

# **Updated Metallurgy Confirms High Recoveries**



29 March 2023

# **Highlights**



Stringer zone testwork achieves 23% Cu in concentrate at 98% Cu recovery, with significant gold credits of 8g/t Au;



Differential flotation of massive sulphide copper and zinc concentrates was also successful:



Massive sulphide copper concentrate grade of 18% Cu and 4.7% Zn, with separate zinc concentrate grade of 50% Zn and 0.59% Cu;



Further work on intermediate grinds, optimised reagents and blends continues.

#### **Overview**

QMines Limited (ASX:QML)(QMines or Company) is pleased to announce the results of its updated metallurgical testwork from its Mt Chalmers copper and gold project. Mt Chalmers is the Company's flagship project, located 17km north-east of Rockhampton in Queensland (Figure 1). This study was undertaken by Mark Hargreaves, a senior Process Engineer from Como Engineers in Western Australia (Como).

The testwork was designed to maximise gold recovery whilst achieving a grind and reagent regime suitable to produce a clean copper concentrate (containing gold and silver). It was also designed to upgrade the copper float tail to one or more saleable concentrates containing zinc, lead, gold and silver.

These results build on earlier testwork, announced in March 2022<sup>1</sup>, which established a preliminary flowsheet and determined working recovery grades for stringer and massive sulphide concentrates from Mt Chalmers. Ongoing metallurgical testwork is being undertaken to progress a Feasibility Study on the Mt Chalmers deposit and deliver a maiden Ore Reserve statement.

## **Overview (Continued)**

The Mt Chalmers mineralisation comprises a stringer zone (Cu-Au) and a massive sulphide (Cu-Pb-Zn-Au-Ag) zone. Metallurgical testwork on the stringer zone, the dominant mineralisation style, is almost complete with only further grind testing to be completed.

Further testwork is planned for the massive sulphide mineralisation which aims to maximise recoveries of all marketable metals.

Half drillcore samples from drill hole MCDD017 have been used in the study, together with new material from drillhole MCDD044, as the former material becomes depleted. The location of both holes can be seen in Figure 2.

The objectives of the testwork was to maximise gold recovery into a flotation product, achieve a reagent regime suitable to produce copper concentrates containing gold and either a combined lead and zinc concentrate or separate lead and zinc concentrates, while maximising sulphide recovery.

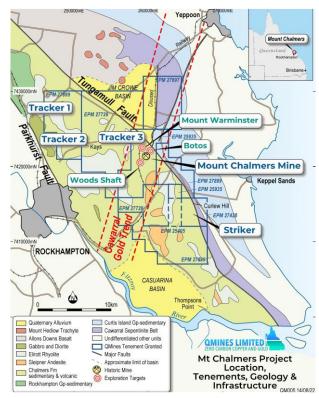


Figure 1: Location of Mt Chalmers tenure, geology & infrastructure.

### **Management Comment**

QMines Managing Director, Andrew Sparke, comments;

"We are very pleased with the updated metallurgical results. This work demonstrates further improvement to the work completed in 2022 with high copper recoveries and significant gold credits as well as a separate zinc product that can maximise recoveries of all metals."

"The coarser grind size shows potential for higher processing throughputs, reduced energy usage, lower processing costs and therefore a reduced carbon footprint."

# **Stringer Grades & Recoveries**

Initial testwork of the stringer mineralisation, from a half core composite sample from drill hole MCDD017, produced a 12.3% copper concentrate with 97% recovery¹ (Table 1). This updated trestwork on grind size and laboratory flotation method has produced considerably better grades including 23% copper in concentrate with 98% recovery.

Each of the tests produced a potentially marketable copper product with significant gold credits. The lead, zinc and silver grade in the stringer composite were low and were thus excluded from the flowsheet to simplify the circuit.

A coarse grind of 150 microns produced an 87% copper recovery and a 64% gold recovery while a finer grind of 75 microns produced 96-98% copper recovery and 60-82% gold recovery (Figure 3). Additional tests on an intermediate grind size of 106 microns will seek to increase the minimum copper recovery to above 90%, in order to maximise copper and gold recovery at the coarsest grind size possible.

