

# ASX announcement

18 November 2021

## Nyungu Copper-Cobalt Drilling Update – Massive Copper Mineralisation Visible in Drill Core

Argonaut Resources NL (ASX: ARE) (*Argonaut* or the *Company*) is pleased to announce that geologists have observed significant intervals of visible copper mineralisation in drill core at the Nyungu Central copper-cobalt deposit (Photos 1-4).

Argonaut confirms that the 2,800m diamond drilling program at Nyungu Central deposit and the 1,500m RC drilling program at Nyungu East copper anomaly are proceeding as planned at the Lumwana West project in Zambia.

### Highlights

#### Nyungu Central: Resource Drilling with Exploration Upside

- In July 2021, Argonaut commenced a 2,800m diamond drilling program at Nyungu Central and Nyungu South (Figure 2 and Figure 4) (the Diamond Drilling Program).
- Drill-core acquired to date contains significant intercepts of visual copper mineralisation in nine of ten holes (Photos 1-4).
- Hole NYDD053 intercepted very significant visual copper mineralisation in the form of apparent chalcocite and native copper at 117.6m (Photo 1).
- Oxide zone, transitional zone (Photos 1-2) and primary zone (Photos 3-4) copper mineralisation has been routinely observed in drill core. Copper content has been progressively confirmed by handheld XRF analyser.
- Ten drill holes have been completed under the Diamond Drilling Program (Table 1) with the 11th hole in progress for a progressive 2,486m. Drilling is continuing.
- Drill hole NYDD062 was expected to drill through mineralisation by 250m depth but has continued to return visual mineralisation to depths of greater than 300m. The hole is currently at 308m.
- Samples are being progressively submitted and prepped in Zambia then air freighted to Australia for analysis.
- The objectives of this drilling program are to:
  - convert some of the current Exploration Target (130-180 million tonnes at 0.45 to 0.65% Cu containing 580,000 to 1,150,000t of copper plus cobalt credits, refer below) to JORC Resource,
  - as well as to increase the scale of the overall known mineralisation at Nyungu.

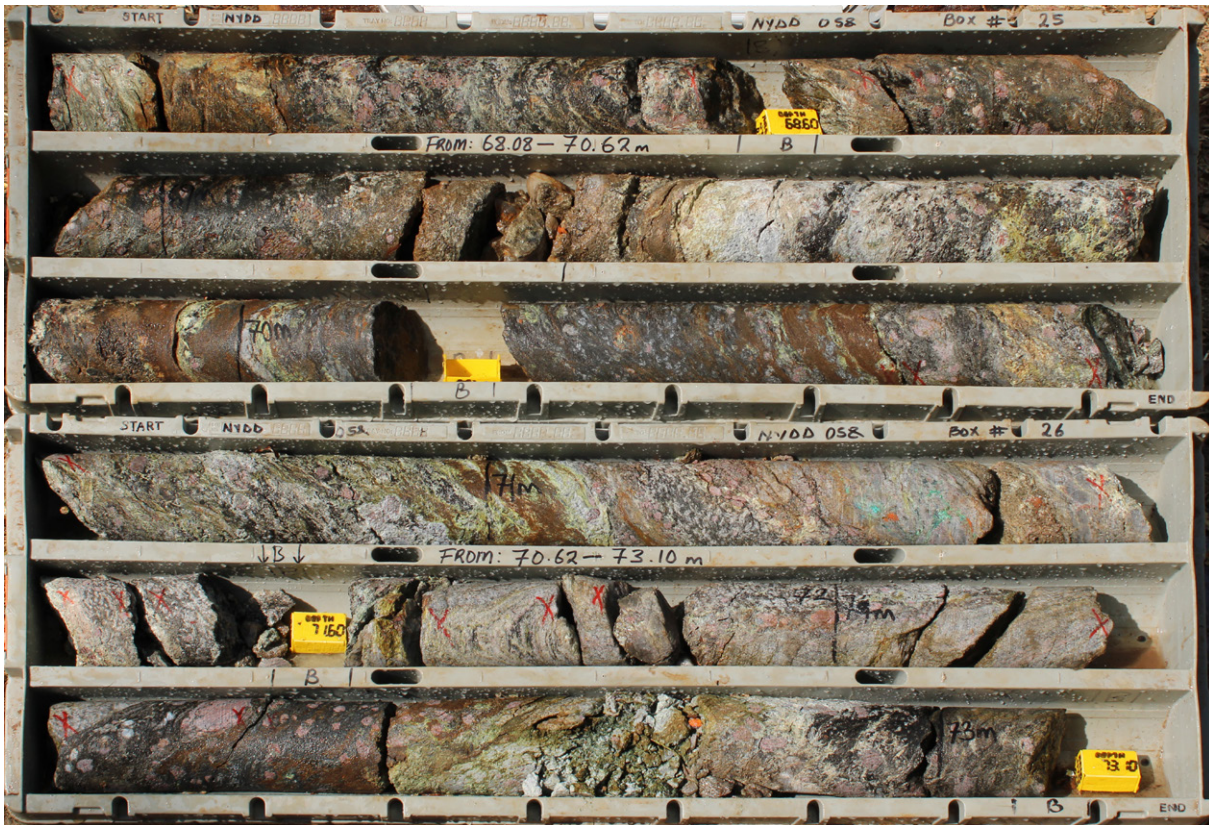
*Note: Visual identification of oxide and sulphide minerals does not provide an accurate representation of metal content. Drilling samples are being progressively submitted to a licenced laboratory for analysis. Results will be reported by Argonaut on receipt.*

#### Nyungu East: RC Drilling Program

- Argonaut has recently defined an intense copper anomaly at Nyungu East. The anomaly is defined by elevated copper in soil samples (Figure 2).
- Peak copper in recently acquired soil samples is 2,100ppm Cu which is 8-10 times higher than peak values at the neighbouring Nyungu Central copper-cobalt deposit.
- Argonaut is drilling up to 1,500m of RC drilling at Nyungu East (the *RC Drilling Program*).
- Six RC holes averaging 92m in depth have been completed to date (Table 2). Drilling is continuing.



