

LIMITED

# HORSESHOE LIGHTS PROJECT SCOPING STUDY HIGHLIGHTS MINING POTENTIAL

### **SUMMARY**

- Horseshoe Metals has completed a positive independent Scoping Study for the Horseshoe Lights Copper-Gold deposit.
- Study results based on three different copper prices with pre-production capex of \$36.7M in all cases were as follows:
  - at a Cu price of AU\$7,750/t, mining of 4.08Mt @ 1.06% Cu generates \$21.7M pre-tax cash flow, IRR of 22.6% and NPV (10% real) of \$8.1M.
  - at a Cu price of AU\$8,825/t, mining of 4.85Mt @ 1.00% Cu generates \$59.9M pre-tax cash flow, IRR of 53.6% and NPV (10% real) of \$34.8M.
  - > at a Cu price of AU\$9,925/t, mining of 5.99Mt @ 0.93% Cu generates \$113.0M pre-tax cash flow, IRR of 85.1% and NPV (10% real) of \$68.8M.
- Study indicates significant upside potential based on forecast AUD copper price improvement above current levels of approximately AU\$7,750/t.
- Further drilling in Q1, 2015 to focus on improving tonnes and grade plus level of confidence in mineral resources within the Scoping Study design pit shells.
- Planning underway for tailings re-treatment trials which could potentially lead to a low cost start to re-development at Horseshoe Lights ahead of open pit mining.

ASX/MEDIA
ANNOUNCEMENT

**19 DECEMBER 2014** 

**ASX Code: HOR** 

Management

**Mr Neil Marston** *Managing Director/Company Secretary* 

Mr Michael Fotios
Non-Executive Director

Mr Alan Still
Non-Executive Director

**Issued Capital** 

Shares: 169.0 Million

**Options:** 

5.4 Million (60c, exp 5/15) Performance Rights: 2.8 M

Share Price: \$0.021

Market Capitalisation: \$3.6 Million

Cash at Bank (30 Nov 2014)

\$0.50 Million

# HORSESHOE METALS

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## **Cautionary Statement**

The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.

The Scoping Study is preliminary in nature as its conclusions are drawn on Measured Resources (13%), Indicated Resources (19%) and Inferred Resource (68%) classification, according to JORC 2012 guidelines.

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised. The stated production target is based on the Company's current expectations of future results of events and should not be solely relied upon by investors when making investment decisions. Further evaluation work and appropriate studies are required to establish sufficient confidence that this target will be met.

Further, the Company cautions that there is no certainty that the forecast financial information derived from production targets will be realised. All material assumptions underpinning the production targets and forecast financial information derived from the production targets are set out in this announcement.

The estimated mineral resources underpinning the Scoping Study production targets have been prepared by competent persons in accordance with the current JORC Code 2012 Edition and the current ASX Listing Rules.

Horseshoe Metals Limited (ASX:HOR) ("Horseshoe" or "the Company") is pleased to announce the results of a Scoping Study ("Study") on its Horseshoe Lights Copper-Gold Project ("Horseshoe Lights Project") in the Gascoyne region of Western Australia (see Figure 1).

The overall outcomes of the Study are positive and reinforce the Company's view that the Horseshoe Lights Project has the potential to be bought back into production given the right future economic circumstances. The outcomes of the Study will assist the Company in future resource definition drilling and project development planning.

The Study was undertaken using the 2013 Mineral Resource Estimate for the Horseshoe Lights deposit which consists of a total Measured, Indicated and Inferred Mineral Resource of 12.85 million tonnes @ 1.00% Cu and 0.1 g/t Au for 128,600 tonnes Cu and 36,000 oz Au (using a cut-off grade of 0.5% Cu) (Refer to Table 5).

#### **STUDY PARAMETERS**

Consulting mining engineers at Entech Pty Ltd (Entech) were commissioned by Horseshoe to provide an independent assessment of potential open pit mining operations at the Horseshoe Lights Project.

The scope of work included the optimisation of the open pit, leading into a scoping level open pit design for each case and the construction of a mining schedule and cost model for the proposed project. A production target of 1,000 ktpa was determined as being a realistic target for project



modelling purposes. The metallurgical recoveries used for the Study for each rock type are presented in Table 1.

