1 December 2021 ASX:QML

QMINES LIMITED

Australia's Next Copper & Gold Developer...

Mt Chalmers Resource Increases By 38% With 78% Now In Measured & Indicated

Highlights

- QMines delivers second Resource estimate at Mt Chalmers following its listing in May 2021;
- Resource grows by **38%** to **5.8Mt @ 1.7% CuEq** for **101,000t contained copper equivalent**;
- Resource estimate also delivers **78% in the Measured & Indicated** categories;
- Several additional VHMS prospects have been identified outside the Resource demonstrating further growth potential; and
- **Drilling continues unabated (+30,000m) with a third Resource upgrade planned for H1-2022.**

Overview

QMines Limited (**ASX:QML**)(**QMines** or **Company**) is pleased to announce its second Mineral Resource Estimate (MRE) at its flagship Mt Chalmers Project, located 17km north-east of Rockhampton in Queensland (Figure 1).

Hyland Geological and Mining Consultants (HGMC) have updated the Mt Chalmers wireframes and bulk density estimates for the Mt Chalmers mineralised zones delivering a new block model and MRE. Importantly, the MRE delivers a maiden Measured and Indicated Resource which now account for 78% of the MRE shown in Table 1.

The new MRE at Mt Chalmers further strengthens the Company's view that Mt Chalmers has future development potential.

Management Comment

QMines Executive Chairman, Andrew Sparke, comments:

“As the Company only listed in May 2021, it is a fantastic achievement to be delivering a Resource upgrade for our shareholders in such a short period of time. I would like to thank our technical team and consultants for all their hard work in delivering this result for our shareholders.

It is very pleasing to see that the upgraded Resource has substantially grown in both size and confidence level, with the Measured and Indicated categories now comprising 78% of the overall Resource.

QMines has identified several VHMS prospects outside the known Resource that bode well for further Resource upgrades and the potential for future development.

Our team is now preparing to deliver a further Resource update which is planned for the first half of next year.”

Mt Chalmers Resource Estimation

QMines first Resource estimate at Mt Chalmers was completed in February 2021 by Mr Simon Tear of H&S Consulting (H&SC) which was published in QMines Prospectus dated 16 March 2021[1]. This maiden Resource was based on a 2005 Resource estimate by McDonald Spiejers as part of a prospectus for Echo Resources Limited, which itself was based on a 1996 estimate by McDonald Spiejers.

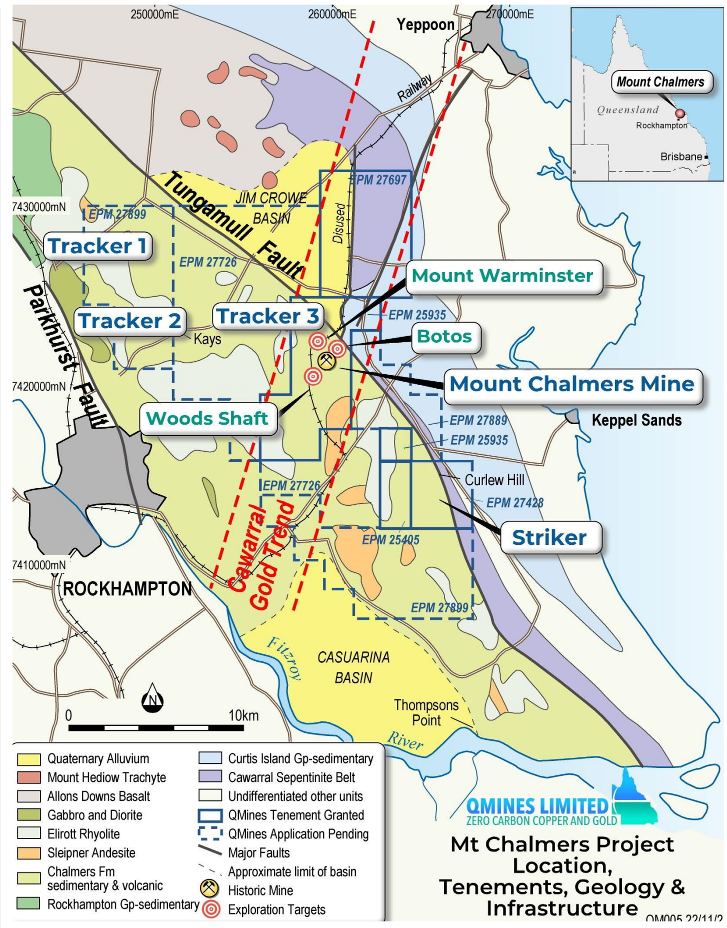


Figure 1: Location of Mt Chalmers Project, tenure, geology & infrastructure.

QMines second Mineral Resource Estimate is a new independent estimate undertaken on its flagship Mt Chalmers Project. The report includes all historical and recent drill results delivered by the Company since listing on ASX in May 2021 (Table 4).

This estimate incorporates base and precious metals contained in the Mt Chalmers deposit including copper, gold, silver, lead and zinc.

Mt Chalmers is a brownfields VHMS project that was mined sporadically up to 1982. The MRE is reported in accordance with the guidelines of the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC 2012) with Resource estimate categories shown in Table 1 and global Resource estimate by copper equivalent tonnes shown in Table 2.

[1] QMines IPO Prospectus, https://wcsecure.weblink.com.au/pdf/QML/02371164.pdf, 16 March 2021.

Resource Estimate

Resource Category	Cut-Off Cu %	TONNES Metric	Cu %	Au g/t	Zn %	Ag g/t	Pb %	Cu t	Au Oz	Zn t	Ag Oz	Pb t
Measured	0.30	2,934,000	0.98	0.78	0.22	5.12	0.08	29,500	73,000	6,700	483,000	2,500
Measured	**0.50**	**2,088,000**	**1.22**	**0.98**	**0.22**	**5.58**	**0.08**	**26,000**	**66,000**	**4,700**	**375,000**	**1,700**
Measured	0.70	1,546,000	1.44	1.17	0.22	5.87	0.08	23,000	58,000	3,500	292,000	1,700
Indicated	0.30	3,908,000	0.76	0.41	0.25	5.61	0.11	30,500	52,000	10,100	705,000	4,300
Indicated	**0.50**	**2,492,500**	**0.98**	**0.50**	**0.25**	**5.69**	**0.10**	**25,000**	**40,000**	**6,300**	**456,000**	**2,600**
Indicated	0.70	1,628,500	1.18	0.60	0.26	5.98	0.11	20,000	31,000	4,300	313,000	1,800
Inferred	0.30	2,121,000	0.66	0.19	0.09	3.33	0.04	14,000	13,000	2,000	227,000	800
Inferred	**0.50**	**1,264,500**	**0.85**	**0.24**	**0.08**	**3.42**	**0.03**	**11,000**	**10,000**	**1,000**	**139,000**	**400**
Inferred	0.70	697,000	1.06	0.19	0.05	3.29	0.02	7,500	4,000	400	74,000	200

Table 1: Resource Estimate by Resource Categories, November 2021. Note rounding errors may occur.

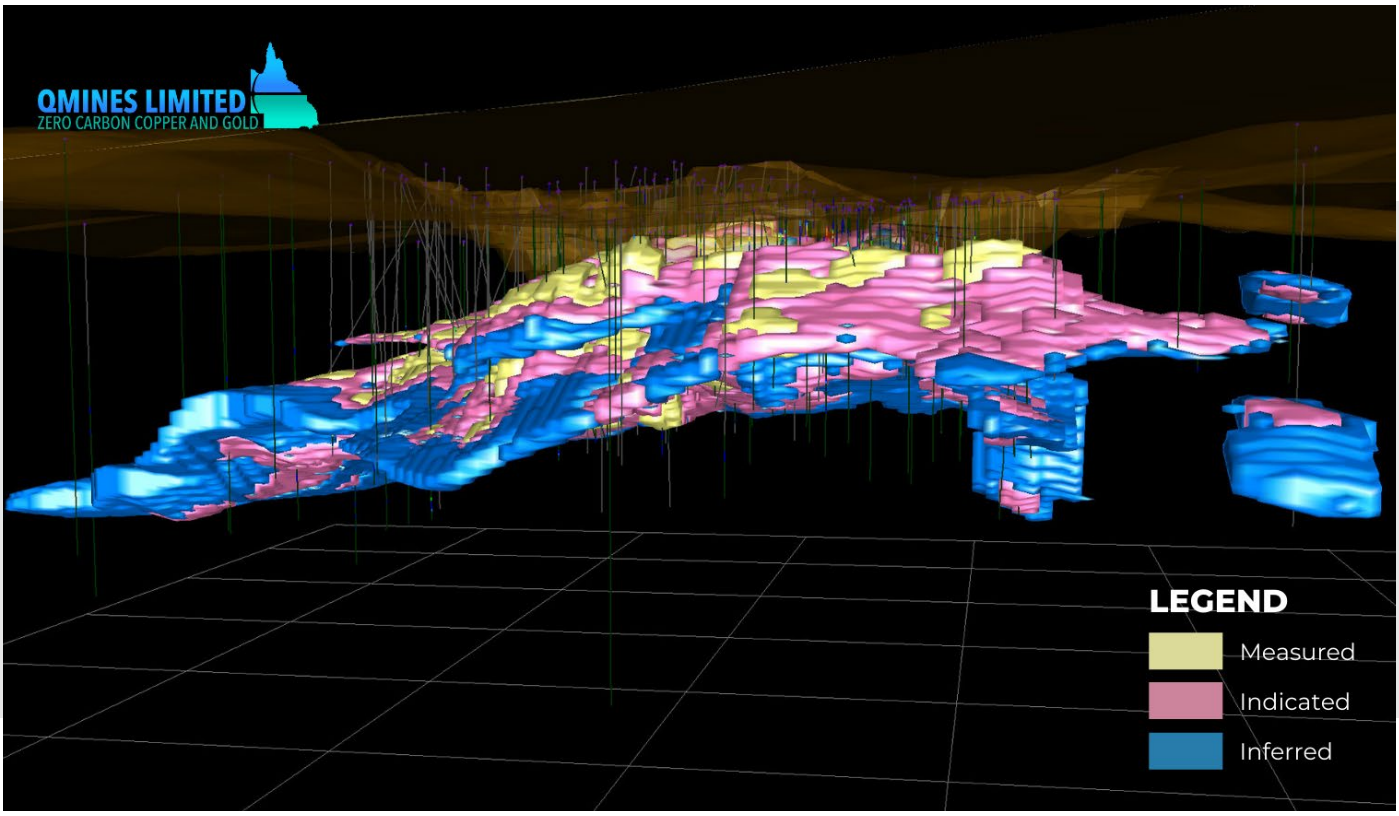


Figure 6: Mt Chalmers Measured, Indicated, Inferred and Unclassified Resources Block Model using a Cut Off of 0.3% Cu (Oblique View: Looking Towards Grid Azim 80° and Dip looking up slightly +5°, Grid Shown 200m x 200m)

Copper Equivalent Tonnes

Resource Category	Cut-Off Cu (%)	TONNE Metric	Cu (%)	Au g/t	Zn (%)	Ag g/t	Pb (%)	Cu Eq (%)	Cu Eq t
Total	0.30	8,963,000	0.81	0.48	0.21	4.91	0.08	1.36	123,000
Total	**0.50**	**5,845,000**	**1.04**	**0.62**	**0.20**	**5.16**	**0.08**	**1.70**	**101,000**
Total	0.70	3,871,500	1.26	0.75	0.21	5.46	0.08	2.04	80,000

Table 2: Global Resource Estimate by Copper Equivalent Tonnes, November 2021. Note rounding errors may occur.

Geology

The geology of the Mt Chalmers area is relatively well-known, with the Mt Chalmers mineralisation being identified as a well-preserved, volcanic-hosted massive-sulphide (VHMS) mineralised system containing copper, gold, zinc, lead and silver. Mineral deposits of this type are deemed syngenetic and formed contemporaneously on, or close to, the sea floor during the deposition of the host-rock units. The mineralisation is believed to have been deposited from hydrothermal fumaroles, or direct chemical sediments or sub-seafloor massive sulphide replacement zones and layers, together with footwall disseminated and stringer zones within the host volcanic and sedimentary rocks.

The mineralisation system at Mt Chalmers displays some similarities to Australian VHMS deposits of Cambro-Ordovician and Silurian age, however closer comparison can be made with the Kuroko-style of VHMS of Tertiary age in Japan (Taube 1990).

