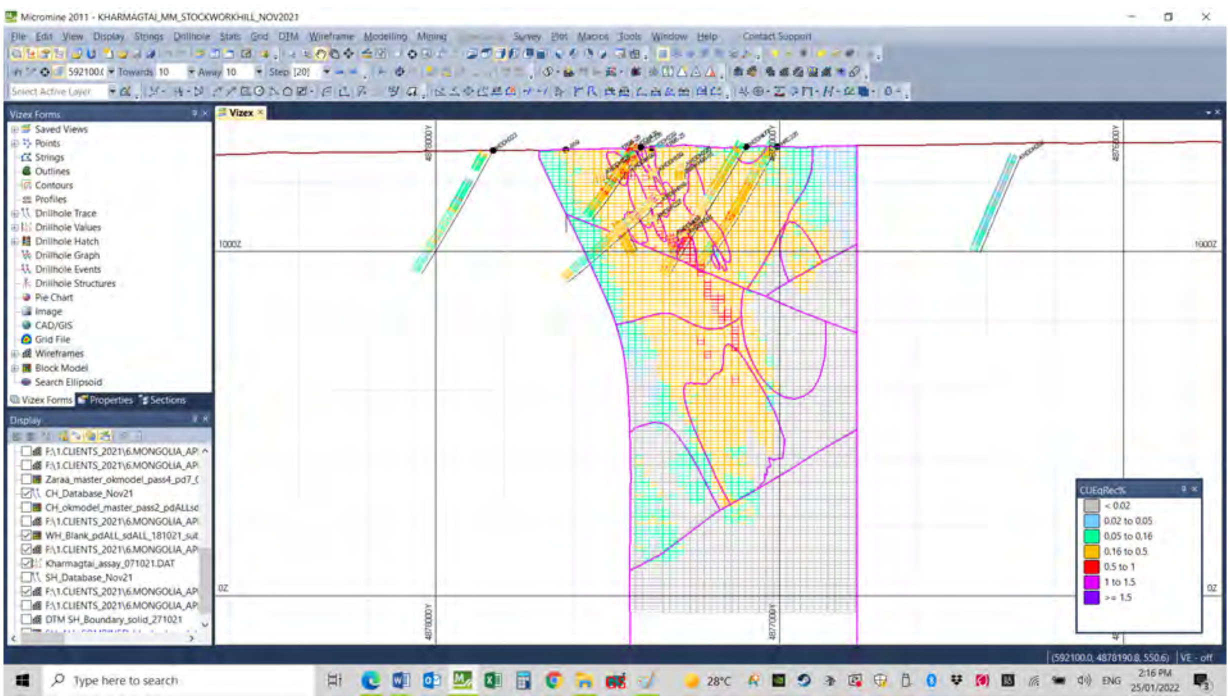


Figure 128: Kharmagtai White Hill - Resource model sectional view 592100mE displaying block model CuEqRec% looking East.

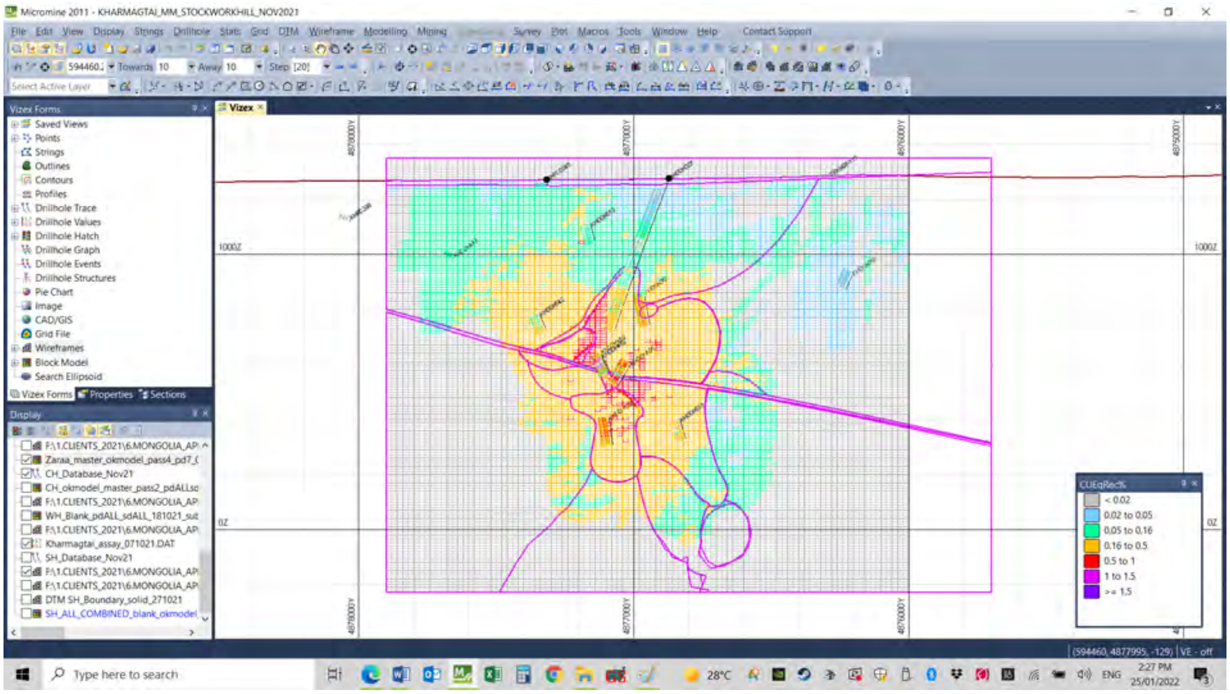


Figure 129: Kharmagtai Zaraa - Resource model sectional view 594460mE displaying block model CuEqRec% looking East.

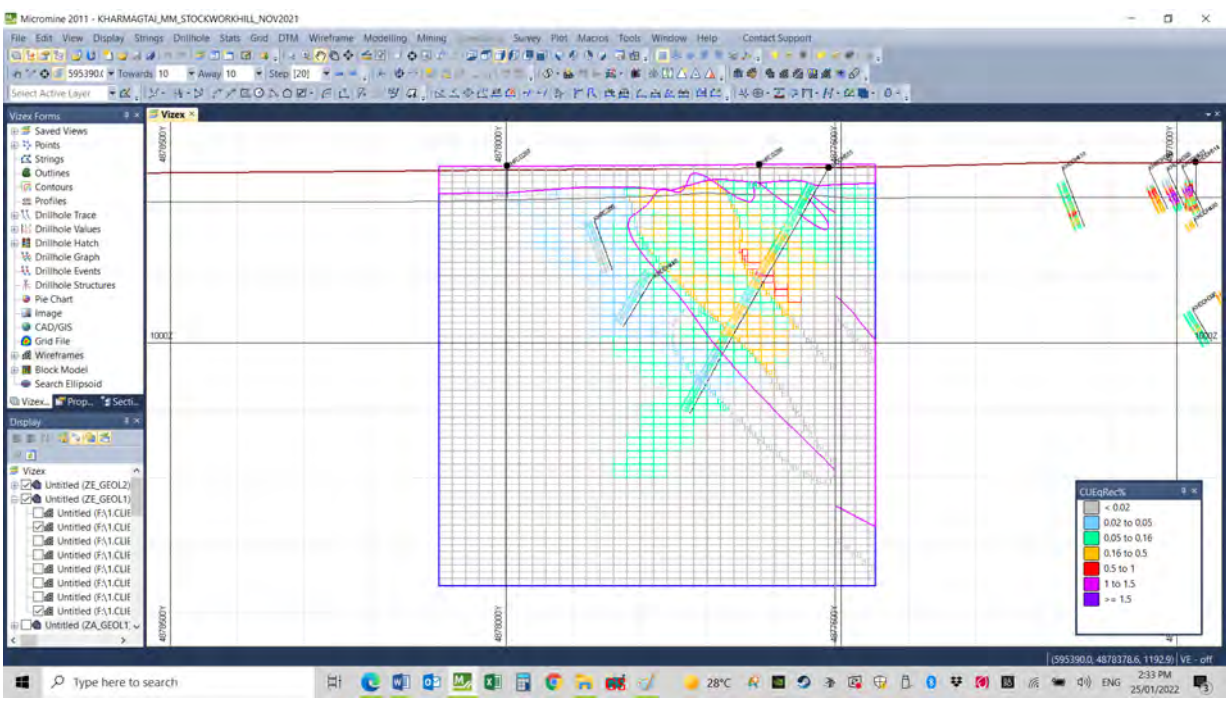


Figure 130: Kharmagtai Zephyr - Resource model sectional view 595390mE displaying block model CuEqRec% looking East.

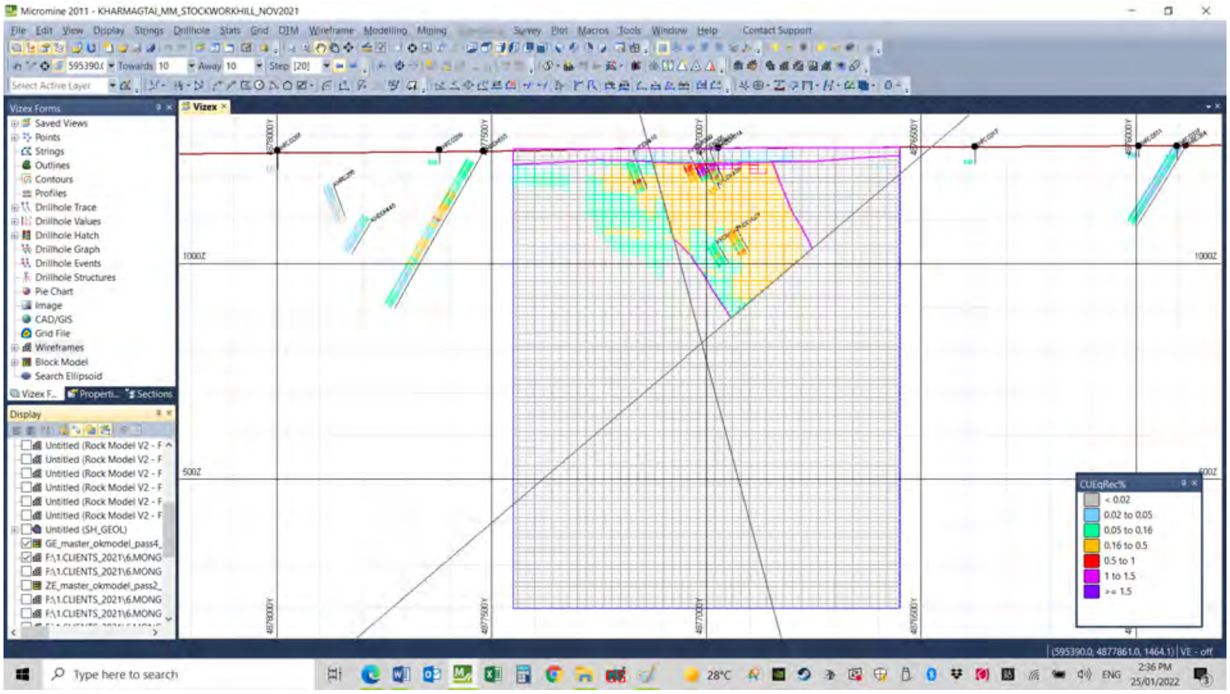


Figure 131: Kharmagtai Golden Eagle - Resource model sectional view 595390mE displaying block model CuEqRec% looking East.

24.2 Model Validation – Check Estimates

An internal desk top process review was completed by SGC and established that no fundamental flaws were present which would materially impact the resource estimates or the data upon which the estimates are predicated.

At the time of writing the report, to the best of SGC knowledge, no third-party estimates were completed or requested by the Client.

Modelling sensitivity analysis of the input data constraints and modelling criteria were conducted by SGC and found that within the modelling domains defined by the Client the estimates were not unduly sensitive to modelling attributes. This indicates to SGC that the geological models produced by the Client appropriately define individual populations which were subsequently also supported by the geometry models produced by SGC.

Furthermore, the population statistics were found to be heterogeneous across domains with no notable drift locally within domains and with minimal to no impact from population outliers (on informing data used in estimates - post data preparation).

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Appendix 1 : Kharmagtai Variograms by project area and Primary and secondary domain for Cu, Au, Mo and S respectively.

Zaraa – Cu pd1 v3 (downhole, along strike and down dip) – P1HW
Zaraa Structure ranges Cu pdom1 CL3 v1_4
0.059 3 0.000 // nugget nst cdf
0.080 sph 11.0 135.5 30.0
0.290 sph 23.0 136.0 118.0
0.570 sph 48.0 137.0 302.0
3 // number of rotations, z -20.0, y 17.0, x 1.0

Zaraa – Au pd1 v3 (Structure, Nugget, Ranges and Rotations) - P1HW
Zaraa Structure ranges Au pdom1 CL v1_4
0.036 3 0.000 // nugget nst cdf
0.560 sph 10.5 29.5 44.0
0.170 sph 77.0 32.0 155.0
0.230 sph 424.0 66.0 295.0
3 // number of rotations z -40.0, y 27.0, x 4.0

Zaraa – Mo pd1 v1 (Structure, Nugget, Ranges and Rotations) - P1HW
Zaraa Structure ranges Mo pdom1 CL v1_4
0.089 3 0.000 // nugget nst cdf
0.610 sph 72.0 77.0 11.0
0.280 sph 108.0 769.0 38.0
0.016 sph 114.0 815.0 603.0
3 // number of rotations z 24.0, y -28.0, x -24.0

Zaraa – S pd1 v1 (Structure, Nugget, Ranges and Rotations) - P1HW
Zaraa Structure ranges S pdom1 CL v1_4
0.009 3 0.000 // nugget nst cdf
0.550 sph 35.5 11.5 31.0
0.150 sph 57.0 74.0 279.0
0.290 sph 86.0 252.0 317.0
3 // number of rotations z 66.0, y 29.0, x 26.0

Zaraa – Cu pd2 v3 (Structure, Nugget, Ranges and Rotations) - P1FW
Zaraa Structure ranges Cu pdom2 CL3 v1_4
0.059 3 0.000 // nugget nst cdf
0.080 sph 11.0 135.5 30.0
0.290 sph 23.0 136.0 118.0
0.570 sph 48.0 137.0 302.0
3 // number of rotations, z -20.0, y 17.0, x 1.0

Zaraa – Au pd2 v3 (Structure, Nugget, Ranges and Rotations) - P1FW
Zaraa Structure ranges Au pdom2 CL v1_4
0.036 3 0.000 // nugget nst cdf
0.560 sph 10.5 29.5 44.0
0.170 sph 77.0 32.0 155.0
0.230 sph 424.0 66.0 295.0
3 // number of rotations z -40.0, y 27.0, x 4.0

Zaraa – Mo pd2 v1 (Structure, Nugget, Ranges and Rotations) - P1FW
Zaraa Structure ranges Mo pdom2 CL v1_4
0.089 3 0.000 // nugget nst cdf
0.610 sph 72.0 77.0 11.0
0.280 sph 108.0 769.0 38.0
0.016 sph 114.0 815.0 603.0
3 // number of rotations z 24.0, y -28.0, x -24.0

Zaraa – S pd2 v1 (Structure, Nugget, Ranges and Rotations) - P1FW
Zaraa Structure ranges S pdom2 CL v1_4
0.009 3 0.000 // nugget nst cdf
0.550 sph 35.5 11.5 31.0
0.150 sph 57.0 74.0 279.0
0.290 sph 86.0 252.0 317.0
3 // number of rotations z 66.0, y 29.0, x 26.0

Zaraa – Cu pd3 v1 (Structure, Nugget, Ranges and Rotations) – P2HW
Zaraa Structure ranges Cu pdom3 CL3 v1_4
0.010 3 0.000 // nugget nst cdf
0.089 sph 8.0 120.5 27.5
0.290 sph 15.0 137.0 226.0
0.610 sph 61.0 138.0 291.0
3 // number of rotations z -21.0, y 19.0, x -1.0

Zaraa – Au pd3 v1 (Structure, Nugget, Ranges and Rotations) – P2HW
Zaraa Structure ranges Au pdom3 CL v1_4
0.036 3 0.000 // nugget nst cdf
0.560 sph 10.5 29.5 44.0
0.170 sph 77.0 32.0 155.0
0.230 sph 424.0 66.0 295.0
3 // number of rotations z -40.0, y 27.0, x 4.0

Zaraa – Mo pd3 v1 (Structure, Nugget, Ranges and Rotations) – P2HW
Zaraa Structure ranges Mo pdom3 CL v1_4
0.089 3 0.000 // nugget nst cdf
0.610 sph 72.0 77.0 11.0
0.280 sph 108.0 769.0 38.0
0.016 sph 114.0 815.0 603.0
3 // number of rotations z 24.0, y -28.0, x -24.0

Zaraa – S pd3 v1 (Structure, Nugget, Ranges and Rotations) – P2HW
Zaraa Structure ranges S pdom3 CL v1_4
0.009 3 0.000 // nugget nst cdf
0.550 sph 35.5 11.5 31.0
0.150 sph 57.0 74.0 279.0
0.290 sph 86.0 252.0 317.0
3 // number of rotations z 66.0, y 29.0, x 26.0

Zaraa – Cu pd4 v1 (Structure, Nugget, Ranges and Rotations) – P2FW
Zaraa Structure ranges Cu pdom4 CL3 v1_4
0.010 3 0.000 // nugget nst cdf
0.089 sph 8.0 120.5 27.5
0.290 sph 15.0 137.0 226.0
0.610 sph 61.0 138.0 291.0

3 // number of rotations z -21.0, y 19.0, x -1.0

Zaraa – Au pd4 v1 (Structure, Nugget, Ranges and Rotations) – P2FW

Zaraa Structure ranges Au pdom4 CL v1_4
0.036 3 0.000 // nugget nst cdf
0.560 sph 10.5 29.5 44.0
0.170 sph 77.0 32.0 155.0
0.230 sph 424.0 66.0 295.0
3 // number of rotations z -40.0, y 27.0, x 4.0

Zaraa – Mo pd4 v1 (Structure, Nugget, Ranges and Rotations) – P2FW

Zaraa Structure ranges Mo pdom4 CL v1_4
0.089 3 0.000 // nugget nst cdf
0.610 sph 72.0 77.0 11.0
0.280 sph 108.0 769.0 38.0
0.016 sph 114.0 815.0 603.0
3 // number of rotations z 24.0, y -28.0, x -24.0

Zaraa – S pd4 v1 (Structure, Nugget, Ranges and Rotations) – P2FW

Zaraa Structure ranges S pdom4 CL v1_4
0.009 3 0.000 // nugget nst cdf
0.550 sph 35.5 11.5 31.0
0.150 sph 57.0 74.0 279.0
0.290 sph 86.0 252.0 317.0
3 // number of rotations z 66.0, y 29.0, x 26.0

Zaraa – Cu pd5 v1 (Structure, Nugget, Ranges and Rotations) - RDF

Zaraa Structure ranges Cu pdom5 CL v1_5
0.060 3 0.000 // nugget nst cdf
0.056 sph 34.0 301.0 78.0
0.820 sph 43.0 440.0 246.0
0.064 sph 2282.0 3682.0 2535.0
3 // number of rotations z -56.0, y 49.0, x 27.0

Zaraa – Au pd5 v1 (Structure, Nugget, Ranges and Rotations) - RDF

Zaraa Structure ranges Au pdom5 CL v1_5
0.060 3 0.000 // nugget nst cdf
0.056 sph 34.0 301.0 78.0
0.820 sph 43.0 440.0 246.0
0.064 sph 2282.0 3682.0 2535.0
3 // number of rotations z -56.0, y 49.0, x 27.0

Zaraa – Mo pd5 v1 (Structure, Nugget, Ranges and Rotations) - RDF

Zaraa Structure ranges Mo pdom5 CL v1_5
0.100 3 0.000 // nugget nst cdf
0.016 exp 45.5 8.0 29.5
0.460 sph 62.0 11.0 123.0
0.420 sph 149.0 27.0 133.0
3 // number of rotations z 81.0, y 17.0, x 69.0

Zaraa – S pd5 v1 (Structure, Nugget, Ranges and Rotations) - RDF

Zaraa Structure ranges S pdom5 CL v1_5
0.020 3 0.000 // nugget nst cdf
0.026 exp 28.0 12.5 22.5

0.440 sph 37.0 13.0 145.0
0.510 sph 42.0 72.0 152.0
3 // number of rotations z 61.0, y 30.0, x 41.0

Zaraa – Cu pd6 v1 (Structure, Nugget, Ranges and Rotations) - COL
Zaraa Structure ranges Cu pdom6 CL v1_6
0.010 3 0.000 // nugget nst cdf
0.350 exp 46.5 16.0 38.0
0.210 sph 47.0 82.0 67.0
0.430 sph 63.0 247.0 131.0
3 // number of rotations z 54.0, y 8.0, x 79.0

Zaraa – Au pd6 v1 (Structure, Nugget, Ranges and Rotations) - COL
Zaraa Structure ranges Au pdom6 CL v1_6
0.190 3 0.000 // nugget nst cdf
0.031 exp 7.5 8.5 7.0
0.600 sph 28.0 121.0 8.0
0.180 sph 86.0 172.0 33.0
3 // number of rotations z -46.0, y 0.0, x 0.0

Zaraa – Mo pd6 v1 (Structure, Nugget, Ranges and Rotations) - COL
Zaraa Structure ranges Mo pdom6 CL v1_6
0.010 3 0.000 // nugget nst cdf
0.550 exp 28.5 13.0 37.0
0.210 sph 30.0 43.0 407.0
0.230 sph 2905.0 1089.0 702.0
3 // number of rotations z 70.0, y -14.0, x 77.0

Zaraa – S pd6 v1 (Structure, Nugget, Ranges and Rotations) - COL
Zaraa Structure ranges S pdom6 CL v1_6
0.010 3 0.000 // nugget nst cdf
0.097 exp 205.0 18.0 15.0
0.240 sph 246.0 19.0 243.0
0.650 sph 3506.0 411.0 1414.0
3 // number of rotations z 81.0, y 10.0, x 78.0

Zaraa – Cu pd7 v1 (Structure, Nugget, Ranges and Rotations) - BG
Zaraa Structure ranges Cu pdom7 CL v1_7
0.011 3 0.000 // nugget nst cdf
0.270 sph 25.0 21.0 9.0
0.200 sph 51.0 78.0 48.0
0.520 sph 71.0 168.0 549.0
3 // number of rotations z -79.0, y 3.0, x -3.0

Zaraa – Au pd7 v1 (Structure, Nugget, Ranges and Rotations) - BG
Zaraa Structure ranges Au pdom7 CL v1_7
0.180 3 0.000 // nugget nst cdf
0.650 sph 9.5 40.0 8.0
0.079 sph 11.0 166.0 166.0
0.091 sph 30.0 231.0 168.0
3 // number of rotations z -77.0, y 4.0, x 2.0

Zaraa – Mo pd7 v1 (Structure, Nugget, Ranges and Rotations) - BG
Zaraa Structure ranges Mo pdom7 CL v1_7

0.012 3 0.000 // nugget nst cdf
0.510 exp 27.0 13.0 11.0
0.240 sph 47.0 16.0 229.0
0.240 sph 226.0 36.0 473.0
3 // number of rotations z -3.0, y 10.0, x 3.0

Zaraa – S pd7 v1 (Structure, Nugget, Ranges and Rotations) - BG
Zaraa Structure ranges S pdom7 CL v1_7
0.007 3 0.000 // nugget nst cdf
0.008 exp 8.5 17.5 18.0
0.099 sph 9.0 29.0 98.0
0.890 sph 77.0 1157.0 101.0
3 // number of rotations z -17.0, y 54.0, x 1.0

Zaraa – SG pdall v1 sd1 (Structure, Nugget, Ranges and Rotations)
Zaraa Structure ranges SG pdom1 CL1 v1_7
0.059 3 0.000 // nugget nst cdf
0.080 sph 11.0 135.5 30.0
0.290 sph 23.0 136.0 118.0
0.570 sph 48.0 137.0 302.0
3 // number of rotations, z -20.0, y 0.0, x 1.0

Zaraa – SG pdall v1 sd3 (Structure, Nugget, Ranges and Rotations)
Zaraa Structure ranges SG pdom3 CL1 v1_7
0.059 3 0.000 // nugget nst cdf
0.080 sph 11.0 135.5 30.0
0.290 sph 23.0 136.0 118.0
0.570 sph 48.0 137.0 302.0
3 // number of rotations, z -20.0, y 17.0, x 1.0

Zephyr – Cu pd2 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) - P2
Zephyr Structure ranges Cu pdom2 sd1_3
0.006 3 0.000 // nugget nst cdf
0.250 exp 44.0 20.5 40.5
0.230 sph 56.0 78.0 58.0
0.510 sph 424.0 169.0 695.0
3 // number of rotations z -9.0, y -12.0, x -47.0

Zephyr – Au pd2 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P2
Zephyr Structure ranges Au pdom2 sd1_3
0.010 3 0.000 // nugget nst cdf
0.350 sph 12.5 138.0 61.0
0.270 sph 33.0 384.0 99.0
0.370 sph 168.0 411.0 110.0
3 // number of rotations z 79.0, y 72.0, x 41.0

Zephyr – Mo pd2 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P2
Zephyr Structure ranges Mo pdom2 sd1_3
0.140 3 0.000 // nugget nst cdf
0.280 exp 20.0 7.5 33.5
0.280 sph 25.0 43.0 174.0
0.300 sph 60.0 149.0 206.0
3 // number of rotations z -6.0, y -23.0, x -43.0

Zephyr – S pd2 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P2
Zephyr Structure ranges S pdom2 sd1_3
0.020 3 0.000 // nugget nst cdf
0.150 exp 20.0 38.5 38.0
0.006 sph 50.0 191.0 230.0
0.820 sph 54.0 354.0 256.0
3 // number of rotations z -45.0, y -78.0, x 79.0

Zephyr – Cu pd3 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P3
Zephyr Structure ranges Cu pdom3 sd1_3
0.020 3 0.000 // nugget nst cdf
0.180 exp 29.5 308.5 56.5
0.240 sph 31.0 309.0 461.0
0.560 sph 119.0 310.0 1789.0
3 // number of rotations z -81.0, y -58.0, x 81.0

Zephyr – Au pd3 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P3
Zephyr Structure ranges Au pdom3 sd1_3
0.100 3 0.000 // nugget nst cdf
0.210 exp 11.0 7.5 9.5
0.620 sph 18.0 9.0 55.0
0.070 sph 73.0 96.0 82.0
3 // number of rotations z 37.0, y -56.0, x -80.0

Zephyr – Mo pd3 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P3
Zephyr Structure ranges Mo pdom3 sd1_3
0.009 3 0.000 // nugget nst cdf
0.010 sph 62.5 29.0 15.5
0.530 sph 233.0 42.0 19.0
0.450 sph 441.0 77.0 45.0
3 // number of rotations z 0.0, y 1.0, x 30.0

Zephyr – S pd3 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) – P3
Zephyr Structure ranges S pdom3 sd1_3
0.010 3 0.000 // nugget nst cdf
0.006 sph 80.0 52.0 9.5
0.440 sph 151.0 131.0 10.0
0.540 sph 213.0 177.0 14.0
3 // number of rotations z 2.0, y 0.0, x 34.0

Zephyr – Cu pd4 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) - CRP
Zephyr Structure ranges Cu pdom4 sd1_3
0.048 3 0.000 // nugget nst cdf
0.510 sph 217.5 14.5 94.0
0.099 sph 218.0 342.0 96.0
0.340 sph 1344.0 602.0 141.0
3 // number of rotations z 2.0, y -1.0, x -48.0

Zephyr – Au pd4 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) - CRP
Zephyr Structure ranges Au pdom4 sd1_3
0.120 3 0.000 // nugget nst cdf
0.020 exp 12.0 6.5 9.0

0.230 sph 33.0 7.0 93.0
0.630 sph 122.0 14.0 212.0
3 // number of rotations z 4.0, y 0.0, x -48.0

Zephyr – Mo pd4 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) - CRP

Zephyr Structure ranges Mo pdom4 sd1_3
0.008 3 0.000 // nugget nst cdf
0.280 sph 19.0 77.0 7.0
0.250 sph 117.0 112.0 114.0
0.460 sph 120.0 1802.0 120.0
3 // number of rotations z 81.0, y -81.0, x 11.0

Zephyr – S pd4 sd1_3 v2 (Structure, Nugget, Ranges and Rotations) - CRP

Zephyr Structure ranges S pdom4 sd1_3
0.009 3 0.000 // nugget nst cdf
0.200 exp 10.5 51.5 68.5
0.650 sph 49.0 233.0 112.0
0.140 sph 61.0 241.0 117.0
3 // number of rotations z -8.0, y -12.0, x 27.0

Zephyr – Cu pd5 sd1 v2 (Structure, Nugget, Ranges and Rotations) - COL

Zephyr Structure ranges Cu pdom5 sd1_3
0.180 3 0.000 // nugget nst cdf
0.025 exp 23.5 56.5 20.5
0.023 exp 24.0 209.0 22.0
0.770 sph 25.0 326.0 27.0
3 // number of rotations z -88.0, y -3.0, x 0.0

Zephyr – Au pd5 sd1 v2 (Structure, Nugget, Ranges and Rotations) - COL

Zephyr Structure ranges Au pdom5 sd1_3
0.230 3 0.000 // nugget nst cdf
0.260 sph 52.5 30.0 5.0
0.240 sph 64.0 266.0 21.0
0.270 sph 68.0 393.0 26.0
3 // number of rotations z 0.0, y 9.0, x 0.0

Zephyr – Mo pd5 sd1 v2 (Structure, Nugget, Ranges and Rotations) - COL

Zephyr Structure ranges Mo pdom5 sd1_3
0.070 3 0.000 // nugget nst cdf
0.250 sph 42.5 31.0 8.0
0.100 sph 59.0 140.0 15.0
0.580 sph 192.0 179.0 16.0
3 // number of rotations z 79.0, y -3.0, x -5.0

Zephyr – S pd5 sd1 v2 (Structure, Nugget, Ranges and Rotations) - COL

Zephyr Structure ranges S pdom5 sd1_3
0.070 3 0.000 // nugget nst cdf
0.012 sph 33.5 43.0 11.5
0.250 sph 47.0 161.0 12.0
0.670 sph 110.0 186.0 13.0
3 // number of rotations z 59.0, y -10.0, x 1.0

Zephyr – COL pd2_5 v1 sd1_3 (Structure, Nugget, Ranges and Rotations) – COMBINED DOMAINS

Zephyr Structure ranges COL pdom2_5 sd1_3
0.010 3 0.000 // nugget nst cdf
0.006 exp 95.0 10.0 41.0
0.460 sph 180.0 26.0 374.0
0.520 sph 2866.0 191.0 468.0
3 // number of rotations z 2.0, y 0.0, x -88.0

Zephyr – SG pd2_4 v1 sd1_3 (Structure, Nugget, Ranges and Rotations)

Zephyr Structure ranges SG pdom2_4 sd1_3
0.020 3 0.000 // nugget nst cdf
0.180 exp 29.5 308.5 56.5
0.240 sph 31.0 309.0 461.0
0.560 sph 119.0 310.0 1789.0
3 // number of rotations z -81.0, y -58.0, x 81.0

Golden Eagle – Cu pd1 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 SD3

Golden Eagle Structure ranges Cu pdom1 sd3
0.030 3 0.000 // nugget nst cdf
0.310 exp 25.5 25.5 35.5
0.220 sph 29.0 126.0 115.0
0.440 sph 381.0 2239.0 150.0
3 // number of rotations z 33.0, y 19.0, x 68.0

Golden Eagle – Au pd1 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 SD3

Golden Eagle Structure ranges Au pdom1 sd3
0.017 3 0.000 // nugget nst cdf
0.440 exp 64.0 44.0 6.5
0.072 sph 65.0 102.0 74.0
0.470 sph 91.0 981.0 97.0
3 // number of rotations z 46.0, y 27.0, x 70.0

Golden Eagle – Mo pd1 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 SD3

Golden Eagle Structure ranges Mo pdom1 sd3
0.009 3 0.000 // nugget nst cdf
0.210 exp 8.0 23.5 42.5
0.700 sph 28.0 93.0 236.0
0.081 sph 29.0 243.0 251.0
3 // number of rotations z 16.0, y 1.0, x -37.0

Golden Eagle – S pd1 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 SD3

Golden Eagle Structure ranges S pdom1 sd3
0.009 3 0.000 // nugget nst cdf
0.290 exp 18.5 23.5 56.5
0.036 sph 32.0 24.0 223.0
0.670 sph 49.0 65.0 227.0
3 // number of rotations z 48.0, y 53.0, x -52.0

Golden Eagle – Cu pd2 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP SD3

Golden Eagle Structure ranges Cu pdom2 sd3
0.030 3 0.000 // nugget nst cdf
0.310 exp 25.5 25.5 35.5
0.220 sph 29.0 126.0 115.0
0.440 sph 381.0 2239.0 150.0
3 // number of rotations z 33.0, y 19.0, x 68.0

Golden Eagle – Au pd2 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP SD3

Golden Eagle Structure ranges Au pdom2 sd3
0.017 3 0.000 // nugget nst cdf
0.440 exp 64.0 44.0 6.5
0.072 sph 65.0 102.0 74.0
0.470 sph 91.0 981.0 97.0
3 // number of rotations z 46.0, y 27.0, x 70.0

Golden Eagle – Mo pd2 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP SD3

Golden Eagle Structure ranges Mo pdom2 sd3
0.009 3 0.000 // nugget nst cdf
0.210 exp 8.0 23.5 42.5
0.700 sph 28.0 93.0 236.0
0.081 sph 29.0 243.0 251.0
3 // number of rotations z 16.0, y 1.0, x -37.0

Golden Eagle – S pd2 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP SD3

Golden Eagle Structure ranges S pdom2 sd3
0.009 3 0.000 // nugget nst cdf
0.290 exp 18.5 23.5 56.5
0.036 sph 32.0 24.0 223.0
0.670 sph 49.0 65.0 227.0
3 // number of rotations z 48.0, y 53.0, x -52.0

Golden Eagle – Cu pd3 sd1 v4 (Structure, Nugget, Ranges and Rotations) - COL

Golden Eagle Structure ranges Cu pdom3 sd1
0.007 3 0.000 // nugget nst cdf
0.033 exp 9.0 43.5 10.0
0.670 sph 18.0 155.0 16.0
0.290 sph 78.0 158.0 21.0
3 // number of rotations z 66.0, y 28.0, x 3.0

Golden Eagle – Au pd3 sd1 v4 (Structure, Nugget, Ranges and Rotations) - COL

Golden Eagle Structure ranges Au pdom3 sd1
0.100 3 0.000 // nugget nst cdf
0.058 exp 29.0 20.5 7.0
0.800 sph 30.0 32.0 14.0
0.042 sph 76.0 42.0 15.0
3 // number of rotations z 2.0, y 20.0, x -19.0

Golden Eagle – Mo pd3 sd1 v4 (Structure, Nugget, Ranges and Rotations) - COL

Golden Eagle Structure ranges Mo pdom3 sd1
0.100 3 0.000 // nugget nst cdf
0.680 exp 35.0 94.0 7.0
0.016 sph 50.0 139.0 19.0
0.200 sph 197.0 142.0 51.0
3 // number of rotations z 80.0, y 0.0, x 0.0

Golden Eagle – S pd3 sd1 v4 (Structure, Nugget, Ranges and Rotations) - COL

Golden Eagle Structure ranges S pdom3 sd1
0.100 3 0.000 // nugget nst cdf
0.850 exp 48.0 98.5 7.0
0.013 sph 54.0 152.0 12.0
0.037 sph 60.0 171.0 15.0
3 // number of rotations z 75.0, y 0.0, x 1.0

Golden Eagle – SG pd1_3 sd1_3 v2 (Structure, Nugget, Ranges and Rotations)

Golden Eagle Structure ranges SG pdomall sd1
0.009 3 0.000 // nugget nst cdf
0.028 exp 10.0 25.0 14.5
0.350 sph 13.0 119.0 194.0
0.610 sph 162.0 280.0 401.0
3 // number of rotations z 81.0, y 28.0, x -58.0

Copper Hill – Cu pd221_231 sd1 blk2_3 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK2-3

Copper Hill Structure ranges Cu pdom221_231 sd1_3
0.190 3 0.000 // nugget nst cdf
0.200 exp 9.5 21.5 31.0
0.320 sph 37.0 26.0 60.0
0.290 sph 573.0 38.0 86.0
3 // number of rotations z 6.0, y -1.0, x -35.0

Copper Hill – Au pd221_231 sd1_3 blk2_3 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK2-3

Copper Hill Structure ranges Au pdom221_231 sd1_3
0.096 3 0.000 // nugget nst cdf
0.051 exp 24.0 8.0 17.5
0.320 sph 38.0 16.0 25.0
0.530 sph 175.0 106.0 72.0
3 // number of rotations z 8.0, y 2.0, x -22.0

Copper Hill – Mo pd221_231 sd1_3 blk2_3 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK2-3

Copper Hill Structure ranges Mo pdom221_231 sd1_3
0.200 3 0.000 // nugget nst cdf
0.450 exp 7.0 18.5 7.0
0.009 sph 65.0 663.0 481.0
0.340 sph 84.0 1265.0 1196.0
3 // number of rotations z 7.0, y 2.0, x 46.0

Copper Hill – S pd221_231 sd1_3 blk2_3 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK2-3

Copper Hill Structure ranges S pdom221_231 sd1_3
0.050 3 0.000 // nugget nst cdf
0.520 sph 70.0 55.0 7.0
0.330 sph 71.0 1053.0 1020.0
0.100 sph 244.0 1097.0 1047.0
3 // number of rotations z 8.0, y -8.0, x 60.0

Copper Hill – Cu pd241_251 sd3 blk4_5 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK4-5

0.110 3 0.000 // nugget nst cdf
0.340 sph 37.5 11.5 8.5
0.290 sph 69.0 91.0 53.0
0.260 sph 73.0 151.0 136.0
3 // number of rotations z -55.0, y 60.0, x 37.0

Copper Hill – Au pd241_251 sd3 blk4_5 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK4-5

0.110 3 0.000 // nugget nst cdf
0.290 exp 10.5 20.5 12.0
0.340 sph 60.0 301.0 56.0
0.260 sph 524.0 304.0 60.0
3 // number of rotations z 5.0, y -6.0, x 60.0

Copper Hill – Mo pd241_251 sd3 blk4_5 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK4-5

0.240 3 0.000 // nugget nst cdf
0.370 exp 11.5 19.5 7.0
0.190 sph 13.0 187.0 197.0
0.200 sph 48.0 457.0 666.0
3 // number of rotations z 16.0, y -14.0, x 44.0

Copper Hill – S pd241_251 sd3 blk4_5 HG v2 (Structure, Nugget, Ranges and Rotations) – P2 HG BLK4-5

0.180 3 0.000 // nugget nst cdf
0.330 exp 7.5 17.5 15.0
0.290 sph 8.0 122.0 122.0
0.200 sph 33.0 477.0 160.0
3 // number of rotations z -85.0, y -30.0, x -27.0

Copper Hill – Cu pd410_450 sd1 blk1_5 HG v2 (Structure, Nugget, Ranges and Rotations) – CRS BLK1

0.028 3 0.000 // nugget nst cdf
0.270 exp 57.5 45.5 20.5
0.160 sph 60.0 106.0 317.0
0.540 sph 392.0 114.0 613.0
3 // number of rotations z 72.0, y 6.0, x 61.0

Copper Hill – Au pd410_450 sd1 blk1_5 HG v2 (Structure, Nugget, Ranges and Rotations) – CRS BLK1

0.036 3 0.000 // nugget nst cdf
0.340 sph 23.5 29.0 23.5

0.008 sph 132.0 69.0 378.0
0.620 sph 240.0 89.0 381.0
3 // number of rotations z 70.0, y 22.0, x 47.0

Copper Hill – Mo pd410_450 sd1 blk1_5 HG v2 (Structure, Nugget, Ranges and Rotations) – CRS BLK1
0.120 3 0.000 // nugget nst cdf
0.410 sph 11.0 21.5 13.5
0.023 sph 19.0 286.0 93.0
0.450 sph 1007.0 448.0 94.0
3 // number of rotations z 9.0, y 7.0, x -81.0

Copper Hill – S pd410_450 sd1 blk1_5 HG v2 (Structure, Nugget, Ranges and Rotations) – CRS BLK1
0.037 3 0.000 // nugget nst cdf
0.510 sph 54.5 87.5 22.5
0.072 sph 55.0 88.0 425.0
0.380 sph 1721.0 117.0 526.0
3 // number of rotations, z 9.0, y -8.0, x 41.0

Copper Hill – Cu pd222_242 sd1_3 blk1_5 LG v2 (Structure, Nugget, Ranges and Rotations) – P2 LG BLK2-4
0.028 3 0.000 // nugget nst cdf
0.270 exp 57.5 45.5 20.5
0.160 sph 60.0 106.0 317.0
0.540 sph 392.0 114.0 613.0
3 // number of rotations z 72.0, y 6.0, x 61.0

Copper Hill – Au pd222_242 sd1_3 blk1_5 LG v2 (Structure, Nugget, Ranges and Rotations) – P2 LG BLK2-4
0.036 3 0.000 // nugget nst cdf
0.340 sph 23.5 29.0 23.5
0.008 sph 132.0 69.0 378.0
0.620 sph 240.0 89.0 381.0
3 // number of rotations z 70.0, y 22.0, x 47.0

Copper Hill – Mo pd222_242 sd1_3 blk1_5 LG v2 (Structure, Nugget, Ranges and Rotations) – P2 LG BLK2-4
0.120 3 0.000 // nugget nst cdf
0.410 sph 11.0 21.5 13.5
0.023 sph 19.0 286.0 93.0
0.450 sph 1007.0 448.0 94.0
3 // number of rotations z 9.0, y 7.0, x -81.0

Copper Hill – S pd222_242 sd1_3 blk1_5 LG v2 (Structure, Nugget, Ranges and Rotations) – P2 LG BLK2-4
0.037 3 0.000 // nugget nst cdf
0.510 sph 54.5 87.5 22.5
0.072 sph 55.0 88.0 425.0
0.380 sph 1721.0 117.0 526.0
3 // number of rotations, z 9.0, y -8.0, x 41.0

Copper Hill – SG pdall sdall blk1_5 v1 (Structure, Nugget, Ranges and Rotations)

0.026 3 0.000 // nugget nst cdf
0.270 exp 57.5 45.5 20.5
0.160 sph 60.0 106.0 317.0
0.540 sph 392.0 114.0 613.0
3 // number of rotations z 72.0, y 6.0, x 62.0

White Hill – Cu pd21 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK1

0.030 3 0.000 // nugget nst cdf
0.370 sph 17.5 73.0 7.0
0.130 sph 127.0 119.0 58.0
0.470 sph 193.0 513.0 88.0
3 // number of rotations z 30.0, y 14.0, x 76.0

White Hill – Au pd21 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK1

0.170 3 0.000 // nugget nst cdf
0.500 exp 30.5 75.0 10.0
0.140 sph 57.0 100.0 508.0
0.190 sph 195.0 823.0 574.0
3 // number of rotations z 3.0, y -4.0, x 48.0

White Hill – Mo pd21 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK1

0.350 3 0.000 // nugget nst cdf
0.280 exp 7.0 27.0 29.5
0.011 sph 15.0 75.0 84.0
0.360 sph 636.0 299.0 98.0
3 // number of rotations z 77.0, y 23.0, x -23.0

White Hill – S pd21 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK1

0.100 3 0.000 // nugget nst cdf
0.500 exp 104.0 38.5 33.5
0.011 sph 199.0 565.0 97.0
0.390 sph 1503.0 657.0 100.0
3 // number of rotations z 0.0, y 0.0, x 47.0

White Hill – Cu pd31 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK1

0.048 3 0.000 // nugget nst cdf
0.170 exp 28.5 49.5 9.5
0.065 sph 58.0 493.0 694.0
0.720 sph 65.0 496.0 709.0
3 // number of rotations z -89.0, y -27.0, x 28.0

White Hill – Au pd31 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK1

0.056 3 0.000 // nugget nst cdf
0.360 exp 24.0 6.5 9.0
0.350 sph 125.0 331.0 525.0
0.230 sph 180.0 661.0 529.0

3 // number of rotations z 89.0, y 23.0, x 21.0

White Hill – Mo pd31 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK1

0.036 3 0.000 // nugget nst cdf
0.270 exp 28.5 9.0 26.0
0.370 sph 55.0 218.0 309.0
0.320 sph 319.0 554.0 310.0
3 // number of rotations z -89.0, y -26.0, x -26.0

White Hill – S pd31 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK1

0.006 3 0.000 // nugget nst cdf
0.510 exp 54.0 15.0 33.5
0.014 sph 77.0 219.0 67.0
0.470 sph 604.0 232.0 112.0
3 // number of rotations z -89.0, y 68.0, x 0.0

White Hill – Cu pd51 sd3 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK1

0.009 3 0.000 // nugget nst cdf
0.200 exp 21.5 15.0 17.5
0.690 sph 23.0 77.0 241.0
0.100 sph 5256.0 352.0 2275.0
3 // number of rotations z 90.0, y 23.0, x 0.0

White Hill – Au pd51 sd3 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK1

0.007 3 0.000 // nugget nst cdf
0.470 exp 44.0 30.0 19.0
0.140 sph 49.0 36.0 155.0
0.380 sph 2038.0 139.0 207.0
3 // number of rotations z 0.0, y 0.0, x 12.0

White Hill – Mo pd51 sd3 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK1

0.130 3 0.000 // nugget nst cdf
0.480 exp 68.5 72.0 7.0
0.008 sph 87.0 160.0 711.0
0.380 sph 1735.0 188.0 721.0
3 // number of rotations z -28.0, y 26.0, x 36.0

White Hill – S pd51 sd3 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK1

0.050 3 0.000 // nugget nst cdf
0.077 exp 7.0 37.0 7.0
0.007 sph 43.0 211.0 16.0
0.870 sph 77.0 249.0 17.0
3 // number of rotations z 90.0, y -67.0, x 0.0

White Hill – Cu pd61_63 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3

0.008 3 0.000 // nugget nst cdf
0.120 exp 10.5 75.0 49.0

0.450 sph 154.0 408.0 961.0
0.420 sph 161.0 409.0 1203.0
3 // number of rotations z 81.0, y 42.0, x -80.0

White Hill – Au pd61_63 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3

0.012 3 0.000 // nugget nst cdf
0.200 exp 21.5 11.5 19.0
0.300 sph 33.0 12.0 173.0
0.490 sph 392.0 312.0 430.0
3 // number of rotations z -1.0, y 24.0, x -53.0

White Hill – Mo pd61_63 sd3 v4 (Structure, Nugget, Ranges and Rotations) - CRS BLK3

0.014 3 0.000 // nugget nst cdf
0.210 exp 17.0 7.0 29.0
0.300 sph 56.0 31.0 455.0
0.480 sph 736.0 454.0 565.0
3 // number of rotations z -55.0, y 81.0, x -53.0

White Hill – S pd61_63 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3

0.007 3 0.000 // nugget nst cdf
0.210 exp 20.0 15.0 39.0
0.310 sph 45.0 34.0 505.0
0.470 sph 649.0 231.0 830.0
3 // number of rotations z -81.0, y 81.0, x -81.0

White Hill – Cu pd71_75 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP BLK1

0.030 3 0.000 // nugget nst cdf
0.200 exp 11.0 33.0 9.5
0.440 sph 117.0 681.0 437.0
0.330 sph 2144.0 1997.0 1899.0
3 // number of rotations z 90.0, y 23.0, x 0.0

White Hill – Au pd71_75 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP BLK1

0.160 3 0.000 // nugget nst cdf
0.330 exp 11.5 102.5 113.0
0.350 sph 109.0 413.0 590.0
0.160 sph 1833.0 1817.0 594.0
3 // number of rotations z -89.0, y -27.0, x 68.0

White Hill – Mo pd71_75 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP BLK1

0.220 3 0.000 // nugget nst cdf
0.400 exp 6.0 104.5 82.5
0.280 sph 74.0 418.0 413.0
0.100 sph 1877.0 3550.0 605.0
3 // number of rotations z -90.0, y -26.0, x 0.0

White Hill – S pd71_75 sd3 v4 (Structure, Nugget, Ranges and Rotations) – CRP BLK1

0.006 3 0.000 // nugget nst cdf
0.380 exp 12.0 177.0 65.0
0.220 sph 933.0 1666.0 111.0
0.390 sph 2500.0 5693.0 391.0
3 // number of rotations z -89.0, y 63.0, x 0.0

White Hill – Cu pd42 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK2

0.009 3 0.000 // nugget nst cdf
0.180 exp 27.5 31.5 12.0
0.006 sph 32.0 248.0 146.0
0.800 sph 416.0 258.0 163.0
3 // number of rotations z 4.0, y -5.0, x 65.0

White Hill – Au pd42 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK2

0.130 3 0.000 // nugget nst cdf
0.570 sph 34.0 128.0 8.5
0.006 sph 76.0 646.0 43.0
0.290 sph 440.0 1218.0 81.0
3 // number of rotations z 81.0, y -78.0, x 9.0

White Hill – Mo pd42 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK2

0.210 3 0.000 // nugget nst cdf
0.064 exp 12.0 7.0 13.0
0.210 sph 16.0 8.0 103.0
0.520 sph 165.0 217.0 509.0
3 // number of rotations z 9.0, y 2.0, x -40.0

White Hill – S pd42 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK2

0.010 3 0.000 // nugget nst cdf
0.220 exp 23.0 31.0 29.0
0.008 sph 24.0 67.0 285.0
0.760 sph 458.0 84.0 760.0
3 // number of rotations z 1.0, y 0.0, x -23.0

White Hill – Cu pd23 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK3

0.030 3 0.000 // nugget nst cdf
0.370 sph 17.5 73.0 7.0
0.130 sph 127.0 119.0 58.0
0.470 sph 193.0 513.0 88.0
3 // number of rotations z 30.0, y 14.0, x 76.0

White Hill – Au pd23 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK3

0.170 3 0.000 // nugget nst cdf
0.500 exp 30.5 75.0 10.0
0.140 sph 57.0 100.0 508.0
0.190 sph 195.0 823.0 574.0
3 // number of rotations z 3.0, y -4.0, x 48.0

White Hill – Mo pd23 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK3

0.350 3 0.000 // nugget nst cdf
0.280 exp 7.0 27.0 29.5
0.011 sph 15.0 75.0 84.0
0.360 sph 636.0 299.0 98.0
3 // number of rotations z 77.0, y 23.0, x -23.0

White Hill – S pd23 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P2 BLK3

0.100 3 0.000 // nugget nst cdf
0.500 exp 104.0 38.5 33.5
0.011 sph 199.0 565.0 97.0
0.390 sph 1503.0 657.0 100.0
3 // number of rotations z 0.0, y 0.0, x 47.0

White Hill – Cu pd33 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK3

0.048 3 0.000 // nugget nst cdf
0.170 exp 28.5 49.5 9.5
0.065 sph 58.0 493.0 694.0
0.720 sph 65.0 496.0 709.0
3 // number of rotations z -89.0, y -27.0, x 28.0

White Hill – Au pd33 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK3

0.056 3 0.000 // nugget nst cdf
0.360 exp 24.0 6.5 9.0
0.350 sph 125.0 331.0 525.0
0.230 sph 180.0 661.0 529.0
3 // number of rotations z 89.0, y 23.0, x 21.0

White Hill – Mo pd33 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK3

0.036 3 0.000 // nugget nst cdf
0.270 exp 28.5 9.0 26.0
0.370 sph 55.0 218.0 309.0
0.320 sph 319.0 554.0 310.0
3 // number of rotations z -89.0, y -26.0, x -26.0

White Hill – S pd33 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK3

0.006 3 0.000 // nugget nst cdf
0.510 exp 54.0 15.0 33.5
0.014 sph 77.0 219.0 67.0
0.470 sph 604.0 232.0 112.0
3 // number of rotations z -89.0, y 68.0, x 0.0

White Hill – Cu pd21_53 sd1 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK3

0.009 3 0.000 // nugget nst cdf
0.200 exp 21.5 15.0 17.5
0.690 sph 23.0 77.0 241.0

0.100 sph 5256.0 352.0 2275.0
3 // number of rotations z 90.0, y 23.0, x 0.0

White Hill – Au pd21_53 sd1 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK3
0.007 3 0.000 // nugget nst cdf
0.470 exp 44.0 30.0 19.0
0.140 sph 49.0 36.0 155.0
0.380 sph 2038.0 139.0 207.0
3 // number of rotations z 0.0, y 0.0, x 12.0

White Hill – Mo pd21_53 sd1 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK3
0.130 3 0.000 // nugget nst cdf
0.480 exp 68.5 72.0 7.0
0.008 sph 87.0 160.0 711.0
0.380 sph 1735.0 188.0 721.0
3 // number of rotations z -28.0, y 26.0, x 36.0

White Hill – S pd21_53 sd1 v4 (Structure, Nugget, Ranges and Rotations) – PB BLK3
0.050 3 0.000 // nugget nst cdf
0.077 exp 7.0 37.0 7.0
0.007 sph 43.0 211.0 16.0
0.870 sph 77.0 249.0 17.0
3 // number of rotations z 90.0, y -67.0, x 0.0

White Hill – Cu pd63_75 sd1 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3 AND CRP BLK5
0.008 3 0.000 // nugget nst cdf
0.120 exp 10.5 75.0 49.0
0.450 sph 154.0 408.0 961.0
0.420 sph 161.0 409.0 1203.0
3 // number of rotations z 81.0, y 42.0, x -80.0

White Hill – Au pd63_75 sd1 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3 AND CRP BLK5
0.012 3 0.000 // nugget nst cdf
0.200 exp 21.5 11.5 19.0
0.300 sph 33.0 12.0 173.0
0.490 sph 392.0 312.0 430.0
3 // number of rotations z -1.0, y 24.0, x -53.0

White Hill – Mo pd63_75 sd1 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3 AND CRP BLK5
0.014 3 0.000 // nugget nst cdf
0.210 exp 17.0 7.0 29.0
0.300 sph 56.0 31.0 455.0
0.480 sph 736.0 454.0 565.0
3 // number of rotations z -55.0, y 81.0, x -53.0

White Hill – S pd63_75 sd1 v4 (Structure, Nugget, Ranges and Rotations) – CRS BLK3 AND CRP BLK5

0.007 3 0.000 // nugget nst cdf
0.210 exp 20.0 15.0 39.0
0.310 sph 45.0 34.0 505.0
0.470 sph 649.0 231.0 830.0
3 // number of rotations z -81.0, y 81.0, x -81.0

White Hill – Cu pd44 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK4

0.009 3 0.000 // nugget nst cdf
0.180 exp 27.5 31.5 12.0
0.006 sph 32.0 248.0 146.0
0.800 sph 416.0 258.0 163.0
3 // number of rotations z 4.0, y -5.0, x 65.0

White Hill – Au pd44 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK4

0.130 3 0.000 // nugget nst cdf
0.570 sph 34.0 128.0 8.5
0.006 sph 76.0 646.0 43.0
0.290 sph 440.0 1218.0 81.0
3 // number of rotations z 81.0, y -78.0, x 9.0

White Hill – Mo pd44 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK4

0.210 3 0.000 // nugget nst cdf
0.064 exp 12.0 7.0 13.0
0.210 sph 16.0 8.0 103.0
0.520 sph 165.0 217.0 509.0
3 // number of rotations z 9.0, y 2.0, x -40.0

White Hill – S pd44 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P4 BLK4

0.010 3 0.000 // nugget nst cdf
0.220 exp 23.0 31.0 29.0
0.008 sph 24.0 67.0 285.0
0.760 sph 458.0 84.0 760.0
3 // number of rotations z 1.0, y 0.0, x -23.0

White Hill – Cu pd35 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK5

0.048 3 0.000 // nugget nst cdf
0.170 exp 28.5 49.5 9.5
0.065 sph 58.0 493.0 694.0
0.720 sph 65.0 496.0 709.0
3 // number of rotations z -89.0, y -27.0, x 28.0

White Hill – Au pd35 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK5

0.056 3 0.000 // nugget nst cdf
0.360 exp 24.0 6.5 9.0
0.350 sph 125.0 331.0 525.0
0.230 sph 180.0 661.0 529.0
3 // number of rotations z 89.0, y 23.0, x 21.0

White Hill – Mo pd35 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK5
0.036 3 0.000 // nugget nst cdf
0.270 exp 28.5 9.0 26.0
0.370 sph 55.0 218.0 309.0
0.320 sph 319.0 554.0 310.0
3 // number of rotations z -89.0, y -26.0, x -26.0

White Hill – S pd35 sd3 v4 (Structure, Nugget, Ranges and Rotations) – P3 BLK5
0.006 3 0.000 // nugget nst cdf
0.510 exp 54.0 15.0 33.5
0.014 sph 77.0 219.0 67.0
0.470 sph 604.0 232.0 112.0
3 // number of rotations z -89.0, y 68.0, x 0.0

White Hill – SG pdall sd3 v1 (Structure, Nugget, Ranges and Rotations)
0.290 3 0.000 // nugget nst cdf
0.480 sph 8.0 44.5 7.0
0.010 sph 21.0 118.0 9.0
0.220 sph 201.0 172.0 93.0
3 // number of rotations z 39.0, y -61.0, x 36.0

White Hill – SG pdall sd1 v1 (Structure, Nugget, Ranges and Rotations)
0.290 3 0.000 // nugget nst cdf
0.320 sph 7.0 102.0 7.0
0.170 sph 36.0 220.0 40.0
0.220 sph 384.0 262.0 129.0
3 // number of rotations z 71.0, y -77.0, x 15.0

White Hill – Cu pdall sd1 v4 (Structure, Nugget, Ranges and Rotations)
0.011 3 0.000 // nugget nst cdf
0.140 exp 9.0 37.5 7.5
0.380 sph 44.0 237.0 34.0
0.470 sph 514.0 1194.0 470.0
3 // number of rotations z 78.0, y 66.0, x -16.0

White Hill – Au pdall sd1 v4 (Structure, Nugget, Ranges and Rotations)
0.006 3 0.000 // nugget nst cdf
0.680 exp 23.5 25.0 21.5
0.018 sph 29.0 258.0 229.0
0.300 sph 409.0 458.0 244.0
3 // number of rotations z 61.0, y -10.0, x -1.0

White Hill – Mo pdall sd1 v4 (Structure, Nugget, Ranges and Rotations)
0.210 3 0.000 // nugget nst cdf
0.210 exp 28.5 23.5 20.5
0.350 sph 31.0 25.0 27.0
0.230 sph 371.0 336.0 262.0
3 // number of rotations z 10.0, y 12.0, x -3.0

White Hill – S pdall sd1 v4 (Structure, Nugget, Ranges and Rotations)
0.008 3 0.000 // nugget nst cdf

0.010 exp 13.0 25.5 20.0
0.730 sph 20.0 29.0 28.0
0.250 sph 485.0 631.0 42.0
3 // number of rotations z -2.0, y -3.0, x 0.0

Stockwork Hill – Cu BZand50 td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZand50 td800

0.009 3 0.000 // nugget nst cdf
0.330 exp 26.5 29.0 16.0
0.480 sph 29.0 156.0 209.0
0.180 sph 73.0 161.0 276.0
3 // number of rotations z 73.0, y 27.0, x 19.0

Stockwork Hill – Au BZand50 td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZand50 td800

0.014 3 0.000 // nugget nst cdf
0.011 exp 18.0 18.5 8.0
0.290 sph 40.0 97.0 9.0
0.690 sph 113.0 250.0 115.0
3 // number of rotations z -4.0, y 7.0, x 78.0

Stockwork Hill – Mo BZand50 td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZand50 td800

0.027 3 0.000 // nugget nst cdf
0.340 sph 13.0 14.5 10.0
0.400 sph 21.0 133.0 123.0
0.230 sph 79.0 144.0 217.0
3 // number of rotations z 82.0, y 12.0, x 12.0

Stockwork Hill – S BZand50 td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZand50 td800

0.009 3 0.000 // nugget nst cdf
0.035 exp 8.5 26.5 28.0
0.470 sph 11.0 145.0 42.0
0.490 sph 114.0 175.0 55.0
3 // number of rotations z 67.0, y 16.0, x 11.0

Stockwork Hill – Cu BZW td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZW td800

0.110 3 0.000 // nugget nst cdf
0.098 exp 15.0 77.0 85.0
0.480 sph 18.0 78.0 264.0
0.310 sph 221.0 395.0 295.0
3 // number of rotations z 73.0, y 11.0, x 12.0

Stockwork Hill – Au BZW td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZW td800

0.009 3 0.000 // nugget nst cdf
0.420 exp 24.5 8.5 58.5
0.250 sph 89.0 23.0 198.0
0.320 sph 213.0 55.0 262.0
3 // number of rotations z -8.0, y 10.0, x -12.0

Stockwork Hill – Mo BZW td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZW td800

0.009 3 0.000 // nugget nst cdf
0.420 exp 80.0 10.0 59.0
0.250 sph 180.0 17.0 146.0
0.320 sph 182.0 21.0 280.0
3 // number of rotations z -8.0, y 10.0, x -17.0

Stockwork Hill – S BZW td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - BZW td800

0.009 3 0.000 // nugget nst cdf
0.380 exp 72.0 12.5 188.0
0.280 sph 281.0 72.0 353.0
0.330 sph 282.0 73.0 358.0
3 // number of rotations z -8.0, y 10.0, x -13.0

Stockwork Hill – Cu CBX td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - CBX td800

0.081 3 0.000 // nugget nst cdf
0.350 sph 13.5 41.0 17.0
0.310 sph 25.0 56.0 76.0
0.260 sph 133.0 518.0 264.0
3 // number of rotations z 68.0, y 19.0, x 14.0

Stockwork Hill – Au CBX td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - CBX td800

0.048 3 0.000 // nugget nst cdf
0.450 exp 20.0 13.0 28.0
0.490 sph 142.0 88.0 244.0
0.012 sph 210.0 188.0 277.0
3 // number of rotations z -25.0, y -10.0, x -18.0

Stockwork Hill – Mo CBX td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - CBX td800

0.041 3 0.000 // nugget nst cdf
0.490 exp 11.5 16.5 8.0
0.097 sph 21.0 154.0 106.0
0.370 sph 274.0 378.0 110.0
3 // number of rotations z -18.0, y 22.0, x 78.0

Stockwork Hill – S CBX td800 sdall v2 (Structure, Nugget, Ranges and Rotations) - CBX td800

0.050 3 0.000 // nugget nst cdf
0.480 sph 26.5 13.0 13.0
0.006 sph 37.0 63.0 191.0
0.460 sph 277.0 159.0 222.0
3 // number of rotations z -18.0, y 0.0, x -62.0

Stockwork Hill – Cu pd51 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 CBX

0.036 3 0.000 // nugget nst cdf
0.026 exp 7.0 40.0 11.0
0.510 sph 23.0 259.0 18.0
0.430 sph 316.0 316.0 21.0

3 // number of rotations z -38.0, y 62.0, x 68.0

Stockwork Hill – Au pd51 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 CBX
0.140 3 0.000 // nugget nst cdf
0.220 exp 8.5 27.0 25.5
0.620 sph 28.0 207.0 85.0
0.020 sph 79.0 376.0 139.0
3 // number of rotations z 76.0, y 25.0, x 69.0

Stockwork Hill – Mo pd51 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 CBX
0.200 3 0.000 // nugget nst cdf
0.290 exp 7.0 23.0 21.0
0.300 sph 12.0 148.0 57.0
0.210 sph 38.0 526.0 469.0
3 // number of rotations z 71.0, y 10.0, x 77.0

Stockwork Hill – S pd51 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 CBX
0.026 3 0.000 // nugget nst cdf
0.520 sph 24.5 10.5 19.5
0.190 sph 29.0 181.0 234.0
0.260 sph 93.0 384.0 409.0
3 // number of rotations z 60.0, y -23.0, x -60.0

Stockwork Hill – Cu pd54 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBX
0.009 3 0.000 // nugget nst cdf
0.780 sph 52.0 9.0 20.5
0.160 sph 54.0 195.0 239.0
0.051 sph 57.0 500.0 284.0
3 // number of rotations z -24.0, y 19.0, x -10.0

Stockwork Hill – Au pd54 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBX
0.059 3 0.000 // nugget nst cdf
0.530 sph 34.5 7.5 17.5
0.350 sph 43.0 241.0 417.0
0.061 sph 2893.0 2942.0 752.0
3 // number of rotations z -8.0, y 36.0, x -22.0

Stockwork Hill – Mo pd54 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBX
0.050 3 0.000 // nugget nst cdf
0.390 sph 37.0 80.5 7.0
0.084 sph 51.0 141.0 97.0
0.480 sph 88.0 178.0 132.0
3 // number of rotations z 12.0, y -36.0, x 42.0

Stockwork Hill – S pd54 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBX
0.070 3 0.000 // nugget nst cdf
0.550 sph 29.5 55.5 9.0

0.006 sph 36.0 136.0 10.0
0.370 sph 47.0 324.0 706.0
3 // number of rotations z -10.0, y 17.0, x 80.0

Stockwork Hill – Cu pd554 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBXE

0.019 3 0.000 // nugget nst cdf
0.250 exp 17.5 13.0 33.0
0.210 sph 27.0 25.0 304.0
0.520 sph 46.0 693.0 337.0
3 // number of rotations z 67.0, y 15.0, x 74.0

Stockwork Hill – Au pd554 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBXE

0.150 3 0.000 // nugget nst cdf
0.350 exp 45.5 6.5 31.0
0.190 sph 69.0 7.0 37.0
0.310 sph 79.0 134.0 38.0
3 // number of rotations z -16.0, y 9.0, x -23.0

Stockwork Hill – Mo pd554 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBXE

0.060 3 0.000 // nugget nst cdf
0.022 exp 53.0 26.5 7.5
0.710 sph 89.0 71.0 8.0
0.210 sph 193.0 73.0 71.0
3 // number of rotations z 76.0, y -59.0, x -23.0

Stockwork Hill – S pd554 sdall v2 (Structure, Nugget, Ranges and Rotations) – TBXm CBXE

0.010 3 0.000 // nugget nst cdf
0.560 sph 34.5 141.5 13.0
0.064 sph 35.0 142.0 514.0
0.370 sph 448.0 143.0 1250.0
3 // number of rotations z 64.0, y -74.0, x 1.0

Stockwork Hill – Cu FBB10 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB10 BZand50

0.007 3 0.000 // nugget nst cdf
0.050 exp 7.0 95.5 8.0
0.440 sph 16.0 180.0 218.0
0.500 sph 75.0 425.0 363.0
3 // number of rotations z 75.0, y 14.0, x 3.0

Stockwork Hill – Au FBB10 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB10 BZand50

0.190 3 0.000 // nugget nst cdf
0.170 exp 7.0 38.0 51.5
0.550 sph 10.0 133.0 137.0
0.090 sph 323.0 2569.0 210.0
3 // number of rotations z 64.0, y 16.0, x -16.0

Stockwork Hill – Mo FBB10 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB10 BZand50

0.030 3 0.000 // nugget nst cdf
0.220 exp 9.5 28.0 84.0
0.400 sph 22.0 332.0 140.0
0.350 sph 531.0 805.0 141.0
3   // number of rotations z 81.0, y 38.0, x -33.0

Stockwork Hill – S FBB10 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB10 BZand50

0.011 3 0.000 // nugget nst cdf
0.260 exp 53.0 31.0 25.0
0.053 sph 65.0 64.0 129.0
0.680 sph 327.0 756.0 169.0
3   // number of rotations z 79.0, y -74.0, x 0.0

Stockwork Hill – Cu FBB20 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB20 BZC

0.013 3 0.000 // nugget nst cdf
0.180 exp 16.5 7.5 11.5
0.430 sph 23.0 152.0 157.0
0.380 sph 126.0 373.0 413.0
3   // number of rotations z -84.0, y -10.0, x -3.0

Stockwork Hill – Au FBB20 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB20 BZC

0.009 3 0.000 // nugget nst cdf
0.340 exp 46.5 40.0 11.0
0.140 sph 63.0 46.0 32.0
0.510 sph 87.0 256.0 145.0
3   // number of rotations z 13.0, y -11.0, x 59.0

Stockwork Hill – Mo FBB20 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB20 BZC

0.019 3 0.000 // nugget nst cdf
0.320 exp 63.0 36.5 15.5
0.410 sph 171.0 90.0 16.0
0.250 sph 195.0 241.0 1001.0
3   // number of rotations z 5.0, y 2.0, x 69.0

Stockwork Hill – S FBB20 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB20 BZC

0.019 3 0.000 // nugget nst cdf
0.520 exp 109.5 53.5 8.5
0.310 sph 155.0 434.0 30.0
0.150 sph 162.0 1079.0 976.0
3   // number of rotations z 0.0, y -79.0, x -80.0

Stockwork Hill – Cu FBB30 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB30 BZE

0.008 3 0.000 // nugget nst cdf
0.520 exp 22.5 10.0 32.5
0.180 sph 57.0 15.0 98.0
0.290 sph 291.0 33.0 475.0
3   // number of rotations z -12.0, y 16.0, x -13.0

Stockwork Hill – Au FBB30 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB30 BZE
0.190 3 0.000 // nugget nst cdf
0.180 exp 77.5 8.0 38.0
0.470 sph 80.0 9.0 100.0
0.160 sph 1010.0 124.0 600.0
3 // number of rotations z 46.0, y -40.0, x -61.0

Stockwork Hill – Mo FBB30 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB30 BZE
0.230 3 0.000 // nugget nst cdf
0.330 exp 10.0 35.5 14.0
0.180 sph 12.0 74.0 64.0
0.260 sph 76.0 86.0 67.0
3 // number of rotations z 82.0, y 19.0, x -22.0

Stockwork Hill – S FBB30 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB30 BZE
0.031 3 0.000 // nugget nst cdf
0.120 exp 14.0 40.5 24.5
0.440 sph 15.0 138.0 136.0
0.410 sph 22.0 158.0 140.0
3 // number of rotations z 65.0, y 12.0, x -79.0

Stockwork Hill – Cu FBB40 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB40 BZW
0.044 3 0.000 // nugget nst cdf
0.012 exp 19.0 28.5 20.0
0.580 sph 31.0 79.0 78.0
0.360 sph 338.0 1072.0 90.0
3 // number of rotations z 81.0, y 12.0, x 1.0

Stockwork Hill – Au FBB40 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB40 BZW
0.030 3 0.000 // nugget nst cdf
0.160 exp 49.0 77.0 9.5
0.200 sph 58.0 370.0 41.0
0.610 sph 83.0 442.0 67.0
3 // number of rotations z -71.0, y 45.0, x 50.0

Stockwork Hill – Mo FBB40 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB40 BZW
0.007 3 0.000 // nugget nst cdf
0.560 exp 30.5 75.0 23.5
0.039 sph 199.0 296.0 24.0
0.390 sph 232.0 298.0 98.0
3 // number of rotations z -81.0, y 11.0, x 4.0

Stockwork Hill – S FBB40 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB40 BZW
0.010 3 0.000 // nugget nst cdf
0.080 exp 11.0 8.0 35.5
0.250 sph 25.0 12.0 167.0
0.660 sph 935.0 240.0 734.0

3 // number of rotations z -4.0, y -9.0, x -4.0

Stockwork Hill – Cu FBB50 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB50 CBXE

0.010 3 0.000 // nugget nst cdf
0.440 exp 67.5 18.0 28.0
0.290 sph 101.0 50.0 239.0
0.260 sph 499.0 575.0 272.0
3 // number of rotations z -26.0, y 6.0, x -34.0

Stockwork Hill – Au FBB50 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB50 CBXE

0.060 3 0.000 // nugget nst cdf
0.260 sph 11.0 7.5 9.0
0.440 sph 43.0 101.0 82.0
0.240 sph 58.0 369.0 495.0
3 // number of rotations z 67.0, y 11.0, x -79.0

Stockwork Hill – Mo FBB50 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB50 CBXE

0.080 3 0.000 // nugget nst cdf
0.390 sph 8.5 7.0 81.5
0.310 sph 24.0 98.0 85.0
0.220 sph 111.0 452.0 889.0
3 // number of rotations z 69.0, y -4.0, x -81.0

Stockwork Hill – S FBB50 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB50 CBXE

0.020 3 0.000 // nugget nst cdf
0.012 exp 29.0 9.5 28.0
0.360 sph 51.0 10.0 133.0
0.610 sph 190.0 84.0 182.0
3 // number of rotations z -24.0, y -1.0, x -19.0

Stockwork Hill – Cu FBB60 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB60 CSZ

0.130 3 0.000 // nugget nst cdf
0.056 exp 35.5 7.5 7.5
0.590 sph 36.0 36.0 21.0
0.220 sph 481.0 37.0 31.0
3 // number of rotations z -19.0, y 2.0, x 83.0

Stockwork Hill – Au FBB60 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB60 CSZ

0.036 3 0.000 // nugget nst cdf
0.450 sph 33.5 63.5 11.5
0.390 sph 34.0 93.0 352.0
0.120 sph 3558.0 415.0 4572.0
3 // number of rotations z 74.0, y -82.0, x 0.0

Stockwork Hill – Mo FBB60 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB60 CSZ

0.240 3 0.000 // nugget nst cdf
0.330 exp 7.0 7.0 7.0

0.250 sph 10.0 8.0 8.0
0.180 sph 32.0 527.0 31.0
3 // number of rotations z 71.0, y -32.0, x 19.0

Stockwork Hill – S FBB60 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB60 CSZ

0.007 3 0.000 // nugget nst cdf
0.260 exp 15.0 20.0 7.0
0.300 sph 18.0 202.0 173.0
0.430 sph 91.0 485.0 181.0
3 // number of rotations z 71.0, y 7.0, x -55.0

Stockwork Hill – Cu pd71 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZ

0.011 3 0.000 // nugget nst cdf
0.140 exp 35.5 9.0 7.0
0.590 sph 42.0 127.0 10.0
0.260 sph 106.0 310.0 44.0
3 // number of rotations z -22.0, y 12.0, x 75.0

Stockwork Hill – Au pd71 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZ

0.042 3 0.000 // nugget nst cdf
0.600 exp 35.0 48.0 15.0
0.270 sph 47.0 147.0 18.0
0.088 sph 255.0 388.0 31.0
3 // number of rotations z -17.0, y -18.0, x 71.0

Stockwork Hill – Mo pd71 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZ

0.190 3 0.000 // nugget nst cdf
0.580 exp 22.5 56.0 9.5
0.160 sph 26.0 180.0 12.0
0.070 sph 627.0 1263.0 84.0
3 // number of rotations z -19.0, y 8.0, x 70.0

Stockwork Hill – S pd71 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZ

0.190 3 0.000 // nugget nst cdf
0.200 exp 7.0 69.0 7.0
0.540 sph 112.0 98.0 8.0
0.070 sph 114.0 104.0 11.0
3 // number of rotations z -44.0, y 81.0, x 81.0

Stockwork Hill – Cu pd81 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZS

0.025 3 0.000 // nugget nst cdf
0.560 sph 7.5 41.5 24.0
0.390 sph 110.0 52.0 485.0
0.025 sph 175.0 113.0 590.0
3 // number of rotations z 81.0, y 4.0, x 0.0

Stockwork Hill – Au pd81 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZS

0.015 3 0.000 // nugget nst cdf
0.560 sph 15.0 73.0 27.5
0.330 sph 47.0 131.0 505.0
0.095 sph 177.0 134.0 851.0
3 // number of rotations z 77.0, y 23.0, x 0.0

Stockwork Hill – Mo pd81 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZS

0.075 3 0.000 // nugget nst cdf
0.650 sph 5.0 44.5 7.0
0.250 sph 33.0 55.0 485.0
0.025 sph 474.0 681.0 866.0
3 // number of rotations z 75.0, y 27.0, x 8.0

Stockwork Hill – S pd81 sdall v2 (Structure, Nugget, Ranges and Rotations) - P2 NSZS

0.009 3 0.000 // nugget nst cdf
0.210 sph 72.5 76.5 10.5
0.015 sph 73.0 389.0 76.0
0.770 sph 191.0 391.0 78.0
3 // number of rotations z 73.0, y -83.0, x 13.0

Stockwork Hill – Cu pd91 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 SSZ

0.130 3 0.000 // nugget nst cdf
0.200 exp 30.5 41.0 13.5
0.390 sph 45.0 340.0 23.0
0.280 sph 454.0 446.0 30.0
3 // number of rotations z 9.0, y -60.0, x 72.0

Stockwork Hill – Au pd91 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 SSZ

0.130 3 0.000 // nugget nst cdf
0.200 exp 39.0 28.5 7.5
0.200 sph 41.0 278.0 19.0
0.470 sph 468.0 469.0 31.0
3 // number of rotations z 0.0, y -33.0, x 79.0

Stockwork Hill – Mo pd91 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 SSZ

0.270 3 0.000 // nugget nst cdf
0.620 exp 12.5 27.5 4.0
0.018 sph 23.0 318.0 7.5
0.092 sph 2793.0 1144.0 8.5
3 // number of rotations z 52.0, y -81.0, x 30.0

Stockwork Hill – S pd91 sdall v2 (Structure, Nugget, Ranges and Rotations) – P2 SSZ

0.030 3 0.000 // nugget nst cdf
0.260 exp 18.5 47.5 9.0
0.430 sph 29.0 276.0 19.5
0.280 sph 1054.0 1075.0 71.5
3 // number of rotations z 56.0, y 12.0, x -4.0

Stockwork Hill – Cu FBB70 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB70 NSZ
0.027 3 0.000 // nugget nst cdf
0.320 exp 69.0 165.5 11.0
0.020 sph 70.0 806.0 158.0
0.630 sph 109.0 906.0 199.0
3 // number of rotations z 13.0, y 4.0, x 73.0

Stockwork Hill – Au FBB70 sdall v2 (Structure, Nugget, Ranges and Rotations) FBB70 NSZ
0.100 3 0.000 // nugget nst cdf
0.460 sph 9.0 17.0 79.0
0.240 sph 25.0 139.0 377.0
0.200 sph 217.0 1032.0 572.0
3 // number of rotations z 61.0, y 15.0, x -64.0

Stockwork Hill – Mo FBB70 sdall v2 (Structure, Nugget, Ranges and Rotations) FBB70 NSZ
0.130 3 0.000 // nugget nst cdf
0.580 exp 7.0 17.5 7.5
0.250 sph 28.0 94.0 368.0
0.040 sph 61.0 837.0 369.0
3 // number of rotations z 80.0, y 5.0, x 20.0

Stockwork Hill – S FBB70 sdall v2 (Structure, Nugget, Ranges and Rotations) FBB70 NSZ
0.008 3 0.000 // nugget nst cdf
0.190 exp 14.0 30.0 18.0
0.190 sph 79.0 65.0 529.0
0.610 sph 81.0 1090.0 550.0
3 // number of rotations z 74.0, y -1.0, x -1.0

Stockwork Hill – Cu FBB80 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB80 NSZS
0.025 3 0.000 // nugget nst cdf
0.310 sph 7.5 73.5 34.5
0.460 sph 61.0 90.0 210.0
0.200 sph 131.0 121.0 1346.0
3 // number of rotations z 81.0, y 4.0, x 0.0

Stockwork Hill – Au FBB80 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB80 NSZS
0.035 3 0.000 // nugget nst cdf
0.280 sph 7.0 65.0 15.5
0.480 sph 22.0 127.0 197.0
0.200 sph 58.0 158.0 802.0
3 // number of rotations z 81.0, y 4.0, x 0.0

Stockwork Hill – Mo FBB80 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB80 NSZS
0.120 3 0.000 // nugget nst cdf
0.440 sph 5.0 72.5 7.0
0.089 sph 25.0 91.0 354.0
0.350 sph 61.0 109.0 431.0

3 // number of rotations z 81.0, y 38.0, x 11.0

Stockwork Hill – S FBB80 sdall v2 (Structure, Nugget, Ranges and Rotations) - FBB80 NSZS

0.020 3 0.000 // nugget nst cdf
0.280 sph 11.0 74.5 57.0
0.290 sph 62.0 130.0 353.0
0.410 sph 73.0 1083.0 1077.0
3 // number of rotations z 75.0, y 15.0, x 64.0

Stockwork Hill – Cu FBB90 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB90 SSZ

0.100 3 0.000 // nugget nst cdf
0.010 exp 19.0 23.0 7.5
0.220 sph 56.0 52.0 21.0
0.670 sph 192.0 60.0 22.0
3 // number of rotations z 62.0, y -81.0, x 11.0

Stockwork Hill – Au FBB90 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB90 SSZ

0.032 3 0.000 // nugget nst cdf
0.420 sph 13.5 22.0 8.5
0.330 sph 14.0 69.0 19.0
0.220 sph 141.0 104.0 25.0
3 // number of rotations z 61.0, y -35.0, x 17.0

Stockwork Hill – Mo FBB90 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB90 SSZ

0.270 3 0.000 // nugget nst cdf
0.400 sph 20.0 6.0 20.0
0.240 sph 25.0 22.0 121.0
0.090 sph 49.0 31.0 144.0
3 // number of rotations z -18.0, y -7.0, x -9.0

Stockwork Hill – S FBB90 sdall v2 (Structure, Nugget, Ranges and Rotations) – FBB90 SSZ

0.030 3 0.000 // nugget nst cdf
0.008 sph 43.5 10.0 34.5
0.460 sph 56.0 13.0 192.0
0.500 sph 370.0 44.0 286.0
3 // number of rotations z -48.0, y 78.0, x -31.0

Stockwork Hill – SG pdall sdall v2 (Structure, Nugget, Ranges and Rotations)

0.360 3 0.000 // nugget nst cdf
0.330 exp 9.0 15.5 15.5
0.140 sph 37.0 259.0 528.0
0.170 sph 1041.0 2293.0 534.0
3 // number of rotations z 72.0, y 9.0, x -42.0

Appendix 2 : Search Rotations

Kharmagtai Project Areas – Secondary Phase Interpretation Orientations as noted by M Brown in conjunction with P Dunham during the interpretation phase to be used as guides to the geometry modelling ahead of estimation.

