



# HORSESHOE METALS LIMITED

ASX ANNOUNCEMENT

12 SEPTEMBER 2018

## EXPLORATION UPDATE- HORSESHOE LIGHTS PROJECT

### SUMMARY

- **Results received from the 15-hole RC drilling program**
- **Drilling program targeted bedrock mineralisation and historic waste rock landforms (WRL)**
- **Results include:**
  - **Bedrock**      **11 m @ 1.54% Cu from 72m, and  
8m @ 0.96% Cu from 50 m**
  - **WRL**            **4 m @ 2.2 g/t Au from 1m, and  
3 m @ 1.4% Cu from surface**
- **New deep exploration target identified at Horseshoe Lights**
- **Ore sorting test work to be included in SMART program**
- **Regional programmes planned at Horseshoe and Kumarina.**

### OVERVIEW

Horseshoe Metals Limited (ASX: HOR) ("Horseshoe" or "the Company") is pleased to release the results of a 15-hole Reverse Circulation (RC) drilling program completed at its Horseshoe Lights Project located 75 km west of Sandfire Resources NL's (ASX:SFR) DeGrussa copper-gold mine, in the Bryah Basin region of Western Australia (Figure 7).

Previous drilling through Waste Rock Landforms (WRL) at Horseshoe returned elevated copper and gold intersections, and to test this potential an initial twelve hole drill program totalling 180 m was completed on the Northwest and Southern WRLs, to investigate their use as a possible resource for low-capex oxide copper ore treatment (the SMART program). This was followed by a three hole exercise testing the bedrock targets.

Results from the WRL drilling showed a range of copper values, with a best result of **3 m @ 1.4% Cu** from surface, inside a broader zone of 10 m @ 0.52% Cu, with a maximum value of 2.3% Cu (refer Table 1); and a zone of **4 m @ 2.23 g/t Au** from 1m.

Notably all anomalous copper zones were recorded from surface on the WRL's, assisting any possible recovery of potential material for the SMART program. The

#### BOARD OF DIRECTORS

Mr Michael Fotios  
*Non-Executive Chairman*

Mr Neil Porter  
*Non-Executive Director*

Mr Alan Still  
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Company is examining the opportunity for additional targeted holes in the vicinity of better results from this and previous drilling.

The best bedrock drilling result was **8m @ 0.96% Cu** from 50 m and **11 m @ 1.54% Cu** from 72m in broad mineralised zone in Hole RC1144.

The Company will also pursue ore sorting technology as a means of improving the grade of the waste and bedrock mineralisation being assessed as part of the SMART program.

## HORSESHOE LIGHTS DRILLING RESULTS

### *Waste Rock Landform drilling*

Previous drilling on the Motters and NW Stringer Zone (refer Figure 1) had to collar through the Northern Waste Rock Landforms. These incidental samples previously returned elevated copper and gold intersections. As the other Waste Rock Landforms (WRL) on the property had limited information, an initial 12 RC hole (WRL01 - 12) drill program totalling 180 m was completed on the Northwest and Southern WRLs to investigate landforms as a possible resource for the SMART program.

This programme was very broad in nature and consider only to provide an indicative assessment. Best result was 3 m @ 1.4% Cu from surface in hole WRL11, inside a broader zone of 10 m @ 0.52% Cu; and 4 m @ 2.23 g/t Au from 1 m in WRL05; which was the only coherent gold intersection.

Typically all anomalous copper zones were recorded from surface on the WRL's, assisting any possible recovery of potential material for the SMART program. The average of copper grades >0.1% from surface was 0.26%, which could potentially be selectively high-graded.

**Table 1: Results from 2017 WRL Drilling, Horseshoe Lights.**

Hole_ID	Final Depth	Grid Easting	Grid Northing	Max Cu_ppm	Max Au_ppb	Best Intersection*
WRL01	12	663277	7193503	1837	85	2 m @ 0.10% Cu from surface
WRL02	10	663272	7193606	3562	154	3 m @ 0.17% Cu from surface
WRL03	17	663115	7193519	1611	768	5 m @ 0.11% Cu from surface
WRL04	8	663219	7193698	2104	69	2 m @ 0.15% Cu from surface
WRL05	9	663132	7193658	673	3120	NSI (Cu) <b>4 m @ 2.23 g/t Au from 1m</b>
WRL06	23	662915	7193576	4081	236	2 m @ 0.10% Cu from surface; and 3 m @ 0.24% Cu from 8m
WRL07	15	662819	7193464	9201	139	10 m @ 0.21% Cu from surface
WRL08	14	662504	7193465	2046	114	9 m @ 0.12% Cu from surface
WRL09	12	662798	7193675	605	2690	NSI
WRL10	20	662366	7194568	5857	78.9	6 m @ 0.28% Cu from surface
WRL11	14	662368	7194352	22670	449	10 m @ 0.52% Cu from surface (including <b>3 m @ 1.4% Cu from surface</b> )
WRL12	26	662710	7194585	3234	67.4	4 m @ 0.26% Cu from surface

\*Cu Intervals >0.1% Cu, 2 m internal dilution, minimum width 2 m

\*Au Intervals >1.0 g/t Au, no internal dilution, minimum width 2 m; NSI unless stated

In addition to the WRL drilling, the company undertook reconnaissance confirmatory sampling of a number of stockpiles (the M15 Stockpiles, a subgrade stockpile; and a gold ore stockpile- refer Figure 2). Previous material estimates of the copper stockpiles have been determined as 243,400 t @ 1.10% Cu (M15) and 38,000 t @ 0.5% Cu (Subgrade) - refer ASX announcement 9 March 2015.

A nominal 8 samples taken from the M15 stockpiles averaged 1.4%, and 4 samples from the subgrade stockpile averaged 1.0 % Cu, exceeding expectations and giving confidence in the possible performance of this material. The gold stockpile averaged 1.9 g/t Au from 4 samples.

