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#### Board

Charles Lew (Chairman)
Anthony Ho (Non-Exec Director)
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## **DECEMBER 2015 QUARTERLY ACTIVITIES REPORT**

#### **HIGHLIGHTS**

- The November 2015 Updated Scoping Study was completed by Snowden with updated inputs from all PFS consultants
- Results indicate strong project potential
- All aspects of the PFS continue to progress on schedule and budget for completion in Q1 2016
- JORC Resource estimate for Brockman Southern Extension completed

#### **SUMMARY**

Snowden Mining Industry Consultants (Snowden) completed an updated Scoping Study on the Yangibana Project indicating compelling financial viability. Inputs to the Scoping Study were provided by each of the consultants that are working on the Pre-Feasibility Study for the Project.

\*Note that all financials are before depreciation, tax and interest.

Based only on the current Indicated Resources at Bald Hill South, Fraser's, Yangibana West and Yangibana North deposits, a proposed 1.0 million tonnes per annum operation is predicted to return a net present value at a 10% discount rate (NPV $_{10}$ ) of A\$650 million – A\$750 million over a life of 7 years. This scenario provides an Internal Rate of Return (IRR) of 52%.

Extrapolating the operation over an additional eight years, based on the reasonable assumption that resources of the same tenor as the current resources will continue to be defined by ongoing exploration from the current Inferred Resources (4.0 million tonnes) and Exploration Target (4.0 million tonnes), and assuming that all financial factors used in the High Confidence case are the same over the extended period, provides an NPV<sub>10</sub> of A\$900 million - A\$1.1 billion.

The potential quantity and grade of an exploration target is conceptual in nature, there has been insufficient exploration to determine a mineral resource and there is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised.

A JORC Resource estimate has been completed for the Brockman Southern Extension establishing Indicated Resources of 5.2 million tonnes at 0.22%TREO including 0.18%HREO, plus 0.39%Nb<sub>2</sub>O<sub>5</sub> and 0.95%ZrO<sub>2</sub>.



# YANGIBANA PROJECT

## **SCOPING STUDY**

## Introduction

The updated Scoping Study focused on the production of separated oxides of the rare earths neodymium (Nd), praseodymium (Pr), dysprosium (Dy), europium (Eu), with lesser gadolinium (Gd) and samarium (Sm). Additional rare earths could be considered for processing at a later date if suitable markets and opportunities are identified.

#### Resources

As reported in the ASX release of 6th October 2015, the current resources at the Yangibana Project are as shown in Table 1.

Resource Classification	Tonnes	%TREO	%Nd₂O₃-Eq*	
Indicated	8,126,000	1.11	0.46	
Inferred	4,236,000	1.09	0.41	
TOTAL	12,362,000	1.10	0.44	

<sup>\*</sup>see explanation at end of report

Table 1 – Yangibana Project, October 2015 JORC Resources

A detailed breakdown of the diluted resources is provided in Appendix 1.

# Mining

Mining of Bald Hill South, Fraser's and Yangibana North/West (here termed Yangibana) has been proposed using standard truck and shovel methods. Dilution had already been accounted for in the resource estimate.

Snowden has completed initial pit optimisations and designs, and preliminary waste dump designs for each of these deposits. The resultant pit dimensions and extracted grades are listed in Table 2. All resources included in the proposed mine plan are from within the current Indicated Resources.

	Bald Hill South	Fraser's	Yangibana	Total
Pit Size (kt)	21,903	12,102	39,357	73,362
Strip ratio (w:o)	6.3	20.3	10.2	9.4
Mining inventory	2,997	569	3,507	7,074
(kt)				
Waste (kt)	18,906	11,533	35,849	66,289
TREO (%)	0.86	0.97	1.43	1.15
Nd <sub>2</sub> O <sub>3</sub> (ppm)	3,018	3,556	3,061	3,083
Pr <sub>2</sub> O <sub>3</sub> (ppm)	663	869	893	794
Dy <sub>2</sub> O <sub>3</sub> (ppm)	62	59	46	54
Eu <sub>2</sub> O <sub>3</sub> (ppm)	76	67	95	85

Table 2 - Yangibana Scoping Study, Mining Inventory



The three optimised and modelled pits therefore provide just over 7.0 million tonnes of mining inventory at an average grade of 1.15% TREO to the processing plant. The pits extract a total of 73.3 million tonnes of material at an average stripping ratio of 9.4:1.