1	**White Hill**	**Mesh Exporte**	Dip	Dip Direction	Strike	plunge	plunge direction		Stike	dip	cross dip		Display
2	Deposit limit (75 south dipping roughly E-W boundary between white hill and Stockwor	Rob	75		290	20 w			3	2	1	defusive footwall and hangingwall	P2
3	Topo	Yes											invoke a fault
4	BOCO and BOX	Yes							4	4	1	Oxide oriemtation	
5	P5	Yes											
6	**Stockwork Hill**												
7	Deposit Limits	Rob										build compartments quickly	
8	Tand	Not using											
9	mTBX	Yes											
10	Compartment One - Bornite Block	Yes	70	180		15	260		5	2	1		
11	Compartment Two - Southern Stockwork Zone	Yes	85	190		40	280		4	3	1		
12	Compartment Three - Mid level MTBX	Yes	80	185		20	280		2	3	1		
13	Compartment Four - Northern Stockwork Zone	Yes	80	155		25	250		2	2	1		
14	Divider Bornite Block	Yes											
15	Divider Northern Stockwork Zone	Yes											
16	Divider Basal Shear	Yes											
17	**Zaraa**		52		253				1	4	1	defuse in all directions	
18	Deposit limits	Rob											p1
19	Topo	Yes											p2
20	Cover	Yes											p3
21	Boco	Yes											background rock
22	Box	Yes											
23	Red Dog	Yes											
24	**Copper Hill**		80		245	40			3	2	1	defusive except uncle uncle remaus	
25	Deposit limits	Yes											P1 P2 P3 Naook,
26	Topo	Yes											background rock
27	Boco	Yes											
28	Uncle remus (drag down to keep good assays on one side)	Yes											
29	**Golden eagle**		61		252				2	3	1		
30	Deposit limits	Rob											P2
31	Boco	Yes											Other
32	**Background**		75	180	270								
33	Topo	Yes											P2
34	Cover	Yes											Other
35	Boco	Yes											
36													

Appendix 3 : Kharmagtai – Coefficients of Variation by domain and Project Area.

Project Area	Pdom	Sdom	Coefficients of Variation (after top-cutting of outliers)			
			Cu	Au	Mo	S
Zaraa	1	1_3	0.51	0.67	0.92	0.53
	2	1_3	0.58	0.78	1.27	0.49
	3	1_3	0.73	0.96	**2.35**	0.62
	4	1_3	0.51	1.06	1.31	0.62
	5	1_3	1.18	1.14	1.63	0.83
	6	1_3	1.63	1.18	1.64	1.78
	7	1_3	1.05	2.26	1.46	0.72
Zephyr	2	1	0.64	1.02	0.60	1.55
	2	3	0.65	1.21	0.74	0.65
	3	1	N/A	N/A	N/A	N/A
	3	3	0.61	2.03	1.21	0.45
	4	1	1.35	1.48	0.89	1.65
	4	3	1.15	**2.35**	0.92	0.50
	5	1	1.51	1.38	0.93	2.17
	5	3	N/A	N/A	N/A	N/A
Copper Hill	410	1_3	1.03	1.75	1.06	1.04
	311	1_3	0.63	0.71	1.08	0.57
	221	1	0.52			
	221	3	0.77	1.20	0.84	1.25
	222	1	N/A			
	222	3	0.84	2.19	0.96	0.45
	321	1	0.79			
	321	3	0.75	2.07	1.98	0.92
	420	1_3	1.52	**2.56**	1.55	1.11
	430	1_3	1.29	2.17	**2.54**	0.71
	231	1_3	0.72	0.87	1.01	0.62
	232	1_3	0.33	0.62	1.61	0.19
	331	1_3	0.68	0.83	**2.46**	0.62
	440	1_3	0.87	1.83	1.83	0.92
	241	1_3	0.65	1.03	0.99	0.74
	242	1_3	0.57	0.70	0.72	0.57
	341	1_3	0.67	0.91	1.72	0.74
	450	1_3	1.20	**2.55**	1.67	0.93
	251	1_3	0.08	0.42	N/A	N/A
	351	1_3	0.76	0.76	1.7	0.52
Golden Eagle	1	1_3	0.39	1.19	1.71	0.96
	11	1	0.46	1.24	0.6	1.81
	13	3	0.37	0.75	1.16	0.77
	2	1_3	0.78	1.18	1.31	0.94
	21	1	0.82	0.99	0.94	1.08
	23	3	0.77	1.21	1.31	0.68

Project Area	Pdom	Sdom	Coefficients of Variation (after top-cutting of outliers)			
			Cu	Au	Mo	S
	3	3	1.25	1.81	0.86	1.91
White Hill	21	1_3	0.56	0.83	1.33	0.51
	31	1_3	1.08	1.25	1.61	0.53
	41	1_3	N/A	N/A	N/A	N/A
	51	1_3	0.61	0.75	1.09	0.45
	61	1_3	1.13	1.18	1.64	0.72
	71	1_3	0.82	1.11	1.33	0.68
	42	1_3	1.30	2.27	1.53	0.96
	23	1_3	0.48	0.77	0.92	0.75
	33	1_3	0.6	0.78	1.06	0.86
	53	1_3	0.22	0.38	0.81	0.62
	63	1_3	1.09	1.67	1.27	0.85
	73	1_3	0.68	1.19	1.72	0.88
	44	1_3	1.30	1.42	**2.40**	0.81
	35	1_3	0.32	0.38	0.94	0.48
	65	1_3	1.39	1.58	1.10	1.56
	75	1_3	0.74	1.08	0.85	1.76
Stockwork Hill	17	1_3	1.51	2.24	**2.36**	1.67
	23	1_3	0.87	1.63	1.57	0.57
	21	1_3	0.90	1.53	1.40	0.62
	22	1_3	1.22	1.88	1.30	0.84
	25	1_3	1.09	1.09	1.34	0.61
	33	1_3	1.24	1.49	1.09	0.58
	31	1_3	0.67	0.88	0.91	0.75
	32	1_3	1.50	2.08	1.92	0.76
	35	1_3	0.98	1.48	1.05	0.58
	43	1_3	0.86	1.33	1.88	0.71
	41	1_3	0.83	1.06	1.24	0.79
	42	1_3	1.42	1.41	1.74	1.22
	47	1_3	0.78	1.40	1.39	0.74
	45	1_3	1.07	1.73	1.31	0.53
	53	1_3	0.87	1.37	1.10	0.36
	51	1_3	0.63	0.89	2.06	0.55
	52	1_3	1.00	1.77	1.89	0.71
	54	1_3	0.77	1.07	1.67	0.44
	55	1_3	1.03	1.53	2.25	0.56
	63	1_3	0.86	1.87	0.69	0.83
	61	1_3	0.65	0.96	1.23	1.12
	62	1_3	0.68	0.99	1.20	1.13
	66	1_3	0.93	2.00	1.16	1.90
	65	1_3	0.80	1.11	1.20	0.79
	93	1_3	0.84	2.02	1.18	1.06
	91	1_3	0.86	1.44	2.27	0.77
	92	1_3	0.80	**2.35**	1.22	1.06

Project Area	Pdom	Sdom	Coefficients of Variation (after top-cutting of outliers)			
			Cu	**Au**	**Mo**	**S**
	96	1_3	1.23	1.85	1.69	1.29
	95	1_3	0.91	1.23	1.86	0.52
	73	1_3	1.68	2.34	2.24	0.85
	71	1_3	0.57	0.8	1.68	0.78
	72	1_3	1.87	2.29	1.67	1.01
	77	1_3	0.85	1.89	1.47	1.54
	83	1_3	2.21	2.22	N/A	N/A
	81	1_3	0.59	0.81	1.49	0.85
	82	1_3	0.74	1.06	1.44	1.28
	85	1_3	1.33	2.22	2.33	0.91
	553	1_3	1.17	1.44	2.17	0.47
	552	1_3	1.25	**2.50**	1.31	0.84
	554	1_3	0.51	1.20	0.55	0.61
	555	1_3	0.99	1.23	1.56	0.61

Appendix 4 : XAM Density Sampling SOP

Kharmagtai Project

XAM-SOP-012 Specific Gravity Collection

Version	Date	Description of Changes	By	Reviewed By	Approved By
1		Original	Unknown		
2	25 Sept 09	Reformat, edits	Munkhbat		

1 Overview

Specific Gravity (SG) data is important for resource and economic calculations. These measurements can also assist in the geophysical modelling of gravity data to better understand the subsurface geology.

2 Hazards

Manual Handling

3 Safety Equipment

Standard issue Xanadu Mines PPE as per Australian Standards

Safety Glasses

Gloves

4 Equipment

Black Marking Pen

Red Marking Pen

Pencil

Electronic Balance

40 Litre Plastic Bin

Stainless Steel Basket

PQ or HQ core trays

SG Data Sheets

Test Sample

Test Weights

5 Specific Gravity (SG) Sample Locations

Specific Gravity (SG) sample locations are to be selected and marked on core samples and core trays by the logging geologists. SG sample locations are to be nominally every ten (10.0) metres down hole, or closer if lithologies/mineralogy vary significantly over smaller intervals. Mineralised intersections are to be sampled every 2 metres; these will occur within every assay sample interval. Specific Gravity samples are to be stored only in PQ and HQ core trays.

6 Specific Gravity (SG) Sample Collection

6.1 Competent Core

Before photography, Specific Gravity (SG) samples are collected in a sample storage core tray and taken to the cutting bay to be cut in half on core saw. After cutting, the two half pieces of core are then taken back to the original tray and placed in their correct position before the core is photographed. After the core has been photographed and all the geology and geotechnical data has been completed, the left hand half of the core is collected and put in a sample storage core tray ready for Specific Gravity determination. The left hand half of the core is now replaced with a wooden core block containing all the appropriate information (see below) about the SG sample. The original core trays are now put on a pallet ready for cutting and sampling.

After cutting, the remaining half of the core will now be sampled with the rest of the core, leaving a gap in the position formally occupied by the Specific Gravity sample. This position is now occupied by the above mentioned wooden core block containing all the appropriate information about the SG sample.

If an SG sample breaks up into small pieces upon sawing, an alternative SG sample is to be chosen from a source as close as possible to the original SG position.

6.2 Soft/Crumbly Core

Soft/crumbly core, which will break upon sawing, is to be placed whole into the SG sample storage core tray and replaced by a wooden core block, with all appropriate markings in the original core tray.

7 Procedure

- SG samples are to be taken every 10 metres, or 2 metres in mineralised zones.
- SG samples are to be between 10 to 15 centimetres in length.
- Mark on left hand side of the red orientation line or black cut line, looking down-hole.
- Whole core is to be used for soft/crumbly core. Place wooden core block in this position with all appropriate information (see below).
- If core is competent, the SG sample is to be cut in half, before photographing core.
- SG samples are to be marked with red paint marker. Information includes drill hole ID number, metre position and length of sample.(see below).

  An example of the markings on core, tray rand, and wooden core blocks is as follows;

KHDDH445
SG 675.32* 0.12** cm

Note: *Metre Position **Length of SG core sample

- Rand of core tray is to be marked near the SG sample with SG, Meterage, and Sample Length.
- A wooden core block is to replace the SG sample.
- Wooden core block is marked with drill hole ID number, metre mark and length of sample.
- SG samples are to be stored in core trays (HQ or PQ).
- Each core tray will contain samples from 1 drill hole only.
- Tray will then be marked with a tray number, drill hole identification, meterage range.
- Tray number will be in chronological order beginning with number 1.
- Trays are then to be transported to side of office for testing.
- After testing, the tray is to be placed on a pallet and stored in the designated SG storage area.

8 Testing procedure

8.1 Balance Operation

- The balance must be kept level, check sight glass to see if bubble is centred. Adjust if necessary.
- Press power on/off switch to turn electronic balance on.
- Press zero button to bring balance to a zero figure on display.

8.2 Weighing dry SG samples

- Record hole ID, core size and length on the data sheet.
- Place SG sample in centre of balance plate.
- Allow a few seconds for balance to settle before recording data.
- Read the weight result on the display and record on the data sheet.
- Place SG sample back in core tray for waxing (if required).
- After recording ten (10) dry SG weight results, weigh the test weight and record on the data sheet. Adjust balance if necessary.

8.3 Wrapping Porous Core Preparation

- Wear appropriate clothing and safety equipment.
- When core is porous you must wrap the core with cling wrap.
- This will prevent any water entering the core to weigh it down more.
- Be gentle with the core inside the glad wrap as you do not want any holes in it.

8.4 Weighing immersed SG samples in water

- Retrieve data sheet and select next core sample to be weighed.
- Samples to be immersed in water are both waxed and unwaxed SG samples
- Gently place SG sample in immersion basket, sample must be completely covered with water
- Support lines for sample holding basket must not touch side of access hole.
- Water level for sample immersion should be kept at a high level in the plastic bin.
- The sample holding basket should be kept at a constant depth below the water line.
- Allow a few seconds for the water to stop moving.
- Allow a few seconds for balance to settle.
- Make sure balance is showing a constant figure, a figure that is increasing may indicate the sample is absorbing water
- Read the weight result on the display and record on the data sheet.
- Replace weighed SG sample in a core tray.
- After recording ten (10) immersed SG samples, weigh the test weight and record on the data sheet.
- Check the water quality daily.
- Change water twice a week or sooner if the water becomes dirty.
- Wipe up any spilled water and ensure good housekeeping.

9 Data collection

- Write the drill hole number, date and technician name on the data form.
- Double check the drill hole number as this is the key identifier for the data system.
- Any general comments should also be recorded on the data sheet.
- After a few data sheets have been filled in, enter this data in the excel spreadsheet, check for errors.
- Write the SG tray number (remember tray number increments from the previous tray processed) that has been assigned on the form. Also record the pallet number the SG tray is going to be stored on.

- Each new tray requires a new spreadsheet to be created, named and saved.
- The new spreadsheet will be saved with the following data, Tray number, Pallet number, Hole ID and date.
- An example of the file name would look like this: tray105_pallet_KHDDH445-1130-20171204.xls

Fig. 1 SG data collection sheet

XANADU MINES MONGOLIA SPECIFIC GRAVITY MEASUREMENTS												
Check gap and overlap	Missing From or To and negative width	SITE_ID	DEPTH_FROM	DEPTH_TO	WEIGHT_AIR	WEIGHT_AIR_WAX	WEIGHT_WATER	SG	exp	ln	Date	TECHNICIAN:
Depth Validation		Hole id	metre	metre	gramm	gramm	gramm	%			(yyyy-mm-dd)	Geotech name
		KHDDH479	9.1	9.2	442		277	2.679			2018-09-07	Byambaa
		KHDDH479	12.7	12.8	373		231	2.627			2018-09-07	Byambaa
		KHDDH479	25.8	25.9	381		234	2.592			2018-09-07	Byambaa
		KHDDH479	32.4	32.5	391		245	2.678			2018-09-07	Byambaa

10 Data Collection Sheet

Line 6 shows the tray number, **105**. Each number is unique and increases by one from the previous processed tray. The tray number is the unique tracking identifier in the data collection system. The boxed region is the length of core sample i.e., sample at 800.26 m is 10 cm long.

11 Reference

SOP 101- Manual Handling.

Appendix 5 : Density average values by pdom, area and oxidation code

Zaraa

pdom	Oxide			Transition			Fresh		
	SG Mean	SG Min	SG Max	SG Mean	SG Min	SG Max	SG Mean	SG Min	SG Max
1	N/A	N/A	N/A	N/A	N/A	N/A	2.77	2.2	2.97
2	N/A	N/A	N/A	N/A	N/A	N/A	2.78	2.52	3.01
3	N/A	N/A	N/A	N/A	N/A	N/A	2.72	2.07	3.07
4	N/A	N/A	N/A	N/A	N/A	N/A	2.76	2.08	3.88
5	2.6	2.6	2.6	N/A	N/A	N/A	2.72	2.57	2.91
6	2.41	2.33	2.77	N/A	N/A	N/A	N/A	N/A	N/A
700	N/A	N/A	N/A	N/A	N/A	N/A	2.8	2.3	3.41
710	2.52	2.25	3.7	2.69	2.42	2.85	2.76	1.99	3.59
720	N/A	N/A	N/A	N/A	N/A	N/A	2.74	2.57	3.04
730	2.64	2.59	2.68	2.63	2.53	2.67	1.75	2.29	3.58
740	N/A	N/A	N/A	N/A	N/A	N/A	2.74	2.54	2.99
750	N/A	N/A	N/A	N/A	N/A	N/A	2.71	2.66	2.79

Zephyr

pdom	All		
	SG Mean	SG Min	SG Max
210	2.61	N/A	N/A
211	2.61	N/A	N/A
230	2.74	N/A	N/A
231	2.74	N/A	N/A
330	2.74	N/A	N/A
331	2.74	N/A	N/A
4130	2.71	N/A	N/A
4131	2.71	N/A	N/A
510	2.72	N/A	N/A
511	2.72	N/A	N/A

Copper Hill

pdom	All		
	SG Mean	SG Min	SG Max
410	2.74	N/A	N/A
311	2.75	N/A	N/A
420	2.7	N/A	N/A
221	2.72	N/A	N/A
222	2.85	N/A	N/A
321	2.75	N/A	N/A
430	2.72	N/A	N/A
231	2.76	N/A	N/A
232	2.94	N/A	N/A

pdom	All		
	SG Mean	SG Min	SG Max
331	2.76	N/A	N/A
440	2.71	N/A	N/A
241	2.78	N/A	N/A
242	2.71	N/A	N/A
341	2.76	N/A	N/A
450	2.7	N/A	N/A
251	2.79	N/A	N/A
351	2.75	N/A	N/A

Golden Eagle

pdom	All		
	SG Mean	SG Min	SG Max
1	N/A	N/A	N/A
11	2.64	N/A	N/A
13	2.76	N/A	N/A
2	N/A	N/A	N/A
21	2.58	N/A	N/A
23	2.75	N/A	N/A
3	2.67	N/A	N/A

White Hill

pdom	All		
	SG Mean	SG Min	SG Max
21-3	2.75	N/A	N/A
31-3	2.74	N/A	N/A
41-3	N/A	N/A	N/A
51-3	2.76	N/A	N/A
61-3	2.73	N/A	N/A
71-3	2.74	N/A	N/A
42-1	N/A	N/A	N/A
42-3	2.79	N/A	N/A
23-1	2.58	N/A	N/A
23-3	2.75	N/A	N/A
33-1	2.69	N/A	N/A
33-3	2.76	N/A	N/A
53-1	N/A	N/A	N/A
53-3	2.74	N/A	N/A
63-1	2.64	N/A	N/A
63-3	2.73	N/A	N/A
73-1	2.65	N/A	N/A
73-3	2.74	N/A	N/A
44-1	2.64	N/A	N/A
44-3	2.73	N/A	N/A
35	N/A	N/A	N/A

pdom	All		
	SG Mean	SG Min	SG Max
65	2.51	N/A	N/A
75	2.74	N/A	N/A

Stockwork Hill

pdom	All	
	OX SG Av	FR SG Av
1504	2.7	N/A
14-Mar	2.7	N/A
40	2.67	N/A
803	N/A	2.69
30	N/A	2.69
801	N/A	2.69
10	N/A	2.69
4002	N/A	2.69
1502	N/A	2.69
802	N/A	2.69
20	N/A	2.69
51	N/A	2.72
54	2.65	N/A
50	2.73	N/A
805	2.71	N/A
806	N/A	2.74
55	2.74	N/A
61	2.68	N/A
807	2.69	N/A
60	2.69	N/A
81	2.67	N/A
809	2.69	N/A
80	2.71	N/A
71	2.64	N/A
77	2.66	N/A
70	2.68	N/A
91	2.71	N/A
810	2.71	N/A
90	2.72	N/A

Appendix 6 : Qualifying Statements

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Appendix 7 : XAM QAQC Standard Operating Procedure (SOP)

Kharmagtai Project

XAM-SOP-018

Diamond Drill Core Sampling and Quality Control

Version	Date	Description of Changes	By	Reviewed By	Approved By
V1	06 Sep 2014	Original	Andy Stewart		
V2	17 Sep 2018	Edited 1 batch of 45 samples to 1 batch of 50 samples	Ulziibayar		

1. SUMMARY

Xanadu's QAQC protocols for diamond drilling comprise two standards, two blanks, one core (field) duplicate and one pulp (analytical) duplicate inserted randomly in batches of 50 samples. Any batch of samples with a failure is routinely re-assayed until it passes, unless a geological override has been applied for barren batches or marginal failures with low impacts.

2. OBJECTIVE

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code') is a professional code of practice that sets minimum standards for Public Reporting of minerals Exploration Results, Mineral Resources and Ore Reserves. The JORC Code provides a mandatory system for the classification of minerals Exploration Results, Mineral Resources and Ore Reserves according to the levels of confidence in geological knowledge and technical and economic considerations in public reports. In the context of complying with the principles of the JORC code a comprehensive Quality Assurance (QA) and Quality Control (QC) program has been developed, which comprise a geological quality management system. This memo has been prepared for the purpose of documenting procedures and presents a program for all Xanadu Mines diamond drilling programs and will describe the steps being taken to minimize sampling errors and presents written protocols to define (1) the sampling program, (2) the preparation of subsamples, (3) the assaying procedures, and (4) the procedures and criteria for Quality Control (QC) for all Exploration Drilling Projects for Xanadu Mines. Although this memorandum focuses only on the processes of sampling and assaying, proper recording of geological data is also an integral part of any quality evaluation process.

3. DEFINITIONS

Quality assurance (QA) concerns the establishment of measurement systems and procedures to provide adequate confidence that quality is adhered to. Quality control (QC) is one aspect of QA and refers to the use of control checks of the measurements to ensure the systems are working as planned.

- The QC terms commonly used to discuss geochemical data are:
- Precision: how close the assay result is to that of a repeat or duplicate of the same sample, i.e., the reproducibility of assay results.
- Accuracy: how close the assay result is to the expected result (of a certified standard).
- Bias: the amount by which the analysis varies from the correct result.

4. QUALITY CONTROL REQUIRMENTS

The aim of Quality Control work is to ensure that sampling, assaying, and geological recording are of high quality for the purpose of sound geological interpretations, which ultimately leads to reliable evaluations. Quality control requirements are determined first by what is needed from a technical perspective to conduct an evaluation and second by what is needed from a regulatory disclosure perspective (JORC 2012). If the technical perspective is adequately addressed for the level of evaluation being conducted, then the regulatory disclosure perspective should also be met for the same level of evaluation. Problems will occur if technical data is used for purposes other than it was intended by the collecting geologists. In other words, make sure that your geological homework is done properly and know what the end use of your data by other people is going to be. Quality Control (QC) refers to the results for standards, blanks, duplicates of samples and repeats of previously prepared pulps that are all submitted to the laboratory with the samples. For such QC data to be accepted by an independent auditor it is usually a requirement that they be submitted "blind" to the laboratory in such a way that the laboratory cannot identify them. Following a number of significant fraud cases in the mining industry, QC now includes attending to the Chain of Custody, to ensure that the integrity of samples collected in the field is not compromised.

5. DIAMOND CORE SAMPLING TECHNIQUES

The following guidelines should be considered for all diamond drill core sampling.

- Core recovery should be recorded for bias assessment.
- Care should be taken when marking depths and sample intervals when there is broken core with poor recovery.
- Core should be re-assembled and marked with a single continuous line for initial splitting by sawing to avoid sampler bias. Sawing operations should use clean water to avoid contamination. The rock saw is regularly flushed regularly with fresh water.
- Care should be taken to avoid sample mix-ups when core is sampled, bagged, and QC samples inserted.
- A sampling nonograph should be constructed to guide crushing/pulverizing/ subsampling at a sample preparation facility. These guidelines are set to ensure optimum quality control of results.

Sampling issues should be dealt with by conducting sampling control tests to understand the heterogeneity of mineralization so that sampling protocols can be optimized to minimize sampling errors and obtain reliable assays. Sampling devices should be checked for integrity to ensure no bias in subsamples.

Sampling issues are generally of two types:

- Initial subsampling errors where non-liberated native heavy minerals or coarse aggregates of non-native minerals are present, and the sample size is reduced too quickly relative to the sample weight resulting in non-representative subsamples; and
- Final subsampling errors where liberated native heavy minerals are present and segregation results in non-representative samples.

Sampling control tests comprise heterogeneity, duplicates, grain size, and precision tests. They are used to characterize heterogeneity and to calculate sample weights, particles sizes, or sampling errors. The interrelationship of these parameters is graphically presented as a sampling nomograph, which is used to optimize sampling protocols.

Sampling errors are generally minimized by increasing the size of samples relative to particle size when splitting subsamples. If significant amounts of coarse native heavy minerals are present, then Screen Metallics Assaying is conducted to pre-concentrate samples to minimize the nugget effect. Sampling nomographs are used in conjunction with Screen Metallics to optimize sample weights.

6. SAMPLE ASSAY PREPARATION AND ANALYSES

Routine sample preparation and analyses of XAM samples are carried out by ALS LLC (ALS Mongolia), who operates an independent sample preparation and analytical laboratory in Ulaanbaatar. Sample preparation (also referred to as sample reduction) is the process by which a sample is crushed and pulverized for analysis. This will almost always involve sub-sampling. The right sampling method will produce a sub-sample that is representative of the total sample. Good sample reduction practice is essential to obtaining meaningful and reliable analytical data.

All diamond core samples are prepared to meet standard quality control procedures as follows:

- Pre-preparation processing (weighting; WGH79)
- Sample crush to nominal 3.35mm (75% passing 3.35mm) <3.5kg (CRU23)
- Jaw crush >3.5kg to nominal - 3.35 mm, excess prep (CRU24)
- Sample Size Reduction - Rotary Split (SPL27)
- Ring mill =<500g sample, 90% passing 75 µm (PUL46)

A 30g sub sample of the assay pulp is fused in a lead collection fire assay. The resulting prill is dissolved in aqua regia followed by presentation to an AAS to quantify the gold in the sample, with a lower detection (LDL) of 0.01 ppm.

A sub sample is of the assay pulp is digested with a multi-acid (4-acid) digestion using a combination of HNO_3 (nitric acid), HF (hydrofluoric acid), $HClO_4$ (perchloric acid) and HCl (hydrochloric acid). The four acid digestion method is a very effective dissolution procedure for a large number of mineral species and is suitable for a wide range of elements. After the digestion, the solution is analysed by either ICP-AES or ICP-OES or both.

7. QUALITY ASSURANCE AND QUALITY CONTROL PROTOCOL

For advanced stage and delineation exploration work, accurate and precise assays with no contamination are required, so that resource/reserve estimates are reliable. Xanadu's QAQC protocols for diamond drilling comprise two standards, two blanks, one core (field) duplicate and one pulp (analytical) duplicate inserted randomly in batches of 50 samples. This provides a significant and satisfactory level of control over the assaying and reasonable monitoring of the sample preparation (there is 5% control using Standards and 5% control using re-assaying of Duplicates and Repeats). The procedure to insert the Standards into the batch should be random: they should look the same as the pulp Repeats (recovered from the laboratory and renumbered), and all checks should be submitted blind. All standards, blanks, and duplicates must be designated by the geologist at the time of logging, so that they can be inserted into the appropriate part of the sample sequence. The field assistants can place the standards and blanks into the sample sequence, but before the samples are dispatched to the lab, the standards and blanks must be checked by the geologist to minimize the chance of error.

7.1 Standard Reference Materials (SRM)

Standard Reference Materials (SRM) is used to monitor the accuracy and precision of an assay lab and is one of the most critical parts of a QA/QC program. Standards can monitor bias errors and sequencing errors that can occur during the assay process. Bias errors can be due to incorrect calibration of the analytical equipment, leading to a whole batch of samples being reported incorrectly. Sequencing errors can be due to samples getting mixed up in the analytical process, leading to assay values being assigned to the wrong samples. If standards submitted with a batch of samples all return a low bias, and this bias is consistent throughout a resource drilling program, the resource estimate will be wrong. Standards are characterised material that has been assayed at many labs to determine the grade and homogeneity. The results of the different lab assays are used as the mean grade, and the homogeneity is measured as a standard deviation about this mean.

- Standards are assayed with every batch of samples. There must be a minimum of 2 standards in each batch of samples and included at an overall rate of two standards for every 50 samples.
- Standards should approximate the grade and composition of the regular sample material (matrixmatched) and should be placed at regular intervals throughout the sample batch. In addition, medium and high-grade standards should be placed into suspected mineralized zones. If there are no obvious mineralized portions in holes, then low-grade standards can be placed anywhere in the sequence at a rate of one standard for every 50 samples.

Table 1: Commercial reference materials comprising 501c, 503c and 504b are supplied by Ore Research & Exploration Pty Ltd (ORE).

CRM CODE	PRINCIPLE CERTIFIED VALUES			State	Matrix	Mineralization
	Au (ppm)	Cu (wt.%)	Mo (ppm)			
OREAS 501c	0.221	0.276	97	Primary	Quartz Monzonite	Porphyry Copper Gold
OREAS 503c	0.698	0.538	318	Primary	Quartz Monzonite	Porphyry Copper Gold
OREAS 504b	1.61	1.11	499	Primary	Quartz Monzonite	Porphyry Copper Gold

7.2 Blanks

Blanks (standards with no detectable Au or Cu) are also submitted to detect contamination and sequencing errors. Coarse blanks are used to check for contamination in the sample preparation procedures while pulp blanks are used to test for contamination in the fire-assay and analytical procedures. Barren granitic material (Khanbogd Mountain granite) crushed to marble size (1 cm), is utilized as blank material. The Khanbogd Mountain granite has been checked to be barren with random assays. Blanks are to be nominated at the time of sample allocation, during the logging of the drill hole and two inserted randomly in every batch of 50 samples. Coarse blanks should only be used in the mineralized portion of the drill hole. If there is no suspected mineralization, then coarse blanks need not be inserted into the sample sequence.

7.3 Duplicates

Duplicates are samples collected, prepared and assayed in an identical manner as an original sample, to provide a measure of the total error of sampling. When this error is derived in relative terms, the total error is the sum of the errors due to splitting the initial duplicate, preparing the sample and assaying the sample. Duplicate check samples that are assayed with the original batch are a measure of the homogeneity of the gold distribution. There is no point in submitting waste samples as duplicates. Field duplicates are collected at the primary point of sampling (split diamond core), or re-chipping of trench sample channels. Submitting half of the second half of sawn diamond core is actually a way of measuring the difference in grade between very closely adjacent different samples in the deposit. While it does not provide a measure of the sample preparation or assaying errors, it may provide a measure of the nugget effect in a deposit as a part of defining a variogram for a geostatistics study. Insert one randomly in every batch of 50 samples.

Analytical duplicates are laboratory pulp splits, and one needs to be randomly inserted in every second batch of 50 samples. Crushing and pulverising reduces the particle size of drill core to a nominal size (e.g., 90% passing 75 µm) and then a small subsample (say 200 g) of this pulp is retained for assay in a pulp packet. Residues of samples may be collected at all stages of the sampling protocol.

8. MONITIRING OF STANDARDS AND BLANKS

Monitoring of standards and blanks data should be done on a real time basis using pre-determined failure/acceptance criteria that have been set up with the assaying laboratory before the reported grades are incorporated into the database. The results must be reviewed and approved by the QC manager who will ensure collection of appropriate QC data and monitor results. All standards and blanks data should be monitored to meet standard quality control procedures as follows:

- Individual standards assays greater than +3 SD of round robin mean = batch failure;
- Two or more consecutive standards assays greater +2 SD of round robin mean = batch failure; and
- Individual blanks assays greater than a cut-off limit of about 0.05 to 0.10 g/t = batch failure.
- Acceptance/rejection criteria are set to ensure optimum quality control of results. The two consecutive standards assays over 2 SD that define a bias may be relaxed depending on final use of assays from a practical perspective.
- All standards and blanks data should be plotted on graphs and a Table of Failures kept for monitoring problems and re-assays

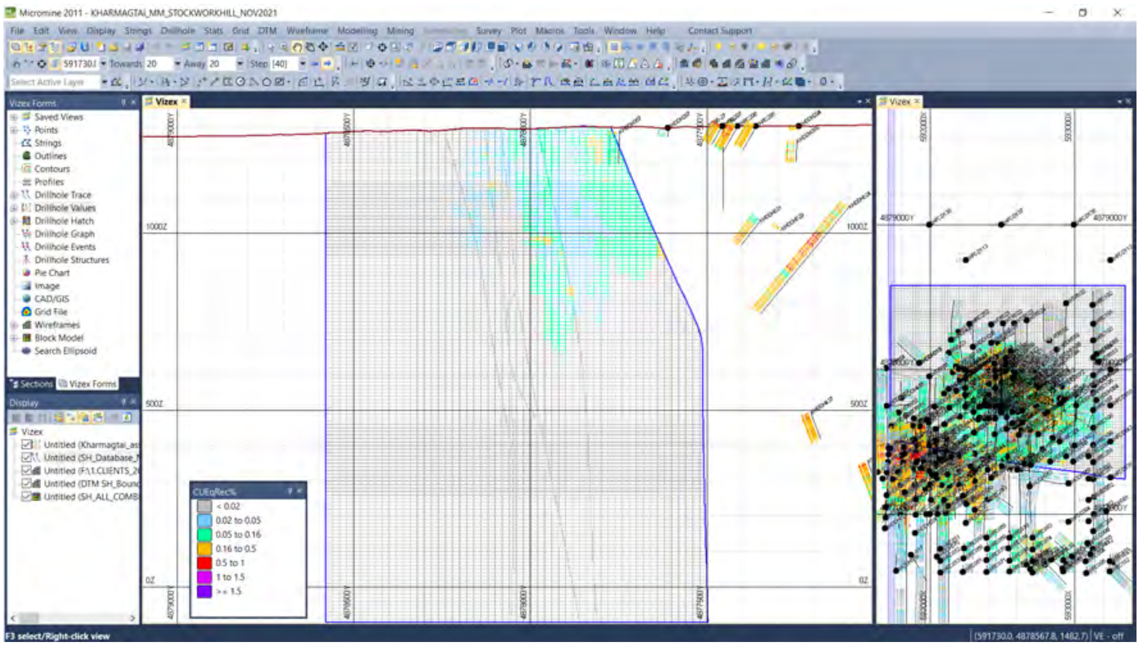
Any batch of samples with a SRM failure is routinely re-assayed until it passes, unless a geological override has been applied for barren batches or marginal failures with low impacts.

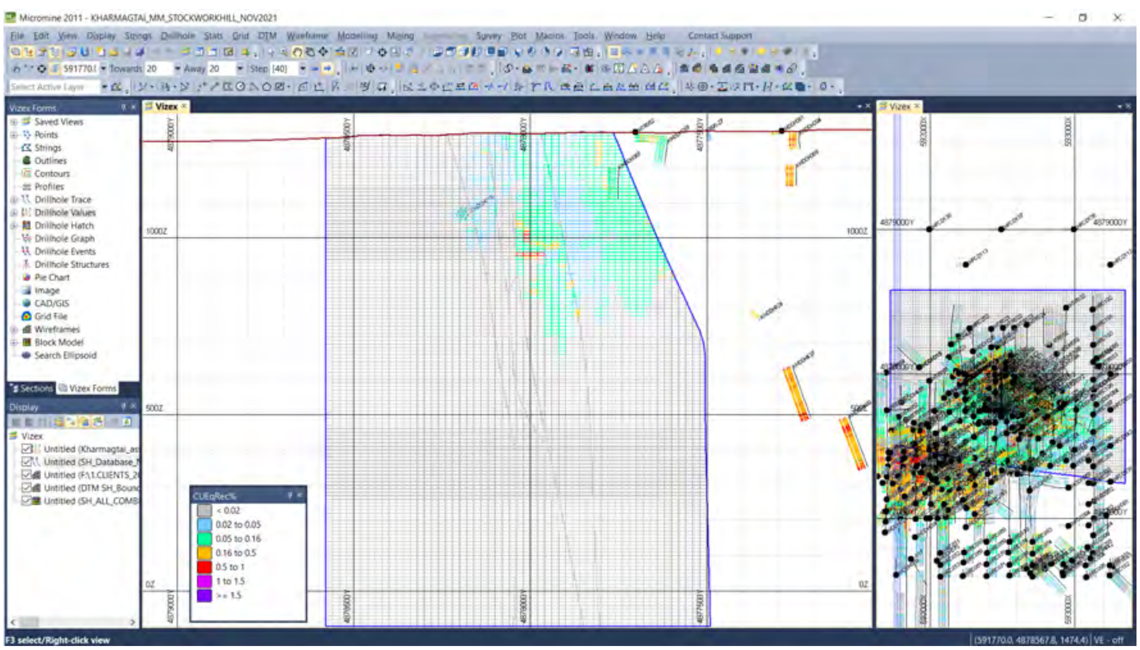
If anomalies are detected, the whole batch may need to be re-analysed (or else handled according to procedures defined in the written QA protocol). The laboratory will certainly also run its own standards and checks, which are not blind, but for which results should also be reported to the client.

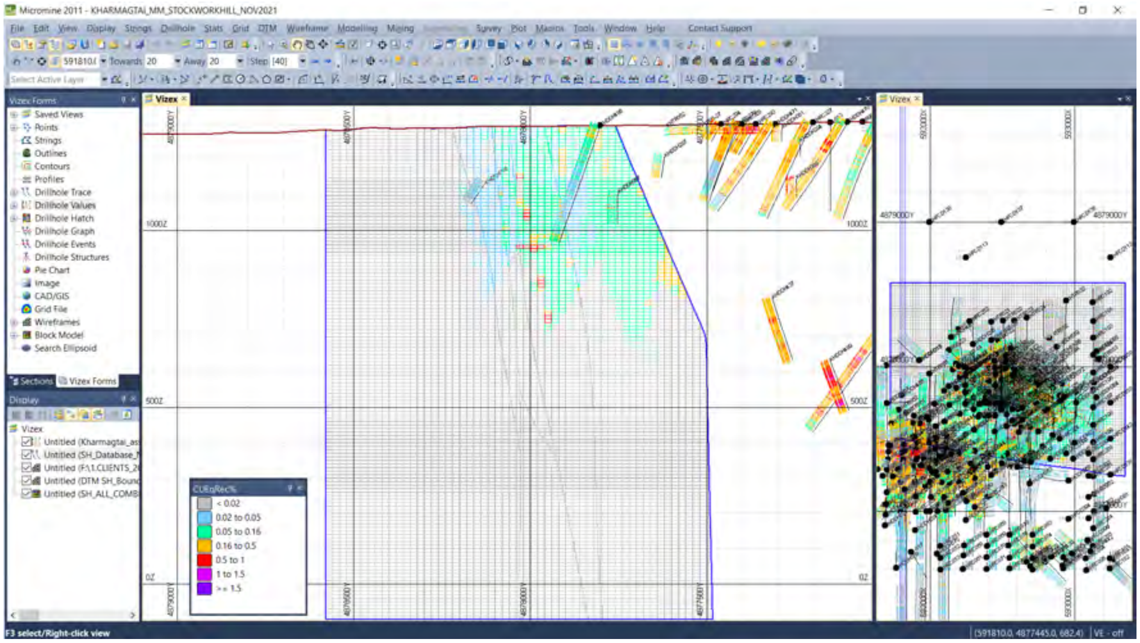
Laboratories should provide the results in electronic format, followed up with a signed certificate (which may also be digital). All the assay results should be stored in a Geo-Bank database that must separately identify all check samples and their known values. In the case of Standards, these are the Expected Mean and Expected Variance. In the case of field Duplicates and pulp Repeats this is the matching sample number for the original analysis.

Appendix 8 : Block model section – by Project Area – grade section

Stockwork Hill Sections – start at 591730mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.



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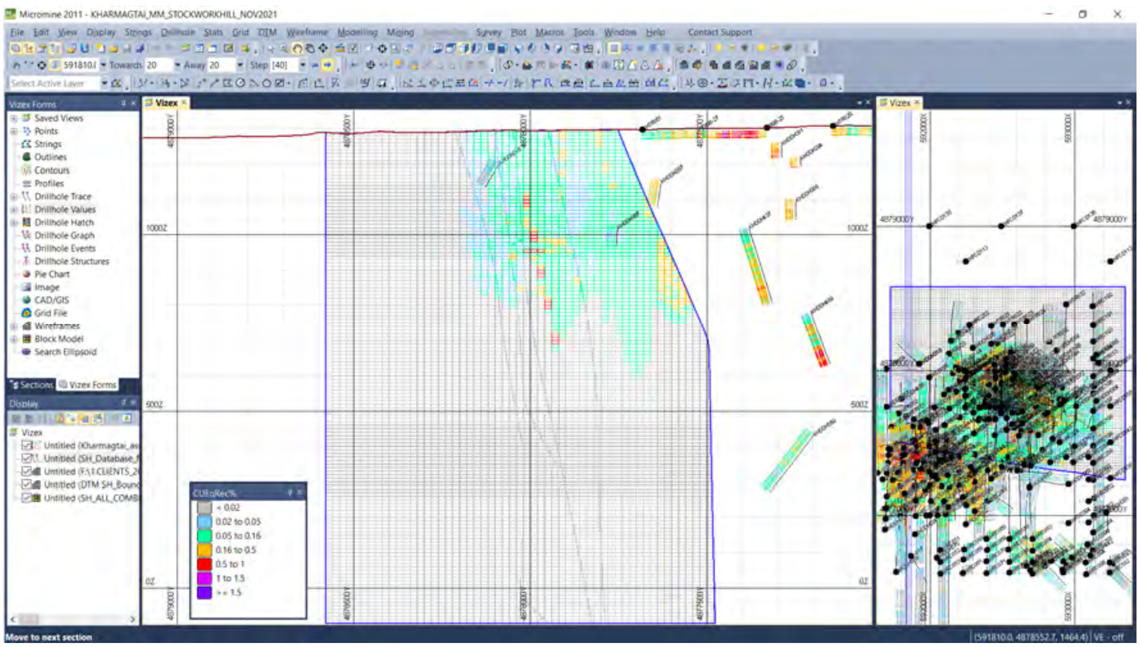
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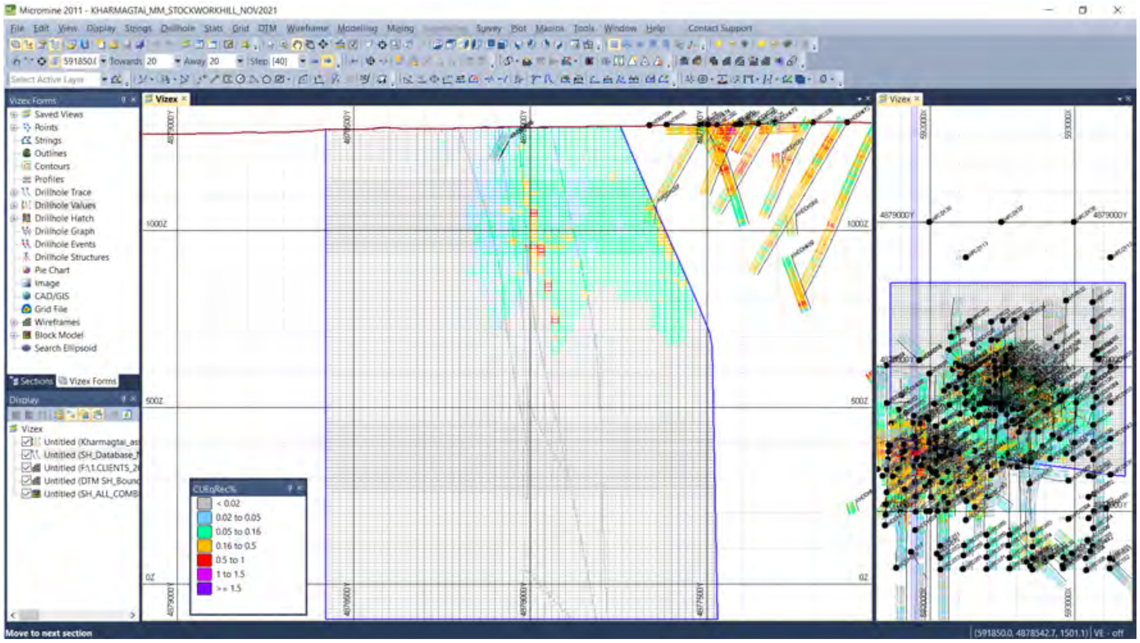
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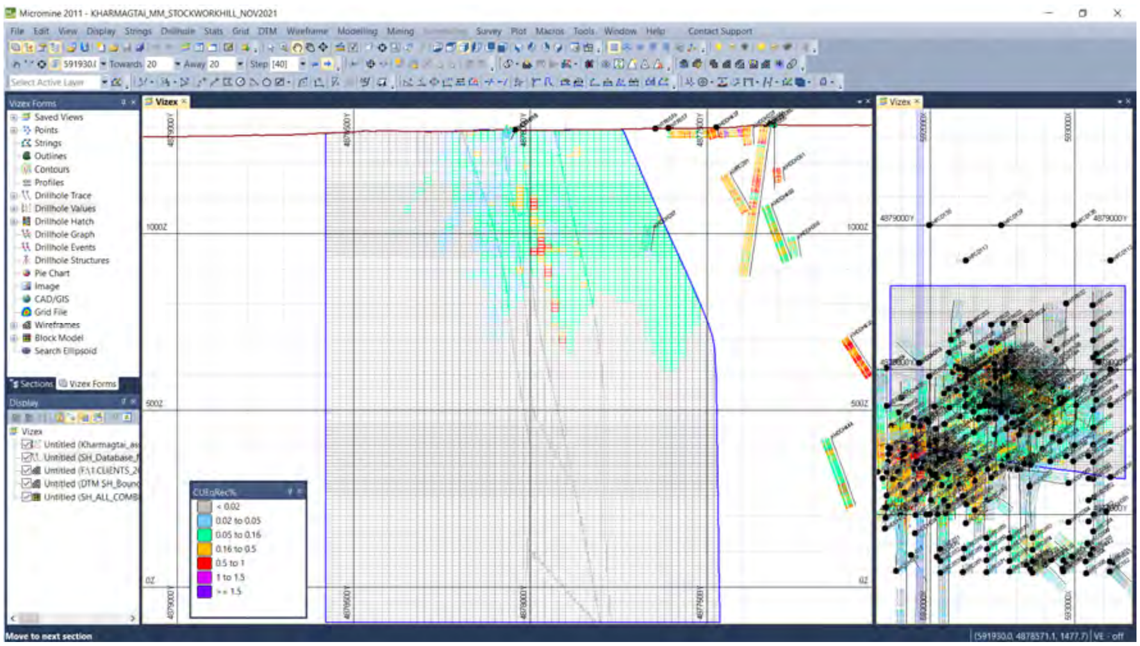
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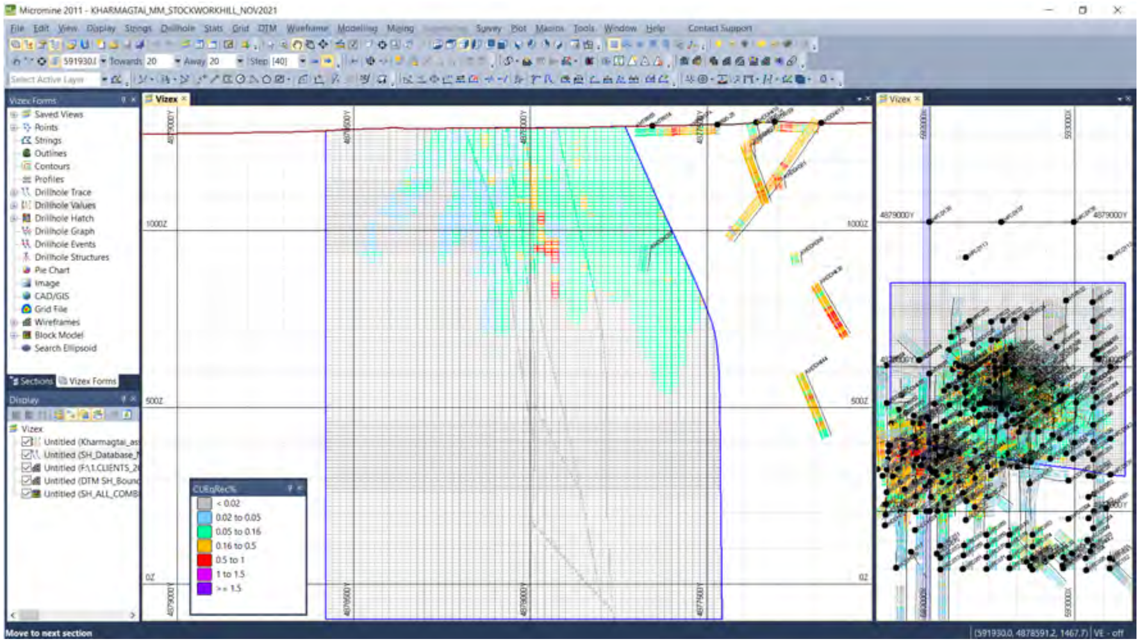
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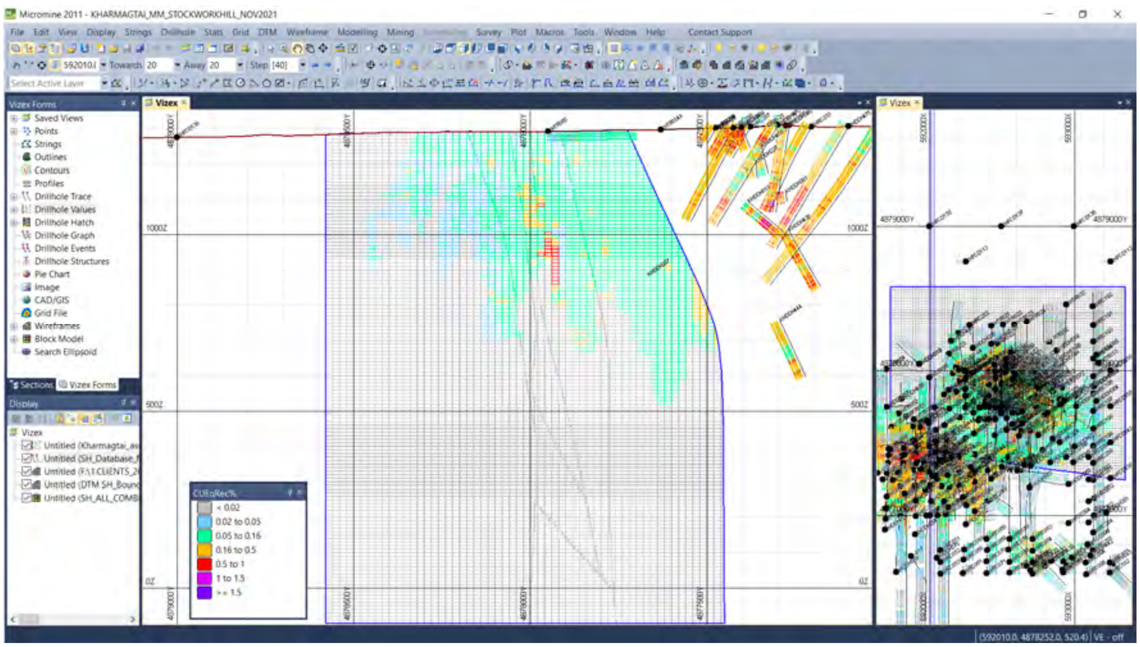
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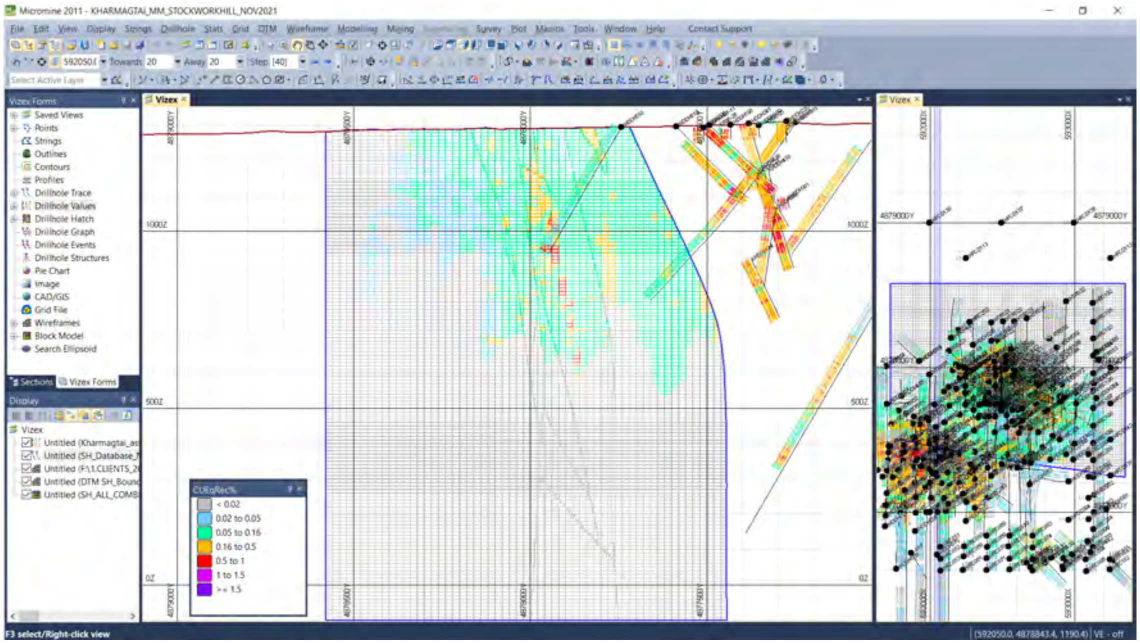
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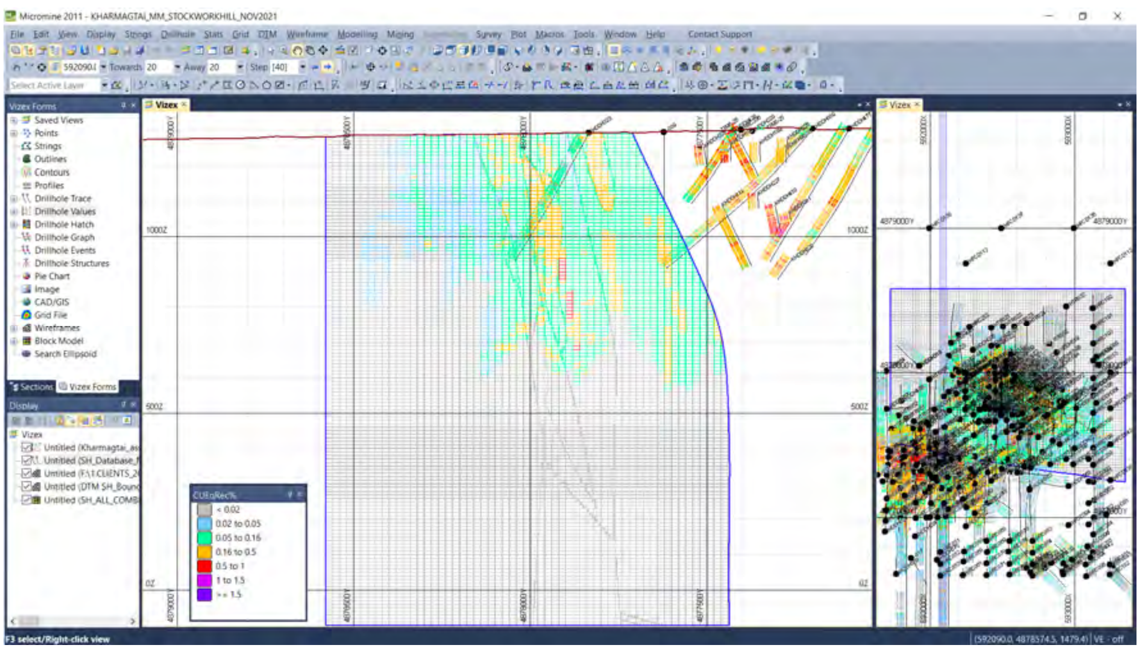
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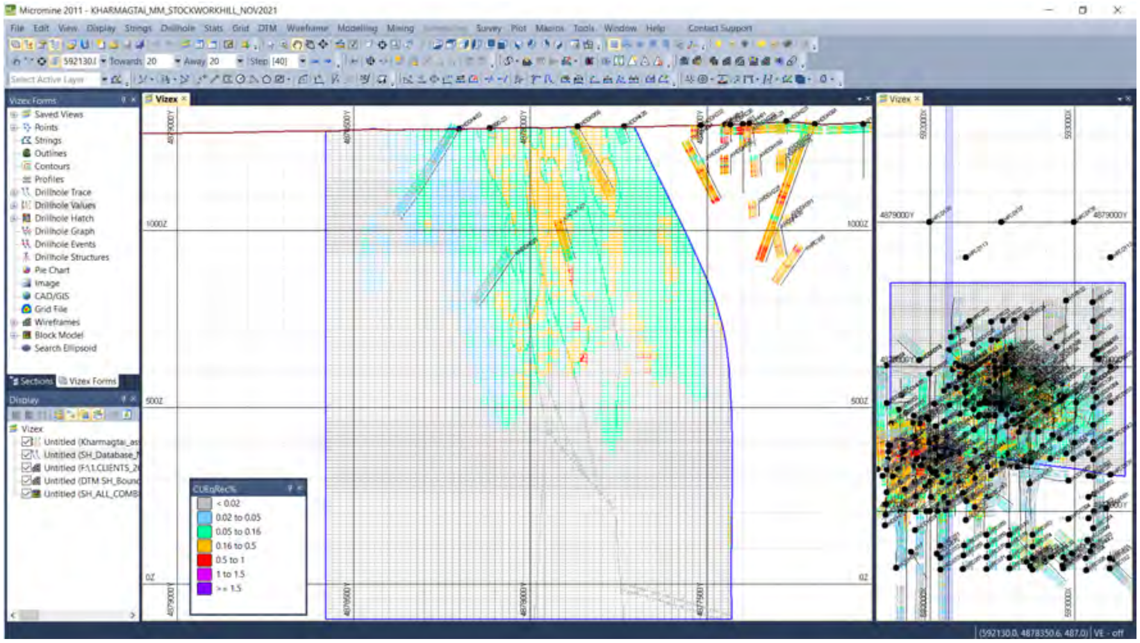
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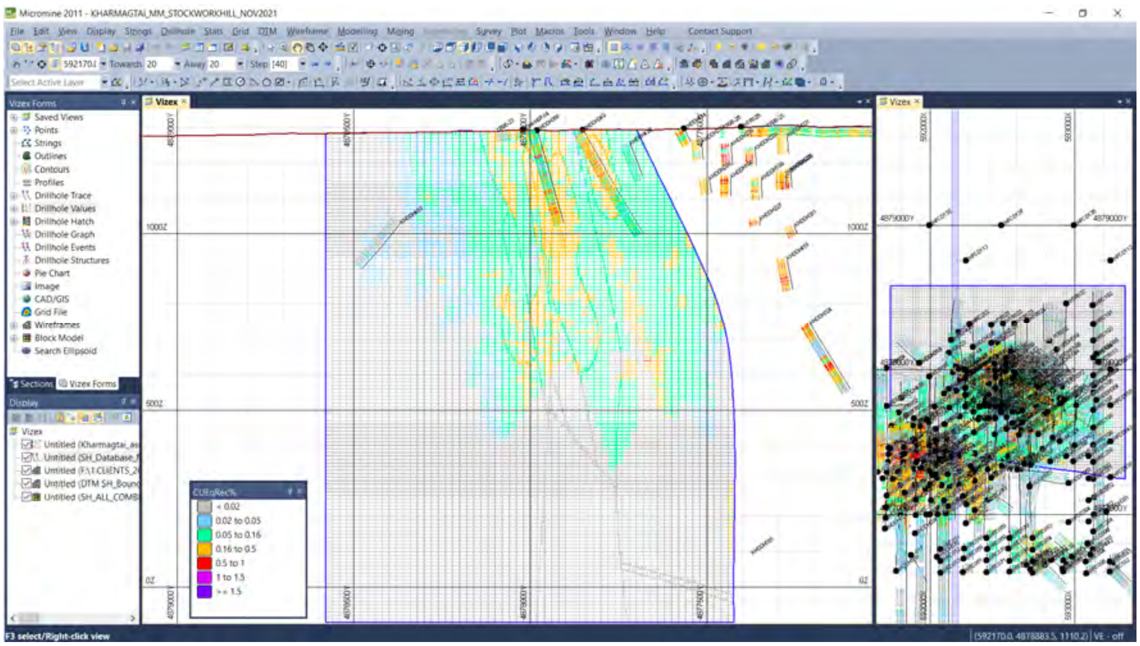
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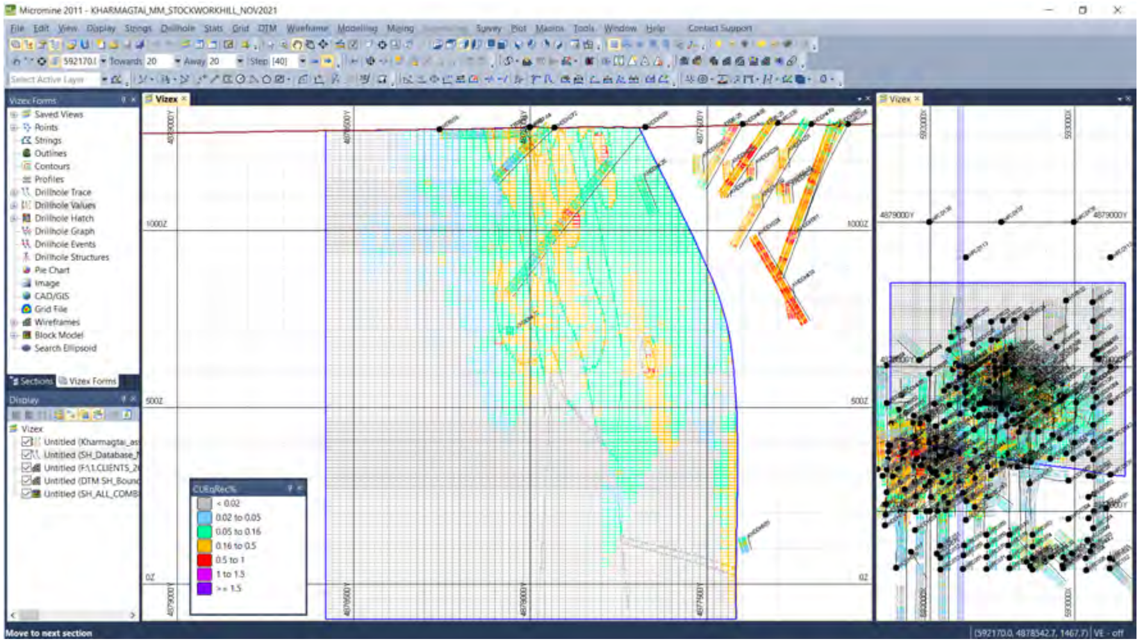
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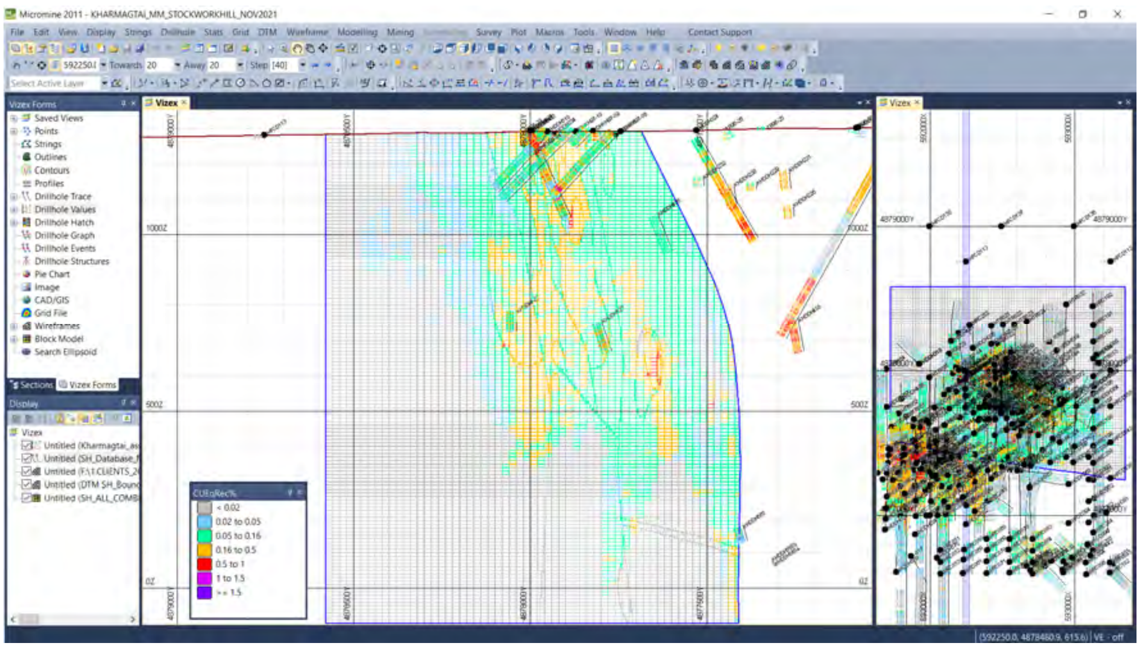
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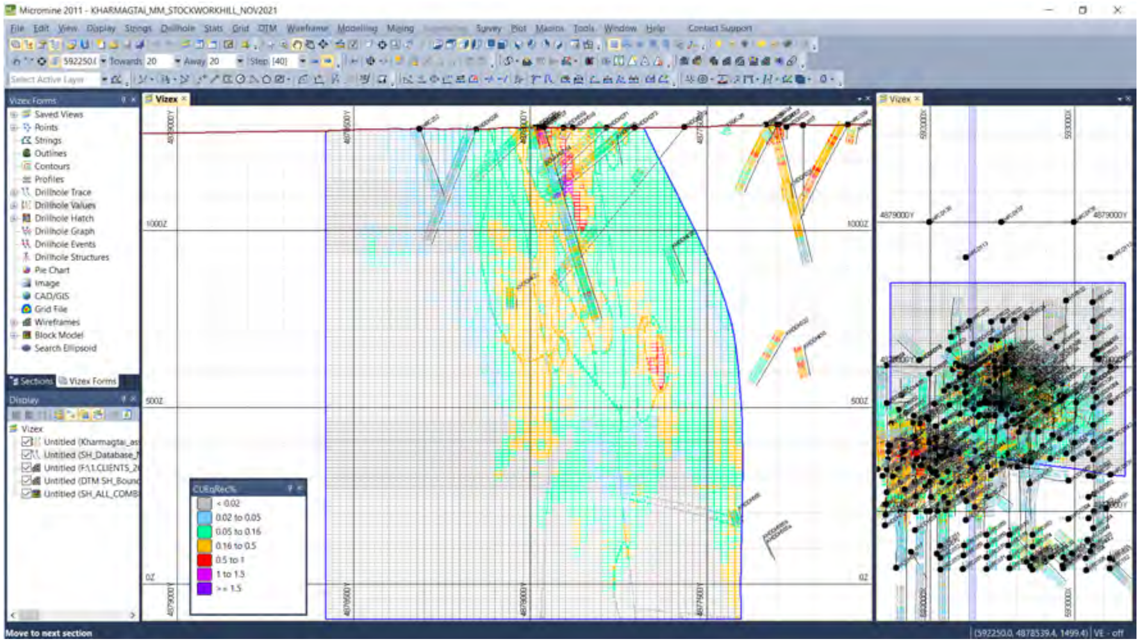