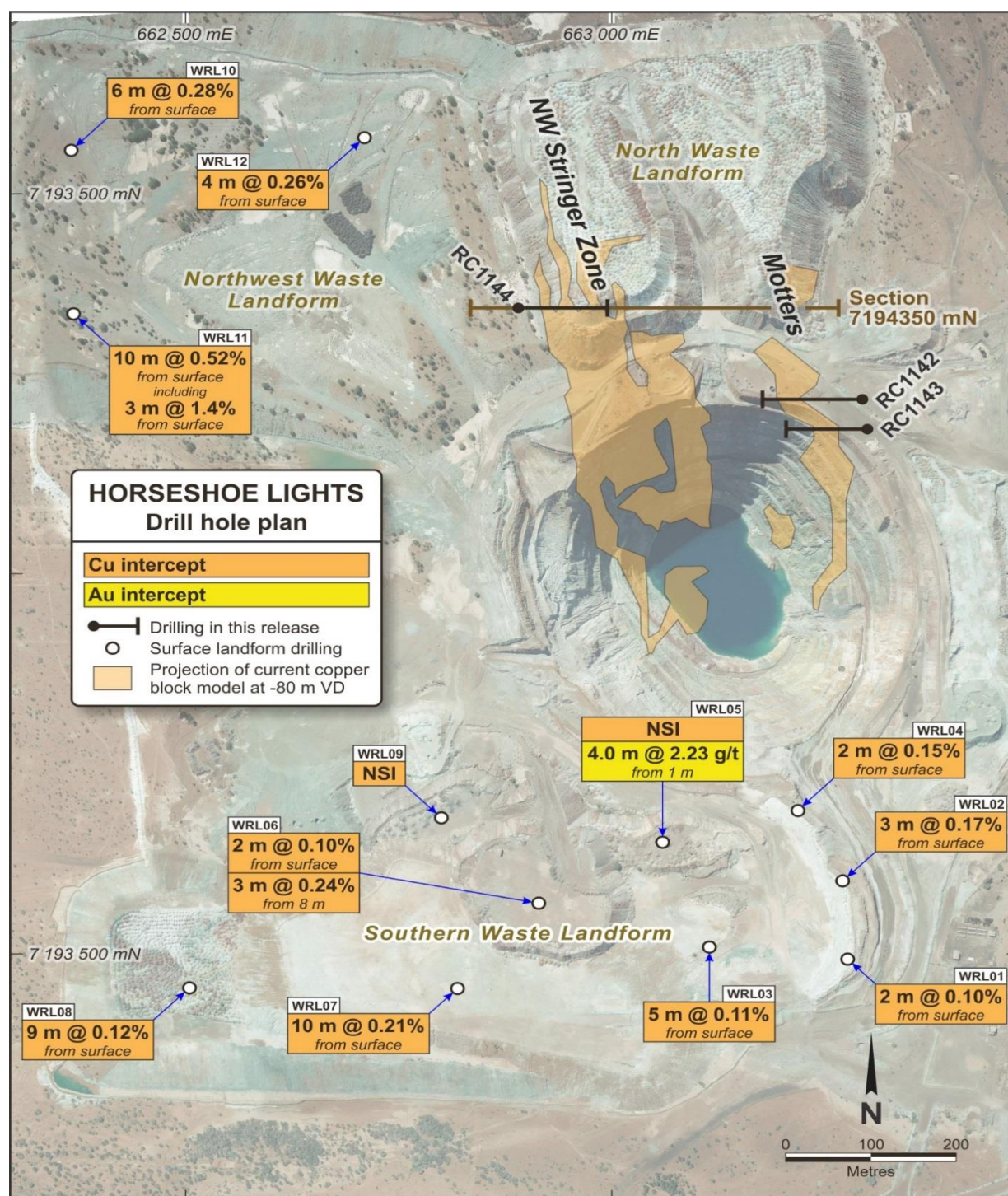


Figure 1: Location and Highlights, WRL drilling



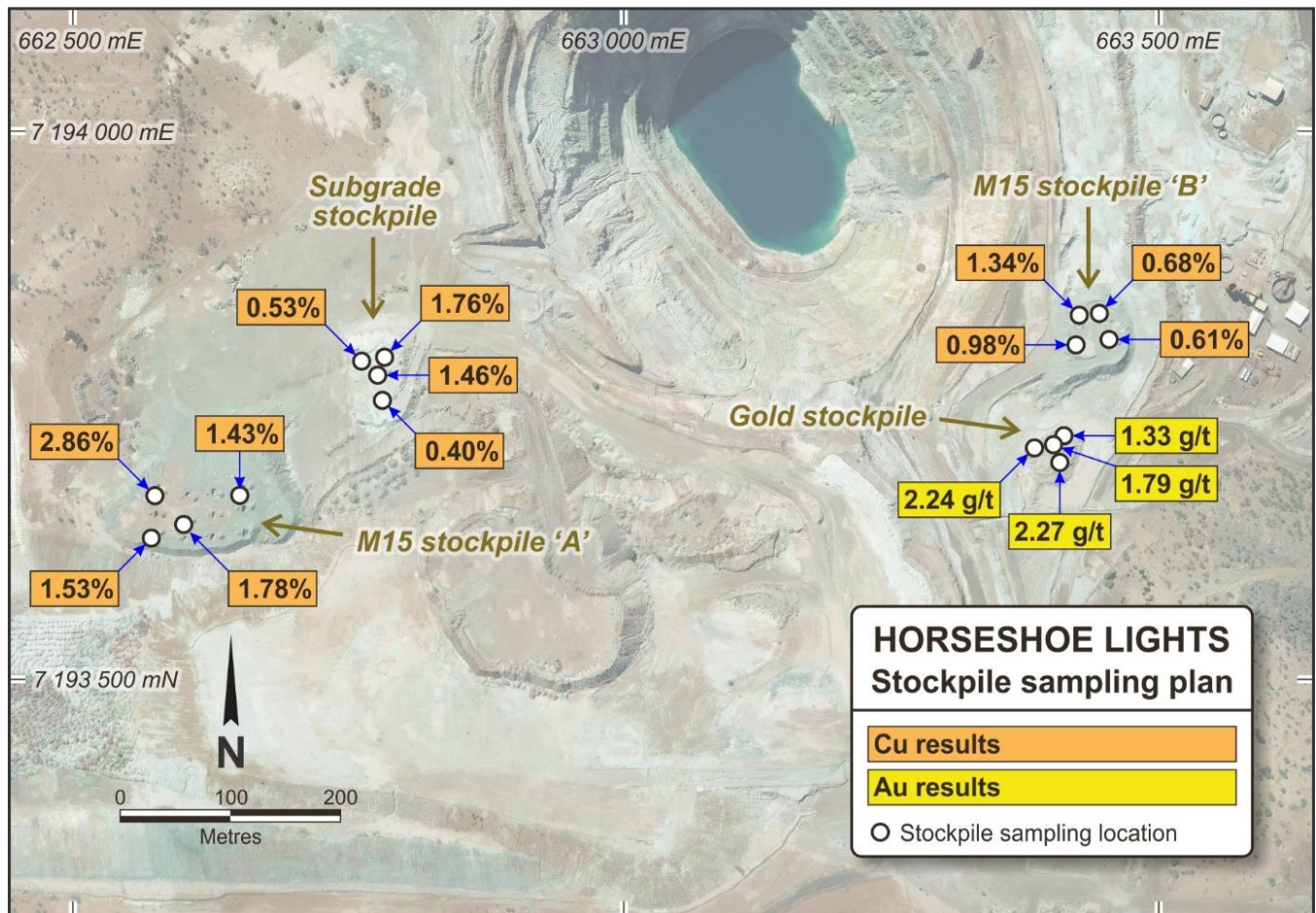


Figure 2: Location and Values, Stockpile Sampling

### Bedrock Target Areas

#### Eastern Footwall Zone

Historical drilling of the Eastern Footwall Zone has proven difficult due to the position of the pit wall. A specialty drill rig completed two holes (RC1142 and RC1143) in a target area believed to be the linkage between the Main Zone and the Motters Zone. Drilling encountered Narracoota Formation volcanic rock with disseminated chalcopyrite observed in the target zone.

Best results for Hole RC1142 (intersections reported >2 m >0.5%, minimum 2 m internal dilution):

- 2 m @ 0.62% Cu from 42m inside a broad lower grade intercept (>0.1%) of 15m @ 0.24% Cu from 35m;

Best results for Hole RC1143 were:

- 5 m @ 0.96% Cu from 51m inside a broad low grade intercept of 33m @ 0.30% Cu from 36m;
- 2 m @ 0.61% from 132m, and
- 2 m @ 0.51% Cu from 136m; both inside a broad low grade intercept of 20m @ 0.26% Cu from 129m;

Both holes were not drilled perpendicular to mineralisation due to the pit proximity, and widths are considered downhole only. Results are considered generally reflective of the modelled resource, and provided confidence in the geological interpretation and modelling for this area.