**Photo 1** An example of very high-grade copper mineralisation<sup>1</sup>. Massive chalcocite (copper sulphide – steely, grey colour) and quartz (dull, light grey colour) with native copper (bronze colour). Dry, HQ (63.5mm diameter) core. NYDD053: 117.6m to 118.0m.



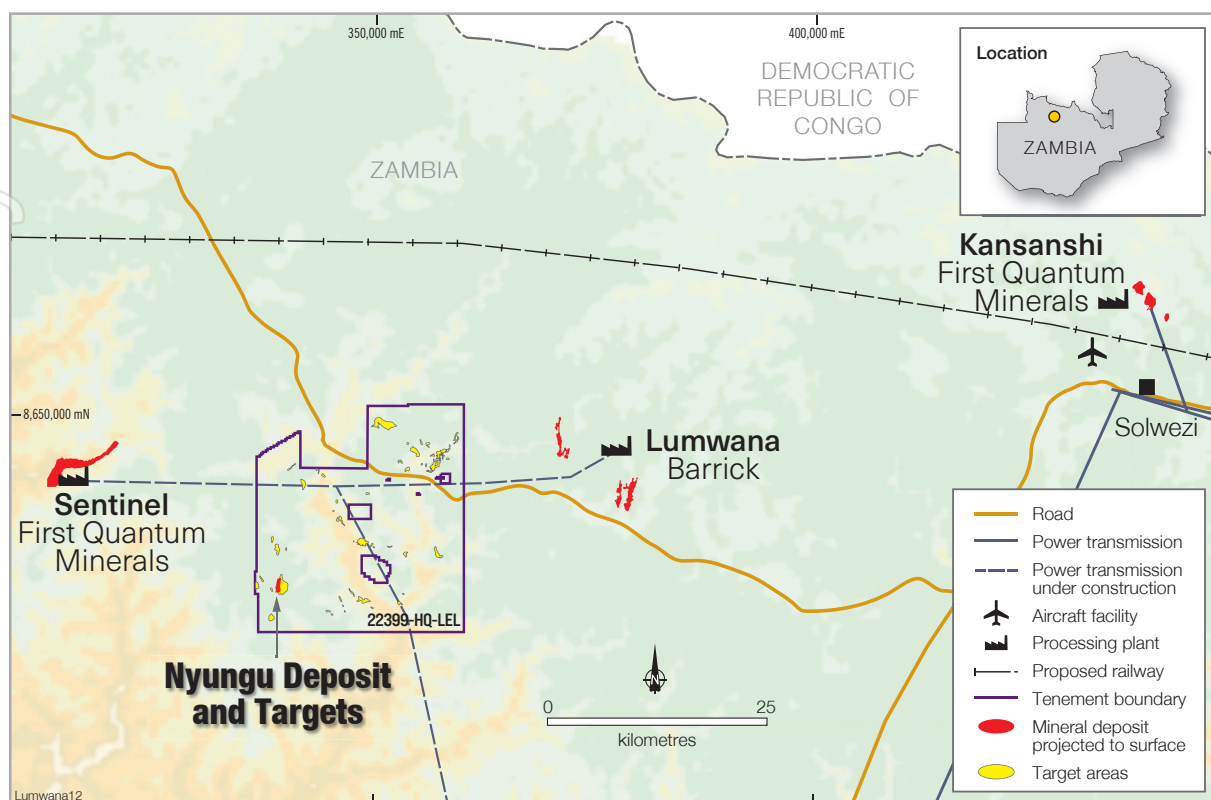
**Photo 2** An example of transitional zone copper mineralisation<sup>2</sup> (mixed copper oxides, carbonates and sulphides) within a foliated, biotite-garnet schist, in the area of faulting. Wet, PQ (85mm diameter) core. NYDD058: 68.1m to 73.1m.

<sup>1</sup> High copper grade confirmed by handheld Olympus Innov-X Delta XRF analyser. Analysis of drill core by handheld XRF analyser is not sufficiently accurate to report to the ASX.

<sup>2</sup> Copper content confirmed by handheld XRF analyser.