For clarification, a Pre-Feasibility Study is scheduled for completion in Q1 2016. The "mining inventory" is indicative but conceptual in nature until completion of the appropriate technical studies.

## **Processing**

The mined ore will be fed to a crushing plant for size reduction, prior to milling to reduce the feed to the required sizing for the flotation processing.

Hastings has completed preliminary beneficiation test work that indicated that, at a plant throughput rate of 1.0 million tonnes per annum, a flotation plant can achieve a 95.5% reduction to 45,000t per annum of concentrate from Bald Hill South and Fraser's feed, and a 93% reduction to 70,000t per annum of concentrate from Yangibana feed, with recoveries of 85% of the contained rare earths (i.e. loss of only 15% of contained rare earths).

Tetra Tech Proteus has progressed the comminution and flotation sections of the design to include 3D modelling for more accurate costing.

The subsequent hydrometallurgical plant leaches the 45,000t per annum or 70,000t per annum of concentrate to extract the target rare earths. The rare earths are then treated in a separation plant/refinery to produce individual or combined rare earths oxides as specified by the customers. Test work in these areas is progressing at The Core Group with work on the beneficiated concentrate from the Eastern Belt Master Composite sample (derived from Bald Hill South and Fraser's deposits).

All processes including crushing, milling, flotation, hydrometallurgy and separation are standard processes used within the rare earths industry. This further de-risks the project. Yangibana rare earths are hosted almost exclusively in the mineral monazite that has a long and well established history in commercial processing. A number of other projects are currently considering this processing route.



The predicted recovery rates incorporated in the Study are as shown in Table 3.

	Bald Hill South/Fraser's	Yangibana
Mass Pull to Concentrate	4.5	7.0
Nd <sub>2</sub> O <sub>3</sub> recovery	78	79
Pr <sub>2</sub> O <sub>3</sub> recovery	78	79
Dy <sub>2</sub> O <sub>3</sub> recovery	58	70
Eu <sub>2</sub> O <sub>3</sub> recovery	72	76
Gd <sub>2</sub> O <sub>3</sub> recovery	79	79
Sm <sub>2</sub> O <sub>3</sub> recovery	79	79

Table 3 – Yangibana Scoping Study, predicted processing recovery rates

# **Project infrastructure**

Locations have been selected for all items of major infrastructure including

Tailings Storage Facility (currently for 10 years)
Roads
Accommodation Camp
Fresh Water Storage Dams
Temporary Concentrate Dams
Water supply
Air strip

Applications have been made for a number of additional Mining Leases, General Purpose Leases and Miscellaneous Licences to cover areas with potential resources and/or infrastructure requirements.

# **Project Economics - High Confidence Scenario**

Tetra Tech Proteus has established capital costs for the project based on industry standards for the basic equipment, milling and beneficiation sections, and by factoring costs available in the public arena from similar operations, that totals an estimated \$411 million including a 40% contingency. Table 4 provides a breakdown of these estimated capital costs.



Capital Cost Centre	A\$M
Geology	5
Mining	4
Processing	154
Project Services	10
Infrastructure	28
Accommodation	20
Management, Services, EPCM	62
Pre-Production	12
Contingency	116
TOTAL CAPEX	411

Table 4 - Yangibana Scoping Study, Estimated Capital Costs

The operating costs are based on contract mining and 90% processing plant availability. The Study assumes the sale of separate (or combined if required by the customer) rare earths oxides at site and operating costs are based on this assumption. Table 5 provides a breakdown of the estimated operating costs. Processing costs are expected to vary from \$146/t ore for Bald Hill South and Fraser's increasing to \$183/t for ore from Yangibana. Estimated average operating costs are provided in Table 5.

Category	Operating Cost (\$/t ore mined)
Contract Mining	39
Processing and Administration	166
TOTAL OPEX	205

**Table 5 - Yangibana Scoping Study, Estimated Operating Costs** 

The revenue is based on the commodity prices predicted by Adamas Intelligence in its 30th June 2015 report entitled "Rare Earth Market Outlook Update: Supply, Demand, and Prices from 2014 Through 2020" as the average figure for 2019, for the six target rare earths, with no projected metal price escalation.

