



16 SEPTEMBER 2015

# Exploration Update – Lumwana West, Zambia

Argonaut Resources NL (ASX: ARE) (*Argonaut* or the *Company*) is pleased to announce results of 2015 drilling at the Lumwana West copper project in Zambia.

## Highlights

- 2015 exploration program:
  - ¬ An 11 hole diamond core drilling program for a total of 2,006m was completed at five prioritised copper targets.
  - ¬ Over 1,000 new soil samples were collected and analysed.
  - ¬ The program substantially completed the first phase of an option agreement with Antofagasta.
- Kamafamba prospect
  - ¬ Three drill holes for 409m were drilled at the Kamafamba prospect (Figure 2). Highlights from this drilling included:
    - » KMDD001: 15.85m at 0.30% copper from 41m
    - » KMDD003: 17.6m at 0.40% copper from 134.5m, including 5.6m at 0.67% copper from 146.5m
- · Kabikupa prospect:
  - ¬ 2015 drilling at Kabikupa prospect (Figure 5) sought to extend the mineralised strike extent to 1,800m.
  - Significant copper mineralisation was not intercepted by drilling outside of the main surface anomaly, meaning subsurface copper mineralisation is likely confined to a strike length of approximately 1,000m (Figure 5).
- Regional drilling program:
  - Three additional targets known as Sharamba, Luamvunda and Mufuka (Figure 1), which were defined by soil sampling and structural geology interpretation, were drill tested between May and July 2015.
  - ¬ No significant mineralised intercepts were returned from these targets.

Argonaut Resources NL ABN 97 008 084 848

#### Registered Office

Suite 4, Level 9 341 George Street Sydney, NSW, 2000, Australia T +61 2 9299 9690 F +61 2 9299 9629 E sydney@argonautresources.com

#### Adelaide Office

Level 1 63 Waymouth Street Adelaide, SA, 5000, Australia T +61 8 8231 0381 F +61 8 8231 6092 E adelaide@argonautresources.com

## Lumwana West (Argonaut 90%)

The Lumwana West project is located in the Central African Copperbelt, North-Western Province, Zambia. The area is prospective for large tonnage, low to medium grade copper deposits. There are several major mines nearby to Lumwana West that are hosted in similar geological settings.

Argonaut, via its 90% held subsidiary, Mwombezhi Resources Ltd, has been successful in generating broad copper intercepts at the Nyungu deposit and has defined a series of large, prospective targets that have now undergone first-pass drill testing.

## **EXPLORATION PROGRAM**

The 2014/15 program was the first exploration phase under the option agreement between Argonaut and a wholly owned subsidiary of Antofagasta plc (*Antofagasta*), dated 28 April 2014 (the *Overlying Agreement*). According to the Overlying Agreement, exploration expenditure of US\$3.9m in the first period earns Antofagasta a 25% interest in the project.

The first phase exploration program was completed in July 2015 and included a total of 8,129m of diamond core drilling plus the collection and analysis of 12,947 soil samples.

Of the total drill meterage, 6,123m were drilled during the 2014 field season with holes targeting the following areas: West Mwombezhi, Kavipopo, ZNS, LMW, Mufuka, and Kapikupa prospects plus the Nyungu deposit (Figure 1).

An additional 2,006m were drilled between May and July 2015 targeting geochemical anomalies and structural targets at Kapikupa, Kamafamba, Mufuka, Sharamba and Luamvunda prospects (Figure 1).