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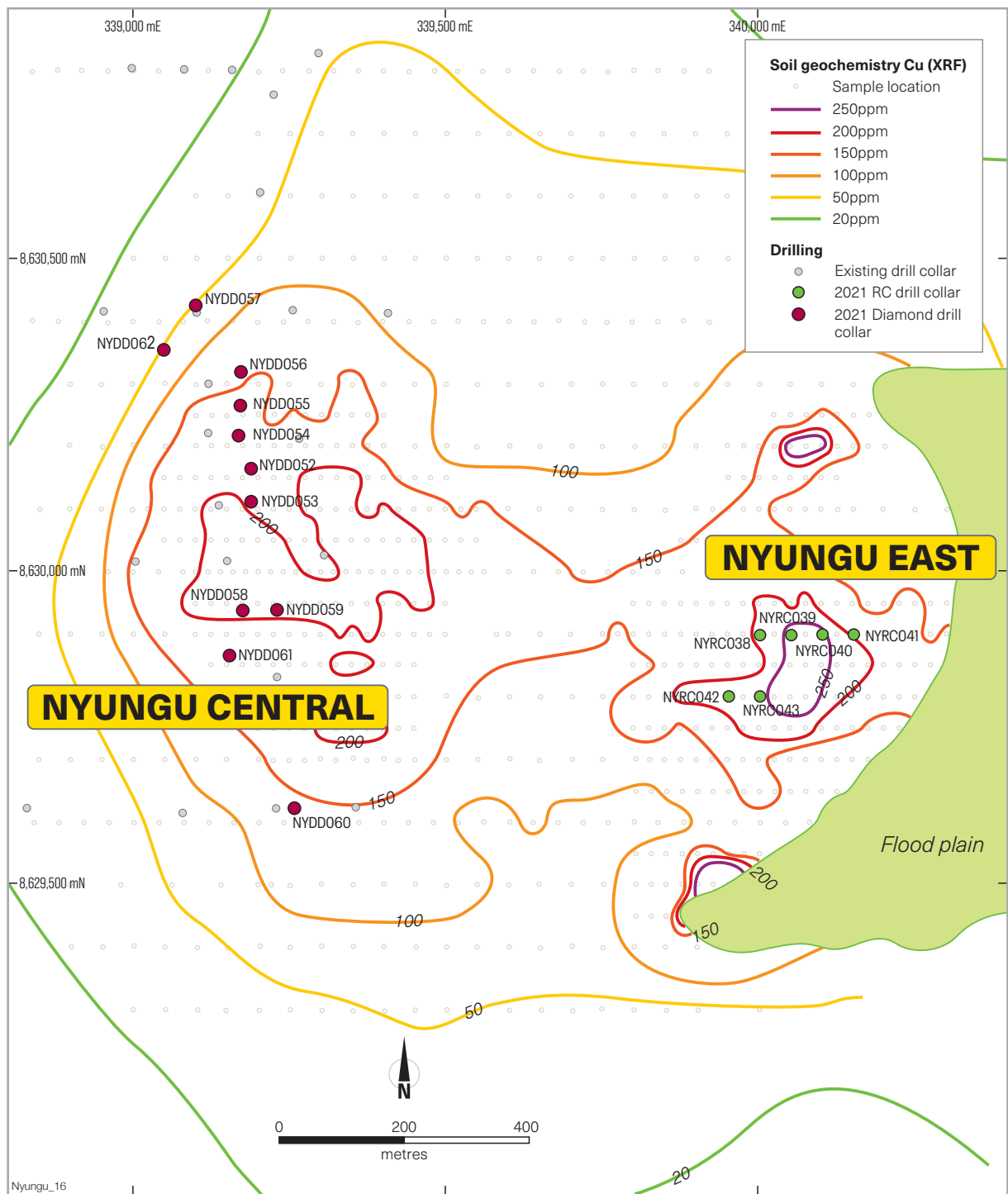
**Figure 1** The Nyungu deposit is located near several major copper mines and relevant infrastructure.

**Table 1** Nyungu Central completed diamond drill holes.

Hole	Easting	Northing	Datum/Zone	Total Depth	Dip	Azimuth
NYDD052	339,189	8,630,164	WGS84_35S	216	-70	90
NYDD053	339,189	8,630,112	WGS84_35S	198	-70	90
NYDD054	339,170	8,630,217	WGS84_35S	171	-65	90
NYDD055	339,171	8,630,265	WGS84_35S	201	-65	90
NYDD056	339,173	8,630,318	WGS84_35S	246	-65	90
NYDD057	339,100	8,630,425	WGS84_35S	249	-65	90
NYDD058	339,175	8,629,938	WGS84_35S	231	-70	90
NYDD059	339,230	8,629,939	WGS84_35S	198	-60	90
NYDD060	339,258	8,629,623	WGS84_35S	234	-60	90
NYDD061	339,155	8,629,866	WGS84_35S	234	-65	90
NYDD062	339,060	8,630,371	WGS84_35S	>308	-65	90

**Table 2** Nyungu East completed reverse circulation drill holes.

Hole	Easting	Northing	Datum/Zone	Total Depth	Dip	Azimuth
NYRC038	340,000	8,629,900	WGS84_35S	120	-70	90
NYRC039	340,050	8,629,900	WGS84_35S	110	-70	90
NYRC040	340,100	8,629,900	WGS84_35S	98	-70	90
NYRC041	340,150	8,629,900	WGS84_35S	108	-70	90
NYRC042	339,950	8,629,800	WGS84_35S	48	-70	90
NYRC043	340,000	8,629,800	WGS84_35S	70	-70	90



**Figure 2** Diamond drill collar and RC drill collar locations and soil geochemistry contours at Nyungu Central and Nyungu East.



## Resource Drilling and Exploration Upside

The 2021 Nyungu deposit drilling program has a dual-purpose: exploration drilling that aims to uncover significant new zones of copper and cobalt mineralisation, and infill drilling for Resource estimation purposes. Additionally, infill drilling will provide sample for ongoing metallurgical testwork.

Argonaut has defined exploration drilling targets that have the potential to materially increase the Resource-base at Nyungu.

## Diamond Drilling Program

The 2021 drilling program is budgeted to cost A\$2,000,000 for a total of 2,800m of varying diameter drill core.

The drilling program is being jointly managed by African Mining Consultants (AMC) and Argonaut Resources' staff based in Adelaide, Australia.

Since the commencement of drilling in late July 2021, Argonaut has completed ten diamond drill holes and commenced the 11th hole for a progressive total of 2,486m. Drill holes average 226m in depth. The remaining 310m of drilling is expected to take two weeks to complete.

The Company is progressively submitting samples for preparation in Zambia followed by analysis in Australia. Argonaut has been advised to expect analysis to take 12-16 weeks from arrival in Australia due to an existing backlog of samples at laboratories.

## Visual Copper Mineralisation – Nyungu Central Deposit

Diamond drill-core acquired during 2021 contains significant intercepts of visual copper mineralisation in nine of ten completed holes (Photos 1-4), as confirmed by handheld XRF analysis. The tenth hole contains sporadic visual copper mineralisation.

Visual mineralisation has been categorised into three zones: the oxide zone, transitional zone (Photos 1-2) and primary zone (Photos 3-4) copper mineralisation. Copper minerals have been routinely identified in all three zones.

Hole NYDD053 intercepted very high-grade copper mineralisation in the form of chalcocite and native copper at 117.6m (Photo 1). This mineralisation is located at a zone of supergene enrichment, commonly seen towards the base of the transitional zone and above the primary zone.

## Exploration Drilling for Deposit Extensions

### Nyungu Central

- The Nyungu deposit is confirmed by 50+ drill holes.
- The deposit has a 1,700m strike length and is open to the north and south (Figure 4).
- Nyungu Central contains high grade intercepts such as 31m at 1.57% copper from 173m including 6m at 5.51% copper.
- The shallower portions of the Nyungu deposit offer potential for low cap-ex, near-term, heap leach operation followed by the long-term production of copper concentrate.