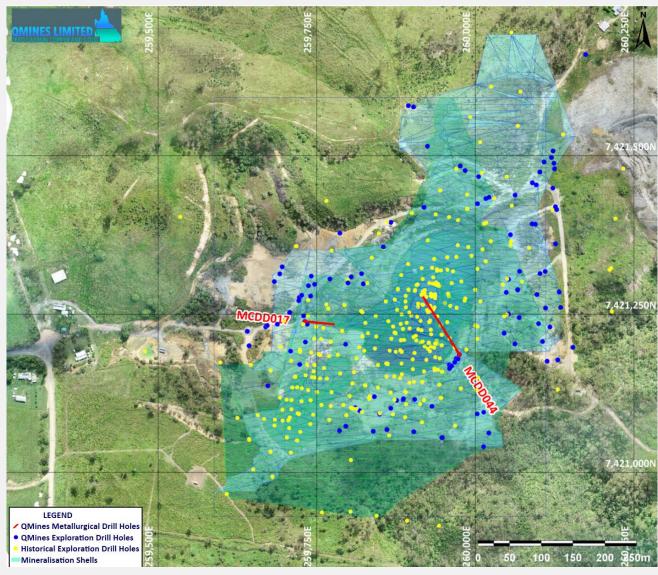


Figure 2: Location of metallurgical drill holes MCDD017 and MCDD044.

Year	Contractor	Grind Size	Copper Grade (%)	Copper Recovery (%)	Gold Grade (g/t)	Gold Recovery (%)
2022	ALS	75 microns	12.3	97.1	4.6	86.5
2023	ALS	150 microns	16.2	87	14	64
2023	ALS	75 microns	17.7	96	5.2	82
2023	Auralia	75 microns	23.1	98	8.02	59.6

Table 1: 2022 and 2023 Testwork Results for Stringer Mineralisation.

# **Massive Sulphide Grades & Recoveries**

Previous testwork on the massive sulphide mineralisation (copper, lead and zinc exhalite) from the MCDD017 core produced rougher concentrates and determined that further float optimisation was required to create separate and improved concentrate streams for each metal.

# **Massive Sulphide Grades & Recoveries (Cont)**

To this end, further testing of the composite massive sulphide sample from hole MCDD017 with a head grade of 1.35% Cu. 1.51% Pb, 3.64% Zn, 10.6g/t Au and 18g/t Ag was subjected to twelve open circuit flotation tests.

Two testwork paths were followed in this program. Bulk flotation (four tests, see Table 2) followed by cleaning, and a rougher-cleaner circuit for copper and zinc concentrates (eight tests, see Table 3). Figure 6 compares the test results.

Bulk flotation produced a medium grade sulphide concentrate assaying 5.2% to 7.54% copper, at a recovery of 53.6% to 98.2% copper. All the minerals were activated, however it was difficult to upgrade the bulk concentrate into separate clean concentrates as this would require depression of already activated zinc minerals. As a result, selective flotation tests were undertaken with much greater success.

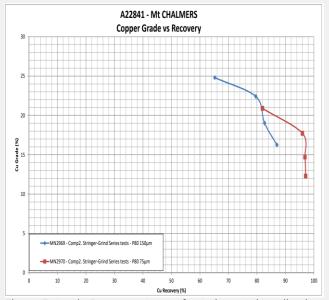


Figure 3: Grade-Recovery Curves for Stringer Mineralisation.



Figure 4: Picture of recent zinc concentrate testwork.

Co		Сор	per	Lead		Zinc		Silv	er	Gold	
		%	% Dist	%	% Dist	%	% Dist	ppm	% Dist	ppm	% Dist
Calculated Head	100.0	1.31	100.0	1.46	100.0	3.51	100.0	17	100.0	7.02	100.0
Assay Head		1.35		1.51		3.64		18		10.6	
Cu Con 1	9.3	7.54	53.6	9.54	60.7	22.3	59.0	86	47.0	26.5	35.1
Cu Con 1-2	18.0	6.69	92.1	7.22	89.0	18.1	92.9	78	82.9	28.0	71.8
Cu Con 1-3	22.5	5.62	96.8	6.08	93.9	15.0	96.4	69	92.0	27.4	87.9
Cu Con 1-4	24.7	5.20	98.2	5.66	95.8	13.8	97.1	66	95.6	25.6	90.2
Py Con 1	2.59	0.34	0.67	0.66	1.17	0.57	0.42	15	2.29	6.32	2.33

Table 2: Bulk Flotation Results for Massive Sulphide Mineralisation.