**Table 1** Metallurgical Recoveries

Deposit	Weathering Description	Recovery
Horseshoe Lights	Oxide	85.0 %
	Transitional	85.0 %
	Fresh	85.0 %

Table 2 summarises the pit optimisation parameters and revenue assumptions used for the Study. Three cases were modelled using varying copper prices with all other inputs remaining the same. Case 1 is designed to represent the prevailing commodity prices in AUD terms. Cases 2 and 3 represent an increased copper price at ~AU\$0.50/lb and ~AU\$1.00/lb above the Case 1 copper price respectively.

Table 2 Pit Optimisation Parameters and Revenue Assumptions

Item	Description	Case 1	Case 2	Case 3
Copper (Cu) Price	AU \$/t	\$7,750	\$8,825	\$9,925
Gold (Au) Price	AU \$/oz	\$1,350	\$1,350	\$1,350
Silver (Ag) Price	AU \$/oz	\$20	\$20	\$20
Mining Recovery	%	95%	95%	95%
Mining Dilution	%	5%	5%	5%
Concentrate Grade	%	25%	25%	25%
Mining Costs (ore)	AU \$/bcm	\$3.50	\$3.50	\$3.50
Mining Costs (waste)	AU \$/bcm	\$3.30	\$3.30	\$3.30
Surface Haulage Costs	AU \$/bcm	\$3.50	\$3.50	\$3.50
Incremental Mining Cost Escalation Factor	%/flitch	3.5%	3.5%	3.5%
Processing Costs	AU \$/t	\$25.00	\$25.00	\$25.00
Administration Costs	AU \$/t	\$2.50	\$2.50	\$2.50
Transportation and Port Charges	AU \$/DMT conc.	\$90	\$90	\$90
Copper Concentrate Treatment Charge	US \$/DMT conc.	\$100	\$100	\$100
Copper Concentrate Refining Charge	US cents/lb Cu	10	10	10
State Royalties – Copper	%	5.0%	5.0%	5.0%
State Royalties – Gold & Silver	%	2.5%	2.5%	2.5%
Royalty - Other	%	2.5%	2.5%	2.5%

#### **PIT OPTIMISATION**

The deposit was optimised using Horseshoe supplied input parameters for project capital costs, processing recoveries, processing operating costs and metal price. Mining costs assumptions were



provided by Entech based on industry averages for similar scale operations, maintained within an internal Entech database.

Through consultation between Horseshoe and Entech, various pit shells for each case were deemed the optimum open pit scenario based on inputs unit costs, acceptable risk profile and minimising the project's cash down position.

From the selected optimisation generated shells, pits were designed for conventional open pit mining methods (drill, blast, load and haul) utilising conventional excavators and dump trucks. Open pit designs for each case were completed and the mining physicals contained within the designed open pit for each Case are set out in Table 3.

Table 3 Breakdown of Ore and Waste and Mineral Resources within each Optimised Open Pit Shell

Case	Ore Tonnes (Mt)	Cu Grade %	In-situ Waste Tonnes (Mt)	Waste Dump Tonnes (Mt)	Stripping Ratio <sup>1</sup>	Measured Resource Included <sup>2</sup>	Indicated Resource Included <sup>3</sup>	Inferred Resource Included <sup>4</sup>
Case 1	4.08	1.06	17.0	2.3	4.7	37%	48%	23%
Case 2	4.85	1.00	18.0	2.4	4.2	48%	58%	30%
Case 3	5.99	0.93	19.0	2.5	3.6	51%	62%	36%

In the Study a provision of \$25M has been allocated to the construction/upgrading of a processing facility for the Horseshoe Lights open pit operations plus a further \$2M/year sustaining capital costs. It is noted that there is some existing infrastructure presently on site including tailings dams, workshop, powerhouse and other buildings, thickener, borefield, an airfield and a small camp.

It is expected that in the prevailing market, a second hand or fit for purpose processing facility may be sourced at a reduced cost. The alternative of trucking ore to third party owned processing facilities may also be a future option which would reduce the capital costs significantly although additional ore transportation costs would apply.

The capital requirements of the processing facility will need to be fully assessed during a future feasibility study.

#### **FINANCIAL RESULTS**

Table 4 below summaries the key project economic assessment results using the revenue and cost assumptions outlined in Table 2.

For Case 1, which represents prevailing commodity prices and exchange rates, the proposed open pit generates a final estimated pre-tax cash flow of \$21.7M with a payback period of 48 months and maximum cash down position of \$36.4M. The project financial model also indicates the project will have a 22.6% IRR and an NPV of \$8.1M at a 10% discount rate. Under these modelled parameters Case 1 is considered to be sub-economic due to the extended capital payback period.