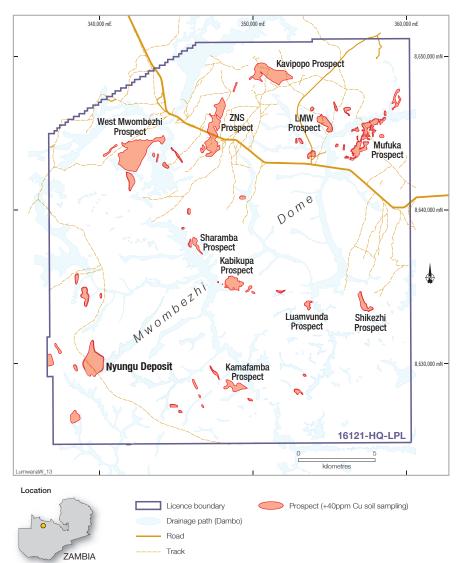


Figure 1: Lumwana West Large-scale Prospecting Licence and prospect locations.

### Kamafamba

The Kamafamba target sits near the southern margin of a large granite body. The prospect is defined by a 1,100m soil geochemistry anomaly. Structural interpretation indicates the geochemical anomaly is coincident with a thrust system related to the granite margin, which enhances the prospectivity of the target.

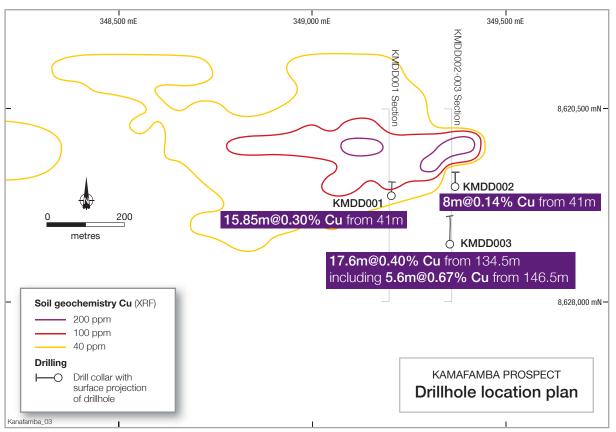


Figure 2: Kamafamba soil anomaly contours and drill intercepts.

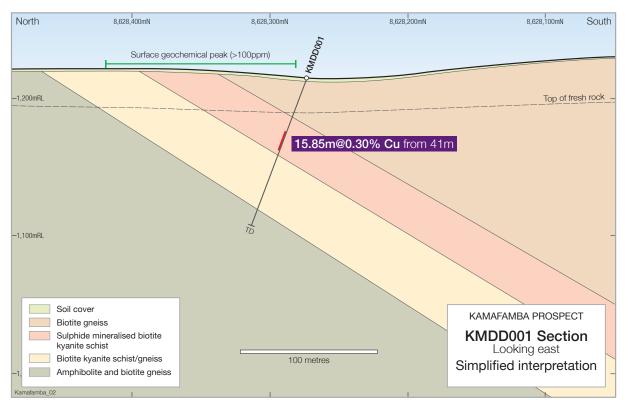


Figure 3: Kamafamba KMDD001 cross section.

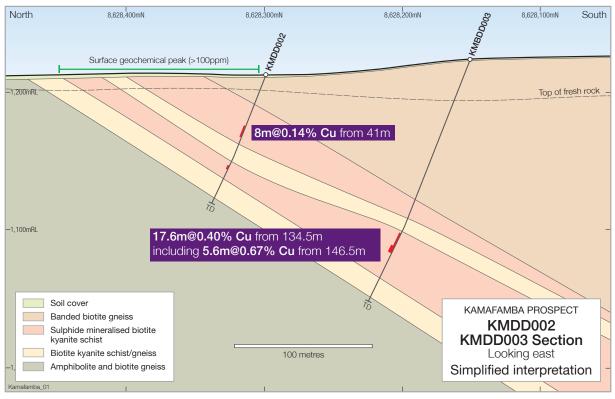


Figure 4: Kamafamba KMDD002-003 cross section.

### Kabikupa

The Kabikupa prospect was defined in 2014 by soil sampling and drilling. The soil geochemistry anomaly strikes south-east and measures approximately 1,000m by 500m. The peak soil sample is 0.13% copper, which is the highest copper-in-soil value returned within the licence area to date.