Figure 5: Picture of recent copper concentrate testwork.

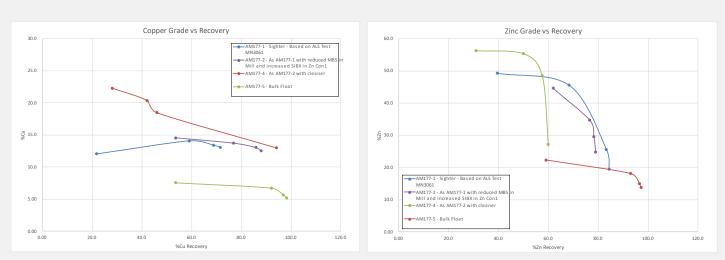


Figure 6: Grade-Recovery Curves for Massive Sulphide Mineralisation. Copper on Left, Zinc on Right.

The cleaner copper test was able to produce a much better concentrate ranging between 13% to 22.3% copper in concentrate at copper recoveries of between 28% and 94.1%.

Separately, a zinc concentrate of between 27.1% and 56.3% was achieved at zinc recoveries of between 30.8% and 59.9%. This work demonstrates that differentially floating copper and zinc products is possible. Further testing will determine the optimum process to achieve high recoveries closer to the targeted 20% copper and 50% zinc in concentrates. A separate lead circuit will also be studied.

## **Blend Work**

In addition to optimising processes for each mineralisation style, master composites combining both stringer and massive sulphide mineralisation are being trialed to allow tuning of copper grade in concentrate by adjusting the ratio of feed type in the blend.

#### What's Next?



Final metallurgical testwork results for the Mt Chalmers deposit;



Delivery of the results of a recent carbon audit to meet the requirements of the Climate Active program and retain our Zero Carbon certification;



Complete the planned Pre-Feasibility Study on the Mt Chalmers project assessing the potential for a stand along mining operation;



Interpretation of the recently completed VTEM™ Max airborne Electromagnetic survey allowing the analysis and ranking of targets; and



Commence drilling prospective regional targets.

# **Forward-Looking Statements**

This document may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning QMines Limited planned exploration program and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "expect," "intend," "may", "potential," "should," and similar expressions are forward-looking statements. Although QMines believes that its expectations reflected in these forward- looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that further exploration will result in the estimation of a further or larger Mineral Resource.

#### **Competent Person Statement**

#### **Exploration**

The information in this document that relates to mineral exploration and exploration targets is based on work compiled under the supervision of Mr Glenn Whalan, a member of the Australian Institute of Geoscientists (AIG). Mr Whalan is QMines' principal geologist and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC 2012 Mineral Code). Mr Whalan consents to the inclusion in this document of the exploration information in the form and context in which it appears.