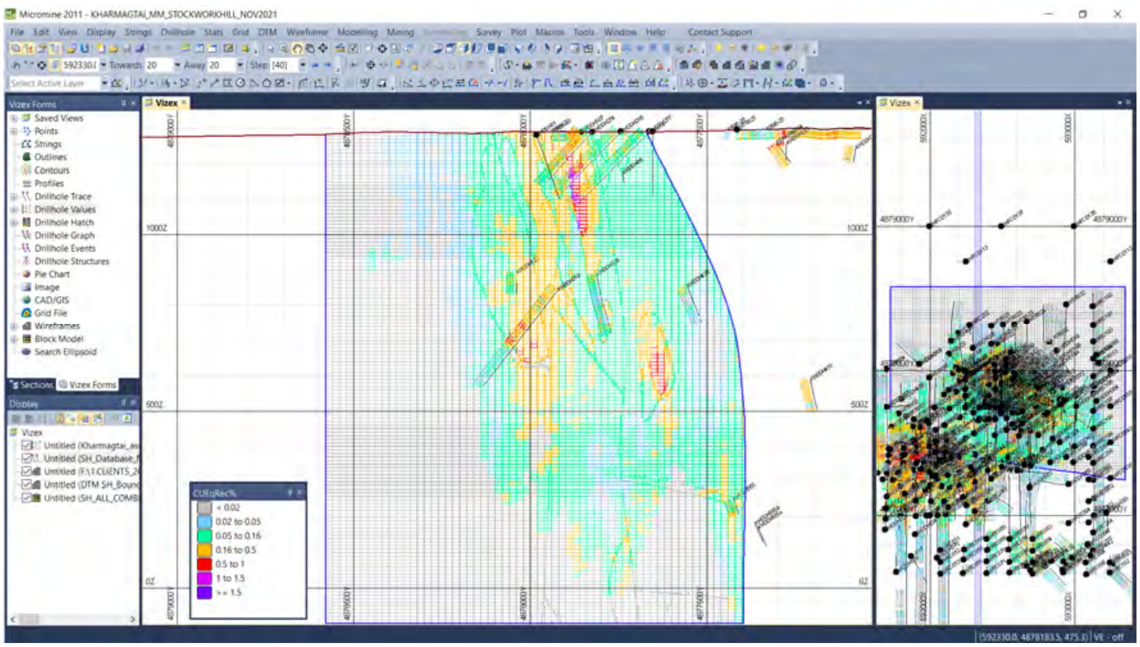

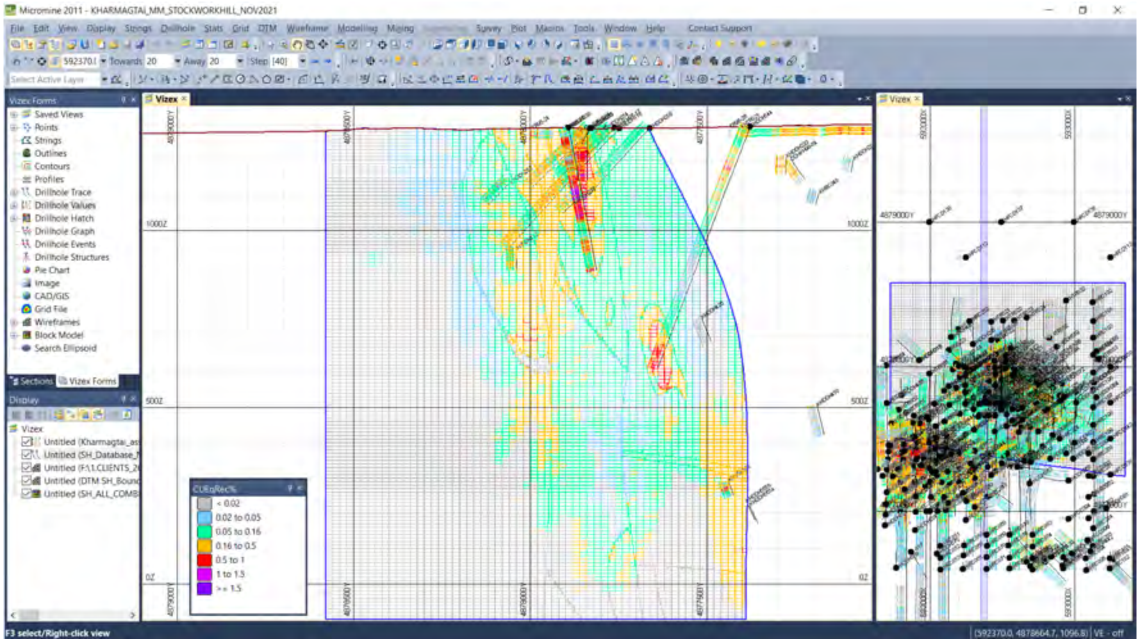
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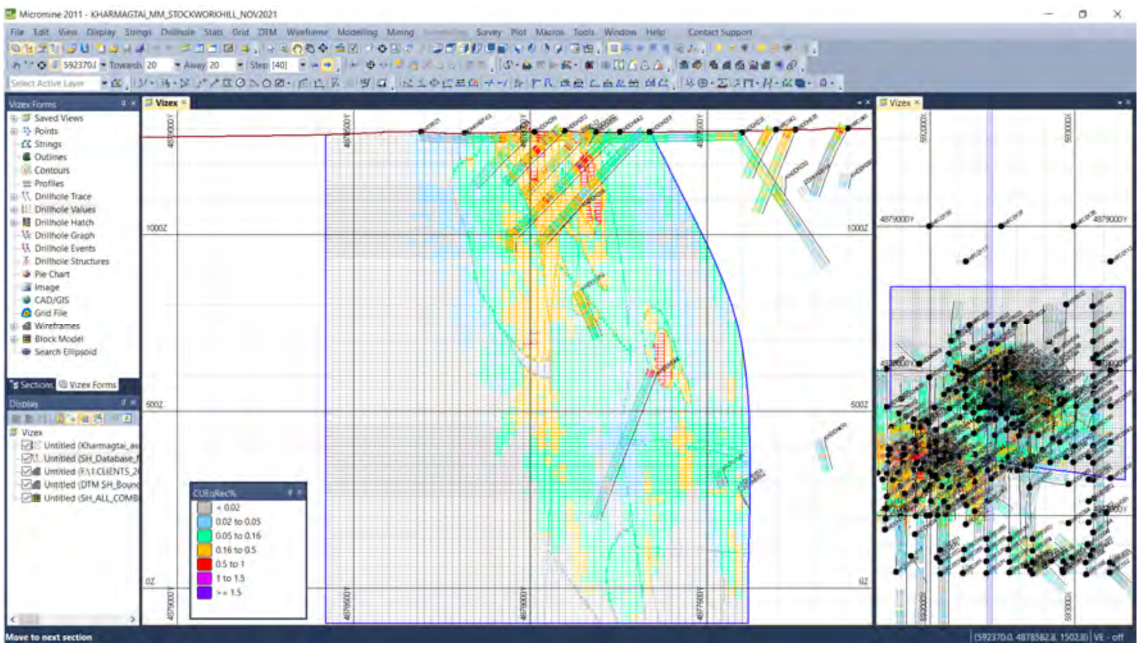
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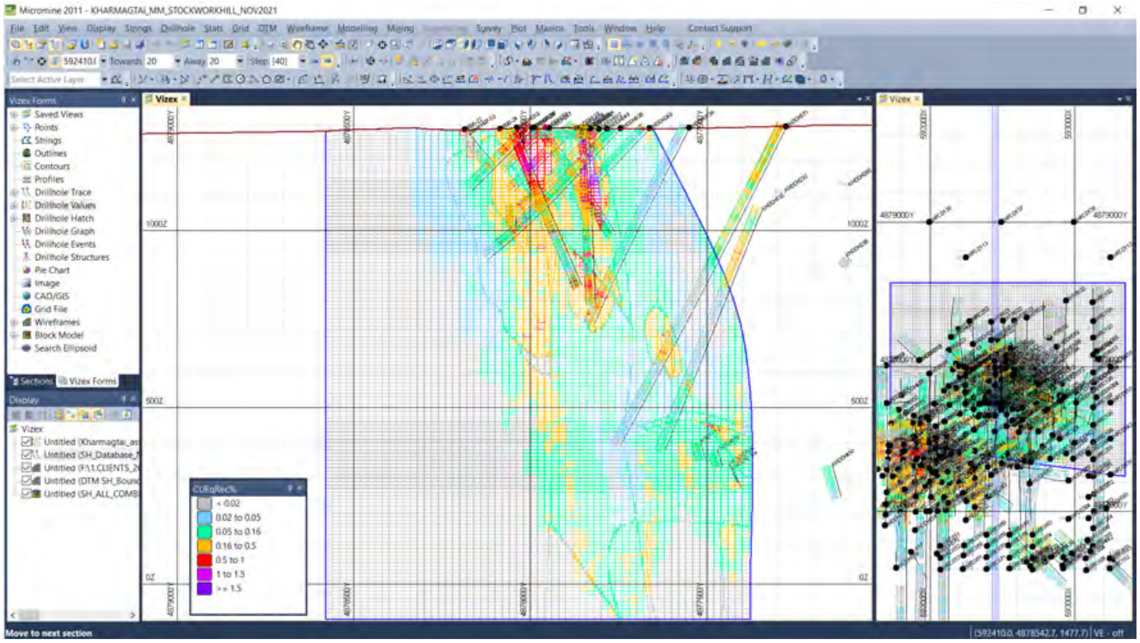
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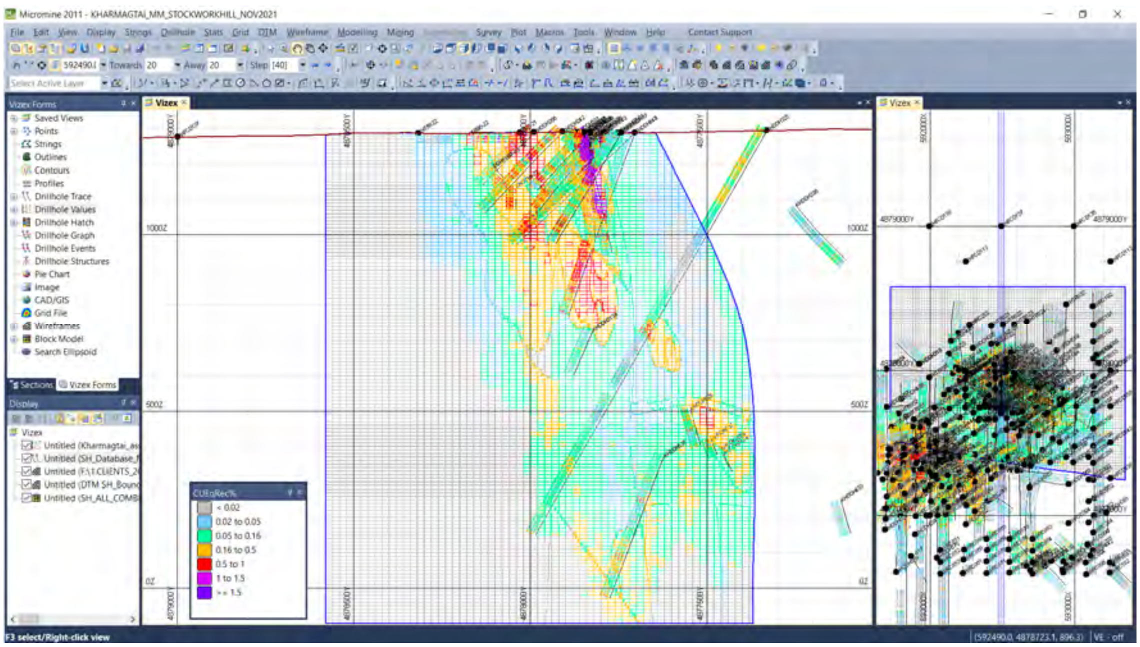
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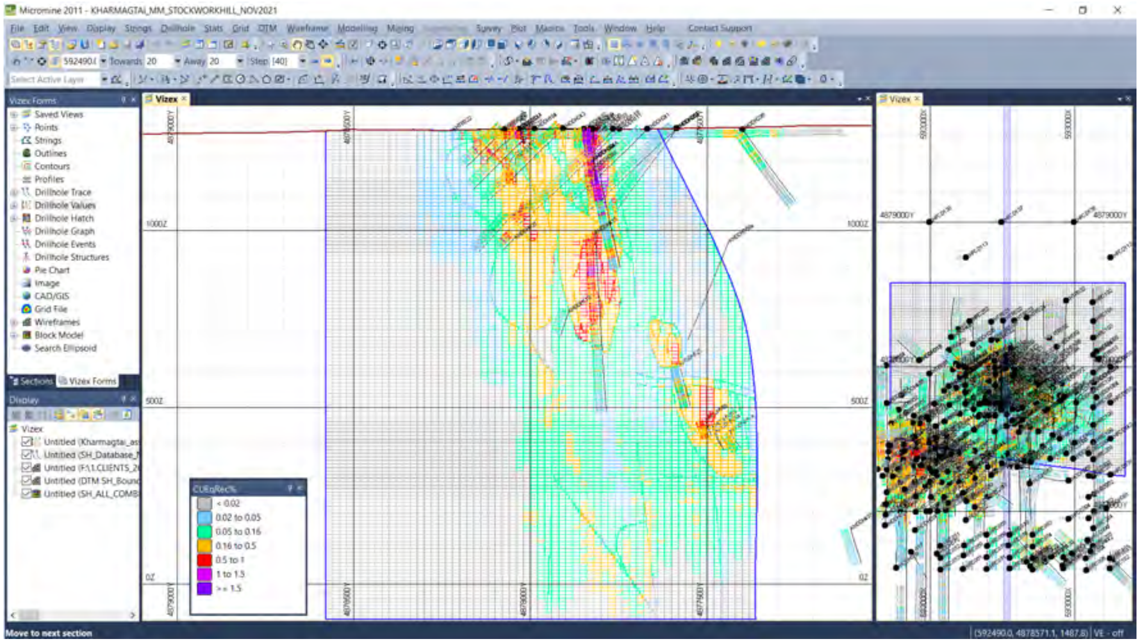
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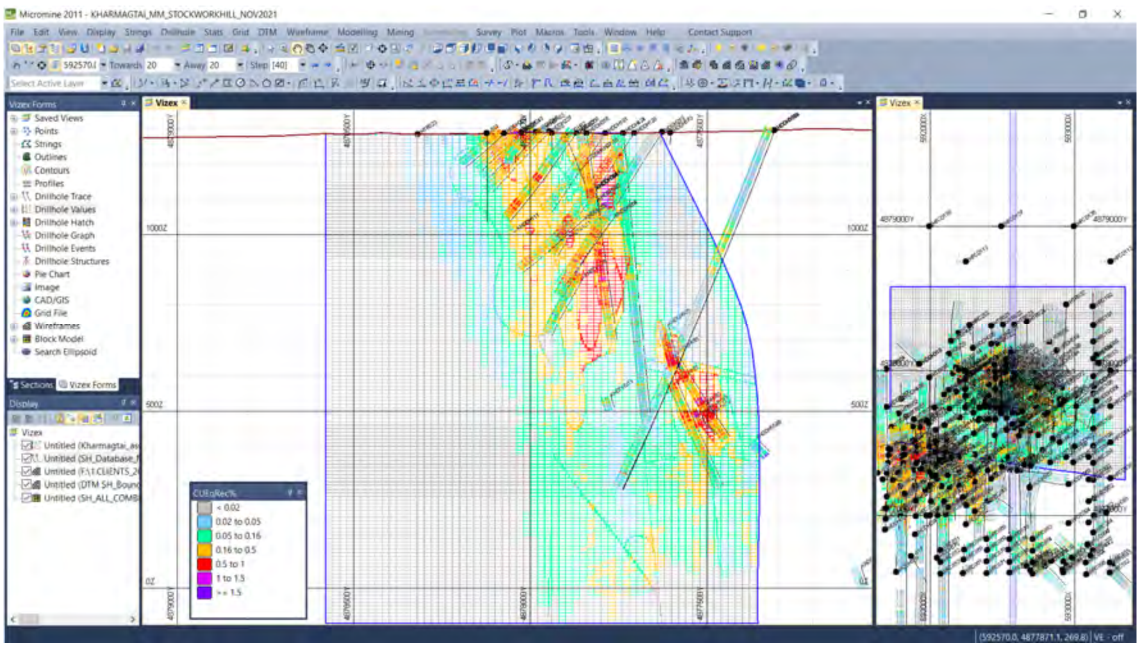
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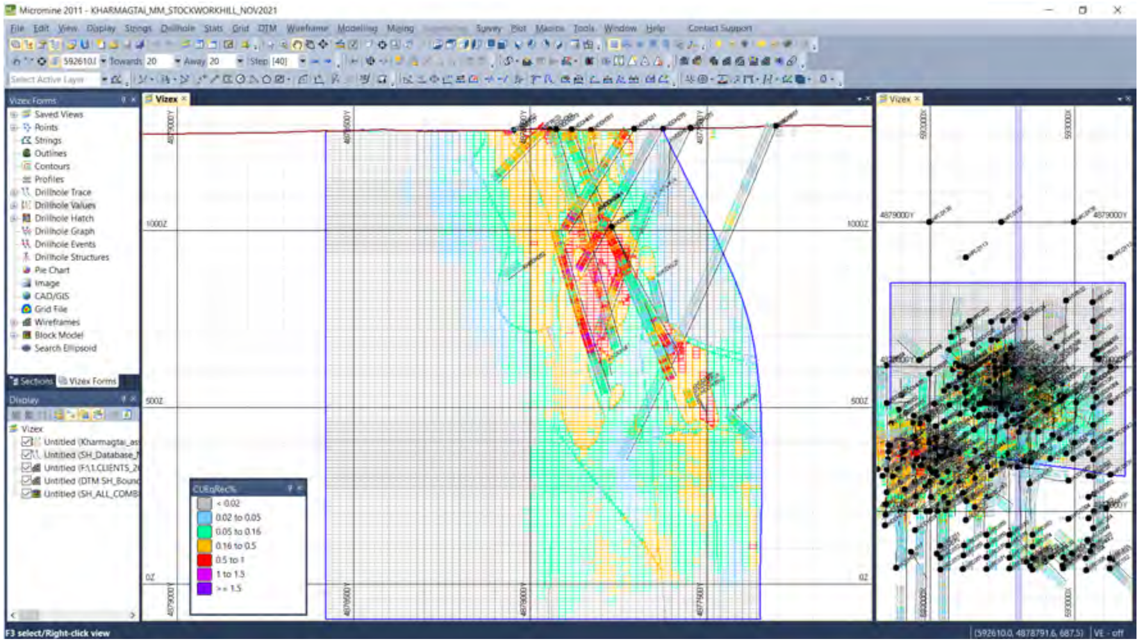
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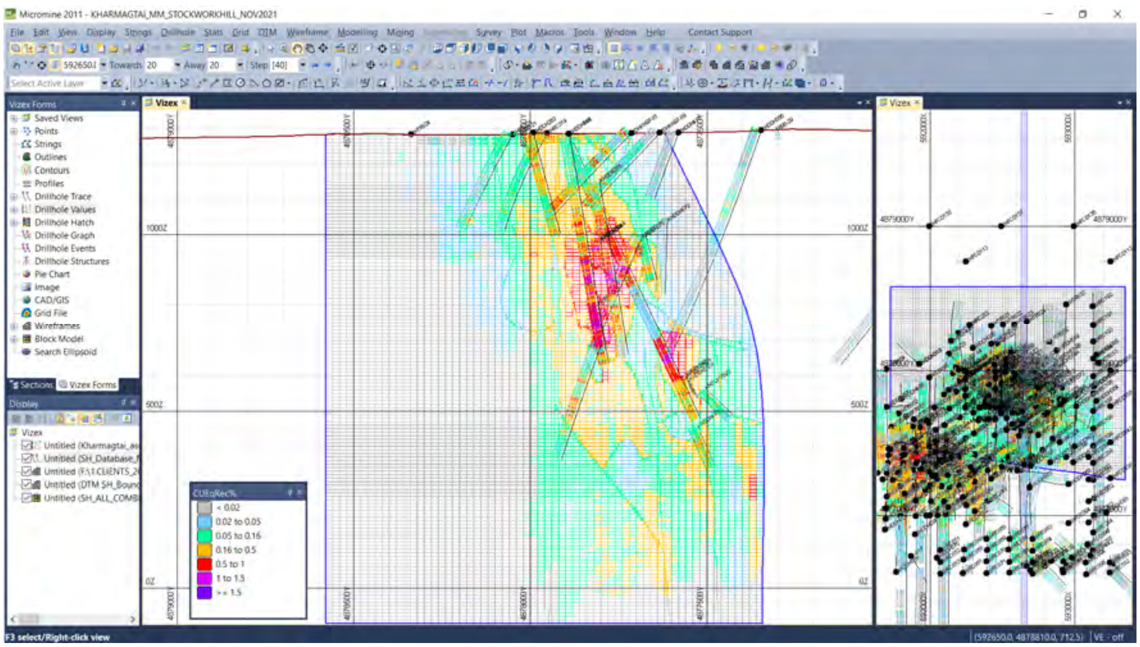
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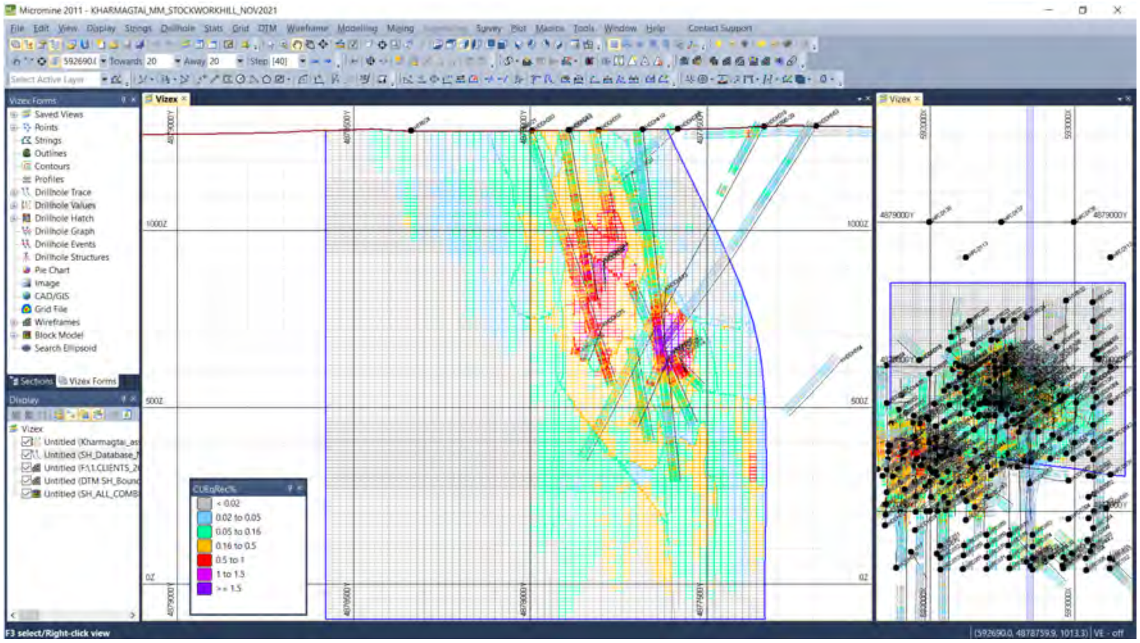
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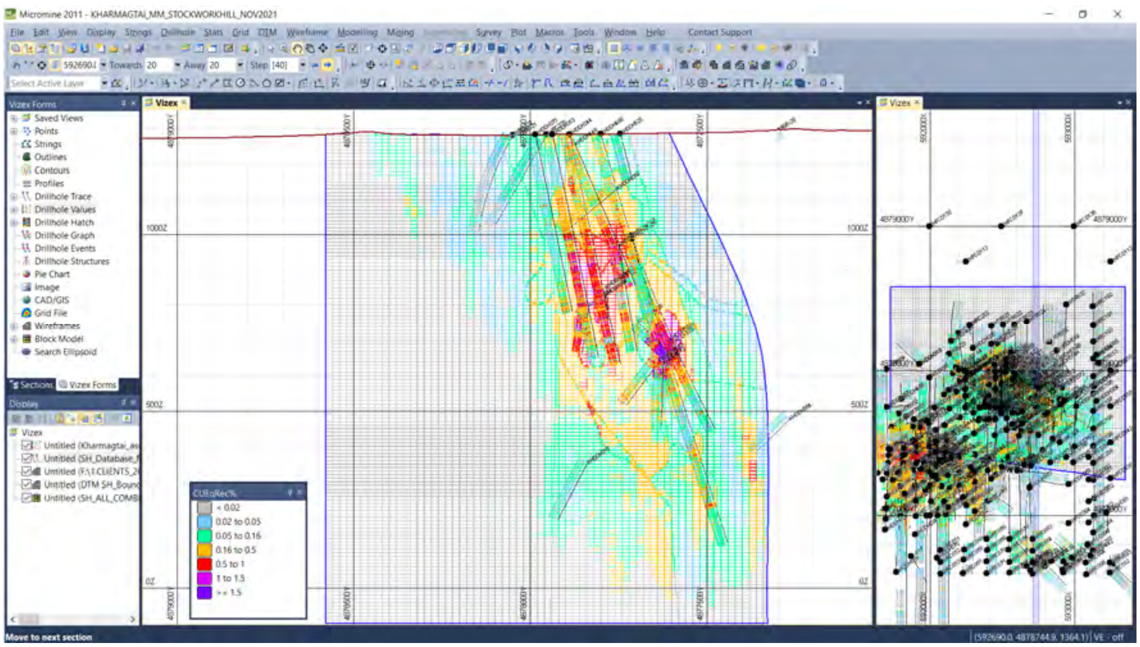
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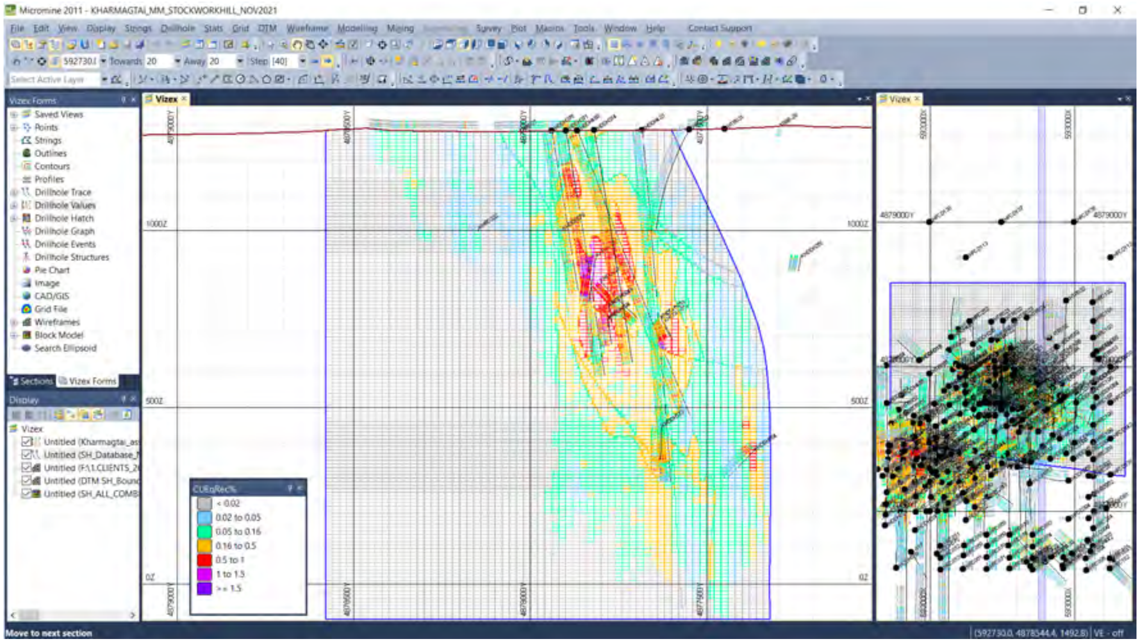
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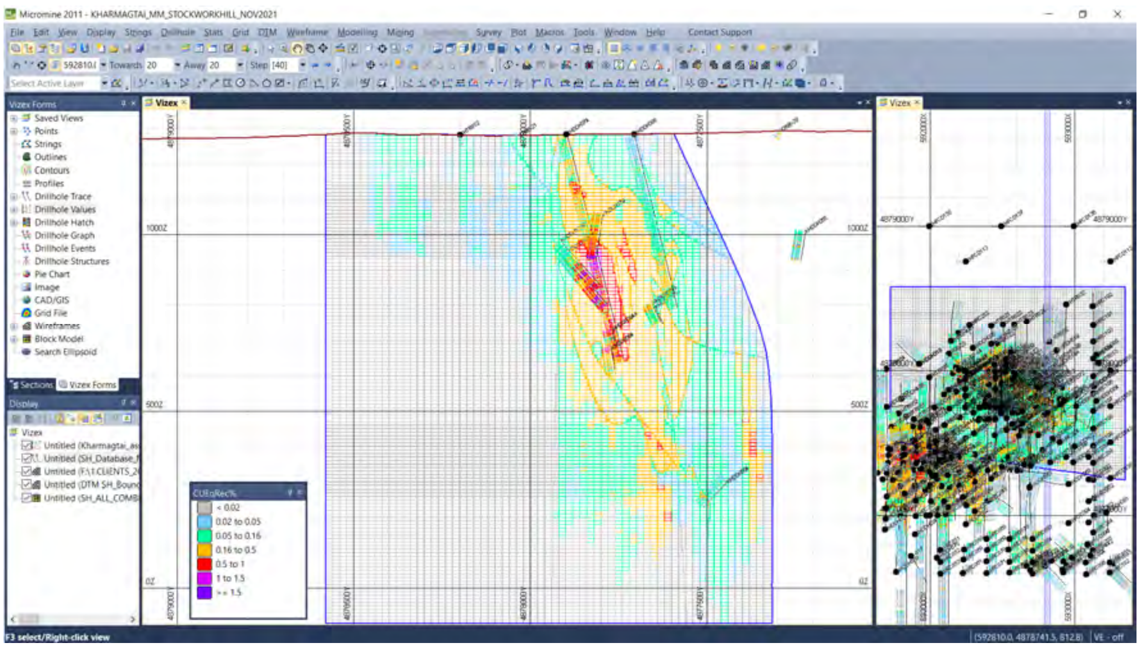
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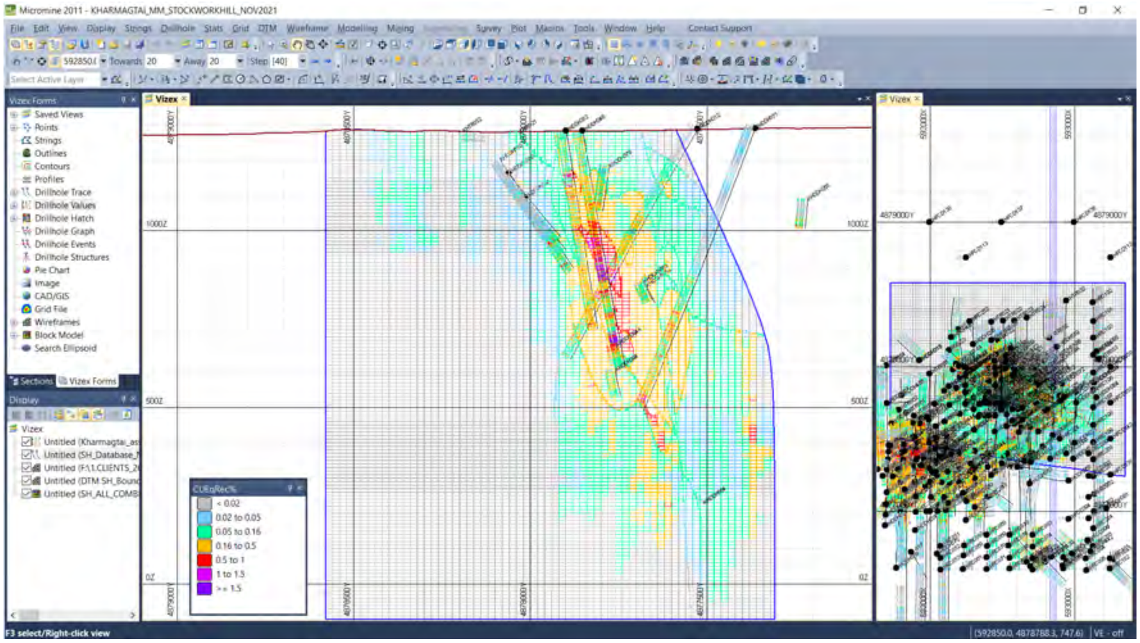
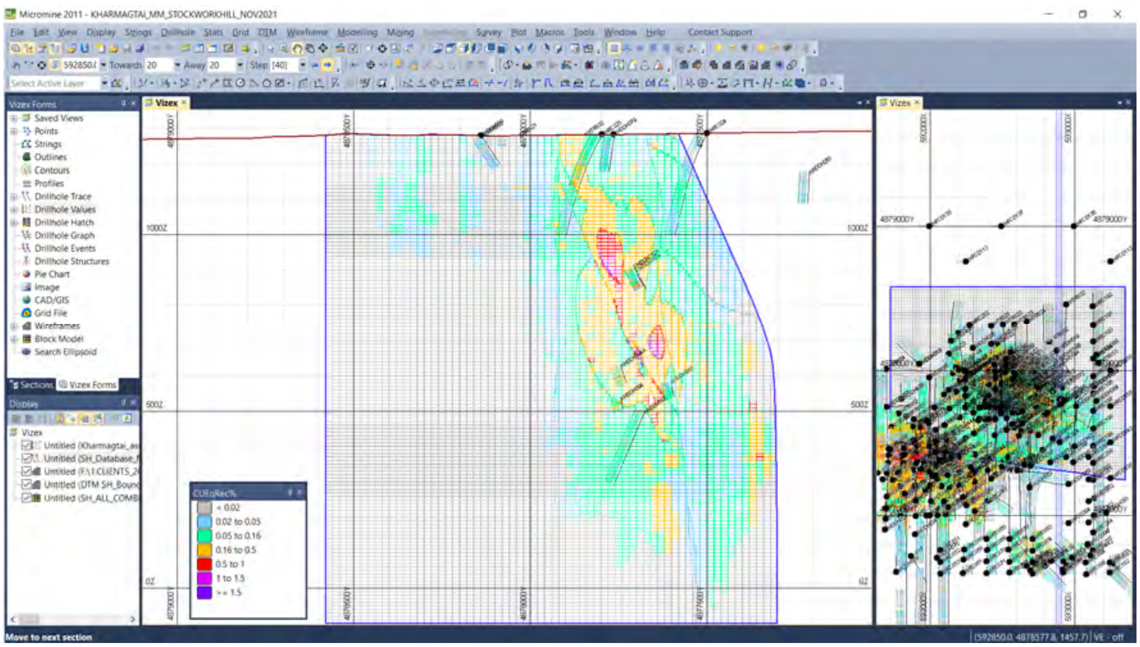
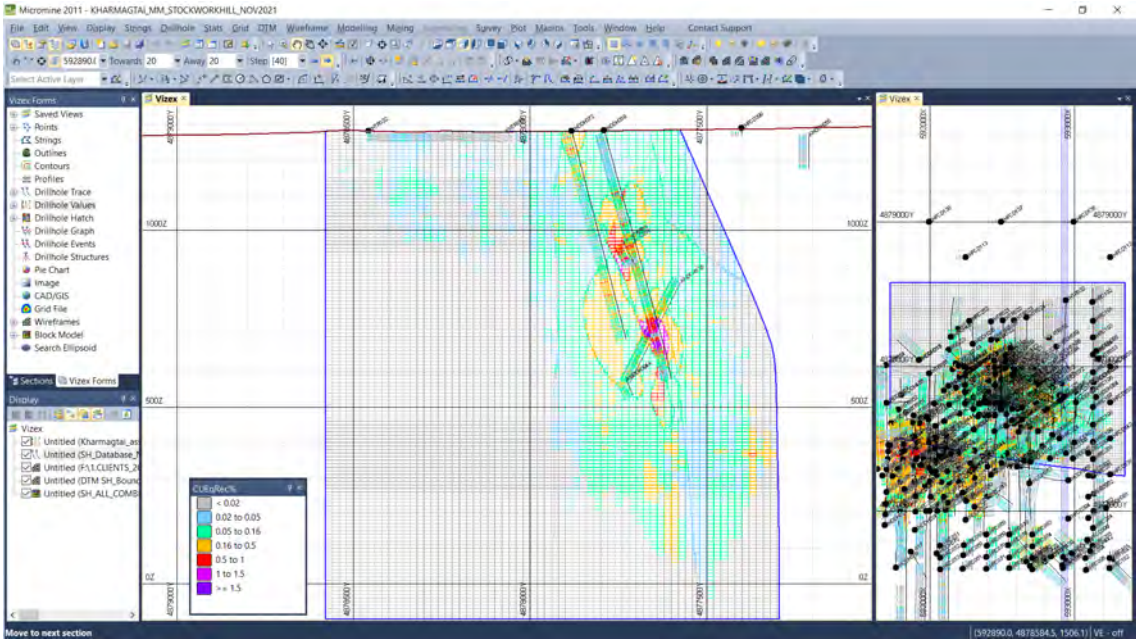
Vizex
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z
0Z
F3 select/Right-click view






Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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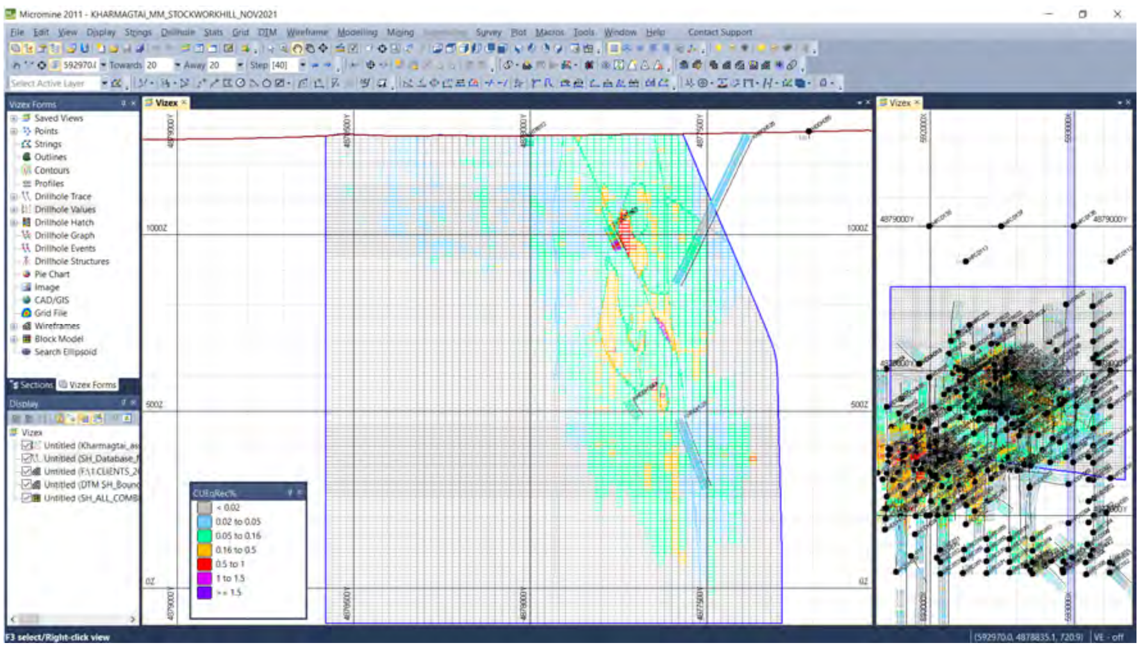
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
Move to next section


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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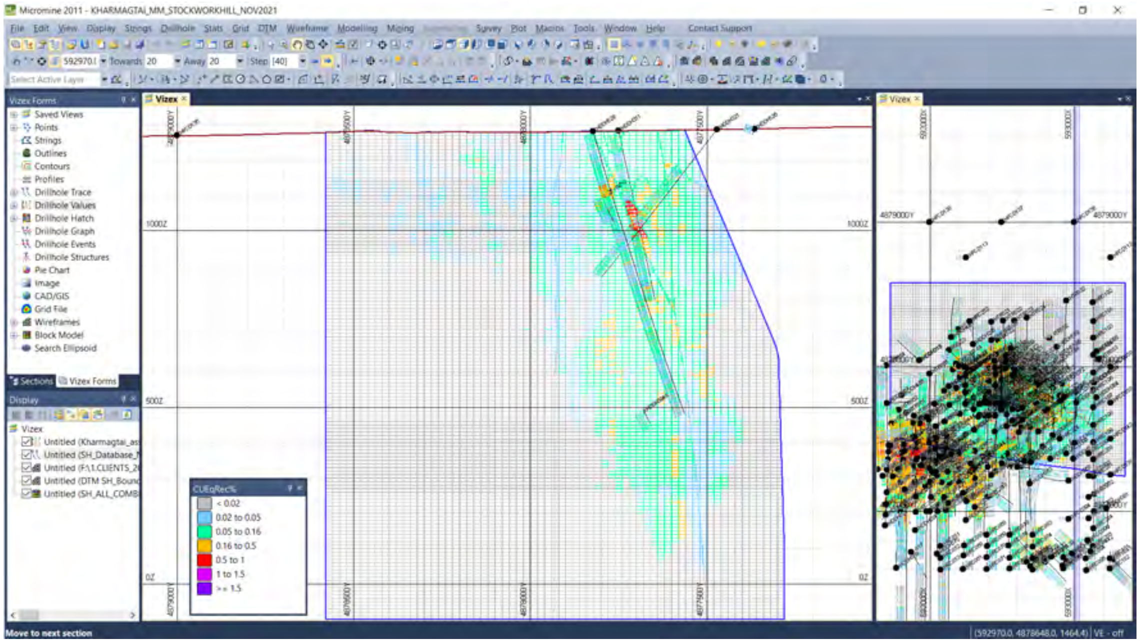
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
F3 select/Right-click view


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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0.02 to 0.05
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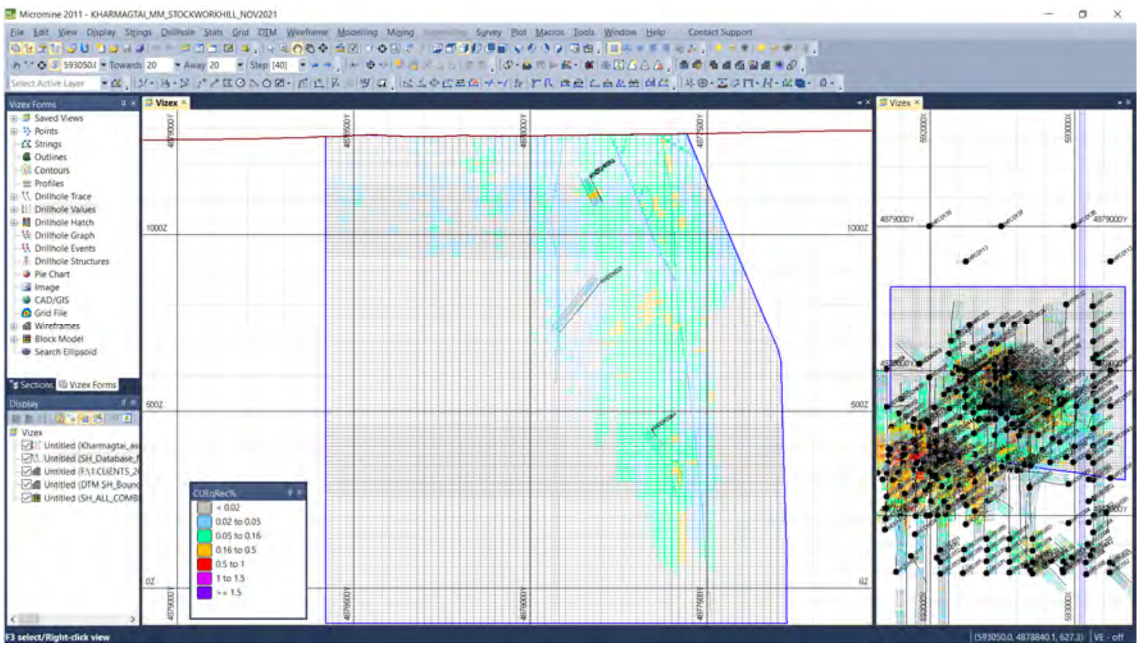
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z
0Z
Move to next section


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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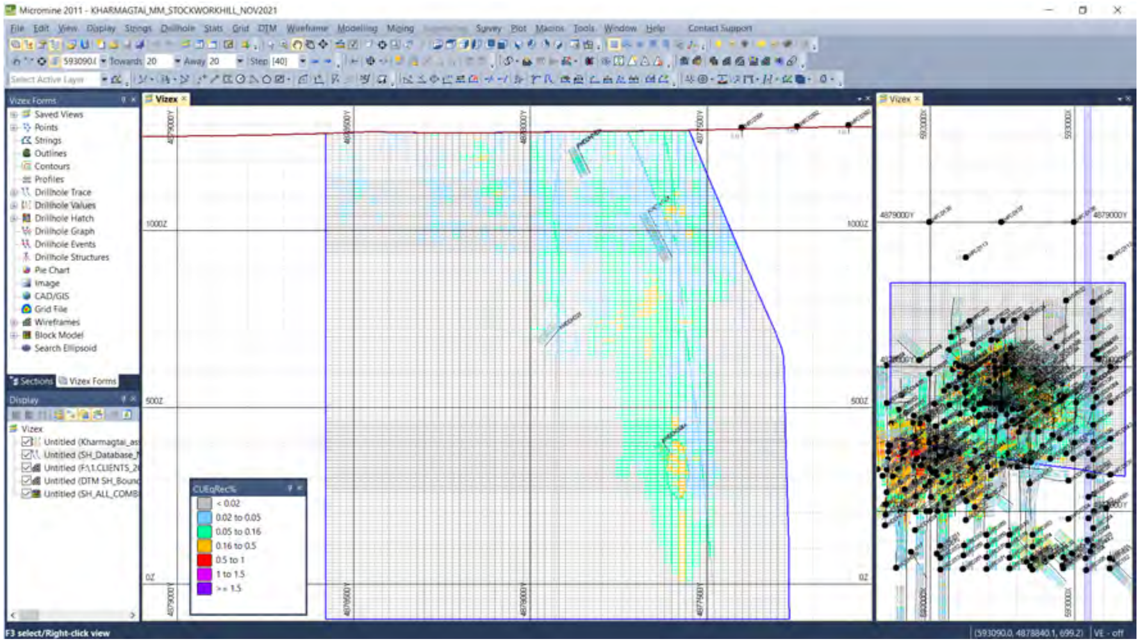
1 to 1.5
>= 1.5
1000Z
500Z
0Z
F3 select/Right-click view


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
File Edit View Display Strings Drillhole Stats Grid DTM Wireframe Modelling Mining Survey Plot Macros Tools Window Help Contact Support
CUEqRec%
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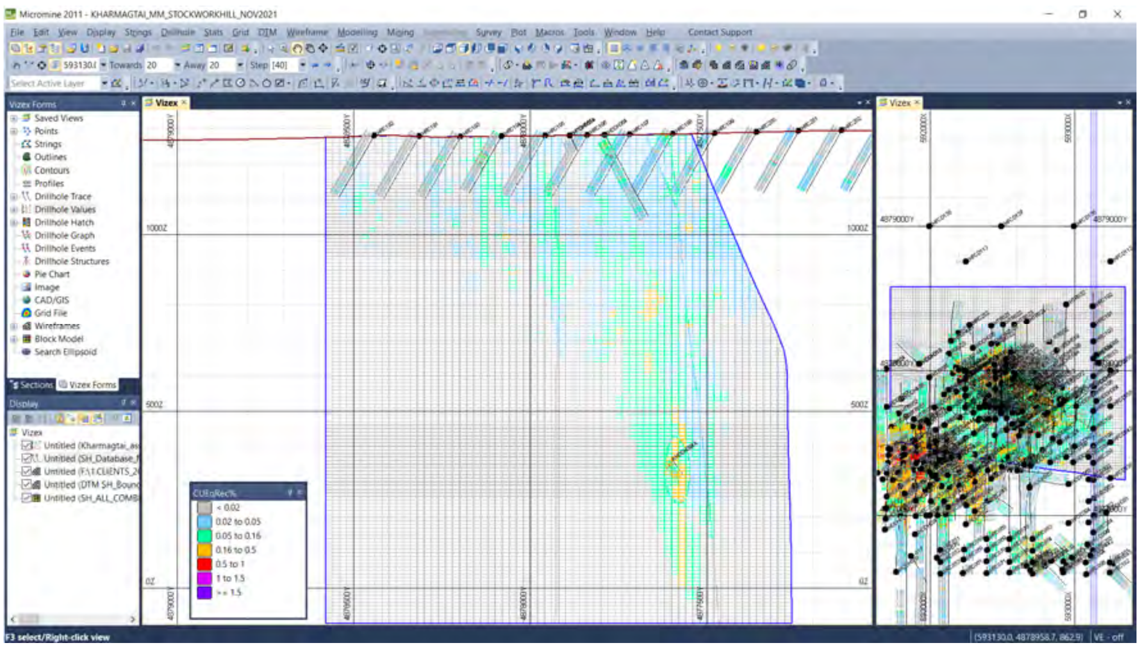
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
File Edit View Display Strings Drillhole Stats Grid DTM Wireframe Modelling Mining Survey Plot Macros Tools Window Help Contact Support
CUEqRec%
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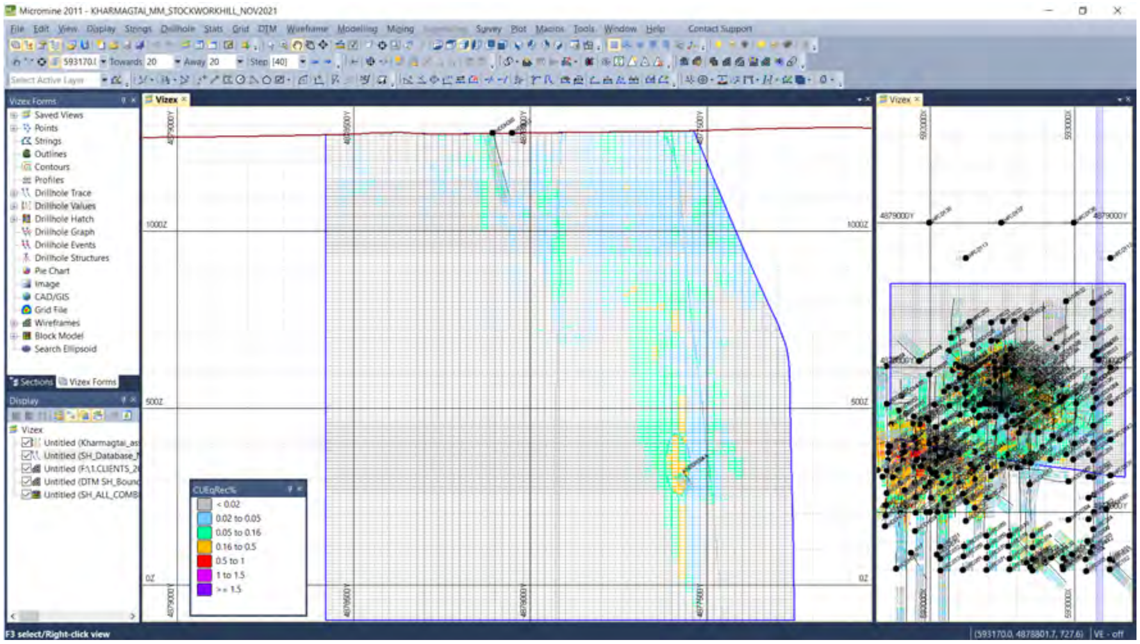
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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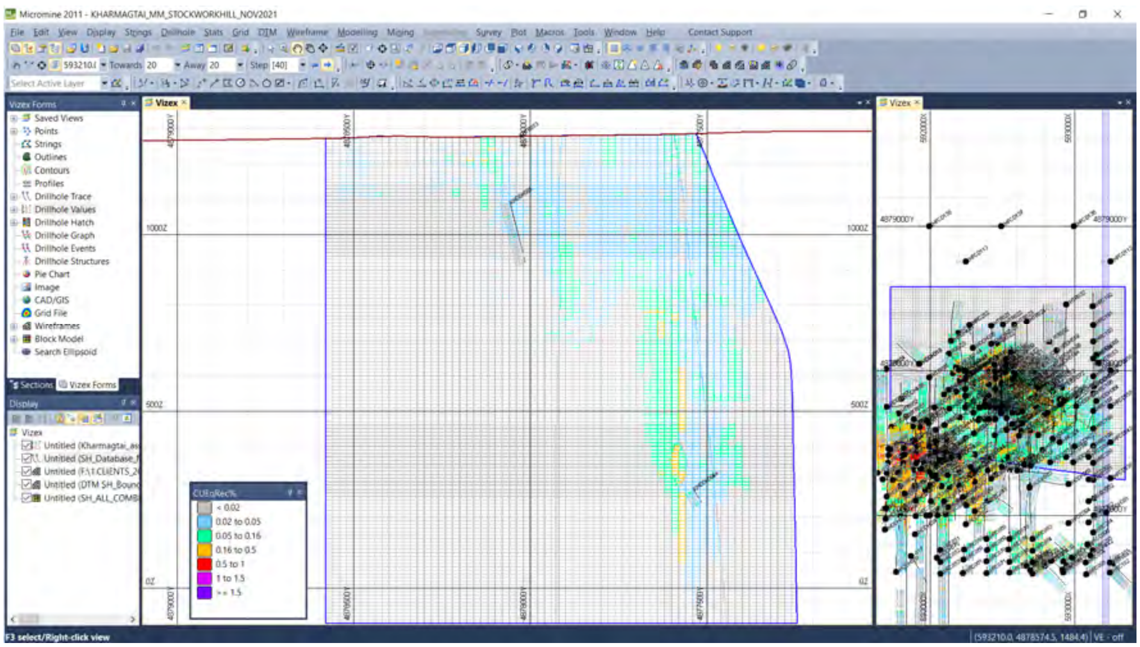
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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1 to 1.5
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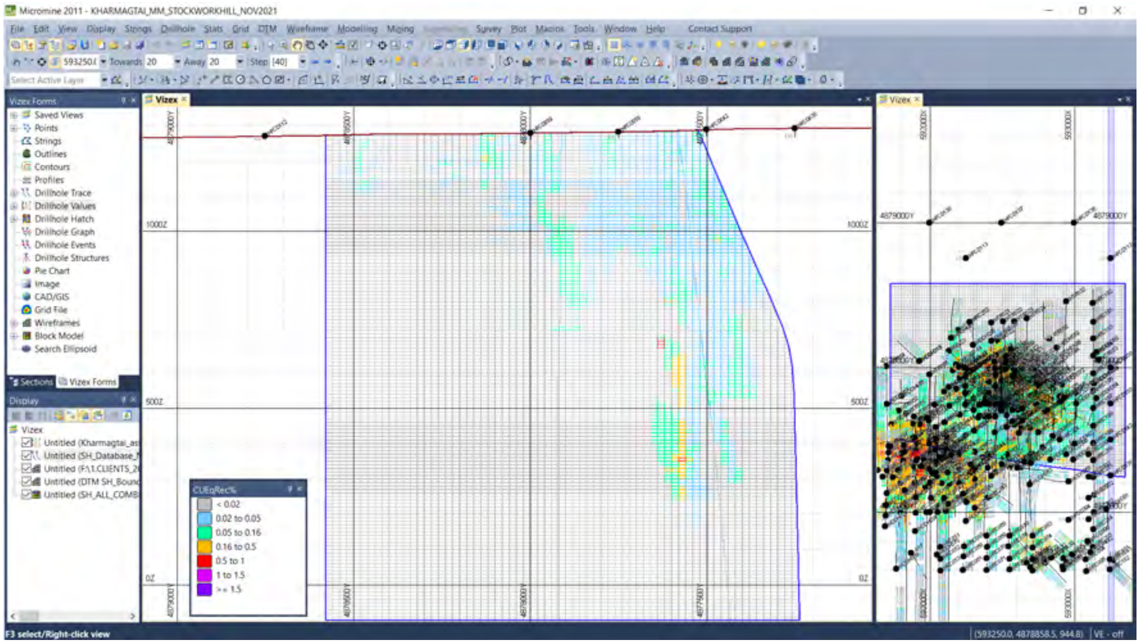
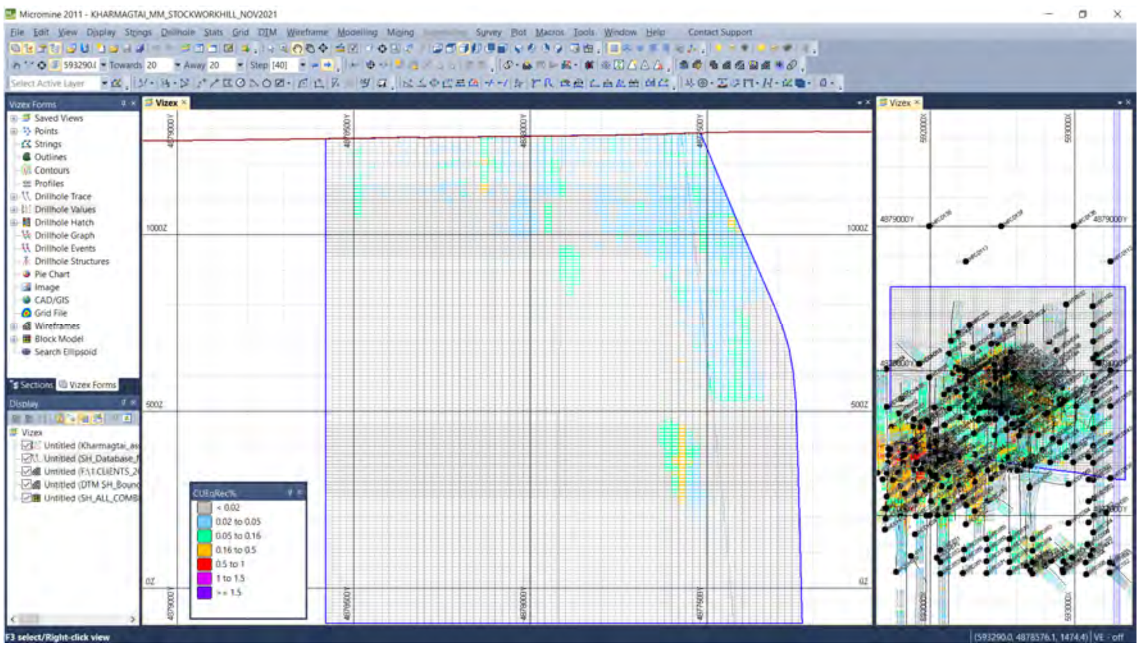

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
File Edit View Display Strings Drillhole Stats Grid DTM Wireframe Modelling Mining Survey Plot Macros Tools Window Help Contact Support
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
F3 select/Right-click view
(593250.0, 4878858.5, 944.8) VE - off


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
File Edit View Display Strings Drillhole Stats Grid DTM Wireframe Modelling Mining Survey Plot Macros Tools Window Help Contact Support
CUEqRec%
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0.02 to 0.05
0.05 to 0.16
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>= 1.5
F3 select/Right-click view
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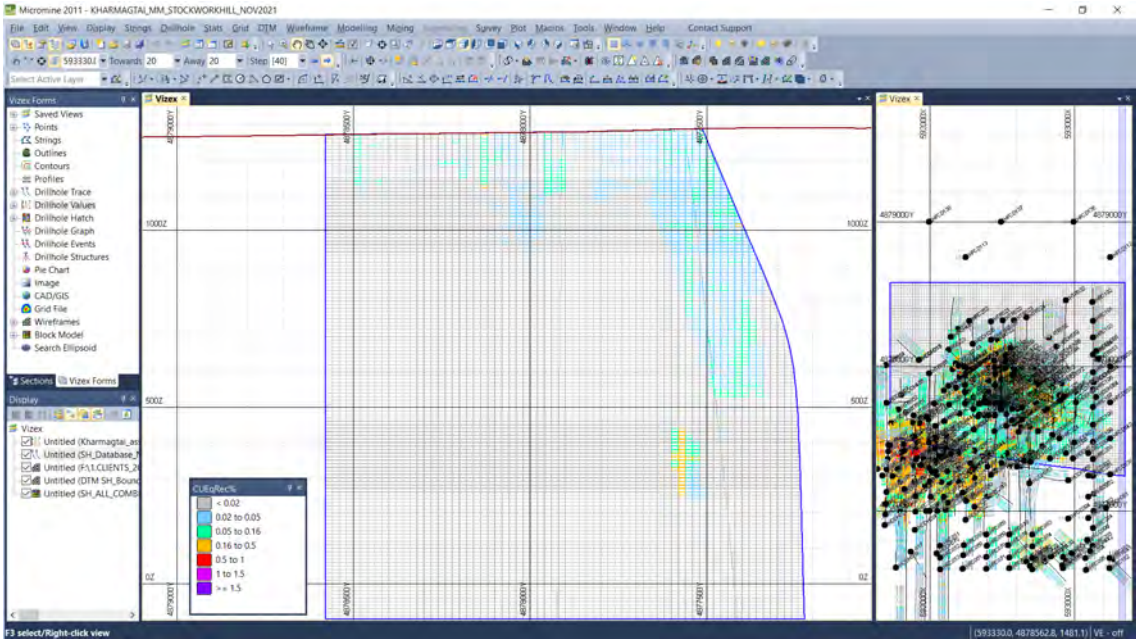
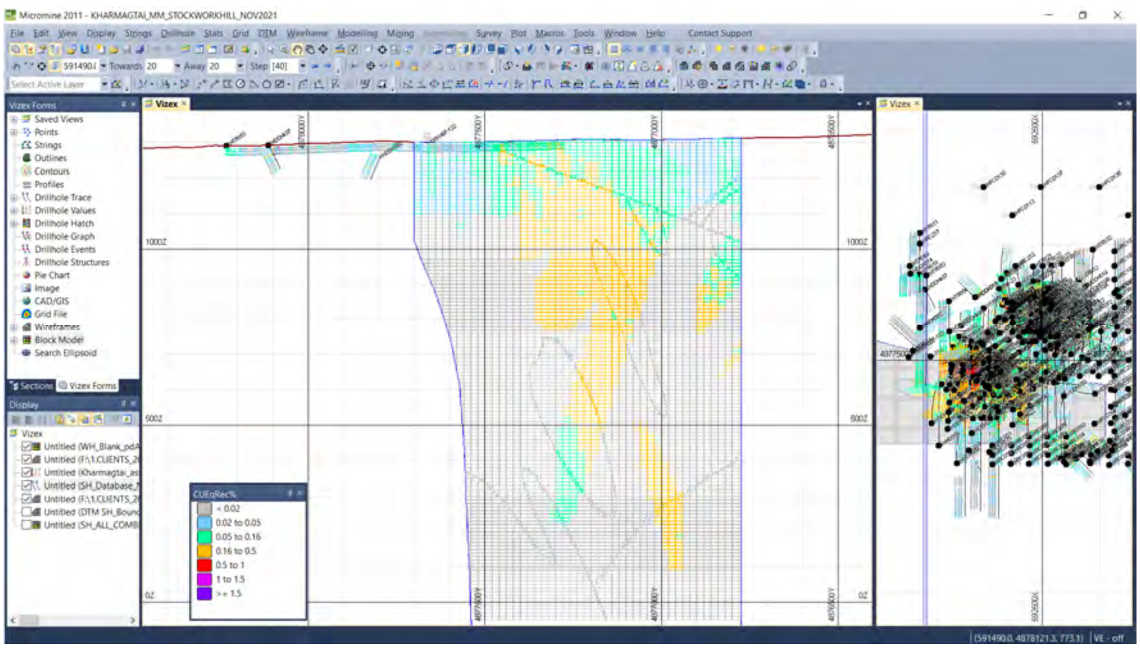
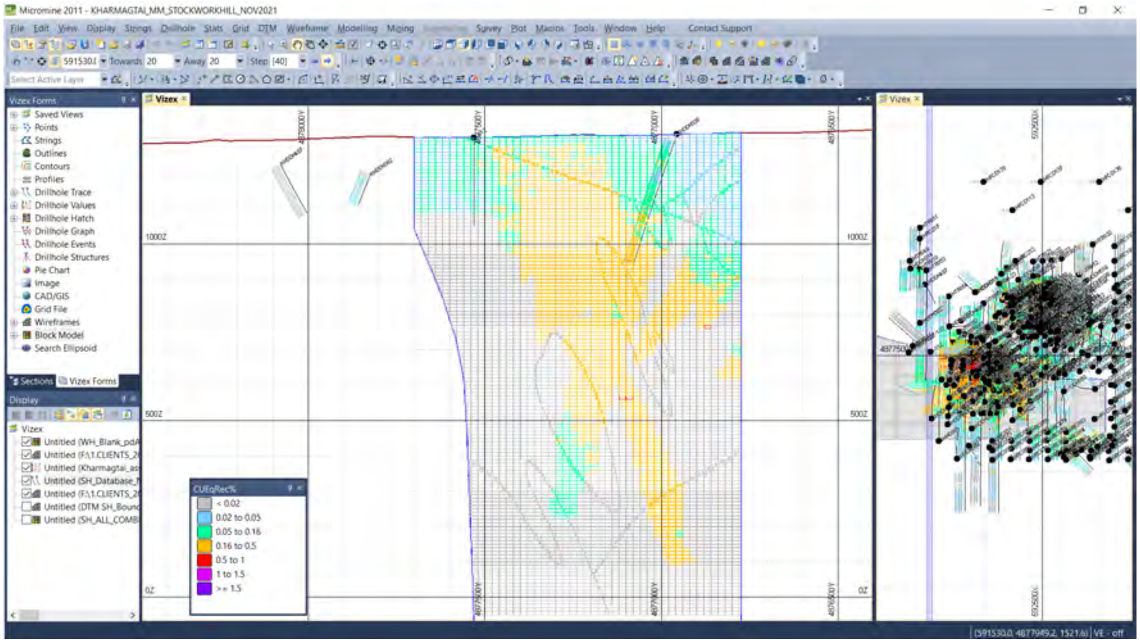
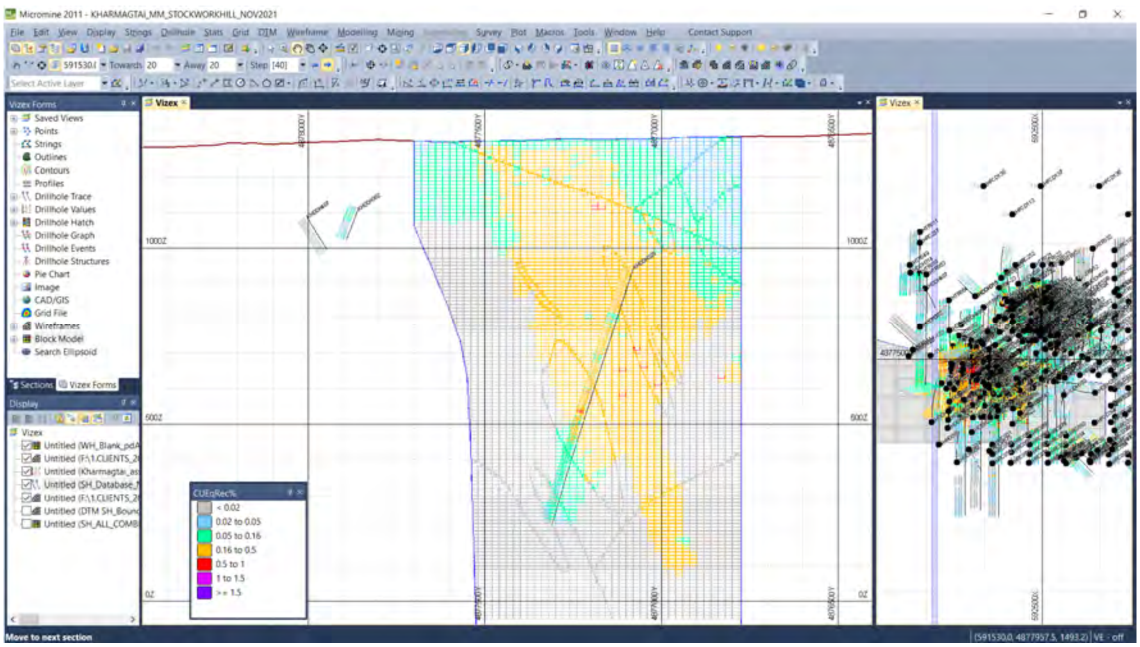
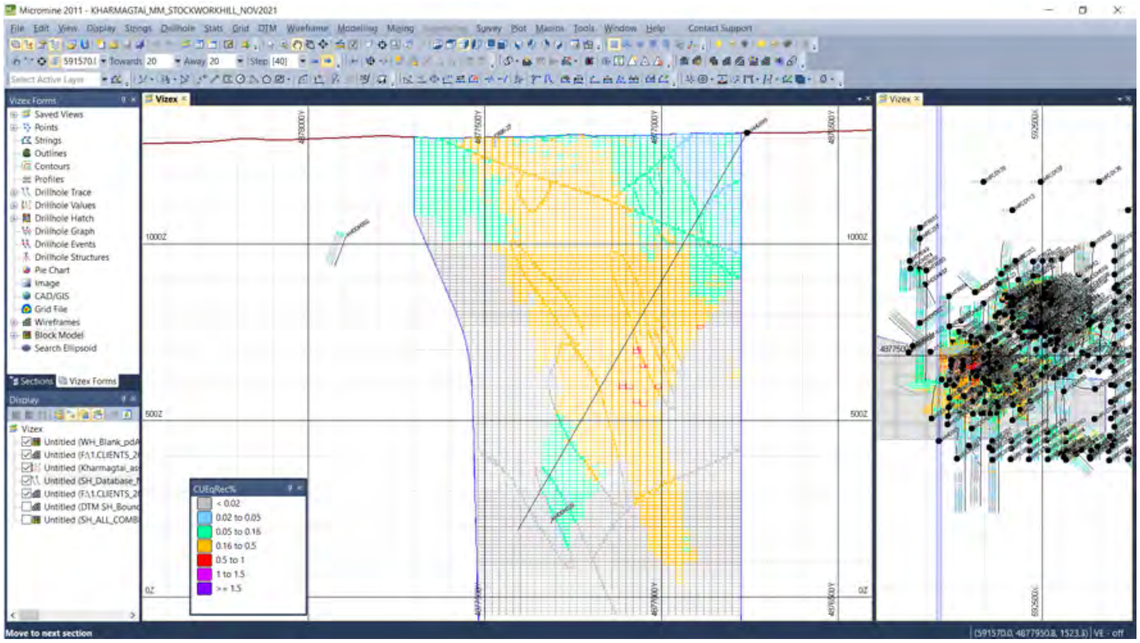


White Hill Sections – start at 591490mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.




Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
Move to next section


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
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CAD/GIS
Grid File
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Block Model
Search Ellipsoid
1000Z
500Z
0Z
CUEqRec%
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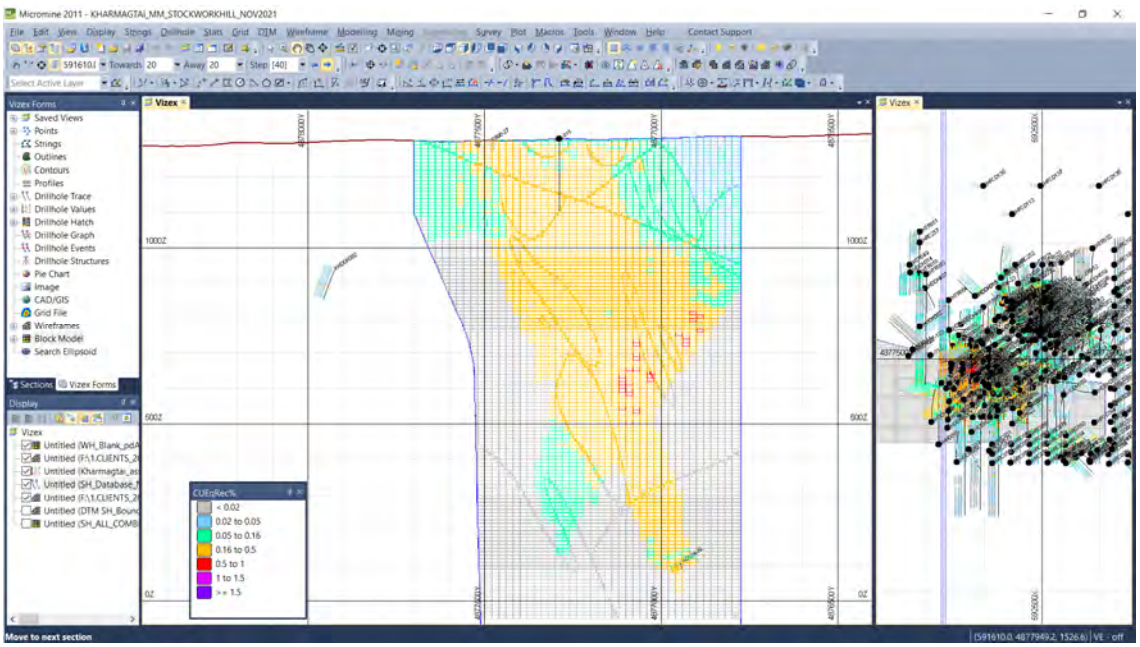
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
Move to next section


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
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Drillhole Structures
Pie Chart
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CAD/GIS
Grid File
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Block Model
Search Ellipsoid
1000Z
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CUEqRec%
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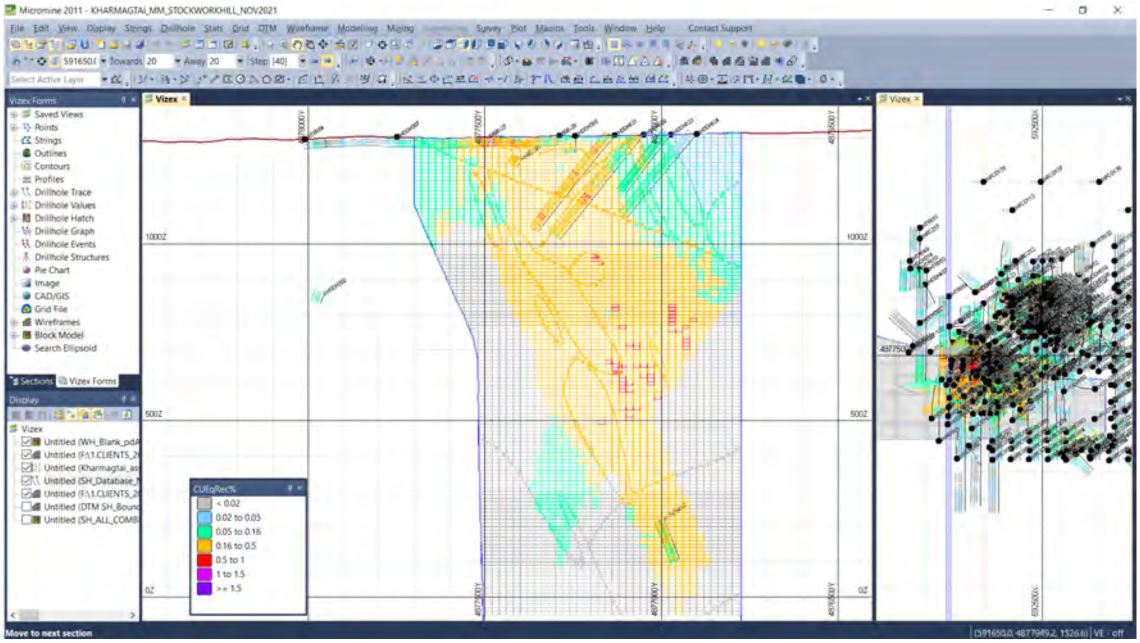
0.5 to 1
1 to 1.5
>= 1.5
Move to next section


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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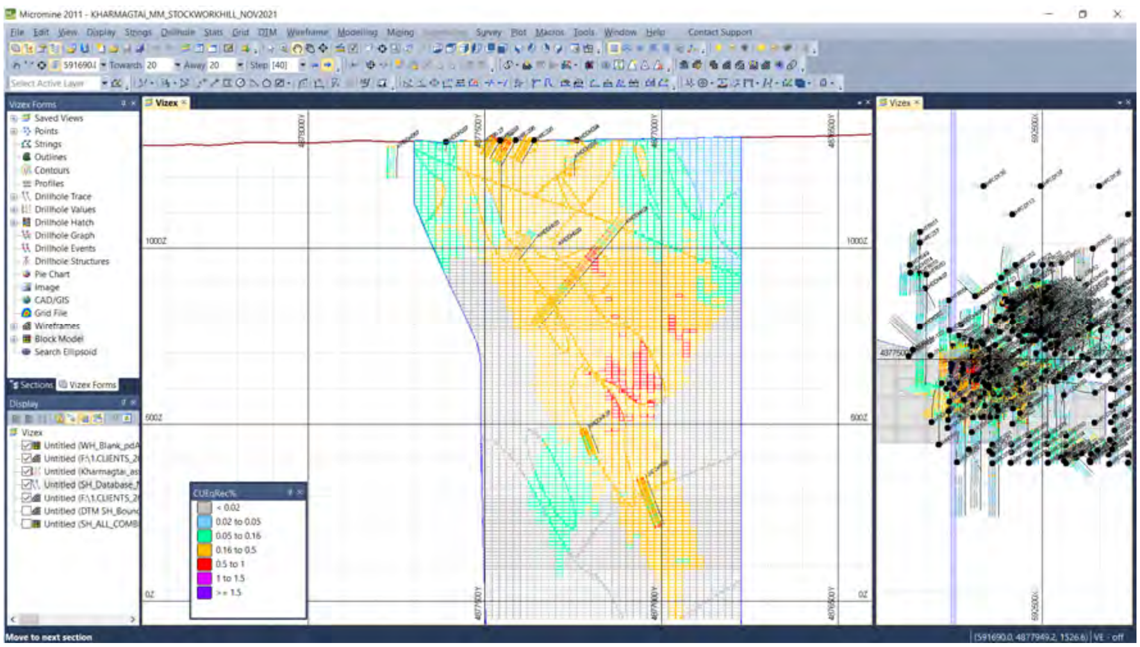
Move to next section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CUEqRec%
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0.5 to 1
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>= 1.5
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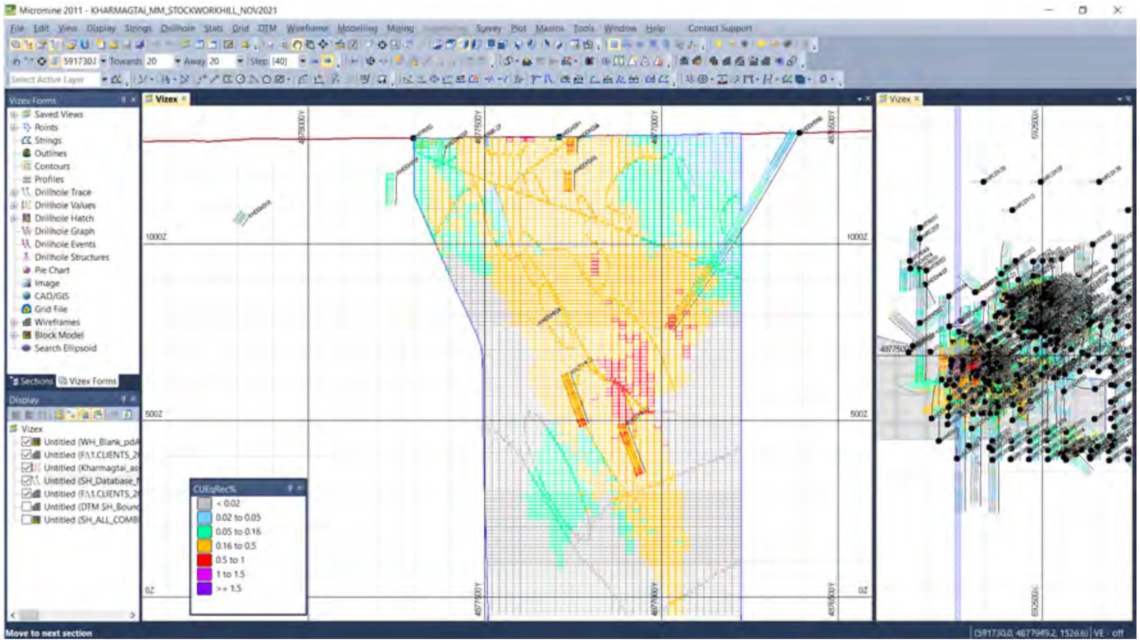
Move to next section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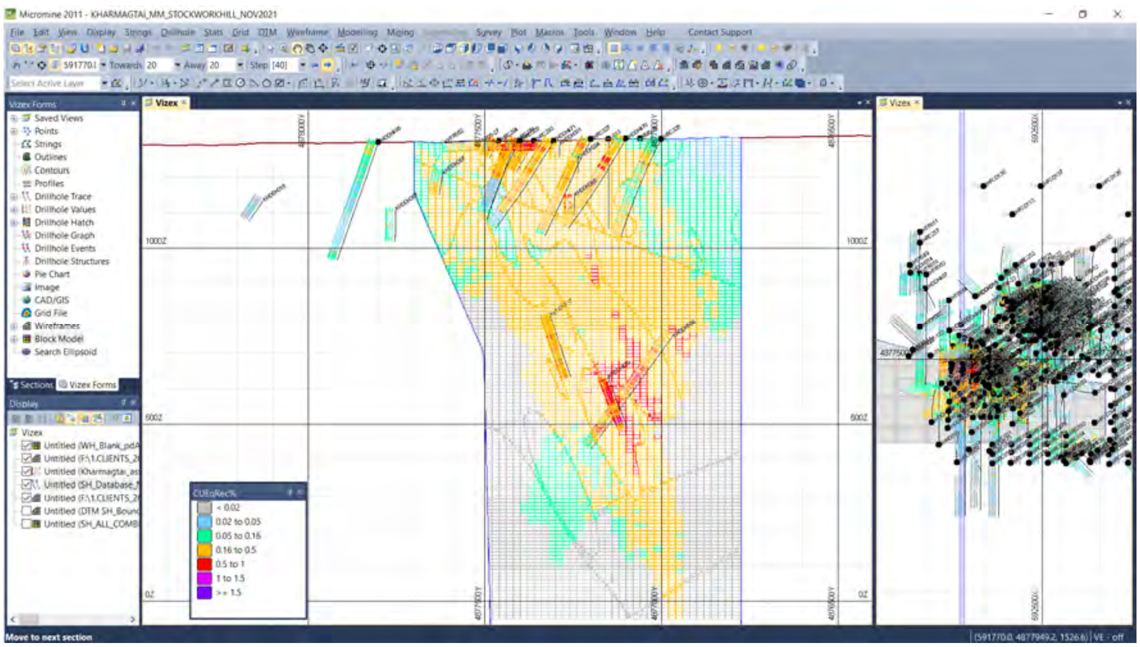
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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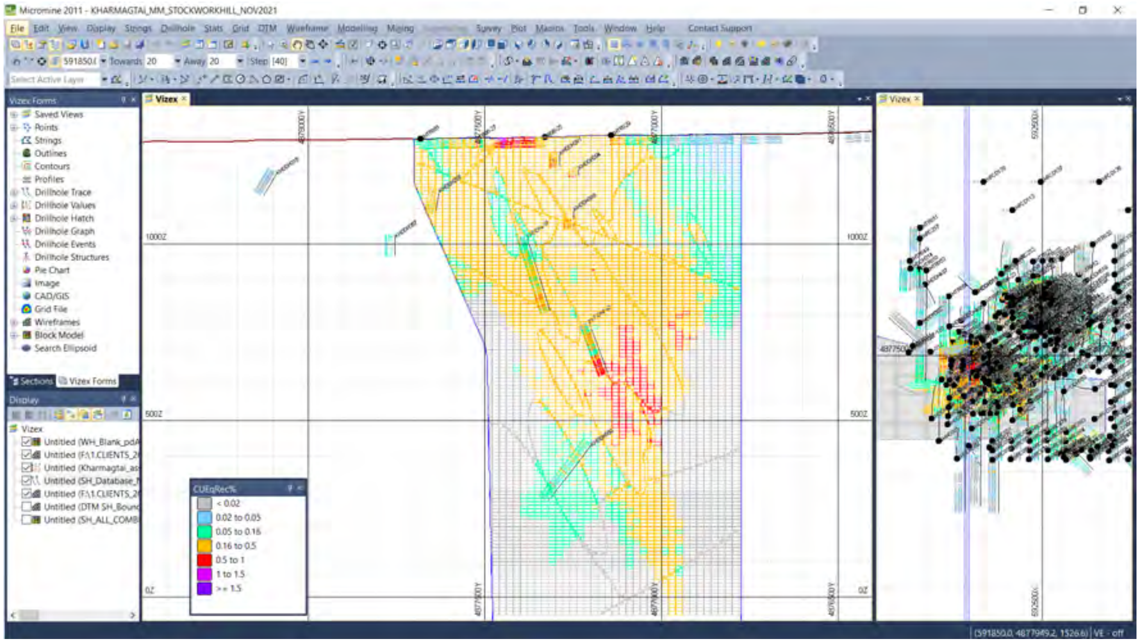
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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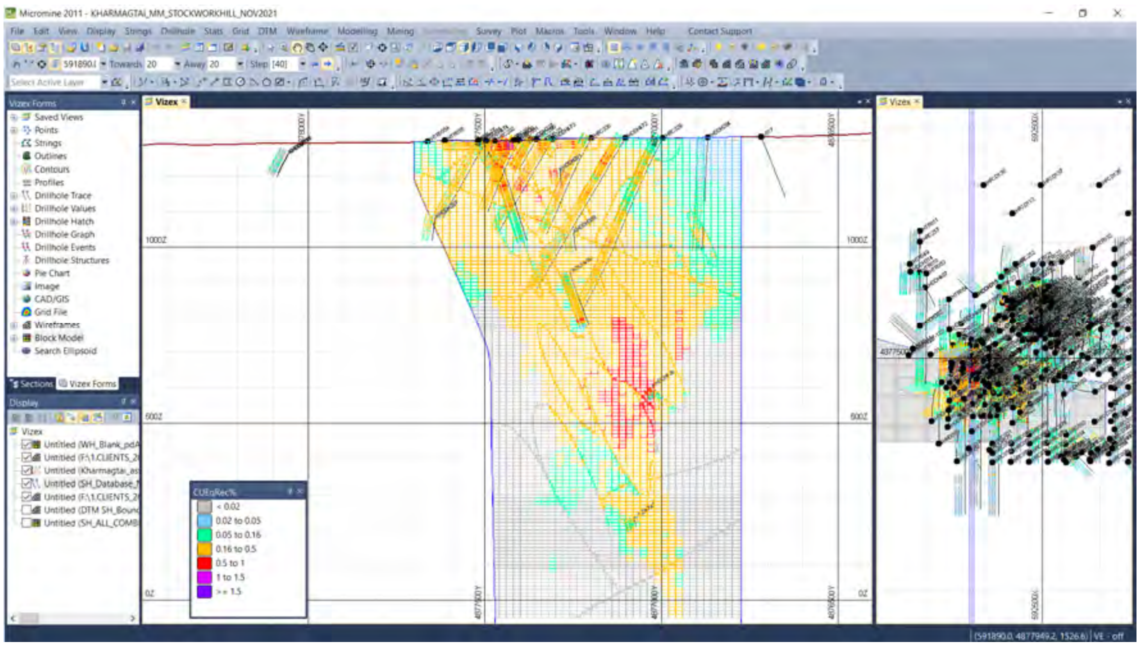
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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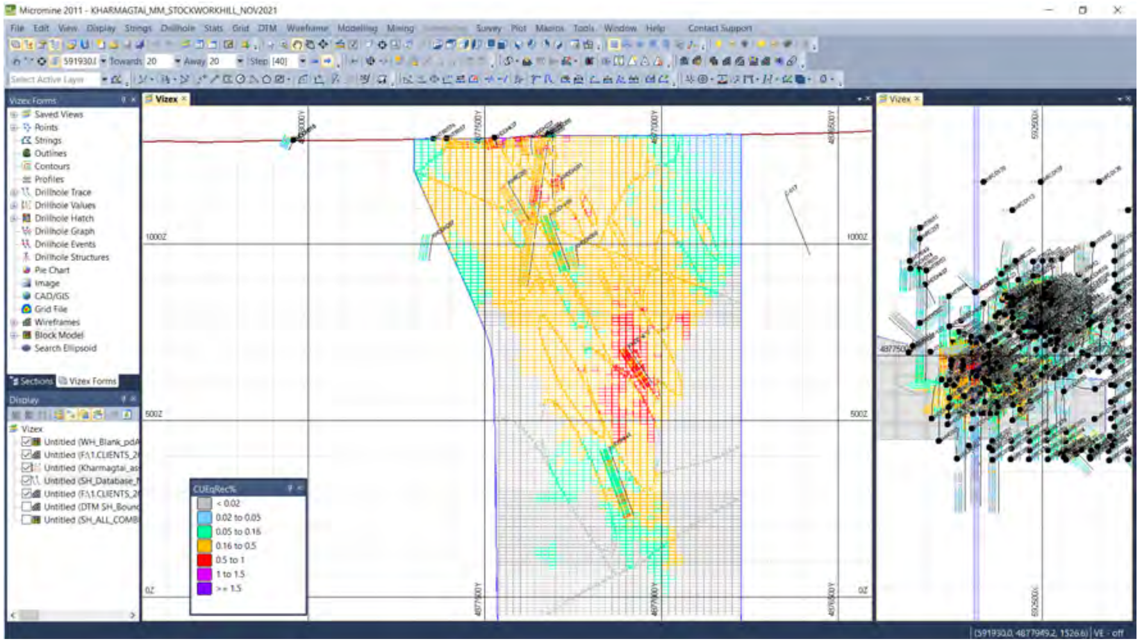
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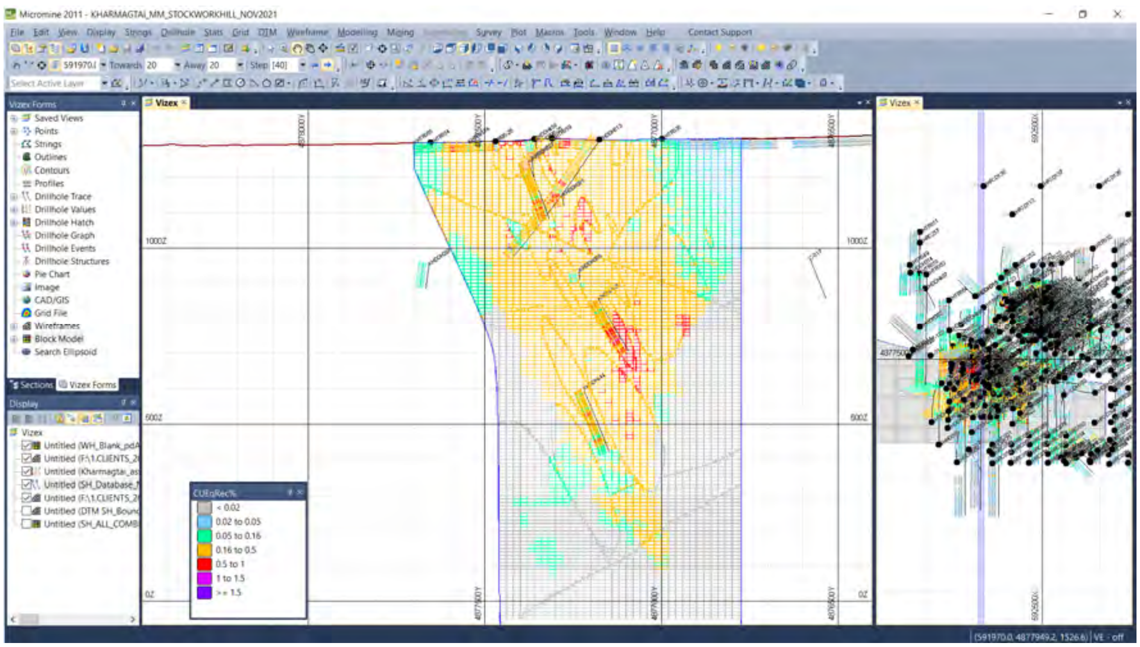
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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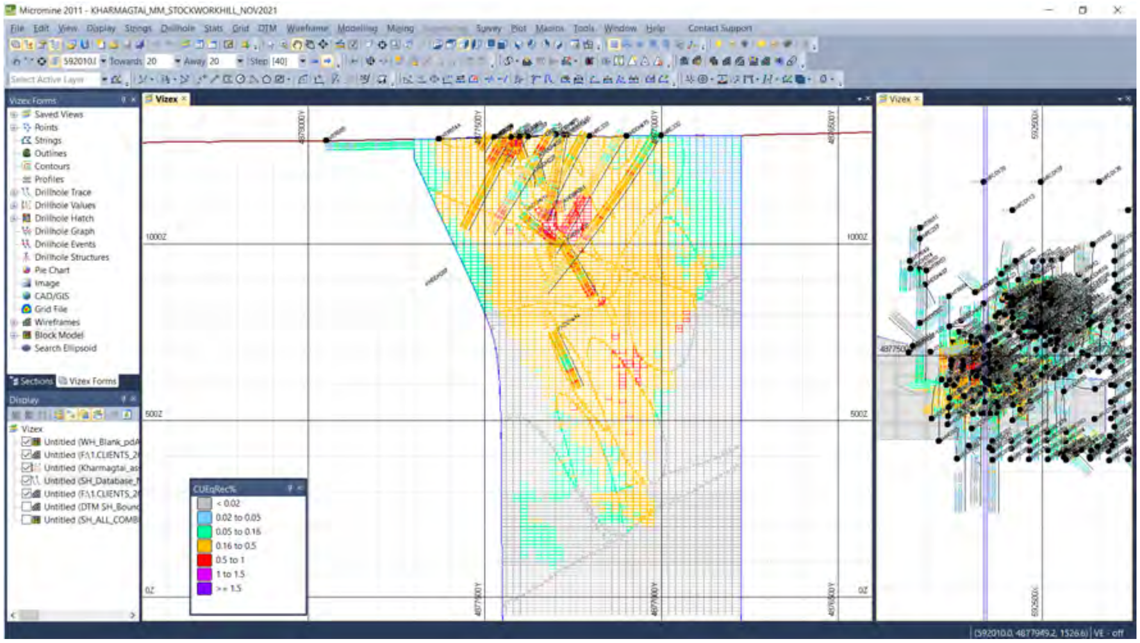
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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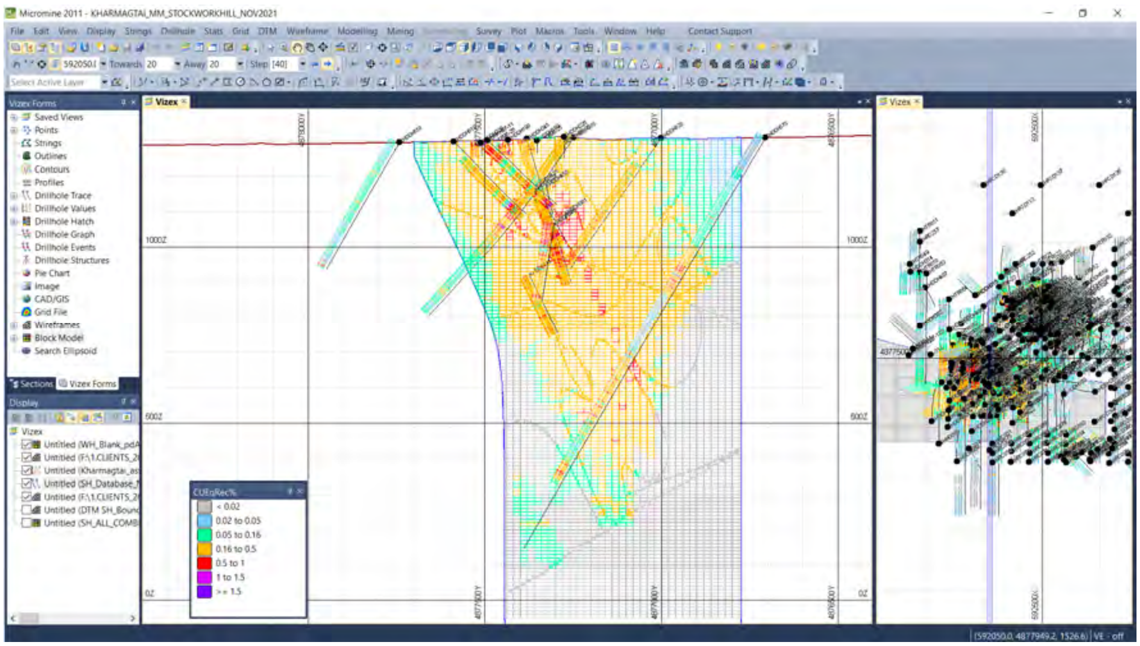
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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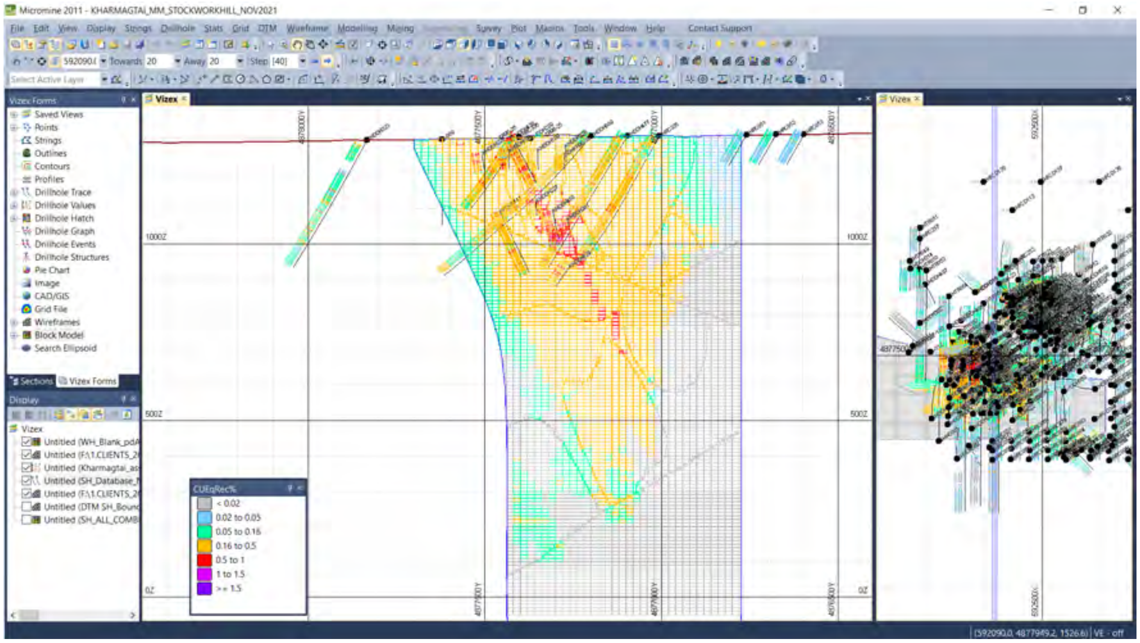
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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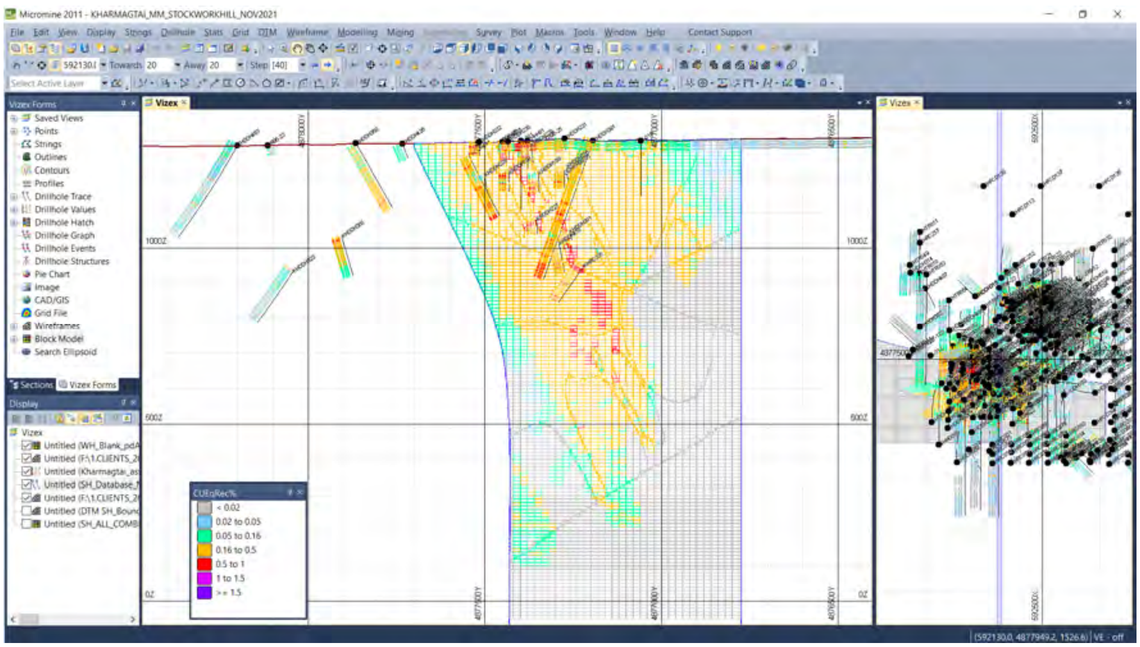
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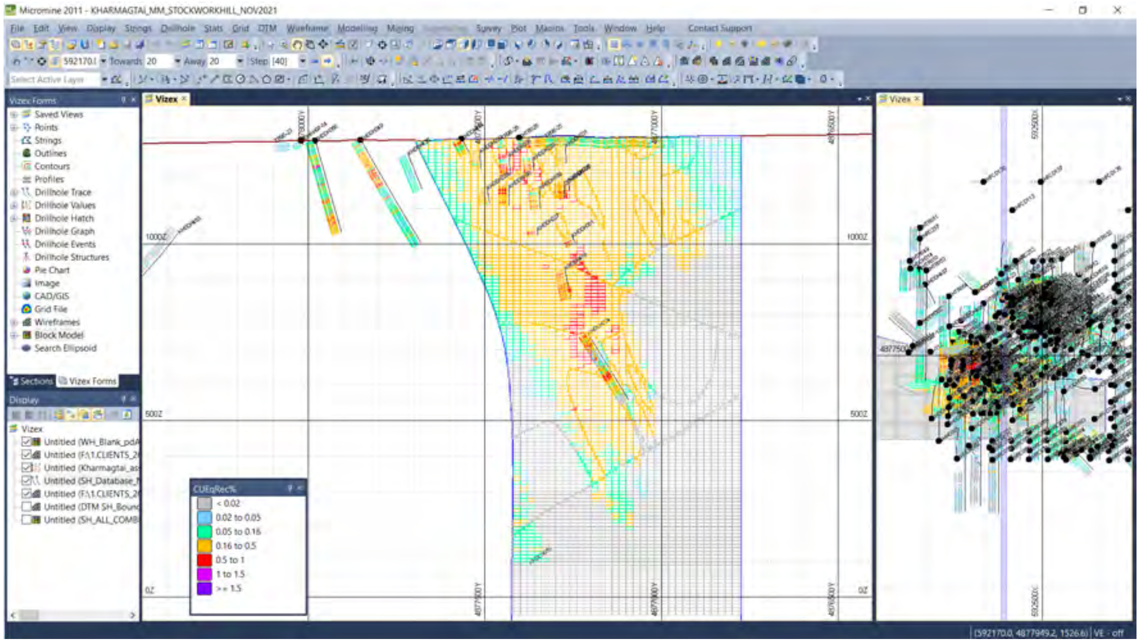
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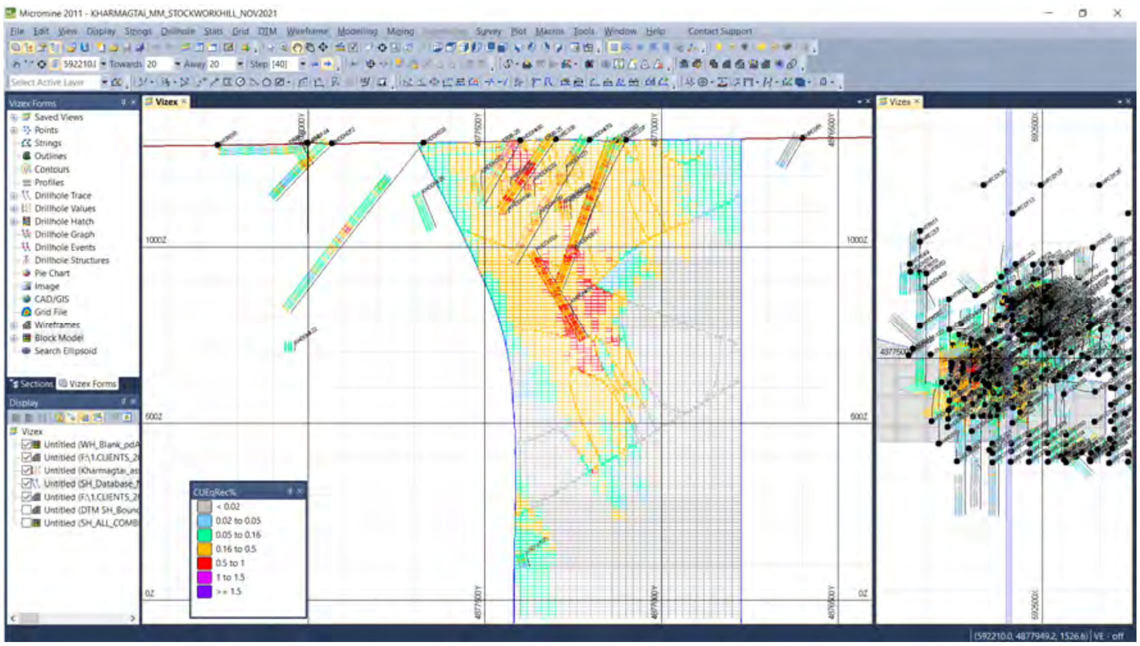
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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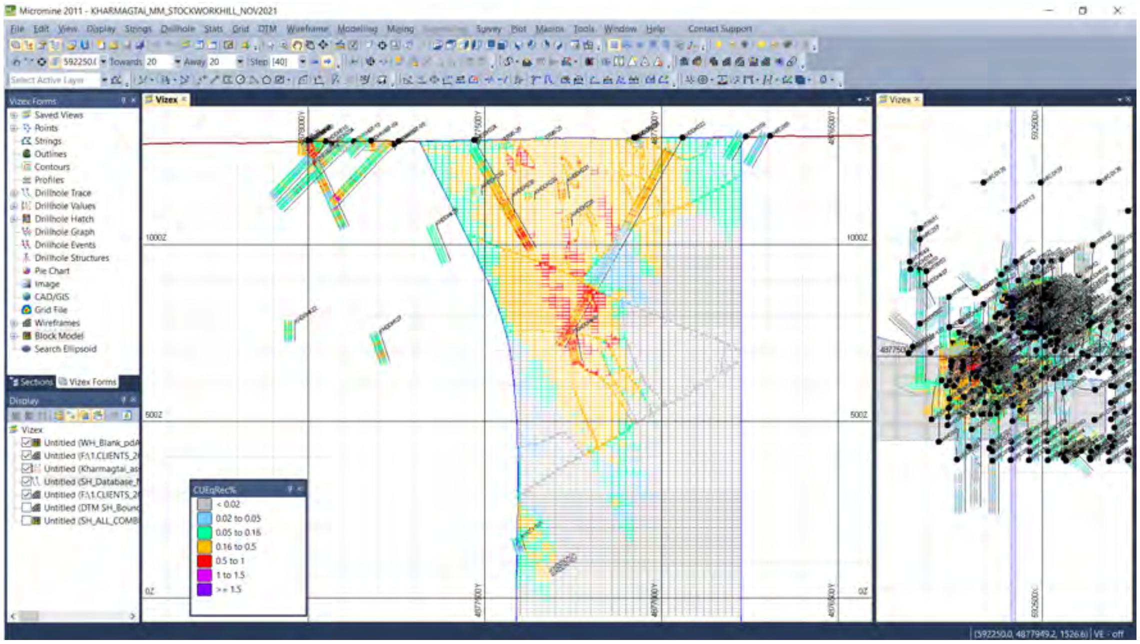

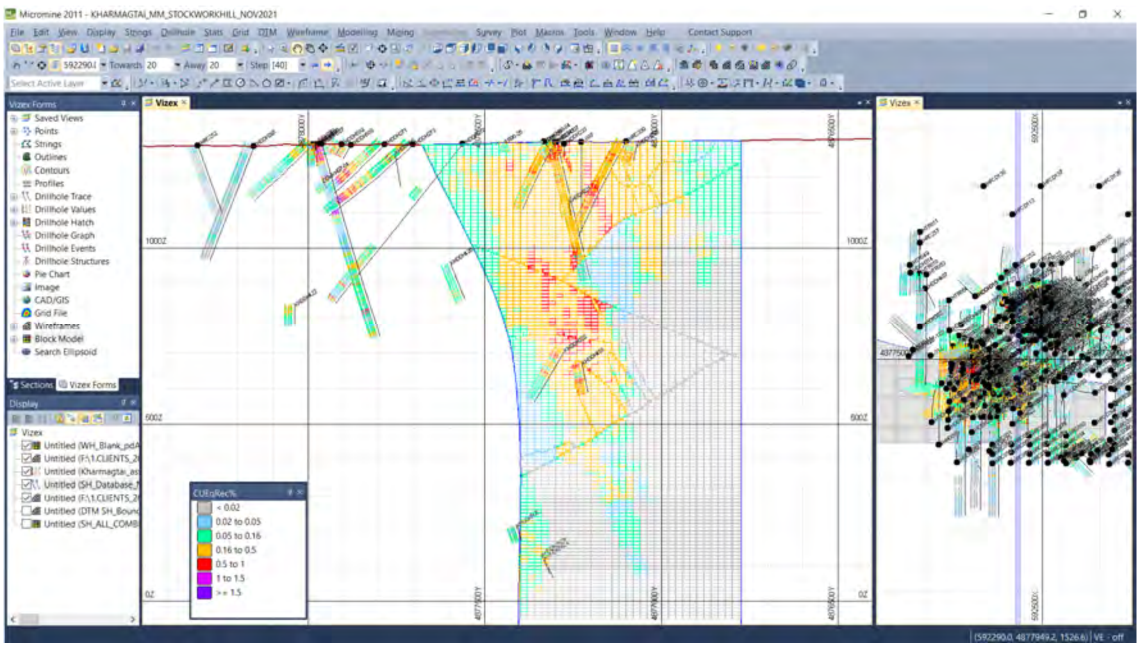

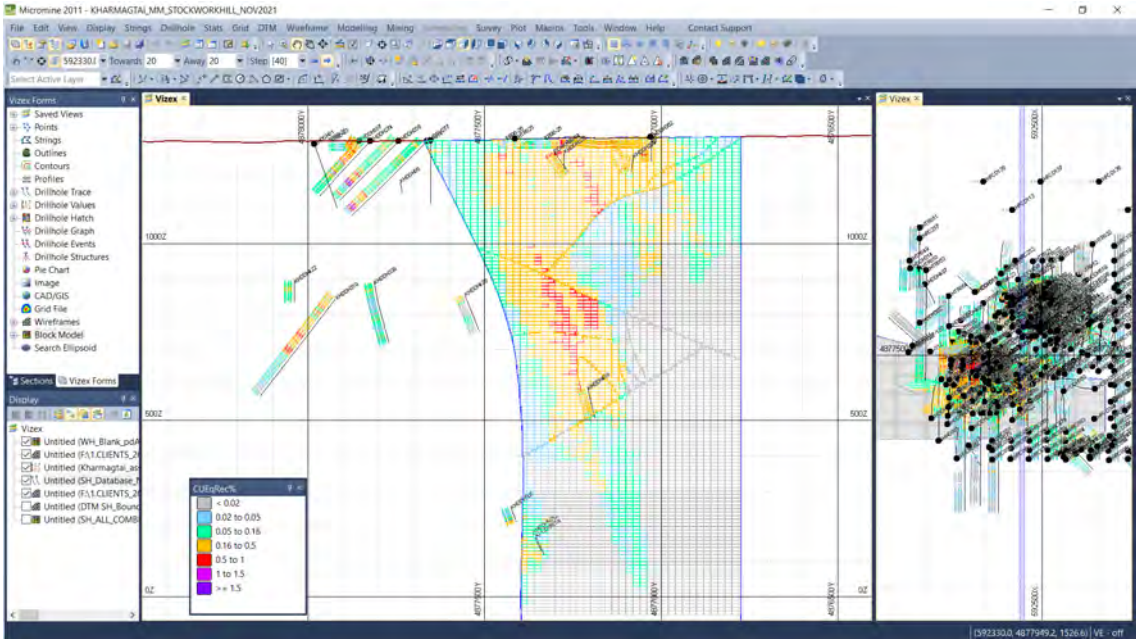
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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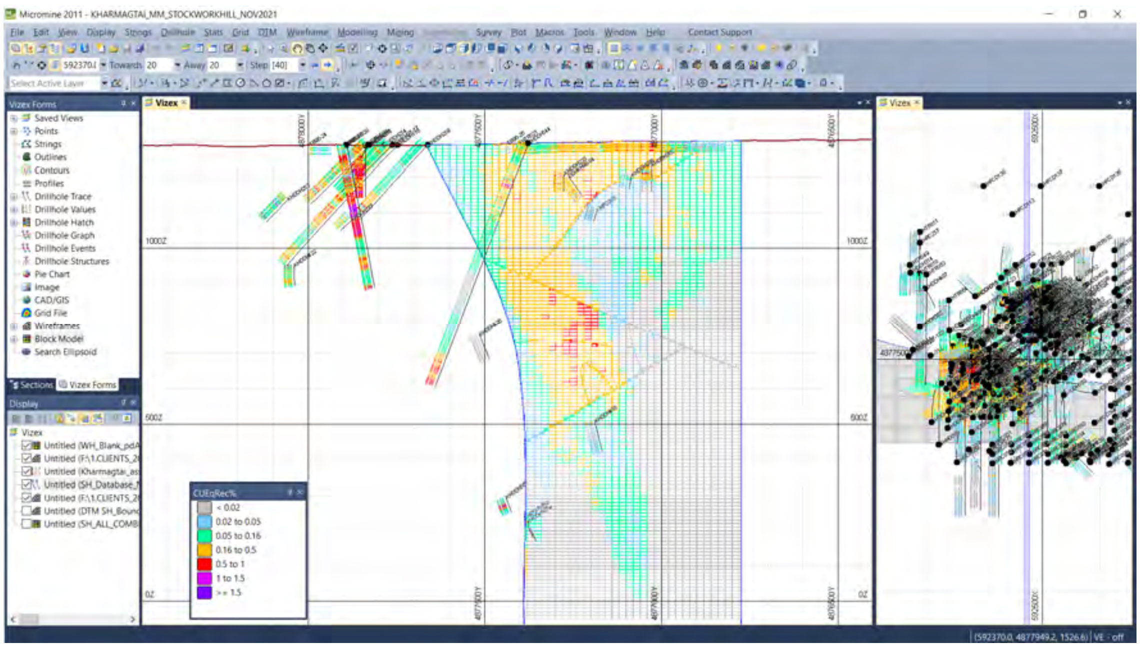
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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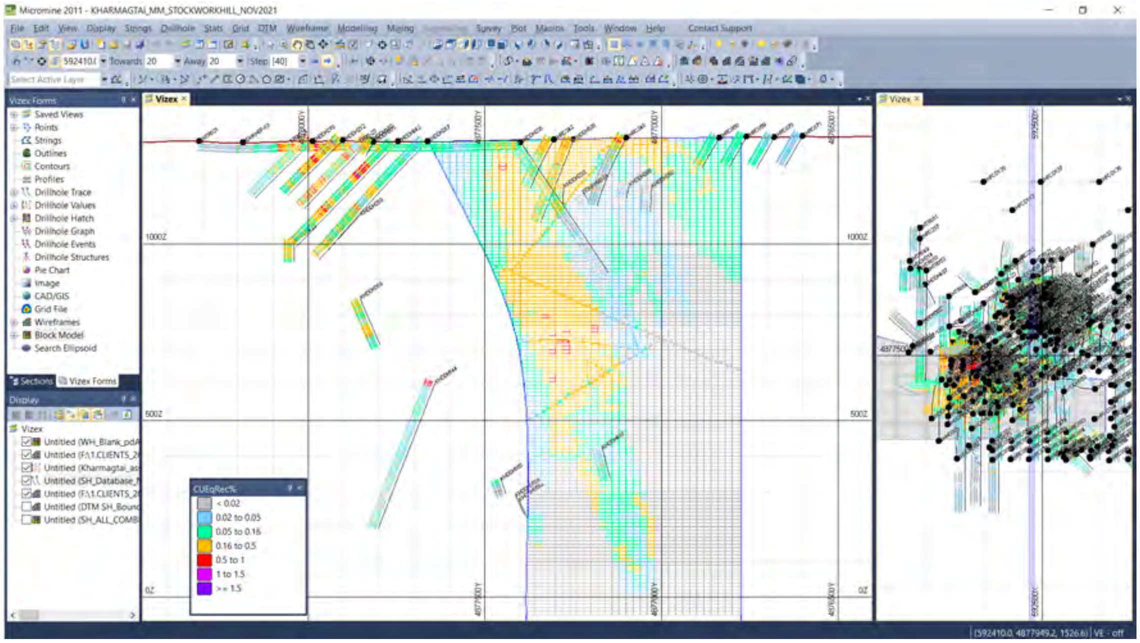
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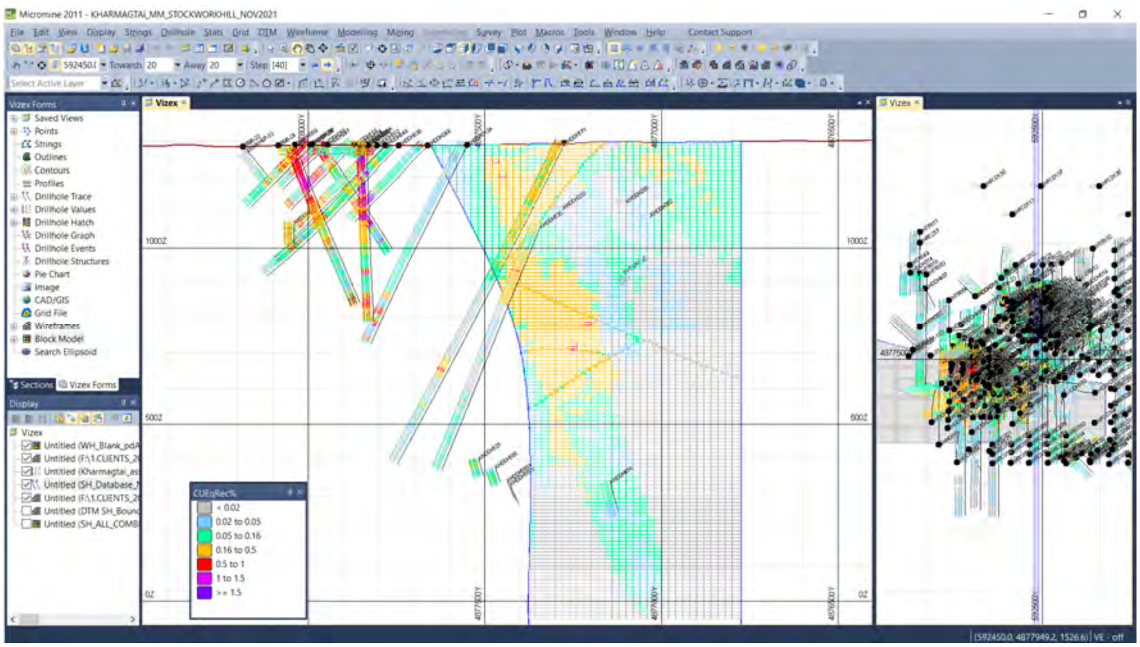
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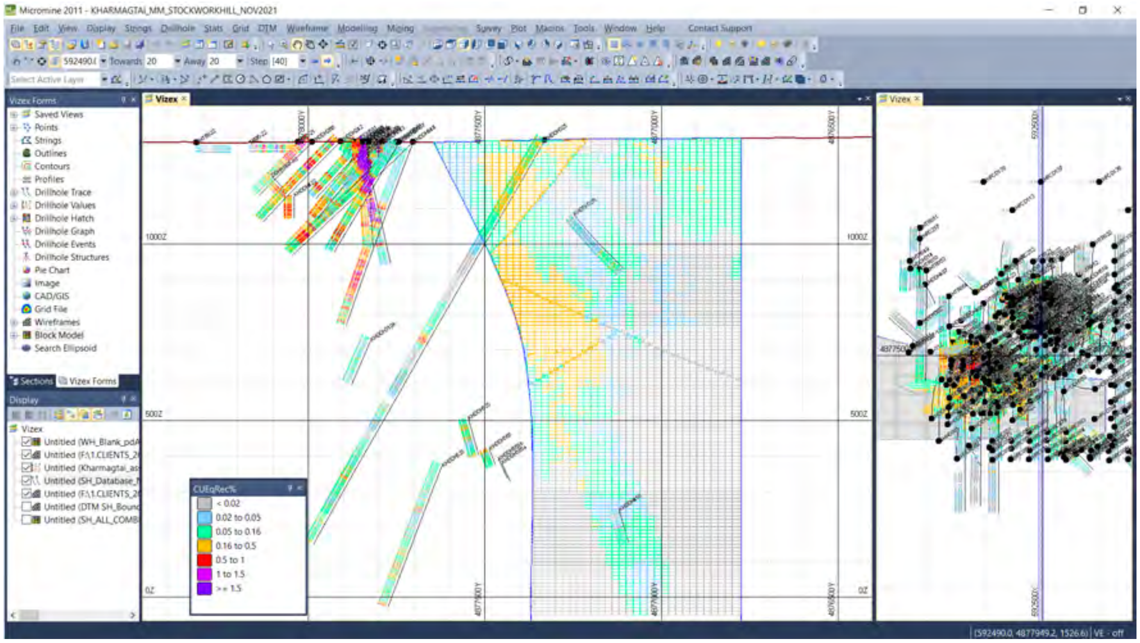
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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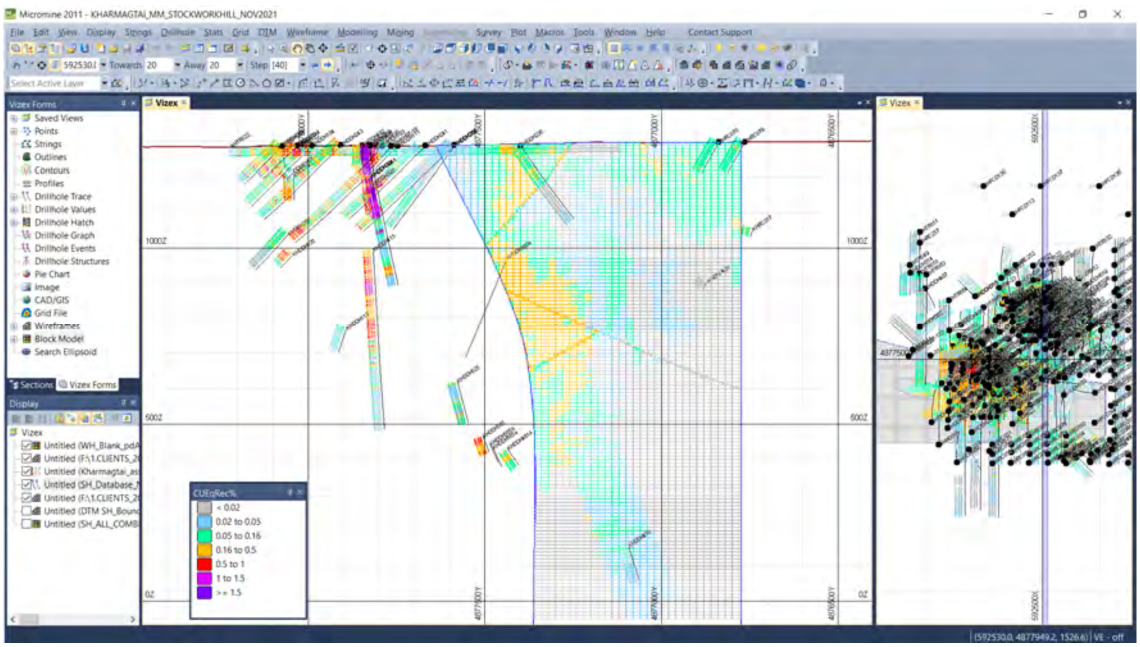
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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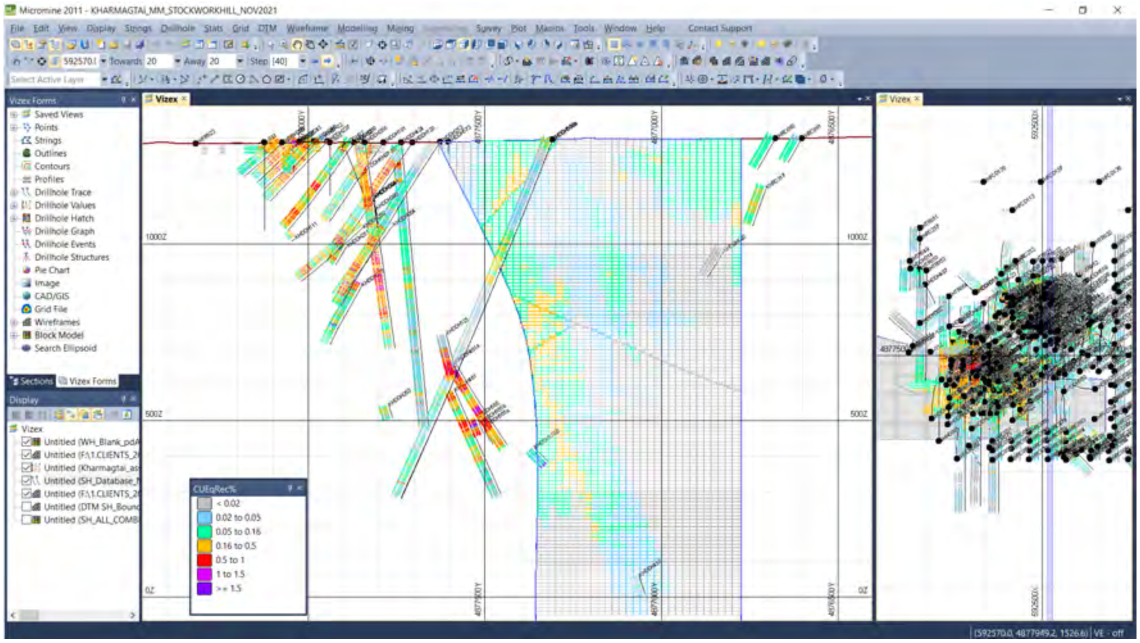
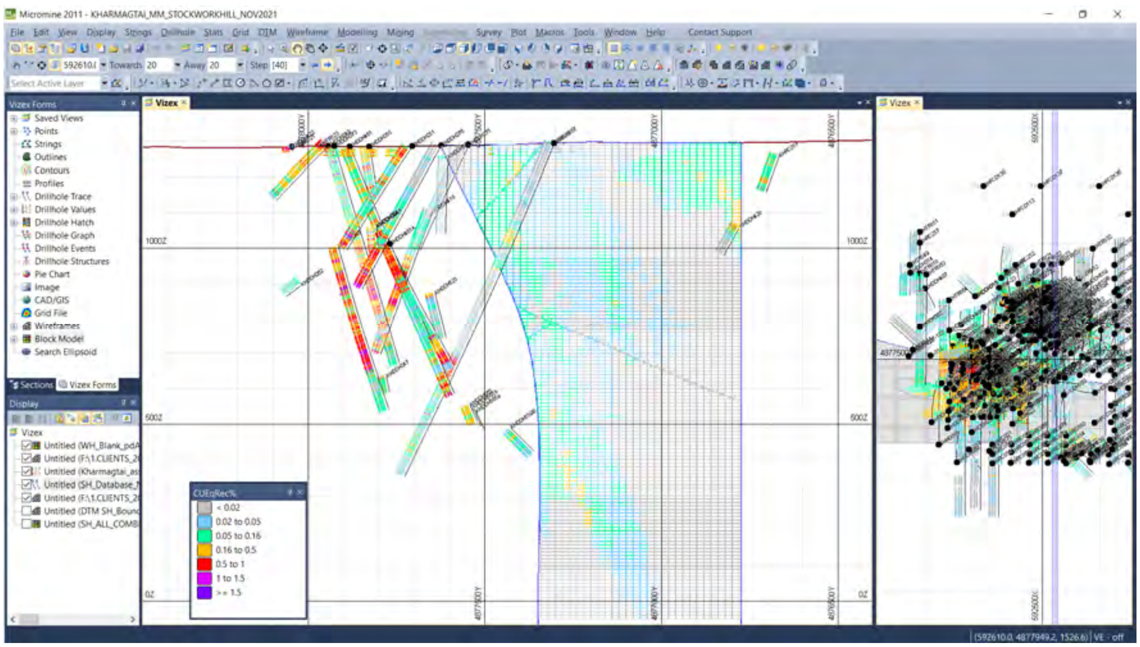
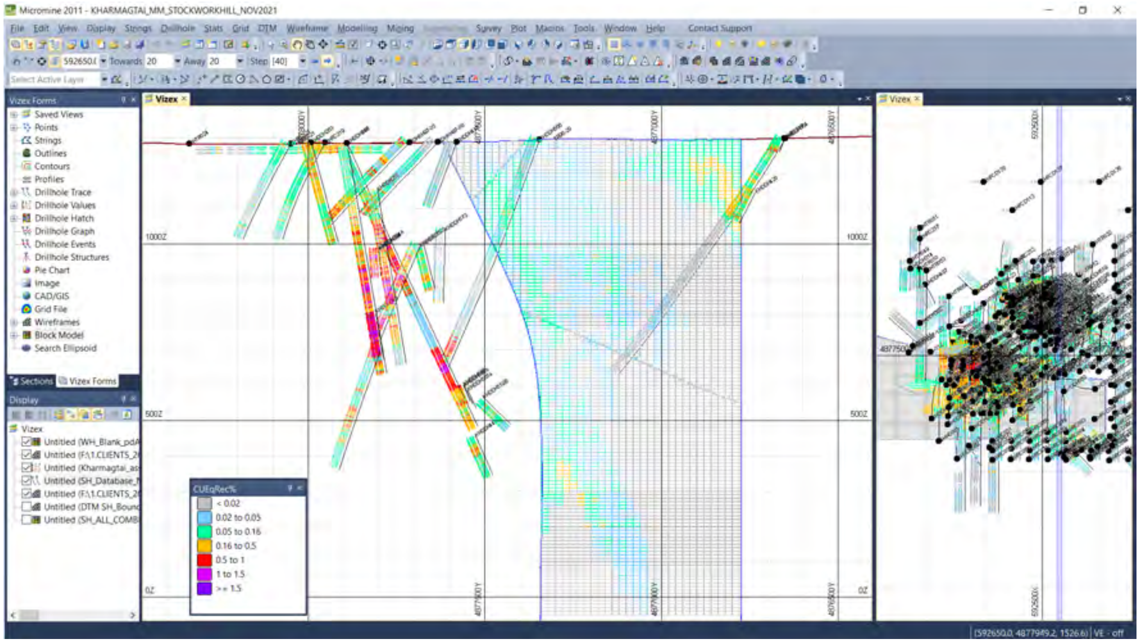
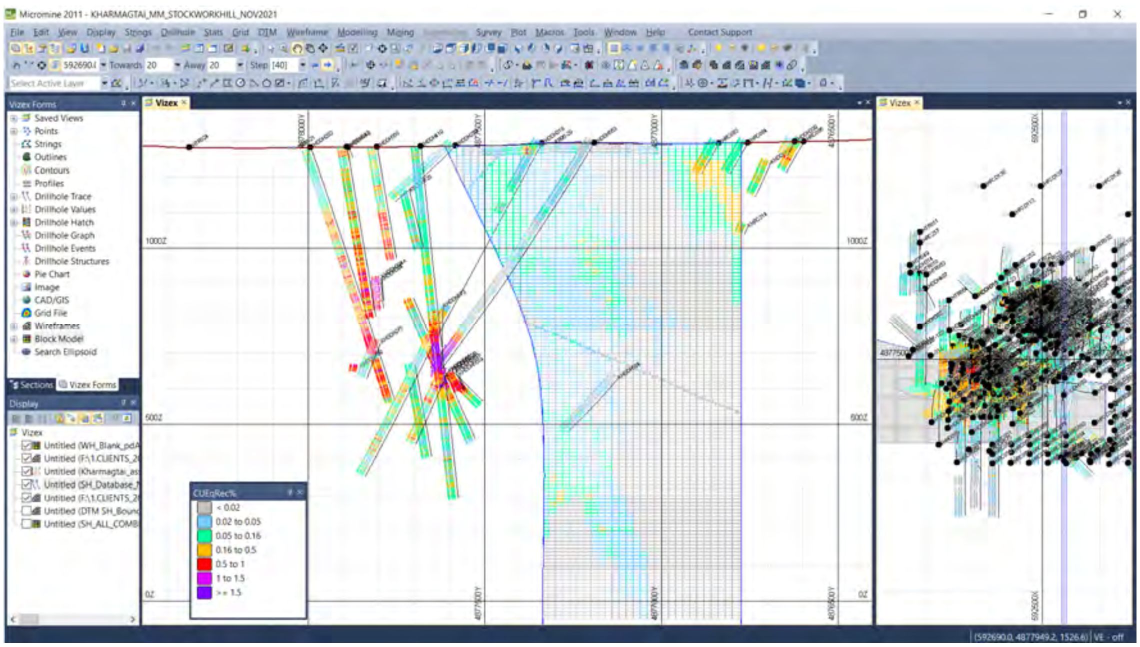
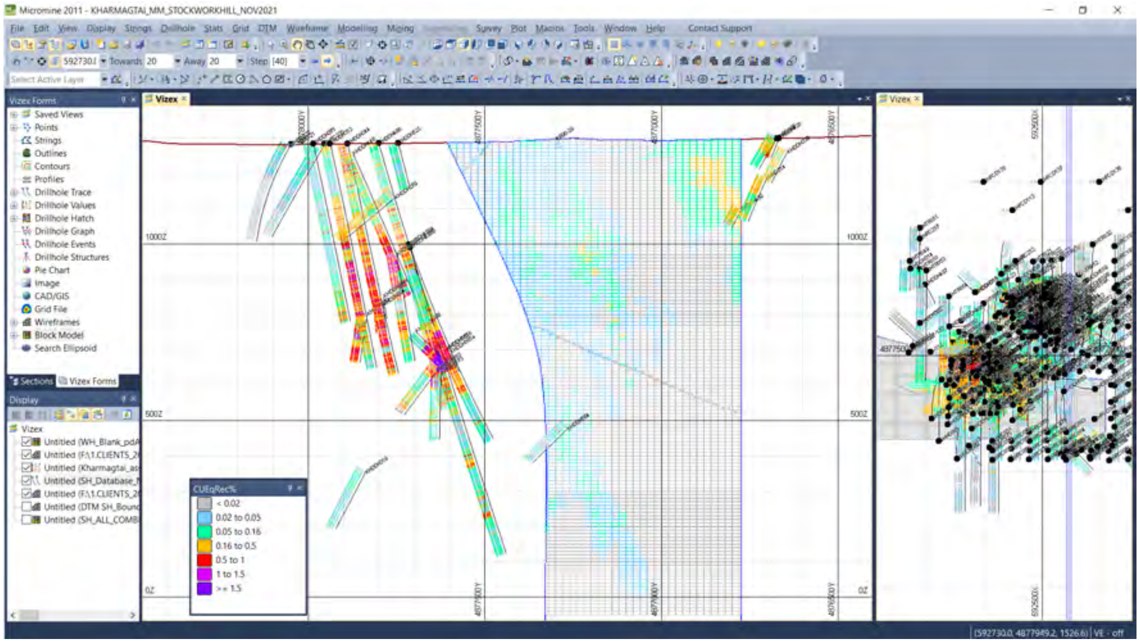
1 to 1.5
>= 1.5