The commodity prices used in the Study are as shown in Table 6.



Oxide	US\$/kg
Neodymium Oxide	103.69
Praseodymium Oxide	92.55
Dysprosium Oxide	480.97
Europium Oxide	420.49
Gadolinium Oxide	49.57
Samarium Oxide	3.85

Table 6 - Yangibana Scoping Study, Commodity Prices

A 2.5% state royalty was incorporated in the financial evaluation and a 0.75 US\$/A\$ exchange rate was assumed.

Key financial indicators are shown in Table 7.

Item	Units	Base Case
Plant throughput	Million tonnes per annum	1.0
Project Life	Years	7.25
Net revenue	A\$M	3,314
Operating Costs	A\$M	1,449
Capital Costs	A\$M	411
NPV at 10% discount rate	A\$M	711
IRR	%	52
Payback after construction completed	Years	1.5

**Table 7 - Yangibana Scoping Study, Key Project Parameters** 

# Project Economics - 15-year Scenario

Extrapolating the operation over an additional eight years, based on the reasonable assumption that resources of the same tenor as the current resources will continue to be defined by ongoing exploration from the current Inferred Resources (4.0 million tonnes) and Exploration Target (4.0 million tonnes), and assuming that all financial factors used in the High Confidence case are the same over the extended period, provides an NPV $_{10}$  of A\$900 million - A\$1.1 billion.



Hastings considers that this case is supported by:-

- current Inferred Resources totalling 4.24 million tonnes at 1.07% TREO at Yangibana West, Yangibana North, Gossan, Lion's Ear, Hook, Kane's Gossan, Bald Hill North, Bald Hill South and Fraser's; and
- an Exploration Target as defined by the JORC Code, Clause 17, of between 4 and 7 million tonnes of plant feed at a grade in the order of 1.0 to 1.2% TREO. This target is conceptual but is supported by:-
  - extensions of the Inferred Resources listed above, both at depth where the deepest intersections show no sign of decreasing potential and along strike supported by outcropping ironstone (the host to the bulk of the rare earths mineralisation in the Yangibana Project);
  - mineralisation at Terry's Find, Yangibana and Yangibana South prospects where limited drilling by Hastings has confirmed grades comparable to those of the existing resources but where insufficient drilling has been completed to allow the estimation of JORC resources;
  - mineralisation at Hook South and Tongue prospects where limited drilling in the 1980s
    has confirmed grades comparable to those of the existing resources but where
    insufficient drilling has been completed to allow the estimation of JORC resources; and
  - numerous outcropping ironstone units elsewhere within the Yangibana Project that in some cases have returned anomalous rare earths values from rock chip samples and in other cases are yet to be assessed.

The Exploration Target will be explored in the future to establish resources as required.

The Exploration Target discussed here is based on rare earths mineralisation associated with the outcropping ironstone units and their depth and strike extensions. The identification of carbonatite-and phoscorite-hosted higher grade mineralisation at Yangibana West, Yangibana North, Lion's Ear, Kane's Gossan, Bald Hill South and Fraser's deposits establishes potential for the Project to host higher grade mineralisation at depth. This potential is not considered in the current Exploration Target.

The potential quantity and grade of the Exploration Target is conceptual in nature. Confirmation of the Exploration Target will depend on the success of future exploration programmes to determine a mineral resource. There is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised.



## **BROCKMAN PROJECT**

During the quarter Hastings commissioned a JORC resource estimate for the Southern Extension, immediately south of the main Brockman deposit near Halls Creek in the East Kimberley region.

The resource assessment, completed by CoxsRocks Pty Limited, was based on the six reverse circulation (RC) holes drilled by Hastings in 2014 and estimated an Indicated Resource of 5.2 million tonnes at 0.22%TREO including 0.18%HREO, plus 0.39%Nb<sub>2</sub>O<sub>5</sub> and 0.95%ZrO<sub>2</sub>.

Sectional interpretations at a 0.2% TREO cut-off were wireframed and resources were estimated using the inverse distance squared (ID2) technique, incorporating a bulk density of 2.6 as measured from the main mineralised zone to the north.