## **Competent Person Statement (Cont)**

#### **Metallurgy**

The Information in this Report that relates to Metallurgical Test Results is based on information compiled by Mr Mark Hargreaves, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Hargreaves is a full-time employee of Como Engineers Pty Ltd. Mr Hargreaves has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Hargreaves consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Product	Wei	ght	Сор	per	Lea	nd	Zir	nc	Iro	n	Sulp	hur	Silv	er	Go	ld
Floudet	Gram s	%	%	% Dist	ppm	% Dist	ppm	% Dist								
Cu Cln Con 1	16.2	1.62	22.3	28.0	15.9	17.5	3.22	1.46	22.8	4.18	30.2	5.16	214	21.6	246	50.2
Cu Cln Con 2	10.4	1.04	17.4	14.0	20.0	14.1	5.24	1.52	20.2	2.38	28.1	3.08	184	11.9	40.7	5.33
Cu Cln Scav Con	5.6	0.56	9.35	4.05	23.4	8.89	8.15	1.27	17.0	1.08	26.2	1.55	157	5.47	13.2	0.93
Cu 1CST	61.5	6.16	10.1	48.1	10.5	43.8	8.39	14.4	19.6	13.6	27.0	17.5	82	31.4	13.6	10.5
Zn 2 Cln Con 1	19.6	1.96	0.58	0.88	1.86	2.47	56.3	30.8	4.07	0.90	32.4	6.70	45	5.49	47.2	11.6
Zn 2 Cln Con 2	12.7	1.27	0.61	0.60	1.93	1.66	53.9	19.1	4.56	0.65	31.8	4.26	48	3.79	2.72	0.43
Zn 2CT	10.1	1.01	0.65	0.51	2.35	1.61	26.5	7.48	12.7	1.45	26.0	2.77	6	0.38	3.80	0.48
Zn Cln 1 Tail	36.6	3.66	0.26	0.74	0.85	2.11	2.40	2.45	15.3	6.33	15.3	5.91	20	4.56	24.2	11.1
Tails	826.3	82.7	0.05	3.20	0.14	7.85	0.93	21.5	7.43	69.4	6.09	53.1	3	15.4	0.90	9.36
Calculated Head	999	100	1.29	100	1.48	100	3.58	100	8.85	100	9.49	100	16	100	7.95	100
Assay Head			1.35		1.51		3.64		8.48		9.38		18		10.6	
Cu Cln Con 1		1.62	22.3	28.0	15.9	17.5	3.22	1.46	22.8	4.18	30.2	5.16	214	21.6	246	50.2
Cu Cln Con 1-2		2.66	20.4	42.0	17.5	31.6	4.01	2.98	21.8	6.55	29.4	8.24	202	33.5	166	55.5
Cu Cln Con 1-2 + Scav Con		3.22	18.5	46.0	18.5	40.5	4.73	4.25	21.0	7.63	28.8	9.79	194	39.0	139	56.4
Cu Ro Con		9.38	13.0	94.1	13.3	84.3	7.13	18.7	20.1	21.3	27.6	27.3	121	70.4	56.8	66.9
Zn 2 Cln Con 1		1.96	0.58	0.88	1.86	2.47	56.3	30.8	4.07	0.90	32.4	6.70	45	5.49	47.2	11.6
Zn 2 Cln Con 1-2		3.23	0.59	1.48	1.89	4.14	55.4	49.9	4.26	1.56	32.2	11.0	46	9.28	29.7	12.1
Zn Cln Con		4.24	0.61	1.99	2.00	5.75	48.5	57.4	6.27	3.01	30.7	13.7	37	9.66	23.5	12.6
Zn Ro Con		7.91	0.45	2.72	1.47	7.86	27.1	59.9	10.5	9.34	23.6	19.6	29	14.2	23.8	23.7

Table 3: Selective Flotation Results for Massive Sulphide Mineralisation.

#### **About QMines**

QMines Limited (**ASX:QML**) is a Queensland based copper and gold exploration and development company. 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 @ 2.0% Cu, 3.6g/t Au and 19g/t Ag between 1898-1982. The Mt Chalmers project now has a Measured, Indicated and Inferred Resource (JORC 2012) of 11.86Mt @ 1.22% CuEq for 144,700t CuEq.<sup>1</sup>

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** & Ownership

Mt Chalmers (100%) Silverwood (100%) Warroo (100%) Herries Range (100%)

### **QMines** Limited

ACN 643 212 104

#### **Directors & Management**

#### **SIMON KIDSTON**

Non-Executive Chairman

#### **ANDREW SPARKE**

Managing Director

#### **ELISSA HANSEN (Independent)**

Non-Executive Director & Company Secretary

#### **PETER CARISTO (Independent)**

Non-Executive Director (Technical)

#### JAMES ANDERSON

**General Manager Operations** 

#### Shares on Issue

137,360,101

## **Unlisted** Options

7,950,000 (\$0.375 strike, 3 year term)

## **Compliance** Statement

With reference to previously reported Exploration results and mineral resources, the Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parametres underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

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

#### **QMines Limited (ASX:QML)**

Contact

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# 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.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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.</li> </ul>	<ul> <li>The company drilled HQ triple tube with diamond core sampling consisting of between 300 mm and 1.5 metre intervals of core.</li> <li>The core was sawn in half lengthways (parallel to long core axis) using a Sandvik wet core saw yielding 1-5 kg core samples into calico sampling bags. 4 individual calicos are placed in polyweave bags and sealed for delivery to the assay lab.</li> <li>Samples are sent by road to ALS Laboratories in Brisbane, crushed, pulverised and riffle split delivering 200 gm pulp for base metal and precious metal assay.</li> <li>Half core from holes MCDD017 and MCDD044 was initially sent to ALS for standard geochemical analysis with results used for resource estimation with results previously reported to the ASX.</li> <li>The remaining half core from MCDD017 and MCDD044 was submitted to ALS Metallurgy and to Auralia Metallurgy for metallurgical testing.</li> <li>Management of the metallurgical program was undertaken by Como Engineers of Perth.</li> <li>Three composite samples were prepared: Comp 1 (Cu/Pb/Zn Comminution), Comp 1 (Cu/Pb/Zn), and Comp 2 (stringer)</li> <li>The first Comp 1 sample was used in comminution tests</li> </ul>