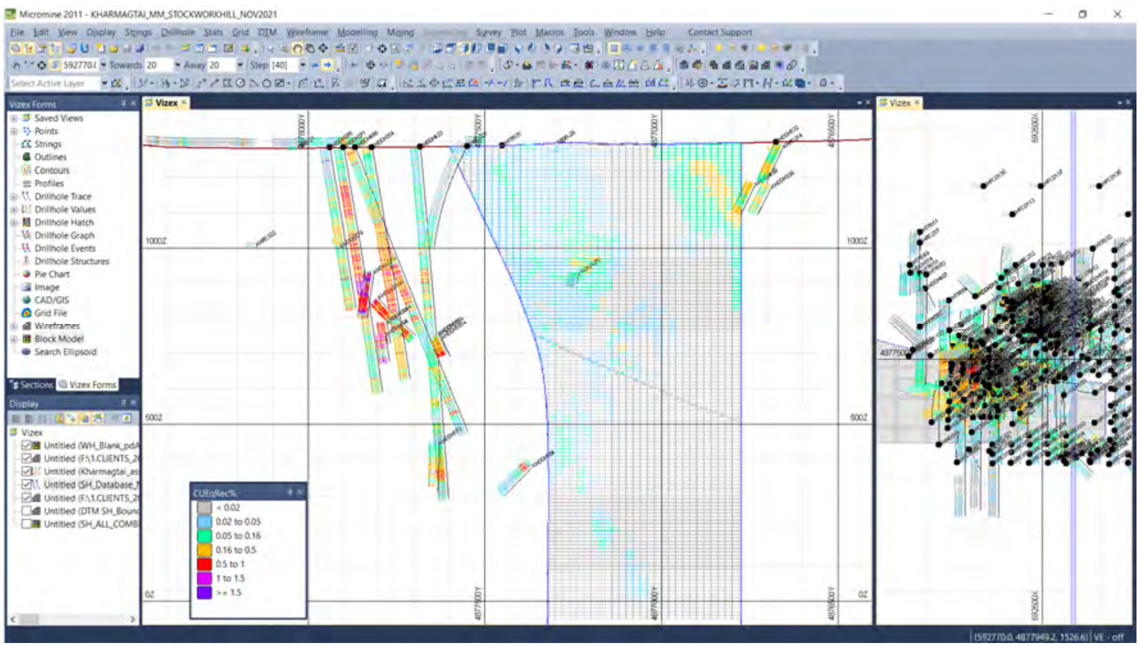

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

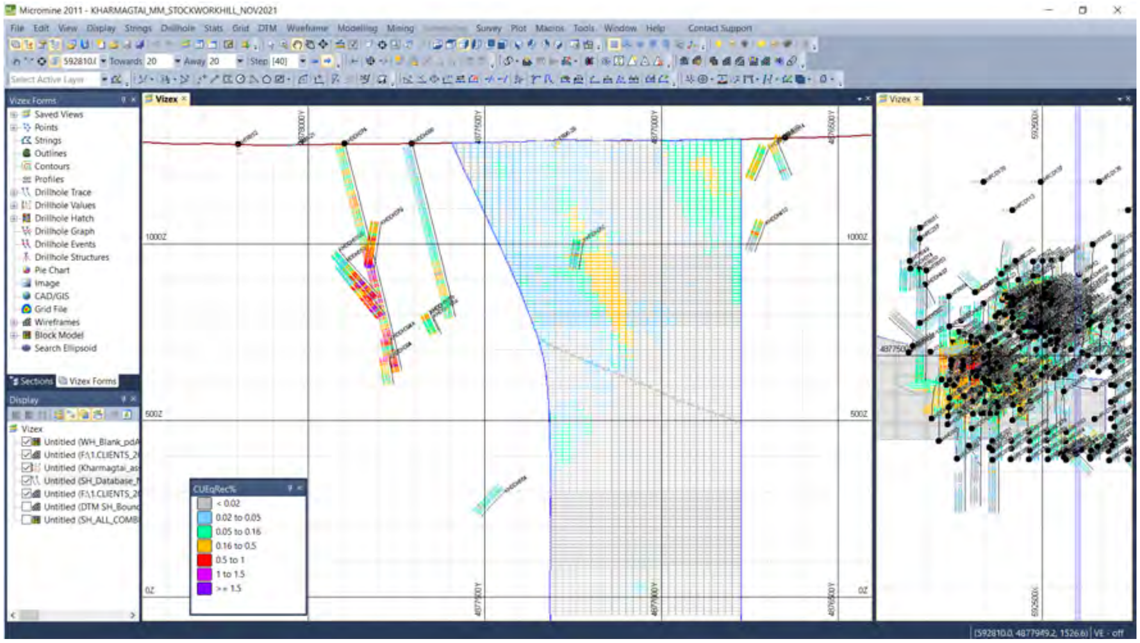

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

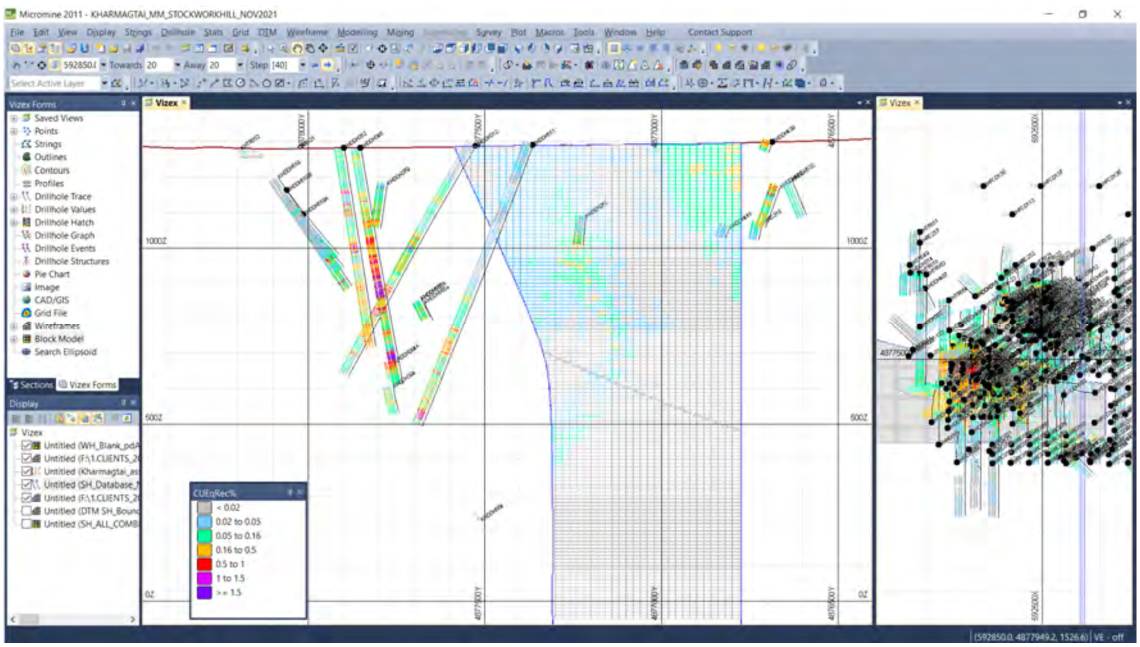

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

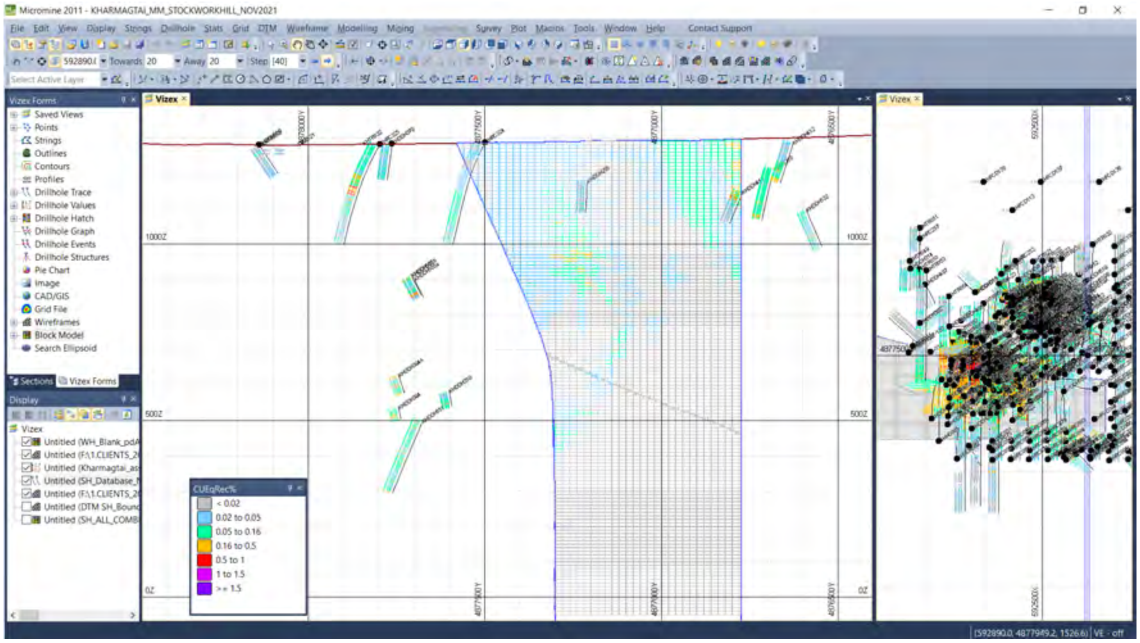

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

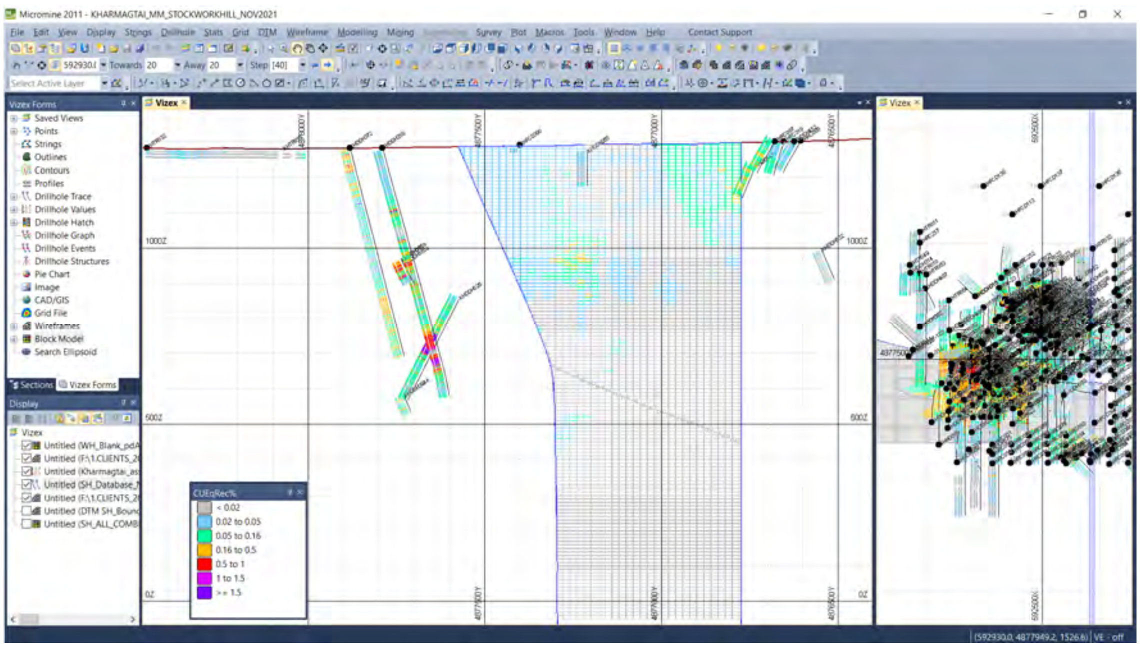

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

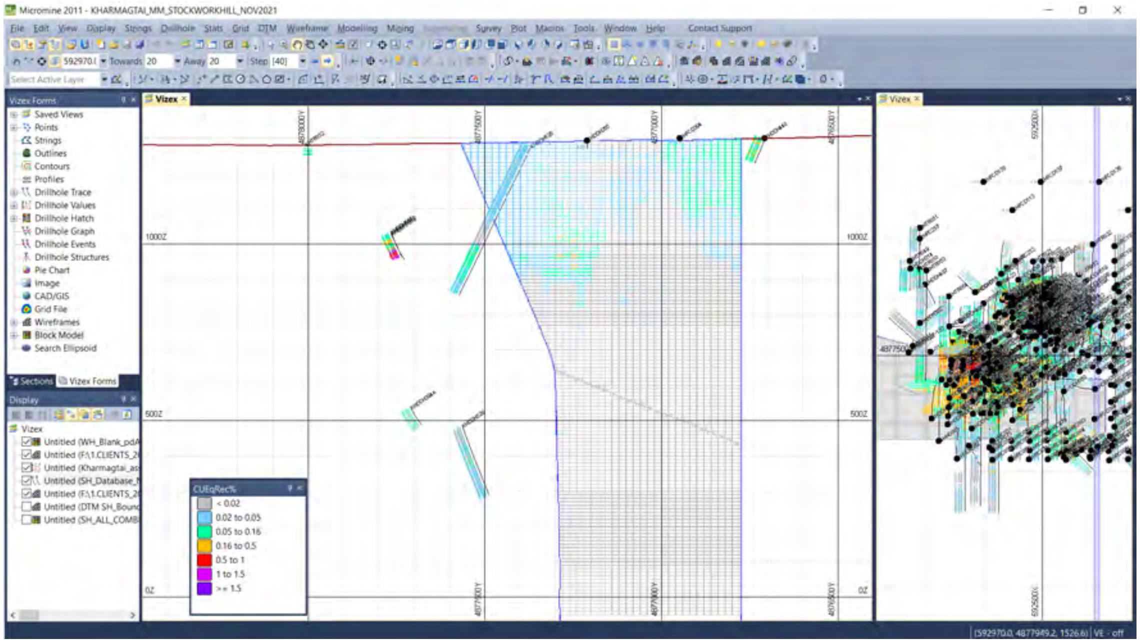

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

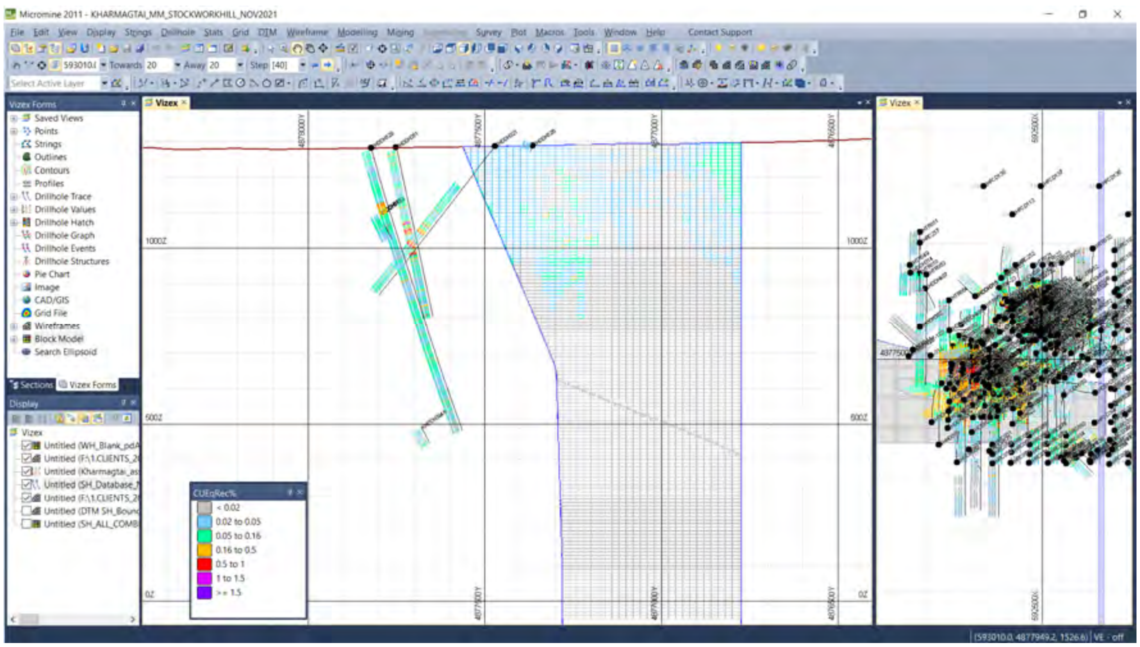

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

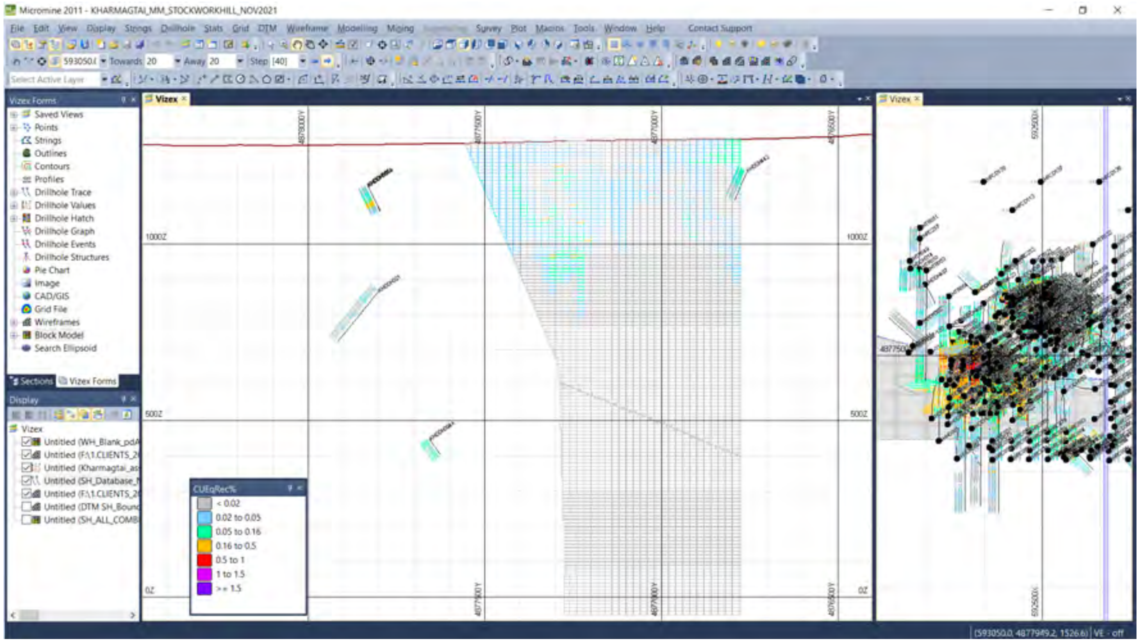

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z
0Z

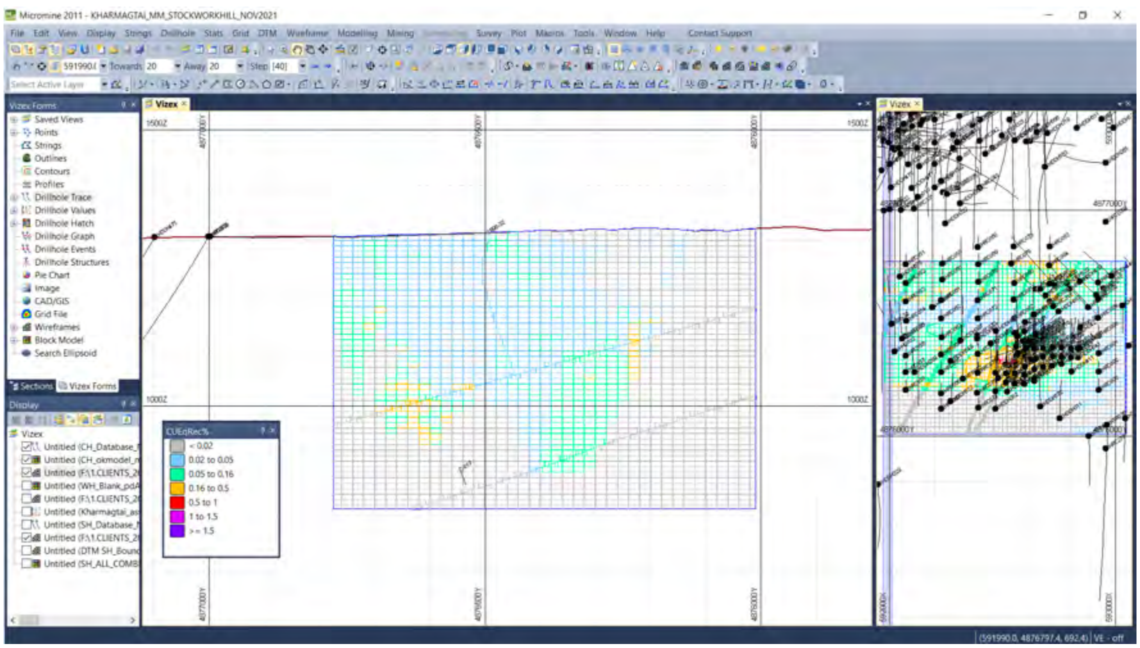

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z
0Z

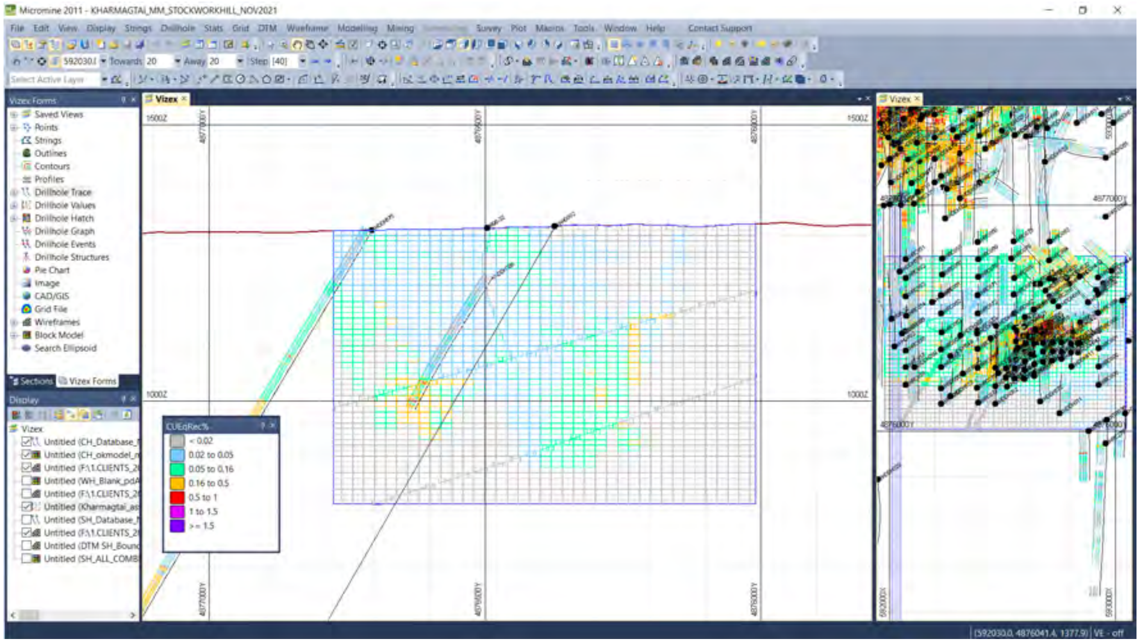

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

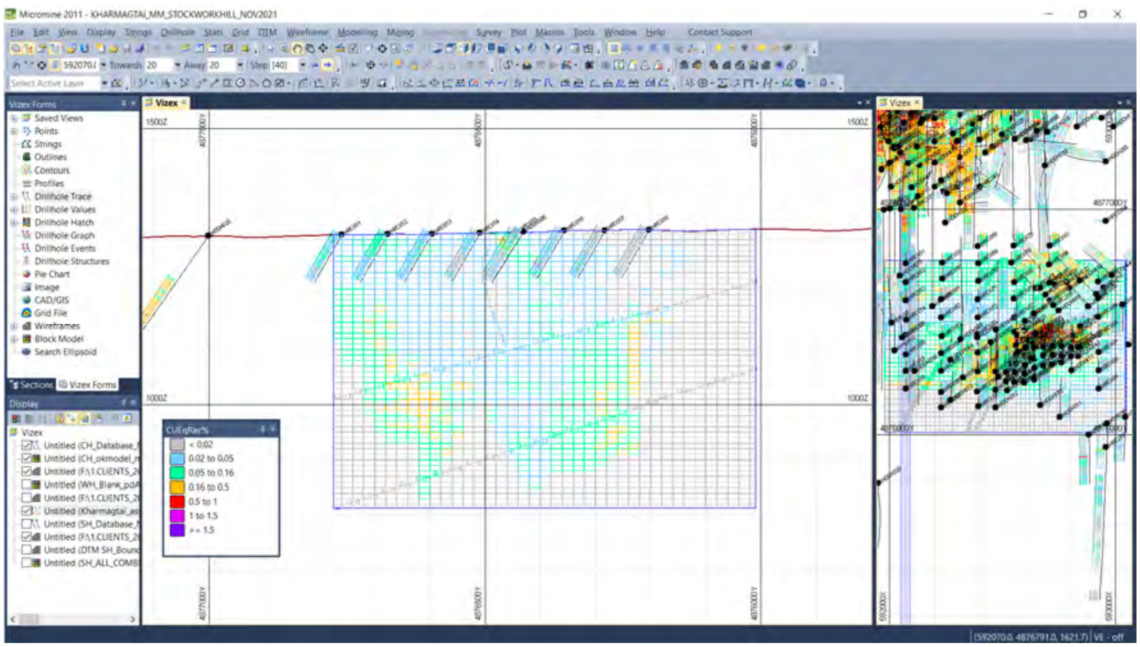

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex
1000Z
500Z
0Z
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

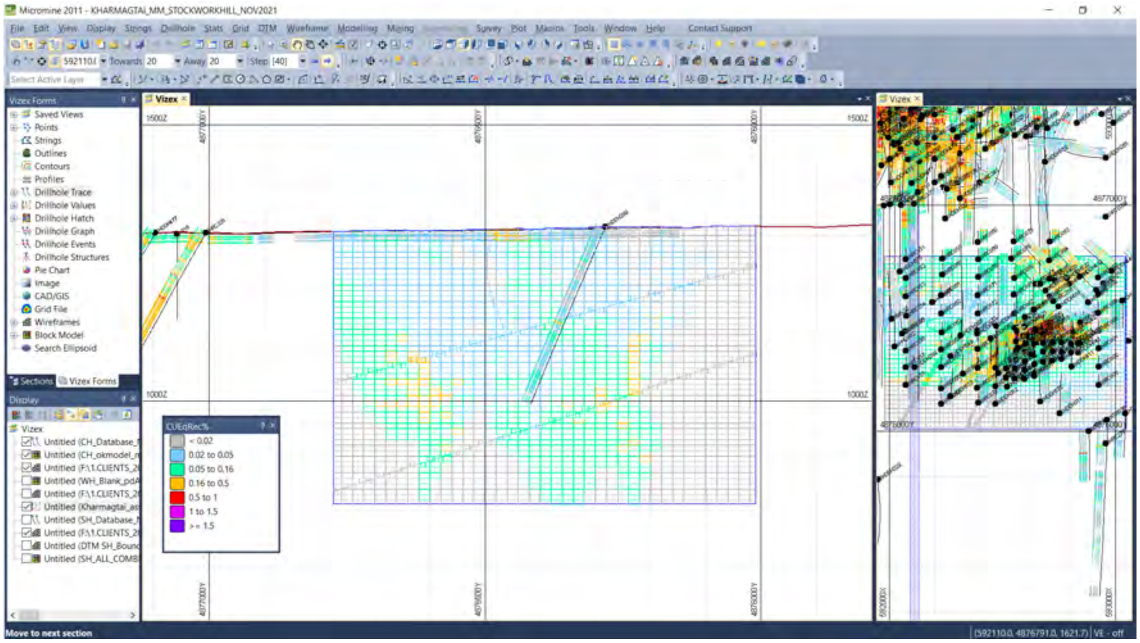


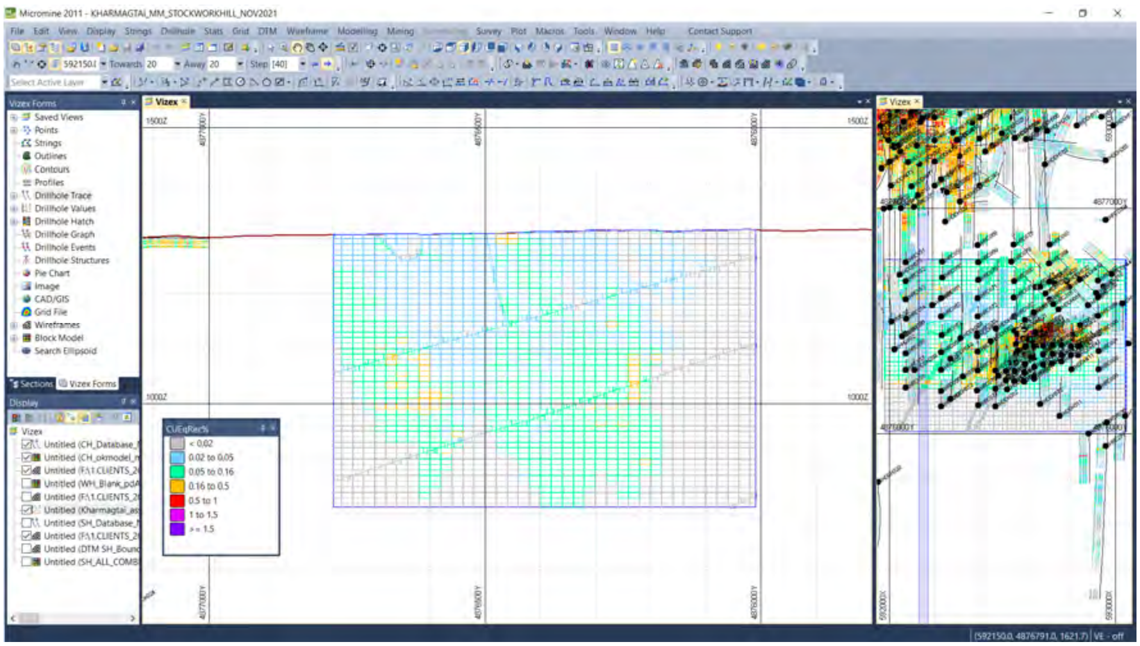
Copper Hill Sections – start at 591990mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.

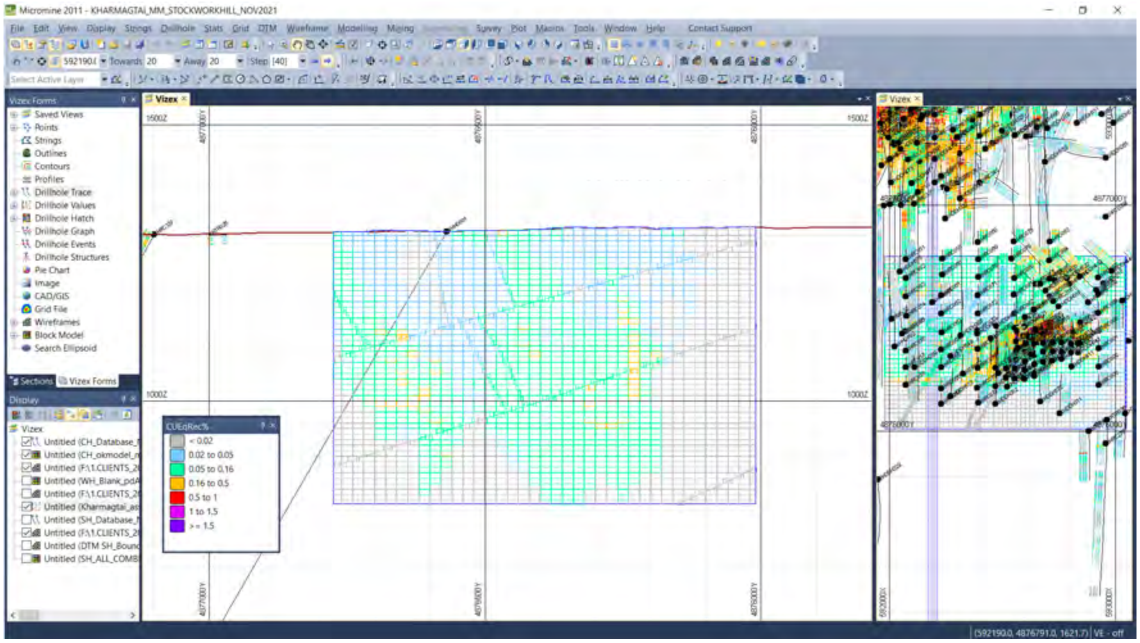


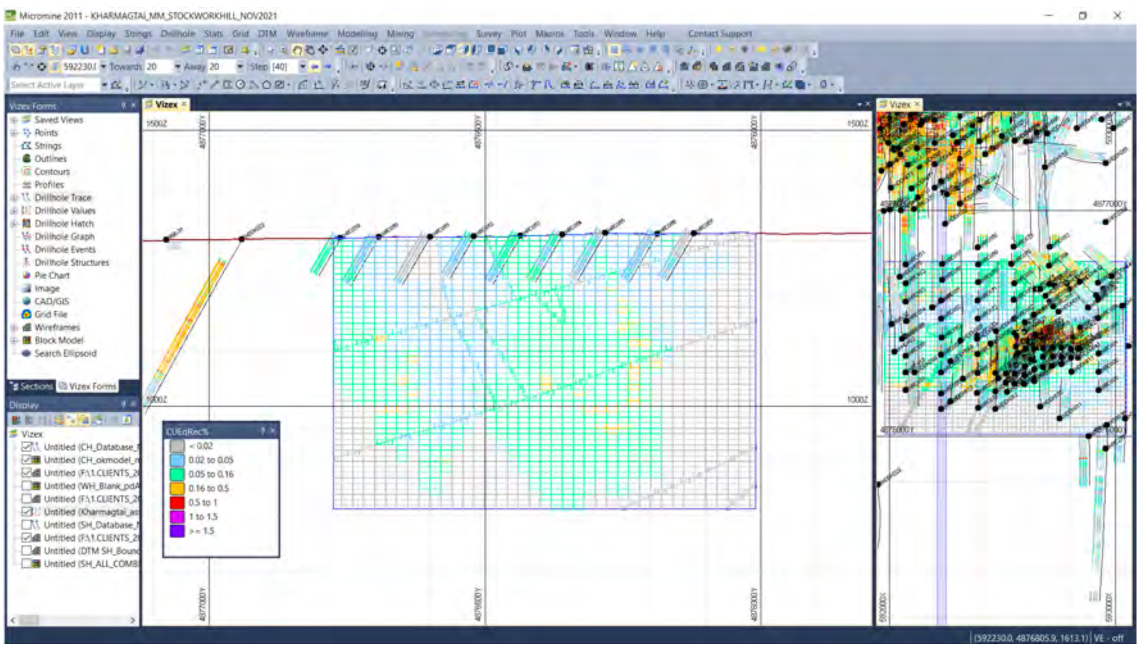

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

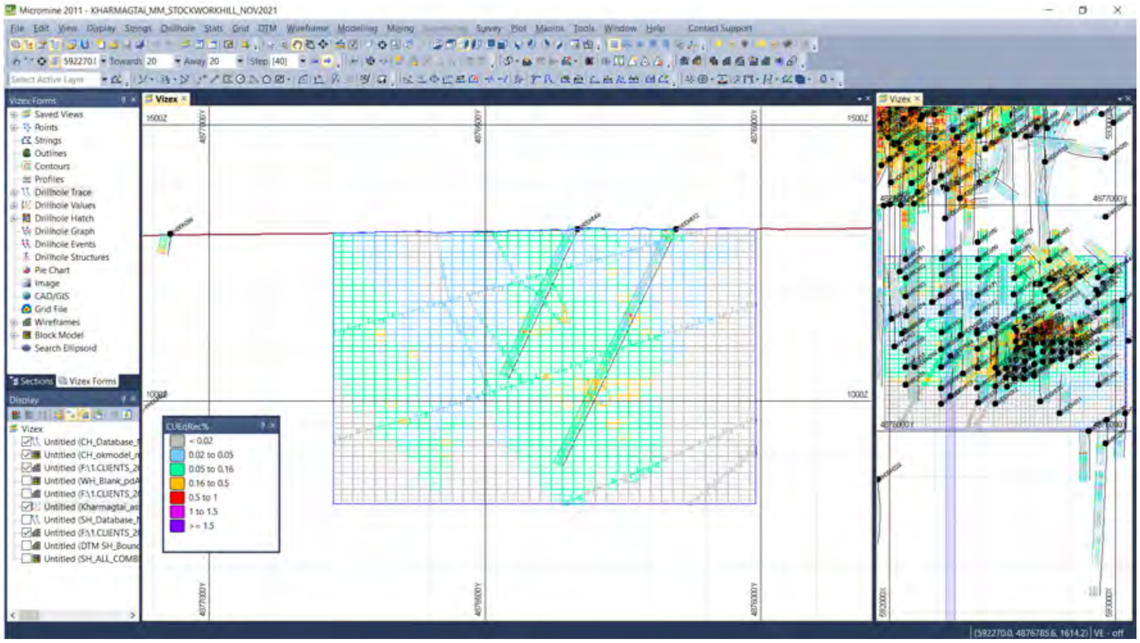

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

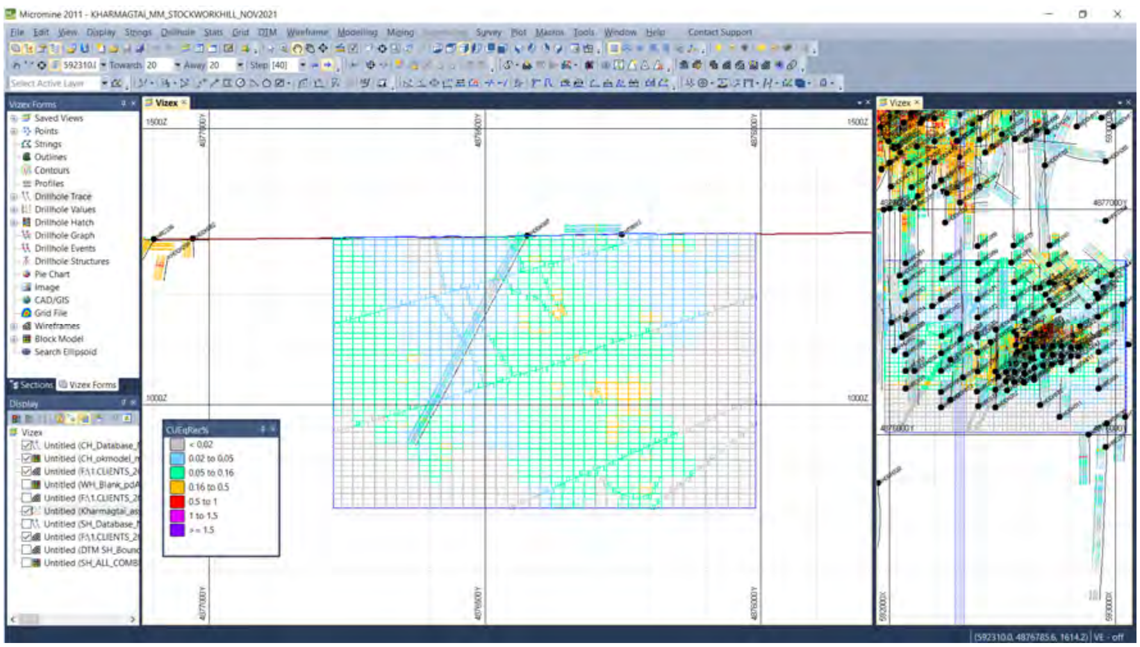

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z
Move to next section

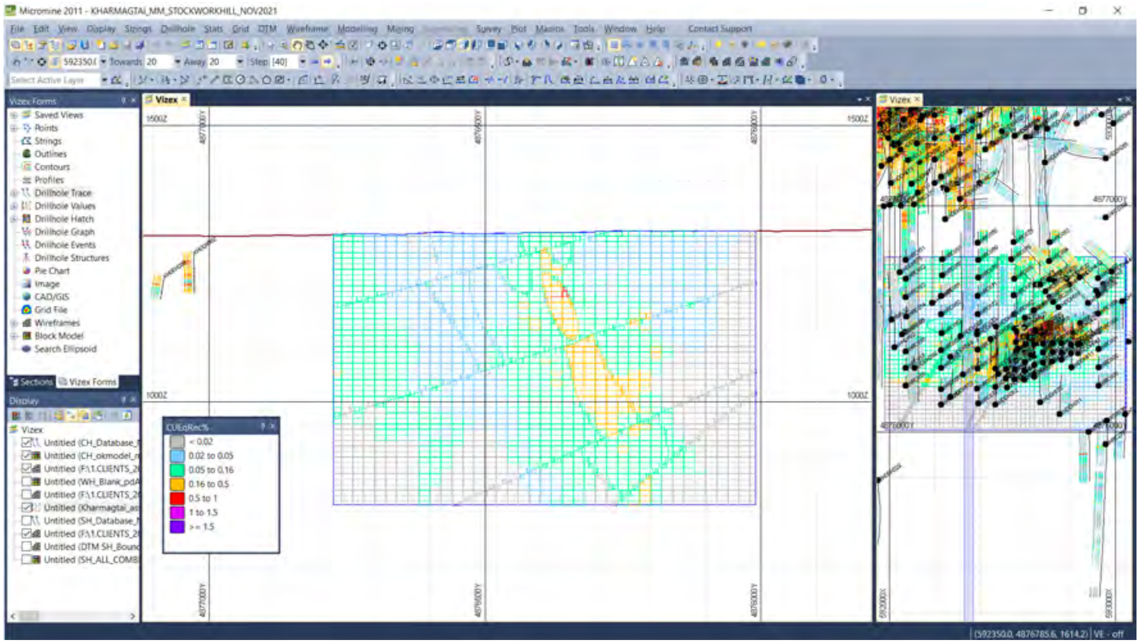

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

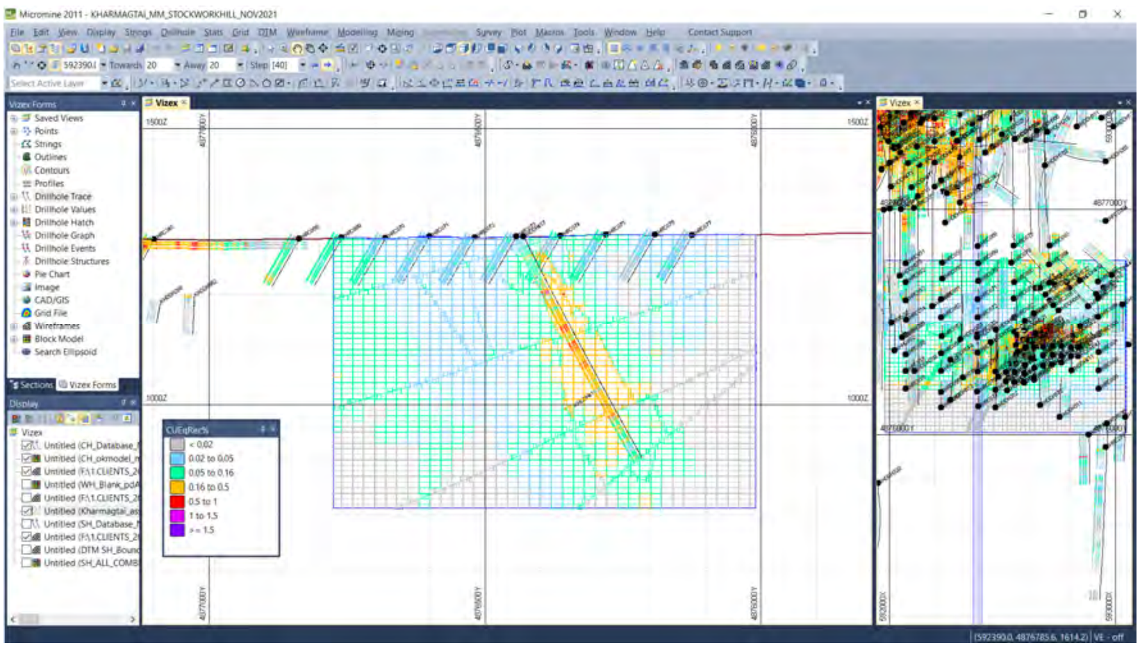

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRnc%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

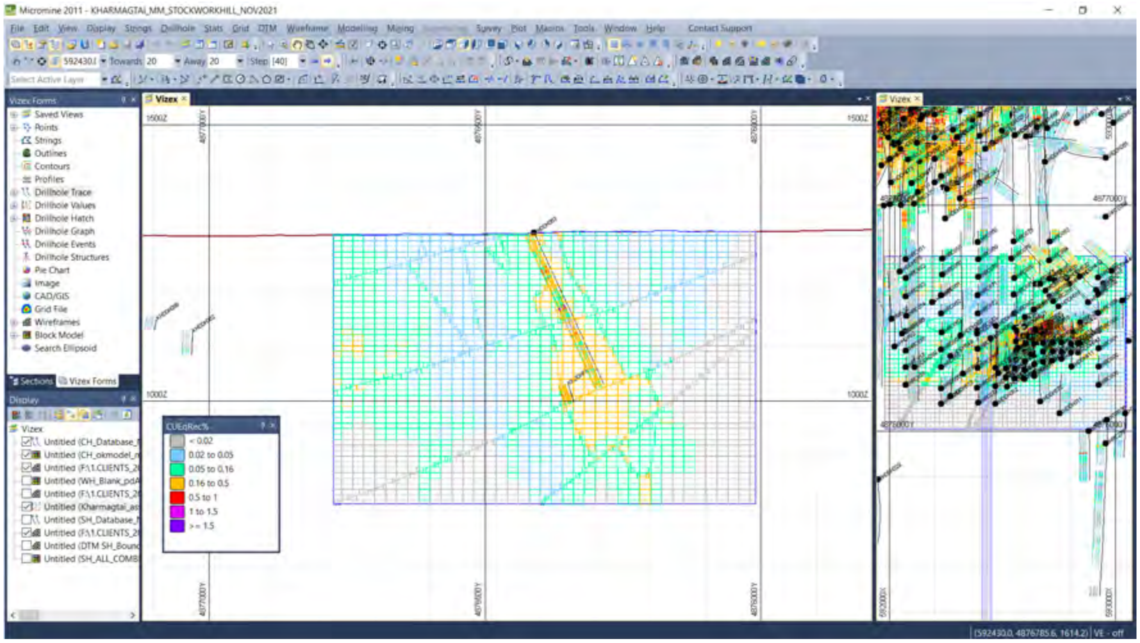

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRnc%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

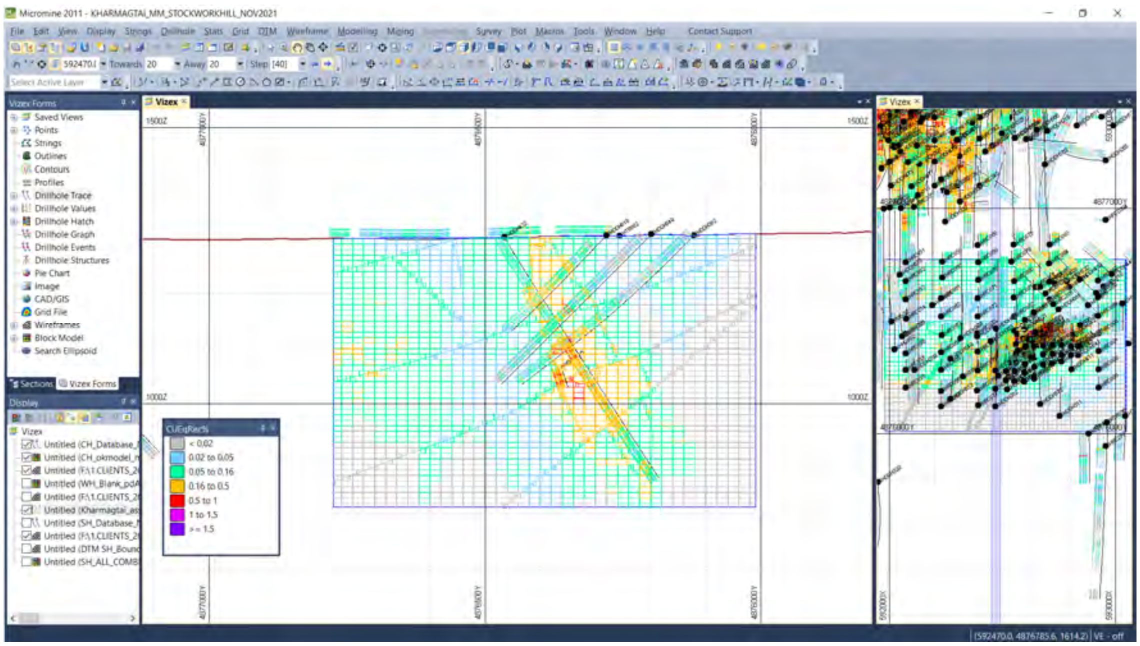

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

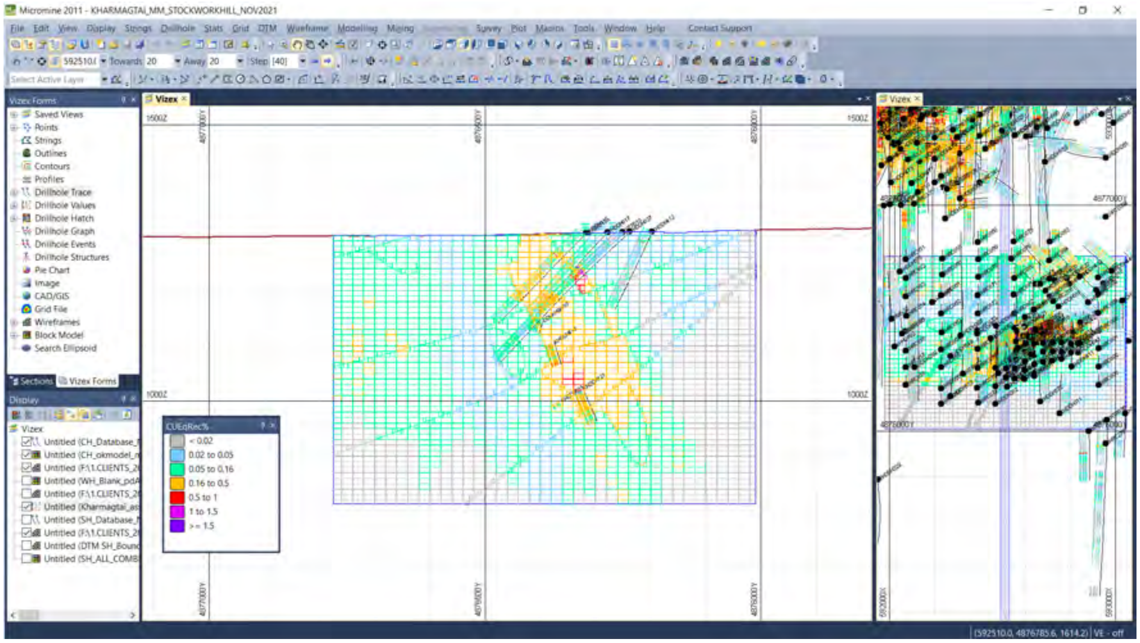

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5






Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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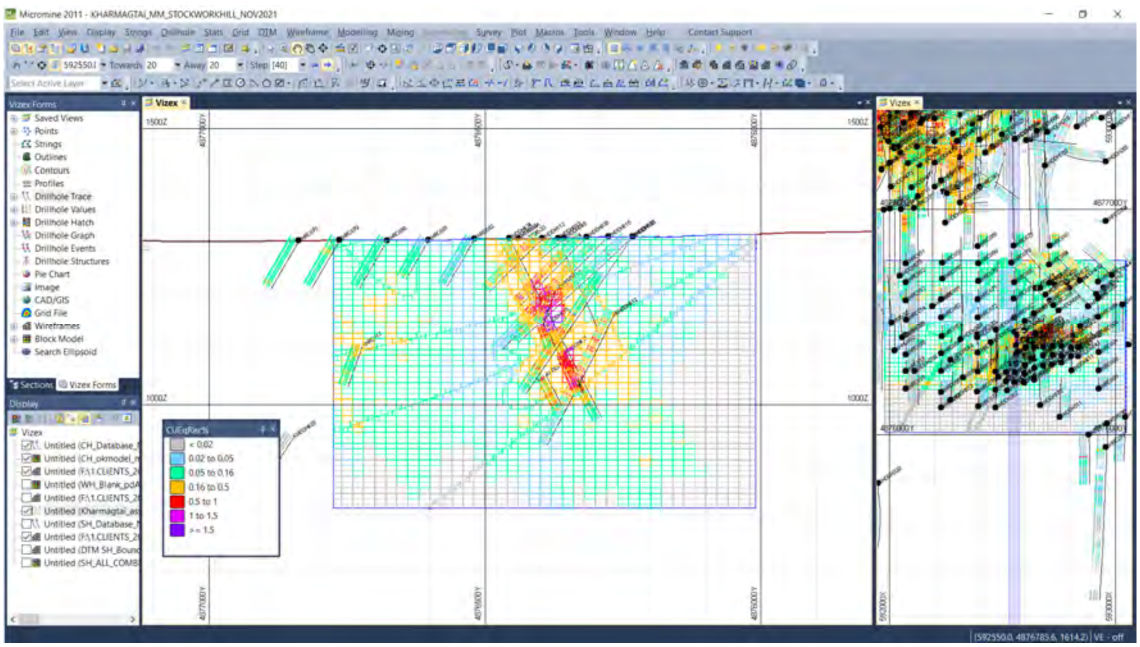
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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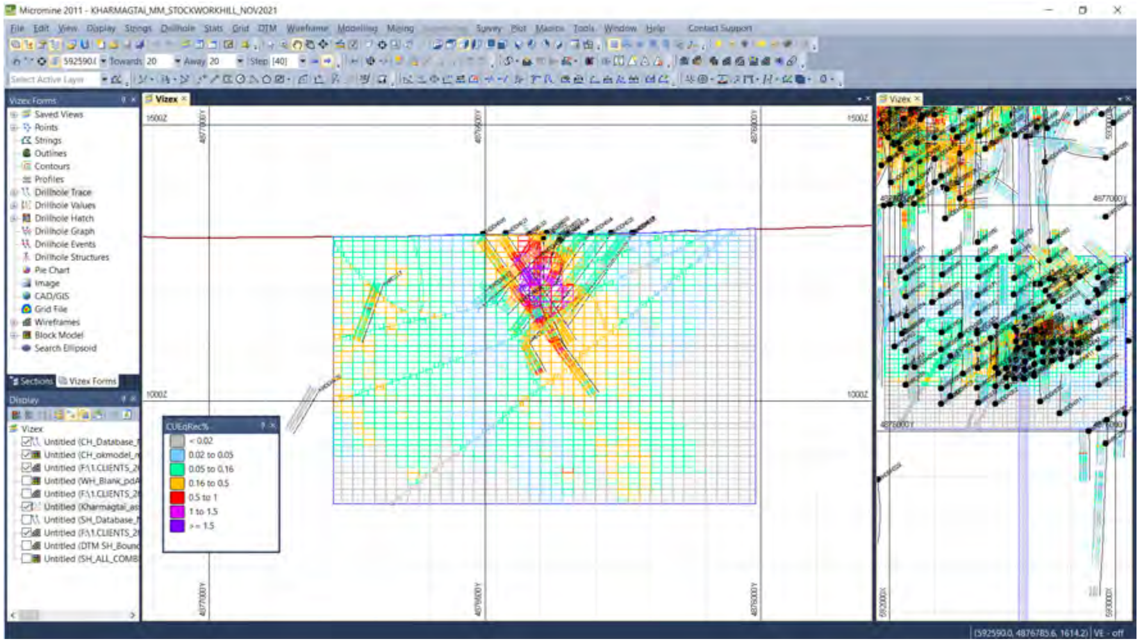
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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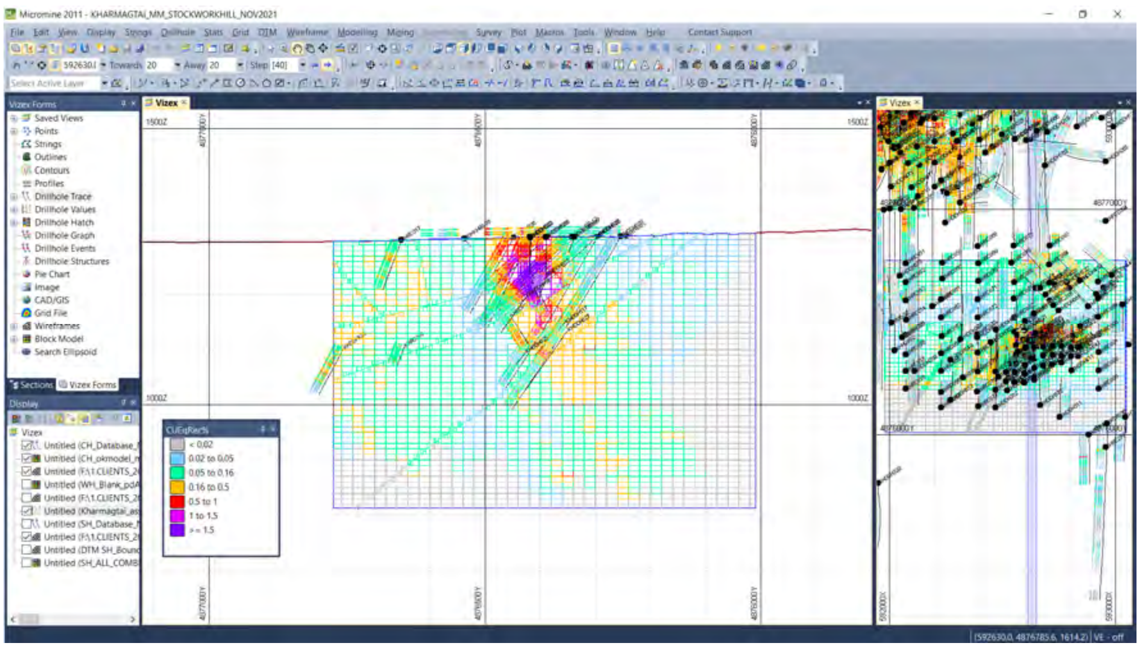
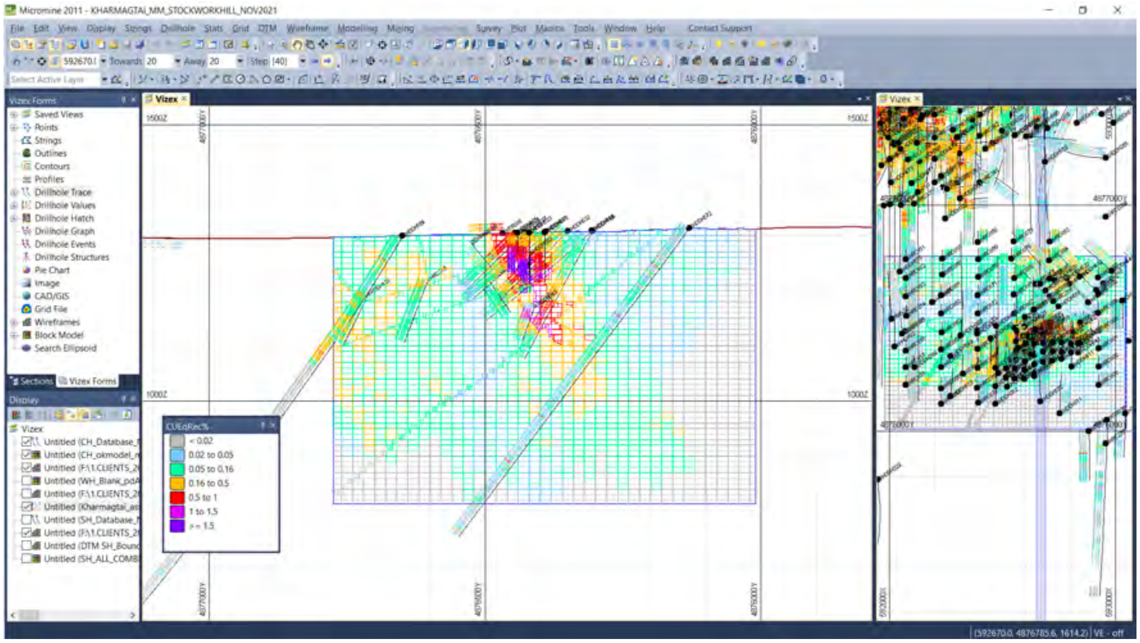
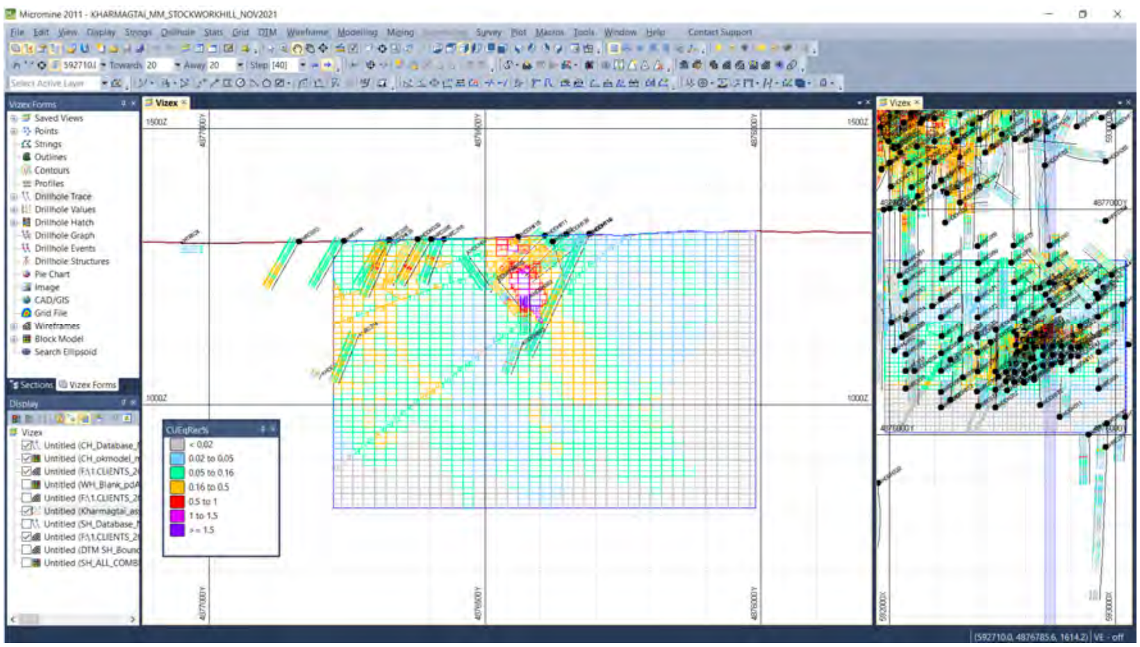
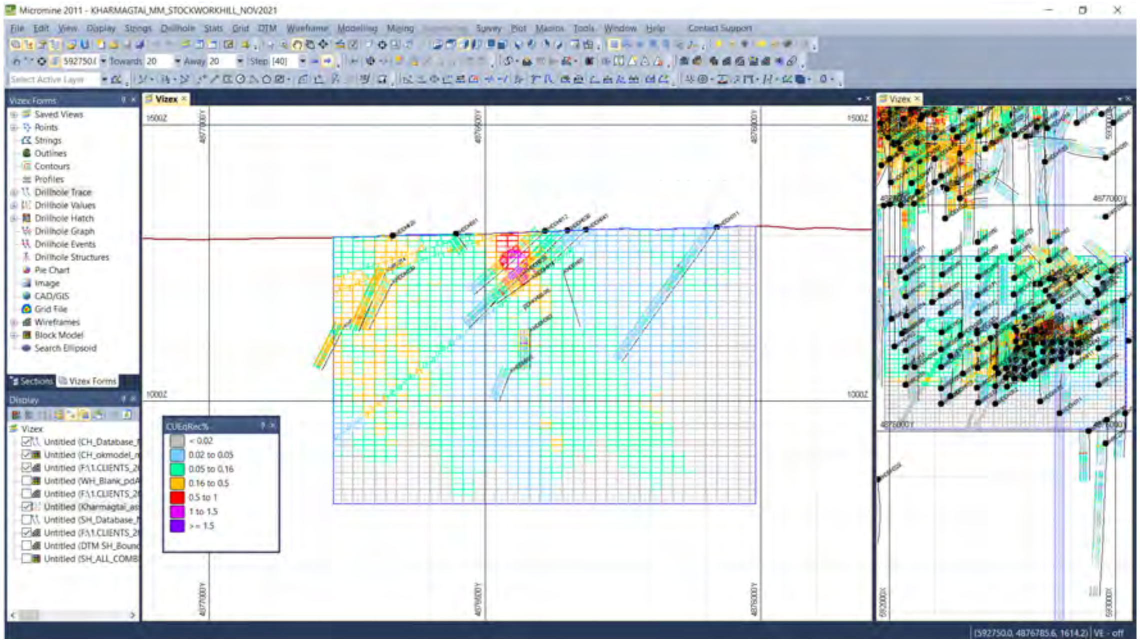
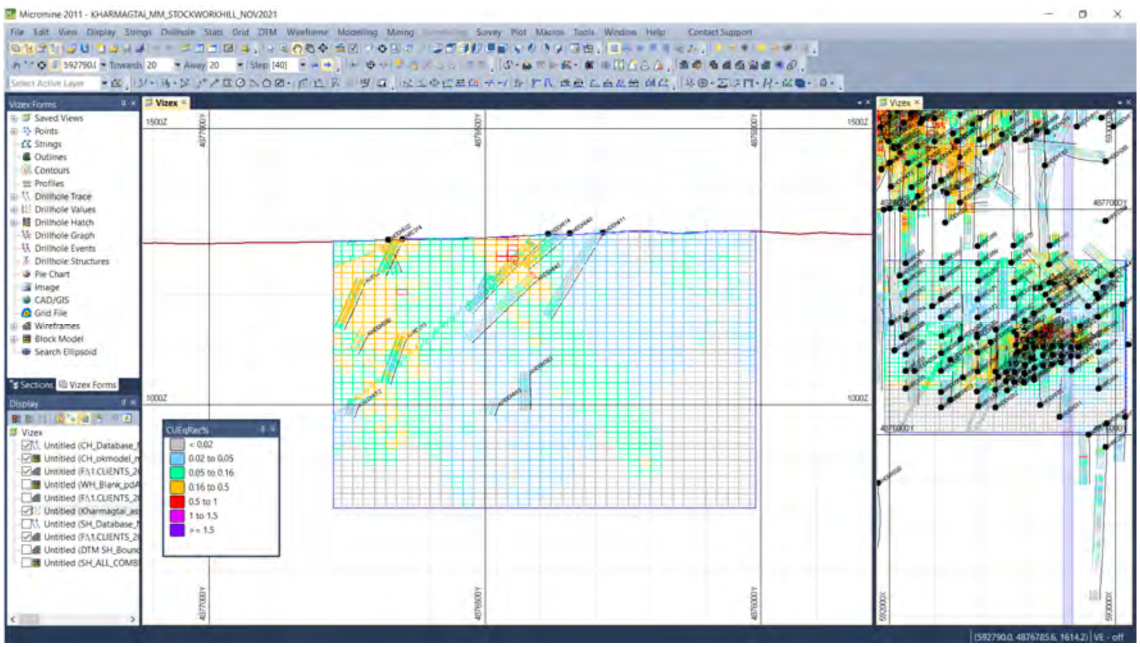
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

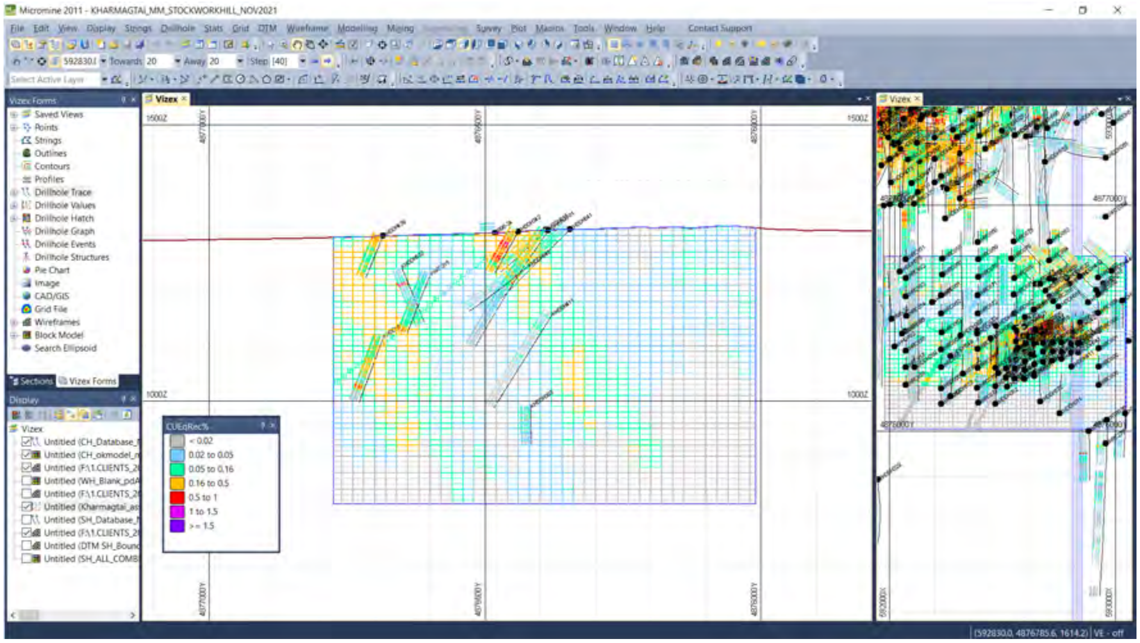

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

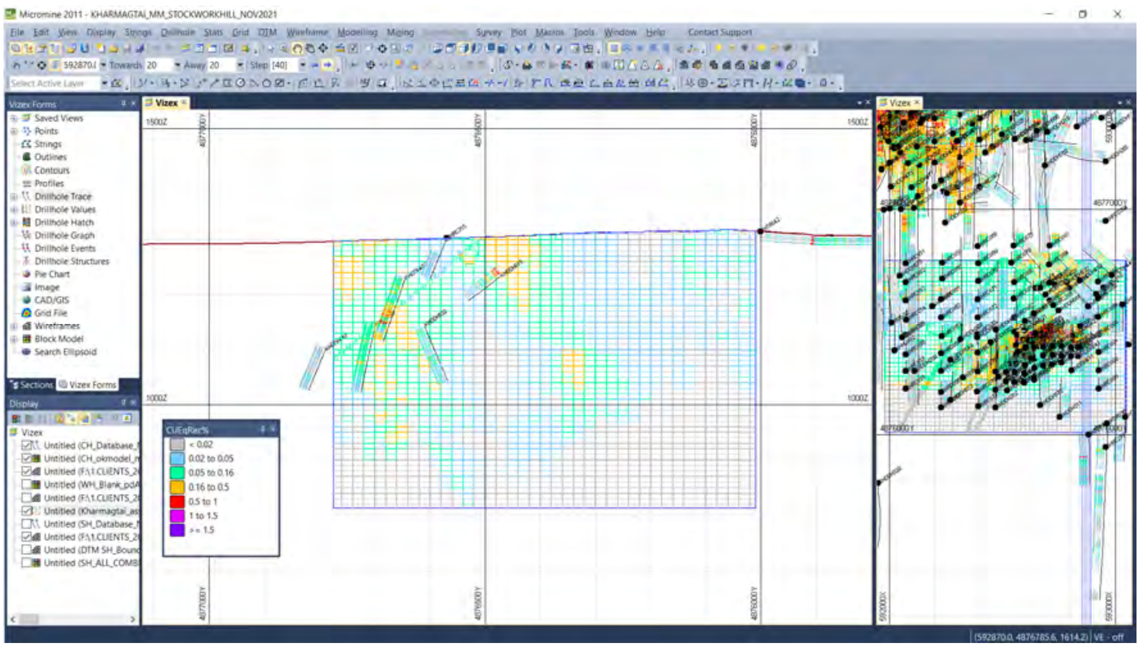

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

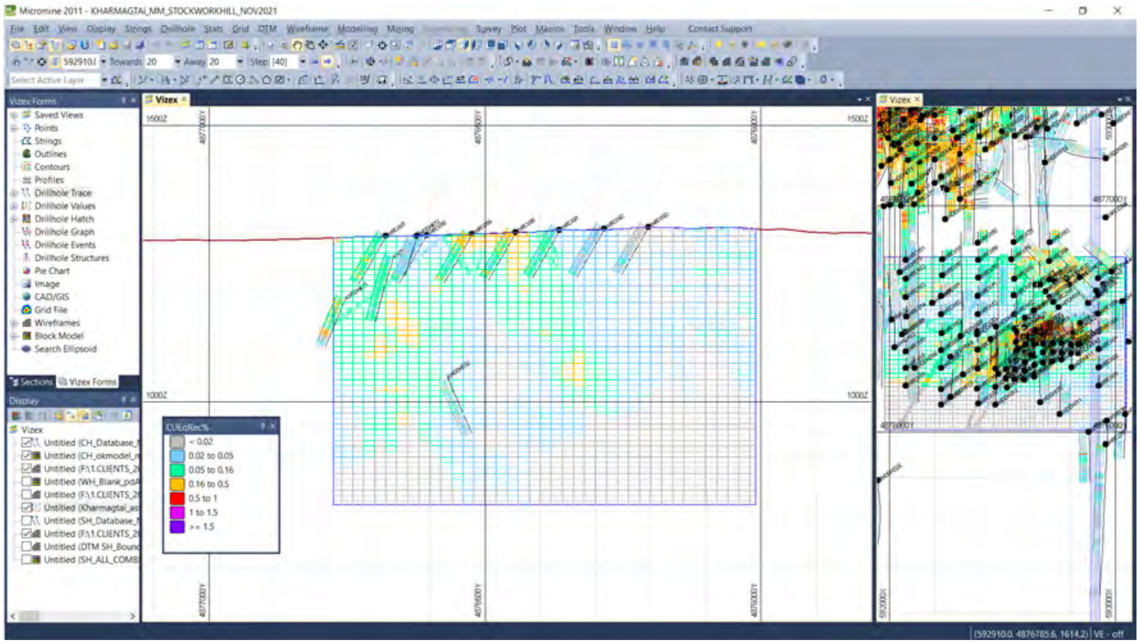

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

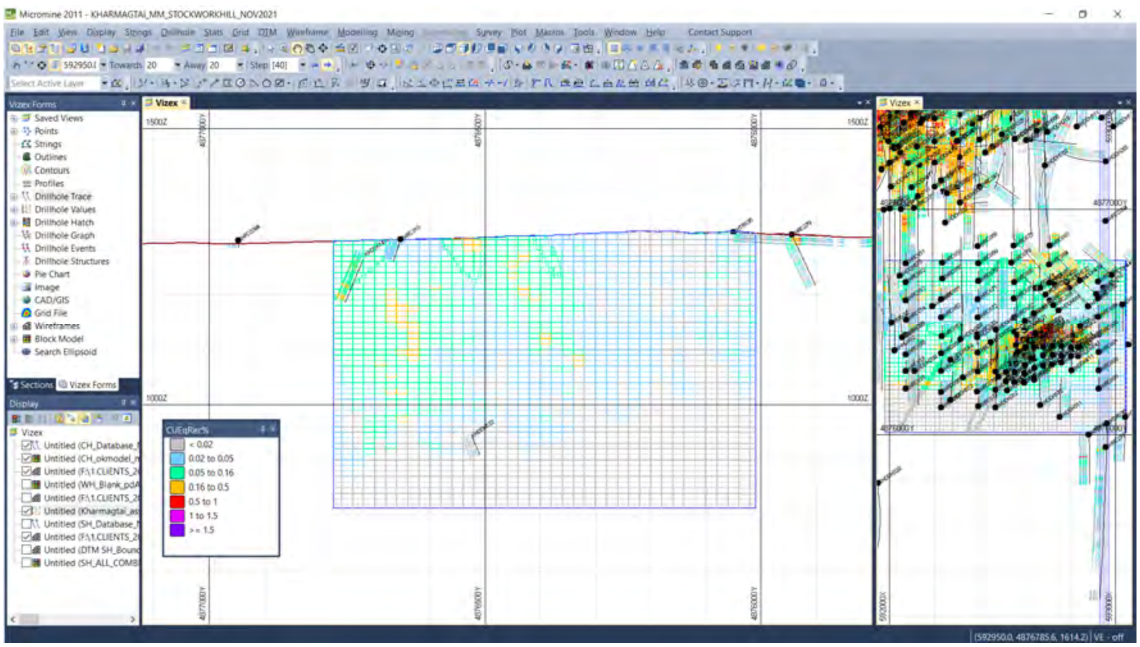

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
(592750.0, 4876785.6, 1614.2) | VE - off

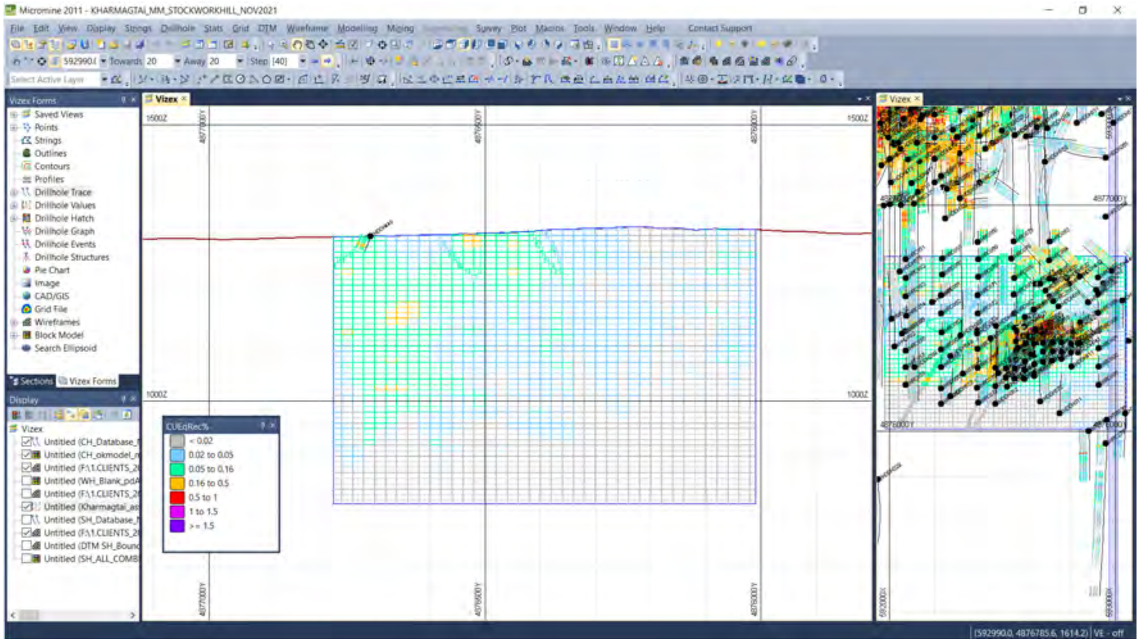

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
(592790.0, 4876785.6, 1614.2) | VE - off