The total JORC resources at the Brockman Project now stand at 41.4 million tonnes at 0.21%TREO including 0.18%HREO, plus 0.36%Nb<sub>2</sub>O<sub>5</sub> and 0.90%ZrO<sub>2</sub>.

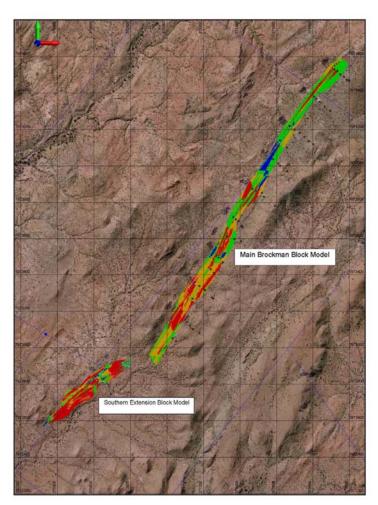


Figure 1 – Brockman Project, Location of Southern Extension Resource



#### **TERMINOLOGY USED IN THIS REPORT**

**TREO** is the sum of the oxides of the heavy rare earth elements (HREO) and the light rare earth elements (LREO).

**HREO** is the sum of the oxides of the heavy rare earth elements europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y).

**CREO** is the sum of the oxides of neodymium (Nd), europium (Eu), terbium (Tb), dysprosium (Dy), and yttrium (Y) that were classified by the US Department of Energy in 2011 to be in critical short supply in the foreseeable future.

**LREO** is the sum of the oxides of the light rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm).

### **NEODYMIUM EQUIVALENCE**

Hastings is concentrating its efforts on the recovery of four important rare earths – neodymium, praseodymium, dysprosium and europium. To portray the grade of the mineralisation Hastings has established neodymium-equivalent figures where:-

The Nd<sub>2</sub>O<sub>3</sub> equivalent (Nd<sub>2</sub>O<sub>3</sub>-Eq) values have been calculated based on the following rare earths prices. These prices have been established by independent consultants Adamas Intelligence in its report entitled "Rare Earth Market Outlook, Update: Supply, Demand and Pricing from 2014 through 20230" dated 30 June 2015, and are being used by Hastings in the evaluation of the project.

## For further information please contact:

Andy Border, General Manager Exploration +61 2 8268 8689 Guy Robertson, Company Secretary +61 2 8268 8689

## **About Hastings Technology Metals**

- Hastings Technology Metals is a leading Australian rare earths company, with two rare earths projects hosting JORC-compliant resources in Western Australia.
- The Yangibana Project hosts JORC Indicated and Inferred Resources totalling 12.36 million tonnes at 1.10% TREO, including 0.44% Nd<sub>2</sub>O<sub>3</sub>-Eq (comprising 8.13 million tonnes at 1.11% TREO Indicated Resources and 4.24 million tonnes at 1.09% TREO in Inferred Resources).
- The Brockman deposit contains JORC Indicated and Inferred Resources totalling 41.4 million tonnes (comprising 32.3mt Indicated Resources and 9.1mt Inferred Resources) at 0.21% TREO, including 0.18% HREO, plus 0.36% Nb<sub>2</sub>O<sub>5</sub> and 0.90% ZrO<sub>2</sub>.
- Rare earths are critical to a wide variety of current and new technologies, including smart phones, hybrid cars, wind turbines and energy efficient light bulbs.
- The Company aims to capitalise on the strong demand for critical rare earths created by expanding new technologies. In November 2015 Snowden completed an updated Scoping Study of the Yangibana Project that confirmed the economic viability of the Project and Hastings is advancing work on a Pre-Feasibility Study.



## Competent Persons' Statement

The information in this announcement that relates to Resources is based on information compiled by Simon Coxhell. Simon Coxhell is a consultant to the Company and a member of the Australasian Institute of Mining and Metallurgy. The information in this announcement that relates to Exploration Results is based on information compiled by Andy Border, an employee of the Company and a member of the Australasian Institute of Mining and Metallurgy.

Each has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this announcement and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code"). Each consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The Scoping Study has been compiled under the supervision of Mr Jeremy Peters. Mr Peters is a full time employee of Snowden Mining Industry Consultants and a Fellow of the Australasian Institute of Mining and Metallurgy and Chartered Professional Mining Engineer and Geologist of that organisation.