The Nyungu Central deposit is open along-strike to the north and south (Figure 3). Argonaut is testing these potential extensions to known mineralisation with a view to increasing tonnages for future Resource estimation.

### Nyungu South

The Nyungu South deposit (Figure 4) sits in a location where a copper soil anomaly and an IP geophysical anomaly (i.e. a zone that may contain disseminated sulphide minerals) are coincident. The IP anomaly continues northwards from the soil anomaly over a significant area. This extension to the IP anomaly is untested and will be drilled by Argonaut in 2021.

## Resource Drilling – Infill Upgrades

Nyungu Central contains high grade intercepts such as 31m at 1.57% copper from 173m including 6m 5.51% copper. There is a statistical likelihood that infill drilling will intercept additional high-grade zones which can boost the average grade of the deposit.

## Indicated JORC Resource

Existing drilling by Argonaut at Nyungu Central and Nyungu South (Figure 4) was conducted using a drill-traverse spacing of approximately 200m. This drilling revealed excellent grade and geometry continuity between traverses at Nyungu Central but was too widely spaced to enable the conversion to Indicated Resource category. The drilling of infill traverses spaced approximately 100m apart is expected to allow Argonaut to estimate the tonnage and grades at Nyungu to JORC Resource standards.

## Oxide-Zone Resource

The earlier drilling by Argonaut at Nyungu targeted fresh copper sulphide mineralisation at depth via angled drilling. No early drill holes targeted near-surface oxide mineralisation. This has left a gap in the Company's understanding of the oxide zone and has affected its ability to progress metallurgical testwork on potentially significant parcel of copper ore. The 2021 drilling program is addressing these matters by specifically targeting drilling in interpreted near-surface oxide zones (Figure 5). Visual mineralisation and handheld XRF analysis indicate that suitable metallurgical samples have been acquired in drilling to date. Results from this program and metallurgical leach testwork that will follow will affect the economics of production in the first five to ten years.

## RC Drilling Program

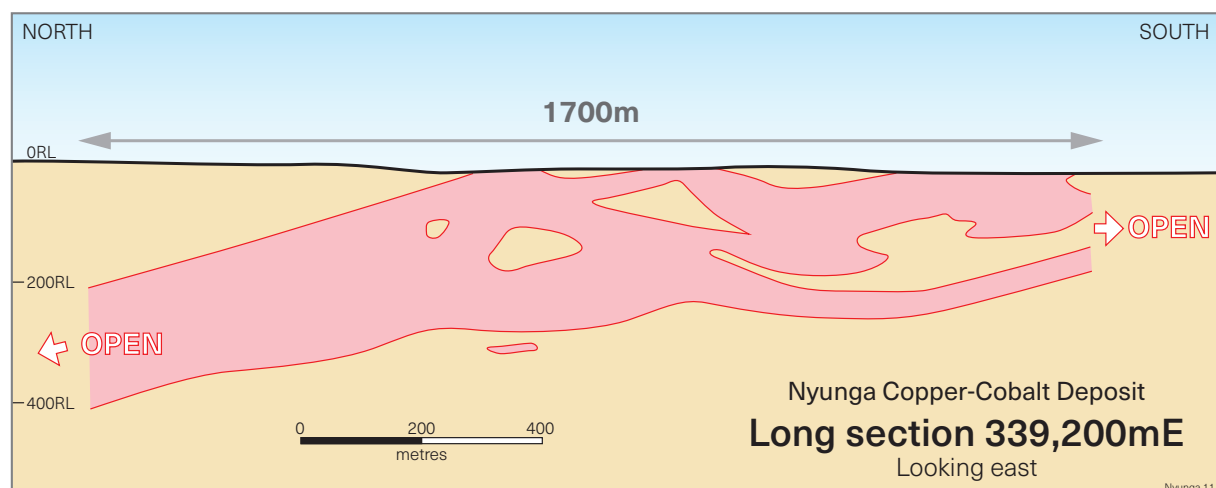
### Nyungu East Anomaly

Since commencing field operations at Nyungu in July 2021, Argonaut undertook a program of soil sampling in the area of the Nyungu deposit. 676 soil samples have been collected and analysed during 2021<sup>1</sup>. These samples are in addition to over 15,000 other soil samples taken and analysed by Argonaut at Lumwana West since 2011.

The Nyungu East soil anomaly (Figure 2) is in three lobes over a strike length of 900m. These lobes are defined by elevated copper soil samples. The peak of the southern lobe is 2,100ppm (0.21%) copper which is 8-10 times higher than peak values at the neighbour Nyungu Central copper-cobalt deposit. The peak of the central lobe is 840ppm copper. The Nyungu East copper anomaly is higher in intensity than the Nyungu Central soil anomaly. Nyungu Central hosts a material copper endowment, as described by the JORC Exploration Target shown below at Table 1.