Four holes for 903m were completed in 2014.

- The first drill hole at Kabikupa prospect, KBDD001, returned **17.4m at 1.18% copper** from 102.6m within a broader intercept of **39m at 0.61% copper** from 81m<sup>1</sup> (Figure 5).
- Drill hole KBDD002 targeted the same mineralisation down-dip and intersected weaker copper mineralisation, interpreted to be the margin of the main mineralisation zone. The hole returned 17m at 0.22% copper from 230m and 10m at 0.27% copper from 266m (Figure 5).
- KBDD003, 800m along strike to the southeast, also intersected the interpreted margin of the main mineralised zone. KBDD003 intercepted 25m at 0.22% copper from 12m and 10.7m at 0.29% copper from 52m (Figure 5).
- KBDD004 intersected the main mineralised zone and returned **20.4m at 0.67% copper** from 151m including **7m at 0.92% copper** from 154m (Figure 5).

The main mineralised zone has been intersected by drilling over a strike length of 800m and the surface geochemical anomaly indicates that the total mineralised strike extent is approximately 1,000m. Kabikupa geology features the zonation of copper sulphide minerals and persistent alteration, indicating the mineralising system is well developed.

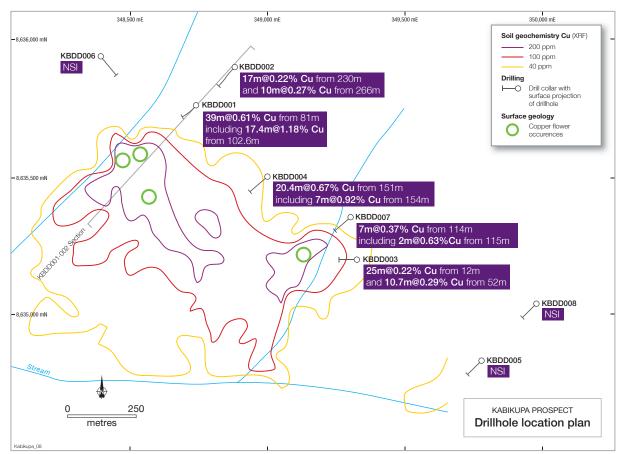


Figure 5: Kabikupa prospect soil anomaly contours and drill intercepts.

<sup>1</sup> By weighted average. Cut-off grade not applied.

## **REGIONAL DRILLING**

Three regional targets known as Sharamba, Kamafamba and Mufuka (Figure1) defined by soil sampling and structural geology interpretation were drill tested.

Results of 2015 drilling at Lumwana West are summarised in Table 1 below.

#### Table 1: 2015 Lumwana West drill intercepts

Hole	From	Interval	Cu (%)
KBDD005		NSI	
KBDD006		NSI	
KBDD007	102.18	0.82	0.32
	114.00	7.00	0.37
including	115.00	2.00	0.63
	176.00	4.00	0.14
KBDD008	188.00	2.00	0.26
KMDD001	41.00	15.85	0.30
including	48.85	6.25	0.44
KMDD002	34.00	1.00	0.19
	41.00	8.00	0.14
	64.00	1.00	0.20
	72.70	3.30	0.18
KMDD003	113.50	1.00	0.12
	130.00	1.90	0.56
	134.50	17.60	0.40
including	146.50	5.60	0.67
including	148.50	1.20	1.41
	155.50	1.20	0.12
MFDD003		NSI	
LVDD001		NSI	
SHDD001		NSI	
SHDD002		NSI	

### **SOIL SAMPLING**

The 2015 exploration program included the collection and analysis of 1,028 soil samples. Of these samples, 626 were collected from an area covering a large granite pluton in the central area of the licence between Kabikupa and Kamafamba and 402 surface geochemical samples were collected from across another granite body in the eastern area of the licence between Mufuka and Shikezhi.

#### 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, as described on page 9 of the Company's 2014 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.