Mr Peters has sufficient experience relevant to the type of deposit and mining technique which are covered in this announcement 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 Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code"). Mr Peters consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

## Cautionary statement

This document contains certain forward-looking statements with respect to the financial condition, results of operations and business of Hastings. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "should", "will", or similar expressions, commonly identify such forward-looking statements.

Examples of forward-looking statements in this document include those regarding mineral resources, anticipated production or construction dates, costs, outputs and productive lives of assets or similar factors. Forward-looking statements involve known and unknown risks, uncertainties, assumptions and other factors set forth in this document that are beyond the Hastings' control. For example, future ore reserves will be based in part on market prices that may vary significantly from current levels. These may materially affect the timing and feasibility of particular developments. Other factors include the ability to produce and transport products profitably, demand for our products, the effect of foreign currency exchange rates on market prices and operating costs, and activities by governmental authorities, such as changes in taxation or regulation, and political uncertainty.



In light of these risks, uncertainties and assumptions, actual results could be materially different from projected future results expressed or implied by these forward-looking statements which speak only as to the date of this report. Except as required by applicable regulations or by law, Hastings does not undertake any obligation to publicly update or revise any forward-looking statements, whether as a result of new information or future events. Hastings cannot guarantee that its forward-looking statements will not differ materially from actual results.



# APPENDIX 1

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Deposit	Tenement	Ind/Inf	Tonnes	% TREO	Nd2O3	Pr2O3	Dy2O3	Eu2O3	Ce2O3	Er203	Gd2O3	Ho2O3	La2O3	Lu2O3	Sm2O3	Tb2O3	Tm2O3	Y2O3	Yb2O3
Bald Hill South	M9/157	Ind	3,247,131	0.82	2873	632	59	72	3236	10.2	172	6.3	974	0.66	339	17.6	1.00	153	5.1
Bald Hill South	P9/467	Ind	51,009	0.78	2791	602	67	82	2991	10.0	196	6.7	862	0.59	370	20.5	0.91	163	4.7
Bald Hill South	M9/157	Inf	728,619	0.64	2268	500	53	58	2475	9.3	140	5.7	698	0.56	271	15.1	0.88	140	4.3
Bald Hill South	P9/467	Inf	107,515	0.83	3011	641	81	86	3047	13.9	217	8.7	918	0.79	385	23.5	1.30	205	6.6
Bald Hill North	E9/1049	Inf	101,703	0.43	1582	327	39	43	1590	7.0	105	4.2	482	0.47	201	11.3	0.70	104	3.5
Bald Hill		Total	4,235,976	0.78	2741	602	58	69	3058	10.1	166	6.2	912	0.64	325	17.2	0.98	151	5.0
Гиоломо	M9/158	Ind	629,535	0.94	3437	838	58	65	3901	9.3	15	6.2	728	0.5	320	16.6	0.9	145	
Frasers	IVI9/158	ina	029,535	0.94	3437	838	58	05	3901	9.3	15	0.2	728	0.5	320	10.0	0.9	145	4.4
Frasers	M9/158	Inf	505,743	0.59	2115	500	40	42	2505	7.2	10	4.5	425	0.4	205	11.0	0.7	113	3.2
Frasers	E9/2018	Inf	35,400	0.46	1827	423	16	27	1869	2.6	56	1.6	359	0.1	154	4.6	0.3	41	1.4
Frasers		Total	1,170,678	0.77	2817	680	49	54	3237	8.2	129	5.3	586	0.4	265	13.8	0.8	128	3.8
Yangibana West	M9/160	Ind	1,479,893	0.99	2246	616	42	82	4637	5.7	187	4.0	1920	0.3	342	15.2	0.5	93	2.5
Yangibana North	M9/159	Ind	2,718,269	1.46	3061	910	43	89	7155	5.5	205	3.9	3058	0.3	394	15.5	0.5	92	2.5
Yangibana West	M9/160	Inf	294,638	1.47	3229	931	51	102	7076	6.5	239	4.7	2897	0.4	448	18.5	0.6	108	2.8
Yangibana North	M9/159	Inf	471,000	1.55	3235	962	45	94	5558	6.6	225	4.7	2300	0.4	408	18.2	0.6	109	2.8
Gossan	M9/159	Inf	220,522	1.07	2132	660	22	55	5368	2.91	113	2.03	2311	0.16	255	8.27	0.28	50	1.39
Hook	M9/159	Inf	348,819	1.09	1866	611	30	49	5513	3.71	114	2.70	2660	0.22	203	10.18	0.31	64	1.51
Kanes Gossan	M9/159	Inf	577,828	1.16	2520	773	42	57	6361	5.45	147	4.07	2454	0.30	270	14.69	0.45	93	1.97
Lions Ear	M9/159	Inf	842,034	1.42	2844	846	42	81	7014	4.45	188	3.73	3114	0.21	343	15.21	0.37	84	1.74
		Total	6,953,002	1.31	2746	810	42	82	6286	5	190	4	2671	0.3	356	15	0.5	90	2
		iotai	0,555,002	1.31	2,40	510	72	02	0200		130	7	2071	0.3	330	13	0.5	30	+ -
Total Indicated			8,125,836	1.11	2865	738	50	79	4852	7.75	185	5.10	1824	0.48	357	16.40	0.73	121	3.70
Total Inferred			4,233,819	1.09	2531	703	43	67	4964	6.28	159	4.33	1960	0.35	299	14.44	0.56	103	2.69
Grand Total			12,359,656	1.10	2750	726	48	75	4891	7.25	176	4.83	1870	0.44	337	15.73	0.67	115	3.36