### Northwest Stringer Zone

Drill hole RC1144 was designed to test the continuity of oxide mineralization between holes on Section 4350 of the Northwest Stringer Zone (Figure 3). Three separate mineralized zones were encountered in Narracoota Formation volcanic rock as indicated by RC drilling chips containing coarse malachite.

Assays highlighted that the entire length of the hole (162m) was effectively elevated in copper, and the main horizon averaged 0.37% over 127 m length from 35m.

Best results for Hole RC1144 (intersections reported >2 m >0.5%, minimum 2 m internal dilution):

- 8 m @ 0.96% Cu from 50 m, and
- 11 m @ 1.54% from 72 m, and
- 2 m @ 0.51% Cu from 127 m; and
- 2 m @ 0.59% Cu from 136 m;

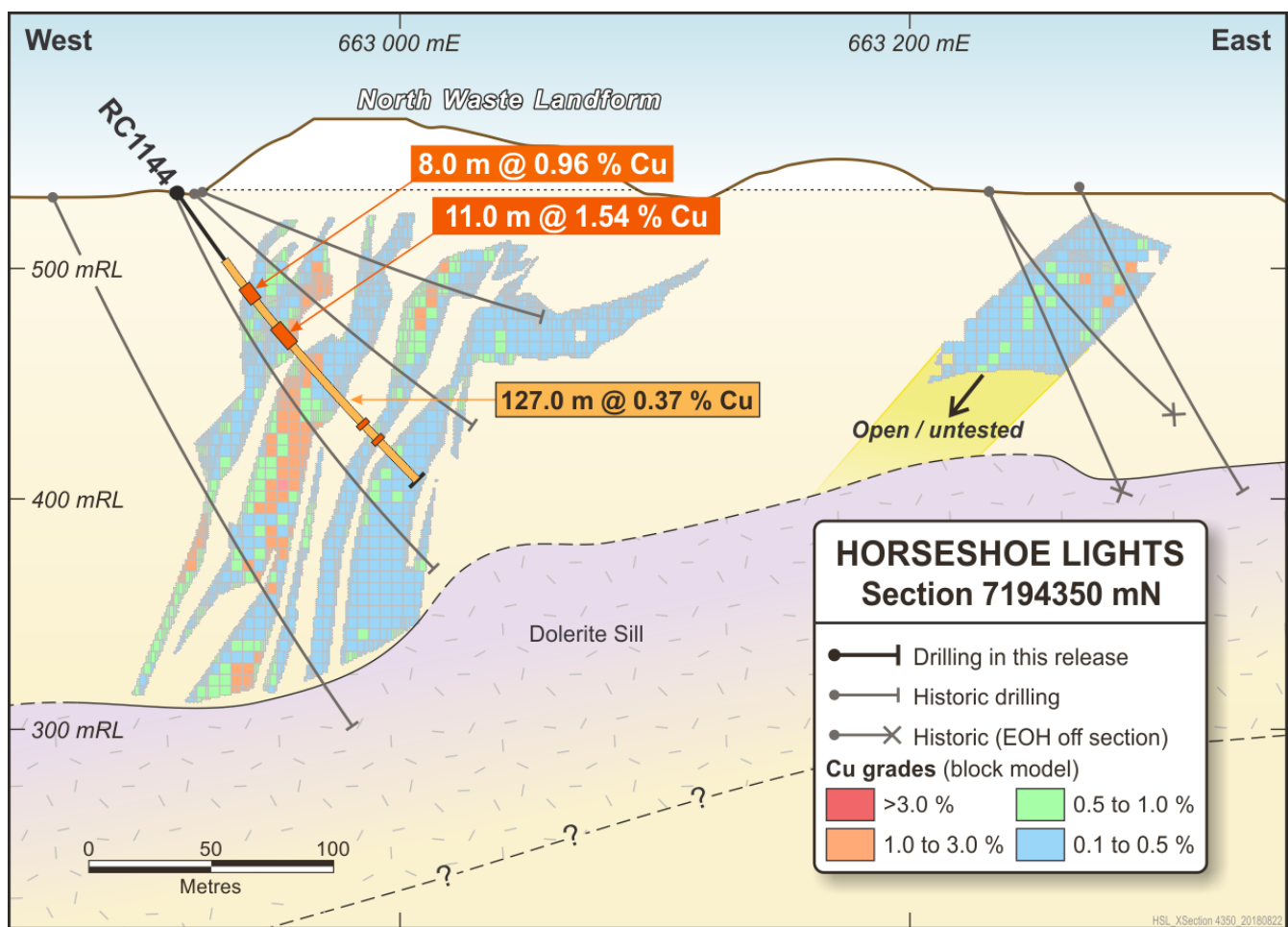


Figure 3: Cross Section 7194350mN, Horseshoe Lights Deposit, highlighting best results from Hole RC1144

Results for RC1144 are considered true width. No significant gold intersections were recorded in any of the bedrock drilling. Material from the oxide zones in Hole RC1144 were retained to provide new inputs to the SMART Project.

## **HORSESHOE LIGHTS EXPLORATION ACTIVITIES**

The Company's geologists have been reviewing targets within the company's tenure, and have been developing what is internally referred to as the "Below the Dolerite", or "BTD" target. As can be seen in Figure 3, Horseshoe Lights volcanogenic massive sulfide (VMS) copper-gold mineralisation in the host Narracoota Formation is terminated by a younger dolerite intrusion, which strikes roughly east-west, and dips variably to the south-southwest. This dolerite has traditionally been seen as the limit of exploration potential, was consistently used as a marker to terminate drilling, and the thickness was unknown to a number of recent workers.

The dolerite is interpreted to occupy a thrust fault that pushes the Narracoota over the Bangemall Group sediments (refer Figure 7 for regional geology plan), which means that that Narracoota Formation should re-appear beneath it, and the formation may continue to host VMS mineralisation below the dolerite (refer Figure 4- Conceptual BTD target).

Recent investigations have highlighted the paucity of understanding in relation to the nature of the relationship between these units, which has a significant impact on the deeper prospectivity of the project. The Company recently re-investigated holes that could determine the thickness of the dolerite, and found two; a diamond hole re-entry on an original RC hole drilled in 1976 (HLD-2), which penetrated 134m of dolerite before passing into a "metasedimentary rock of unknown character"; and Hole RC702 drilled in 1988, penetrating 120m of dolerite before passing briefly into 14m of black pyritic shale before being terminated. It is unclear if the logged shale can be interpreted as Bangemall sediments, or internal to the Narracoota Formation, which can occur and is observed locally at Horseshoe within the Narracoota Formation.

The Company now considers that the thickness of the dolerite should not necessarily be considered a heavy impediment to exploration targeting, particularly as it daylights up-dip to the north, and that the sequence below the dolerite should be drill tested with more rigor to establish if prospective horizons can be established within newly-located and untested Narracoota Formation, below the Bangemall sediments. The dolerite also impacts surface geophysical techniques, and drilling below the dolerite may provide a platform to identify non-shale anomalies through downhole techniques.

The Company also has Programme of Works (PoW) approval to aircore drill test a strong geochemical copper in soil anomaly to the south of Horseshoe pit on E52/2042 (refer Figure 5) and PoW approval to undertake confirmatory infill and extensional auger sampling of targets T1-T6 generated from regional auger sampling on E52/1998. These programmes require ground clearance and board approval to proceed.