The Mt Chalmers mineralisation is situated in the early Permian Berserker Beds, which occur in the fault-bounded Berserker Graben, a structure 120km long and up to 15km wide. The graben is juxtaposed along its eastern margin with the Tungamull Fault and in the west with the Parkhurst Fault (Figure 1). The Berserker Beds lithologies consist mainly of acid to intermediate volcanics, tuffaceous sandstone and mudstone (Kirkegaard and Murray 1970). The strata are generally flat lying, but locally folded. Most common lithotypes are rhyolitic and andesitic lavas, ignimbrites or ash flow tuffs with numerous breccia zones.

Rocks of the Berserker Beds are weakly metamorphosed and, for the most part, have not been subjected to major tectonic disturbance, except for normal faults and localised high strain zones that are interpreted to have developed during and after basin formation. Recent geological work by the Queensland Department of Natural Resources and Mines places volcanic and sedimentary units of the prospective Chalmers Formation, the host unit to the Mt Chalmers copper-gold mineralisation, at the base of the Berserker Beds.

The Ellrott Rhyolite and the Sleipner Member andesite were emplaced synchronously with the deposition of the Chalmers Formation. Late Permian to early Triassic gabbroic and dioritic intrusions occur parallel to the Parkhurst Fault. Smaller dolerite sills and dykes are common throughout the region and in the Berserker Beds.

The geometry of the Mt Chalmers ore body indicates a relatively flat lying asymmetrical massive sulphide mound (Figure 2). Both historical and recent drilling results intersecting higher grade Cu-Au massive sulphides the interpreted source rhyolite dome and high grade Pb, Zn, Ag in the massive sulphide and exhalate ore body the interpreted source rhyolite dome. Similar metal zoning has also been observed in the stringer/disseminated zone beneath the massive sulphide zone where Cu-Au grades are typically higher close to the dome and Pb, Zn, Ag grades typically higher away from the dome.

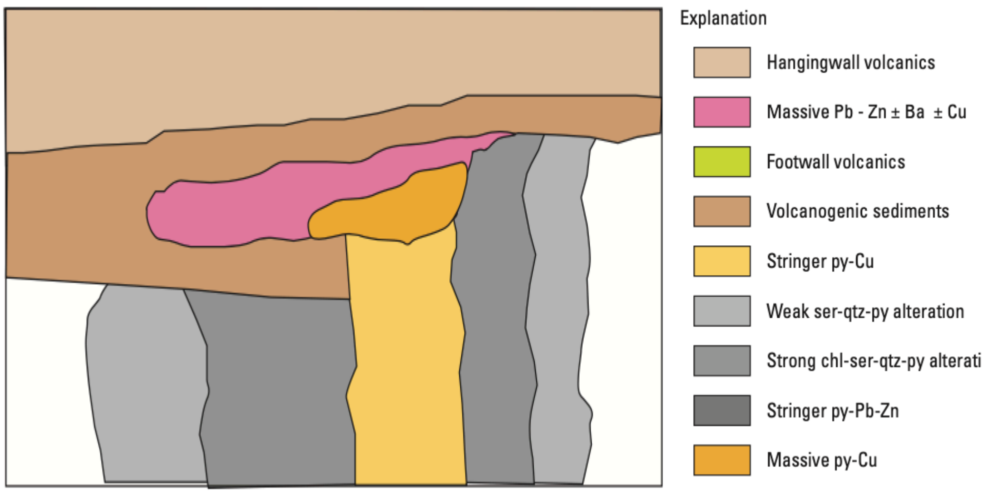


Figure 2: Mt Chalmers Example VHMS Asymmetric Mound (Slack, USGS 2010).

Geological Interpretation

A geological interpretation was completed by Dr Brett Davis[1], an Independent Structural Geologist and Consultant, and Mr Tom Orr of Orr and Associates and has been supplied to HGMC as a series of 2D (Figure 3) and 3D DXF files, which were imported into Surpac. The digitisation of the drillhole database by QMines allowed for the generation of 3D mineral constraining solids and geological surfaces for a combination of 20m and 40m spaced sections.

The Resource is divided into three mineralisation types, namely Massive, Exhalite and Stringer and their oxide equivalents. The deposit has an overall strike length of approximately 700m north-south and an east-west extent ranging between 250m and 350m. There are zones up to 50m of thickness for the stringer zone and 5m to 20m for the massive sulphide domains. Mineralisation is exposed in the pits and extends to a vertical depth of 200m below surface.

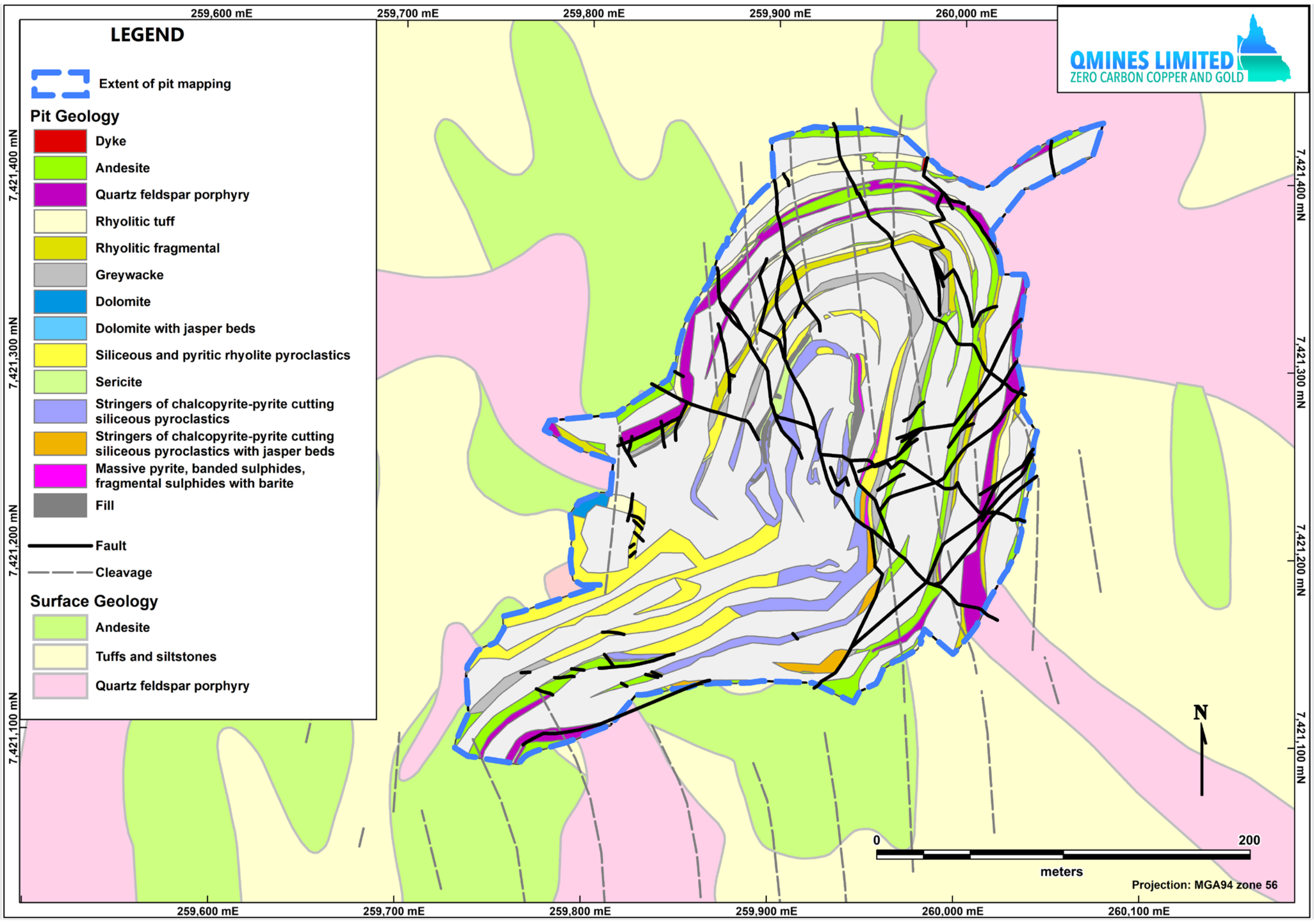


Figure 3: Geological Interpretation Mt Chalmers Project (Orr & Associates, November 2021).

The massive sulphide and exhalite zones are relatively flat-lying flanking a rhyolite dome with a variying in dip between 10° and 40°. These zones are part of an encompassing exhalite horizon that immediately overlies a footwall stringer mineralised zone. Four massive sulphide mineral zones within the encompassing exhalite horizon were defined using logged geology with reference to copper, gold and sulphur assay grades.

A geological surface was created for the base of complete oxidation from information from current QMines logs and the historical Geopeko logs. The surface was inferred by interpolation from the digital terrain model (DTM) and appears in Figure 4. The recent QMines drilling programs have provided more specific information, validation of historical drilling undertaken by previous companies and QAQC for all holes drilled by QMines at the project.

[1] Further Broad High-Grade Copper, Gold and Zinc Intersections, https://wcsecure.weblink.com.au/pdf/QML/02455979.pdf, 23 November 2021.

There is no evidence of gold enrichment or depletion in the oxide zone but there is some evidence of copper depletion in the oxide zone and possibly some minor supergene copper enrichment locally.

Drillhole geology was checked by HGMC against the QMines interpretation. The interpretation was checked by HGMC in 3D against drillhole assays grades with no significant issues being noted. The geological understanding of the deposit appears to be significantly improved through work done by Brett Davis and Tom Orr and is appropriate for Resource estimation. The style of mineralisation and the orebody type means there is a strong lithological control to the grade and geological continuity.

HGMC has not undertaken a site visit due to COVID border restrictions however has relied upon numerous recent site visit reports from geological contractors and consultants currently involved with the Mt Chalmers Project.

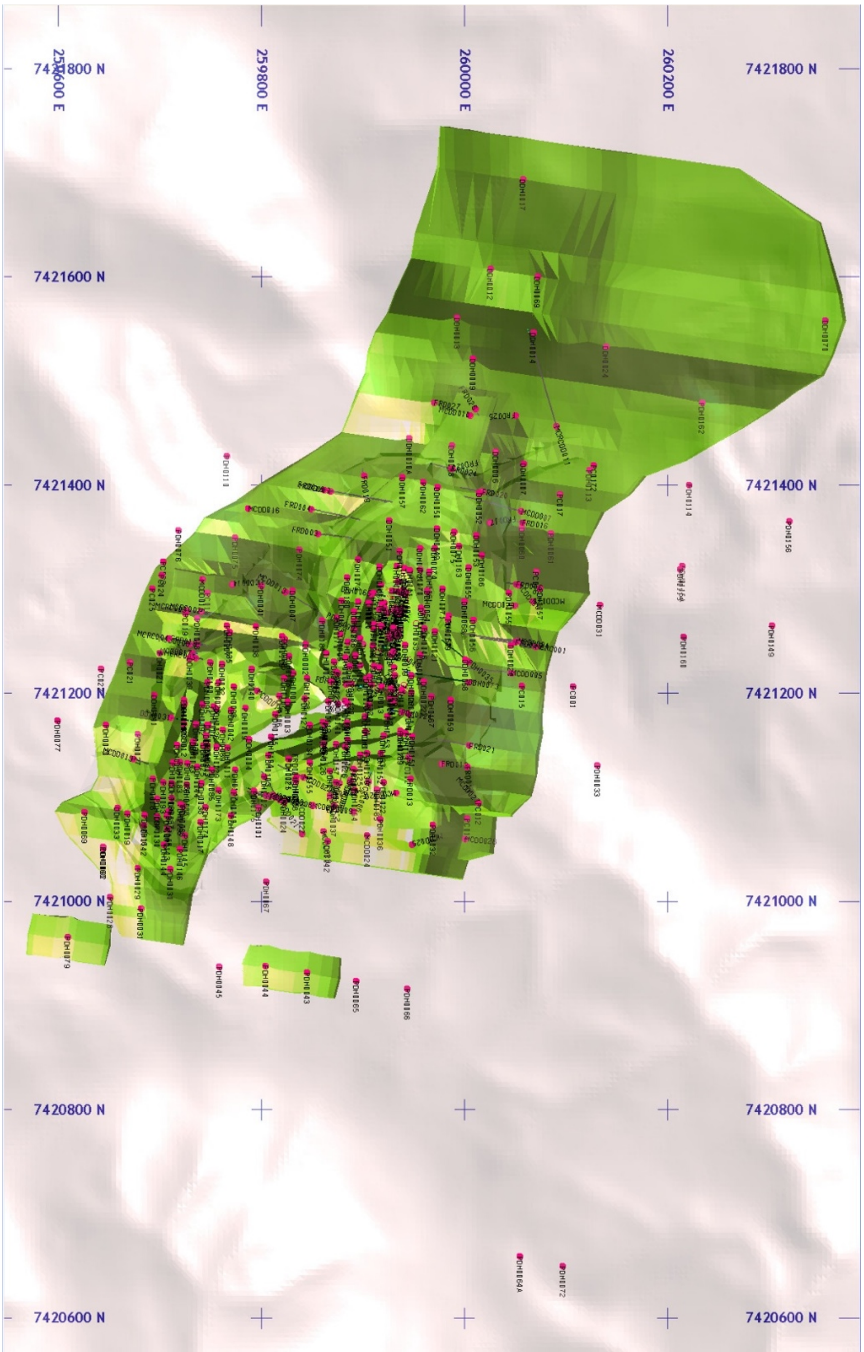


Figure 4: Digital Terrain Model Mineral Zone Dimensions & Drillhole Locations in Plan View.