<sup>&</sup>lt;sup>1</sup> Stripping Ratio calculated on a tonnage basis.

<sup>&</sup>lt;sup>2</sup> Refers to the portion of the Measured Resource contained within the optimisation pit shell

 $<sup>^{3}</sup>$  Refers to the portion of the Indicated Resource contained within the optimisation pit shell

<sup>&</sup>lt;sup>4</sup> Refers to the portion of the Inferred Resource contained within the optimisation pit shell



For Case 2, which represents a ~AU\$0.50/lb increase in copper price above the Case 1 price, the proposed open pit generates a final estimated pre-tax cash flow of \$59.9M with a payback period of 32 months and maximum cash down position of \$36.0M. The project financial model also indicates the project will have a 53.6% IRR and an NPV of \$34.8M at a 10% discount rate.

For Case 3, which represents a ~AU\$1.00/lb increase in copper price above the Case 1 price, the proposed open pit generates a final estimated pre-tax cash flow of \$113.0M with a payback period of 22 months and maximum cash down position of \$36.0M. The project financial model also indicates the project will have an 85.1% IRR and an NPV of \$68.8M at a 10% discount rate.

**Table 4** Summary of Economic Assessment Results

Item	Unit	Case 1	Case 2	Case 3
Production Rate	Ktpa	1,000	1,000	1,000
Mine Life	(~years)	4	5	6
Recovered Metal - Cu	t	36,778	41,048	47,375
Recovered Metal - Au	OZ	9,778	10,971	12,730
Recovered Metal - Ag	OZ	211,765	232,394	271,101
Total Revenue	M\$	\$302.5	\$381.7	\$492.8
Royalties	M\$	(\$22.3)	(\$28.1)	(\$36.4)
Mining Costs	M\$	(\$61.0)	(\$67.0)	(\$76.0)
<b>Processing &amp; Administration Costs</b>	M\$	(\$112.4)	(\$133.4)	(\$164.7)
Freight & Ports Costs	M\$	(\$13.2)	(\$14.8)	(\$17.1)
<b>Treatment and Refining Charges</b>	M\$	(\$26.9)	(\$31.8)	(\$36.7)
Pre-strip and Plant Capital Expenditure	M\$	(\$36.7)	(\$36.7)	(\$36.7)
Sustaining Capital Expenditure	M\$	(\$8.3)	(\$10.0)	(\$12.2)
Cash Flow before Tax	M\$	\$21.7	\$59.9	\$113.0
NPV (10%)	M\$	\$8.1	\$34.8	\$68.8
IRR	%	22.6%	53.6%	85.1%
Payback Period	(months)	48	32	22

#### **PIT DESIGNS**

Using the pit designs created, the existing Horseshoe Lights open pit would be cut-back to the north to access ore material located under part of the existing waste dump. Excavation of part of the existing waste dump has been accounted for in the financials of this project.

The open pit designs utilise the haul ramp that enters the existing open pit at the southern end, cutting the eastern wall back and continuing the pit ramp to the north. The ramp access continues on the north wall, continuing to the western wall before switching back and staying on the northern extents of the open pit. A small separate open pit is also mined at the Motters Zone located north east of the existing open pit. Figure 2 illustrates the mine design in respect to the current topography for the Case 3 pit.

# HORSESHOE METALS

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#### POTENTIAL OPPORTUNITIES AND RISKS

#### **Commodity Prices**

Whilst the project under prevailing commodity prices and modelled costs (i.e. Case 1) is considered sub-economic there is significant upside potential for development of mining operations at the project in the longer term as shown in Cases 2 & 3. The present global outlook is for long term USD copper prices to trend above existing levels. Combining this with the widely forecasted outlook for continuation of the fall in AUD:USD exchange rates means the AUD copper price could increase significantly in the future.

#### Mine Design

Due to the scope of the Study the mine designs have been generated after first pass pit optimisations. Further iterations of the pit optimisation and pit design may improve the stripping ratio and overall economics of the project.

All the scenarios have included significant Inferred Mineral Resource estimates. On-going exploration drilling and subsequent re-estimation may result in changes to the economically minable portions of the resource. This may result in an increase or decrease in the tonnage and/or grade estimates.