### RC Drilling

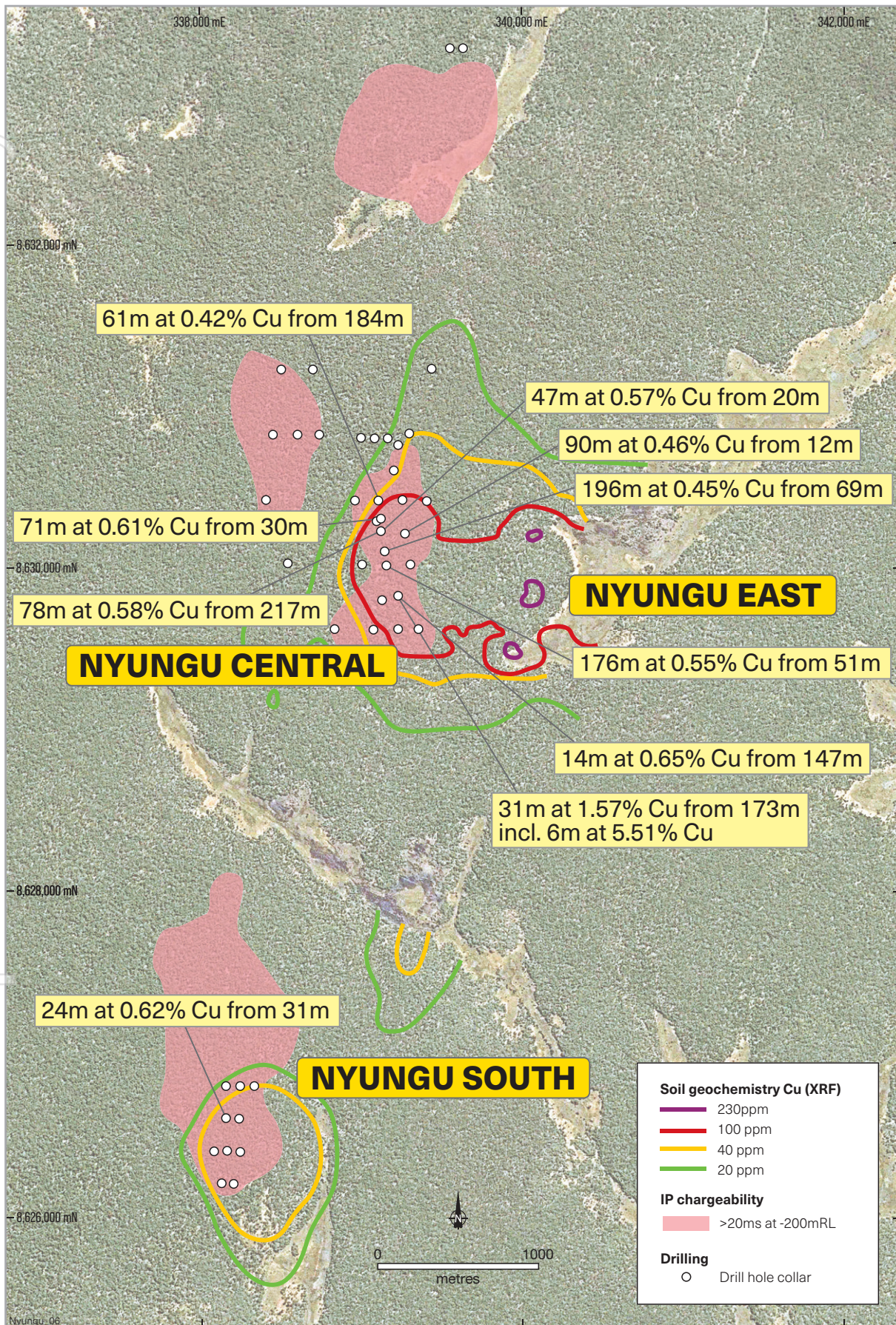
Argonaut's Zambian subsidiary, Mwombezhi Resources Ltd, aims to complete 1,500m of reverse circulation percussion drilling to test the three lobes of the Nyungu East copper anomaly. Approximately 15 holes ranging in depth from 80m to 130m are planned. The RC drilling must demobilise at the onset of the Zambian wet season which will occur at some stage during November.



**Figure 3** Nyungu Central long section showing copper mineralisation.

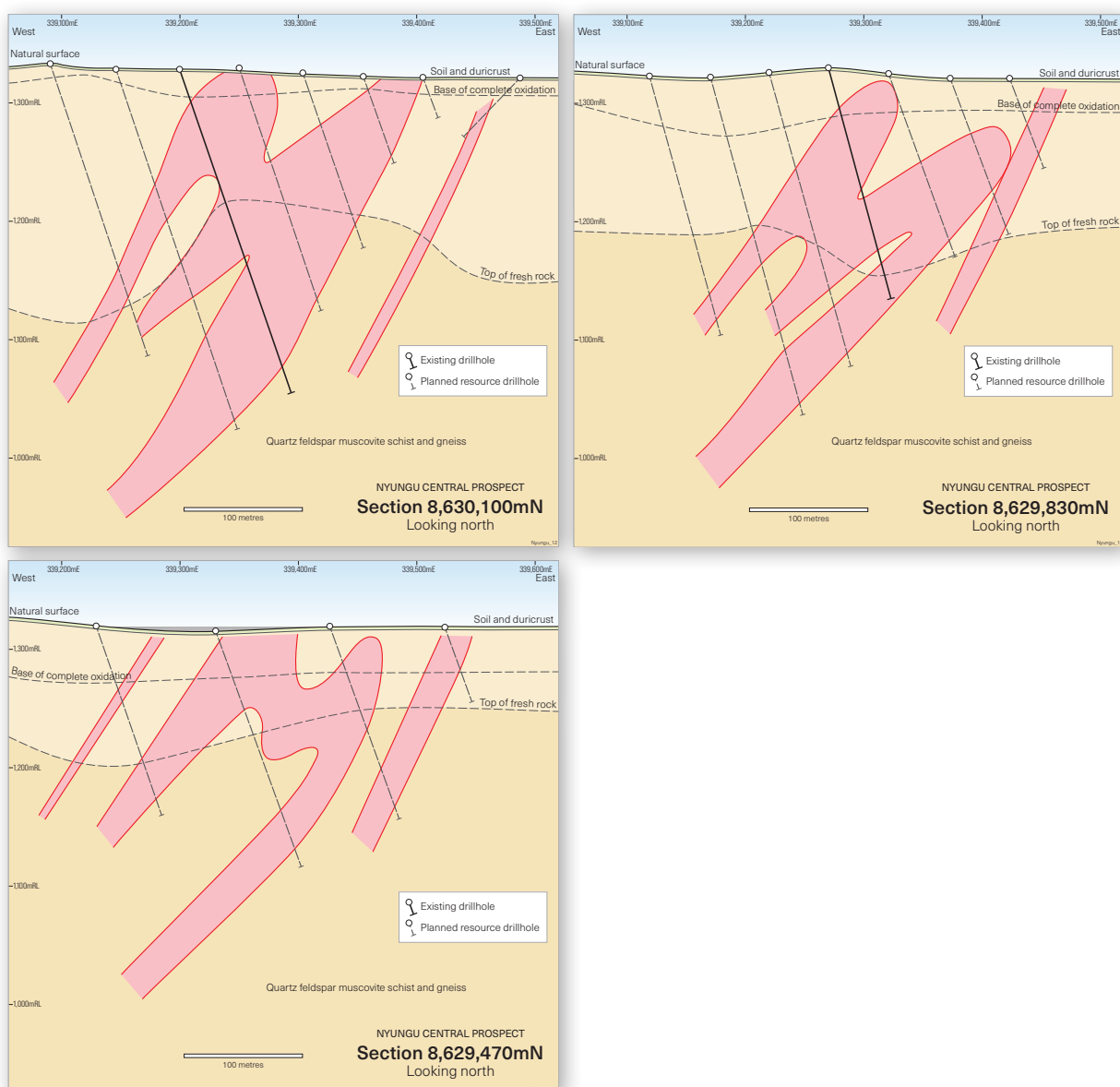
<sup>1</sup> Soil samples are sieved, B horizon, residual soil. Samples are typically spaced 25m apart along east-west lines which are 50m apart. The soil samples have been analysed using a handheld XRF analyser. Relevant QA/QC processes included the analyses of appropriate analytical standards and blanks (reference samples) for calibration, plus repeat analysis, and analysis of duplicate soil samples. XRF analytical results for 2021 soil samples were within desired QA/QC thresholds.