Structural Geological Report

In October 2021, QMines engaged Dr Brett Davis[1] to undertake a detailed study of the structural geological constraints of the Mt Chalmers VHMS deposit. Dr Davis spent several days reconnaissance mapping at Mt Chalmers with the primary aim of providing a detailed structural geology interpretation to better inform the Resource model.

Summary

Mapping has been restricted to all accessible areas of the pits and a geology interpretation has been compiled for areas not currently modelled by QMines. The current mapping campaign has found that historical mapping, which is restricted to a moderate-quality scan, is of good quality and only requires interrogation or amendment where scanned features are illegible.

[1] Further Broad High-Grade Copper, Gold and Zinc Intersections, https://wcsecure.weblink.com.au/pdf/QML/02455979.pdf, 23 November 2021.

Structures comprising the architecture of the deposit have been divided into seven populations and tabulated on Table 3. Of these, four main structure sets are considered important for potential shape modification of mineralisation:

- Population #2 - Associated with intense zones of ~N-S trending cleavage development;
- Population #3 - The structures have localised mafic dyke emplacement and been active post-dyke, creating sheared intrusions that occupy the same planar structures;
- Population #4 – These structures are inferred as occurring at the southern end of Main Pit and traversing the West Pit. They are interpreted as a bounding structure to the interpreted geometry of the porphyritic rhyolite unit and potentially associated with Population #5; and
- Population #5 – Visually obvious, moderately-dipping structures in the eastern wall of the main pit and causing SE-side down displacement.

The presentation details the fault populations in terms of inferred kinematics, morphology, relative ages, orientations and potential.

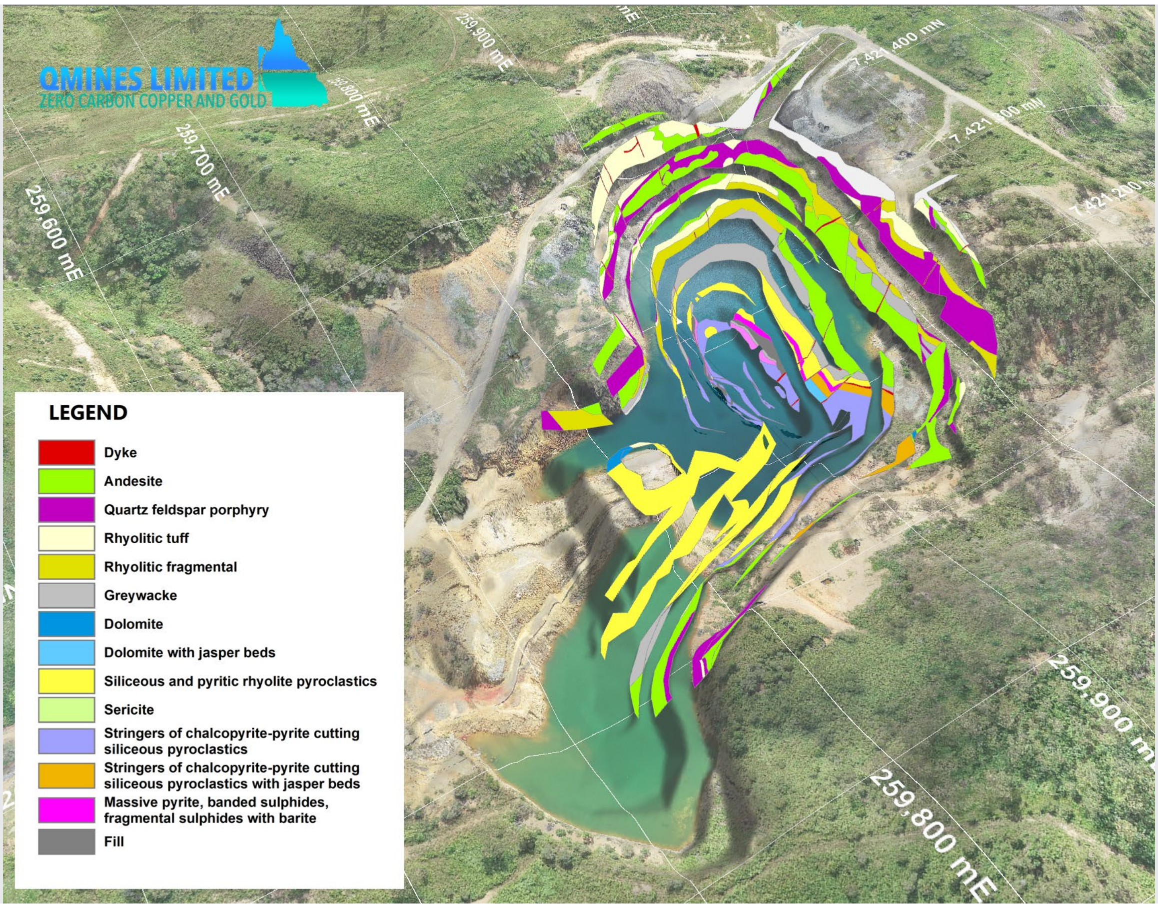


Figure 5: 3D Geological Interpretation, DTM and Aerial View of the Mt Chalmers Open Pits (Orr & Associates November 2021).

Fault Populations

The Mt Chalmers deposit is dissected by several sets of faults, all of which have potential to modify the 3D shape of the mineralisation. The fault populations are tabulated in inferred order of formation from oldest (Population 1) to youngest (Population 7).

Geological mapping derived from historical Geopeko records combined with Dr Brett Davis' recent mapping have been digitised by Orr & Associates and can be seen in Figures 7 and 8.

The complete Dr Brett Davis structural model of the Mt Chalmers VHMS deposit report can be found on the Company's website via the following hyperlink; https://bit.ly/3CGUrwT

Table 3: Fault Populations, Mt Chalmers VHMS Deposit.

Population Number	Location	Orientation	Inferred Kinematics	Potential Displacement Magnitude	Characteristics
1 – Ductile shears 1	Bounding upper surface of mineralised zone	~N-S striking and moderate dip to east on east side of Main Pit. Moderate dip to the west on the west side?	Sinistral on eastern side of the Main Pit	Probably minimal	May represent deformation of the exhalate and sericite-altered units that could accommodate shearing strain.
2 – Ductile shears 2	Throughout the deposit but less common in andesite	Strike is ~160-340 and dip is steep to east and west	Sinistral in plan, both W- side-down and E-side-down in section depending on location relative to domal mineralisation shape	Unknown, possibly metres to 10s of metres	Associated with intense zones of ~N-S trending cleavage development.
3 - Dyke faults	Occupy same positions as mafic dykes; only noted in Main Pit	Strike is ~140-320 and dip is steep	W-side-down, both sinistral and dextral in plan. Suggests movement is dominantly dip-slip.	Unknown, possibly metres to 10s of metres	The structures have localized mafic dyke emplacement and been active post-dyke, creating sheared intrusions that occupy the same planar structures.
4 - E-W to NE- SW faults	Southern end of Main Pit and traversing West Pit. Inferred as a bounding structure to the interpreted geometry of the porphyritic rhyolite unit.	E-W to NE-SW strikes with inferred steep dips	Possibly sinistral based on change in cleavage orientation.	Unknown. 10's of metres?	Inferred as marking boundary between sequences of markedly different orientation and competency. Potential continuous with fault set #5
5 - WNW-ESE faults	South of Main Pit		Dextral separation	Several metres	Possibly part of the E-W fault population #4
6 - NE-SW faults	East wall of Main Pit	NE-SW striking and moderately dipping	Oblique, sinistral, SE-side- down	Metres, but probably not more than 10m on individual faults	Visually obvious in east wall of Main Pit, progressively steeping the sequence down to the south.
7 - Brittle fracture arrays	Berms on northern side of Main Pit	ENE-WSW strikes and steep dips	Dextral, E-side-down	Probably minimal	Characterised by brittle deformation and Fe-carbonate veining

Resource Estimation

HGMC has reviewed the Company's Independent Geologist Report by H&SC contained in the QMines Prospectus published on 16 March 2021, as well as available historical Resource reports by McDonald Spiejers in 1996.

HGMC has completed an upgraded Mineral Resource Estimate and Resource Report based on the digitisation of historic drill holes including some recently acquired historic databases and drilling undertaken by QMines since acquiring the project. QMines recent drilling commenced at Mt Chalmers in March 2021 and includes a series of new diamond and reverse circulation (RC) drillholes. This work has enabled HGMC to update and upgrade the Resource estimates under the 2012 JORC Code & Guidelines.

Drilling Technique & Data

The Mt Chalmers deposit has historically been drilled with a combination of percussion drilling ("PDH") including open hole percussion, Reverse Circulation (RC) and diamond core drilling (Table 4). Percussion drilling was with a Mayhew 1000 or a Mayhew 1500 rig with 114.5mm down hole hammer bit. Geopeko diamond drilling used core sizes ranging from NQ to BQ whereas Federation mostly used HQ with some NQ where required.

Figure 8: Two Drill Rigs in Operation at QMines Flagship Mt Chalmers Project

Many holes were initially drilled using an open hole percussion or RC drilling method and tailed with a diamond drill hole. The vast majority of drillholes were vertical. No core orientation data is available from historical records.

QMines 2021 drilling was undertaken using a multi-purpose UDR 650 track mounted rig, and a Hydco 1000 Dual purpose truck mounted rig. RC drilling utilised 114.5mm diameter RC rods and 140mm percussion face-sampling hammer with auxiliary air packs and onboard air. Diamond tails were drilled by a track mounted Hyundai Dasco 7000 diamond core rig. Coring was completed with HQ triple tube with the core sample being orientated using REFLEX ACT111 core orientation tool.

No historical sample recovery data is available for either the diamond drilling or the RC drilling. Historic reports indicate 90% sample recovery from the Geopeko drilling except for weathered and oxide zones (these zones have now been mined out). No documentation for any RC sampling procedures was found in historical reports available to the Company.

Since acquiring the project, QMines has undertaken several diamond core and RC drilling programs since drilling commenced in March 2021 (Table 4). The drilling was designed to validate historic work and extend the Resource wireframes. The Company has delivered suitable quality control data (QAQC), further reinforcing the confidence in the historical drilling undertaken by Geopeko and other explorers at Mt Chalmers.

Both the historical and current drilling methods used are typical of current industry practices and are considered to be reliable methods, delivering results suitable for Resource estimation. The lack of historical sample recovery data has been remedied by the recent diamond and RC drilling work undertaken by QMines. Diamond core and RC drilling sample recovery rates average 93 - 95% of all metres drilled in both the mineralised and unmineralized zones. It is now possible to establish the relationship between sample recovery and metal grade.

The Mt Chalmers deposit is a generally flat-lying mineral deposit and the majority of drillholes are vertical providing a good intersection angle with the mineralisation. Holes drilled on a sixty-degree dip are estimated to represent 87% true width. There is no obvious sampling bias with the drilling orientation.

Drillhole Database

QMines supplied a comprehensive recently digitised drillhole database for the Mt Chalmers deposit which HGMC reviewed and accepted as an accurate, reliable, and complete representation of the available data. HGMC imported the data into a 'resource' Microsoft Access database that was then transferred into MineSight mining software for viewing in 3D. HGMC performed limited validation of the data including error checking. The drillhole database for the Mt Chalmers deposit was deemed to be satisfactory for Resource estimation purposes; however, responsibility for the data and data quality resides with QMines. All historical drilling was competently logged by Geopeko with the production of hardcopy logs and cross sections.