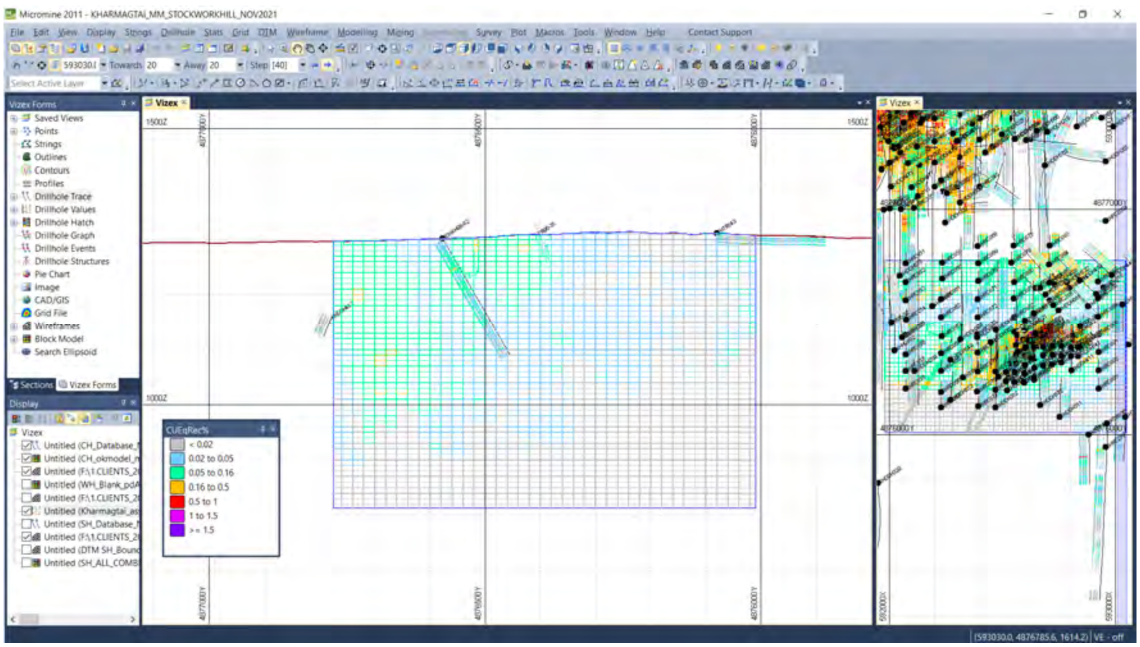

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1500Z
1000Z

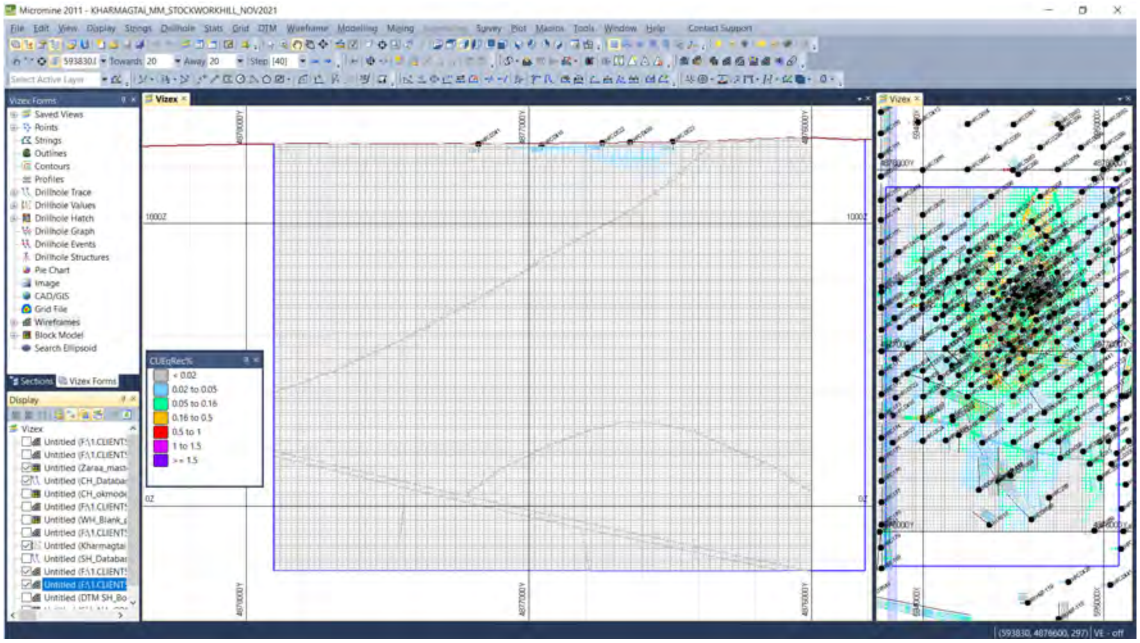

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

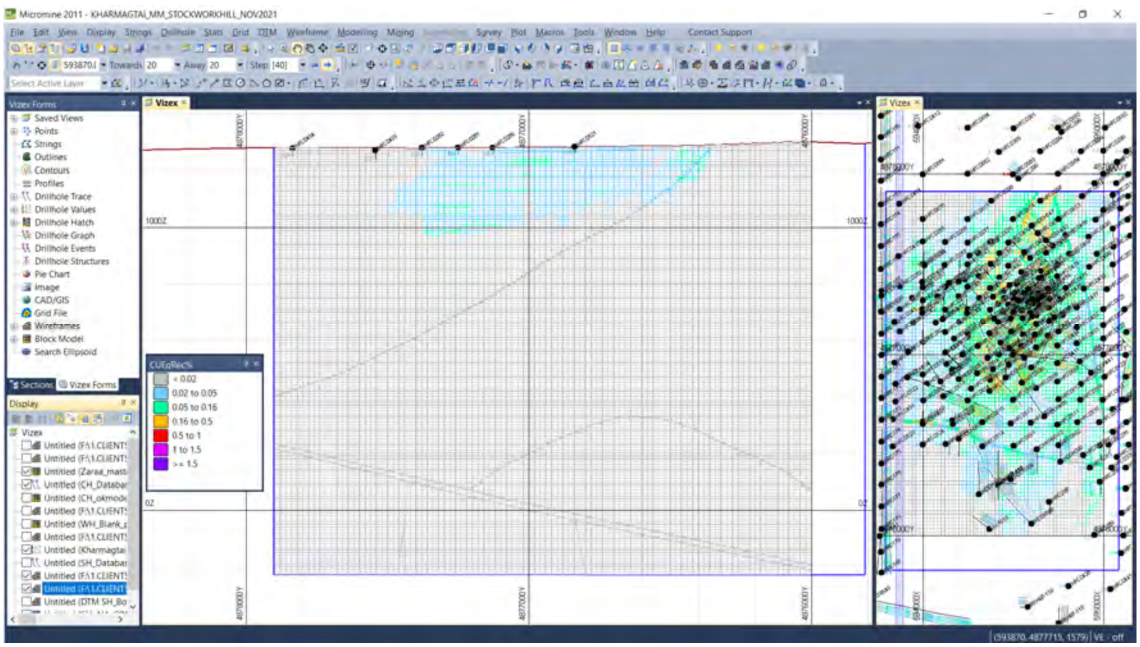

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5

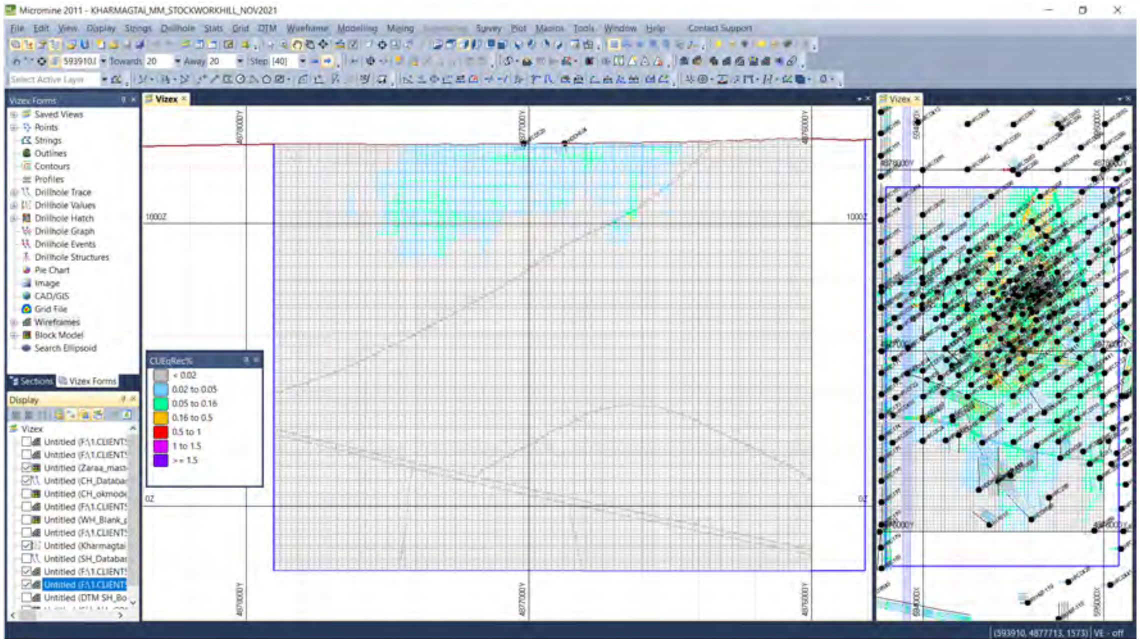




Zaraa Sections – start at 593830mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
CUEqRec%
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0.16 to 0.5
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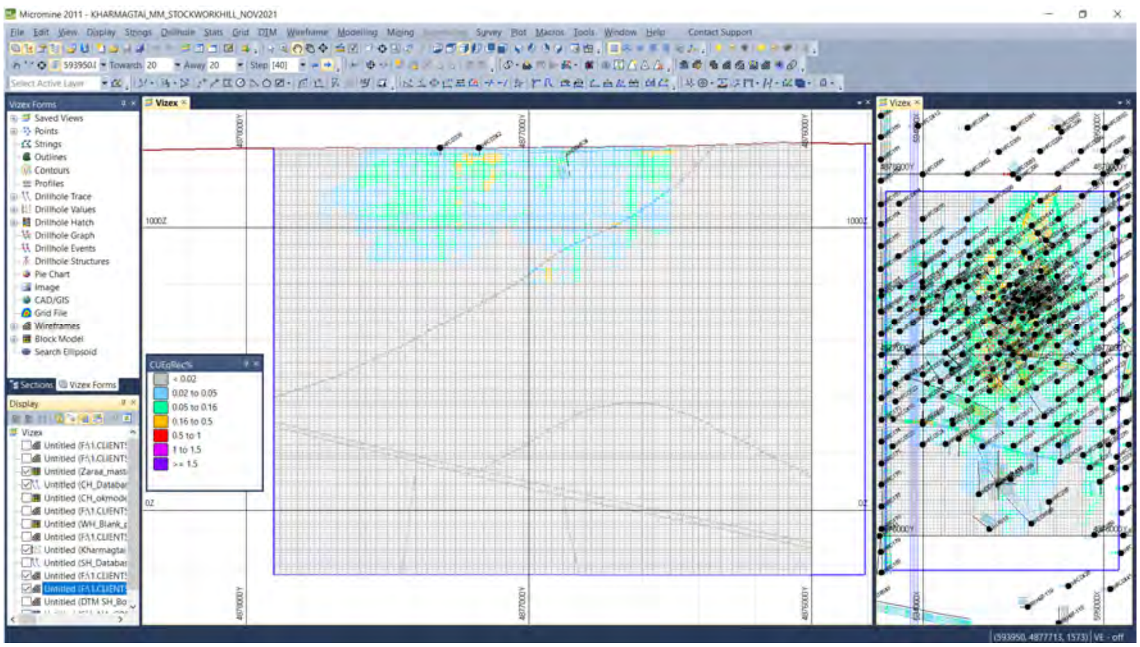
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
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CUEqRec%
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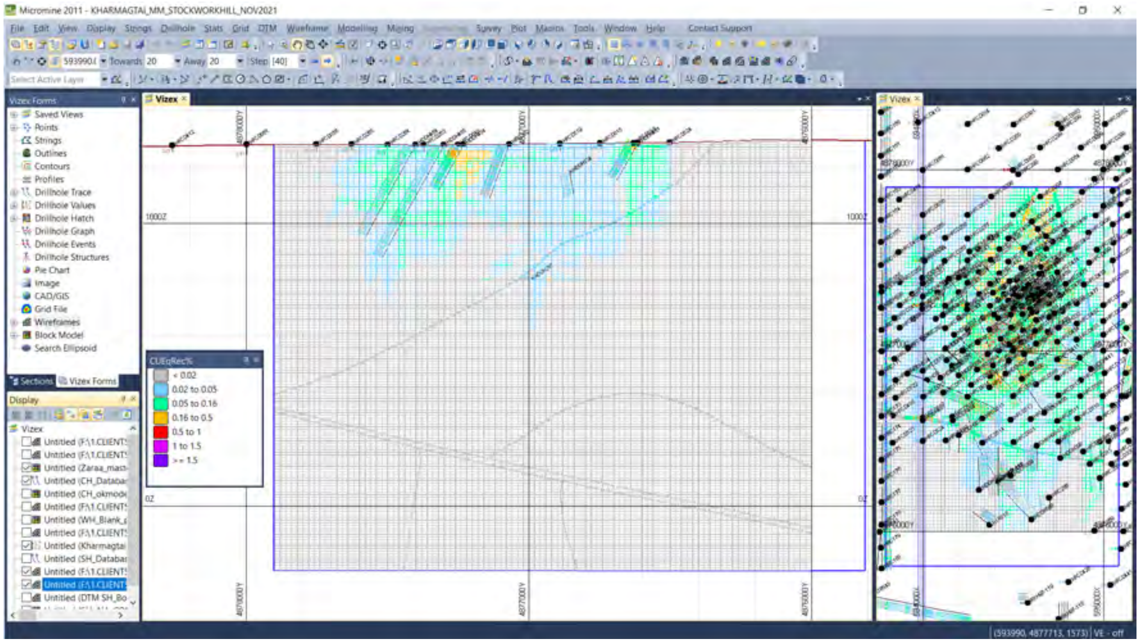
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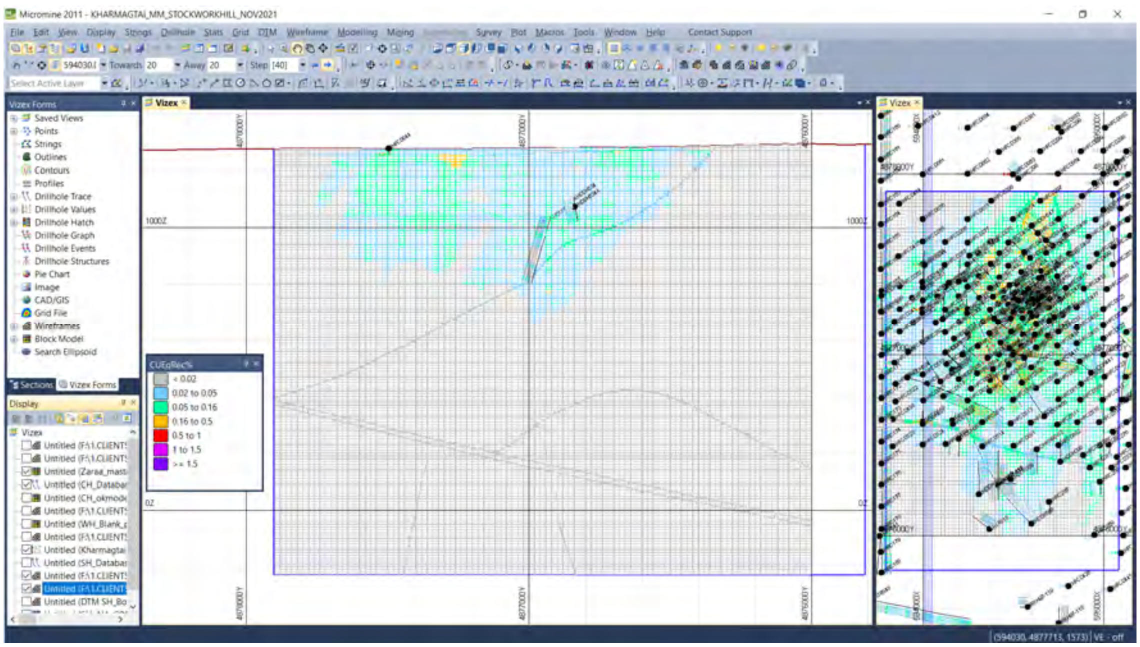
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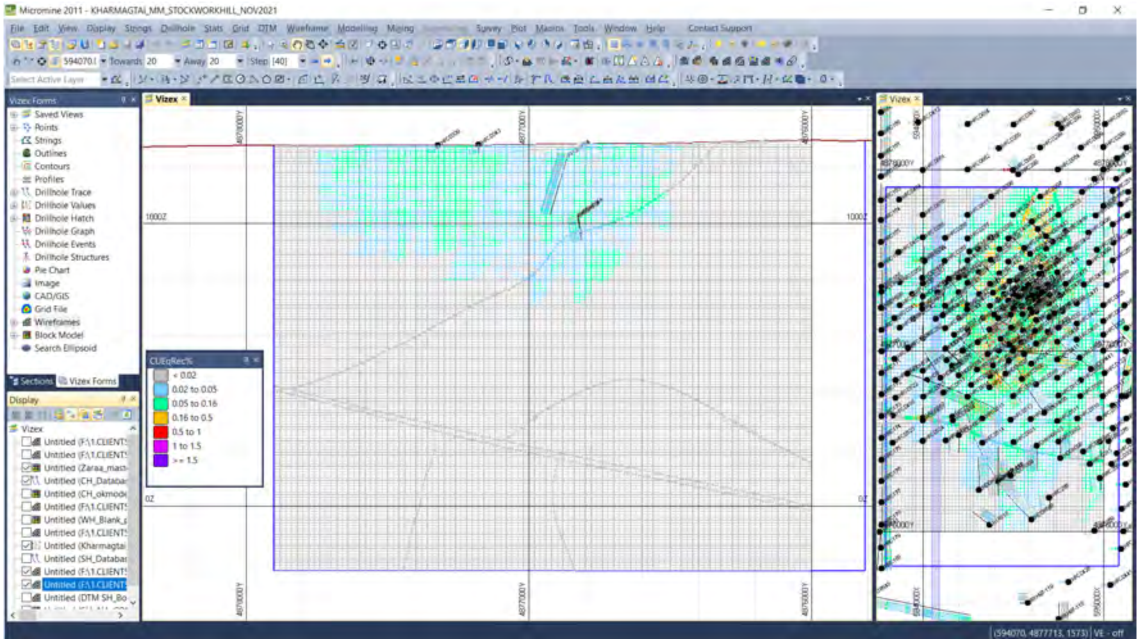

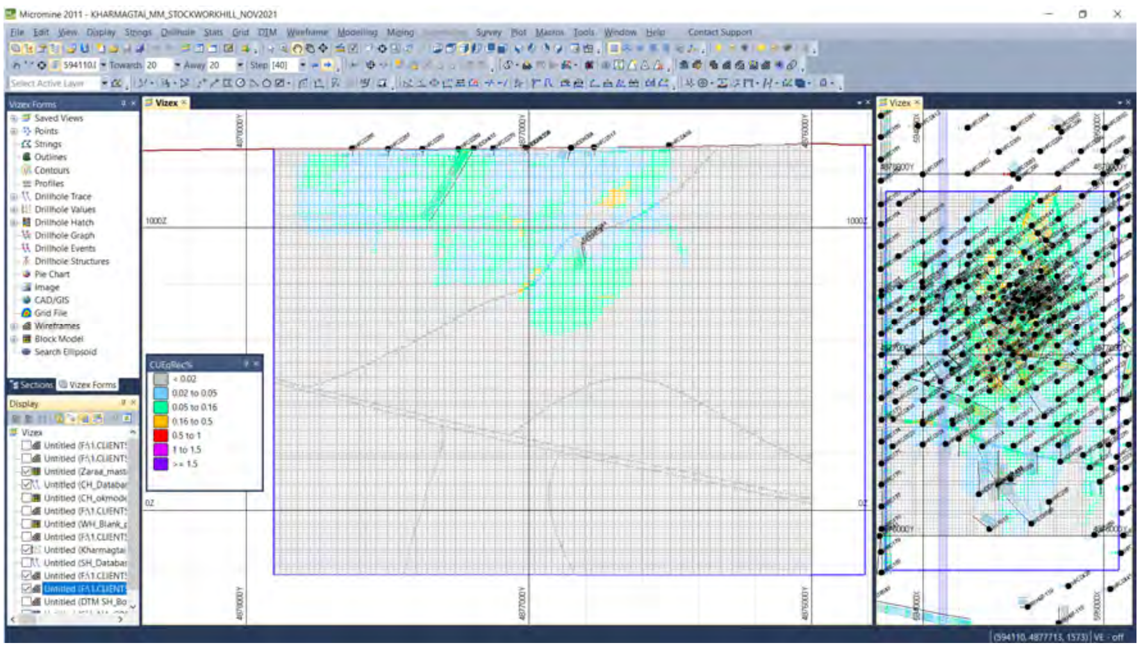

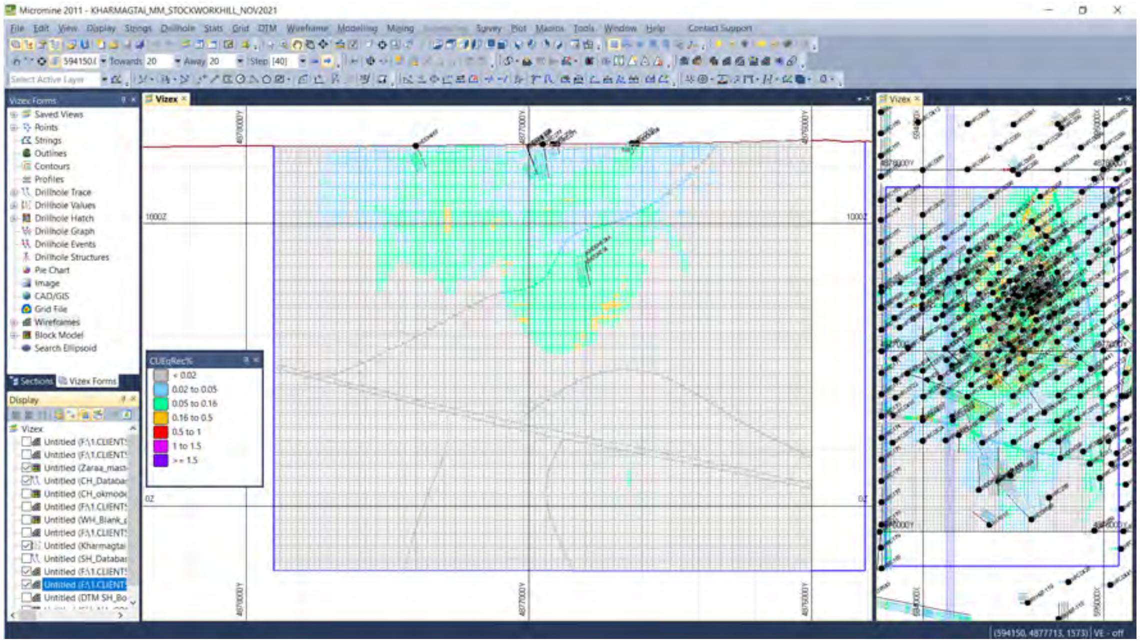

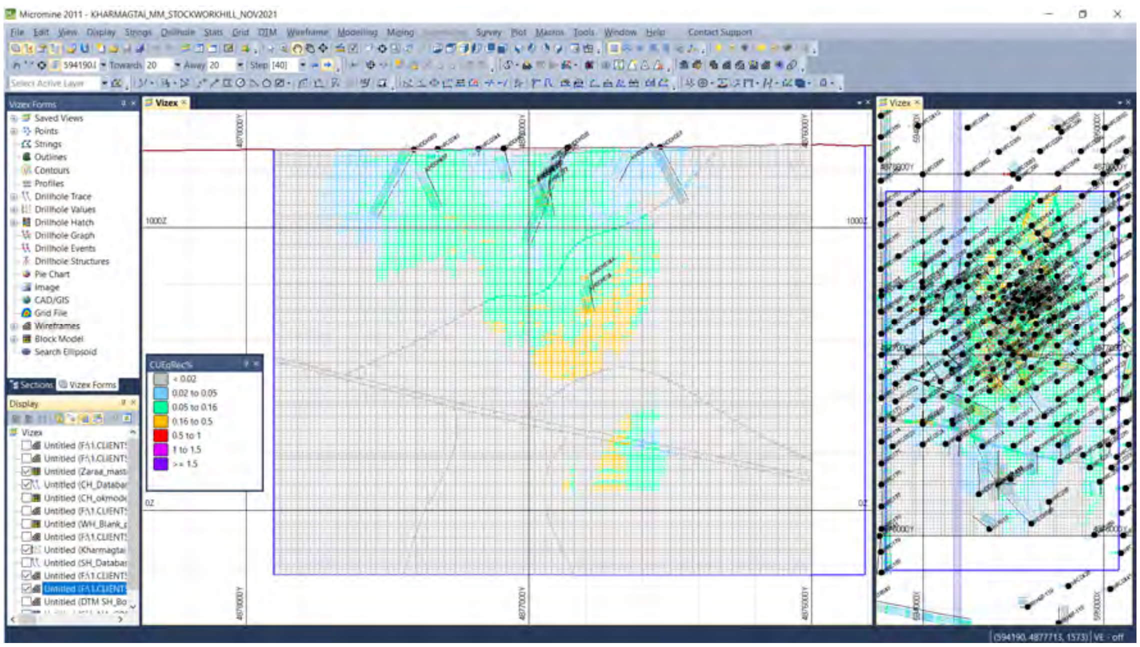

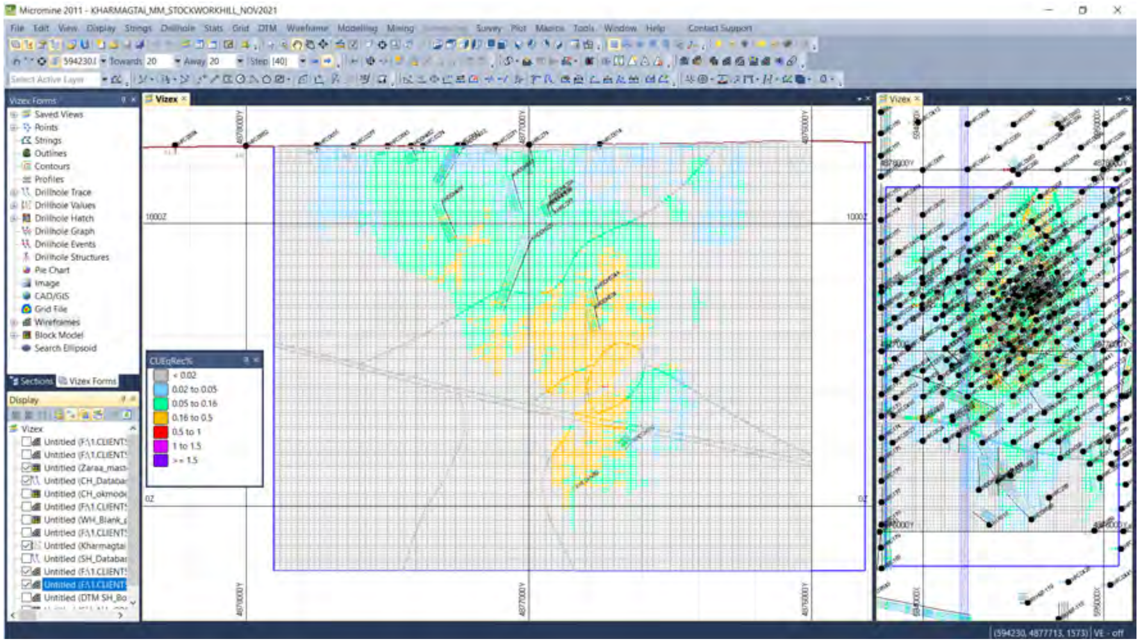
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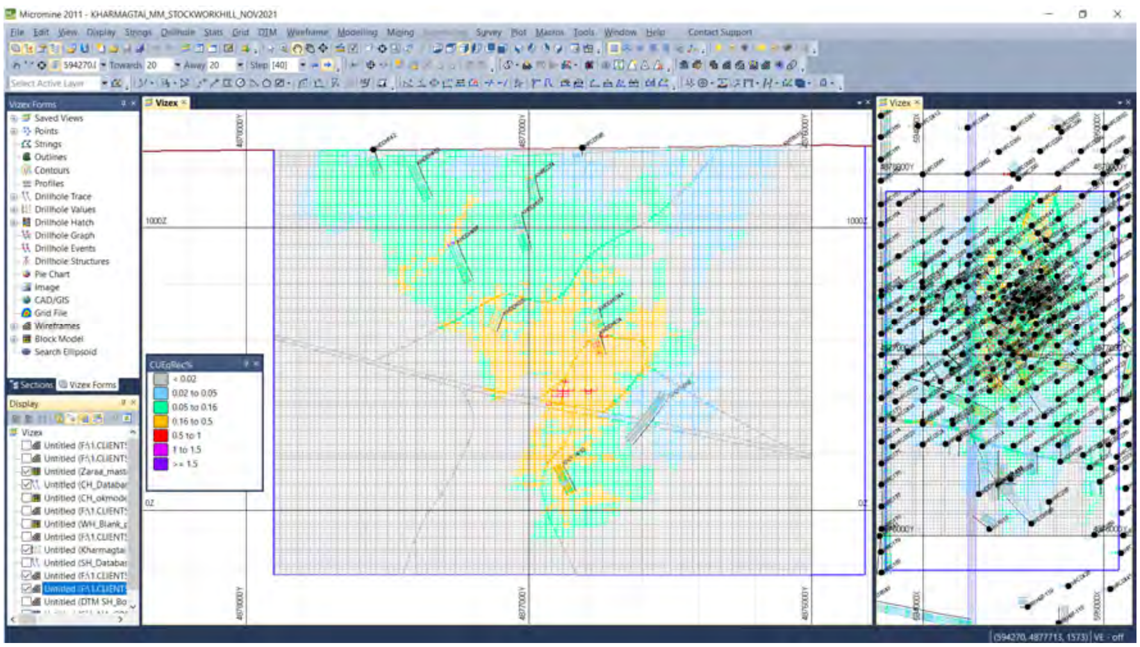
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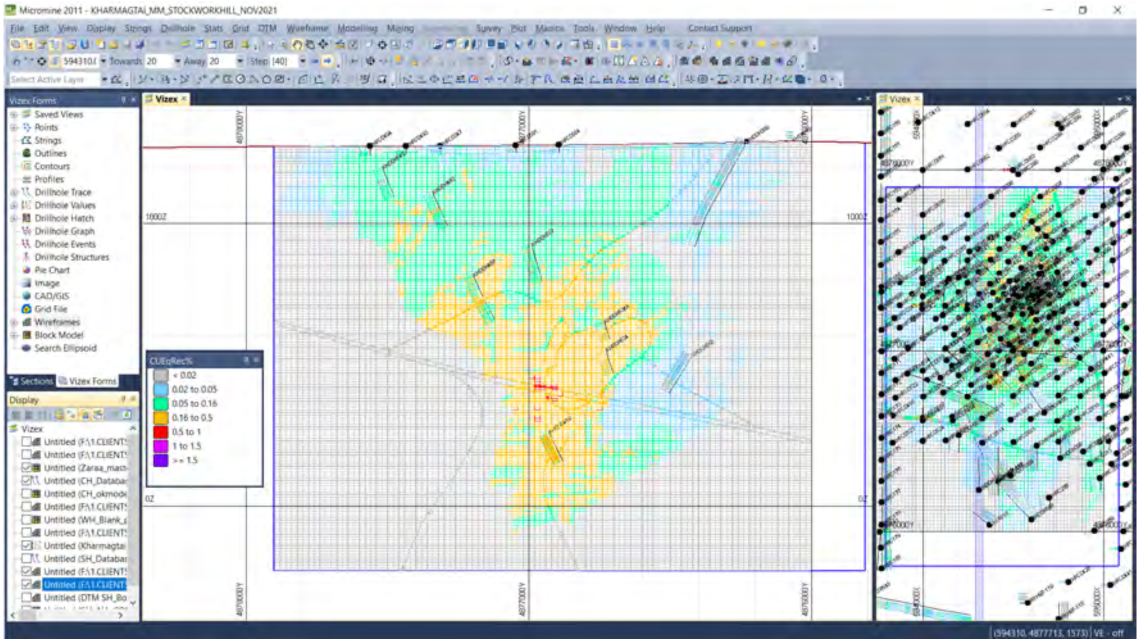
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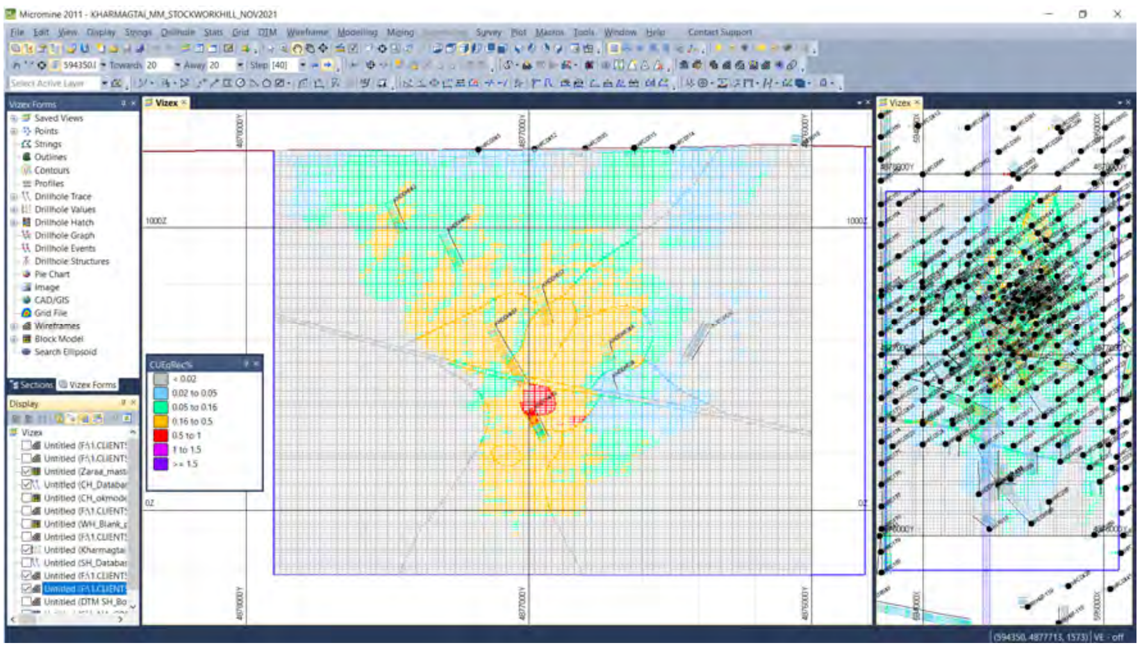
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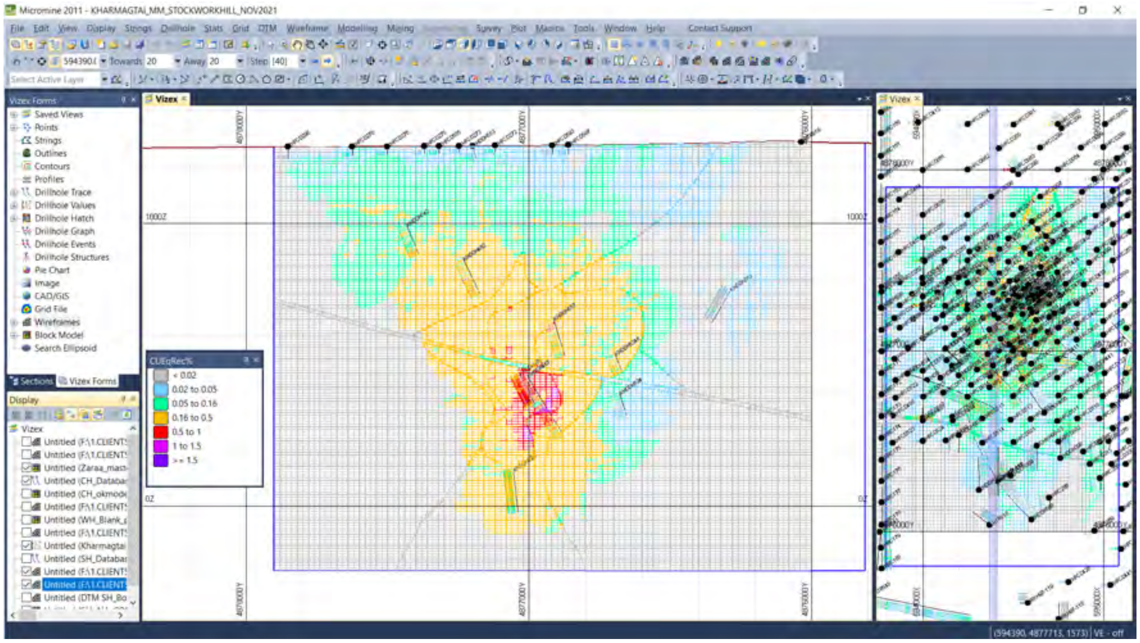
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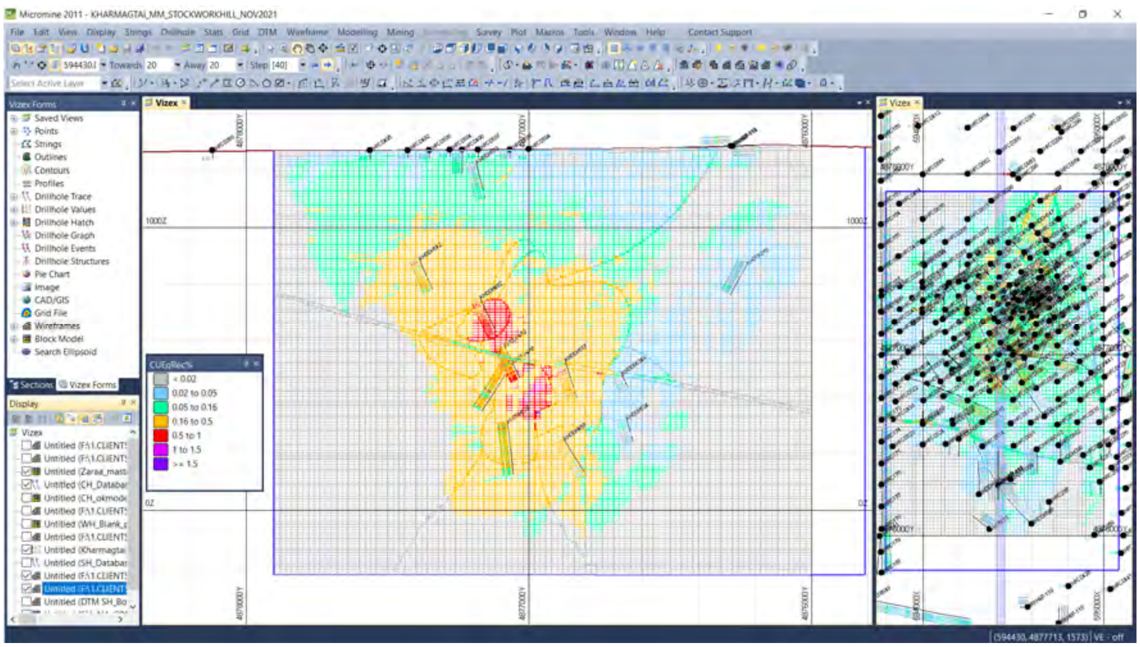
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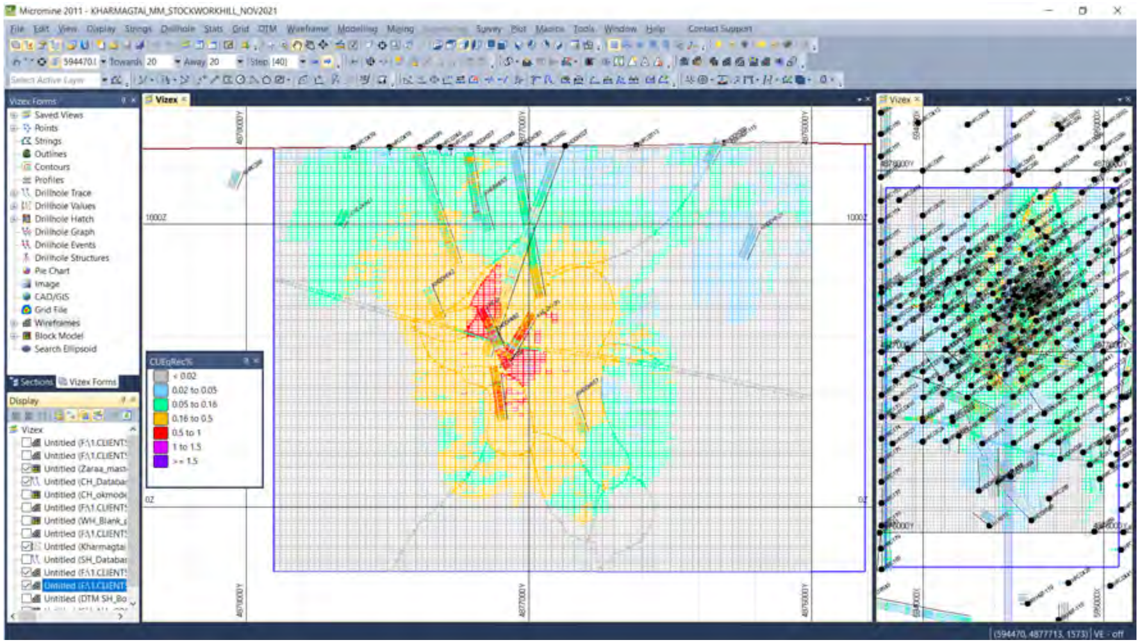
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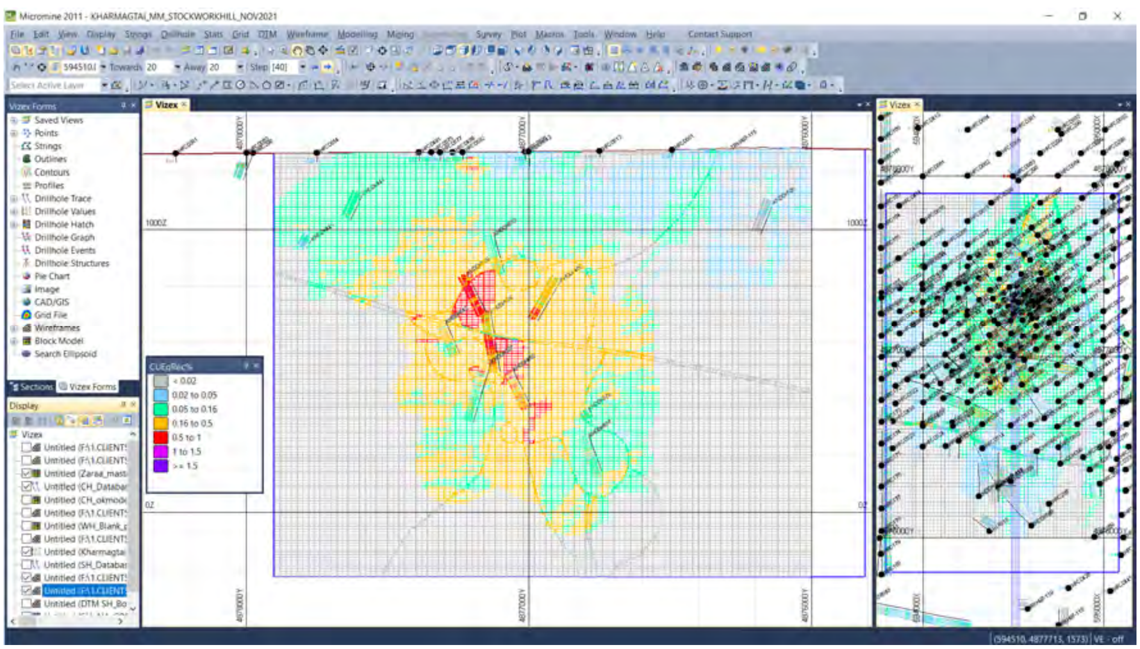
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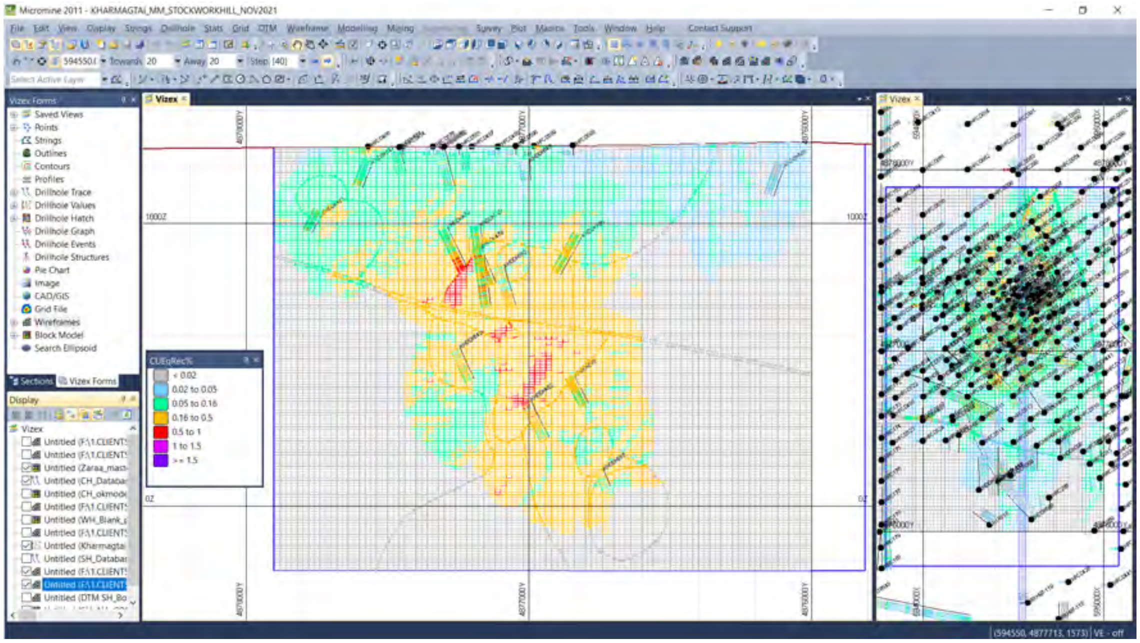
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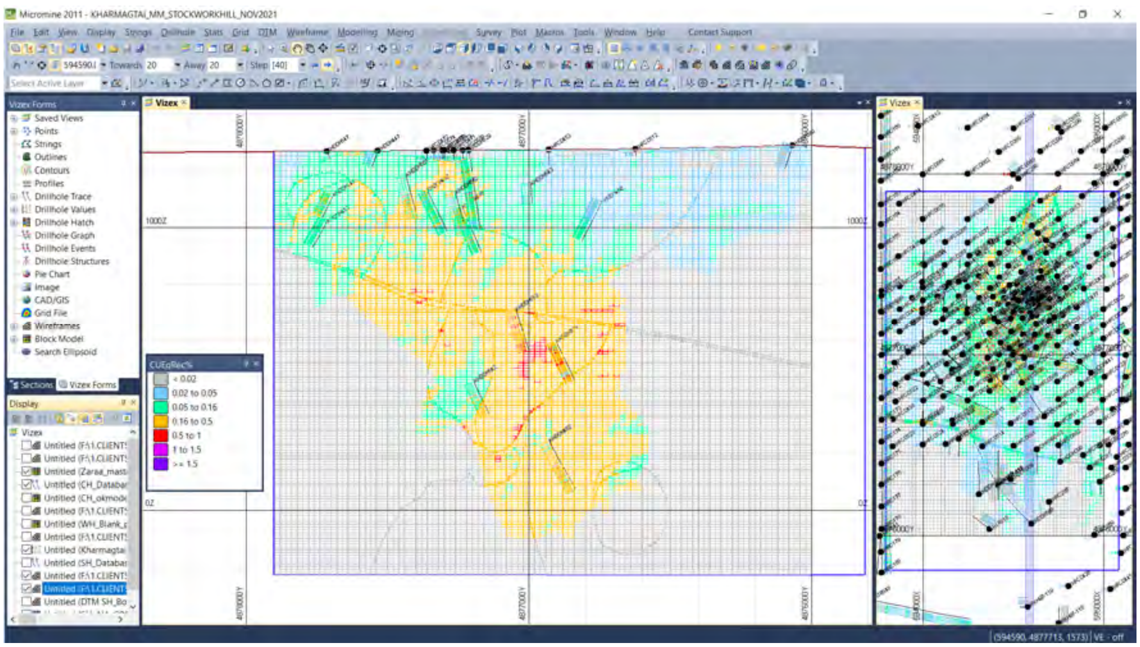
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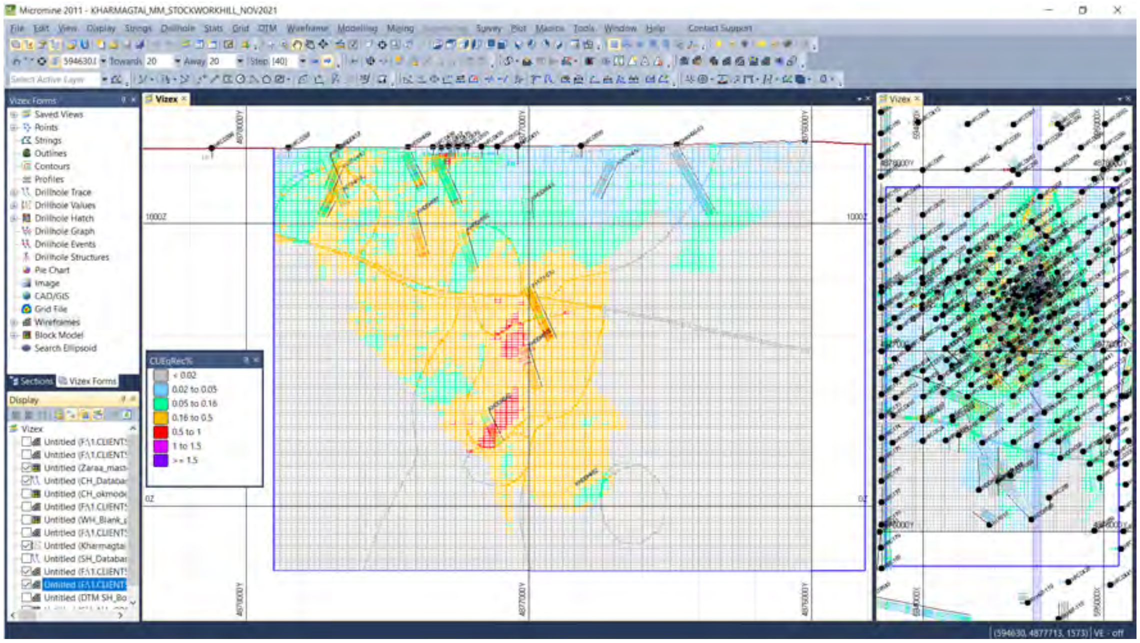
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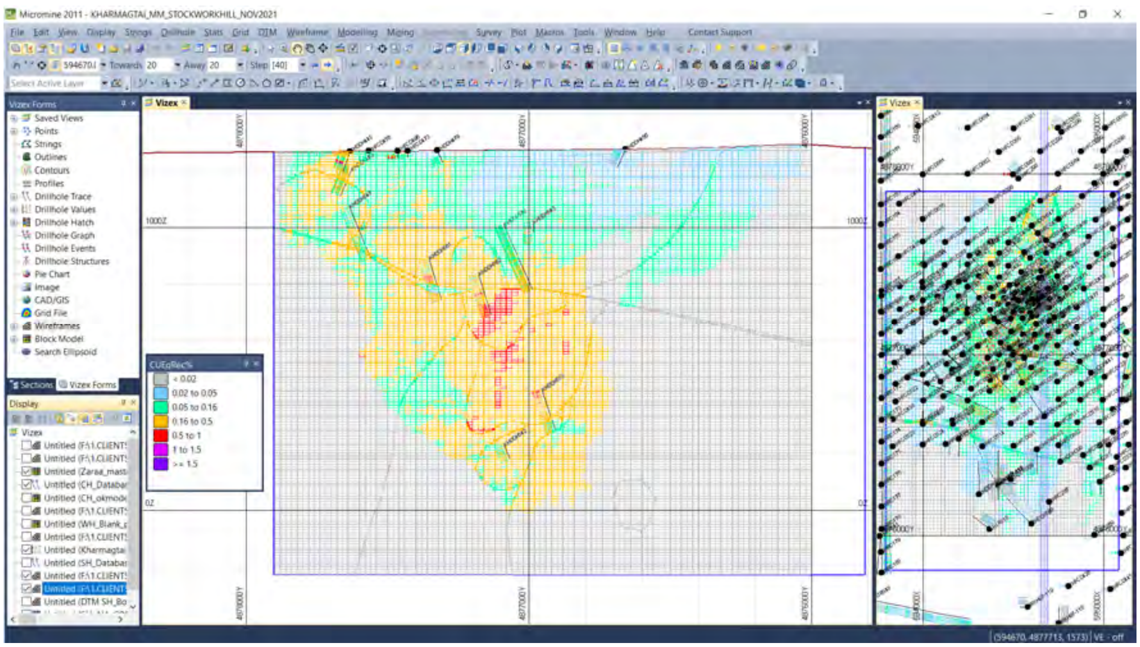
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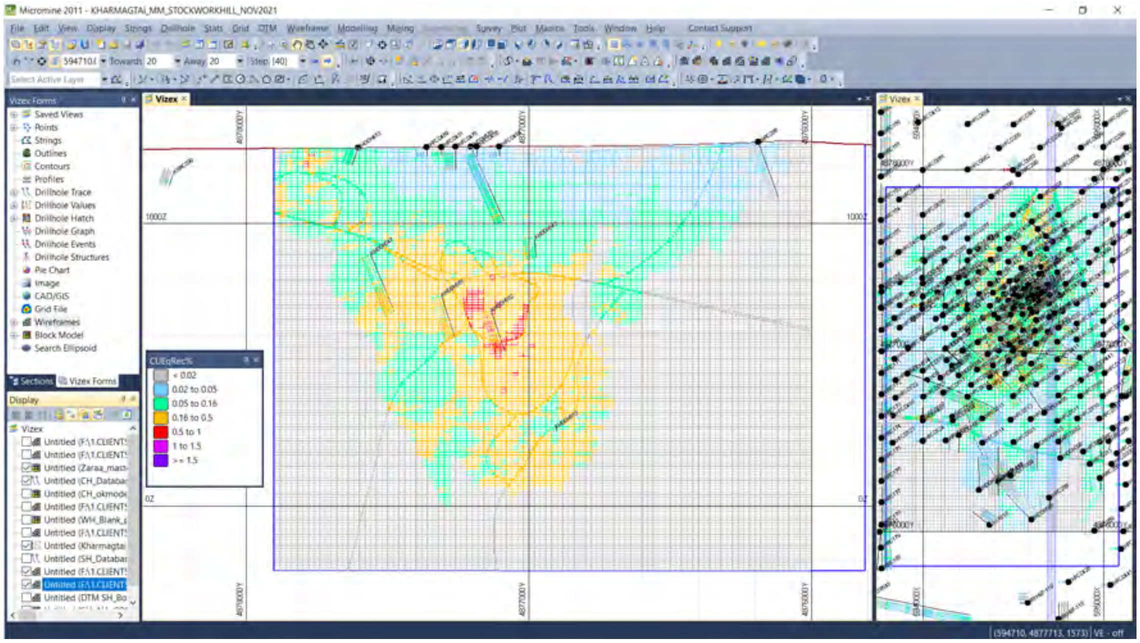
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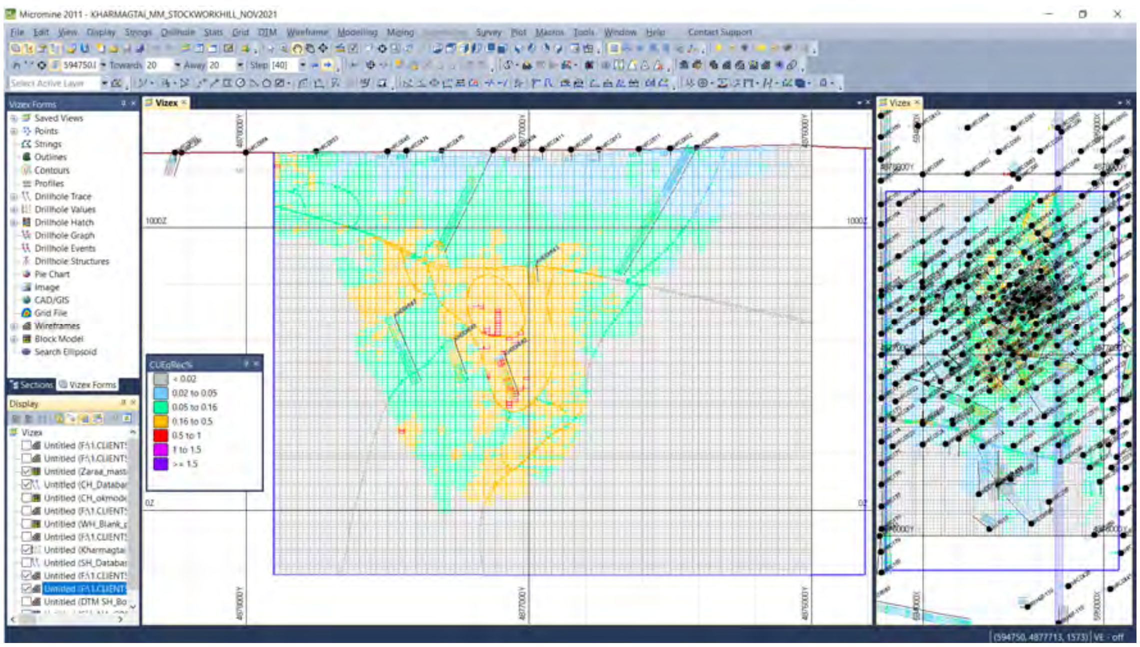
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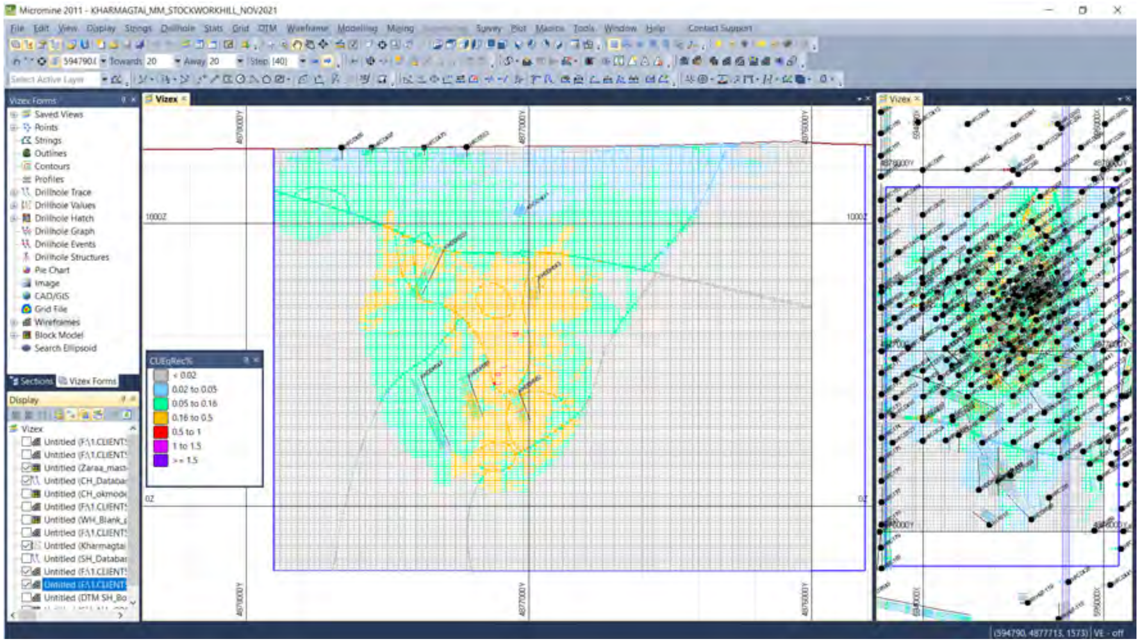
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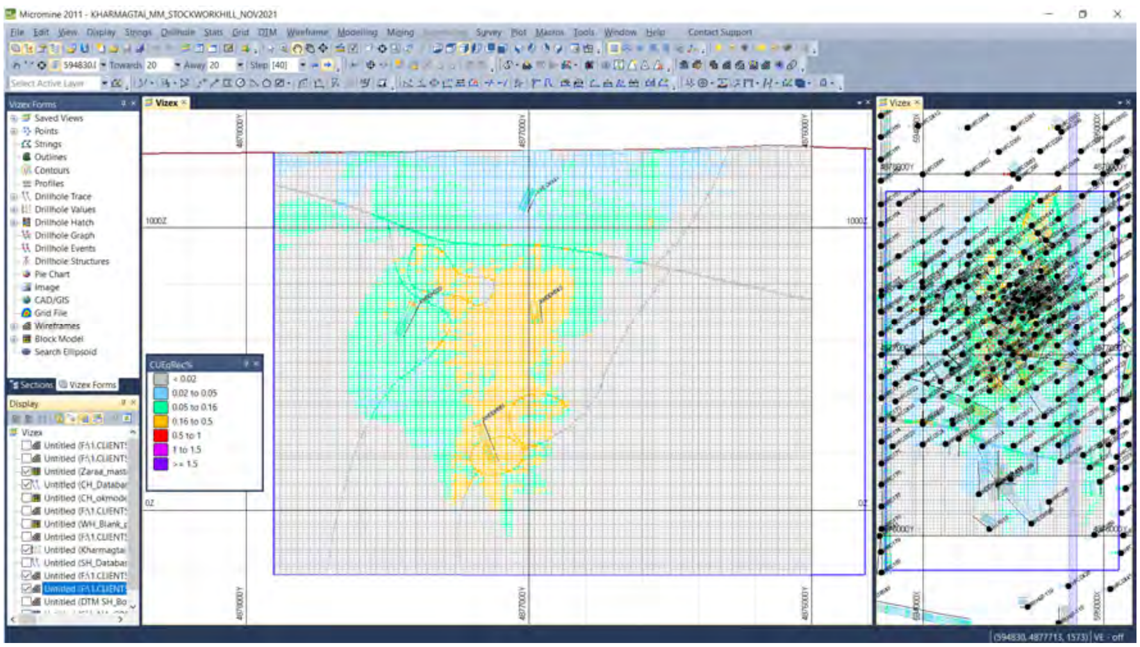
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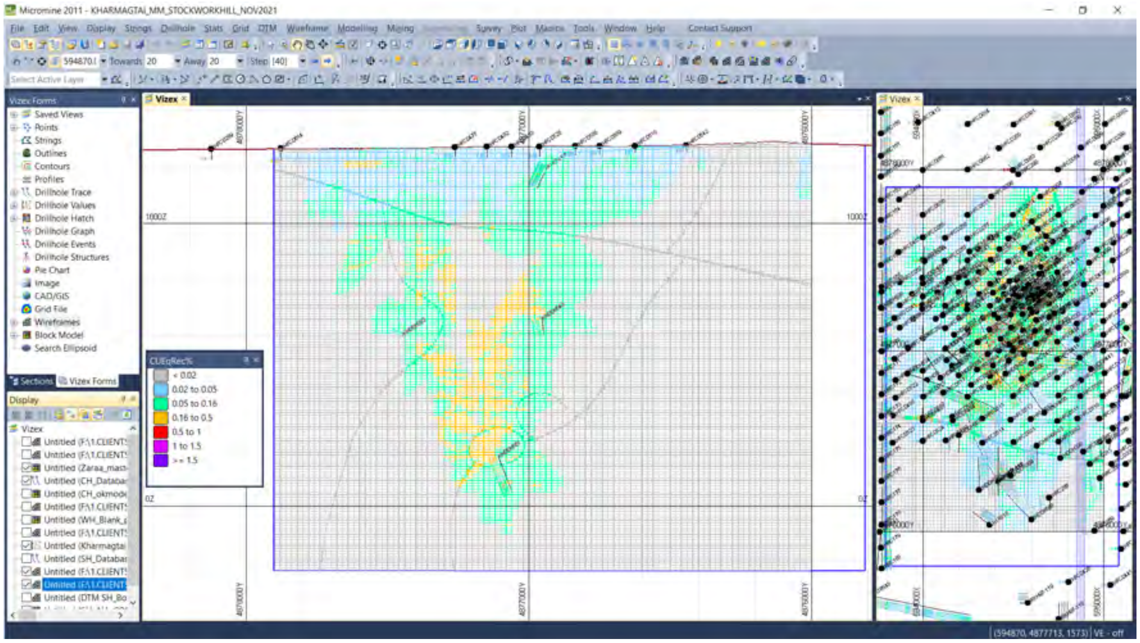
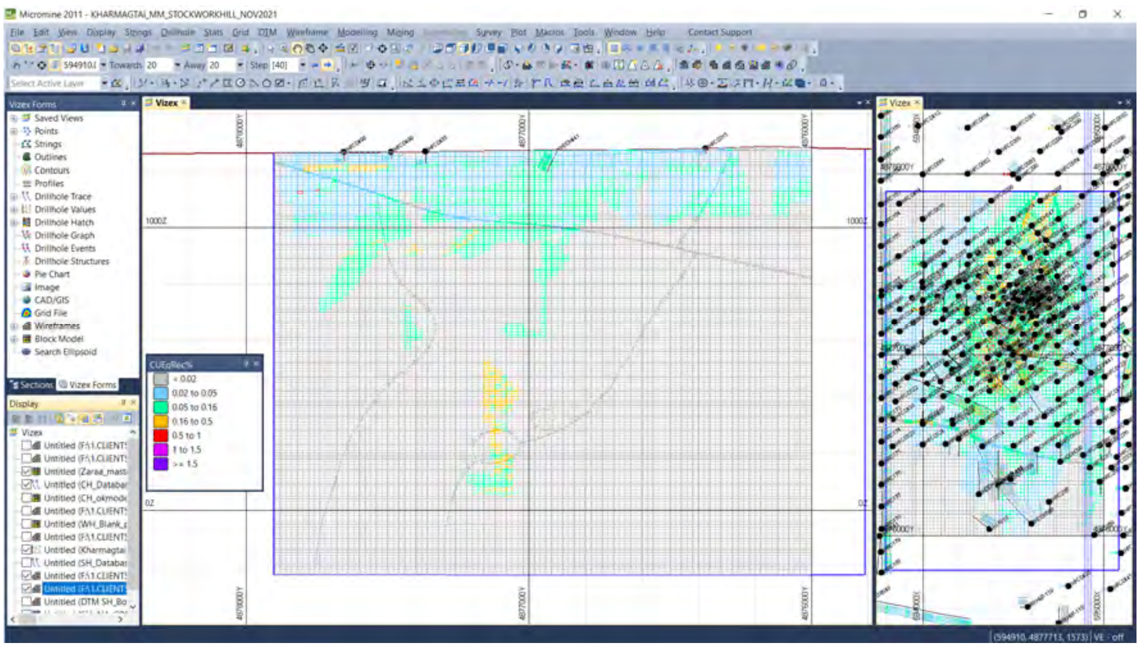
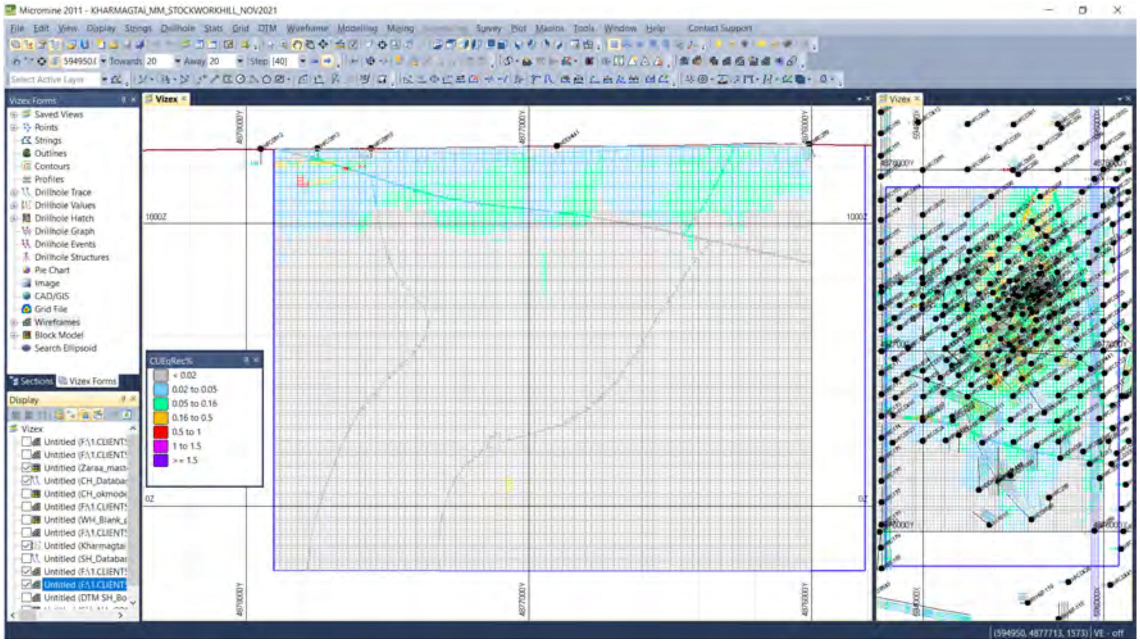
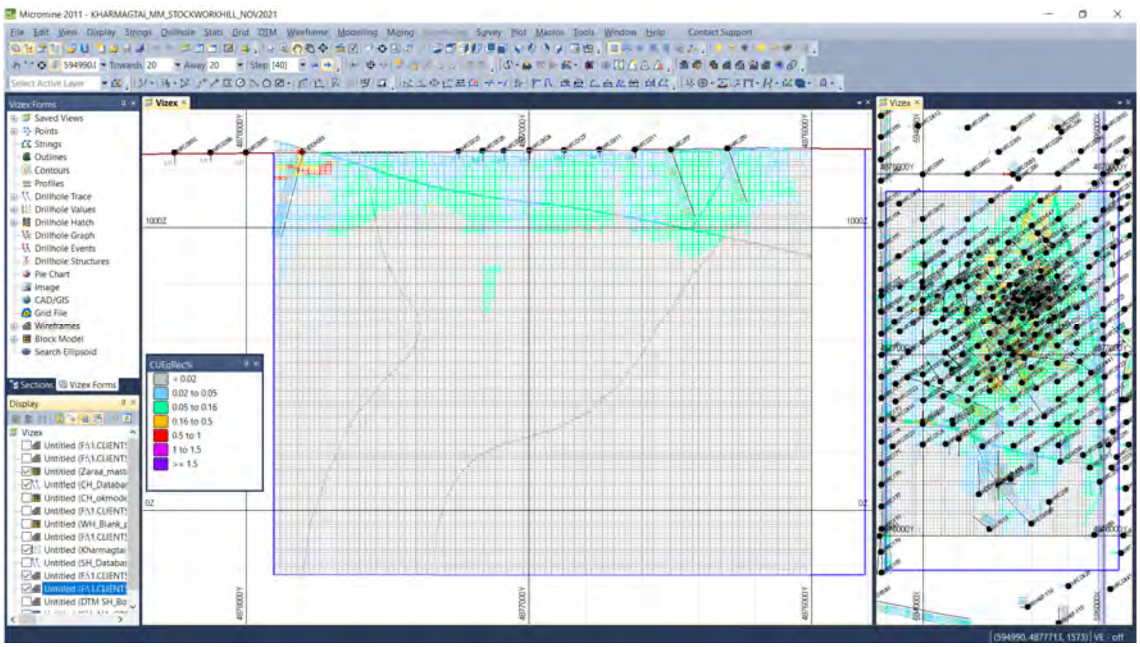
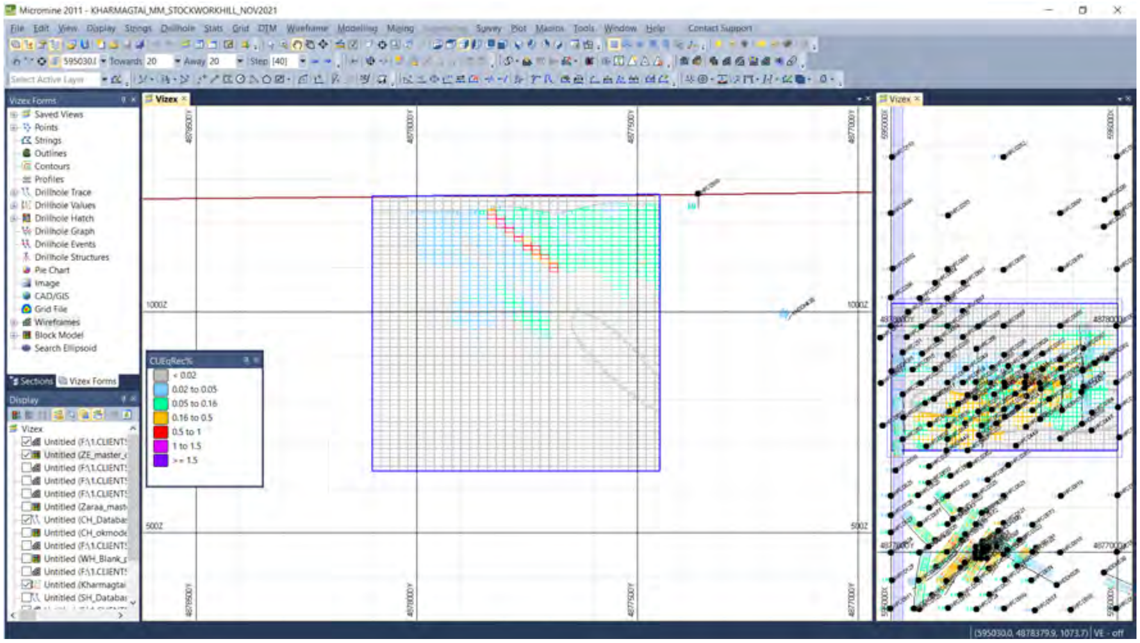








Zephyr Sections – start at 595030mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.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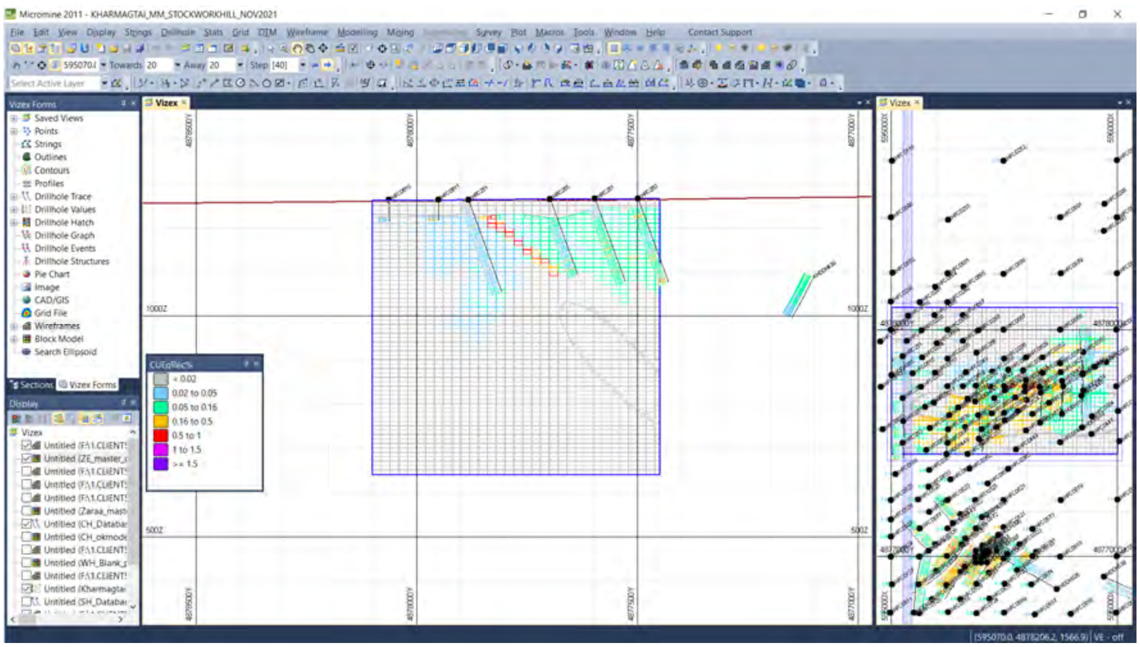
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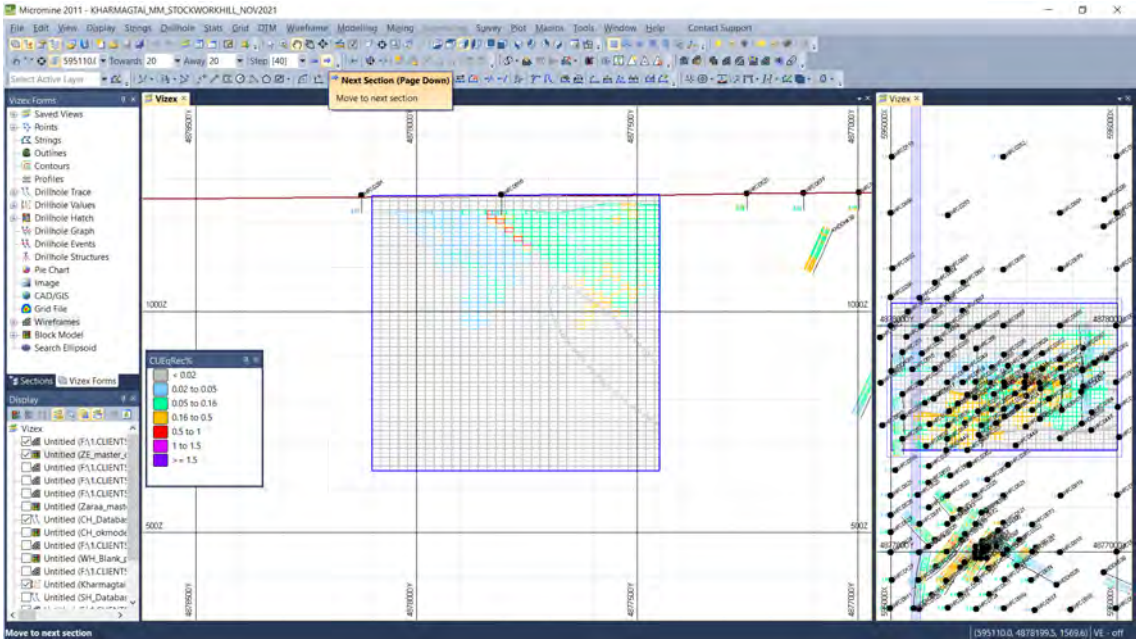
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Next Section (Page Down)
Move to next section
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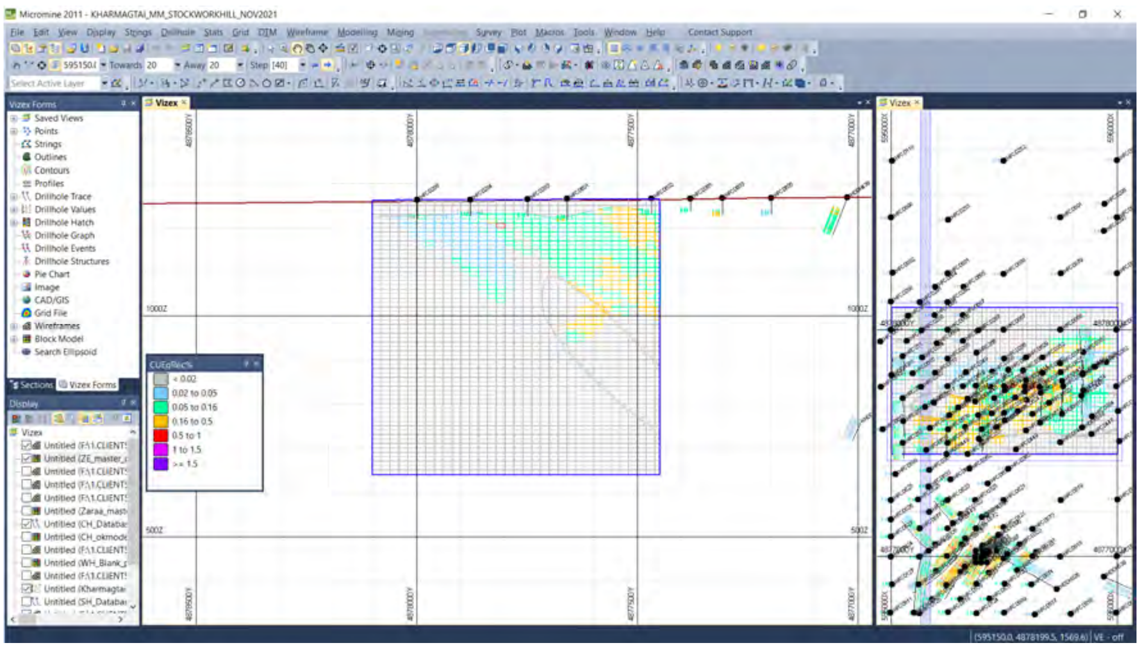
Move to next section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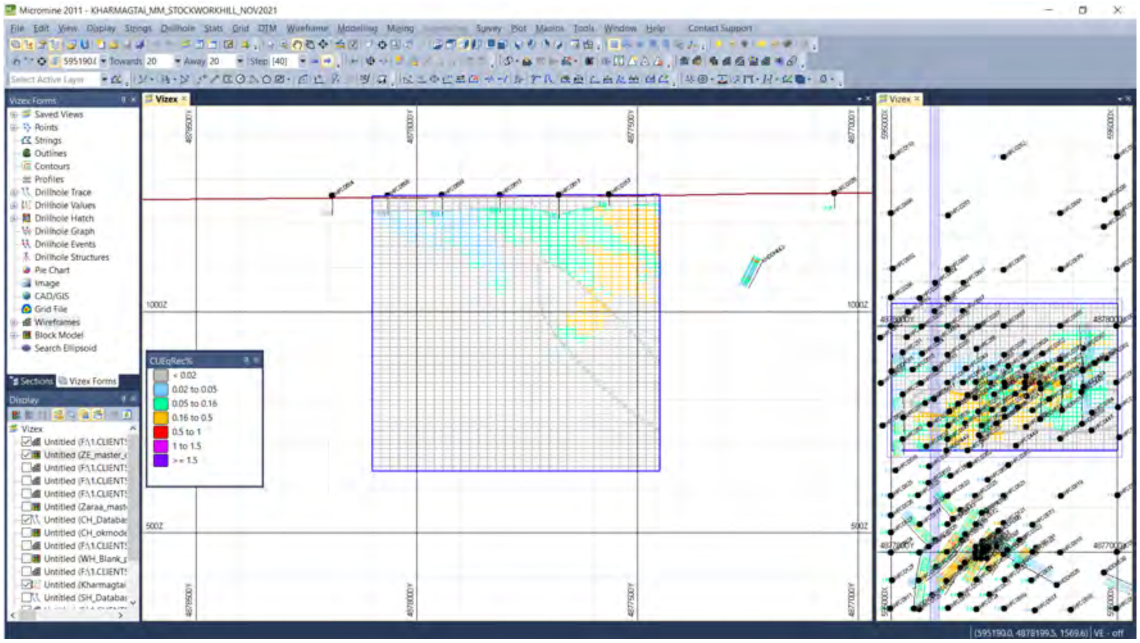