# Appendix 1

## Lumwana West - 2015 drill intercepts.

Hole	East	North	RL	Dip	Azimuth	Total depth	From	То	Interval	Cu (%)	Co (ppm)
KBDD005	349780	8634830	1253	-70	225	201.00			NSI		
KBDD006	348390	8635940	1255	-70	135	290.00			NSI		
KBDD007	349298	8635354	1246	-70	225	267.00	102.18	103.00	0.82	0.32	22
							114.00	121.00	7.00	0.37	45
including							115.00	117.00	2.00	0.63	38
							176.00	180.00	4.00	0.14	114
KBDD008	349987	8635042	1265	-70	225	212.00	188.00	190.00	2.00	0.26	35
KMDD001	349205	8628273	1215	-70	360	114.00	41.00	56.85	15.85	0.30	96
including							48.85	55.10	6.25	0.44	102
KMDD002	349370	8628298	1213	-70	360	103.07	34.00	35.00	1.00	0.19	56
							41.00	49.00	8.00	0.14	107
							64.00	65.00	1.00	0.20	36
							72.70	76.00	3.30	0.18	48
KMDD003	349355	8628150	1225	-70	360	192.20	113.50	114.50	1.00	0.12	56
							130.00	131.90	1.90	0.56	144
							134.50	152.10	17.60	0.40	171
including							146.50	152.10	5.60	0.67	222
including							148.50	149.70	1.20	1.41	336
							155.50	156.70	1.20	0.12	79
MFDD003	356620	8643680	1267	-60	135	201.00			NSI		
LVDD001	353381	8633724	1243	-70	60	123.00			NSI		
SHDD001	346065	8637950	1242	-70	90	221.80			NSI		
SHDD002	346138	8637945	1243	-60	90	81.00			NSI		

#### Notes

1 Calculated using 0.1% Cu lower cut threshold, no upper cut threshold, maximum 4 metres internal dilution

2 Analysis by Intertek Genalysis - Methods 4A/OE, 4A/MS for U, ARU10/SAA for Au

3 Coordinate system: WGS84, Zone 35 South

4 NSI = No significant intercepts

5 DD = Diamond core intercept

# 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
Sampling techniques	<ul> <li>Nature and quality of sampling (eg 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 (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>The Kabikupa, Sharamba, Kamafamba and Luamvunda prospects were sampled using diamond drill holes. A total of 11 drill holes were drilled for a total of 2006.07 metres.</li> <li>Diamond drillcore only was sampled. Drillcore was logged for lithology, weathering, alteration, mineralisation and structure. Sampling was conducted as half core (NQ and HQ) or quarter core (PQ) for visibly mineralised intervals with an appropriate buffer into the unmineralised country rock. Sampling followed ARE protocols and industry best practice QA/QC procedures.</li> <li>Drillore sampled on nominal 1 metre intervals which varied with respect to lithological and geological boundaries in mineralised zones. A 2 metre maximum sample length outside mineralized zones, also varied with respect to lithological and geological boundaries.</li> <li>Samples were 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.</li> </ul>
Drilling techniques	<ul> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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> <li>Diamond core only, NQ3 with PQ3 or HQ3 collars. HQ and NQ drillcore was oriented using an Ezy Mark 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>Drillcore recoveries are logged per drilling run, overall core recoveries greater than 95%.</li> <li>Drillcore reconstructed on angle iron for run length measurement against driller's blocks, orientation lines and recording of driller's breaks.</li> <li>Diamond drillcore has high recoveries with negligible core loss recorded.</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>	<ul> <li>Drillcore has been logged for geological (lithology, mineralisation, alteration) and geotechnical (alpha/beta angles, RQD, recovery) information, all data is stored in a database and/or spreadsheet.</li> <li>All holes are logged and photographed.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <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> <li>Selected drillcore was cut in half using core saws at the field camp, and half core (HQ and NQ size) collected for sampling, ensuring the same side (RHS looking downhole) of the drillcore was consistently sampled. Field duplicates (pulp and crush checks) were submitted routinely to monitor QC of sample preparation and laboratory analysis.</li> <li>Samples were 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>