QMines drilling programs have been competently logged by Company geologists with all logging data directly recorded into a Panasonic Toughbook. Logging codes were established by H&SC prior to commencement of drilling operations and were a mixture of quantitative and qualitative data. Geological information originally consisted of lithology descriptions, alteration, mineralisation and oxidation levels. All data is available in a digital format. All core trays have been digitally photographed and stored in the Company electronic database.

All hardcopies of historical drillhole data were compiled from open-file reports held by the Geological Survey of Queensland (GSQ) and together with current data was used to create a comprehensive drillhole database for Resource estimation purposes (Table 4).

Digital geology data and Digital Terrain Models were supplied to HGMC in order to compare the assay data and the geological interpretation and mineral distribution. HGMC's assessment of the data confirms that it is suitable for Resource estimation.

Substantial documentation on the validation of the database was provided and confirmed by HGMC. QMines state that all available data was compiled and verified by Lisa Orr and Tom Orr of Orr and Associates who used a complete set of original drill logs and mine records held in open-file reports submitted to the GSQ.

Hole Type	Number	RC Meters	Diamond Meters
Resource Drill Hole Table – QMines Drilling			
Diamond	12		1,520.40
RC Pre-Collar & Diamond Tails	20	1,442.20	1,267.33
RC	9	685.00	
RC Pre-Collar Drilling	13	900.00	
TOTAL	**54**	**3,027.20**	**2,787.73**
Resource Drill Hole Table – Historic Drilling			
Diamond	32		3,393.95
RDH Pre-Collar & Diamond Tails	72	4,106.81	3,894.82
RDH	237	11,824.43	
TOTAL	**341**	**15,931.24**	**7,288.77**
GRAND TOTAL	**395**	**18,958.44**	**10,076.50**

Table 4: All new and historical drillholes and meters drilled used in the Resource upgrade.

Sampling & Sub Sampling

Historical sampling consists of either 1m intervals of chip material sub-sampled to 2kg for RC samples or 1m sawn or split half core samples yielding approximately a 3-5kg sample. All sample material submitted to the laboratory are crushed and pulverized to give a 200g sample from which a sub-sample of 30g is taken for base metal analysis and a 50g charge for gold by fire assay.

There is no documentation concerning the analytical method used by Geopeko, but the work was completed at the Mount Morgan minesite laboratory and presumably the analysis was to an acceptable level. The Mt Morgan operation has since shut down and the laboratory no longer operates.

Analysis of the 1994 Federation drillcore was completed by ALS using a mixture of ICP and 50g charge fire assay with atomic absorption spectroscopy (AAS) for base metals and gold, respectively. Analysis initially used ICPAES method (IC587) on a 4-acid digest for Cu, Pb, Zn, S, Ag, As, Ba, Fe and Mn. After the initial 3-4 batches of samples the laboratory introduced an AAS method (A101) on an aqua regia digest to check Cu, Pb, Zn and Ag assays for higher grade (ore-grade) samples. Fire assaying using a 50g charge with an AAS finish (PM209) were used for the gold analysis.

Historical QAQC programmes were limited and are not considered to be consistent with current industry practices. There are few reports from the historical drilling campaigns of any certified reference materials (CRM) being used to assess the accuracy of the analysis. Despite the lack of documentation describing the analytical methods and the lack of QAQC it is reasonable to assume that the historical analysis was to an acceptable level at the time of its completion and that the results, in the opinion of the Competent Person, are useable.

All core and RC samples from QMines recent drilling programs were submitted to ALS Laboratories in Brisbane for assay, with appropriate QAQC procedures and validation of historical drillholes. ALS base metal suite ME-ICP61 (ICP-AES on a four-acid digest, 25g sample) was used to analyse for Ag, As, Ba, Cu, Pb, S and Zn with Au analysed by AA25 (fire assay with AAS finish on a 30g sample) method. Sample preparation and base metal analysis was undertaken in Brisbane, and Au determined by Fire Assay completed at ALS laboratory in Townsville.

The Company submits batches to ALS from all drill programs as they come to hand. An analysis of duplicate sample assays suggests there is no significant bias. Certified reference materials (CRM) and blanks are inserted at regular intervals (1 in 20 samples or 5% for RC samples and 1 in 11 or 9.4% for diamond drillcore samples) with suitable CRMs being supplied by OREAS Pty Ltd and GEOSTATS Pty Ltd. Duplicate samples are prepared by splitting RC samples or from quarter-core and are submitted at a rate of 1 in 50 samples (2%) for RC samples and 1 in 32 samples (3.1%) for diamond drillcore. Internal laboratory QAQC reports are delivered by ALS with certification of assay method used and certified assay results. These results are delivered to the project geologist, drillhole data base manager and the Company.

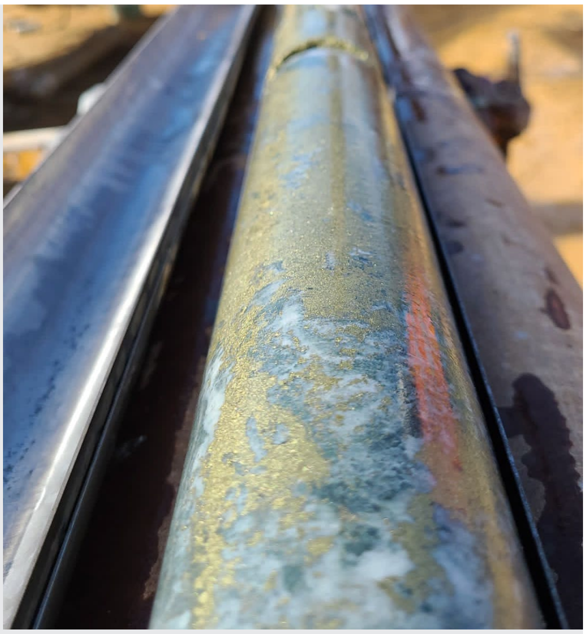


Figure 9: Drill Hole MCDD015 Showing Semi Massive Chalcopyrite Stringer.

QAQC data for each assay reporting batch is reviewed as they are received. Batches deemed to have failed the QAQC analysis are re-assayed.

Topography
The current topography was defined by the Company who delivered a Digital Terrain Model (DTM) flown by drone survey. The quality and accuracy of the DTM data capture has been validated and independently processed by Minecomp Surveying.

SAMPLE LOCATIONS
All work was completed in the Geopeko local grid which was an orthogonal grid rotated approximately 90° anti-clockwise i.e. a magnetic north grid. Percussion holes (Geopeko) were not surveyed downhole; however, it should be noted that virtually all of them were vertical and are considered by QMines to have had very limited deviation. Pre-Federation diamond drill holes, logs and sections only showed evidence of down hole surveying for one hole but the survey details are not recorded in the log. The remainder of the diamond drill holes are assumed not to have downhole surveys. Federation drill holes were surveyed at intervals of approximately 50m using an Eastman single shot borehole survey camera supplied by the drilling contractors. QMines have assumed that all pre-1995 holes were straight, simply using the recorded collar bearings and dips as downhole surveys. This will no doubt result in some errors in the 3D location of samples, but since hole depths are typically about 50m-150m and most holes were vertical into relatively flat-dipping rocks, serious hole deviations are not expected to have been common.

The Geopeko drilling was initially on a nominal pattern of 40m x 40m which was subsequently infilled to a nominal 20m x 20m over most of the deposit, but with considerable local variation in hole spacings (Figure 4). Federation locally infilled or extended the 40m x 40m pattern, but on an irregular basis because of the access difficulties presented by the water-filled open pit. At the northern end of the stringer zone where the mineralisation becomes deeper the pattern ranges from about 40m x 40m to 40m x 80m. Downhole sampling was at 1m intervals. The data point spacing is appropriate for its use in generating Mineral Resources at the appropriate levels of confidence.

QMines have implemented a complete conversion of all historical drill collar surveys and local grids utilized by previous explorers, with Rockhampton based surveyors undertaking the conversion of local grid to GDA94 MGA Zone 56. This work was validated by Minecomp Surveying. The Company has converted from local historical grid to GDA 94 MGA Zone 56.

Estimation Methodology
All available Diamond, RC drilling data was used for the updated MRE. Drillhole collar positions have been accurately surveyed. Some historical drill hole collars were draped onto a 'triangulated' Digital Terrain Model surface and were checked in order to match the drill holes with actual collar surveys. The survey control for collar positions was considered adequate for the estimation of the reported Resources for Mt Chalmers as stated.

The mineralised domains were interpreted from the drilling data by QMines as 3D strings (in Micromine software) which were then linked to generate 3D wire-frames using MineSight software by HGMC.

These mineralised wire-frame domains were used for statistical analysis and grade estimation. Similar wire-frame or boundary surfaces were used to flag different geological (rock type) domains and weathering and oxidation zones. Material types broadly designated as the 'stringer', 'exhalite' and 'massive sulphide' zones which were further sub-divided as necessary according to being oxidised, transitional or fresh/sulphide material. These different material type zones were primarily used to designate deposit profile bulk density differences.

Dry bulk density (density) was assigned by material type with values assigned representing the average measured bulk density for that material type. The data was measured using Archimedes principals or densiometer based bulk density measurements and were recorded in the drilling database. The bulk density values applied in the deposit are: Stringer Zone = 3.00 t/m³, Exhalite Zone 3.20 t/m³, Massive Sulphide Zone = 3.80 t/m³, Weathered/Oxide = 2.20 t/m³, Transition = 2.50 t/m³ and Fresh (Sulphide) = 3.00 t/m³.

General statistical analysis and localised spatial geostatistics were analysed using the composited drilling data. Composites for all zones were set to 1m (based on the main Cu analytical item) and were used to generate semi-variogram models to analyse the spatial continuity of Cu, Zn, Ph, Au and Ag in the main mineralisation domain.

One (1) block model was constructed for the Mt Chalmers deposits using 5m x 8m x 2m block cells covering the entire extents of the mineralisation.

The block model coordinate boundaries (GDA94 MGA Zone 56) are as follows.

Mt Chalmers block model coordinate boundaries (GDA94 MGA Zone 56) are:

- 259,200m E to 260,600m E - (280 x 2.5m blocks)
- 7,420,400m N to 7,421,800m N - (175 x 8.0m blocks)
- -240m RL to 580m RL - (200 x 2.0m benches)

The Ordinary Kriging (OK) interpolation method was used for the estimation of the Cu, Pb, Zn, Au and Ag items using variogram parameters defined from the geostatistical analysis. The kriging interpolated items used different interpolation parameters as determined from the independent variographic analysis. A geostatistical review was completed to check correlation between the various estimated elements and like the H&S Resource modelling study, there is little correlation between gold and any of the other elements e.g. Cu, Ag, Pb and Zn.

An outlier 'distance of restriction' approach was applied to each element during the interpolation process and were set individually to each of the nine designated AREA mineralisation geometry domains. The outlier restriction level is determined based on analysis of the observed localised geostatistics and is intended to reduce the influence of very high-grade outlier composite samples. The outlier restrictions ranges applied during Kriging interpolation to each AREA domain were:

- Cu - 1 to 8 %
- Pb - 1 to 6 %
- Zn - 1 to 20 %
- Au - 1 to 28 g/t
- Ag - 10 to 205 g/t

During Kriging interpolation a minimum of 1 and a maximum of 24 composites were allowed within search ellipses. Anisotropic search ellipse in each AREA domain were set with different orientations to match the local dip and strike changes associated with each of the different mineral domains. Maximum search distance was 80m.

This new Resource model and Resource estimation was prepared by HGMC and is considered in line with current industry best practice. The block model produced fairly represents the grades observed in the drill holes.

Density Model

Historical default density values utilised by both H&S and MS in their Resource estimates were derived for the mineral domains from limited measured data. QMines during their diamond core drilling operations have taken multiple specific gravity (SG) measurements across all lithological domains using the water displacement method. The following bulk density values have been applied to the HGMS Resource Estimate.

- 3.0 t/m³ for stringer mineralisation;
- 3.2 t/m³ for exhalite mineralisation;
- 3.8 t/m³ for massive sulphide mineralisation;
- 2.2 to 3 t/m³ for oxidised versions of the above mineral domains; and
- 3.04 t/m³ default average bulk density value.

Cut-Off Grade

HGMC has used a default 0.5% Cu as the cut-off for reporting mineral Resources from the final block model. The three-dimensional wireframe models of mineralisation were based on 0.5% Cu cut-off grades for gold, silver, lead and zinc.