### ***Enquiries***

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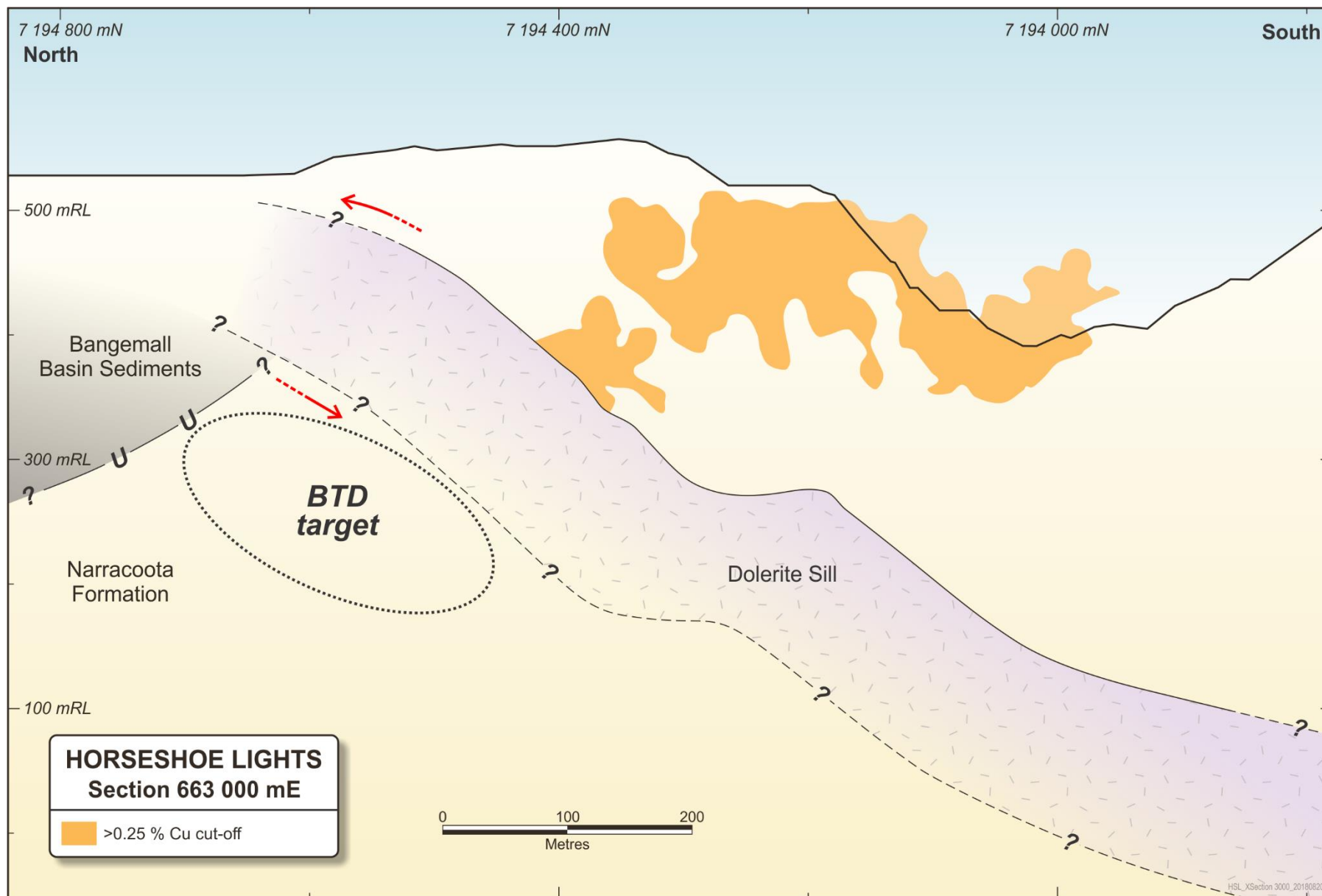


Figure 4: Conceptual BTM Target, Cross Section 663000 mE, looking East, Horseshoe Lights Deposit