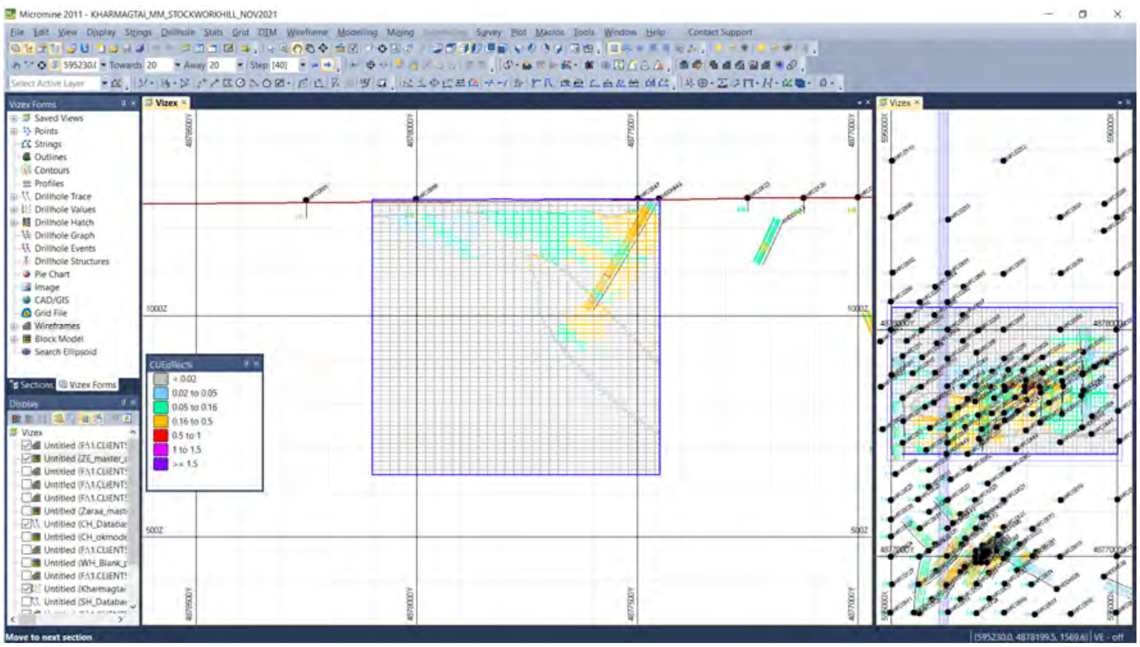

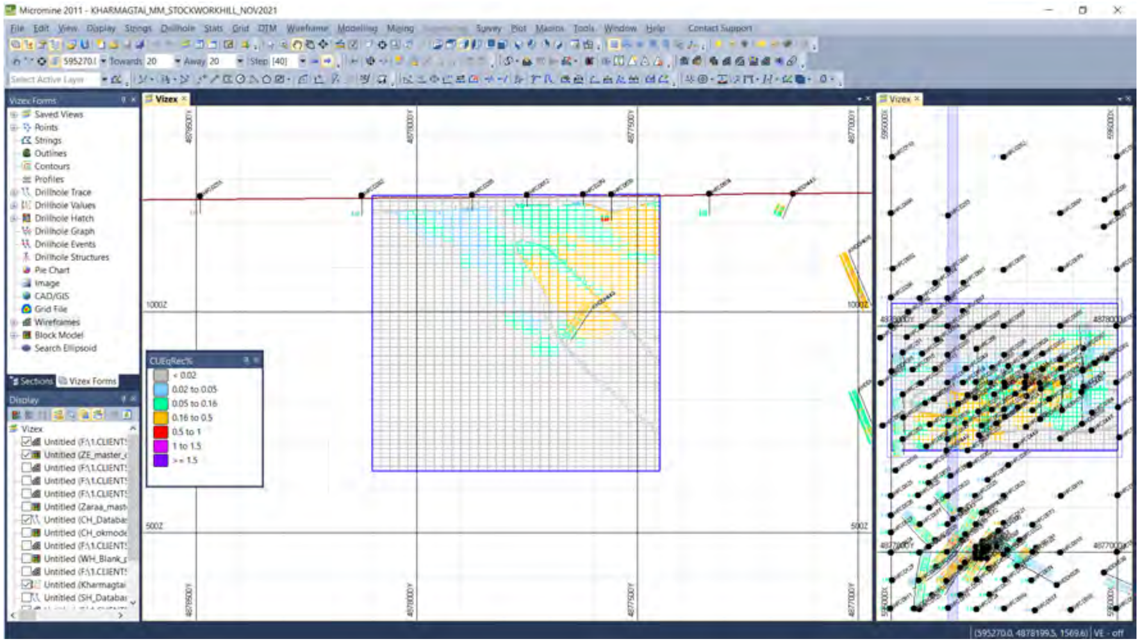
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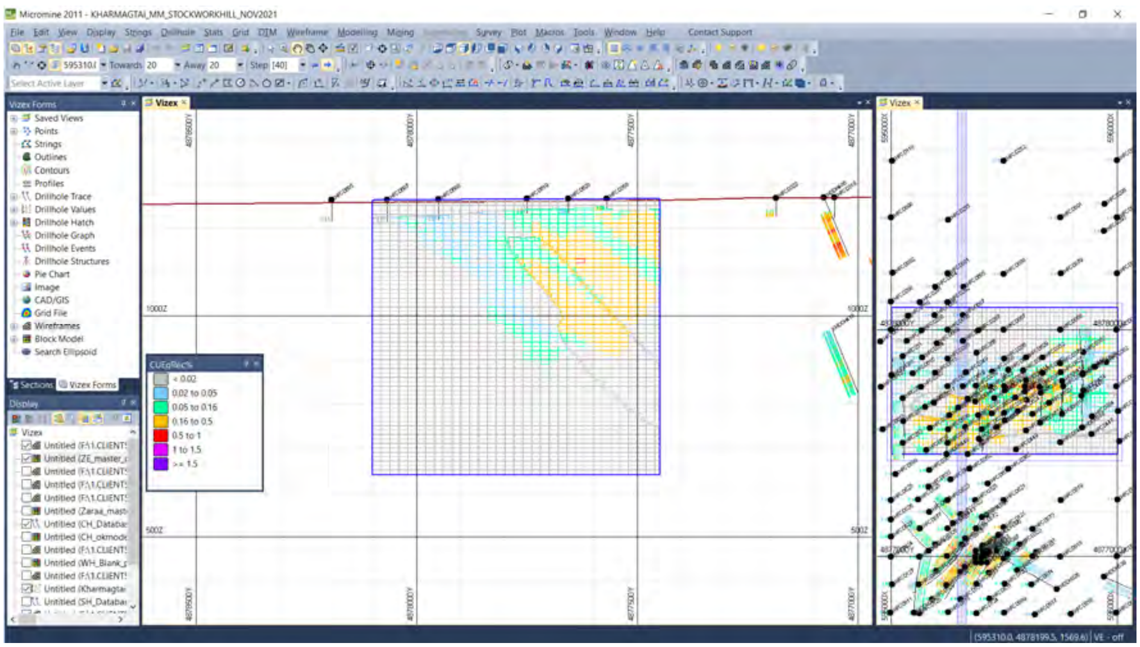
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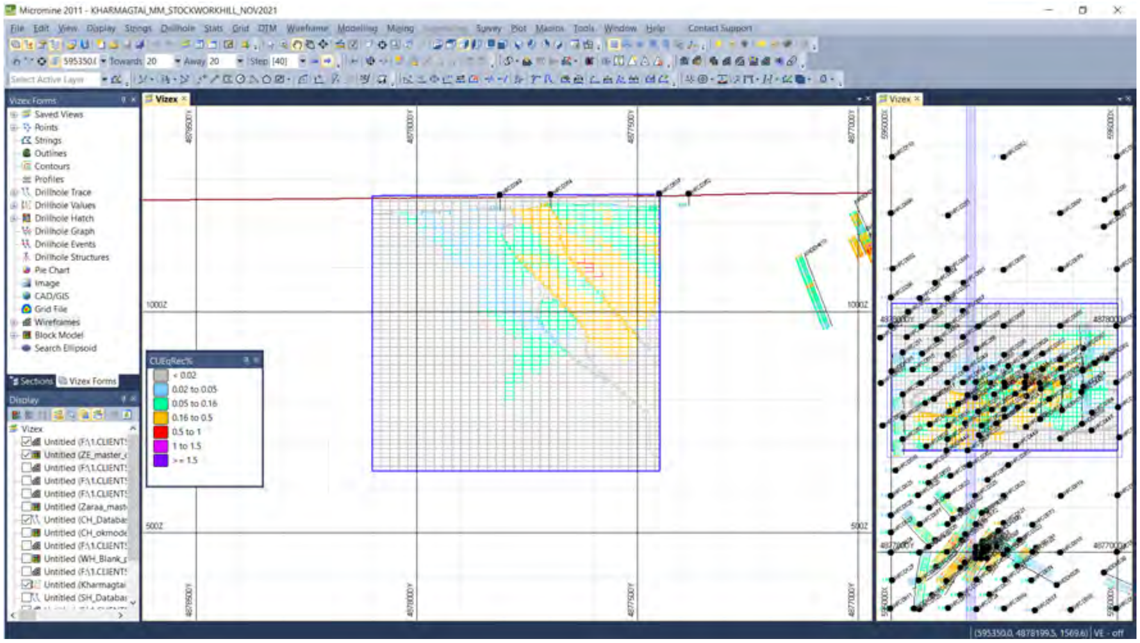

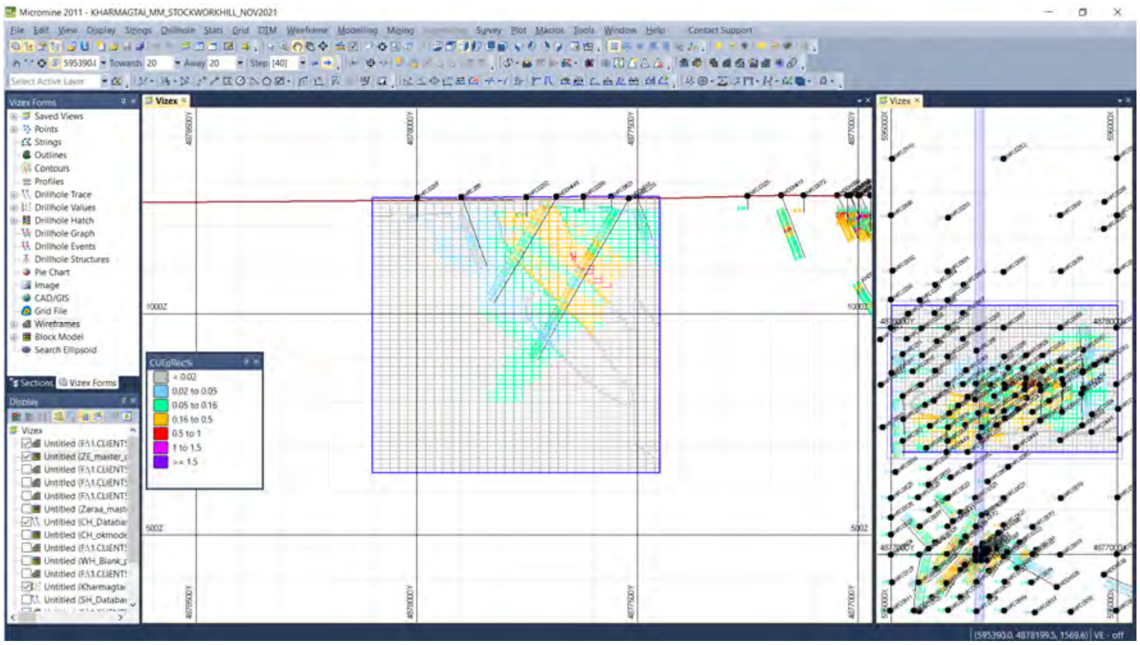

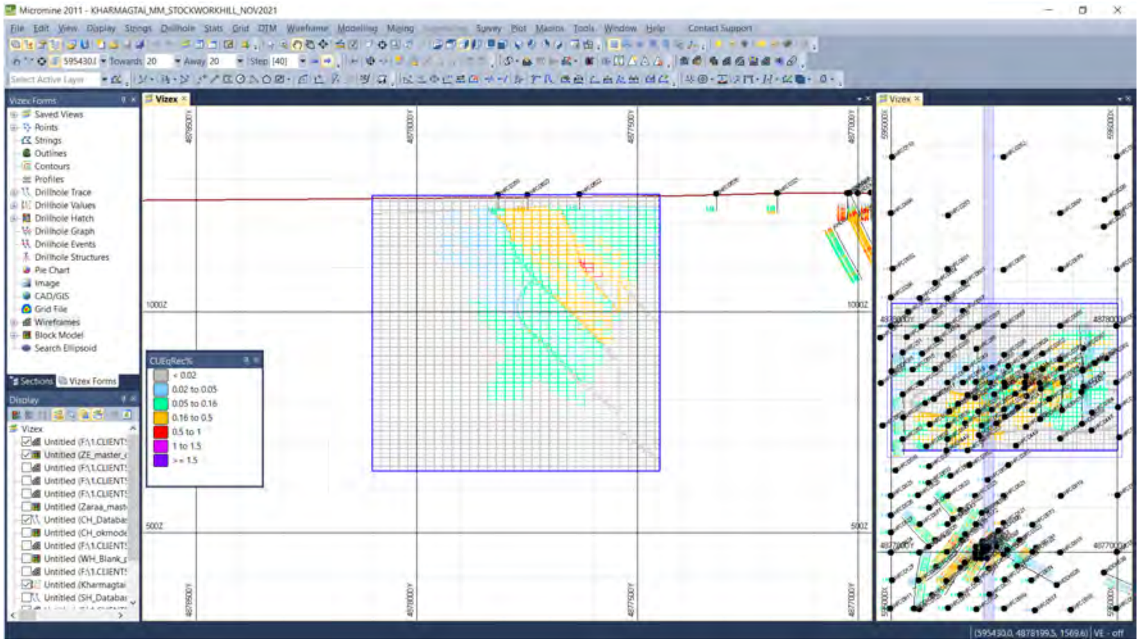
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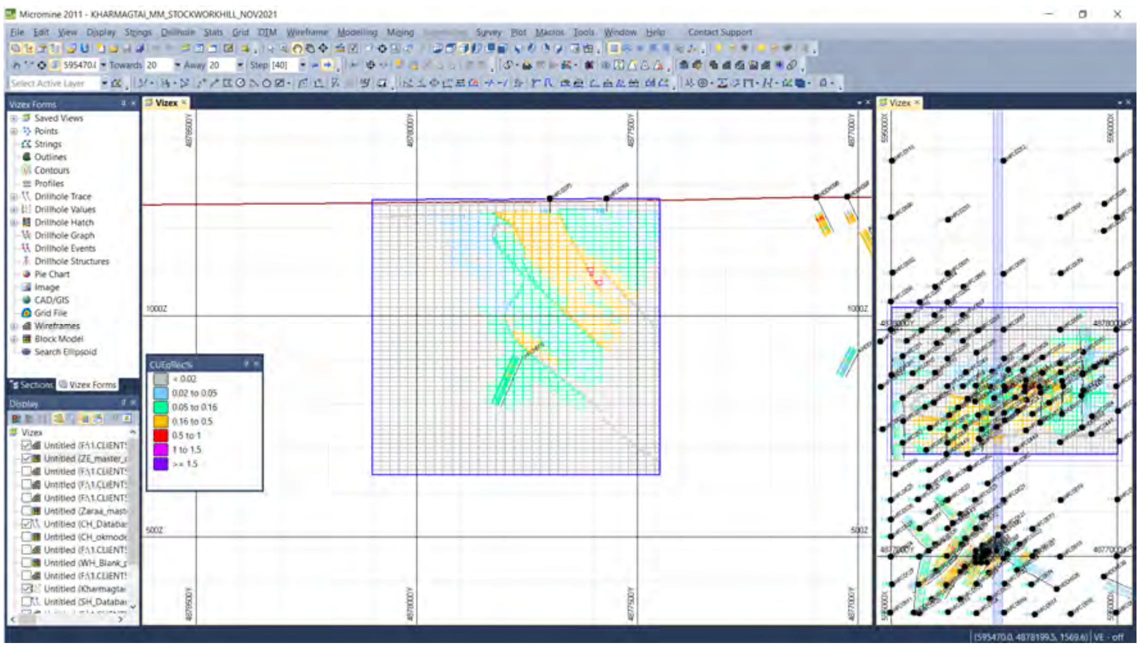
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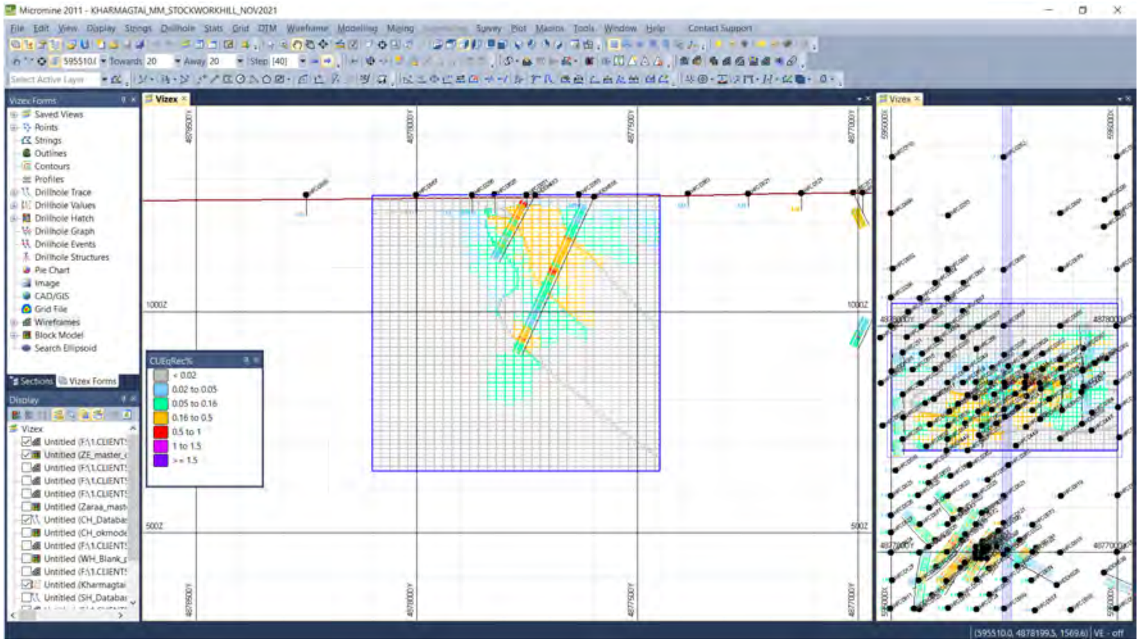
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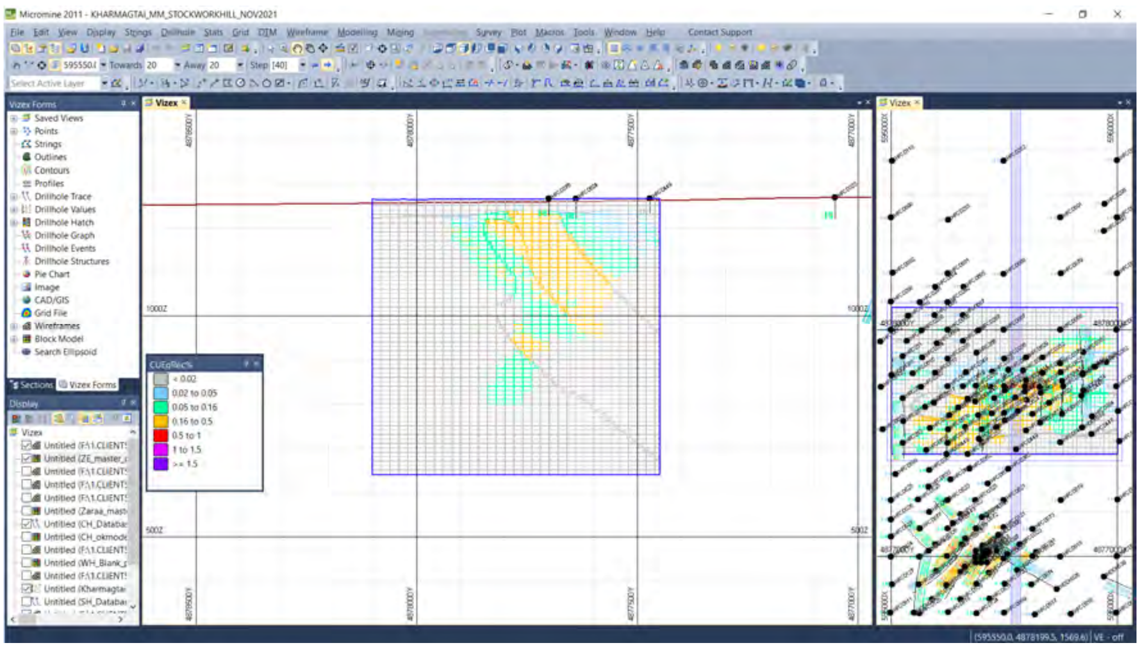
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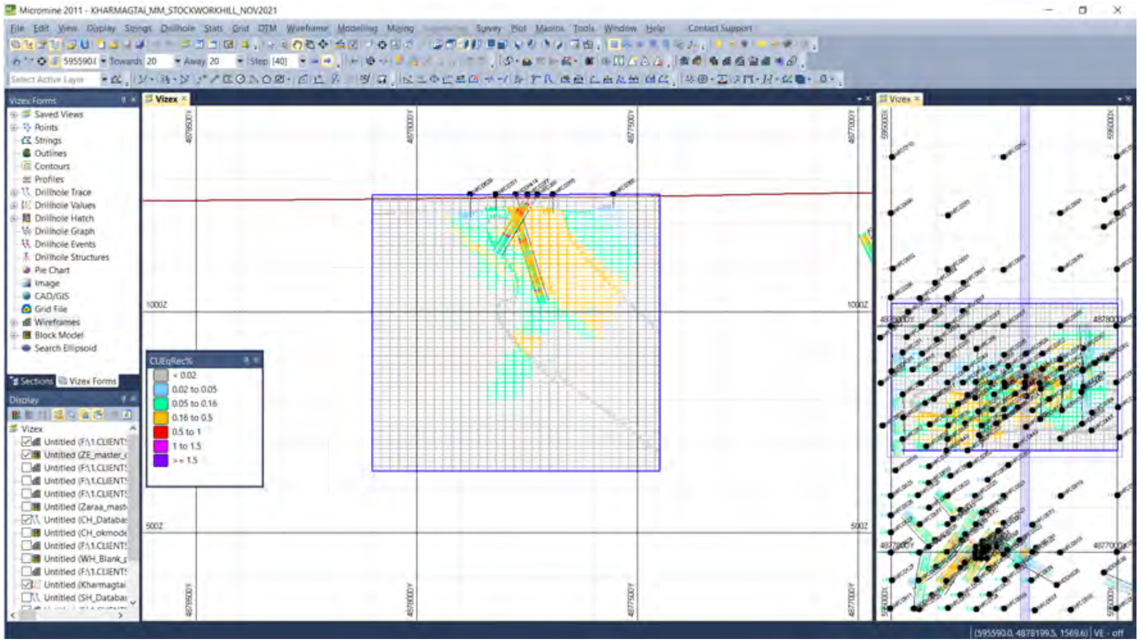
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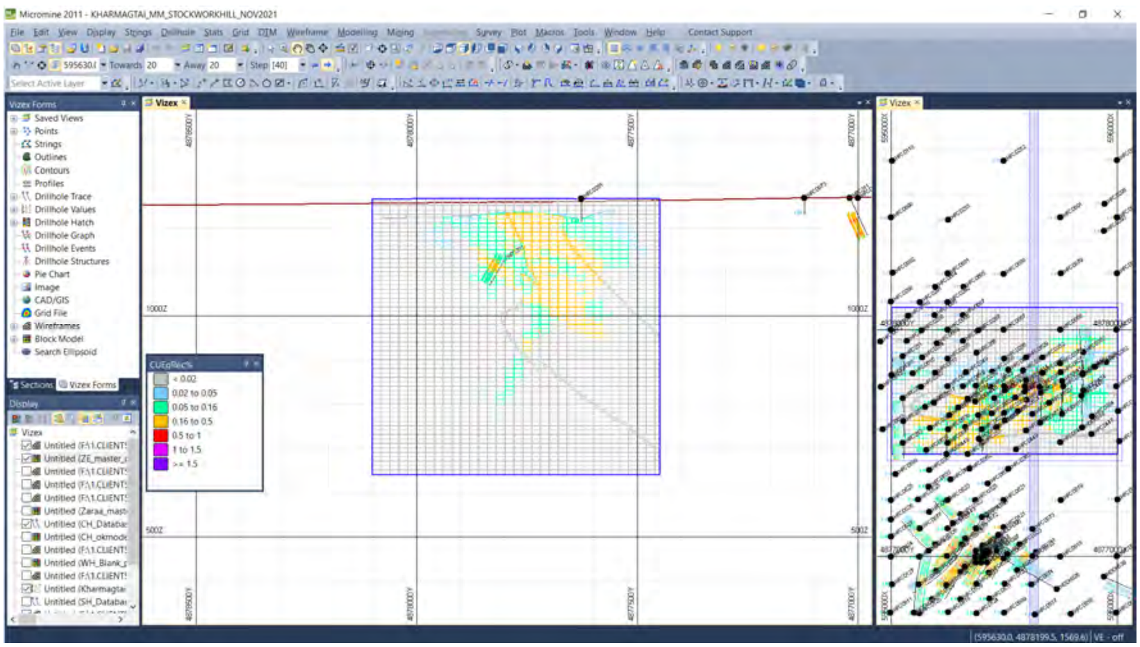
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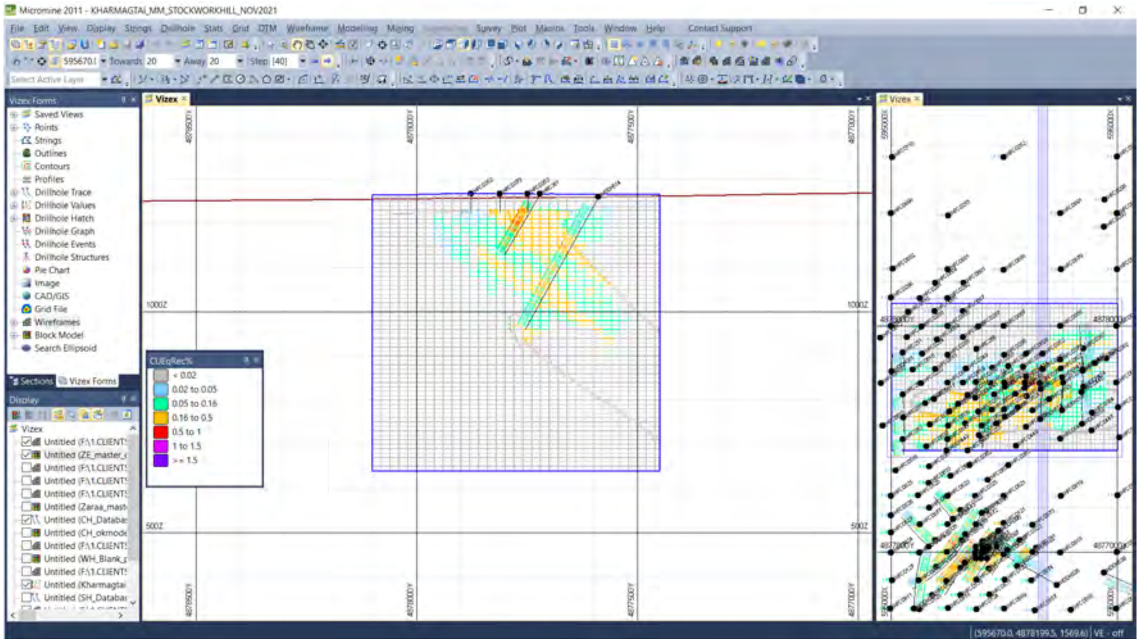
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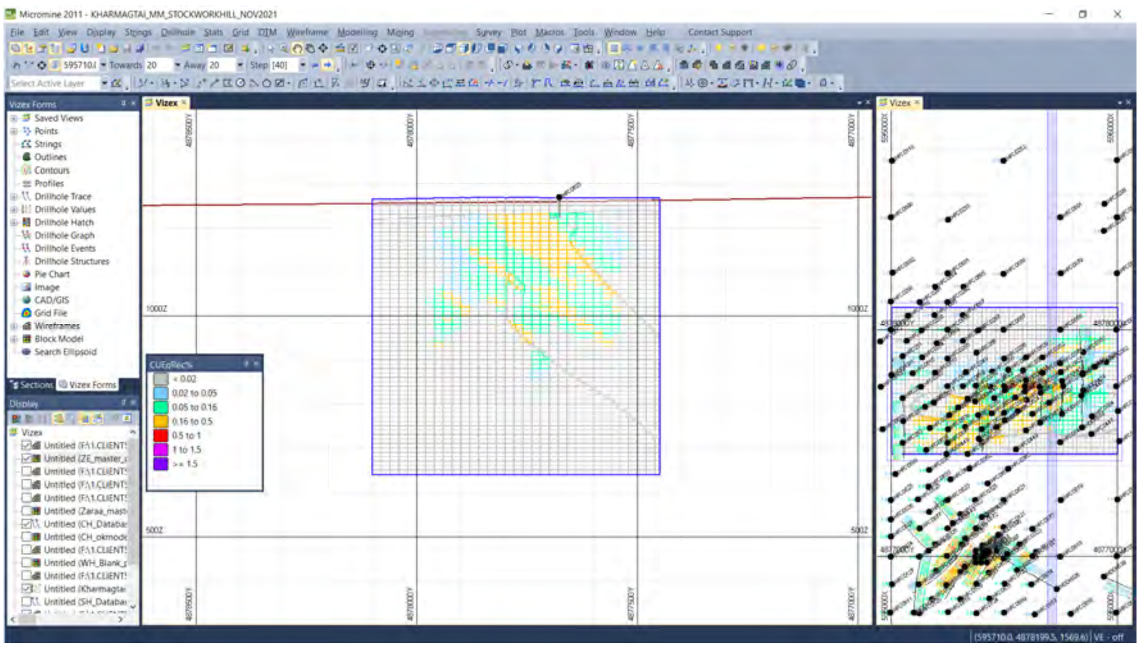
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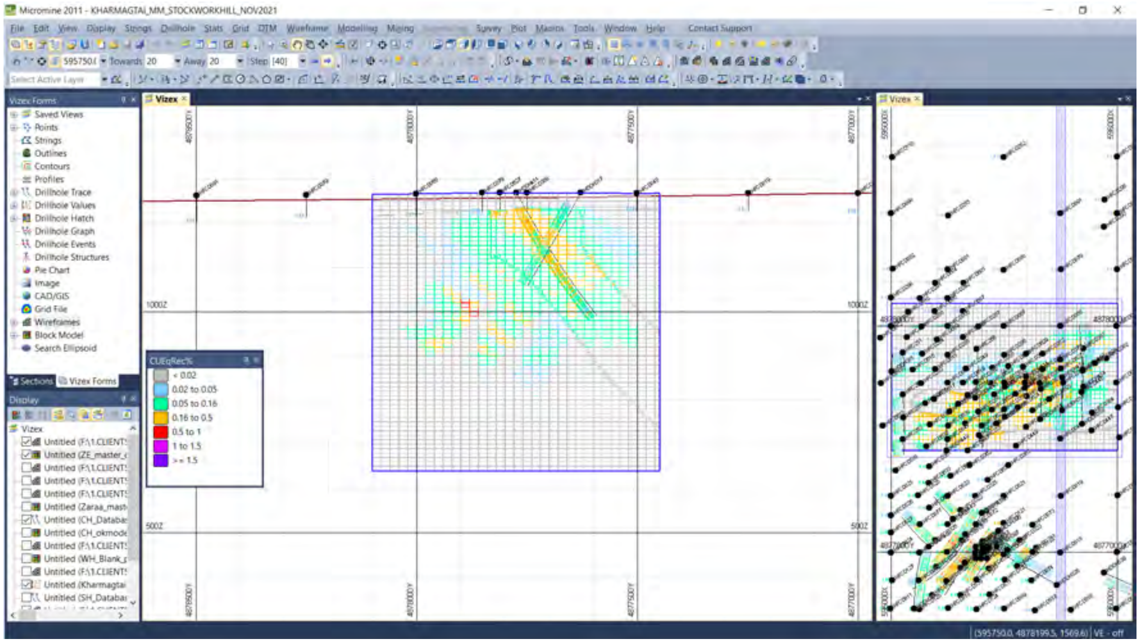

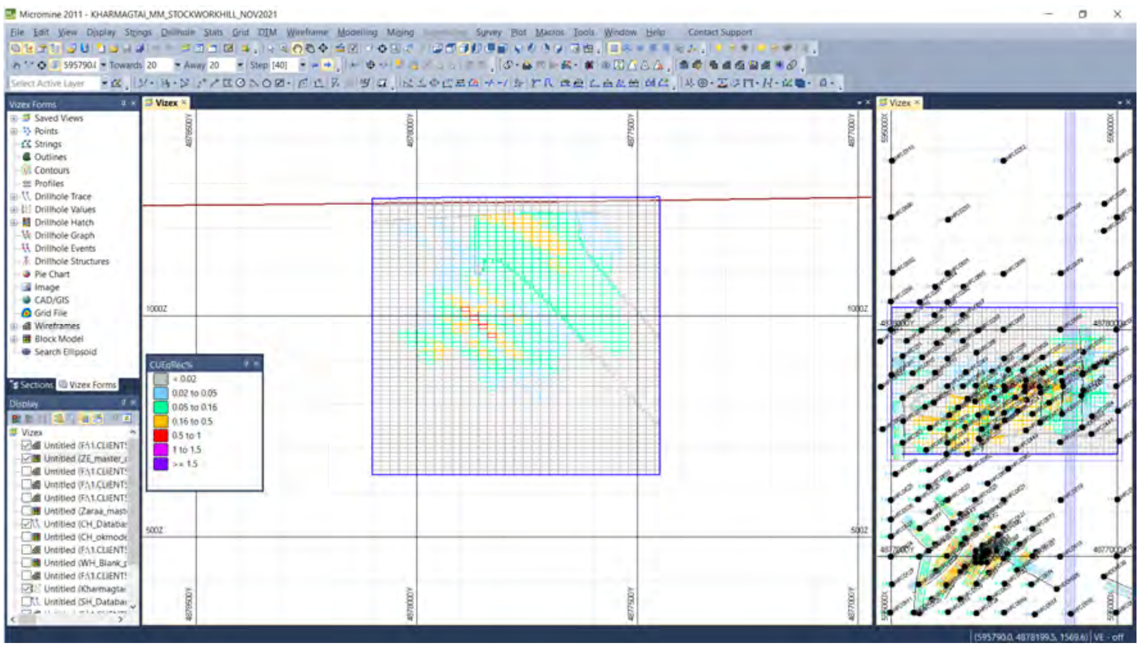

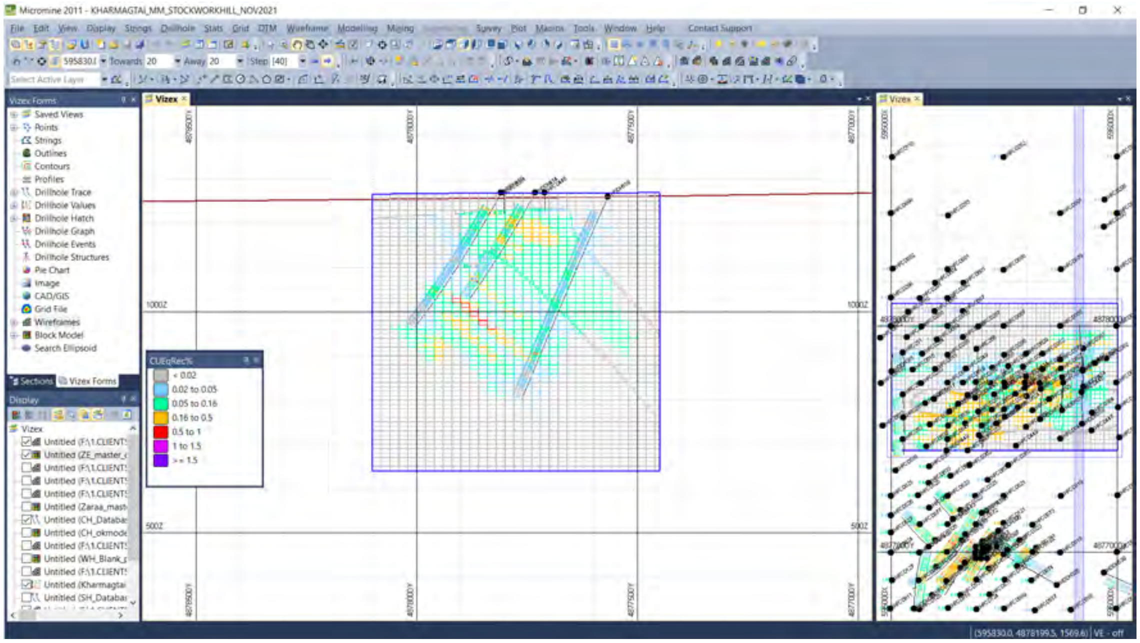
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CUEqRec%
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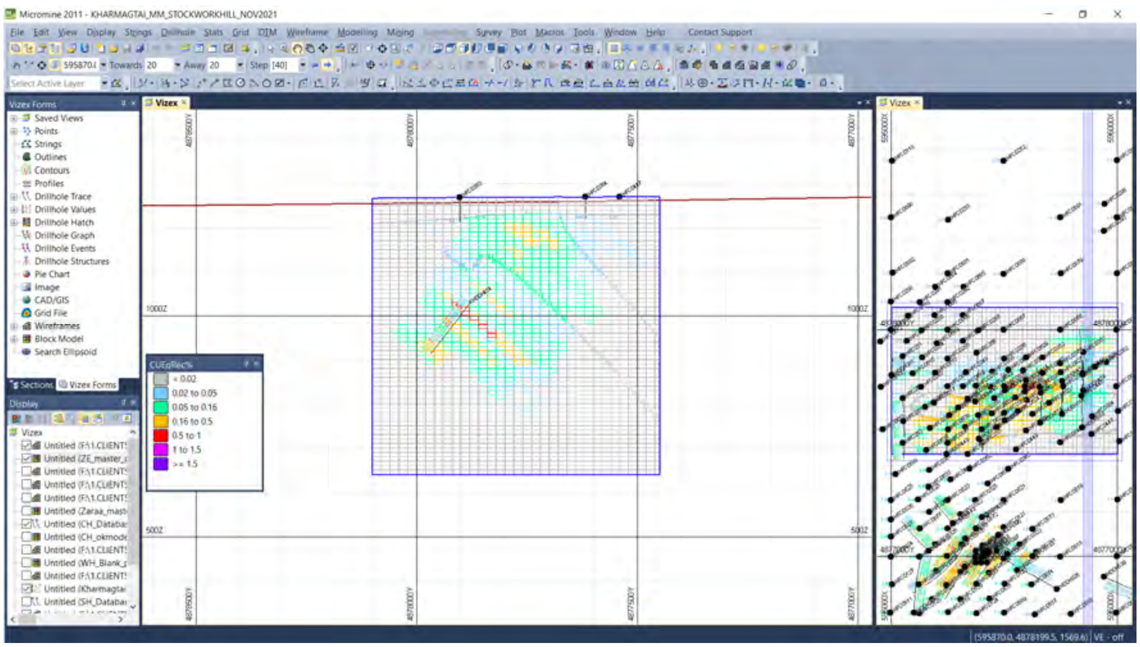
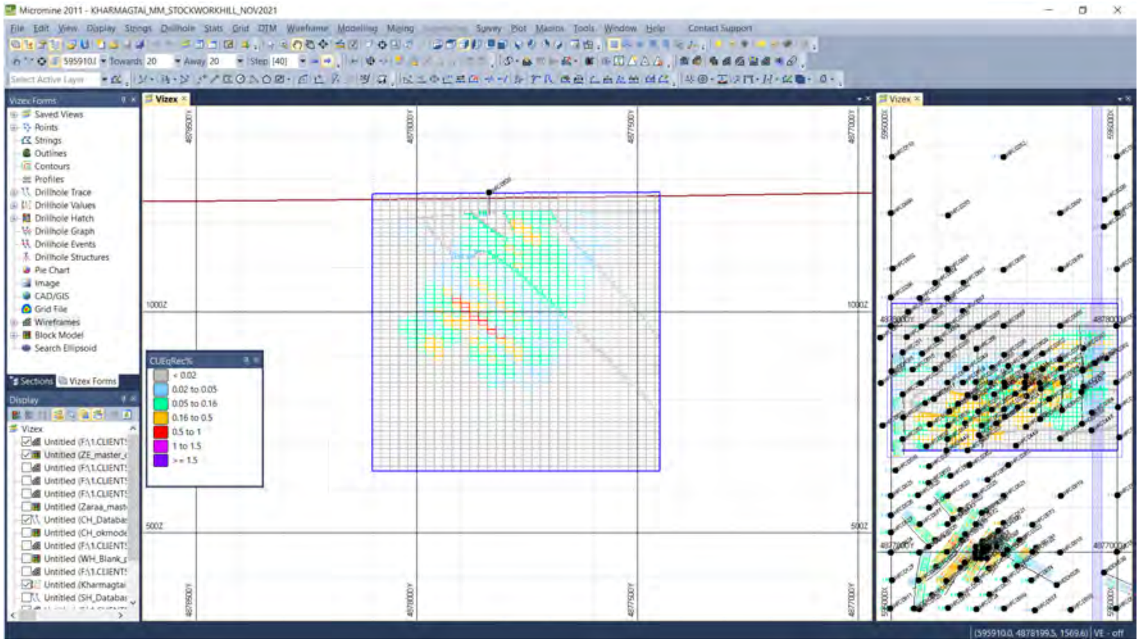
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z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CUEqRec%
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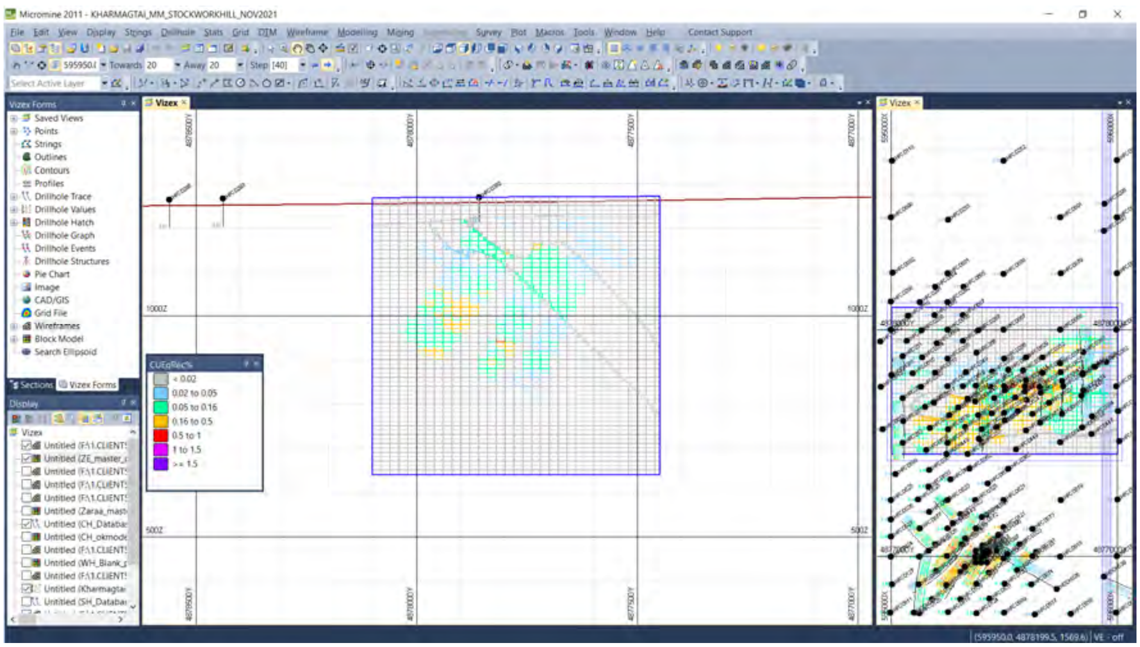
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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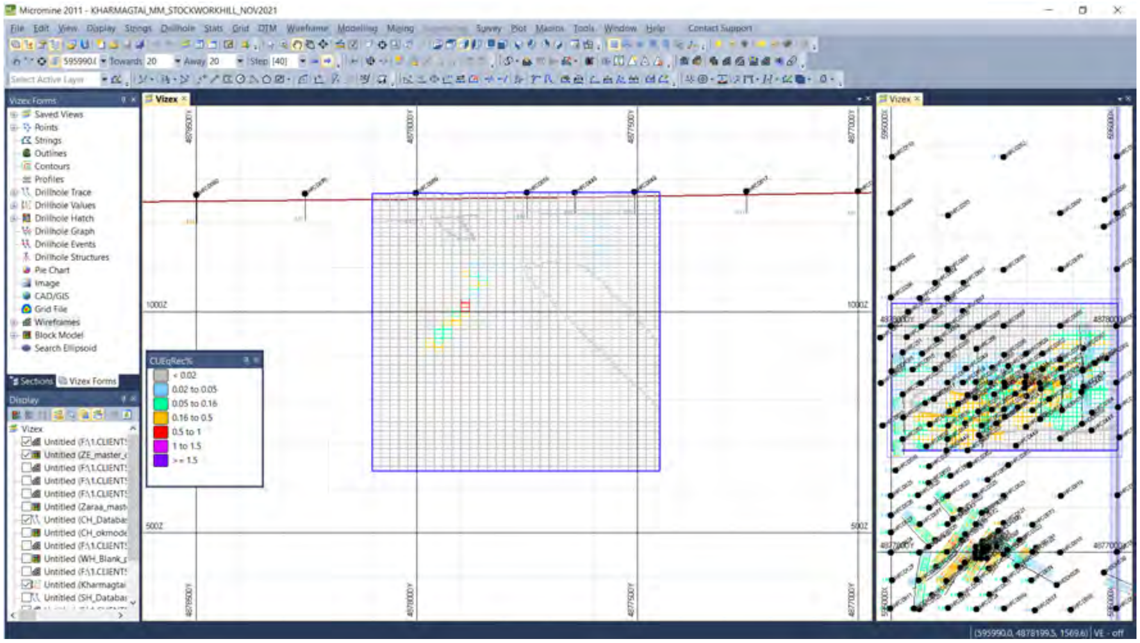
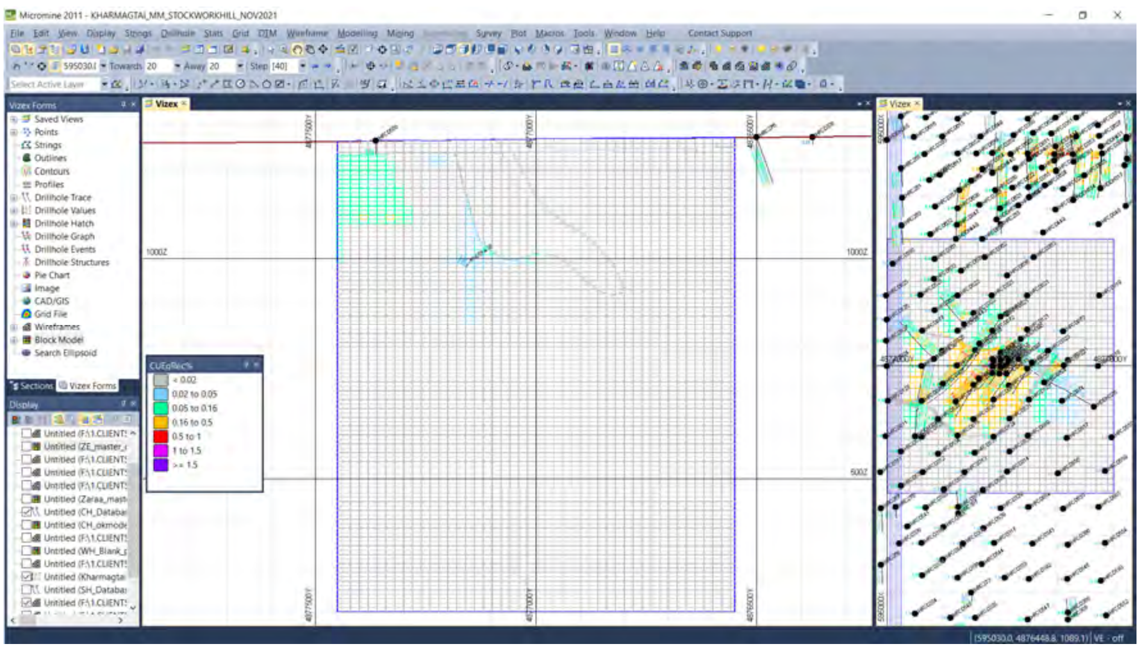
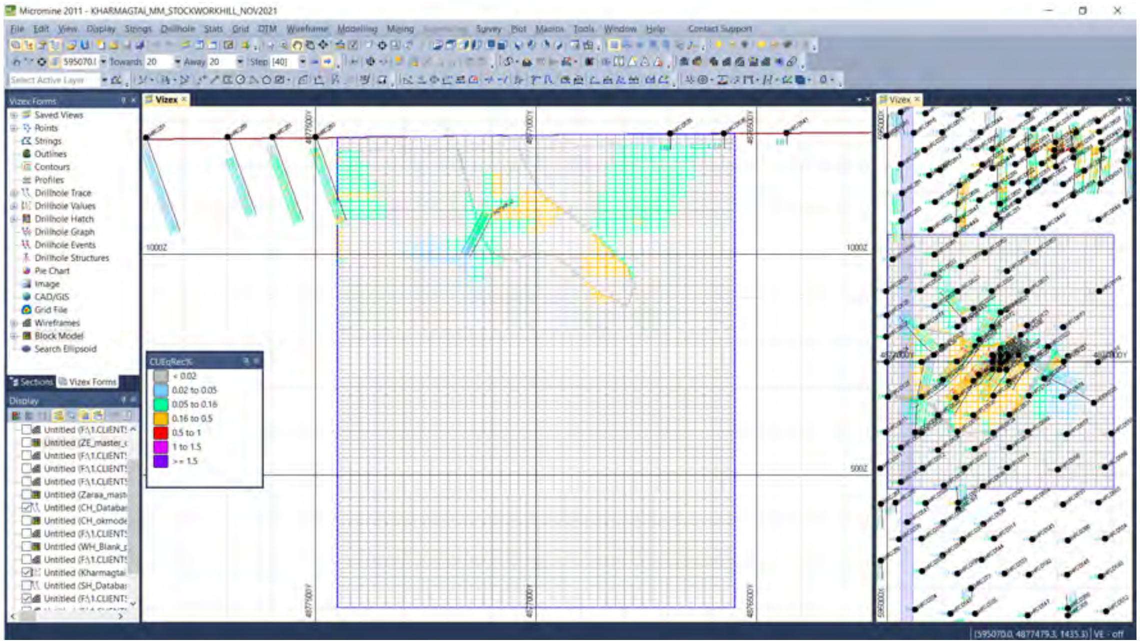
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z



Golden Eagle Sections – start at 595030mE looking east and stepping 40m increments, displaying CuEqRec% as per the internal legend.




Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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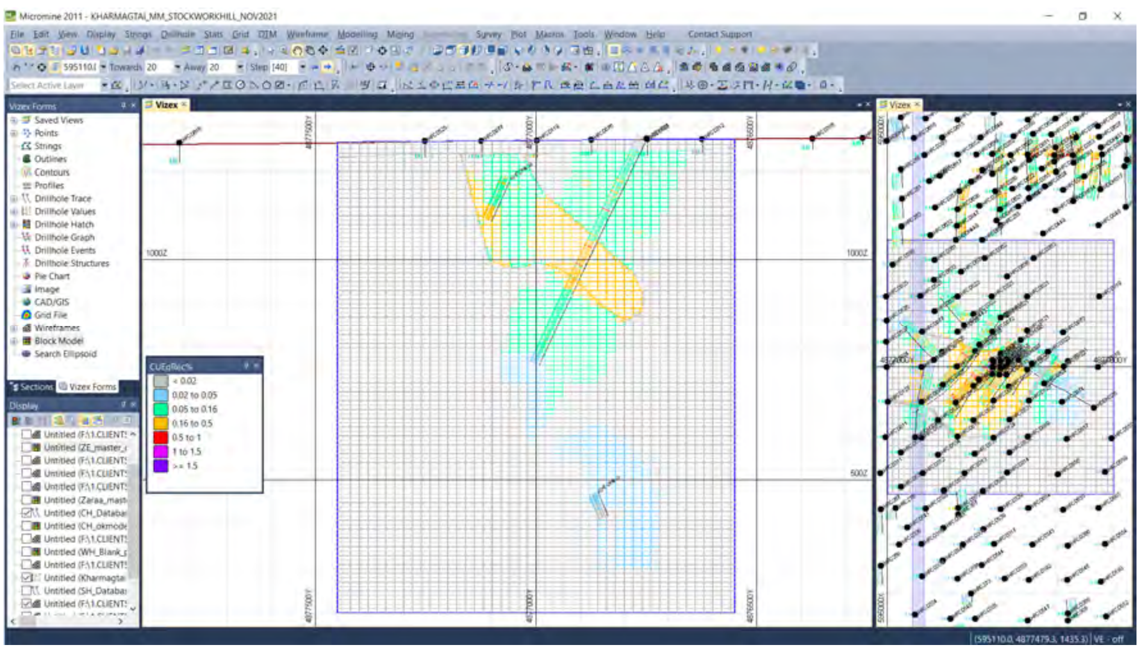
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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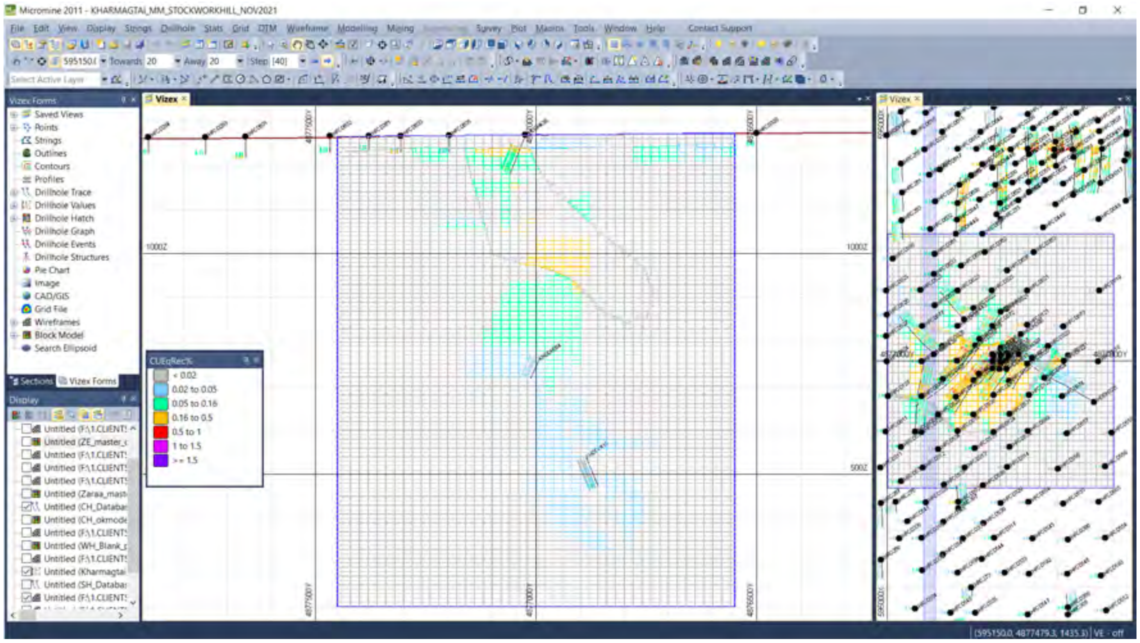
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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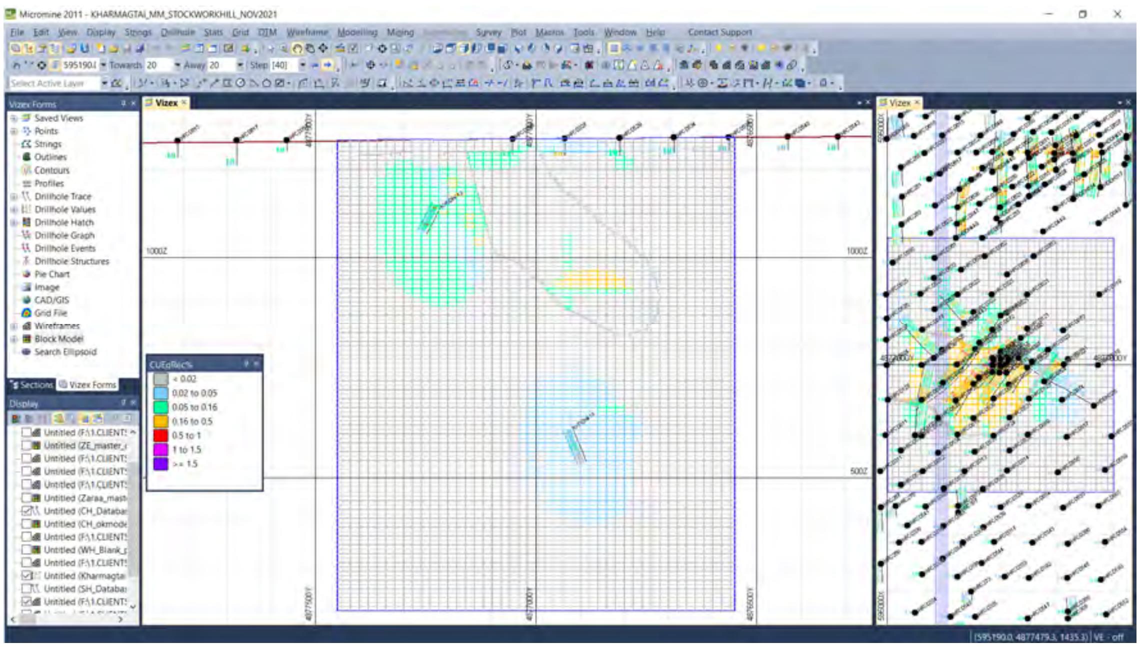
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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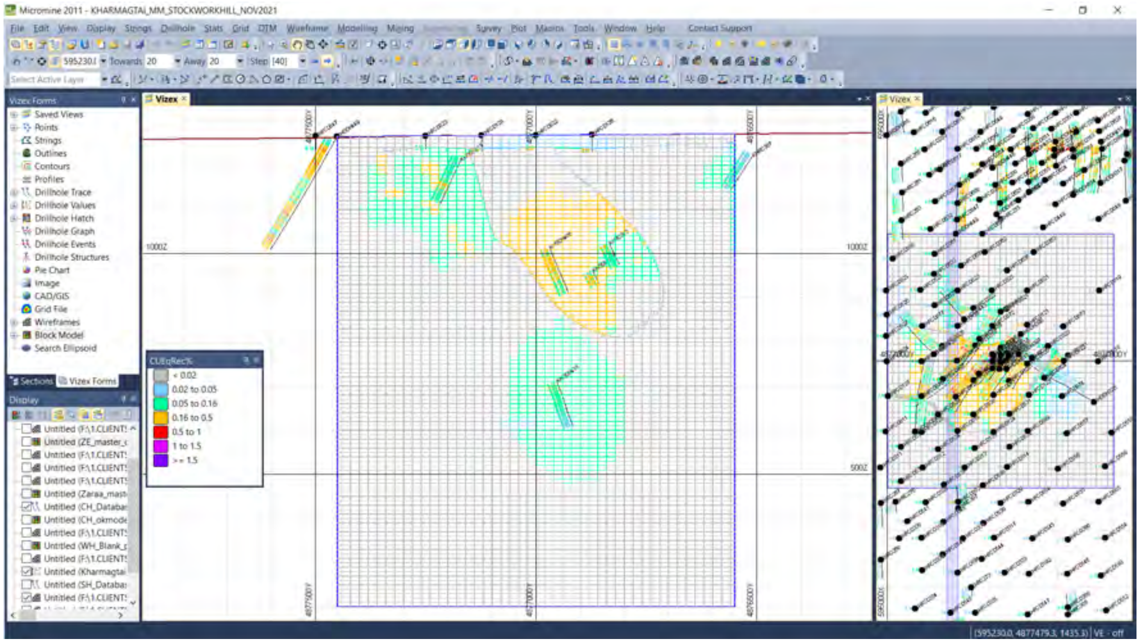
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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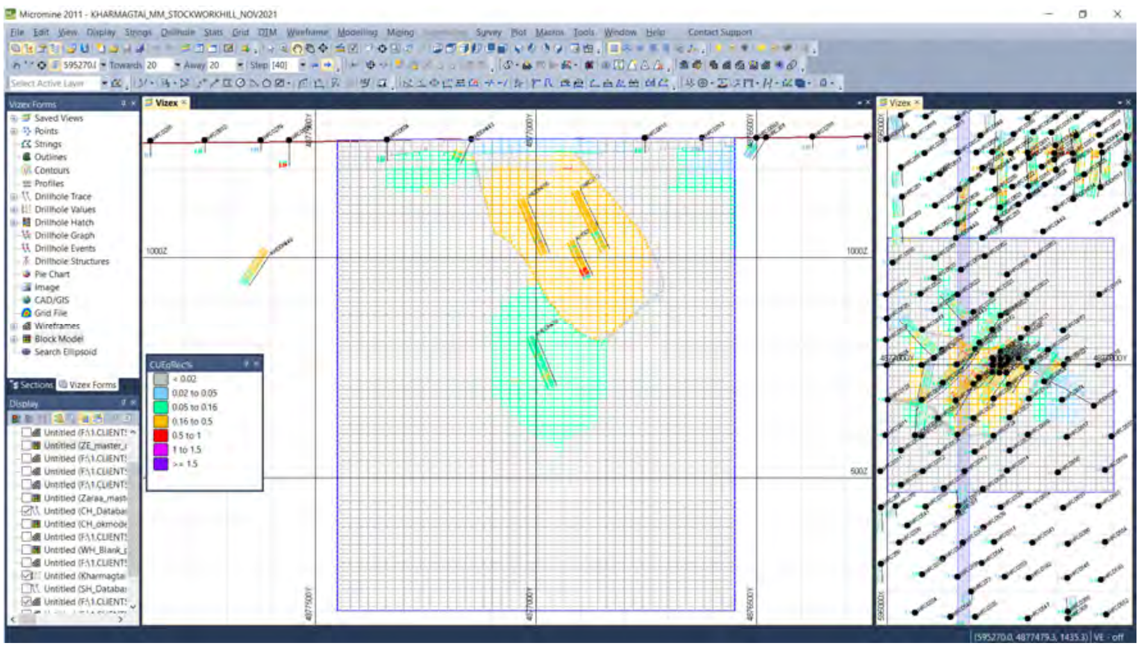
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
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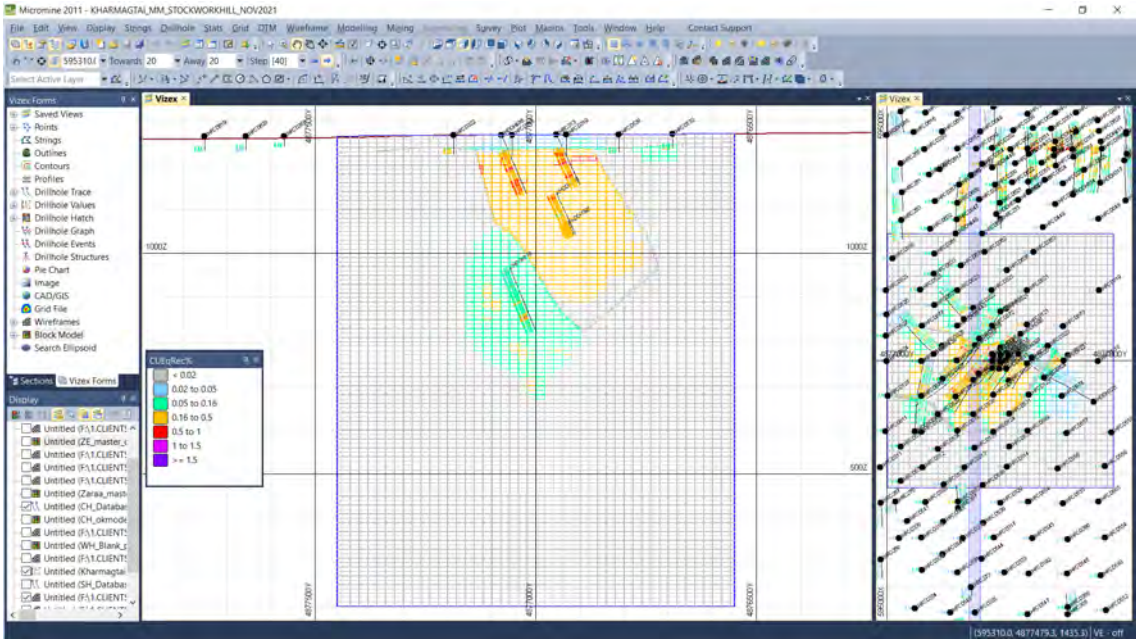
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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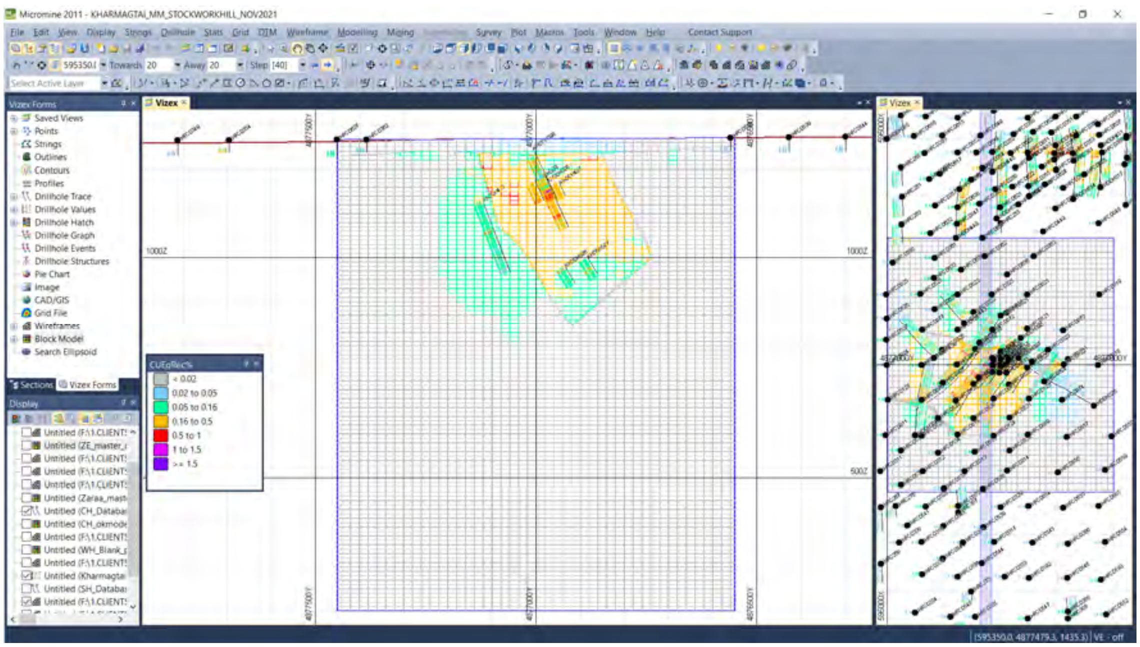
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
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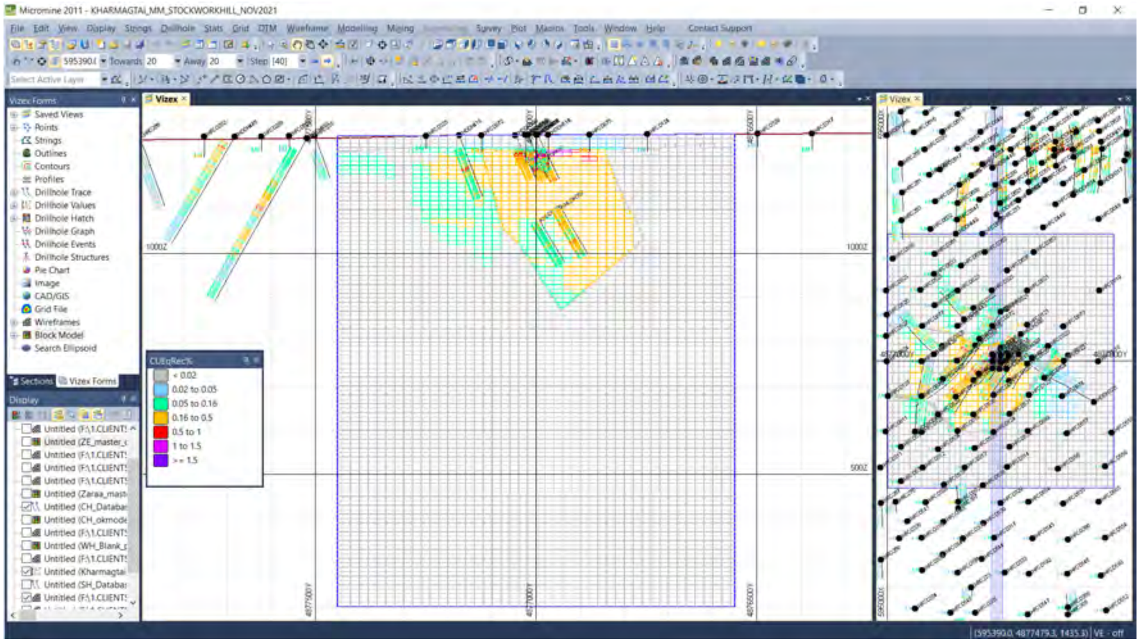
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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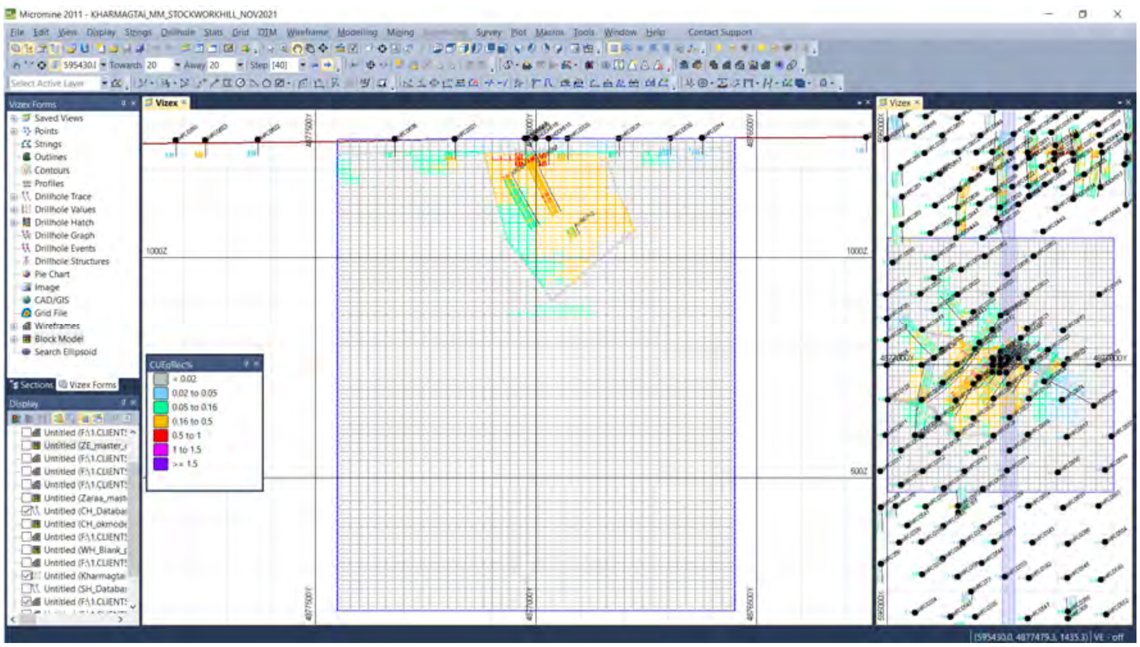
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
500Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
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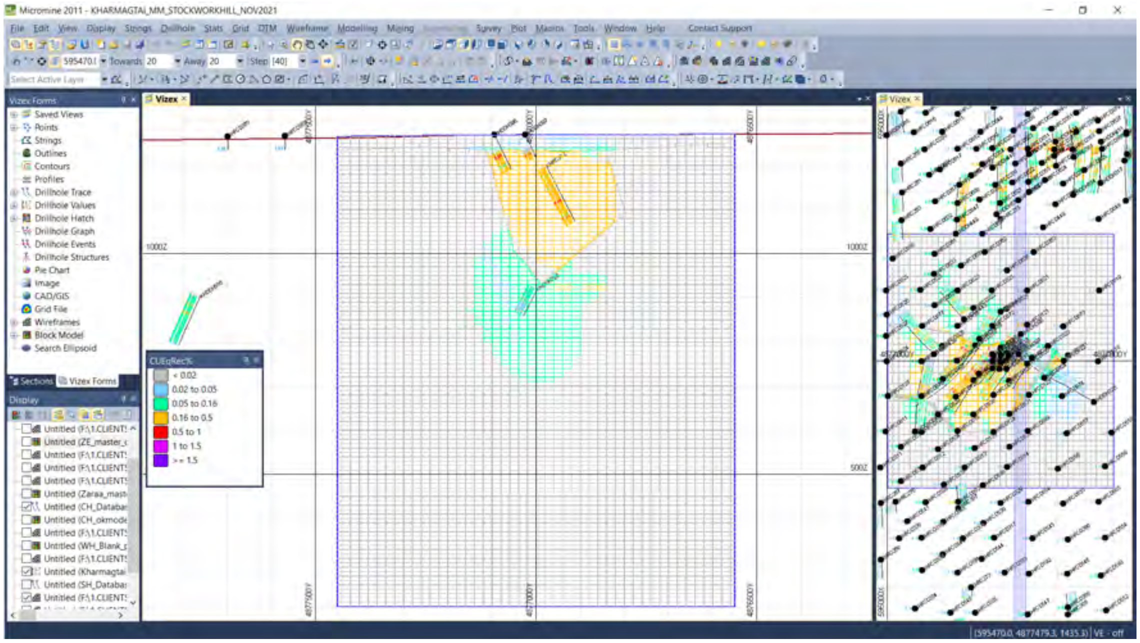
500Z