Reconciliation

Production figures from mining by Geopeko comprise both underground and subsequent open pit operations are incomplete. However, reconciliation between the historical block model prepared by McDonald Spiejers (MS) in 1995 and the historical production are considered adequate. The historical block model results were reliable within the constraints of the interpreted geology, drillhole distribution, historic assay results and the recorded position and extent of historic mine workings. HGMC concurs with this conclusion.

Mineral Resources

QMines advised HGMC to prepare a range of estimates using cut-off grades between 0.3%. 0.5% and 0.7% Cu which can be seen in Tables 1 and 2. The Company believes the 0.5% Cu cut-off is an appropriate grade for reporting the Resource Estimate as it reflects the current base and precious metal prices and likely mining approach.

The Resource estimate is now reported by HGMC for a copper equivalent cut-off based on the following 2021 metal price assumptions, metallurgical recovery assumption, exchange rate and copper equivalent formula.

Figure 10: Mt Chalmers Drilling Operations

Assumptions

Metal Prices

- Copper (USD)/t $6,655
- Gold (USD)/oz $1,900
- Zinc (USD)/t $3,450
- Silver (USD)/oz $25
- Lead (USD)/t $2,450

For comparison purposes, the assumed metal prices used are based on the prices used in the February 2021 Resource by Mr Simon Tear of H&S Consulting which was published in QMines Prospectus dated 16 March 2021.[1]

Metallurgical Recovery

- Copper 97%
- Gold 86.5%
- Zinc 77.5%
- Silver 70.5
- Lead 85%

Metallurgical recovery assumptions were based on an early-stage metallurgical sighting study currently being undertaken by the Company. In August 2021 QMines delivered approximately 230kg of diamond core from holes drilled at the Mt Chalmers Project to ALS Metallurgical Laboratory in Balcatta Western Australia.

Under the supervision of COMO Engineering, drill core representing the copper/gold stringer ore and the copper, lead and zinc exhalite ore were prepared as two master composites to generate bench scale flotation testwork.

Preliminary results from this float testwork are thought to be indicative of expected metallurgical recoveries for Mt Chalmers mineralisation and have been used as recovery data in the copper equivalent Resource estimate calculation. However, the metallurgical sighting study has not been completed in its entirety with several additional tests currently being undertaken to potentially further enhance recoveries and is expected to be completed in Q1-2022.

Exchange Rate

For comparison purposes, the exchange rate used was based on the rate used in the February 2021 Resource by Mr Simon Tear of H&S Consulting which was published in QMines Prospectus dated 16 March 2021.

The exchange rate was US$0.70.

Copper Equivalent Formula

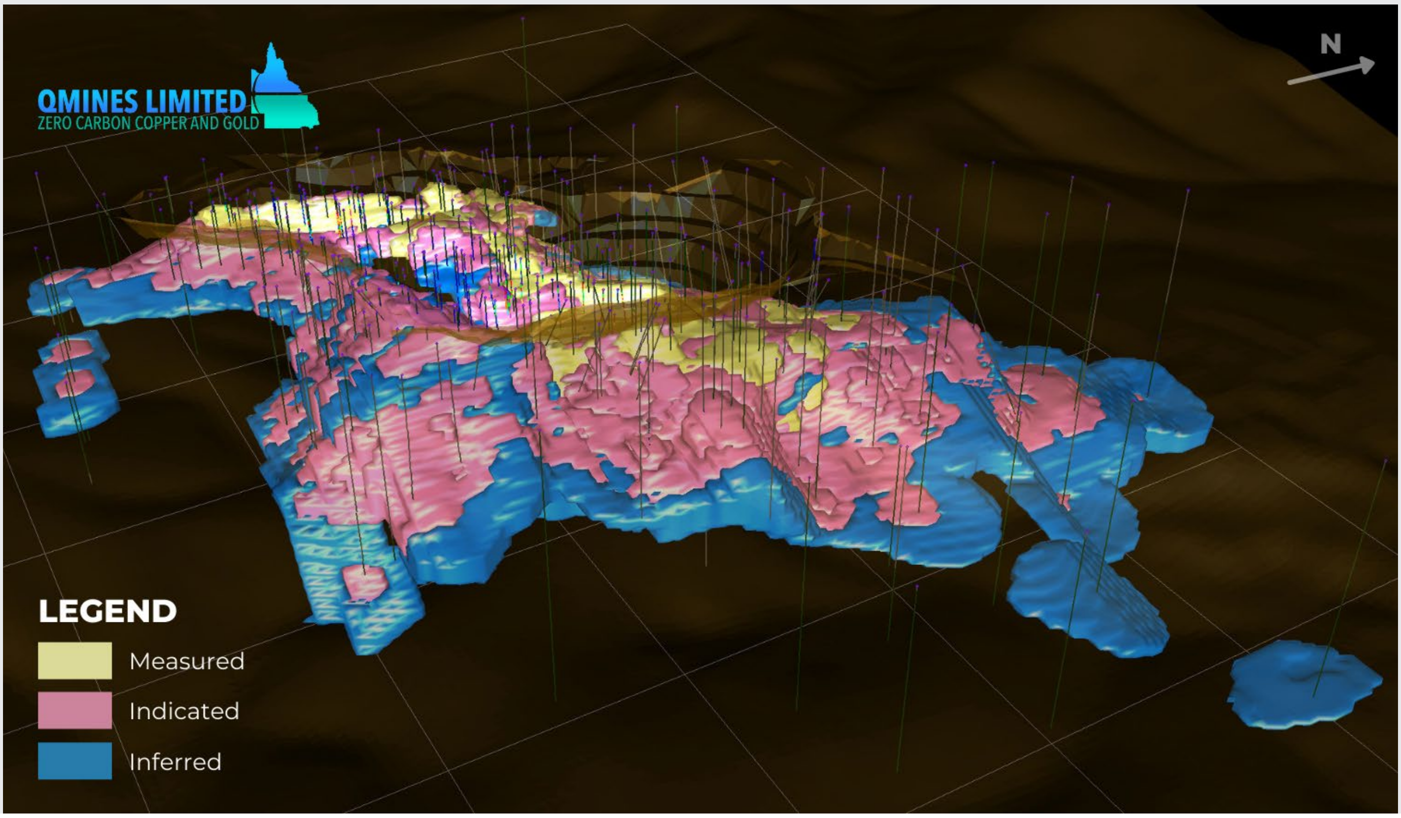
(Cu_%) + (Au_ppm*0.819) + (Zn_%*0.414) + (Ag_ppm*0.009) + (Pb_%*0.323)

Resource Category	Cut-Off Cu (%)	TONNE Metric	Cu (%)	Au g/t	Zn (%)	Ag g/t	Pb (%)	Cu Eq (%)	Cu Eq t
Total	0.30	8,963,000	0.81	0.48	0.21	4.91	0.08	1.36	123,000
Total	**0.50**	**5,845,000**	**1.04**	**0.62**	**0.20**	**5.16**	**0.08**	**1.70**	**101,000**
Total	0.70	3,871,500	1.26	0.75	0.21	5.46	0.08	2.04	80,000

Table 2: Shows the estimates for a range of copper equivalent cut-off grades and Figure 6 presents the same data in a graphical format. Note rounding errors may occur.

[1] QMines IPO Prospectus, https://wcsecure.weblink.com.au/pdf/QML/02371164.pdf, 16 March 2021.

Figure 11: Mt Chalmers Measured, Indicated, Inferred and Unclassified Resources Block Model using a Cut Off of 0.3% Cu (Oblique View: Looking Towards Grid Azim 350° and Dip looking down -45°, Grid Shown 200m x 200m)



For comparison purposes, the assumed metal prices used are based on the prices used in the February 2021 Resource by Mr Simon Tear of H&S Consulting which was published in QMines Prospectus dated 16 March 2021.

Resource Category	Cut-Off Cu %	TONNES Metric	Cu %	Au g/t	Zn %	Ag g/t	Pb %	Cu t	Au Oz	Zn t	Ag Oz	Pb t
Measured	0.30	2,934,000	0.98	0.78	0.22	5.12	0.08	29,500	73,000	6,700	483,000	2,500
Measured	**0.50**	**2,088,000**	**1.22**	**0.98**	**0.22**	**5.58**	**0.08**	**26,000**	**66,000**	**4,700**	**375,000**	**1,700**
Measured	0.70	1,546,000	1.44	1.17	0.22	5.87	0.08	23,000	58,000	3,500	292,000	1,700
Indicated	0.30	3,908,000	0.76	0.41	0.25	5.61	0.11	30,500	52,000	10,100	705,000	4,300
Indicated	**0.50**	**2,492,500**	**0.98**	**0.50**	**0.25**	**5.69**	**0.10**	**25,000**	**40,000**	**6,300**	**456,000**	**2,600**
Indicated	0.70	1,628,500	1.18	0.60	0.26	5.98	0.11	20,000	31,000	4,300	313,000	1,800
Inferred	0.30	2,121,000	0.66	0.19	0.09	3.33	0.04	14,000	13,000	2,000	227,000	800
Inferred	**0.50**	**1,264,500**	**0.85**	**0.24**	**0.08**	**3.42**	**0.03**	**11,000**	**10,000**	**1,000**	**139,000**	**400**
Inferred	0.70	697,000	1.06	0.19	0.05	3.29	0.02	7,500	4,000	400	74,000	200

Table 1: Resource Estimate by Resource Categories, November 2021. Note rounding errors may occur.

Mineral Resource Statement

The Resource estimates are classified in accordance with the Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC, 2012).

The mineral Resource estimate contained in this report covers the Mt Chalmers deposit and has been completed by an independent Resource geologist, Mr Stephen Hyland, Principal Consultant Geologist with Hyland Geological and Mining Consultants (HGMC). Mr Hyland is a Fellow of the Australian Institute of Mining and Metallurgy and holds relevant qualifications and experience as a qualified person for public reporting as required by the JORC Code in Australia. Mr. Hyland consents to the inclusion in this report of the information in the form and context in which it appears.

The classifications, summarised in Tables 1 and 2, are considered appropriate on the basis of drill hole spacing, sample interval, geological interpretation and representativeness of all available assay data. The defined mineralisation within the deposit are classified as Measured, Indicated and Inferred Resources and shown as block model in Figures 6. The Resource is based on an ordinary Kriging interpolated block model. The Resource upgrade information contained in this report is subdivided by mineralised domains and material type.

Competent Person Statement

EXPLORATION

The information in this announcement that relates to exploration results is based on information compiled by Hamish Grant a competent person who is a member of the Australian Institute of Geoscientists (AIG). Hamish Grant is employed by QMines Limited as Project Geologist. Mr grant has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 edition of the JORC Code. Mr Grant consents to the inclusion in this announcement of the matters based on his work in the form and context in which it appears.

MINERAL RESOURCE ESTIMATE

The information in this report that relates to mineral Resource estimation is based on work completed by Mr. Stephen Hyland, a Competent Person and Fellow of the AusIMM. Mr. Hyland is Principal Consultant Geologist with Hyland Geological and Mining Consultants (HGMC), who is a Fellow of the Australian Institute of Mining and Metallurgy and holds relevant qualifications and experience as a qualified person for public reporting according to the JORC Code in Australia. Mr Hyland is also a Qualified Person under the rules and requirements of the Canadian Reporting Instrument NI 43-101. Mr Hyland consents to the inclusion in this report of the information in the form and context in which it appears.

NO REPRESENTATION, WARRANTY OR LIABILITY

Whilst it is provided in good faith, no representation or warranty is made by QMines or any of its advisers, agents or employees as to the accuracy, completeness, currency or reasonableness of the information in this announcement or provided in connection with it, including the accuracy or attainability of any forward looking statements set out in this announcement. QMines does not accept any responsibility to inform you of any matter arising or coming to QMines notice after the date of this announcement which may affect any matter referred to in this announcement. Any liability of QMines, its advisers, agents and employees to you or to any other person or entity arising out of this announcement including pursuant to common law, the Corporations Act 2001 and the Trade Practices Act 1974 or any other applicable law is, to the maximum extent permitted by law, expressly disclaimed and excluded.

***Note GDA94 MGA Zone 56**

• In reported exploration results, length weighted averages are used for any non-uniform intersection sample lengths. Length weighted average is (sum product of interval x corresponding interval assay grade), divided by sum of interval lengths and rounded to two decimal points.
• No top cuts have been considered in reporting of grade results, nor was it deemed necessary for the reporting of significant intersections.
• No metal equivalent values have been reported.
* Downhole intersections contained in this announcement in the vertical drill holes reported, represent true widths of the assayed mineralised intersections contained in Table 1.
* Downhole intersections contained in the announcement in drill holes at 60-degree dip represent approximately 87% true width of the assayed mineralised intersections contained in Table 1.