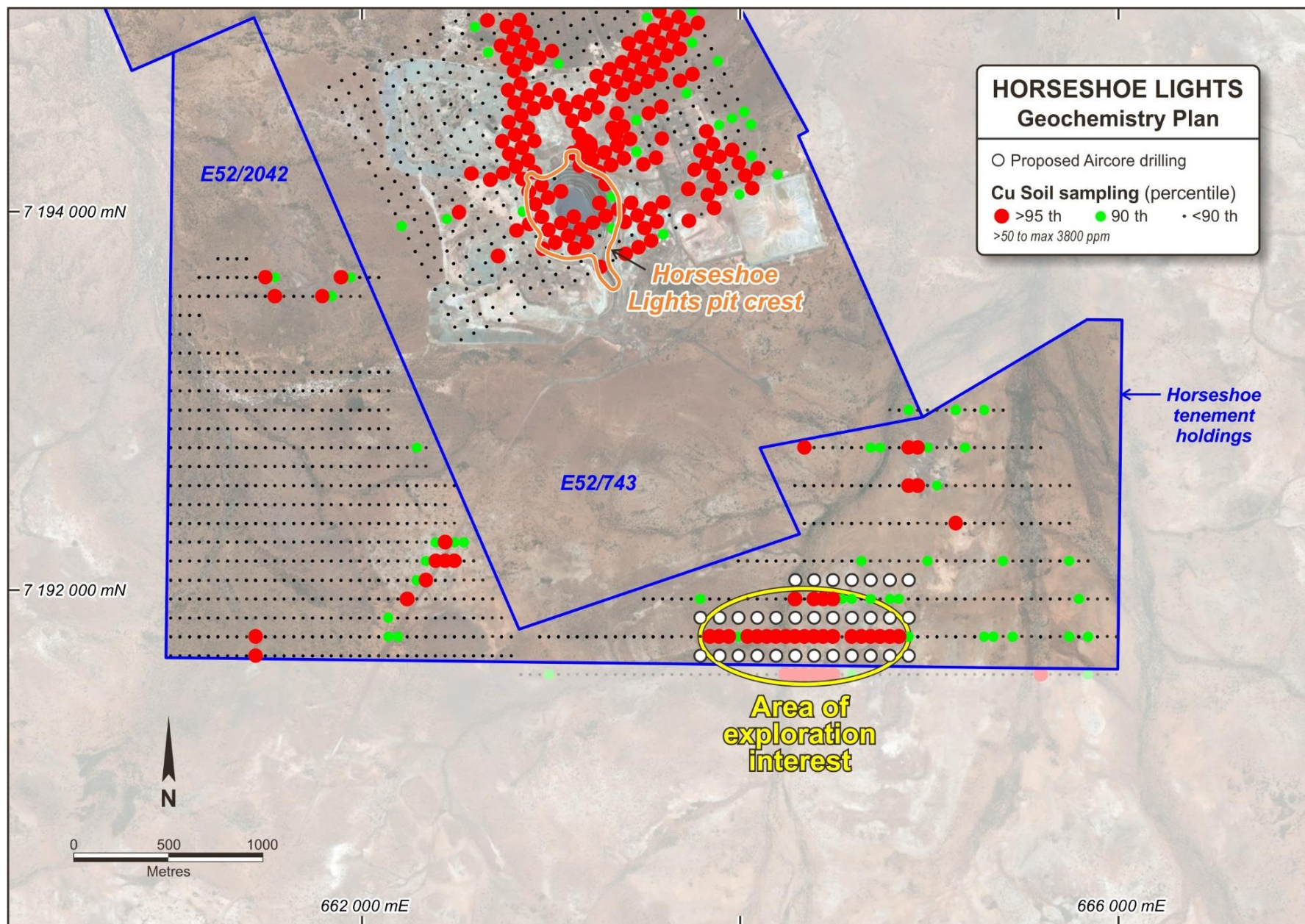


Figure 5: Plan of compiled historical soil sampling, Horseshoe Lights Project



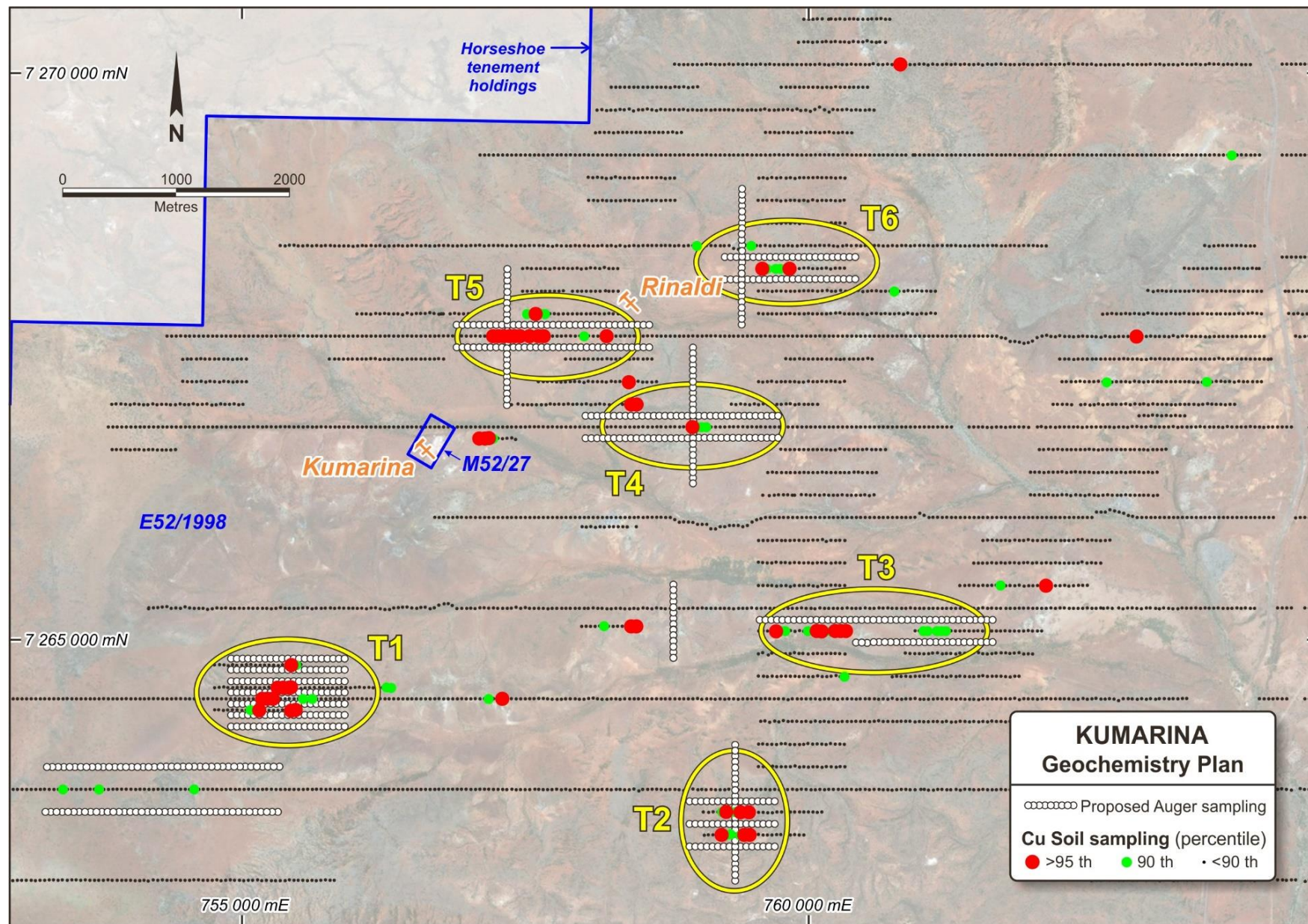


Figure 6: Plan of compiled auger sampling and geochemistry targets, E52/1998, Kumarina Project