Appendix 1 – Yangibana Scoping Study, Detailed breakdown of October 2015 JORC Resources for the Yangibana Project



# TENEMENT SCHEDULE

# as at 31 December 2015 (All tenements are in Western Australia)

## YANGIBANA PROJECT

# **Hastings Rare Metals Limited**

E09/2084 100%

E09/2086 100%

E09/2095 100%

P09/482 100%

M09/157 100%

E09/2129 100%

# Gascoyne Metals Pty Limited (100% subsidiary)

E09/1989 100%

E09/2007 100%

E09/2137 100%

E09/1043 70%

E09/1049 70%

E09/1703-1706 70%

M09/159 70%

M09/160 100%

MLA09/161, 163 70%

MLA09/164, 165 100%

GA09/10 100%

GA09/11 70%

L09/66-75 100%

# Yangibana Pty Limited (100% subsidiary)

E09/1700 100%

E09/1943-1944 100%

E09/2018 100%

P09/467 100%

M09/158 100%

MLA09/162 100%

# **BROCKMAN PROJECT**

# Hastings Project Holdings Pty Limited (100% subsidiary)

P80/1626-1635 100% E80/4555 100%

EA80/4970 100%



Criteria	etion 1, and where relevant in section 2, also apply to this s JORC Code explanation	Commentary
Database	Measures taken to ensure that data has not been	Data was provided as a validated Access Database and was digitally imported into
integrity	<ul> <li>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>	Micromine Mining software. Micromine validation routines were run to confirm validity of all data.      Analytical results have all been electronically merged to avoid any transcription error.
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul> <li>Site visits have been undertaken, drilling techniques and methods reviewed, RC hole have been logged, diamond core has been assessed and verified with adjacent RC dr intersections.</li> </ul>
Geological interpretation	<ul> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> </ul>	<ul> <li>The confidence in the geological interpretation is excellent.</li> <li>Detailed geological logging and surface mapping allows extrapolation of drill intersections between adjacent sections.</li> <li>Alternative interpretations would result in similar tonnage and grade estimation techniques.</li> <li>Geological boundaries are determined by the spatial locations of the various mineralised structures.</li> <li>Continuous "niobium tuff" units, locally folded and obvious based on logging and</li> </ul>
Dimensions	The factors affecting continuity both of grade and geology.	scintillometer readings (+200 cps) are the key factors providing continuity of geological grade.
<i>Simensions</i>	<ul> <li>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>	<ul> <li>Brockman Southern Extension – the lateral dimensions of the resources at Bald Hil South are shown in the diagram in the body of this release. The mineralisation dips moderately (60°) but variably to the southwest as shown in diagrams in the body of release, and ranges from 10m to 60m thick.</li> <li>It extends over approximately 600 metres of north south extent and down dip by 10 metres</li> </ul>
Estimation and nodelling echniques	<ul> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of byproducts.</li> <li>Estimation of deleterious elements or other nongrade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> <li>The process of validation, the checking process used the comparison of model data to drill hole.</li> </ul>	<ul> <li>Grade estimation using Inverse Distance Cubed (ID3) methodology has been applie to all Resources. One wireframe has been used to subset and constrain the data poin used in the interpolation and only individual grades from individual wireframes were used.</li> <li>The block models were constructed using a 5m by 5m by 2m block size, constrained by one individual wireframe.</li> <li>One interpolation pass was made with a 260m by 120m by 6m (Y, X and Z) search oriented parallel to the azimuth and dip of the mineralised zones (no plunge comport has been defined) to ensure all portions of the wireframe were filled.</li> <li>Geological interpretation of consistent, generally moderately dipping mineralised structures with an average 40m true thickness.</li> <li>Visual validation comparing bock grades with drillhole assay values via cross section plans and long sections was completed.</li> </ul>
	used, the comparison of model data to drill hole data, and use of reconciliation data if available.	