About QMines

QMines Limited (**ASX:QML**) is a Queensland based copper and gold exploration and development company. **QMines vision is to become Australia's first zero carbon copper and gold developer**. The Company owns 100% of four advanced projects covering a total area of 1,096km². The Company's flagship project, Mt Chalmers, is located 17km North East of Rockhampton.

Mt Chalmers is a high-grade historic mine that produced 1.2Mt @ 3.6g/t Au, 2.0% Cu and 19g/t Ag between 1898-1982. Mt Chalmers has a Measured, Indicated and Inferred Resource (JORC 2012) of 101,000t contained copper equivalent @ 1.7% Cu Eq.

QMines' objective is to grow its Resource base, consolidate assets in the region and assess commercialisation options. The Company has commenced an aggressive exploration program (+30,000m) providing shareholders with significant leverage to a growing Resource and exploration success.

Projects

Mt Chalmers (100%)

Silverwood (100%)

Warroo (100%)

Herries Range (100%)

Directors & Management

ANDREW SPARKE
Executive Chairman

ELISSA HANSEN (Independent)
Non-Executive Director & Company Secretary

PETER CARISTO (Independent)
Non-Executive Director (Technical)

JAMES ANDERSON
General Manager Operations

HAMISH GRANT
Project Geologist
(Competent Person - Exploration)

QMines Limited

ACN 643 212 104

Shares on Issue

111,372,748

Unlisted Options

4,200,000 ($0.375 strike, 3 year term)

This announcement has been approved and authorised by the Board of QMines Limited.

Contact

QMines Limited (ASX:QML)

Registered Address: Suite J, 34 Suakin Drive, Mosman NSW 2088
Postal Address: PO BOX 36 Mosman NSW 2088
Website: www.qmines.com.au

Telephone: +61 (2) 8915 6241 — **Email**: info@qmines.com.au
Peter Nesveda, Investor Relations — **Email**: peter@qmines.com.au
Andrew Sparke, Executive Chairman — **Email**: andrew@qmines.com.au

JORC Code, 2012 Edition – Table 1 Mt Chalmers Mineral Resources

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr>
<td>Sampling techniques</td>
<td>
Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.
Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.
Aspects of the determination of mineralisation that are Material to the Public Report.
In cases where ‘industry standard’ work has been done this would be relatively simple (e.g. ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.
</td>
<td>
The Mt Chalmers deposit has been drilled with a combination of percussion drilling (“PDH” open hole percussion, reverse circulation drilling (“RC”)) and diamond core holes (“DD”) amounting to 395 drill holes for 29,034 metres.

<table>
<tr><td>Drill hole table QMINES</td><td></td><td></td><td></td></tr>
<tr><td>Hole Type</td><td>Number</td><td>RC mtrs</td><td>Diamond mtrs</td></tr>
<tr><td>Diamond</td><td>12</td><td></td><td>1520.4</td></tr>
<tr><td>RC precollar Diamond tail</td><td>20</td><td>1442.2</td><td>1267.33</td></tr>
<tr><td>RC only</td><td>9</td><td>685</td><td></td></tr>
<tr><td>RC Precollar - diamond tails incomplete</td><td>13</td><td>900</td><td></td></tr>
<tr><td>Total</td><td>54</td><td>3027.2</td><td>2787.73</td></tr>
<tr><td>Drill hole table - HISTORIC</td><td></td><td></td><td></td></tr>
<tr><td>Hole Type</td><td>Number</td><td>PDH mtrs</td><td>Diamond mtrs</td></tr>
<tr><td>Diamond</td><td>32</td><td></td><td>3393.95</td></tr>
<tr><td>PDH precollar Diamond tail</td><td>72</td><td>4106.81</td><td>3894.82</td></tr>
<tr><td>PDH only</td><td>237</td><td>11824.43</td><td></td></tr>
<tr><td>Total</td><td>341</td><td>15931.24</td><td>7288.77</td></tr>
<tr><td>Grand Total</td><td>395</td><td>18958.44</td><td>10076.5</td></tr>
</table>

Sampling consists of either 1 m intervals of chip material sub-sampled to 2 kg for RC samples or 1 m sawn or split half core samples yielding approximately a 3-5 kg sample.
At the laboratory, all sample material from each diamond core and RC sample submission is crushed and pulverized to give a 200 g representative sample from which a sub-sample of 30 g is taken for base metal analysis and a 50 g charge for gold.
There is no documentation concerning the analytical method used by Peko, but the work was completed at the Mt Morgan (“MML”) minesite laboratory and presumably the analysis was to industry
</td>
</tr>
</table>

Criteria	JORC Code explanation	Commentary
		standard for the time. The Federation sample prep and analysis was completed by a commercial laboratory using a mixture of ICP and 50 g charge fire assay with atomic absorption spectroscopy ("AAS") for base metals and gold, respectively. • The mineralisation is considered a classic example of a Kuroko-style volcanogenic massive sulphide deposit. The stratabound Cu and Au (Pb, Zn, Ag) mineralisation is strongly related to a combination of pyrite-rich host lithologies and spatial positioning relative to a central rhyolite dome. • The deposit was mined in three phases: 1890 – 1912; during World War 2 and 1979-1981 by MML • **In 2021 QMINES** has undertaken drilling operations at Mt Chalmers drilling 11 diamond core holes for 1,575 metres, 685 metres of RC, 157 metres of RC pre-collars and 407 metres diamond core tails • The company drilled HQ triple tube with diamond core sampling consisting of between 0.3 m and 1.5 metre intervals of core. Samples were cut with a Sandvik wet core saw yielding 1-5 kg core samples (dependent on sample intervals) into calico sampling bags. 4 individual calicos are placed in polyweave bags and sealed for delivery to the assay lab.Samples are sent by road to ALS Laboratories in Brisbane, crushed, pulverised and riffle split delivering 200 g pulp for base metal and precious metal assay.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Percussion drilling was with a Mayhew 1000 or a Mayhew 1500 rig with 114.5 mm down hole hammer bit. • For the Peko diamond drilling core sizes ranged from NQ to BQ whereas for Federation diamond drilling was mostly HQ size with some NQ where needed. • Many holes were initially drilled using an open hole percussion or RC drilling method and tailed with a DD hole. • The vast majority of drillholes were vertical. • No core orientation data is available. • **QMines Operations – 2021** drilling was undertaken using a multi-purpose UDR 650 track mounted rig, and a Hydco 1000 Dual purpose truck mounted rig. RC drilling utilised 114.5 mm diameter RC rods and 140 mm percussion face-sampling hammer with auxiliary air packs with onboard air. Diamond tails being drilled by a track mounted Hyundai Dasco 7000 diamond core rig.

Criteria	JORC Code explanation	Commentary
		• Coring was HQ triple tube with the core sample being orientated using REFLECX ACT111 core orientation tool.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• No historic sample recovery data is available for either the DD or the RC drilling. Historical reports indicate 90% recovery from the Peko drilling except for weathered and oxide zones (these zones have been mined out). • No documentation of RC sampling procedures is available • Peko investigated the risk of sample bias due to loss of fines. Only a small number of samples were collected, too few for anything conclusive, but there were indications of a small preferential concentration of sulphides in the samples of retained drill cuttings with an associated increase in Cu, Ag and possibly Au grade (results for Au were reported as erratic). • The drilling methods are considered to be of industry standard at the time of drilling and would normally have been expected to give reliable results suitable for resource estimation. • With a lack of recovery data it is not possible to establish if there is a relationship between sample recovery and metal grade. • **QMines Operations – 2021** diamond drilling core recovery was excellent with between 93 - 95% of all diamond core recovered from both the mineralised and unmineralized zones. RC sampling recovered dry samples every metre drilled with each metre rock chipped logged and collected in chip trays. • Drilling method is consistent with current industry practices with no sample bias and is representative in nature.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All drilling was competently logged with the production of hardcopy logs and cross sections. All hardcopies had appropriate levels of information for a resource estimate to be completed. • McDonald Speijers Pty Ltd ("MS"), consultant resource geologists, built the current digital database in 1995 from sighting the original drill logs and kept records. John Macdonald, Principal Geologist with MS, transcribed and compiled some of the hardcopy data including visual verification into digital data. • Logging consisted of a series of codes that were a mixture of quantitative and qualitative data. • Geological information originally consisted of lithology

Criteria	JORC Code explanation	Commentary
		descriptions, alteration, mineralisation and oxidation levels. Not all of this data is available in a digital format. • **QMines Operations – 2021** drilling programs have been competently logged by Company geologists with all logging data digitised electronically into Panansonic Toughbook. • Logging codes were established prior to commencement of drilling operations by H & S Consultants and were a mixture of quantitative and qualitative data. • Geological information originally consisted of lithology descriptions, alteration, mineralisation and oxidation levels. All data is available in a digital format. • All core trays have been digitally photographed and stored in the Company NAS drive.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• Peko diamond core was sampled under geological control, but generally averaged about 1 m in sample length. Most of it was sampled using a mechanical core splitter with 50% taken for sample prep and assay. Some mineralised intervals were cut with a diamond saw with 50% of the interval sent to the MML laboratory at the Mt Morgan mine site for preparation and assay. No information is available about sample prep procedures used for this work. • Peko percussion drilling involved dry cuttings being collected via cyclones and riffled to give a sample of about 2 kg for submission to the laboratory. The RC samples were submitted to the MML laboratory at the Mt Morgan mine site for preparation and assay. No information is available about sample prep procedures used for this work. • Wet samples were collected in 2 ways. In the West Lode area samples were collected in a fine gauze catcher and mixed on a groundsheet before being coned and quartered. Sample intervals ranged from 1-2m. This sample collection method would have led to large losses of fines. In the Main Lode area wet samples were collected in half 44-gallon drums and transferred to hessian bags. When dry they were riffle split. This was a better method, but fines would still have been lost when water flows were high and the collecting drum overflowed. • The larger core from the 1995 Federation diamond holes was

Criteria	JORC Code explanation	Commentary
		logged and mineralised intervals were selected on the basis of visual assessment. Quarter core samples (HQ core size) were collected using a diamond saw with the samples sent for sample prep and assay. • The Federation core samples were submitted to Australian Laboratory Services P/L for preparation at their Rockhampton facility and assay at their Townsville laboratory. The sample preparation scheme involved jaw crushing to an unknown size followed by pulverisation of the total sample in a Labtechnics LM5 mill to a nominal 90% passing -75um. • A barren quartz flush was used after each set of sulphide-rich samples at an unknown insertion ratio. • **QMines Operations – 2021** recovered diamond core was cut using a Sandvik core cutting wet saw. • Core was cut in half (parallel to the long-core axis) for submission with duplicates cut in quarters (parallel to the long-core axis) • ALS Laboratories dry the samples prior to crushing and pulverising. All sample material from each diamond core and RC sample submission is crushed and pulverized to a nominal 90% passing 75 µm giving a 200 g representative sample from which a sub-sample of 30 g is taken for base metal analysis and a 50 g charge for gold. • RC sampling was collected using an OX engineering cyclone with a cone splitter delivering 10% representative sampling per lineal metre drilled. Duplicate samples are taken every 25 m and 75 m drilled in the drilling sequence with duplicate samples being 50-50% split sample from the same cone splitter. • RC sampling recovery was dry with pre collars being completed at the water table.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory*	• Peko samples were submitted to the MML laboratory at the Mt Morgan mine site for analysis. No technical details have been located regarding sample preparation procedures or assaying methods. The Mt Morgan operation has since shut down and the laboratory no longer operates. • Federation initially used an ICP method (1C587) for Cu, Pb, Zn, S, Ag, As, Ba, Fe and Mn. After about the first 3-4 batches of samples the laboratory introduced an AAS method (A101) to check Cu, Pb, Zn and Ag assays for higher grade samples. Fire assaying of a 50 g charge with an AAS finish (PM209) was used for gold.