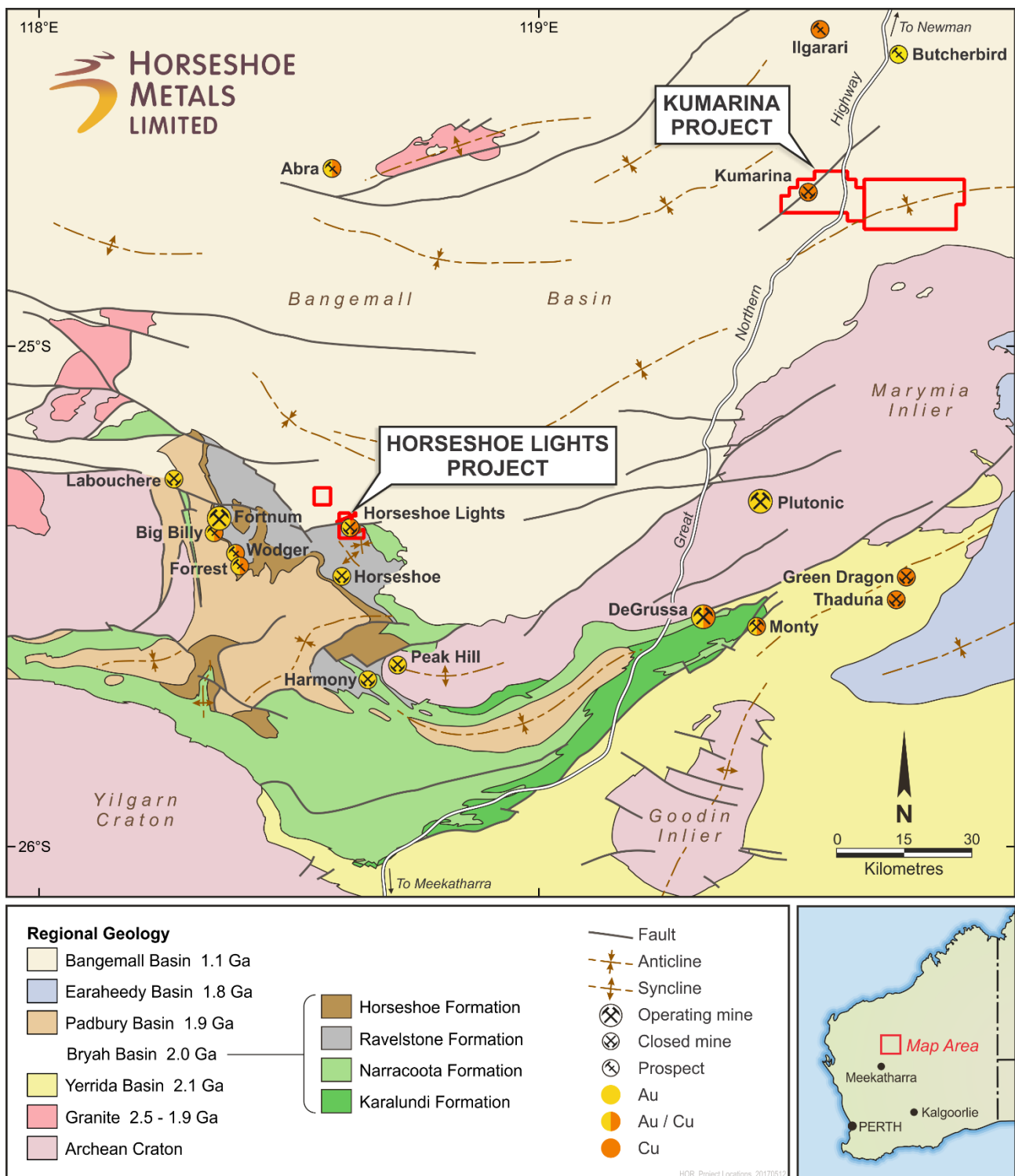


Figure 7: Location map and geology, Horseshoe Lights and Kumarina Projects

## About Horseshoe Metals Limited

Horseshoe Metals Limited (ASX:HOR) is a copper and gold focused Company with a package of tenements covering approximately 500km<sup>2</sup> in the highly prospective Peak Hill Mineral Field, located north of Meekatharra in Western Australia. The Company's projects are the Horseshoe Lights Project and the Kumarina Project.

## About the Horseshoe Lights Project

The Horseshoe Lights Project includes the historic open pit of the Horseshoe Lights copper-gold mine which operated up until 1994, producing over 300,000 ounces of gold and 54,000 tonnes of contained copper including over 110,000 tonnes of Direct Shipping Ore (DSO) which graded between 20-30% copper.

The Horseshoe Lights ore body is interpreted as a deformed Volcanogenic Hosted Massive Sulphide (VMS) deposit that has undergone supergene alteration to generate the gold-enriched and copper-depleted cap that was the target of initial mining. The deposit is hosted by quartz-sericite and quartz-chlorite schists of the Lower Proterozoic Narracoota Formation.

Past mining was focused on the Main Zone, a series of lensoid ore zones, which passed with depth from a gold-rich oxide zone through zones of high-grade chalcocite mineralisation into massive pyrite-chalcopyrite. To the west and east of the Main Zone, copper mineralisation in the Northwest Stringer Zone and Motters Zone consists of veins and disseminations of chalcopyrite and pyrite and their upper oxide copper extensions.

Table 1 below summarises the total Mineral Resources for the Horseshoe Lights Project as at 30 June 2018.

<b>TABLE 1</b> <b>HORSESHOE LIGHTS PROJECT</b> <b>SUMMARY OF MINERAL RESOURCES</b> <b>AS AT 30 JUNE 2018</b>								
Location	Category	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Cu metal (tonnes)	Au metal (oz)	Ag metal (k oz)
<b>In-situ Deposit</b> (0.5% Cu cut-off grade)	<i>Measured</i>	1.73	1.04	0.0	0.5	18,000	1,900	28.8
	<i>Indicated</i>	2.43	0.95	0.0	0.7	23,200	3,400	52.2
	<i>Inferred</i>	8.69	1.01	0.1	2.6	87,400	30,700	712.4
	<b>Total</b>	<b>12.85</b>	<b>1.00</b>	<b>0.1</b>	<b>1.9</b>	<b>128,600</b>	<b>36,000</b>	<b>793.4</b>
<b>Flotation Tailings</b>	<b>Inferred</b>	<b>1.421</b>	<b>0.48</b>	<b>0.34</b>	<b>6.5</b>	<b>6,800</b>	<b>15,300</b>	<b>294.8</b>
<b>M15 Stockpiles</b>	<b>Inferred</b>	<b>0.243</b>	<b>1.10</b>	<b>0.17</b>	<b>4.7</b>	<b>2,650</b>	<b>1,300</b>	<b>36.7</b>
Note: At 0% Cu cut-off grade unless otherwise stated					<b>TOTAL</b>	<b>138,050</b>	<b>52,600</b>	<b>1,124.9</b>

The above Mineral Resource Estimates all meet the reporting requirements of the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves".



### **About the Kumarina Project**

*The copper deposits at the Kumarina Project were discovered in 1913 and worked intermittently until 1973. The workings extend over nearly 5km as a series of pits, shafts and shallow open cuts. At the main Kumarina Copper Mine, the workings are entirely underground with drives from the main shaft extending for some 200m in the upper levels and for about 100m in the lower levels at a depth of 49m below surface.*

*Incomplete records post-1960s make it difficult to estimate the total copper production from the workings. However, indications are that the Kumarina Copper mine was the second largest producer in the Bangemall Basin group of copper mines. Recorded production to the late 1960s is 481t of copper ore at a high-grade of 37.0% Cu and 2,340t at a grade of 17.51% Cu.*

*An initial Mineral Resource Estimate for the Rinaldi deposit was completed by the Company in 2013 (see 30 June 2013 Quarterly Report announced on 31 July 2013).*

*The total Measured, Indicated and Inferred Mineral Resource Estimate as at 30 June 2018 is shown in Table 2 below.*

<b>TABLE 2 KUMARINA PROJECT SUMMARY OF MINERAL RESOURCES AS AT 30 JUNE 2018</b>				
<b>Location</b>	<b>Category</b>	<b>Tonnes (t)</b>	<b>Cu (%)</b>	<b>Cu metal (tonnes)</b>
<b>Rinaldi Prospect</b> (0.5% Cu cut-off)	<i>Measured</i>	<i>415,000</i>	<i>1.46</i>	<i>6,100</i>
	<i>Indicated</i>	<i>307,000</i>	<i>1.16</i>	<i>3,500</i>
	<i>Inferred</i>	<i>114,000</i>	<i>0.9</i>	<i>1,000</i>
	<b>Total</b>	<b>835,000</b>	<b>1.3</b>	<b>10,600</b>

The Mineral Resource Estimate meets the reporting requirements of the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”

## ***Forward Looking Statements***

Horseshoe Metals Limited has prepared this announcement based on information available to it. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions and conclusions contained in this announcement. To the maximum extent permitted by law, none of Horseshoe Metals Limited, its directors, employees or agents, advisers, nor any other person accepts any liability, including, without limitation, any liability arising from fault or negligence on the part of any of them or any other person, for any loss arising from the use of this announcement or its contents or otherwise arising in connection with it. This announcement is not an offer, invitation, solicitation or other recommendation with respect to the subscription for, purchase or sale of any security, and neither this announcement nor anything in it shall form the basis of any contract or commitment whatsoever. This announcement may contain forward-looking statements that are subject to risk factors associated with gold exploration, mining and production businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimations, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory changes, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

## ***Competent Persons Statement***

The information in this report that relates to the Exploration Results and Mineral Resources at the Horseshoe Lights and Kumarina Projects is based on information reviewed by Mr Craig Hall, whom is a member of the Australian Institute of Geoscientists. Mr Hall is a contractor to Horseshoe Metals Limited and has sufficient experience which is relevant to the style of mineralisation and types of deposit under consideration and to the activity he is undertaking to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012)'. Mr Hall consents to the inclusion of the data in the form and context in which it appears.