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
1000Z
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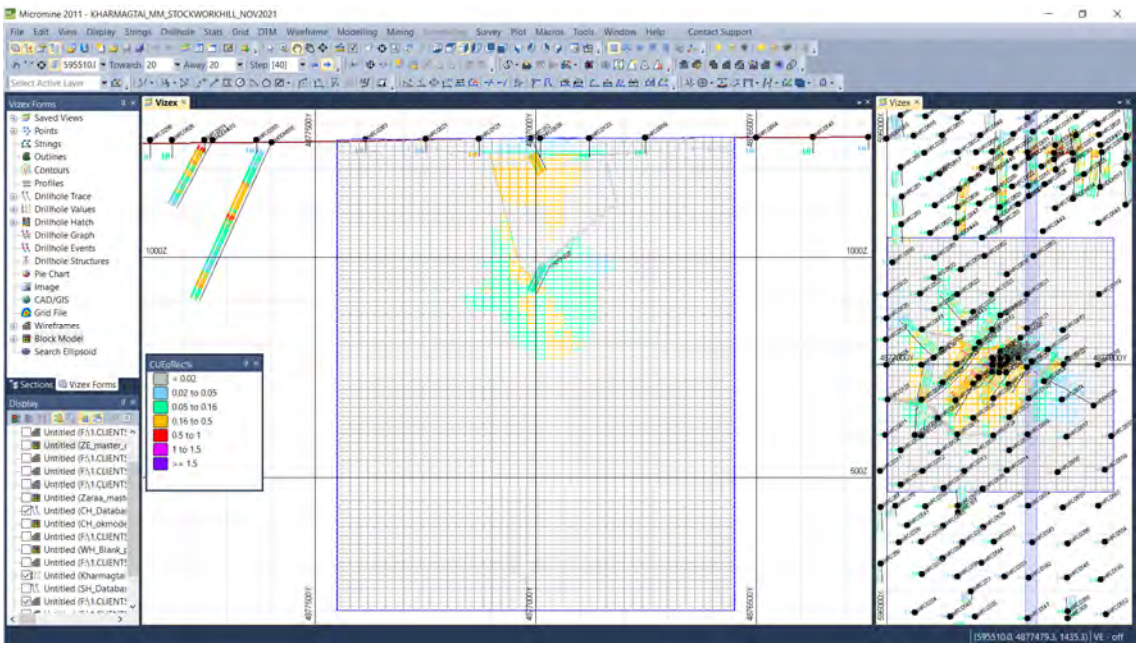
Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5
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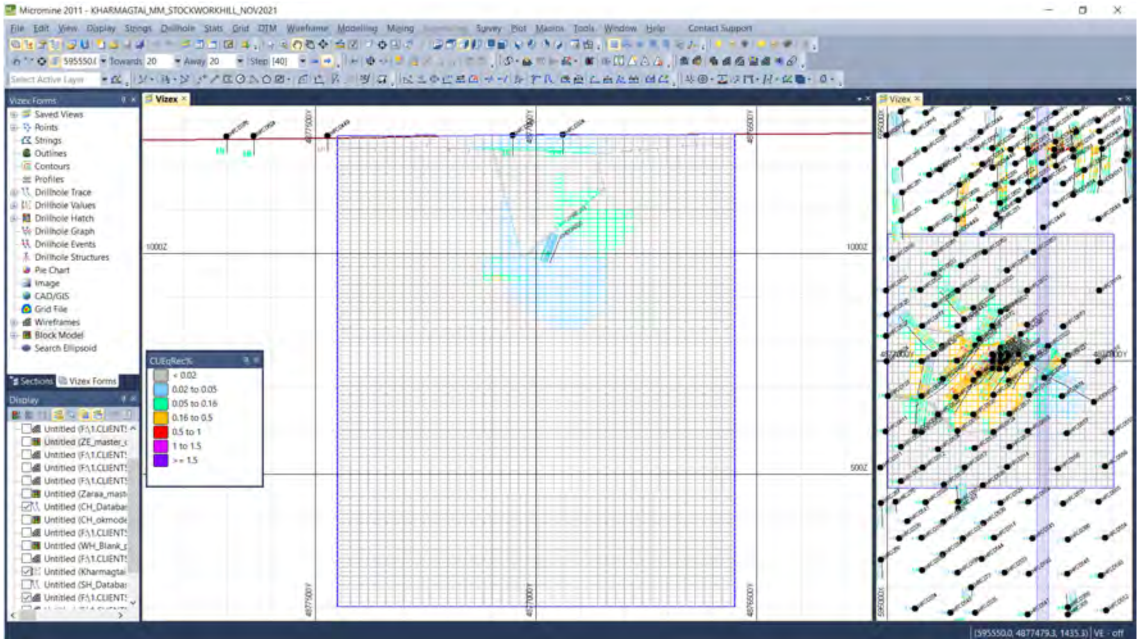
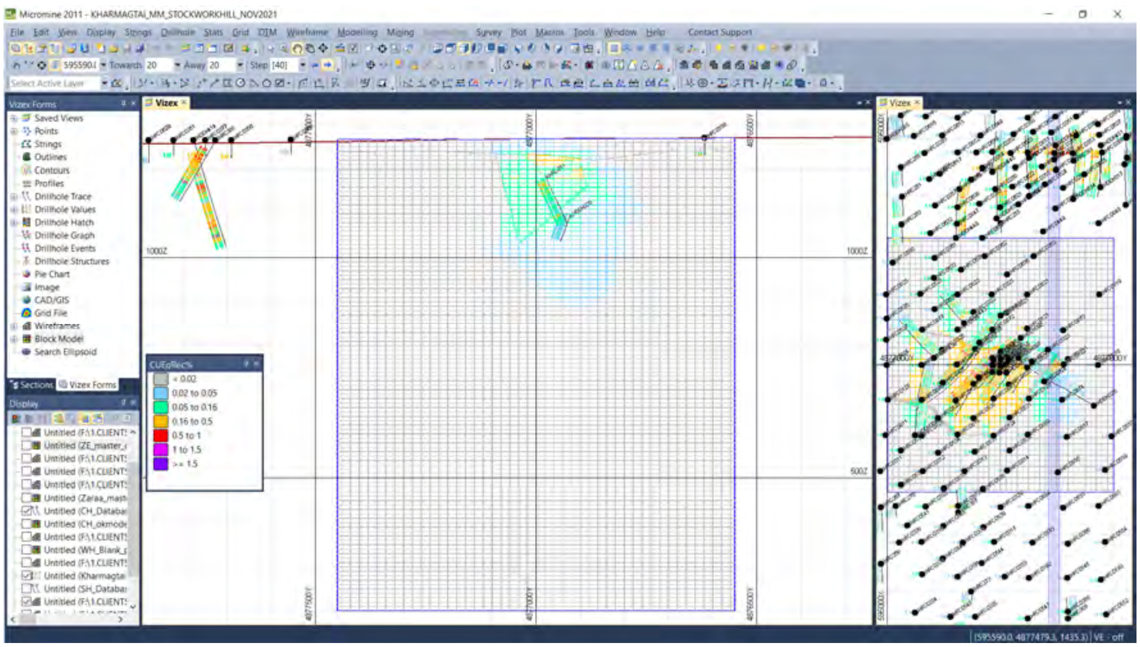
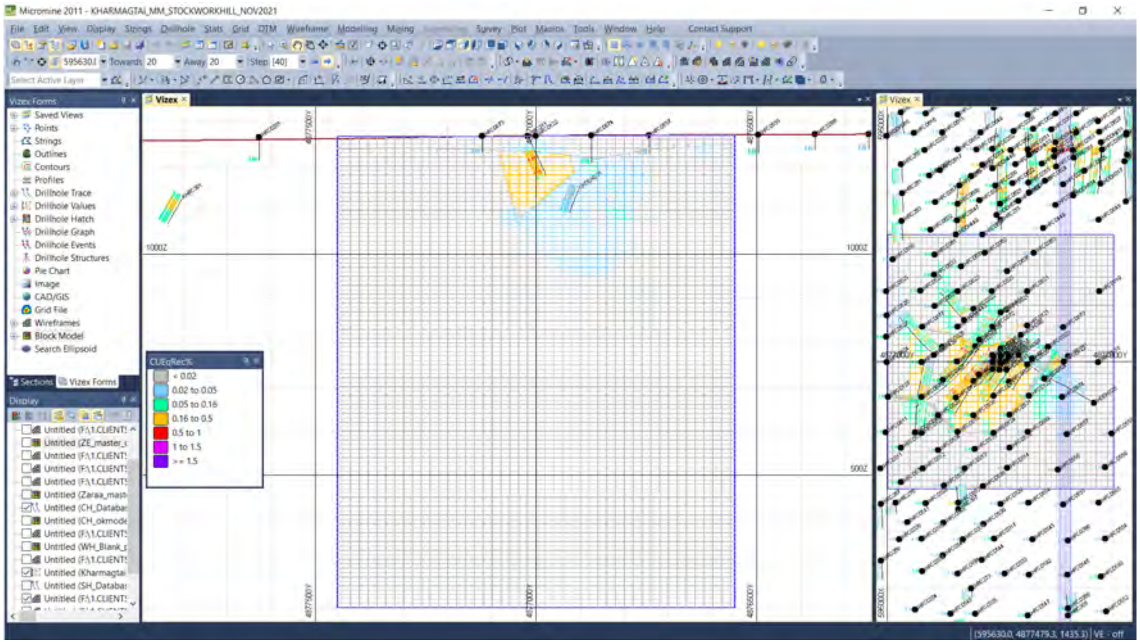

Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
Vizex Forms
Saved Views
Points
Strings
Outlines
Contours
Profiles
Drillhole Trace
Drillhole Values
Drillhole Hatch
Drillhole Graph
Drillhole Events
Drillhole Structures
Pie Chart
Image
CAD/GIS
Grid File
Wireframes
Block Model
Search Ellipsoid
CUEqRec%
< 0.02
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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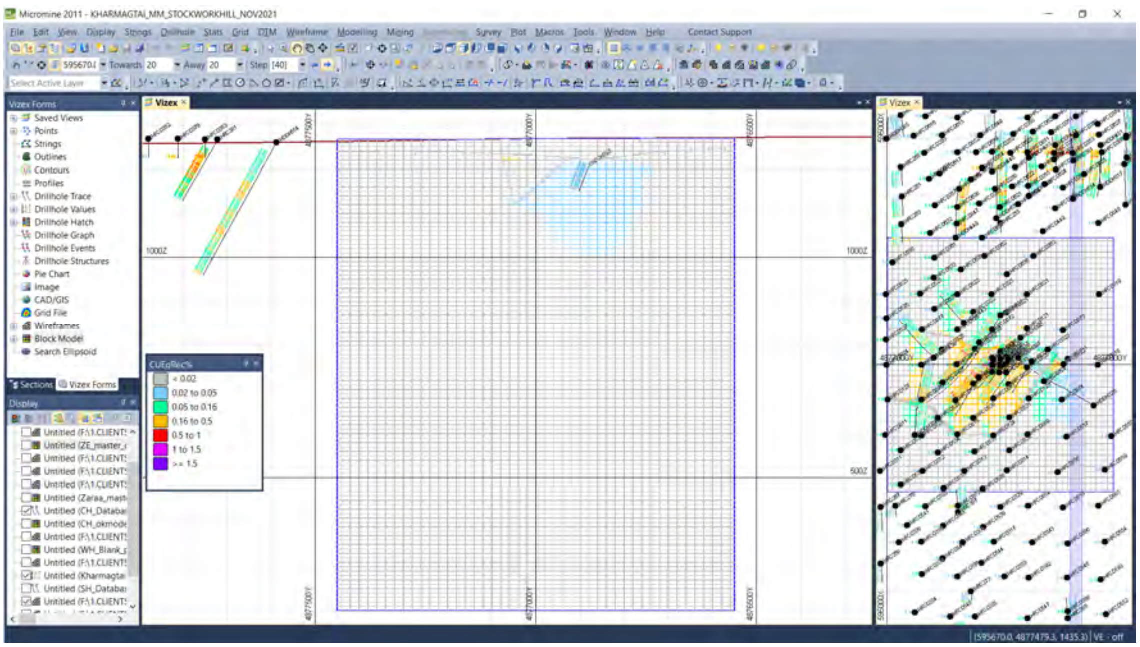
0.02 to 0.05
0.05 to 0.16
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5


Micromine 2011 - KHARMAGTAI_MM_STOCKWORKHILL_NOV2021
CUEqRec%
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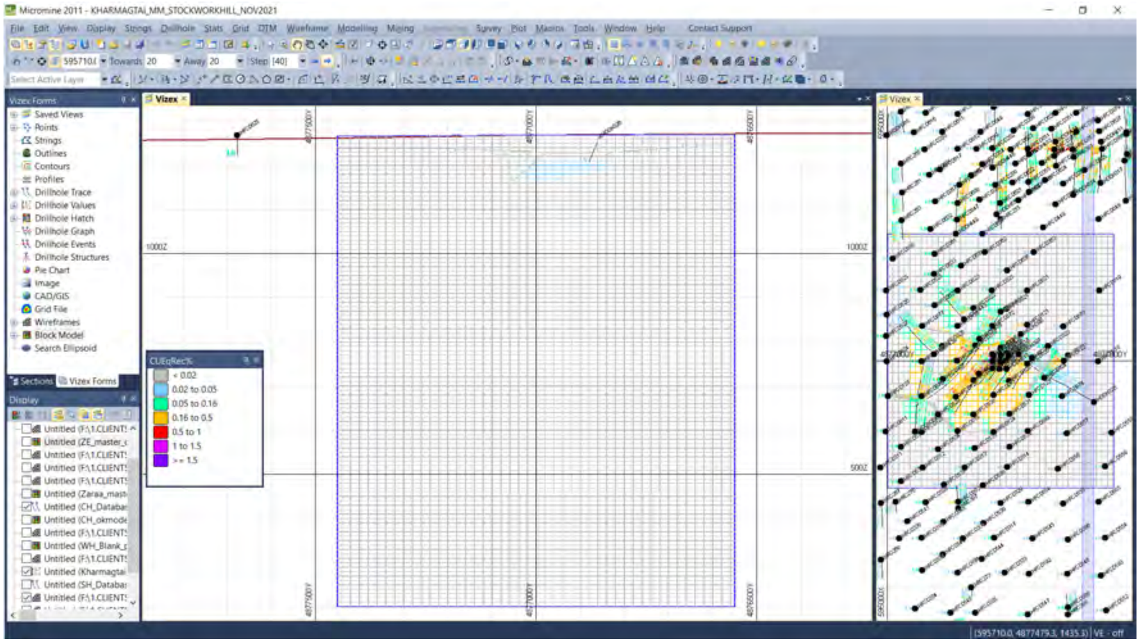
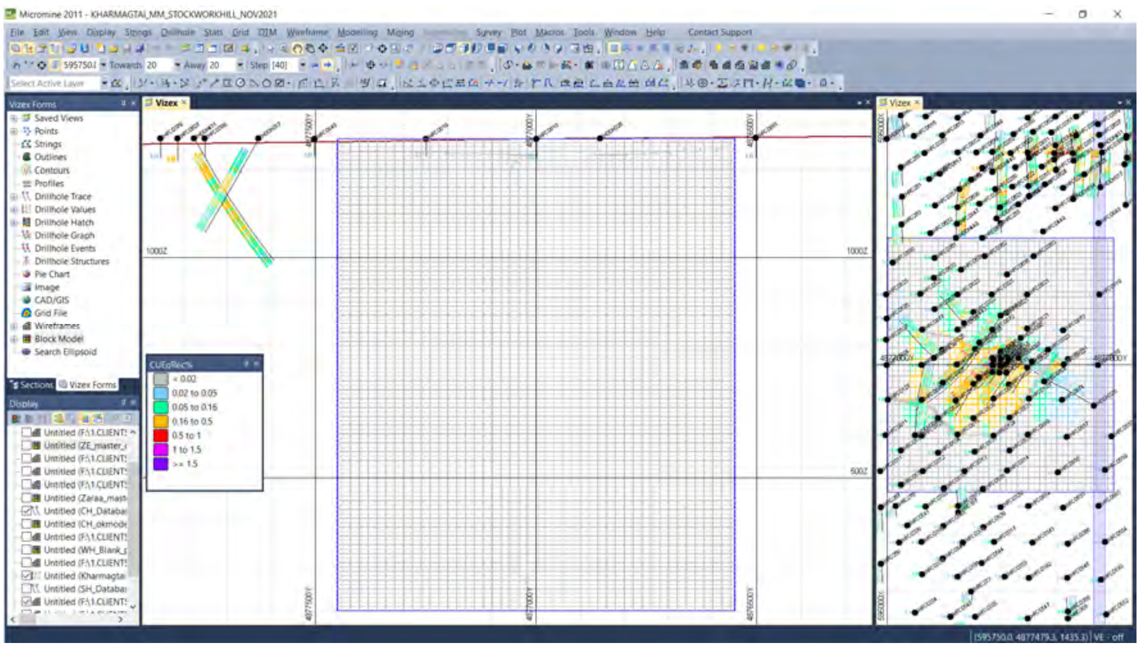
0.16 to 0.5
0.5 to 1
1 to 1.5
>= 1.5





Appendix 9 : Grade-tonnage curve & data by project area / type, combined classification.

Stockwork Hill

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

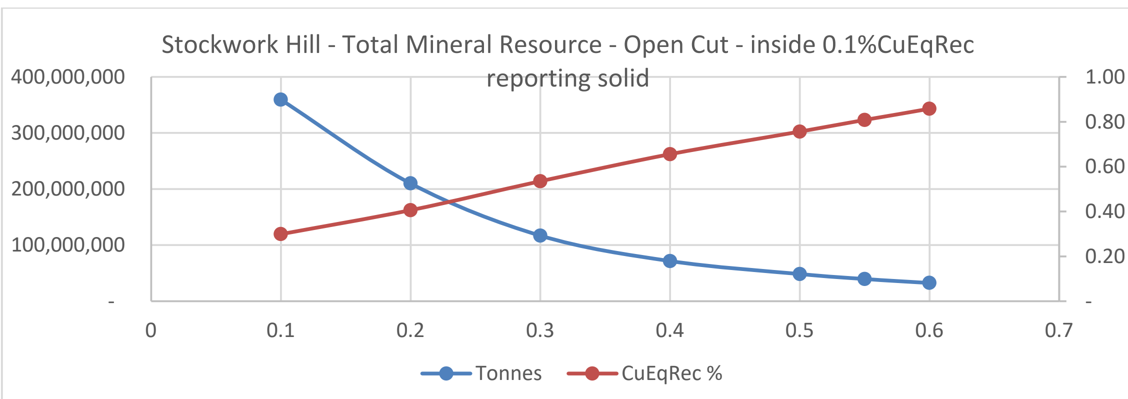
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	359,286,717	0.30	0.20	0.19
0.2	209,856,040	0.41	0.27	0.27
0.3	116,994,594	0.53	0.35	0.36
0.4	71,598,252	0.66	0.42	0.45
0.5	48,371,547	0.76	0.48	0.53
0.55	39,520,282	0.81	0.51	0.57
0.6	32,508,063	0.86	0.54	0.61

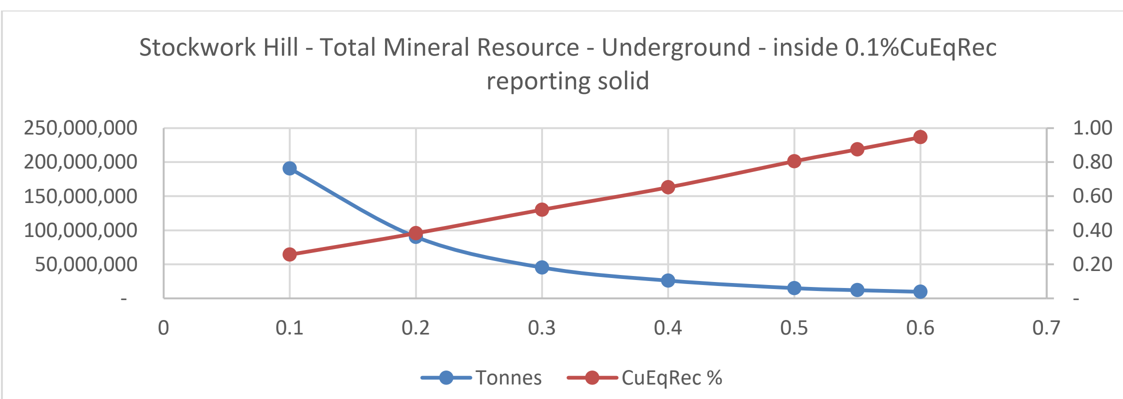
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	190,582,871	0.26	0.17	0.17
0.2	90,159,436	0.38	0.24	0.27
0.3	45,298,802	0.52	0.32	0.39
0.4	25,998,683	0.65	0.39	0.51
0.5	14,959,320	0.80	0.47	0.65
0.55	11,992,415	0.87	0.50	0.72
0.6	9,709,275	0.95	0.54	0.79

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





White Hill

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

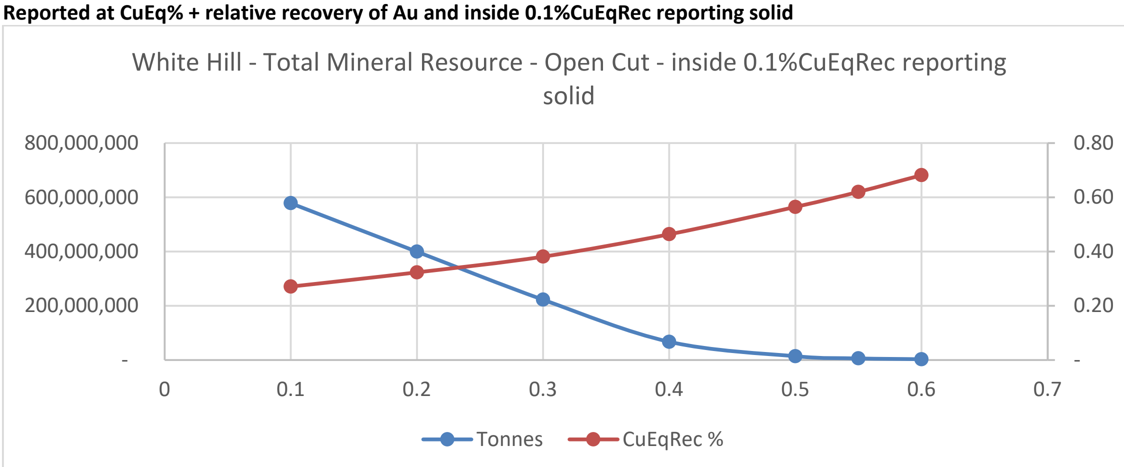
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	578,047,625	0.27	0.20	0.13
0.2	399,184,720	0.32	0.24	0.16
0.3	222,383,030	0.38	0.28	0.20
0.4	66,907,395	0.46	0.32	0.27
0.5	13,721,825	0.56	0.38	0.36
0.55	6,008,681	0.62	0.41	0.40
0.6	2,652,632	0.68	0.45	0.44

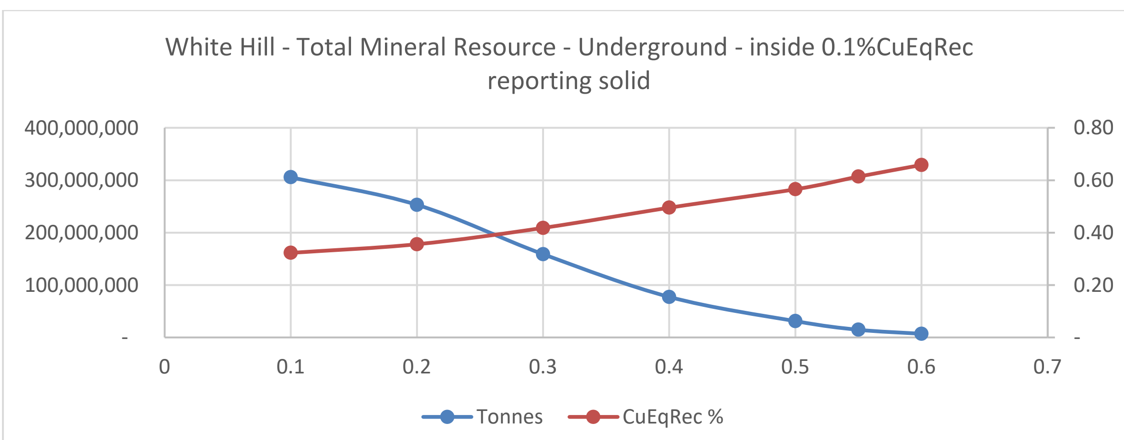
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	305,821,034	0.32	0.27	0.11
0.2	253,007,888	0.36	0.29	0.12
0.3	158,981,686	0.42	0.34	0.15
0.4	77,368,011	0.50	0.40	0.18
0.5	31,115,511	0.57	0.46	0.20
0.55	14,707,876	0.61	0.50	0.21
0.6	7,013,608	0.66	0.54	0.22

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





Copper Hill

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

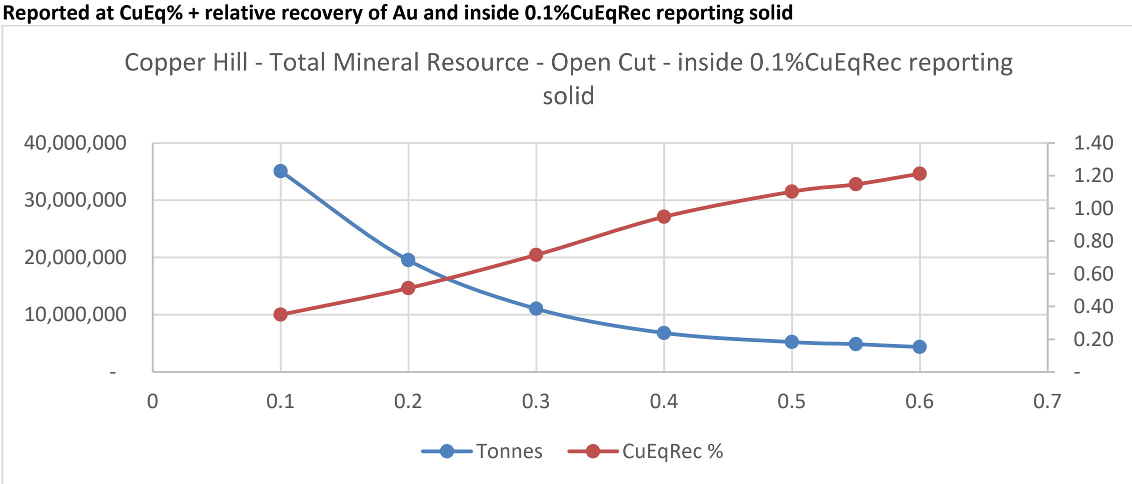
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	35,059,508	0.35	0.24	0.21
0.2	19,509,514	0.51	0.34	0.33
0.3	11,041,562	0.72	0.45	0.51
0.4	6,806,789	0.95	0.57	0.72
0.5	5,213,549	1.10	0.65	0.87
0.55	4,840,507	1.15	0.67	0.91
0.6	4,348,392	1.21	0.70	0.98

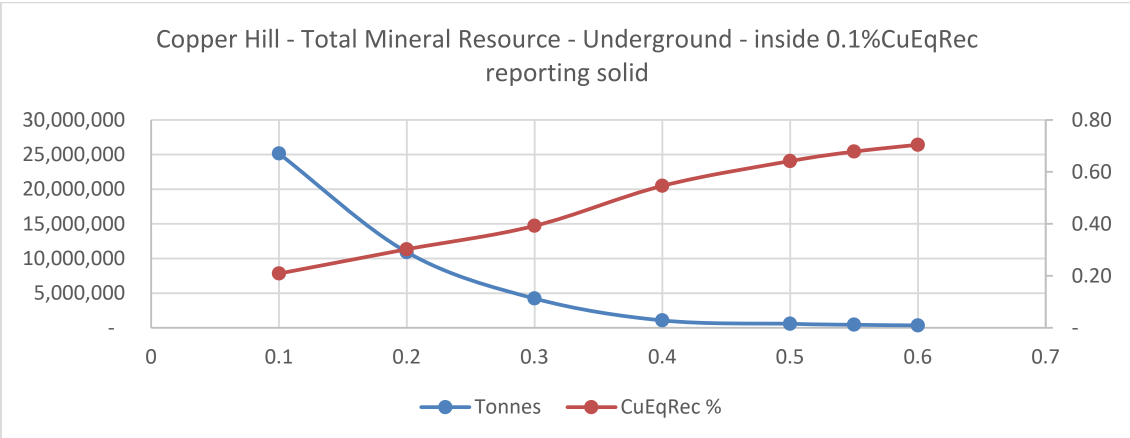
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	25,138,276	0.21	0.16	0.09
0.2	10,912,316	0.30	0.23	0.14
0.3	4,215,412	0.39	0.29	0.19
0.4	1,063,128	0.55	0.38	0.32
0.5	565,283	0.64	0.45	0.37
0.55	434,043	0.68	0.47	0.39
0.6	343,281	0.70	0.49	0.41

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





Zaraa

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

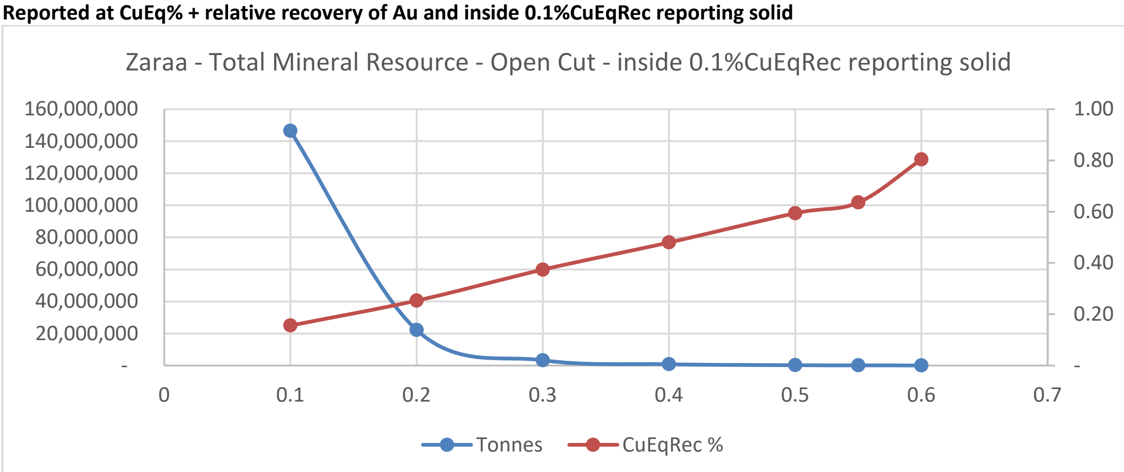
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	146,397,716	0.16	0.10	0.11
0.2	22,166,201	0.25	0.15	0.21
0.3	3,243,555	0.37	0.19	0.36
0.4	818,781	0.48	0.24	0.46
0.5	180,000	0.59	0.28	0.60
0.55	115,800	0.64	0.35	0.54
0.6	31,640	0.80	0.59	0.41

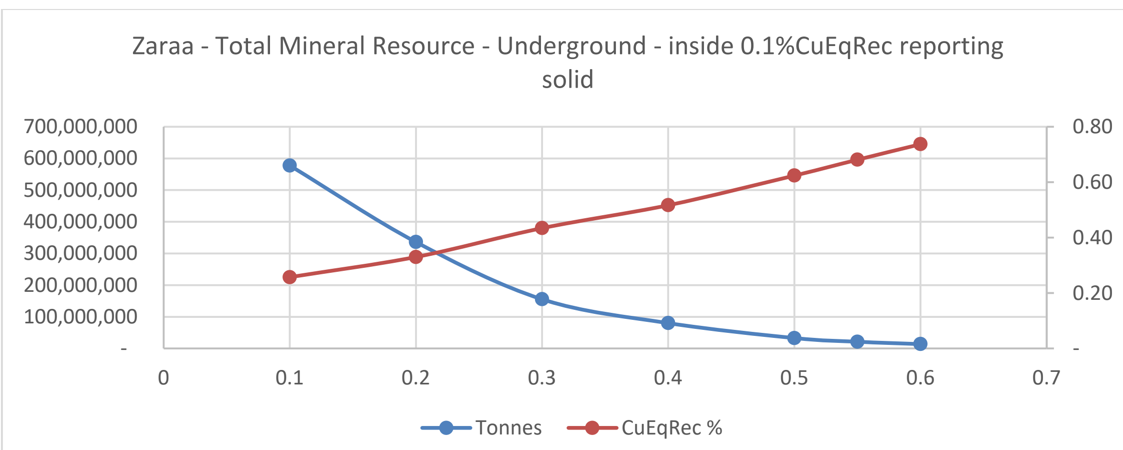
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	577,514,112	0.26	0.19	0.14
0.2	336,041,745	0.33	0.24	0.18
0.3	155,470,410	0.43	0.30	0.25
0.4	80,029,196	0.52	0.36	0.31
0.5	32,704,434	0.62	0.42	0.39
0.55	21,038,190	0.68	0.46	0.43
0.6	13,841,783	0.74	0.49	0.48

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





Zephyr

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

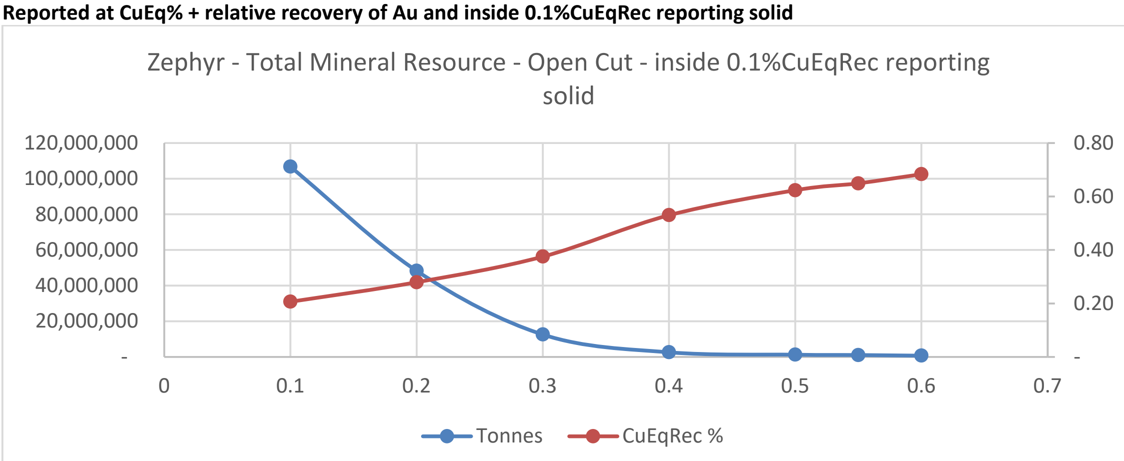
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	106,650,195	0.21	0.12	0.17
0.2	48,283,323	0.28	0.15	0.25
0.3	12,531,018	0.38	0.17	0.40
0.4	2,548,590	0.53	0.11	0.82
0.5	1,245,823	0.62	0.06	1.08
0.55	995,344	0.65	0.06	1.13
0.6	680,784	0.68	0.06	1.20

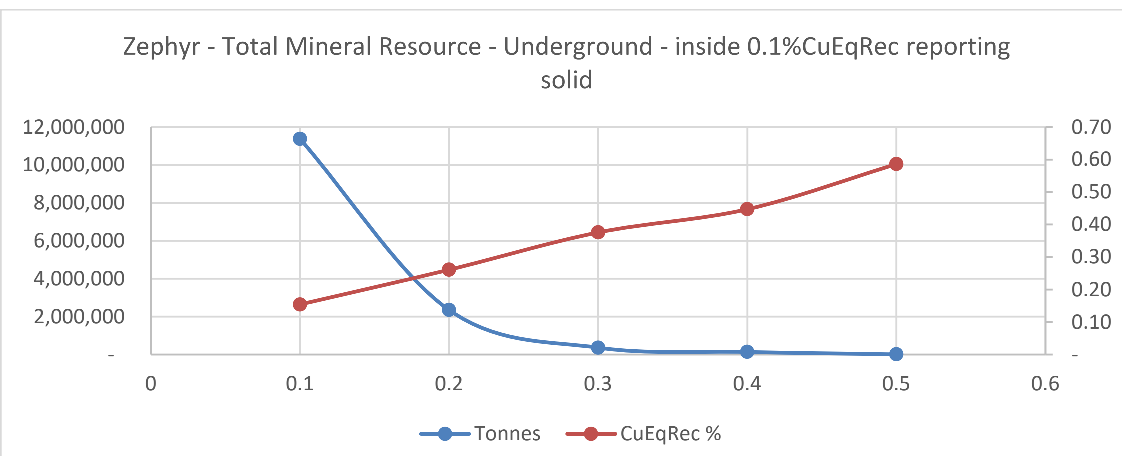
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	11,376,611	0.15	0.09	0.12
0.2	2,351,766	0.26	0.15	0.21
0.3	361,120	0.38	0.07	0.59
0.4	135,360	0.45	0.01	0.84
0.5	11,360	0.59	0.01	1.10
0.55	11,360	0.59	0.01	1.10
0.6	-	-	0.00	0.00

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





Golden Eagle

Total Open Pit Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

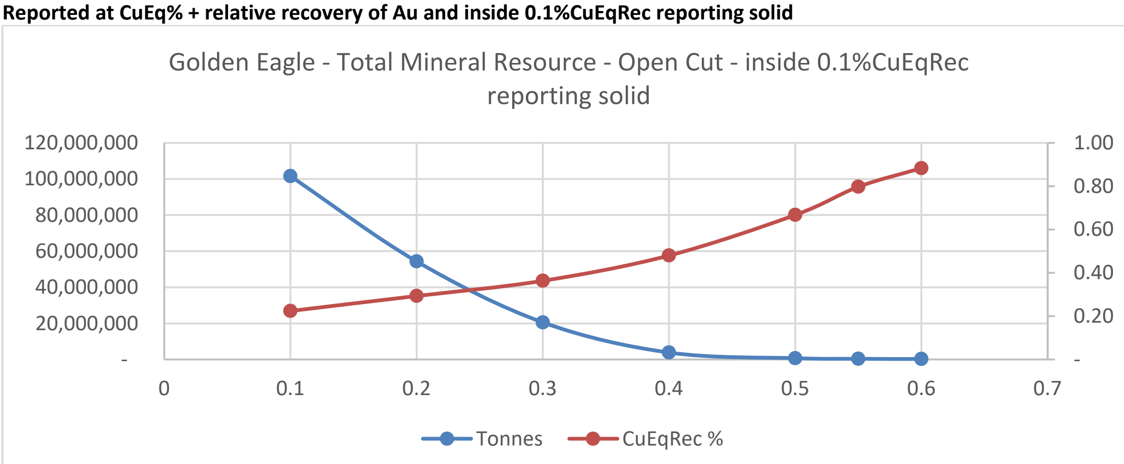
COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	101,549,782	0.22	0.11	0.22
0.2	54,295,018	0.29	0.13	0.31
0.3	20,547,791	0.36	0.14	0.42
0.4	3,827,513	0.48	0.16	0.63
0.5	715,262	0.67	0.15	1.00
0.55	379,508	0.80	0.14	1.27
0.6	274,562	0.88	0.14	1.44

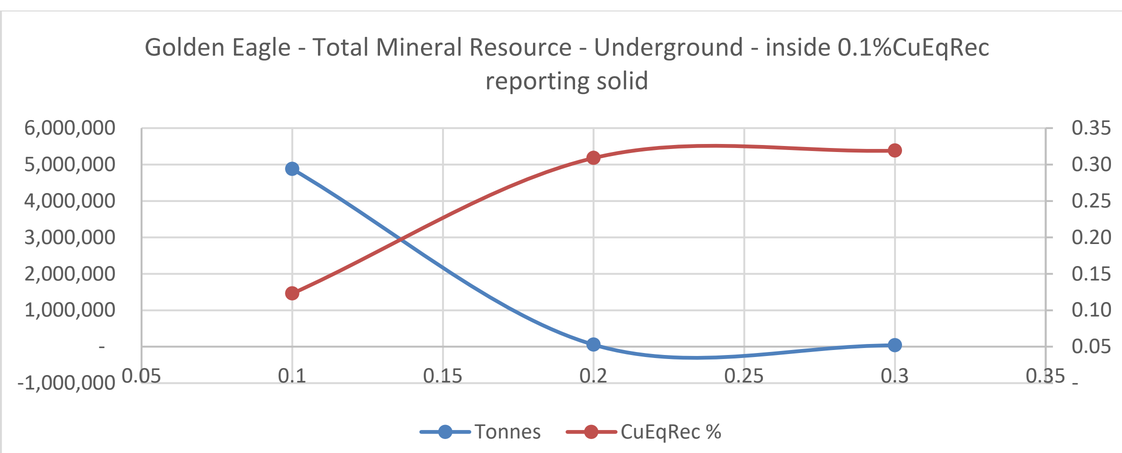
Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid

Total Underground Resource - reported inside 0.1% CuEqRec reporting solid and at various CuEqRec cutoff grades

COG	Tonnes (t)	CuEqRec %	Cu %	Au g/t
0.1	4,875,583	0.12	0.09	0.06
0.2	55,831	0.31	0.14	0.33
0.3	38,414	0.32	0.14	0.34
0.4	-	-	0.00	0.00
0.5	-	-	0.00	0.00
0.55	-	-	0.00	0.00
0.6	-	-	0.00	0.00

Reported at CuEq% + relative recovery of Au and inside 0.1%CuEqRec reporting solid





Appendix 10 : Exploration ranking details

Target	Target type	Proposed Work	Depth of cover/ to top	Length	Width	Peak Cu %	Peak Au g/t	Lithology	Alteration
Stockwork Hill	**Stockwork-Tourmaline Breccia**	Continued modelling of 3D geology combining Geochemistry and ASD	0	950m	400m	**5.80%**	**63.5**	Quartz monzodiorite and monzodiorite, tourmaline breccia dykes	biotite-magnetite-hornblend-quartz sericite-epidote-chlorite
White Hill	**Stockwork**	MT Lines to catagorise mineral response	0	1000m	500m	**2.90%**	**19.9**	Quartz monzodiorite and monzodiorite, diorite porphyry	biotite-magnetite-hornblend-quartz sericite-epidote-chlorite
Copper Hill	**Stockwork**	MT Lines to identify extensions and drilling to test these	10m	400m	200m	**6.20%**	**199.5**	Quartz monzodiorite and monzodiorite, siltstone host	quartz sericite-epidote-chlorite
TBX Extensions	**Tourmaline Breccia**	3000m of drilling is planned. MT lines to identify potential higher grade zones	~400m	1200m	200m	**2.11%**	**1.8**	Quartz monzodiorite and monzodiorite, diorite porphyry	biotite-magnetite-k feldspar with sericite
Bornite Extensions	**Stockwork-Tourmaline Breccia**	Drilling is to be planned	440m	320m	Unknown	**2.94%**	**9.1**		biotite-magnetite-k feldspar
Northern Step Down Target (Stockwork Hill)	**Stockwork-Tourmaline Breccia**	MT	500m	230m	Unknown	**0.80%**	**1.14**	Quartz monzodiorite and monzodiorite, diorite porphyry	biotite-magnetite-hornblend-quartz sericite-epidote-chlorite
White Hill West	**Stockwork**	MT Lines to test for higher-grade portions	0m	800m	400m	**0.16%**	**0.45**	Siltstone, monzodiorite and quartz monzodiorite	biotite-magnetite-hornblend
Zaraa	**Stockwork**	A single 1000m drill hole down plunge of P1-P2 pipe	360m	unknown	unknown	**0.83%**	**2.29**	Siltstone, monzodiorite and quartz monzodiorite	biotite-magnetite-hornblend-quartz sericite-epidote-chlorite
Sandstorm (T4)	**Stockwork**	MT Lines are planned and drilling as a part of the TBX extensions	30m	800m	750m	**0.41%**	**0.76**	Quartz monzodiorite and monzodiorite, tourmaline breccia dykes	quartz-sericite-pyrite; chlorite-epidote
Zephyr (T3)	**Stockwork**	MT Lines	23m	650m	550m	**0.59%**	**0.52**	Monzodiorite and siltstone, andesite and tourmaline breccia dykes	quartz-sericite-pyrite
Golden Eagle	**Stockwork**	MT and Detailed Geological relog and 3D modelling is required.	27m	800m	650m	**0.30%**	**3.39**	Quartz monzodiorite and monzodiorite	quartz-k-spar/biotite-chlorite
Target 6	**Tourmaline Breccia / Stockwork**	MT Lines are required	45m	1000m	400m	**0.10%**	**0.19**	Tourmaline breccia's in Quartz monzodiorite and monzodiorite	chlorite
Target 10	**Stockwork**	A MT line is planned over the target area as a part of the trail survey	0m	1100m	500m	**0.10%**	**0.23**	Sandstones intruded by quartz monzodiorite	chlorite-magnetite-epidote
Target 7-8	**Stockwork**	A line of CSAMT and AMT is designed over the target as a part of the trial survey.	35m	1000m	800m	**0.10%**	**0.47**	Monzodiorite and siltstone, tourmaline breccia	quartz-sericite-pyrite
Target 17	**Tourmaline Breccia / Stockwork**	CSAMT is planned over the target as a part of the Copper Hill CSAMT survey	0m	250m	250m	**0.05%**	**1.45**	Siltstones and monzodiorite, quartz-tourmaline breccia	Silica
Target 2	**Epithermal**	MT may be useful to identify the key structure. Detailed Geological relog and 3D modelling is required. Several along strike DDH holes are planned where target 2 and Target 3 join	30-60m	400m	250m	**0.08%**	**1.27**	Monzodiorite and siltstone	quartz-pyrite-sericite; silicification
Target 18	**Stockwork**	Thought should be given to CSAMT	0m	800m	400m	**0.14%**	**1.04**	Siltstone, hornblend diorite and quartz monzodiorite, tourmaline breccia dyke	Chlorite-magnetite
Target 16	**Stockwork**	Thought should be given to CSAMT	0m	5000m	400m	**0.26%**	**0.11**	Sandstones and quartz-tourmaline dyke	silica
Target 11	**Tourmaline Breccia**	Thought should be given to CSAMT	0m	300m	300m	**0.23%**	**0.1**	Tourmaline breccia float,	
Target 12	**Stockwork**	Thought should be given to CSAMT	54m	7000m	400m	**0.13%**	**0.1**	Monzodiorite and quartz monzodiorite dykes	Chlorite

Target 13	**Stockwork**	Thought should be given to CSAMT	0-6m	1100m	300m	**0.06%**	**0.1**	Sandstone and monzodiorite	Chlorite
Target 15	**Stockwork**	Thought should be given to CSAMT	25m	600m	400m	**0.06%**	**0.06**	Siltstones and monzodiorite	chlorite-magnetite
Target 9	**Stockwork**	Thought should be given to CSAMT	0m	800m	400m	**0.05%**	**0.01**	Siltstones and monzodiorite	Silica
Target 5	**Epithermal**	A line of CSAMT and AMT is designed over the target as a part of the trial survey.	54m	125m	125m	**0.08%**	**0.17**	Basalts	
Stockwork Hill North	**Stockwork/Gold**	MT Lines are suggested around the Phyllic anomaly drilled in 2018	1-2m	600m	300m	0.10%	5.6	Hornblende diorite porphyry	pyrite, sericite, quartz, tourmaline
Copper Hill North	**Stockwork**	MT Lines may assist in targeting	0m	600m	400m	0.81	0.69	Hornblende Diorite porphyry	pyrite, sericite, epidote
Target 19	**Stockwork-Tourmaline breccia**	Systematic drilling required	12.5m	600m`	240m	0.1	3.34	Quartz monzodiorite porphyry	pyrite, sericite, chlorite, albite
Target 20	**Stockwork-Tourmaline breccia**	Systematic drilling required	18.7m	460m	220m	0.3	1.1	Diorite, diorite porphyry & quartz monzodiorite porphyry	pyrite, sericite, epidote, albite
Target 21	**Stockwork-Tourmaline breccia**	Systematic drilling required	15.7m	370m	290m	0.19	0.39	Diorite, & quartz monzodiorite porphyry	pyrite, sericite, chlorite
Target 22	**Stockwork**	Continued modelling of 3D geology combining Geochemistry and ASD	3.2m	240m	200m	0.1	0.2	Diorite porphyry, granodiorite	pyrite, sericite, chlorite
Target 23	**Stockwork**	Continued modelling of 3D geology combining Geochemistry and ASD	0m	440m	220m	0.1	0.12	Quartz monzodiorite porphyry	
Target 24	**Stockwork**	Continued modelling of 3D geology combining Geochemistry and ASD	0m	580m	450m	0.3	0.7	Siltstone, diorite, diorite porphyry	hornfelsing
Target 25	**Stockwork**	MT Lines may assist in targeting	0m	500m	410m			sandstone at surface	
Target 26	**Stockwork**	MT Lines may assist in targeting	0m	1000m	600m			sandstone at surface	
Target 27	**Stockwork-Tourmaline breccia**	MT Lines may assist in targeting	4m	630m	420m	0.2	0.69	siltstone & Monzodiorite	
Target 28	**Stockwork-Tourmaline breccia**	MT Lines may assist in targeting	0m	1200m	400m			siltstone, diorite, monzodiorite, TBX	
Target 29	**Stockwork**	Continued modelling of 3D geology combining Geochemistry and ASD	45m	480m	360m	0.13	1.02	diorite, quartz-monzodioirite	pyrite, sercite, chlorite
Target 30	**Stockwork-Tourmaline breccia**	MT Lines may assist in targeting and systematic drilling	28m	860m	600m	0.48	0.22	siltstone, sandstone, diorite	pyrite, sericite, chlorite
Target 31	**Stockwork**	MT Lines may assist in targeting	72m	1400m	1000m			Andesite	
Target 32	**Stockwork**	MT Lines may assist in targeting	72m	640m	520m			Andesite	
Target 33	**Stockwork**	MT Lines may assist in targeting	48m	900m	520m			Andesite	
Target 34	**Stockwork**	MT Lines may assist in targeting	23m	460m	320m			Andesite	

Target 35	**Stockwork**	MT Lines may assist in targeting	17m	1600m	600m			Basalt	
Target 36	**Stockwork**	MT Lines may assist in targeting	24m	620m	440m			Andesite	
Target 37	**Stockwork**	MT Lines may assist in targeting	4m	1200m	730m			Andesite	
Target 38	**Stockwork**	MT Lines may assist in targeting and systematic drilling	0m	1400m	330m			Siltstone	
Target 39	**Stockwork-Tourmaline breccia**	MT Lines may assist in targeting	19m	560m	400m			Quartz monzodiorite	
Target 40	**Stockwork**	MT Lines may assist in targeting	35m	580m	280m	0.2	0.38	siltstone, diorite, monzodiorite	pyrite, sericite

Vein Types *	B vein surface expression	Hole ID	From	To	interval	Cu	Au	CuEq	Meters x CuEq	Average Drill Spacing	Comments
A-B-C-D-M-T-CBM-UST	200m x 50m	KHDDH394	6	662	656	0.50%	0.85g/t	1.04%	686.54m	75m	
A-B-C-D-M-T-CBM	400m by 200m	KHDDH430	0	850	850	0.32%	0.2g/t	0.45%	383.75m	150m	
A-B-C-D-M-T-CBM	None	KHDDH421	0	411.6	411.6	0.54%	0.79g/t	1.04%	430m	50m	
A-B-C-D-M-T	None	KHDDH526	555	672	117	0.68%	0.58g/t	0.98%	114m	500m	Newly discovered zone east of Billy's Basalt Shear
A-B-C-D-M-T	None	KHDDH419	466	760	294	0.47%	0.85g/t	1.01%	298m	75m	
A-B-C-D-M-T	None	KHDDH418	333	545	212	0.36%	0.38g/t	0.61%	128.58m	200m	
A-B-D-M	None	KHDDH458	2	787.9	785.9	0.21%	0.12g/t	0.29%	224.85	>150m	Bleached hornfelsed siltstone and weakly mineralised monzodiorite porphyry west of White Hill. Three drill holes by XAM with 700m plus of moderate grade porphyry mineralisation
A-B-C-D-M-T-CBM-UST	None	KHDDH462 (incomplete assay)	458	774 (open)	316	0.32%	0.26g/t	0.49%	155.1m (open)	One Hole	
A-B-D-M	700m by 200m	KHDDH449	28	250	222	0.14%	0.20g/t	0.26%	59.53	>250m	Multiple broad intercepts of moderate grade porphyry mineralisation associated with P2 intrusive (similar to Stockwork Hill).
A-B-D-M	300m x 350m	KHDDH445	10.7m	230	219.3	0.12%	0.21g/t	0.26%	56.43m	>250m	Circular gold and copper anomaly along strike from Stockwork Hill. A single diamond drill hole has encountered two 50m intervals of moderate porphyry mineralisation with associated b-veining and alteration within P2 intrusive similar to Stockwork Hill
UST-A-B-D	500m x 500m	KHDDH395	42	262	220	0.15%	0.64g/t	0.56%	122.72	75m	Large scale gold rich porphyry target. Geology from current drilling and 3D geophysical modelling indicates the present holes have tested the top of a very large porphyry system
A-B-D-M-T-CBM	300m x 100m	KHDDH449	39	225	186	0.11%	0.31g/t	0.31%	57.58	>500m	A large scale moderate copper and gold anomaly associated with a significant volume of tourmaline breccia. Four drill holes have been drilled returning Four holes have been drilled with broad zones of porphyry style mineralisation
A-B	50m x 50m	Trench CHTR021	475	680	205	0.12%	0.09g/t	0.18%	36.37m	Single Trench	Large moderate but consistent Au-Cu anomaly driven by rock chipping, low density quartz-sulphide B veining, abundant malachite fracture filling.
A-D	None	None									Targets 7-8 combined after infill drilling merged the anomalism. Large scale gold anomaly with weak copper anomalism. Tourmaline-py+/-cpy breccia's
T	None	None									Au anomaly associated with vuggy quartz-tourmaline veins to 20cm width, 0.1-1.45 g/t Au in rock chip

B, C, D	single point	KHRC298	81	87	6	0.06%	0.21g/t	0.13%	0.83	>350m	Linear gold anomaly associated with the interpreted extensions of the Kharmagtai Fault zone. Moderate Pb/Zn/As anomalism indicates CBM source. Two shallow RC holes were drilled returning 0.3 to 0.6g/t Au in CBM veins. Magnetic anomalies to the south were tested with DDH returning +350m intercepts of weak to moderate (0.2-0.25eCu) grade porphyry mineralisation and several gold only intercepts (9.6m @ 1.86g/t Au from 53m including 5.2m @ 2.72m)
A-D	25m x 50m	None									Weak gold and copper anomalism in rock chipped siltstones and tourmaline breccia
T	None	None									Single point Au anomaly in quartz-hematite+/-tourmaline vein dykes hosted in sandstone
T	None	None									Driven by single point rock-chip of tourmaline breccia
A	None	KHRC3110	154	224	70	0.09%	0.04g/t	0.12%	8.37m	Single RC hole	Moderate to strong Au and Cu anomalism on margins of Chun
D	None	None									moderate Au and Cu anomalism on margins of Chun
D	None	None									Weak Cu and Gold anomalism associated with porphyry style alteration and tourmaline breccia
	None	None									Large but moderate to low level Au-Cu anomalism driven by rock chipping
D	None	None									Single point Au anomaly on northern edge of grid. Moderate As, Pb and Zn anomalism suggests CBM style
C-D-CBM	None	Assays Pending									Strong discrete IP anomaly directly along strike of the Northern Stockwork Zone. Historical rock chips at surface give very strong gold anomalism. I{ anomaly was tested with drilling and returned very strong phyllic alteration.
B-D	None	KHDDH420	5	313	308	0.17%	0.06g/t	0.21%	64.78	100m	Broad zones of disseminated and veined mineralisation directly north of Copper Hill. Potential repeat of CH
A-B-C-D-T	None	None									Geology, geochemistry and geophysics are similar with Stockwork Hill mineralization and lies in similar magnetic destructive corridor. Possible eastern extension of Stockwork Hill mineralization.
D	None	KHDDH404	29	103	74	0.20%	0.6g/t			100m	Geology, geochemistry and geophysics are similar with Stockwork Hill mineralization and lies in similar magnetic destructive corridor. Possible eastern extension of Stockwork Hill mineralization.
A-B-D	None	KHDDH447	145	330	185	0.14%	0.2g/t			100m	Geology, geochemistry and geophysics are similar with Stockwork Hill mineralization and lies in similar magnetic destructive corridor. Possible eastern extension of Stockwork Hill mineralization.
M-C	None	KHDDH442	56	88	32	0.10%	0.04g/t			100m	Higher magnetics, moderate denser, moderate chargeable and low resistivity corridor, possible structure-controlled NE extension of Copper Hill mineralization.
		KHRC062									Higher magnetics, moderate denser, moderate chargeable and low resistivity corridor, possible structure-controlled NW extension of Copper Hill mineralization.
M-C	None	None									High magnetic, moderate denser, moderate chargeable and resistivity low area, possible structurally displaced extension of White Hill in depth.
	None										Higher magnetic, moderate denser, moderate chargeable and resistivity high area, possible a blind porphyry mineralization.
	None										Higher magnetic, moderate denser, moderate chargeable and resistivity low area, possible a blind porphyry mineralization.
D	None	KHRC176	58	60	2	0.20%	0.35g/t				Higher magnetic, moderate denser, moderate chargeable and resistivity low area, possible a blind porphyry mineralization.
	None										Magnetic destructive, moderate denser, moderate chargeable and high resistivity area, possible magnetite destructive zone related with quartz-sericite-pyrite alteration and porphyry mineralization.
A-B-D	None	KHDDH558	390	392	2	0.13%	1.02g/t				High magnetic, moderate denser, moderate chargeable and moderate resistivity area, possible a blind porphyry mineralization.

A-B	None	KHDDH427	86	206	120	0.29%	0.1g/t				A blind geochemical target defined by PCD drilling. Target area is 0.2 x 0.3 km area along the fault zone. There have a copper anomaly surrounds by peripheral base metal anomalism.
	None	KHDDH306									High magnetic, moderate denser, low chargeable and resistivity area, possible blind porphyry mineralization. IP depends on depth penetration due to conductive cover, thus IP results would be misunderstanding.
	None	KHPCD117									High magnetic, moderate denser, low chargeable and resistivity area, possible blind porphyry mineralization. IP depends on depth penetration due to conductive cover, thus IP results would be misunderstanding.
	None	KHPCD148									High magnetic, moderate denser, low chargeable and resistivity area, possible blind porphyry mineralization. IP depends on depth penetration due to conductive cover, thus IP results would be misunderstanding.
	None	KHPCD309									High magnetic, high denser, moderate chargeable and moderate resistivity area, possible blind porphyry mineralization.
	None	KHPCD162									High magnetic, low density, moderate chargeable and resistivity low area, possible blind porphyry mineralization.
	None	KHPCD143									High magnetic, moderate denser, moderate chargeable and low resistivity area, possible blind porphyry mineralization.
	None	KHPCD112									Moderate magnetic, higher denser, moderate chargeable and high resistivity area, possible blind porphyry mineralization. Magnetic and chargeable signatures are similar with Stockwork hill porphyry mineralization.
D	None										Moderate magnetic, higher denser, moderate chargeable and high resistivity area, possible blind porphyry mineralization. Malachite staining observed at surface.
	None	KHPCD196									Copper and molybdenum anomalism defined by PCD drilling.
D	None	KHDDH483	39	118	79	0.11%	0.1g/t				The target is copper and gold anomalism over 0.3 x0.6 km area defined by PCD drilling.

Appendix 11 : XAM Drill Core Sampling Intervals, Dispatch Preparation and Sampling - SOP

Kharmagtai Project

XAM-SOP-009v3

Drill Core Sampling Intervals, Dispatch Preparation and Sampling

Version	Date	Description of Changes	By	Reviewed By	Approved By
V1			Unknown		
V2	24 Sept 17	Edits, reformats	Munkhbat	Mat Brown	
V3	13 Mar 18	Edit, reformats	Ulziibayar	Mat Brown	

1 Introduction

Drill core samples are generally 2.0 metres in length, either half or quarter cut sections. There are number of sizes of core: PQ, HQ and NQ, with HQ and NQ the most common for Kharmagtai. Samples also consist of QAQC Samples (standards, field blanks, pulp and core duplicate samples). The sampling process is the final, and one of the most important processes in the handling of drill core. The geologist must pay attention to the sampling intervals, orientation and cut lines, and marking the high grade mineralisation. The core shed Field Technician is to ensure correct labelling and bagging of core samples, placing the correct sample of core into the correct bag and prepare the samples for dispatch to the lab.

2 Hazards

Manual Handling

3 Equipment Required

Dispatch Sheet

Standards

Field blank samples

Black paint marker pen/ Red paint marker pen

300 mm x 380 mm (12” x 18”) plastic and calico bags

Sample No. tags

600 mm x 910 mm (24” x 36”) rice bags with plastic insider

Adhesive labels for plastic/rice bags

Cable ties

4 Safety Equipment

Standard Xanadu Mines as per **MS** (Mongolian Standards) requirements

Goggles, safety glasses

Work gloves

5 Creating Sample Intervals

A guideline for the geologist to decide upon the sample intervals is listed below in order of priority (Table 1):

1. Sample interval start/finish at the lithology contacts, or mineralisation contracts or alteration or structures.
2. Sample interval where the core loss is greater/equal to 20 cm. Sample intervals can be across core loss less than 20 cm.
3. End sample lengths at **"even number"** meter marks where possible, especially when doing 2 meter samples.
4. Maximum sample length of 2 m
5. Minimum sample length of 30 cm.
6. In broken core or where metre marks are not accurate, use the drillers core blocks for sample intervals (Would not be able to do block to block >2 m sample runs)

Table 81: Sample Intervals

2 m	0.3 to 2 m
Continuous sampling for geochemical purposes	Selective sampling of high grade mineralisation <2 m
Composite sampling for low-grade > 10m intersections e.g., White Hill zone Cu	Selective sampling of discrete zones < 2 m that represent specific high grade zones e.g., Golden Eagle CBM-Au zone
Composite sampling of a number of high grade zones that cannot be mined discreetly or do not show an association with a single structure	Make up irregular sample interval to even metre mark

6 Creating Dispatch Sheet Samplers

Once the sample intervals are created in Excel in a database, the geologist then needs to create a "Drilling Dispatch Sheet". The lab will assay a batch of 50 samples (containing 45 drill core samples, and 5 QAQC samples).

The 5 QAQC samples contained in each dispatch consists of:

Field Blanks; FB, calico bag with Khan Bogd granite;

Core Duplicates; CORE DUP, comprising the 1/4 cut drill core.

Standard Reference Material (STD); plastic and calico bags with a packet of SRM

The geologist must decide upon the most appropriate standards to include in the dispatch.

Please see QAQC for a list of all standards used at Kharmagtai project and their certified grades.

7 Instructions to core shed samplers

7.1 Dispatch Sheet Samplers

Standards, tickets, security tags are all stored at the Kharmagtai Core Shed.

The Project Geologist prints out the Dispatch Sheet Samplers, then gives it to the Sampling geologists, who will then prepare the standards, security tag and tickets. One batch of sampling form should contain 45 samples of drill core samples and 5 QAQC samples, using the following form:

10th sample will be a **standard (one of 501c/503c/504c)**

20th sample will be a **field blank**

30th sample will be a **duplicate of the sample before (19)**

40th sample will be a **standard (one of 501c/503c/504c)**

50th sample will be **field blank** this form will continue until dispatch closes.

One dispatch should contain one hole and should continue until maximum sample size 200 is reached and/or until the depth at which the hole terminates. If the hole is too deep, a second batch of sample should be opened using the above form again.

7.1.1 Example of ‘Sample Sheet’ (Dispatch Cut Sheet)

The Field Technician is to highlight all QAQC samples cut sheet with a highlighter pen. that are listed on the dispatch cut sheet.

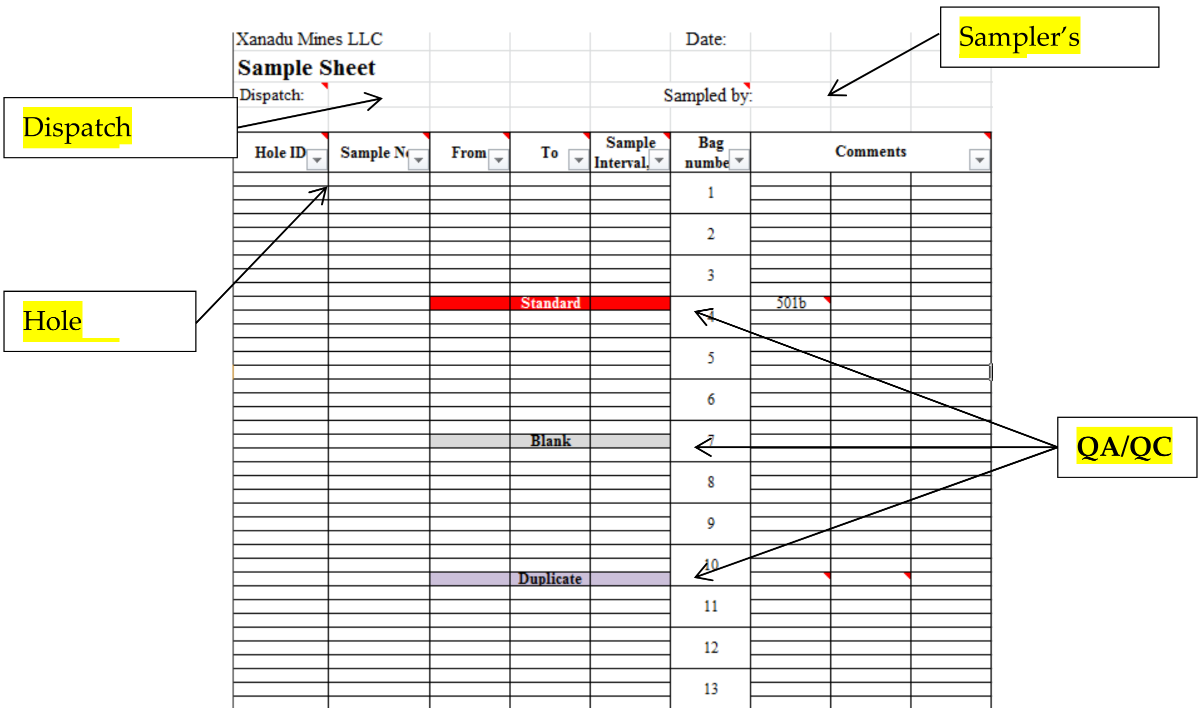


Figure 1. Sample Dispatch Sheet.

Showing highlighted QAQC samples

7.1.1.1 Core Shed bag writing, Sampling and Bagging Drill Core

7.1.1.1.a Writing up Calico Bags

Starting with the first sample number on the dispatch sheet, write the sample numbers (figure 2) on a calico bag. Continue in for a total of 45 labelled calico bags. As each sample number is written, a small tear-off paper ticket with a number corresponding to the bag number is placed inside the calico bag.

Figure 2. Calico bags with Sample Number

7.1.1.1.b Standards

Standards in a calico bag are located in the core shed and inserted with each "Dispatch Sheet". See Figure 3 for an example of a standard sample.

Tear off the Kraft bag and discard the coloured tag at the bottom of the bag, e.g., it may have codes ***501c, 503c*** or ***504c*** written on it. Place the bag containing the standard into the appropriate calico bag labelled with the sample number, along with a tear off sample ticket, as per the dispatch sheet**.**

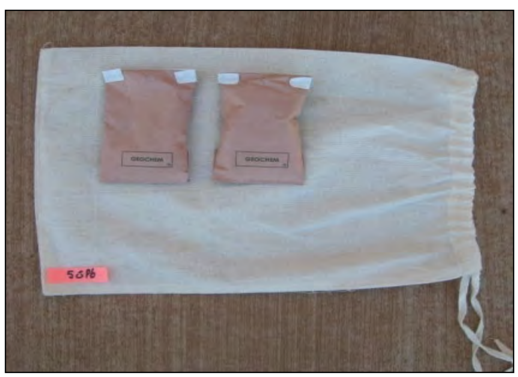


Figure 3. Example of a Standard Sample

7.1.1.1.c Field blanks

Field Blanks samples contain **Khan Bogd granite***, s*upplies of which are kept at the core sheds. Two cups of Field Blank material are to be placed in the Field Blank sample bag. From the provided sample ticket book, tear-off a sample ticket with the correct sample number and place in the calico sample bag, as per the dispatch sheet**.**

7.1.1.1.d Core duplicates

The Core Duplicate sample is the **Left Hand** and ¼ of the cut core that remains in the tray. The calico bag should contain the appropriate tear-off sample number ticket and labelled as per dispatch sheet. There should be no core left in the tray over the 2 metres sampled. Bag should be tied.

7.1.1.2 Labelling large rice bags

On the sticky labels, which will be attached to the front of the green plastic/rice bags, write the dispatch number, the sample to and from, and the number of bags as below:

TO: ALS LAB ULAANBAATAR

DISPATCH: 20181001

Sample: From: XD25001 To: XD25004

Bag 1 of 8

7.1.1.3 Marking sample numbers on core trays

The sample numbering is to be written on the tray divider in red paint marker (e.g., **XD88947**) at the start of each sample interval after the metre mark, as shown in Figure4 below. The Field Technician is to cross check against instruction sheet and mark all intervals as identified.

Figure 4. Sample number on core tray at start of the 2.0 m sample interval.

8 Bagging of Samples

Sampling is best done looking down hole. Stand at the end of the tray with the hole number and tray number marking. Put the core from the end of the sample interval into the sample bag first, then work your way back to the start position of the previous sample, i.e., if the sample interval is 102 m to 104 m, start at 104 m and work back to the start of 102 m.

The calico bags are then to be arranged in order on the bench or floor as they are filled so they can be checked upon completion of the sampling process.

The right hand half (looking down-hole) of the cut drill core for each sample interval is to be placed in the calico bag. Ensure that pieces of drill core will not puncture the calico bag. Break long sharp pieces into smaller sections. Double bag if necessary. It is important to include small sample pieces that are within that interval. A stainless steel spoon should be used to collect chips and core dust.

Mark on the 'Dispatch Sheet" as you go, that the samples have been taken.

8.1 Checking Samples in Calico Bags

Upon completion of the sampling process all calico bags are to be checked against the dispatch sheet. Ensure that all drill core samples, standards, field blanks and core duplicates are in their correct position. Each bag should contain the correct sample and be closed securely, with a cable tie.

8.2 Check Rice Bags

After all the rice bags have been filled with calico sample bags, use the dispatch sheet as a guide to ensure they are in their correct order and contain the correct samples. Ensure all bags are securely closed and labelled correctly.

9 Transport of the Bags

The Geologist and the Field Technician will decide the date the bags are to be picked up from the core shed and transported to the assay laboratory by the Sample truck.

A dispatch shipment form is completed, listing all the dispatches, security tags used and SSM that are being transported.

10 Paperwork to QAQC Specialist

Upon completion of the sampling procedure, the dispatch sheets, and the Dispatch Shipment Form are to be given to the GIS/QAQC specialist in UB office.

11 References

S11-SOP-158 Manual Handling