**Figure 4** The Nyungu Central and Nyungu South deposits are defined by broad copper intercepts.





**Figure 5** Nyungu Central cross sections showing existing and planned drill holes.

## Copper and Cobalt Exploration Targets

Argonaut has previously estimated Exploration Targets for both copper and cobalt mineralisation at Nyungu using an independent consultancy. These estimations are shown below in Table 3.

**Table 3** Nyungu Exploration Target

Commodity	Tonnage Range (Mt)	Grade Range (%)	Contained Metal Range (kt)
<b>Copper*</b>	130 to 180	0.45 to 0.65	580 to 1,150
<b>Cobalt^</b>	15 to 20	0.08 to 0.12	12 to 24

\* Copper Exploration Target announced to the ASX by Argonaut on 9 April 2013.

^ Cobalt Exploration Target announced to the ASX by Argonaut on 27 March 2017.

Both Exploration Targets are estimated to JORC standards.

*The potential quantity and grade of the Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.*

## Metallurgical Testwork

Argonaut has been testing the metallurgical properties of oxide, transitional zone and fresh (sulphide) ores for the past 18 months. This information is driving the development of process flowsheets and scoping economic studies into the various processing options.

The metallurgical testwork program is extensive. Argonaut has completed testing of the following properties: mineralogy, comminution, flotation and oxidation (including both roast/leach and Albion process). The Company is currently completing a suite of orientation leach tests on small samples of oxide and transitional ores. Future tests will include large-scale leach tests, bio-leach tests and solvent extraction/electrowinning (SX/EW) tests.

## Mining Study

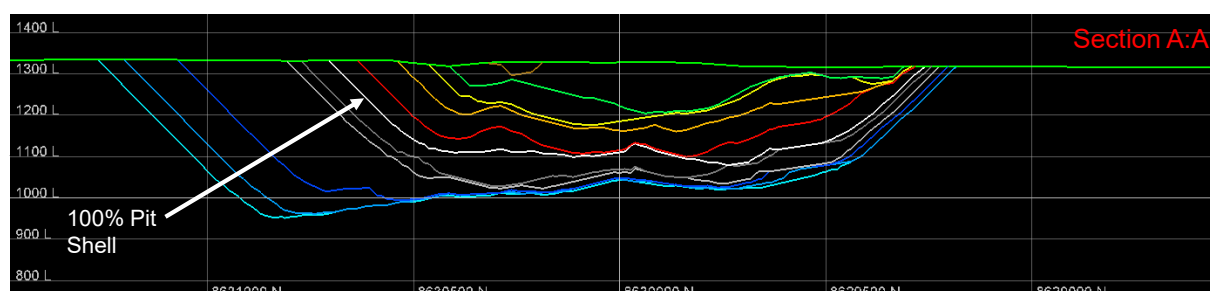
A preliminary open pit optimisation study was conducted for the Nyungu Central and Nyungu South deposits. The modelling was for copper production only, using costs from similar mines. The results were highly encouraging.

Modelling shows excellent deposit geometry via a very low stripping ratio (Figure 6).

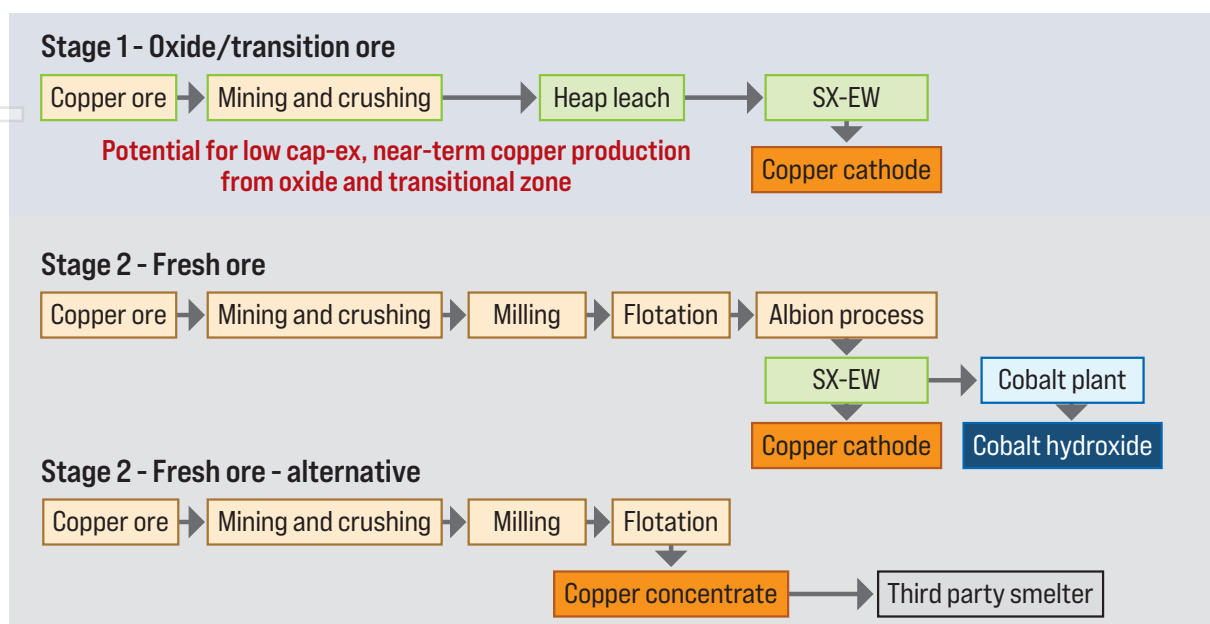
- Stripping ratio of 1.5 to 1 for the optimum pit at a copper price of US\$7,151; and
- Stripping ratio of 2.3 to 1 for depths greater than 300m at 150% of the current copper price, indicating the deposit has a low sensitivity to stripping ratio.