The Study has assumed that all the material in the North Waste Dump, parts of which is to be moved under the pit designs, is treated as waste. However previous drilling by the Company has identified that parts of this dump contain low-grade copper/gold mineralisation. The potential to remove and treat some of the dump material economically has not yet been assessed.

#### **Processing**

Processing costs represent the largest cost to the project and as such incremental savings in processing costs can make material differences to the project economics. In this Study it has been assumed that all ore types will be processed through the same comminution and copper flotation plant. There may be opportunity to add further value by optimising the plant to batch processing different ore types, with the plant configured specifically for each ore type rather than a blend. In addition to maximising payable metal recovery, there may be savings in plant operating and capital costs.

In this Study a fixed recovery for copper, gold and silver has been applied. In practice, the recovery will improve with head grade and applying a fixed recovery may tend to overstate recovery for low-grade ore and understate recovery for high-grade ore.

The Study did not include processing of any existing low grade surface stockpiles and mineralised tailings (see Table 6) which have the potential to add additional low cost material for processing.



#### **FUTURE ACTIVITIES**

With the successful completion of the Study the Company is encouraged that re-development of mining operations at the Horseshoe Lights Project may be achievable in the future and that additional work is warranted to advance the project. The immediate tasks for the Company are:

- The Study has identified areas within and immediately adjacent to the optimised design shells
  where there is potential to add extra tonnes and grade and to improve the level of geological
  confidence of the existing mineral resources. A total of about 28 holes (approximately 3,700
  metres) of RC drilling have been planned for the purpose with collar locations shown in Figure
  3. Drilling of these RC holes is due to commence in January 2015.
- To assess surface stockpiles, tailings and mineralised dumps for low cost processing options. Historical studies have generally only looked at acid leaching to treat the flotation tailings however a recent site inspection has identified that the flotation and CIP tailings contain particles of native copper, chalcopyrite, chalcocite, copper oxides and gold which may be readily amenable to simple gravity type beneficiation to recover a saleable product at low operating and capital costs. A programme of appropriate trials will be required initially to prove this concept, planning for which is underway. This process, if proven to be viable, could provide the Company with a pathway to implementing a staged development that generates cash flows in the short term, some of which could potentially be applied to a second stage larger development involving open pit mining such as contemplated in this Scoping Study.
- A Mineral Resource Estimation update and Scoping Study update will be implemented following the completion of the next phase of drilling.

## **ENDS**

### For further information please contact:

Neil Marston James Moses

Managing Director Media and Investor Relations

 Horseshoe Metals Limited
 Mandate Corporate

 T: +61 8 9481 5866
 M: +61 420 991 574

 M: +61 427 188 768
 T: +61 2 8211 0612

E: <u>nam@horseshoemetals.com.au</u> E: <u>james@mandatecorporate.com.au</u>

#### **About Horseshoe Metals Limited**

Horseshoe Metals Limited (ASX:HOR) is a copper and gold focused company with a package of tenements covering approximately  $500 \text{km}^2$  in the highly prospective Peak Hill Mineral Field, located north of Meekatharra in Western Australia. The Company's projects are the Kumarina Project and the Horseshoe Lights Project (see Figure 1).

#### **About the Horseshoe Lights Project**

The Horseshoe Lights Project includes the old 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 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, which also host Sandfire Resources' DeGrussa copper/gold mine.

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.

A Mineral Resource Estimate for the Horseshoe Lights deposit was completed by the Company in June 2013 (see 30 June 2013 Quarterly Report announced on 31 July 2013). 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"

The total Measured, Indicated and Inferred Mineral Resource Estimate is **12.85 million tonnes @ 1.00% Cu and 0.1 g/t Au** for **128,600 tonnes Cu and 36,000 oz Au** (using a cut-off grade of 0.5% Cu) (See Table 5).