The information in this report that relates to the Horseshoe Lights Project In-situ Mineral Resources is based on information originally compiled by Mr Dmitry Pertel, an employee of CSA Global Pty Ltd, and reviewed by Mr Hall. This information was originally issued in the Company's ASX announcement "40% increase in Copper Resource at Horseshoe Lights Copper/Gold Project", released to the ASX on 5th June 2013. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements. The company confirms that the form and context in which the findings are presented have not materially modified from the original market announcements.

The information in this report that relates to the Horseshoe Lights Project surface stockpile Mineral Resources is based on information compiled by a previous employee of Horseshoe Metals Limited, and reviewed by Mr Hall. The information was previously issued in announcements released to the ASX on 26 February 2015 and 9 March 2015. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements. The company confirms that the form and context in which the findings are presented have not materially modified from the original market announcements.

The information in this report that relates to the Kumarina Project (Rinaldi Prospect) Mineral Resources is based on information compiled by or under the supervision of Mr Robert Spiers, an independent consultant to Horseshoe Metals Limited and a then full-time employee and Director of H&S Consultants Pty Ltd (formerly Hellman & Schofield Pty Ltd), and reviewed by Mr Hall. The information was originally issued in the Company's ASX announcement "Horseshoe releases Maiden Mineral Resource Estimate for Kumarina", released to the ASX on 4th March 2013. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements. The company confirms that the form and context in which the findings are presented have not materially modified from the original market announcements.

## APPENDIX 1

### Horseshoe Lights Project, 2017 RC Drilling Program: Drillhole Information

<i>Hole ID</i>	<i>Easting (m)</i>	<i>Northing (m)</i>	<i>Azimuth (degrees)</i>	<i>Dip</i>	<i>Depth (m)</i>	<i>Location Target Area</i>
WRL01	663277	7193503	360	-90	12	Waste Rock Landform
WRL02	663272	7193606	360	-90	10	Waste Rock Landform
WRL03	663115	7193519	360	-90	17	Waste Rock Landform
WRL04	663219	7193698	360	-90	8	Waste Rock Landform
WRL05	663132	7193658	360	-90	9	Waste Rock Landform
WRL06	662915	7193576	360	-90	23	Waste Rock Landform
WRL07	662819	7193464	360	-90	15	Waste Rock Landform
WRL08	662504	7193465	360	-90	14	Waste Rock Landform
WRL09	662798	7193675	360	-90	12	Waste Rock Landform
WRL10	662366	7194568	360	-90	20	Waste Rock Landform
WRL11	662368	7194352	360	-90	14	Waste Rock Landform
WRL12	662710	7194585	360	-90	26	Waste Rock Landform
RC1142	663294	7194225	270	-44	155	Eastern Footwall
RC1143	663300	7194200	270	-55	159	Eastern Footwall
RC1144	662891	7194348	090	-50	162	NW Stringer Zone



## APPENDIX 2

### Horseshoe Lights Project, 2017 RC Drilling Program: Bedrock Drilling Results Summary

Hole	MGA Northing	MGA Easting	MGA RL	MGA Azimuth	Dip	Max Depth	From	To	Interval (m)	Cu % >0.5	Au g/t >0.5	Drill Type	Target
RC1142	7194225	663294	531	270	-47	155.0	42.0	44.0	2.0	0.62	NSI	RC	Eastern Footwall
RC1143	7194200	663300	532	270	-55	159.0	51.0	56.0	5.0	0.96	NSI	RC	Eastern Footwall
							132.0	134.0	2.0	0.61	NSI		
							136.0	138.0	2.0	0.51	NSI		
RC1144	7194348	662891	532	90	-50	165.0	50.0	58.0	8.0	0.96	NSI	RC	NW Stringer Zone
							72.0	83.0	11.0	1.54	NSI		
							127.0	129.0	2.0	0.51	NSI		
							136.0	138.0	2.0	0.59	NSI		

Notes:

No upper cut applied, 2m minimum interval; 2m maximum internal waste unless otherwise specified

Cu analysis by microwave-assisted, HF-based digestion with ICP-MS finish; DL 0.2ppm

Au analysis by 25gm charge aqua-regia and ICP-MS finish; DL 0.5ppb

Coordinates in MGA94 zone 51.

## JORC CODE, 2012 EDITION

### Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <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. 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 style="list-style-type: none"> <li>Exploration results are collected using standard industry practices for sampling, assay methods and QAQC. Reverse circulation (RC) samples weighing approx. 3kg are collected as individual 1m samples through a cyclone which are riffle split for analysis. Each sample is analysed with a handheld Niton XRF in the field.</li> <li>RC samples within zones of visual oxide or sulphide mineralisation or producing elevated readings of copper as determined by handheld XRF are sent for laboratory assaying as 1m riffle split samples. The remaining intervals of the drill hole are submitted as 4m speared composite samples. Any anomalous composite samples are to be re-submitted as original 1m split samples. The handheld XRF was regularly calibrated as per manufacturer's specifications.</li> <li>Industry standard practice was used for copper analysis whereby a 3kg RC drill sample representing a 1m sample interval was used to obtain a 25g pulp for analysis by HF-based digestion using a combination of ICP-MS and ICP-OES for the determination of 61 elements. For gold analysis the same sample was used to obtain a 25g charge for aqua regia analysis by ICP-MS.</li> </ul> <p>Historic soil sampling and auger sampling referenced in this release are completed to industry standard: eg.E52/2042 soils collected by Plutonic in 1997 via -2mm mesh sieve to an average weight of 1-1.5kg; submitted to Genalysis for pulverisation to nominal 75micron and analysed for gold to 1ppb via B/ETA (aqua Regia digest with graphite furnace AAS finish); and B/AAS for Cu and As to 1ppm and 5ppm respectively via B/AAS (aqua Regia digest with Flame AAS finish); and</p> <p>E52/1998 auger samples collected by Regional Exploration Services WA under direction from HOR personnel in 2011-12 with 4513 samples recovered at reactive carbonate interfaces. Whole soil samples were submitted under preparation code Q-PRTOT for pulverisation to 75um by Quantum Analytical Services. Samples were assayed under code Q-AR2MS for a limited suite of precious and base metals (Au, Ag, As, Bi, Co, Cu, Mn, Ni, Pb, Zn) via aqua regia digest and AAS finish.</p>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>The drill holes were completed using the Reverse Circulation (RC) technique with a 5½" face sampling bits, using a track mounted "Aardvaark" rig, capable of low angle (&lt;45°) RC drilling.</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>Visual inspection of the sample volume indicates sample recovery is excellent. Any poor sample recovery or condition is noted in the drillhole database.</li> <li>RC samples are visually checked for recovery, moisture and contamination. A cyclone and splitter are used to provide a uniform sample and these are routinely cleaned. The drill contractor blew out the hole at the beginning of each drill rod to remove excess water and maintain dry samples.</li> <li>Ground conditions for RC drilling are good and drilling returned consistent size samples. RC recoveries are high enough to preclude the potential for sample bias.</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> </ul>	<ul style="list-style-type: none"> <li>Logging of RC drilling identifies all aspects of lithology, colour, weathering texture, alteration and mineralisation including percentage estimates of oxide/sulphide content. All primary recorded on site data was directly imported into a drillhole database and checked against the original data. During logging part of</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <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>the RC sample was sieved, logged and placed in RC chip trays.</li> <li>The lithology data is qualitative. All reverse circulation samples have been photographed in wet form and the chip trays are retained for physical inspection on-site and in the Perth office.</li> <li>All RC holes are logged from start to end of hole.</li> </ul>
<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> </ul>	<ul style="list-style-type: none"> <li>No diamond core drilled during this program.</li> <li>All RC samples are initially riffle split on a 1:7 ratio. All samples drilled dry.</li> </ul>
	<ul style="list-style-type: none"> <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>RC sample procedure follows industry best practice whereby samples are sorted, reconciled, placed onto trolleys and LabWest's code PREP-02, as follows: Samples were received, sorted and dried at 105°C in an electric oven, then crushed to ~2mm and a 500-700g subsample taken by rotary division for pulverisation. The subsample was pulverised &gt;90% passing 75µm using bowl-and-disc type mills (LM1.5), and ~200g of pulverised sample was taken for analysis. The technique is considered appropriate for the process of sub-sampling.</li> <li>Sub sampling stages are considered appropriate for the representivity of samples.</li> <li>Residuals and original samples sources retained for checks.</li> <li>The sample size is considered industry standard for base and precious metal mineralisation.</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 (eg 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>All samples are to be submitted to a NATA accredited laboratory for multi-element analysis. The copper assay is derived using a multi-element analysis where a portion of the sample is digested in a HF-based acid mixture under high pressure and temperature in a microwave apparatus for analysis, with determination of 64 elements by a combination of ICP-MS and ICP-OES.</li> <li>A Thermoscientific Niton XL3t GoldD+ Handheld XRF was used to screen for anomalous Cu sample and 1m split sample submissions; samples were otherwise submitted as a generated 4m composite sample. All pXRF data was collected using 30 second reading time for all 3 beams on soil mode. The instrument was calibrated according to manufacturer's specification and tested regularly. Subsequent comparison of assay results to pXRF readings for this programme showed suitable correlation.</li> <li>LabWest's standard quality control procedures, which meet or exceed industry benchmarks, were applied, with inclusion of certified reference materials, reagent blanks and duplicate analyses in each batch of samples. In addition to internal laboratory checks the Company submitted a Geostats GBM999-8 standard (low grade sulfide Cu/Au material) on a 1:50 ratio, and acceptable levels of accuracy and precision have been established.</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>External laboratory checks are planned for significant assay results but have yet to be completed.</li> <li>Some holes have previously been drilled to twin old holes. The purpose of the broader drill program is to infill and verify mineralised intervals and grades determined from existing drilling. The bedrock holes are generally designed as infill to the current resource.</li> <li>All drilling and sample data is captured in the field electronically using established templates and verified in Perth office before upload into database.</li> <li>No adjustments undertaken.</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>Initial collar locations are determined by handheld Garmin GPS but will be surveyed using DGPS by licensed surveyors before resource estimates are undertaken.</li> <li>Grid system coordinates are GDA94 MGA Zone 50.</li> <li>Topographic control is available from known survey stations and Hyvista aerial photography acquired in 2017</li> </ul>