## Mineral Processing

The conceptual mineral processing flowsheets for a two-stage operation are shown below (Figure 7). Stage one involves oxide and transitional zone ores. Stage two involves the fresh, predominantly chalcopyrite ore in the deeper primary zone. Two alternative processes are shown for the second stage. One involves the production of copper metal and cobalt hydroxide and the other involves the sale of copper concentrate to local smelters.



**Figure 6** Nyungu Central long-section, looking east. Preliminary pit optimisation open pit shells. White shell has a stripping ratio of 1.5 to 1 and reflects the optimisation at US\$7,151. The light blue shell has a stripping ratio of 2.3 to 1 and is economic at 150% of that price.



**Figure 7** Conceptual mineral processing flowsheet for a two-stage operation at Nyungu.



## Cobalt Production Impediments – why Zambia?

Recent battery-related demand for cobalt has exposed the fragile nature of cobalt supply. Over 70% of the world's cobalt is coming from the DRC, one of the world's riskiest and most opaquely administered mining jurisdictions.

There are two main reasons why most the world's cobalt supply comes from the DRC: mineral endowment and favourable metallurgy.

Southern DRC and North-western Zambia (including the Zambian Copperbelt) cover the geological domain known as the Central African Copperbelt. Deposits in both countries commonly contain cobalt.

Of the 190 countries assessed for 'ease of doing business' by the World Bank in 2019, Zambia ranked 85. DRC ranked near the bottom at 183. Zambia is a far safer and lower-risk jurisdiction that benefits from political stability, robust mining law and functioning courts.

Other countries with significant cobalt endowment include Australia (nickel-cobalt laterites) and Canada (polymetallic copper-nickel-cobalt). The main reason cobalt production lags in these countries is metallurgy. The processing of cobalt in Australia and Canada is either metallurgically complex or prohibitively expensive (or both).

Zambia represents a blend of lower political risk, excellent mineral endowment, and favourable metallurgy.

## About Argonaut

Argonaut Resources NL is an Australian Securities Exchange listed exploration and development company focused on the Murdie copper project in South Australia and copper development at the Nyungu copper-cobalt deposit at the Lumwana West project in North-western Zambia.

Argonaut has plans to list its uranium subsidiary, Orpheus Minerals Ltd, on the ASX.

This report was authorised for release by:

**Lindsay Owler**

Director and CEO

ARGONAUT RESOURCES NL

*Sections of information contained in this report that relate to Exploration Results were compiled or supervised by Mr Lindsay Owler BSc, MAusIMM who is a Member of the Australasian Institute of Mining and Metallurgy and is a full-time employee of Argonaut Resources NL. Mr Owler holds shares and options in Argonaut Resources NL, details of which are disclosed in the Company's 2021 Annual Report. Mr Owler has sufficient experience which is relevant to the style of mineral deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr Owler consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.*