Criteria	JORC Code explanation	Commentary
	checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	• Peko submitted 352 samples for check assaying to Australian Laboratory Services (ALS) in Brisbane on a regular basis during their drilling programmes, although results for Au, Ag and Pb in particular were not always available. The drill logs recorded the results for these "duplicates" and MS were able to compile and analyse. They concluded there was no significant bias for Cu, Au, Ag and Zn. However, there was a significant positive bias with the check laboratory for Pb but this was not significant for the resource as Pb is not treated as an economic commodity. The MML silver results were adjudged to have poor precision but for relatively low silver values. • Federation undertook check assaying at an independent laboratory, but the results are not available. • There are no reports from any of the drilling campaigns of any standards being used to assess the accuracy of the analysis. • Despite the lack of documentation describing the analytical methods and the lack of QAQC it is reasonable to assume that the analysis was to an industry standard for the time and that the results would be reasonable, especially for the level of classification of the resource estimate. • **QMines Operations – 2021** samples for assay were submitted to ALS Laboratories in Brisbane. • Ag, As, Ba, Cu, Pb, S and Zn were determined by ALS (ME-ICP61) by ICP-AES on a four acid digest, Au was determined using ALS method AA25 (fire assay with AAS on a 30 g pulp). Sample preparation and base metal analysis was undertaken in Brisbane and Fire Assay undertaken by ALS in Townsville. • The Company submits batches to ALS from drill programs as they come to hand. Reporting on QAQC results for all drillhole samples submitted between February 2021 and November 2021 has been undertaken by Lisa Orr of Orr and Associates, who found that QMines QAQC is consistent with current industry practice for a drill program. • Duplicate samples of riffle splits (RC samples) and quarter core (diamond drilling samples) are utilised to monitor laboratory reproducibility. With coefficients of variation under 31% there is no significant bias in assayed results from duplicates assayed.

Criteria	JORC Code explanation	Commentary
		• Certified Reference Materials (CRM) and blanks (supplied by OREAS and GEOSTATS Pty Ltd) are inserted at regular intervals with suitable CRMs being used to monitor laboratory accuracy. With 252 out of 265 CRMs reporting within 3 standard deviations of certified values a success rate of 95.1% was achieved. • Internal laboratory QAQC reports are delivered by ALS with certification of assay method used and certified assay results. These results are delivered to the project Geologist, Drill hole data base manager and the Company
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Historical drillhole intersections have now been digitised and viewed by QMines Geologists and by HGMS resource Geologist. • QMines has cross checked selected data, while building a new geological database, based on scanned open files held by the Queensland Dept of Mines, all drillhole collars were checked and random drill logs checked. No issues were noted. • QMines state that all available data was compiled and verified by John Macdonald, Principal Geologist with McDonald Speijers Pty Ltd and documented in “MOUNT CHALMERS DEPOSIT UPDATED MINERAL RESOURCE ESTIMATE & REVIEW OF ASSOCIATED DATA COLLECTION PROCEDURES” • John Macdonald used a complete set of original drill logs, plus mine records which at the time were available at the MML mine site offices. • There is no documentation of any adjustment to the data that has included inserting half lower detection limit values into the database, insertions of blank values where no sample recorded etc. • **QMines Operations – 2021** significant intersections have been validated by the Company’s project geologist. • A number of historical holes have been twinned as part of the validation process of historical data. • Documentation and digitisation of historical data has been undertaken by Lisa Orr of Orr and Associates the Company geological data base manager with all historical data verified. Drill hole data base is stored in an Access database and housed independently in an external NAS drive and backed up in a cloud storage system.

Criteria	JORC Code explanation	Commentary
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• The earliest grid shown on plans was an exploration grid established by CEC which originated at the North Shaft, which was assigned coordinates of zero for both easting and northing. • Peko subsequently established a mine grid, again using the North Shaft as the origin, which was assigned coordinates of 5,000 m E & 5,000 m N. A network of local control stations was set out by MML staff surveyors. • All previous data (such as drill collar locations) were converted by Peko to mine grid which appears to have been used consistently for both exploration and production work. • Control points for the Peko mine grid survive and this grid was also used for all Federation and MS work. A Rockhampton based surveyor (R E Harris) who previously worked as a mine surveyor on the project with MML conducted all surface surveys for Federation. • Local mine control survey points are still in existence, and these have been re-surveyed by QMines using a Differential Global Positioning System. • QMines has converted the Local Grid to GDA94 MGA Zone 56 grid using ArcGIS software, using a combination of local mine control survey points and landmarks. • The current topography was defined using a photogrammetric survey conducted by Capricorn Survey Consultants Pty Ltd on behalf of Federation in May-June 1995. This was based on photography flown in November 1992 and used ground controls established by MML in the 1970's to provide a tie in between AMG and mine grid coordinates. • Pre-open pit topography was available as photogrammetric contour plans dated November 1978, generated by Geo-Spectrum (Aust) for MML. These were presented at 1:500 and 1:1000 scale over the mine area with contour intervals of 1 m and 2 m, respectively. They were apparently based on photography flown in 1973. • MS digitised the 1:1000 scale plan over the area of the resource model to allow volumes to be estimated for the Peko pit and for subsequent excavations at the south end of the pit, pit backfill and surface dumps • Percussion holes, which make up 73% of the total number of holes available, were not surveyed downhole. However, it should be noted that virtually all of them were vertical and are considered by

Criteria	JORC Code explanation	Commentary
		QMines to have had very limited deviation. • For pre-Federation diamond drill holes, logs and sections only showed evidence of down hole surveying for 1 hole but the survey details are not recorded in the log. The remainder of the diamond drill holes are assumed not to have been surveyed downhole. • Federation drill holes were surveyed at intervals of approximately 50m using an Eastman single shot borehole survey camera supplied by the drilling contractors. • QMines have assumed that all pre-1995 holes were straight, simply using the recorded collar bearings and dips for downhole surveys. This will no doubt result in some errors in the 3D location of samples, but since hole depths are typically about 50-150 m and most holes are vertical into flat-dipping rocks, serious hole deviations are not expected to have been common. • **QMines Operations** have implemented a complete conversion of all historical drill collar surveys and local gridding utilised by previous explorers with Rockhampton based mine surveyors undertaking the conversion with the local work being validated by MINECOMP Surveying. • Conversion from local grid to GDA 94 MGA Zone 56. • All drill hole collars are picked up by and validated by the site surveyors. • The Company has flown a new Digital Terrain Model (DTM) using drone survey technology. • The quality and accuracy of the DTM has been validated and processed independently of the data capture by MINECOP Surveying.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• The Peko drilling was initially on a nominal pattern of 40 m x 40 m which was subsequently infilled to a nominal 20 m x 20 m over most of the deposit, but with considerable local variation in hole spacings. • Federation locally infilled or extended the 40 m x 40 m pattern, but on an irregular basis because of the access difficulties presented by the water-filled open pit. • At the northern end of the stringer zone where the mineralisation becomes deeper the pattern ranges from about 40 m x 40 m to 40 m x 80 m. • Downhole sampling was at 1 m intervals.

QMINES LIMITED
ZERO CARBON COPPER AND GOLD

Criteria	JORC Code explanation	Commentary
		• The data point spacing is appropriate for the use in generating Mineral Resources at the appropriate levels of confidence. • No sample compositing has been undertaken. • **QMines Operations – 2021** drill programs have been designed to validate historical drill hole data, expand the resource envelope and make new discoveries. • Line and drill hole spacing is not applicable • No composite sampling has been applied
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The deposit is generally flat-lying and virtually all drillholes are vertical thus giving a good intersection angle with the mineralisation. • There is no obvious sampling bias with the drilling orientation.
Sample security	• *The measures taken to ensure sample security.*	• There is no documentation describing the process of securing samples at site and their transportation to the laboratory. • **QMines Operations – 2021** samples are cut onsite by Company workers, inserted into individual numbered calico sample bags then 4 calico bags are inserted into sealed cable tied polyweave bags. Polyweave bags are numbered in sequence. • Samples are then delivered by Company staff to Centurion Freight Rockhampton, loaded into bulka bags by Company staff and shipped directly to ALS Laboratory Brisbane overnight.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• MS essentially completed an audit of the sampling techniques with the 2005 Mineral Resources. The audit concluded that “After extensive validation and editing MS are satisfied that the drill hole database files used for resource estimation are reasonably complete and free of serious errors, within the practical limitations imposed by the age of some of the data”. • **QMines Operations – 2021** sampling techniques have been established by the Company Project Geologist. Results are reviewed and validated by the Company database geology manager. • Exploration results are not audited independently

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• QMines Pty Ltd has two 100% owned subsidiaries, Dynasty Gold Pty Ltd and Rocky Copper Pty Ltd, through which the Company has a 100% beneficial interest in the Mt Chalmers Project. The Mt Chalmers Project is held in EPM 25935 and EPM 27428 located 25 kilometres east of the City of Rockhampton in coastal central Queensland, Australia. The project covers an area of historic gold and copper mining, which comprises an area of 198 km^2. • The Project is free and unencumbered by either joint ventures or any other equity participation of the tenement. • QMines has yet to negotiate any landowner provisions or Government royalties or yet to commence environmental studies within the project area. Currently the Queensland Department of Natural Resources & Mines is conducting remediation works on minor acid mine waste draining from a mineralised mullock dump. • All the tenements are for "all minerals" excepting coal. • Note that the granted tenements allow QMines to carry out many of their planned drilling programs under relevant access procedures applying to each tenement. • All the EPMs are subject to the Native Title Protection Conditions with respect to Native Title. • Declared Irrigation Areas, Declared Catchment Areas, Declared Drainage Areas, Fossicking areas and State Forest, are all land classifications that restrict exploration activity. These are not affecting QMines' main prospects but may have impact on regional programs in places. • All annual rents and expenditure conditions have been paid and fully compliant
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• CEC and Peko are generally recognised as competent companies using appropriate techniques for the time. Written logs and hardcopy sections are considered good. • Federation was a small explorer that was entirely focussed on defining the Mt Chalmers resource. They used a very competent geologist, Alex Taube, for the drilling programme. Alex Taube is widely respected for his knowledge about VHMS deposits in North

Criteria	JORC Code explanation	Commentary
		Queensland.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Mt Chalmers mineralisation is situated in the early Permian Berserker Beds, which occur in the fault-bounded Berserker Graben, a structure 120 km long and up to 15 km wide. The graben is juxtaposed along its eastern margin with the Tungamull Fault and in the west, with the Parkhurst Fault. • The Berserker Beds lithology consists mainly of acid to intermediate volcanics, tuffaceous sandstone and mudstone, (Kirkegaard and Murray 1970). The strata are generally flat lying, but locally folded. Most common are rhyolitic and andesitic lavas, ignimbrites or ash flow tuffs with numerous breccia zones. Rocks of the Berserker Beds are weakly metamorphosed and, for the most part, have not been subjected to major tectonic disturbance, except for normal faults that are interpreted to have developed during and after basin formation. • Late Permian to early Triassic gabbroic and dioritic intrusions occur parallel to the Parkhurst Fault. Smaller dolerite sills and dykes are common throughout the region and the Berserker Beds. • Researchers have shown that the Mt Chalmers mineralisation is a well-preserved, volcanic-hosted massive-sulphide ("VHMS – Kuroko style") mineralised system containing zinc, copper, lead, gold and silver. Mineral deposits of this type are syngenetic and formed contemporaneously on, or in close proximity to, the sea floor during the deposition of the host-rock units deposited from hydrothermal fumaroles, direct chemical sediments or replacements (massive sulphides), together with disseminated and stringer zones within these host rocks. • The oldest rocks in the area, the 'footwall sequence' of pyritic tuffs, are seen only in the Mt Chalmers open pit and in drill holes away from the mine. The rock is usually a light coloured eutaxitic tuff with coarse fragments, mainly of chert, porphyritic volcanics and chloritic fiamme (fiamme are aligned, "flame-like" lenses found in welded ignimbrite and other pyroclastic rocks and indicate subaerial deposition. Eutaxitic texture, the layered or banded texture in this unit, is commonly caused by the compaction and

Criteria	JORC Code explanation	Commentary
		flattening of glass shards and pumice fragments around undeformed crystals). The alteration (silicification, sericitisation and pyritisation) of this basal unit becomes more intense close to mineralisation. • The 'mineralised sequence' overlying the 'footwall sequence' consists mainly of tuffs, siltstones and shales and contains stratiform massive sulphide mineralisation and associated exhalites: thin barite beds, chert and occasionally jasper, hematitic shale and thin layers of bedded disseminated sulphides. Dolomite has been recorded in the mineralised sequence close to massive sulphides. This sequence represents a hiatus in volcanic activity and a period of water-lain deposition. • The 'hanging wall sequence' is a complex bedded series of unaltered crystal and lithic rhyolitic tuffs and sediments with breccia zones and occasional chert and jasper. • A mainly conformable body of andesite, ranging from 10 m to 250 m thick, intrudes the sequence; it usually occurs just above the ‘mineralised sequence’. A quartz-feldspar porphyry body intrudes the volcanic sequence and in places intrudes the andesite. • The rocks in the mine area are gently dipping, about 20° to the north in the Main Lode mine area and similarly dipping south at the West Lode: the predominant structure is a broad syncline trending north-north-west. Slaty cleavage is strongly developed in some of the rocks, notably in sediments and along fold axes. Such cleavage is prominent in areas close to the mineralisation. • Doming of the rocks close to the mineralisation has been interpreted by detailed work in the open cut to be largely due to localised horst block-faulting (Taube 1990), but the doming might also be a primary feature in part. Steep dips are localised and usually the result of block faulting. The Main Lode outcrop and West Lode outcrop are variably silicified rocks which, by one interpretation, may have been pushed up through overlying rocks in the manner of a Mont Pelée spine (Taube 1990), but in any case, form a dome of rhyolite / high level intrusions of the Ellrott Rhyolite. The surrounding mineralised horizon is draped upon the flanks of domal structures.