Criteria	JORC Code explanation	Commentary
<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>Resource drilling in this program to date used approx. 20m spacing.</li> <li>The resource drilling spacing and results employed in this program are consistent with previous drill spacing and results that are part of a JORC compliant mineral resource.</li> <li>Composite sampling over 4m has been employed for 1m samples producing a XRF reading below 1000ppm. Such results are not discussed in this release.</li> <li>Drilling in this program is orientated east-west to maintain consistency and spacing with previous drilling.</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>As stated above.</li> </ul>
<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>Prior to submission all samples are stored on-site under supervision of the project geologist. Samples are transported to Perth by Horseshoe Metals personnel and then onto the assay laboratory by licensed couriers.</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>No audits or reviews have been performed to date.</li> </ul>

## Section 2 Reporting of Exploration Results

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>The Horseshoe Lights Project comprises one Mining Lease (M52/743), one Exploration Licence (E52/2042) and five Miscellaneous Licences (L52/42 -45 and L52/66) covering an area of approximately 60 km<sup>2</sup> (6,000 hectares). Current registered holder of the tenements is Murchison Copper Mines Pty Ltd (MCM) which is a wholly owned subsidiary of Horseshoe Metals Limited. The Kumarina project consists of three tenements, M52/27; and E52/1998 and E52/2930. MCM has 100% interest in the tenements. Unrelated party Horseshoe Gold Mine Pty Ltd (a subsidiary of Granges Resources Limited) retains a 3% net smelter return royalty in respect to all production derived from some of the Horseshoe Lights Project tenements, namely M52/743, E52/2042.</li> <li>Mining Lease 52/743 is in good standing, however M52/743, E52/2042 and E52/1998 are currently subject to plaint which the company is vigorously defending. The Company is unaware of any additional impediment to it obtaining a licence to operate in the area.</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>The Horseshoe Lights deposit surface gossan was discovered in 1946 and worked at a prospect level until 1949. Open pit and underground workings were operated by Asarco from 1949 to 1954. Asarco explored the deposit by sampling surface trenches, drilling one surface diamond drill hole, underground drilling and cross-cutting underground on two levels.</li> <li>In 1964, Electrolytic Zinc Company conducted widespread exploration including eight diamond drill holes in a search for copper. During 1969 and 1970 Planet Metals Ltd drilled seven holes. In the period 1975 to 1977, Amax Corporation and its partner Samantha Mines investigated the Horseshoe Lights area for base metals. This investigation included drilling a further three diamond drill holes including one beneath the southern end of the main ore zone. Placer Austex Pty Ltd and Homestake Mining Company Ltd also investigated the property.</li> <li>Previous exploration activities during the main phase of open pit mining were completed by Horseshoe Gold Mine Pty Ltd which was a wholly owned subsidiary of Barrack Mines Ltd between 1983-89. Barrack Mines Ltd drilled 43 diamond holes for 15,353m, 638 Reverse Circulation holes for 55,343m.</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>VMS mineralisation at Horseshoe Lights occurs in the core of a NNW trending and SE plunging anticline. The mineralised envelope of the deposit itself is also SW dipping and plunging to the SSE, and was likely folded. It sits within altered basalt and mafic volcanoclastic units along the contact with overlying felsic volcanic schist. The VMS mineralisation in the mine area is constrained by the tightly folded and sheared stratigraphy, and appears to be affected by offsets along N-S and NE trending brittle faults.</li> </ul>
<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</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the body of text of this report and Table 1 for information material to the understanding of the exploration results.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>Material drill holes:</i></p> <ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>No exclusions of information have occurred.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>Only 1m split samples are reported and simply averaged over the mineralised interval; typically with no top cut, minimum 2m minimum interval &gt; 0.5% Cu, minimum 2m internal dilution</li> <li>Some aggregation of lower grade intervals is reported to show continuity of low grade Cu, typically &gt;0.1% in bedrock drilling</li> <li>N/A</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>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').</i></li> </ul>	<ul style="list-style-type: none"> <li>All intercept widths reported are downhole lengths. No attempt has been made here to report true widths unless stated.</li> <li>Intercepts that consist of high grade results within a longer lower grade zone are detailed separately to avoid confusion.</li> <li>Exploration drilling in this program is either vertical for waste rock landform drilling; or orientated perpendicular to interpreted mineralisation trend where possible.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>See plans and sections</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>See Table 1 and Appendix 2 for data</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Company's opinion this material has been adequately reported in previous announcements and the detail is not relevant for reporting of these exploration results.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drilling is being considered local to waste rock landform results of significance. Other planned activities discussed in text.</li> <li>Refer to diagrams in body of text.</li> </ul>