Criteria	JORC Code explanation	Commentary
		Cu/Pb/Zn and Comp 2 Stringer was utilised for flotation testing.
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).	<ul> <li>Diamond Drilling was undertaken using a multi-purpose UDR 650 track mounted rig, and a Hydco 1000 Dual purpose truck mounted rig. RC pre-collar 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.</li> <li>Coring was HQ triple tube with the core sample being orientated using REFLEX ACTIII core orientation tool.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul> <li>QMines diamond core recovery was excellent with between 93 - 95% of all diamond core recovered from both the mineralised and unmineralized zones. RC chips from each metre were collected in chip trays and logged. The majority (&gt;95%) of RC samples were dry.</li> <li>Drilling methods are consistent with current industry practices with no sample bias and are representative in nature.</li> </ul>
Logging	<ul> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	with all logging data digitised electronically into a Panasonic Toughbook.
Sub-sampling techniques	If core, whether cut or sawn and whether quarter, half or all core taken.	Core was sawn in half lengthways. Half core was initially assayed for use in resource estimation. The second half of the core was



Criteria	JORC Code explanation	Commentary
and sample preparation	<ul> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>Submitted for metallurgical testing.</li> <li>Core from drillhole MCDD017 was used for almost all metallurgical testwork completed to date. Core from hole MCDD044 is now being used for blend work and will also be used in future testing as material from MCDD017 becomes depleted.</li> <li>A continuous section of half-core from 21.95 m to 82.6 m in drillhole MCDD017 and from 38.9 m to 121.4 m in hole MCDD044 was submitted representing the two main mineralisation types on the project (massive sulphide and stringer mineralisation in each hole).</li> <li>Sub-samples for comminution testing were taken at approximately 1 m lengths (~0.5 kg each). Samples for the metallurgical testing were taken over 0.8 to 1.4 m lengths generally representing 1 – 6 kg each.</li> <li>Each prepared composite was then control-crushed to &lt;3.35 mm, blended, and homogenised via a rotary sample divider (RSD) before 1 kg charges were split for further testing. Comp 1 Cu/Pb/Zn Comminution Comp, as well as a sub-sample of Comp 2 Stringer was used for Bond ball mill work index (BWi) determination. Comp 1 Cu/Pb/Zn was utilised for flotation testing.</li> <li>The sample sizes are considered appropriate for the stage of testing and representative of the materials to be tested.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<ul> <li>commercial ISO accredited laboratory.</li> <li>QMines used a variety of QAQC control CRM's and blanks on initial assaying.</li> <li>Internal laboratory QAQC samples were used.</li> </ul>



Criteria	JORC Code explanation	Co	mmentary				
Verification of			Element/Output Gold in ores and leach residues: Gold in solution: Arsenic: Sulphur speciation: General element scan: Antimony: Fluorine: True SG: No adjustments have been m	Method Fire assay/ICP-MS Direct ICP-MS Arsenic digest/ICP-OES finish Sherritt method Labfit CS2000 analyser Mixed acid digestion/ICP-OES finish Antimony digest/ICP-OES finish ISE Helium pycnometer ade to the data.			
sampling and assaying	<ul> <li>independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>Company personnel have reviewed headgrade results fr metallurgical testing against the original assay data. Intervention of identical from the original data so a direct comparison</li> </ul>					
Location of data points	<ul> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>		All drill hole collars are picked up by and validated by the sit surveyors using sub cm accurate differential GPS.				
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	•	Data spacing not applicable for Sample compositing has been and then homogenising.	or this release. I undertaken using crushing, blending			
Orientation of data in relation to	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation</li> </ul>	•	dip of -45° through a generally These drill intercepts are not	a dip of -56° and hole MCDD044 at a y flat-lying mineralised zone. considered true widths. True width is DD017 drill intercepts and 66% of the			



Criteria	JORC Code explanation	Commentary
geological structure	and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	S .
Sample security	The measures taken to ensure sample security.	Core samples from both holes were taken from the drill site in HQ core trays to core yard wrapped in cling wrap, sealed with core tray lids, stacked on pallets then delivered by Company staff to Centurion Freight Rockhampton and shipped directly to ALS Laboratory Brisbane Laboratory for delivery to ALS Balcatta.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No audits or reviews have taken place.