Table 5 Mineral Resources Estimate (0.5% Cu cut-off)

Туре	Category	Tonnage (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Cu metal (tonnes)	Au metal (oz)	Ag metal (oz)
	Measured	0.18	1.25	0.1	0.5	2,300	500	2,800
Ovida	Indicated	0.15	0.94	0.0	0.4	1,400	200	2,000
Oxide	Inferred	0.12	0.84	0.0	0.5	1,000	200	1,900
	Total Oxide:	0.45	1.04	0.1	0.5	4,700	900	6,700
	Measured	0.12	1.28	0.1	0.7	1,500	200	2,900
Transition	Indicated	0.23	1.16	0.1	0.5	2,700	400	3,500
Transition	Inferred	0.15	1.15	0.0	0.6	1,700	100	2,800
	Total Transition:	0.50	1.19	0.0	0.6	5,900	700	9,200
	Measured	1.42	1.00	0.0	0.5	14,200	1,200	23,100
ماه : ما ما د	Indicated	2.06	0.93	0.0	0.7	19,100	2,800	46,700
Sulphide	Inferred	8.42	1.01	0.1	2.6	84,700	30,400	707,700
	Total Sulphide:	11.90	0.99	0.1	2.0	118,000	34,400	777,500
N	1easured	1.73	1.04	0.0	0.5	18,000	1,900	28,800
1	Indicated		0.95	0.0	0.7	23,200	3,400	52,200
	Inferred	8.69	1.01	0.1	2.6	87,400	30,700	712,400
	TOTAL		1.00	0.1	1.9	128,600	36,000	793,400

Table 6 Surface Stockpiles and Flotation Tailings Mineral Resources Estimate

Туре	Category	Tonnage (t)	Cu (%)	Cu metal (tonnes)
Flotation Tailings	Inferred	1,420,000	0.47	6,700
M15 Stockpile	Inferred	244,000	0.80	1,900
Subgrade Stockpile	Inferred	38,000	0.50	200
	TOTAL	1,702,000	0.52	8,800



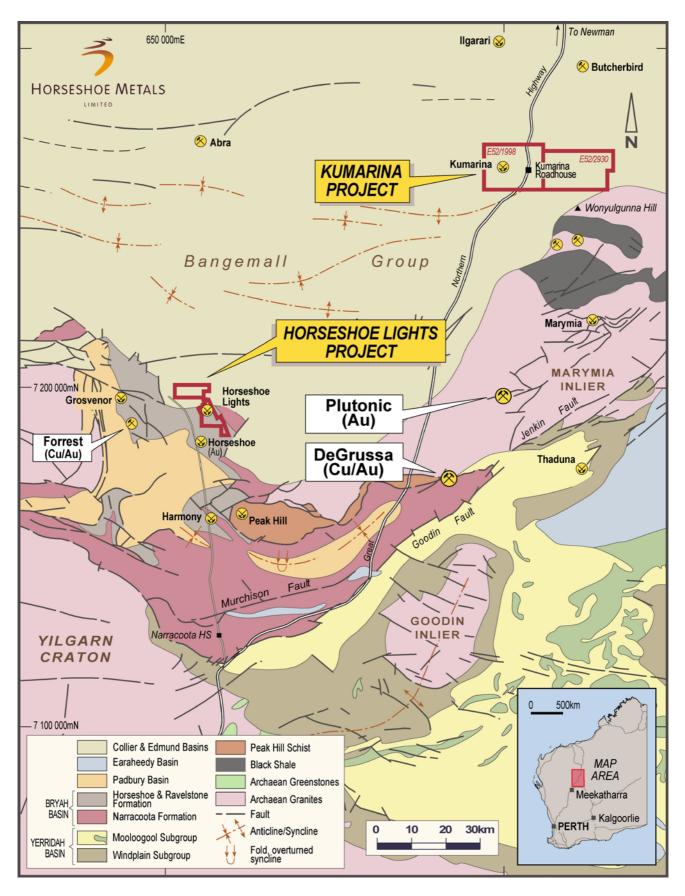


Figure 1 – Horseshoe Lights Project
Project Location Plan



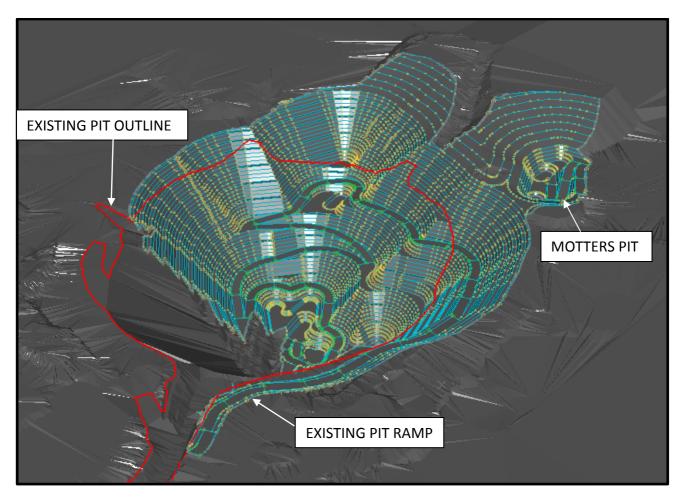


Figure 2 – Horseshoe Lights Project Case 3 Preliminary Pit Design - Oblique View looking NW