Criteria	JORC Code explanation	Commentary

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• Exploration Results are reported in the body of the relevant announcements in Table 1

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*
	• *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*
	• *The assumptions used for any reporting of metal equivalent values should be clearly stated.*
		• **QMines Operations – 2021**
		• In reported exploration results, length weighted averages are used for any non-uniform intersection sample lengths. Length weighted average is (sum product of interval x corresponding interval assay grade), divided by sum of interval lengths and rounded to two decimal points.
		• No top cuts have been considered in reporting of grade results, nor was it deemed necessary for the reporting of significant intersections.
		• Metal equivalent values have been reported as below;
		  Copper (USD)/t $6,655
		  Gold (USD)/oz $1,900
		  Zinc (USD)/t $3,450
		  Silver (USD)/oz $25
		  Lead (USD)/t $2,450
		• Mt Chalmers VHMS is a polymetallic base and precious metal mineral system, cut off grades used by the Company in calculating mineralised intersections are 2,500 ppm Cu, 0.1 ppm Au and 1 ppm Ag, 0.5% Zn and 0.5% Pb

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• **QMines Operations – 2021** • At Mt Chalmers, the drilling has generally intersected the mineralisation at high angles. • The majority of holes drilled at Mt Chalmers Copper Project are vertical in nature. • Holes drilled on 60 degree dip are reported in the Significant intercept table. True widths in 60 degree dip are not reported. True Width is approximately 87% of the down hole intersection.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Maps, sections, mineralised intersections, plans and drill collar locations are included in the body of the relevant announcement.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Table 1 in the body of the announcement
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• CEC and Peko completed some brownfields exploration to assist with defining the resource including Induced Polarisation surveys and Sirotem (electromagnetic method) surveys. • Federation concentrated on defining the resource estimates. • No other exploration data is considered meaningful at this stage. • **QMines Operations – 2021** the company delivered soil geochemical grids obtained from the Geological Survey of Queensland consisting of 19,000 samples collected by various workers and digitized by the Company during 2021.
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided*	• Infill and resource expansion drilling is being undertaken to upgrade and potentially expand the current resource estimates.

Criteria	JORC Code explanation	Commentary
	this information is not commercially sensitive.	

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• The drill hole database is maintained by QMines (In conjunction with Orr & Associates). • The Competent Person has verified the internal referential integrity of the database. • Some historic drill holes required elevation adjustment to the 'pre-mining' topographic surface. • No other significant errors or concerns were encountered.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• The Competent Person consolidating the drilling and sampling data is a contractor to QMines and has not visited the site. • A site visit has not yet been undertaken by the Competent Person responsible for the resource estimation. The competent person has relied upon reports from various different personnel that have visited and worked at the Mt. Chalmers Mine and nearby exploration area.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• Comprehensive Pit mapping to capture both the geological and structural information used to guide resource modelling has been carried out with a recent comprehensive structural mapping study carried out by Dr Brett Davis of Olinda Gold Pty Ltd. Mineralization modelling has been guided by the combined geological and structural information as is currently available. • Mineralisation envelopes were interpreted in section from drill hole data. A nominal 0.2-0.3% Cu edge lower cut-off was initially developed. The mineralization developed was also locally adjusted to capture and delineate the majority of significant and related Zinc, Lead, Gold and Silver mineralisation. • The mineralisation envelopes are contained within a reliably interpreted geological and structurally mapped package that is confirmed to correlate with the majority of sulphide mineralization.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and*	• The majority of the geologically interpreted Mt. Chalmers mineralised occurrence has an approximate >1.2 km strike length. • The modelled mineralization area has an approximate strike of 900 m.

Criteria	JORC Code explanation	Commentary
	lower limits of the Mineral Resource.	• The mineralisation thickness ranges from approximately 5 m to 50 m, with average thickness being approximately 10-30 m. Mineralization in the majority of deposit areas extends to approximately 200 m below topographic surface. • Mineralisation has been modelled both above pre-existing pit excavation surface to ensure mineralization modelling continuity. • The approximate dimensions for the historic pit area is: 1. Old Mt. Chalmers Pit – 480 m long, 200 m wide and 80 m deep.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.*	• All available RC and Diamond drilling data was used to build the mineralisation model and for guiding Mineral Resource estimation. Recent verification RC and Diamond drilling carried out by QMines has also enabled some of the estimated resources to be assigned a higher level of resource estimation confidence and therefore higher level or resource reporting classification. • QMines has acquired new assay information from recent drilling programs. An updated drilling, geological logging and assay database was used to define and model the mineralised domains for Cu, Pb, Zn, Au & Ag. • The majority of drill collar positions have been surveyed. Newly drilled holes were accurately surveyed by QMines. Some of the collar positions were adjusted according to Topographic DTM surface data. Some historical un-surveyed drill hole collar elevations were draped onto a 'pre-mining' topographic DTM surface and were checked in order to match the known surveyed drilling. The survey control for collar positions is considered adequate for the estimation of resources as stated. • The mineralised domains were interpreted from the drilling data provided by Qmines. Sets of cross- sectional 3D strings were generated throughout the deposit area. These were then linked to generate 3D wire-frames. Mineralised wire-frame domains were used for statistical analysis and grade estimation. The development of wire-frames was tightly controlled and were

Criteria	JORC Code explanation	Commentary
	• *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	mostly not extended (extrapolated) beyond 1 average section spacing from the last drill-hole 'point of observation'. • A set of wire-frame weathering surfaces and broad material type wire-frames were also modelled to highlight lithological and bulk density characteristics and differences that overprint the mineralized zones. These codes are used to flag bulk density differences and preliminary metallurgical domains. • A series of mineralization AREA domains were also defined to segregate major changes in mineralization zone orientation. These AREA domains were used to define localized mineralization distribution characteristics and search ellipsoid orientation for block model interpolation. • Spatial statistical analysis was carried out on the main assay data items. Sample data was composited to one metre down-hole intervals initially based on the copper item. This also included equivalent compositing for the Pb, Zn, Au & Ag items. The composite probability distributions were interrogated for each element and each AREA domain to review localized average grades, composite 'outlier' values and related coefficient of variation. • Composites in each AREA domain were used to generate both down-hole and where possible longer range between hole semi-variograms models to establish interpolation ranges and relative nugget and sill ratios used in Ordinary Kriging interpolation for block model grade assignment. • One (1) block model was constructed for the total deposit area combining geology and mineralization modelling for the Cu, Pb, Zn, Au and Ag elements. The Block model was constructed using a 3D array of blocks with dimensions of using 5.0 m x 8.0 m x 2.0 m (E-W, N-S, Bench) block cells coded with the mineralisation wire-frames. • The Block Model coordinate boundaries (GDA94 MGA Zone 56) are; 259,200 m E to 260,600 m E – (280 x 2.5 m blocks) 7,420,400 m N to 7,421,800 m N - (175 x 8.0 m blocks)

Criteria	JORC Code explanation	Commentary
		-240 m RL to 580 m RL - (200 x 2.0 m benches) • The Ordinary Kriging (OK) interpolation method was used for the estimation of Cu, Pb, Zn, Au and Ag items using variogram parameters defined separately from the geostatistical analysis if each element. A minor outlier 'distance of restriction' approach was applied during the interpolation process for all items in selected domains in order to reduce the unwanted spatial influence of very high-grade outlier composite samples. The distance of restriction was set at 16m and when the local AREA domain threshold value was at approximately the 99th percentile level. • The kriging interpolated grades for each element used different interpolation parameters as determined from an independent 'AREA' domain variography analysis and was contained within the main mineralized zone wire-frame. No extrapolation of grades outside the mineralization wire-frame was permitted. • Dry Bulk Density ("density") was assigned by material type, oxidation state with the designation of vales assigned representing the average bulk density for each material type. All bulk density measurements used for assignment in the block model were taken from the available measured bulk density measurements from the historic drilling database and the new diamond core samples acquired during the recent QMines drilling programs.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• All tonnages are reported on a dry basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• A 0.5% Cu cut off has been applied to reported tonnes and grade. This cut-off is considered in line with current copper price in conjunction with associated beneficial elements Pb, Zn, Au & Ag and favourable mineral processing considerations.

Criteria	JORC Code explanation	Commentary
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• It is assumed the majority of the deposit will be mined using open pit mining methods with some limited underground mining in deeper locations as may be necessary as per previous small scale underground mining carried out historically. • Detailed grade control will refine resource and expected reserve detail prior to any mining activity.

Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• Metallurgical Recovery Assumptions
		  • Copper 97%
		  • Gold 86.5%
		  • Zinc 77.5%
		  • Silver 70.5%
		  • Lead 85%
		• Metallurgical recovery assumptions have been based on an early-stage metallurgical sighting study currently being undertaken by the Company. In August 2021 QMines delivered ~230 kg of diamond core from holes drilled at Mt Chalmers Copper Project to ALS Metallurgical Laboratory in Balcatta Western Australia.
		• Under the supervision of COMO Engineers drill core representing the copper/gold stringer ore and the copper, lead and zinc exhalite ore were prepared as two master composites to generate bench scale flotation testwork.
		• Initial results from this float testwork are indicative of metallurgical recoveries for Mt Chalmers base and precious metals ore and have been used as recovery data in the copper equivalent Resource Estimate calculation. The metallurgical sighting study has not been completed in entirety with several additional tests now being undertaken to potentially improve recoveries and is expected to be finalised early in Q1 2022.

Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The resource is located in an area of historic mining which included waste dump and tailings disposal it is assumed no environmental factors would prevent reactivation/extension of these disposal options.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• Dry Bulk Density (DBD) has been determined from both historical and new Archimedes and densitometer measurements taken from core samples from the recent QMines drilling programs. Additionally, some rock chip samples and bulk samples acquired during recent exploration activity have also been used. • Laboratory based Archimedes methods have been used to determine bulk density from RC Chip and diamond core samples. The bulk densities derived appear appropriate for the rock material and mineralization types described and for the main weathering and oxidation material states present. • The density measurements have been averaged in all deposit areas according to the geologically logged domains and according to their weathered (oxidized or fresh) characterization. Some bulk density values were retained from previous (historic) block model. • The bulk density values applied in the deposit are: Stringer zone = 3.00 t/m^3, Exhalite Zone = 3.20 t/m^3, Massive Sulphide Zone = 3.80 t/m^3, Weathered/Oxide = 2.20 t/m^3, Transition = 2.50 t/m^3; Fresh (Sulphide) = 3.00 t/m^3.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*	• The classification was considered appropriate on the basis of drill hole spacing, sample interval, geological interpretation, history of mining, and representativeness of all available assay data.

Criteria	JORC Code explanation	Commentary
	• *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The classification criteria have employed multiple 'ancillary' interpolation parameters including 'distance of composite to model block' (DIST1), 'number of composite available within the search ellipsoid' (COMP1) for each block interpolation and the local kriging variance' (KERR1) for each block. The DIST1, COMP1 and KERR1 item values are 'condensed into a 'quality of estimate' (QLTY) which is the used a guide to refine a 'resource category' (RCAT) item used to assist with final resource reporting. • Classification of the resources has been assigned by the Competent Person and includes a series of project specific 'modifying factors' appropriate for the Resource estimation.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The mineral Resource model and estimation has been reviewed in comparison with the previous preliminary estimation work on the project as estimated by QMines Ltd. No major discrepancies or issues have been identified.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The Competent Person considers the mineral resource to be a robust and accurate global estimate of the contained metal as the estimation has been constrained within defined mineralisation wire-frames. • The Resource classification applied to the Resource reflects the Competent Person's confidence in the estimate.