# **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	<ul> <li>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.</li> <li>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.</li> </ul>	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, EPM 27428, EPM 27697, EPM 27726 and EPM 27899 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 km².



Criteria	JORC Code explanation	Commentary
		<ul> <li>Note that the granted tenements allow QMines to carry out many of their planned drilling programs under relevant access procedures applying to each tenement.</li> <li>All the EPMs are subject to the Native Title Protection Conditions with respect to Native Title.</li> <li>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.</li> <li>All annual rents and expenditure conditions have been paid and fully compliant</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>CEC and Geopeko are generally recognized as competent companies using appropriate techniques for the time. Written logs and hardcopy sections are considered good.</li> <li>Federation was a small explorer that was entirely focused on defining the Mt Chalmers resource. They used a very competent geologist, Alex Taube, for the drilling program. Alex Taube is widely respected for his knowledge about VHMS deposits in North Queensland.</li> <li>Great Fitzroy was also a small explorer that focused on Mt Chalmers as well as Woods Shaft and satellite VHMS targets. They also employed Alex Taube to manage the drilling program at Woods Shaft.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>Mineralization at Mt Chalmers 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.</li> <li>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</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>been subjected to major tectonic disturbance, except for normal faults that are interpreted to have developed during and after basin formation.</li> <li>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.</li> <li>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.</li> <li>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 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.</li> <li>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</li></ul>



Criteria	JORC Code explanation	Commenta	ГУ					
		unaltered breccia z  A mainly m thick, 'mineralist the volca  The rock north in the West Lock north-nother rocks is promined interpret localised also be a the result outcrop may have of a Montrhyolite	<ul> <li>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.</li> <li>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.</li> <li>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.</li> <li>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</li> </ul>					diments with n 10 m to 250 lest above the body intrudes esite. In the cline trending ed in some of such cleavage on has been argely due to coming might ed and usually and West Lode interpretation, in the manner rm a dome of Rhyolite. The
Drill hole Information	A summary of all information material to the understanding of the exploration results including a	Hole ID	MGA East	MGA North	RL	Dip	MGA Azi	EOH depth
	tabulation of the following information for all	MCDD017	259731.2	7421238.6	91.3	-60	96	93.1
	Material drill holes:  o easting and northing of the drill hole collar  o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar  o dip and azimuth of the hole	MCDD044	259974.7	7421186.1	91.3	-45	328	154.9



Criteria	JORC Code explanation	Commentary
	<ul> <li>o down hole length and interception depth</li> <li>o hole length.</li> <li>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.</li> </ul>	
Data aggregation methods	<ul> <li>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.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Results reported in the metallurgical testing represent samples that have been physically composited (i.e. no mathematical compositing has taken place.</li> <li>No cutting of high-grades has been undertaken.</li> <li>Metal equivalents have not been used.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>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').</li> </ul>	Metallurgical test results relate to percentage recovered and/or concentrate grades and do not reflect down-hole intercepts.
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should	A map showing drill collar locations is included in the body of the announcement.



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	include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	
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.	This release reports a summary of recent tests completed in the ongoing metallurgical testing of mineralized samples submitted.
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.	This release refers to recent metallurgical testing of drill core samples from the Mt Chalmers resource. See the body of the release for details.
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul> <li>Delivery of the results of a recent carbon audit to meet the requirements of the Climate Active program and retain our Zero Carbon certification.</li> <li>Complete the planned Pre-Feasibility Study on the Mt Chalmers project assessing the potential for a stand along mining operation.</li> <li>Interpretation of the recently completed VTEM™ Max airborne Electromagnetic survey.</li> <li>Commence drilling of prospective regional targets.</li> <li>Further metallurgical work is ongoing.</li> </ul>