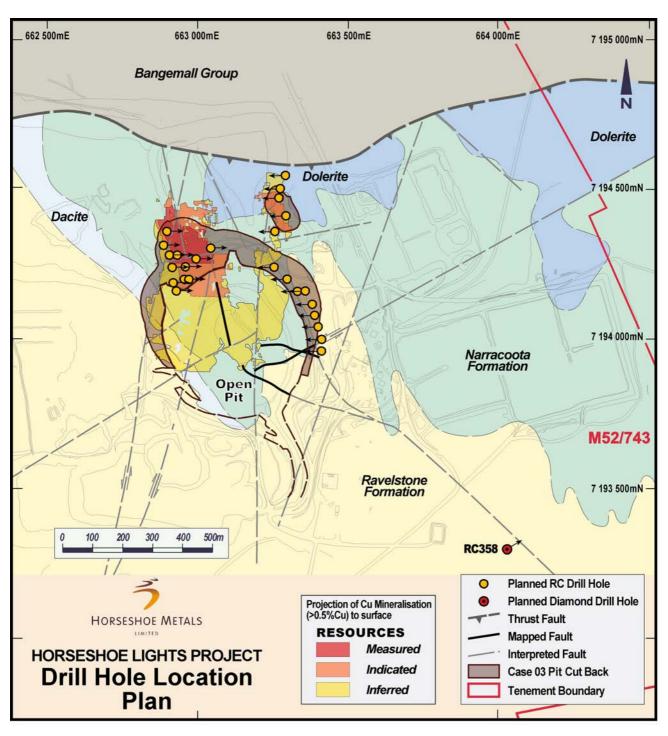


Figure 3 – Horseshoe Lights Project
Proposed Resource RC Drilling with Case 3 Pit Shown

# HORSESHOE METALS

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# Competent Persons Statement

The information in the report that relates to mining project evaluations is based upon information compiled by, or under the supervision of Mr Matthew Keenan who is a member of The AusIMM (Chartered Professional). Mr Keenan is an employee of Entech Pty Ltd. Matthew Keenan has sufficient technical and techno-economic assessment experience, which is relevant to the activity that he is undertaking, to qualify as an Expert as defined in the 2005 Edition of the "Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Experts Reports" (VALMIN Code).

The information in this report that relates to the Horseshoe Lights Project Mineral Resources (Table 5) is based on information compiled by Mr. Dmitry Pertel, who is a member of the Australian Institute of Geoscientists. Mr. Pertel is an employee of CSA Global Pty Ltd. The information was previously issued with the written consent of Mr Dmitry Pertel in the Company's 30 June 2013 Quarterly Report released to the ASX on 31 July 2013. The Company confirms that:

- (a) the form and context in which Mr. Dmitry Pertel's findings are presented have not been materially modified.
- (b) it is not aware of any new information or data that materially affects the information included in the 31 July 2013 ASX announcement and that all the material assumptions and technical parameters underpinning the estimate in the 31 July 2013 ASX announcement continue to apply and have not materially changed.
- (c) it is uncertain that following evaluation and/or further exploration work that the historical estimates will be able to be reported as mineral resources in accordance with the JORC Code.

The information in this report that relates to the Horseshoe Lights Project Surface Stockpiles and Flotation Tailings Mineral Resources (Table 6) is based on information compiled by Mr Geoff Willetts, BSc. (Hons) MSc., who is a member of the Australian Institute of Geoscientists. Mr. Willetts is an employee of the Company. The information was previously issued with the written consent of Mr Geoff Willetts in the Company's announcement released to the ASX on 5 June 2013. The Company confirms that:

- (a) the form and context in which Mr Geoff Willetts' findings are presented have not been materially modified.
- (b) it is not aware of any new information or data that materially affects the information included in the 5 June 2013 ASX announcement and that all the material assumptions and technical parameters underpinning the estimate in the 5 June 2013 ASX announcement continue to apply and have not materially changed.
- (c) it is uncertain that following evaluation and/or further exploration work that the historical estimates will be able to be reported as mineral resources in accordance with the JORC Code.