# JORC Code, 2012 Edition – Table 1

## Section 1 Sampling Techniques and Data – Lumwana West Project

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

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Samples from the Nyungu Central deposit are being sourced from diamond drill core. A total of 11 drill holes have been drilled for a total of 2,486 metres.</li> <li>Samples from the Nyungu East prospect are being sourced from reverse circulation (RC) percussion chips.</li> <li>Sampling was conducted as quarter core (PQ and HQ) or half core for visibly mineralised intervals of HQ core with an appropriate buffer into the unmineralised country rock. Sampling followed ARE protocols and industry best practice QA/QC procedures.</li> <li>Drill core is being sampled on nominal 1 metre intervals in mineralised zones. Maximum sample length outside mineralized zones is 2 metres.</li> <li>RC samples are being manually split using a riffle splitter and sampled on nominal 1 metre intervals in mineralised zones. Samples outside mineralized zones are composited across 2 metres.</li> <li>Drill core is being analysed every 0.5 metre and RC samples every 1 metre using a handheld XRF analyser. XRF copper results together with mineralisation logs and core photos are being used to determine mineralised and unmineralised zones.</li> <li>Samples are being dried, crushed (~5mm), split up to 1.2kg, pulverised and pulp taken for four acid digest followed by ICP-OES (multi-element), ICP-MS (U) or Aqua Regia/AAS (Au) finish. No analytical results have been received at the time of this announcement.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>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).</li> </ul>	<ul style="list-style-type: none"> <li>Diamond drill core (NYDD0XX) is either PQ3 (0 to base of transitional zone) or HQ3 (to EOH) recovered by standard tube. HQ drill core is being oriented using an Ezy Mark orientation tool.</li> <li>Reverse circulation holes (NYRC0XX) are 5.25 inch percussion.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Drill core recoveries are logged per drilling run. Core recoveries to date are greater than 95%.</li> <li>Drill core is reconstructed on angle-iron for run length measurement against driller's blocks, orientation lines and recording of driller's breaks.</li> <li>RC sample recovery is yet to be undertaken.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Drill core is being logged for geological (lithology, mineralisation, alteration) and geotechnical (alpha/beta angles, RQD, recovery) information, all data is stored in a database and or spreadsheets.</li> <li>All diamond drill holes are being logged and photographed.</li> <li>RC drill hole chips are being logged for lithology, mineralisation, and alteration.</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <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 sub-sampling 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 style="list-style-type: none"> <li>Drill core is being cut in half using core saws at Kitwe, and half core (HQ) collected for sampling, ensuring the same side (RHS looking downhole) of the drill core was consistently sampled.</li> <li>Field duplicates (pulp and crush checks) were submitted routinely to monitor QC of sample preparation and laboratory analysis.</li> <li>PQ half core is being cut to quarter core and sampled.</li> <li>Samples are being prepared at and crushed to 85% &lt;5mm with a 1.2kg subsample split (rotary and riffle) for pulverising to 85% &lt;75µm. Regular sizing checks were undertaken and reported.</li> <li>Sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <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 (ie lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>Samples will be submitted to a four acid digest (sulphuric, nitric, perchloric and hydrofluoric) and Inductively Coupled Plasma (ICP) finish.</li> <li>QAQC procedures include a chain of custody protocol, systematic submittal of 10 to 20% QA/QC samples including field duplicates, blanks and externally sourced certified reference samples into the flow of samples submitted to the laboratory.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>The verification of significant intersections by either 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 style="list-style-type: none"> <li>Significant intersections will be reported by ARE.</li> <li>No drill holes have been twinned.</li> <li>Data entry and verification is undertaken by AMC following an established protocol. All data is stored in spreadsheets and regularly backed-up.</li> <li>No statistical adjustments to data have been applied.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Drillhole locations have been surveyed by averaged Garmin GPS measurements, down hole surveys were collected every 50 metres using a Reflex EZ-TRAC instrument.</li> <li>Appropriate QC procedures were applied to verify down hole surveys.</li> <li>The grid system for the Lumwana West Project is UTM WGS84, zone 35 South.</li> <li>All GPS collar locations corrected to UTS 2010 survey DTM.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Diamond drill hole holes are typically infilling 200m spaced traverses to 100m.</li> <li>RC drill hole are on 100m spaced lined with 50m spaced collars.</li> <li>No resources or reserves reported.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <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 and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>Majority of drillholes orientated to intercept normal to the strike of mineralisation and were inclined to the east. Mineralisation is interpreted to strike 015 true, dip moderately to steeply to the west and plunge moderately to the north.</li> <li>Due to the dip attitude of the mineralisation, 70o inclined drillholes do not intersect the mineralisation completely perpendicular. This is not considered to have introduced any significant bias.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Sample security</b>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>The chain of custody for sample dispatch was implemented and is as follows: <ul style="list-style-type: none"> <li>Polywoven bags containing samples, labelled, sealed with cable ties and weighed.</li> <li>Sample despatch shipments were delivered to the sample preparation laboratory and the sample dispatch form signed and returned with a confirmation of the cable tie seals in place and the delivery of all samples within each batch.</li> </ul> </li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>Visits and review of the sample preparation laboratory at Intertek Genalysis in Kitwe and of the Intertek Genalysis laboratory in Australia are yet to be undertaken.</li> </ul>

## Section 2 Reporting of Exploration Results – Lumwana West Project

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Large Scale Prospecting Licence, 22399-HQ-LEL, Lumwana West, approximately 100 km west of Solwezi, Zambia. Current expiry date is 28/12/2021. An application for renewal has been submitted. Mwombezhi Resources Ltd holds 100% of the licence, Lumwana West Resources (100% subsidiary of Argonaut Resources NL) holds a 90% interest in Mwombezhi.</li> <li>The Nyungu area is in a forest reserve for which permission to access has been granted.</li> <li>Mwombezhi environmental project brief was duly authorised.</li> <li>Subject to renewal on 28/12/2021.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Roan Selection Trust (1960's – 1970's) - Regional soil sampling, augering, wagon drilling and diamond drilling. Drilling at Nyungu (Drillholes MM295 and MM296).</li> <li>AGIP – COGEMA JV (1982 – 1987) - Systematic regional radiometric traversing, soil and stream sediment sampling, geological mapping, pitting and trenching between 1982 and 1987. No drilling.</li> <li>Phelps Dodge (1990's) - Soil sampling and drilling. Drilling at Nyungu and Kavipopo (Drillholes NYU1 and 2, KAV 1 and 2).</li> <li>Zamanglo (2000 - 2003) – Regional and infill soil sampling. Geological mapping, IP/CR/CSAMT geophysical surveys. Three phases of RC drilling, at Nyungu (MBD00RC001-011 and MBD01RC001-009) and regional program (MBD02RC001-012) including 3 drillholes at ZNS and 4 drillholes at LMW.</li> <li>Equinox (2003 – 2008) – unknown but some unknown drill collars are presumably from this phase.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Style of mineralisation targeted is Lumwana style, structurally controlled, shear hosted, Cu +/- Co (+/- U and Au).</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </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>	<ul style="list-style-type: none"> <li>See Tables 1 and 2</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Length-weighted average grades reported. No upper limit has been</li> <li>applied to copper grades in these exploration results.</li> <li>A cut-off grade of 0.1% Cu and a maximum internal dilution of 3m</li> <li>(downhole width) are used as a guideline when delineating the drilled thickness intervals of mineralisation.</li> <li>All metal grades reported are single element.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Down hole length, true width not known.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to figures within report.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>No assay results reported.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Assay results for 2021 diamond and RC drilling are yet to be received.</li> <li>There is no outstanding exploration data considered material that has not been previously reported or is not contained within this report.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Further geological interpretation, structural analysis, resource estimation, metallurgical testing, mining engineering and economic studies to be completed for the Nyungu Central deposit.</li> <li>See Figure 5.</li> </ul>