Criteria	JORC Code explanation	Commentary
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 (eg standards, blanks, duplicates, external laboratory checks) and precision have been established.</li> </ul>	<ul> <li>Samples were 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, field blanks and externally sourced certified reference samples into the flow of samples submitted to the laboratory.</li> </ul>
Verification of sampling and assaying	<ul> <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> <li>Significant intersections are reported by ARE and checked by AMSA.</li> <li>No drillholes have been twinned.</li> <li>Data entry and verification is undertaken by AMC following an established protocol into Reflex Logger software, all data is stored in a digital database (Reflex Hub) and regularly backed-up.</li> <li>No statistical adjustments to data have been applied.</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>	<ul> <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>
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>	<ul><li>Wide spaced exploration drilling.</li><li>No resources or reserves reported.</li></ul>
Orientation of data in relation to geological structure	<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 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><li>orientation.</li><li>No orientation based bias had been identified in the data to this</li></ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>The chain of custody for sample dispatch was implemented and is as follows:         <ul> <li>Polywoven bags containing samples, labelled, sealed with cable ties and weighed.</li> <li>Sample dispatch 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>
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• Visits and review of the sample preparation laboratory at Intertek Genalysis in Chingola and of the Intertek Genalysis laboratory in Adelaide have been conducted by the senior personnel.

## 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
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>	<ul> <li>Large Scale Prospecting Licence, 16121-HQ-LPL, Lumwana West, approximately 100 km west of Solwezi, Zambia. Licence renewed for further 2 year period. Current expiry date is 20/07/2017. Prior to expiry an application for extension of term will be submitted to the Geological Survey of Zambia. Mwombezhi Resources holds 100% of the licence, Lumwana West Resources (100% subsidiary of Argonaut Resources NL) has an earn in joint venture. Currently, have acquired 90% interest. Portions of the licence area are forest reserves requiring permission to access which has been granted.</li> <li>No known impediments.</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Roan Selection Trust (1960s – 1970s): 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> </ul>
		<ul> <li>Phelps Dodge (1990s): Soil sampling and drilling. Drilling at Nyungu and Kavipopo (Drillholes NYU1 and 2, KAV 1 and 2).</li> </ul>
		<ul> <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> </ul>
		<ul> <li>Equinox (2003 – 2008): Unknown but some unknown drill collars are presumably from this phase.</li> </ul>
		<ul> <li>No previous exploration drilling evident or known prior to 2014 at Kabikupa, Sharamba, Kamafamba, Mufuka or Luamvunda prospects.</li> </ul>
Geology	• Deposit type, geological setting and style of mineralisation.	<ul> <li>Style of mineralisation targeted is Lumwana style, structurally controlled, shear hosted, Cu +/- Co (+/- U and Au).</li> </ul>
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:	See Table – Lumwana West Project Drillholes
	$\neg$ easting and northing of the drill hole collar	
	<ul> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> </ul>	
	¬ 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.	

Criteria	JORC Code explanation	Commentary
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg 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>Length-weighted average grades reported. No upper limit has been 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 (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>
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 (eg 'down hole length, true width not known').</li> </ul>	Down hole length, true width not known.
Diagrams	<ul> <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>	Refer to figures within report.
Balanced reporting	<ul> <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>	All results reported.
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.	<ul> <li>There is no outstanding exploration data considered material that has not been previously reported or is not contained within this report.</li> </ul>
Further work	<ul> <li>The nature and scale of planned further work (eg 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>Further geological interpretation and structural analysis to be completed on these prospects. Target testing contingent on positive interpretation.</li> <li>All future exploration work is commercially sensitive and will not be released to the market until results are available.</li> </ul>