Criteria	JORC Code explanation	Commentary						
	determination of the moisture content.							
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	<ul> <li>A nominal downhole cut-off of 0.20% TREO has been used to establish the target mineralised zones. The cut-off corresponds well with an anomalous (+200 cps) and with the visually distinct Niobium Tuff. host. Scintillometer readings are taken of all samples and these also effectively map the mineralised zones.</li> </ul>						
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	<ul> <li>The Inferred Southern Extension at Brockman includes internal and edge dilution and is considered effectively a diluted mineable resource. The resources defined to date would potentially be amenable to simple open pit mining.</li> <li>The deposit forms the extension of the main Brockman deposit. Additional metallurgical testwork is required to quantify metallurgical recoveries and costs.</li> </ul>						
Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	<ul> <li>Preliminary and limited hydrometallurgical test work has been carried out on samples from the Southern Stockwork zone and a theoretical process has been designed at scoping study level. Further work to develop a viable metallurgical recovery and process is required to optimise and allow cost optimisation for the extraction of the rare earth elements.</li> </ul>						
Environmental factors or assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	Preliminary environmental studies have been carried out on site. No environmental issues have been identified during the surveys completed to date.						
Bulk density	Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.  The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.  Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	Bulk density/specific gravity have been measured by the Company on core from the main Southern Stockwork zone and extrapolated to the south for this latest estimate. Samples have been taken from each of oxidised, partially oxidised and fresh mineralisation with results feeding into the resource estimations. Bulk density/specific gravity measurements have also been carried out at an independent laboratory on samples of oxidised, partially oxidised and fresh host rock. A mean ISBD of 2.6 tonnes per cubic metre has been adopted for this estimate.						
Classification	<ul> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>Whether the result appropriately reflects the</li> </ul>	<ul> <li>The Mineral Resources have been classified as Inferred based on the drill spacings and geological continuity of the deposit.</li> <li>The results of the Mineral resource Estimation reflect the views of the Competent Person.</li> </ul>						



Criteria	JORC Code explanation	Commentary
Audits or reviews  Discussion of	Competent Person's view of the deposit.  The results of any audits or reviews of Mineral Resource estimates.  Where appropriate a statement of the relative	This is the first JORC 2012 Resource Estimate for the Southern Extension at Brockman.  The relative accuracy of the Mineral Resource is reflected in the reporting of the Mineral Resource is reflected.
relative accuracy/ confidence	accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.  • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation.  Documentation should include assumptions made and the procedures used.  • These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	<ul> <li>Mineral Resource as being in line with the guidelines of the 2012 JORC.</li> <li>The statement relates to global estimates of tonnes and grade, with reference made to resources above a certain cut-off that are intended to assist mining studies.</li> </ul>



## **DECEMBER 2015 Mineral Resources and Ore Reserves (MROR) Statement**

## **SUMMARY**

This statement represents the Mineral Resources and Ore Reserves (MROR) for Hastings Technology Metals Limited (Hastings or the Company) as at 31 December 2015. This MROR statement has been compiled and reported in accordance with the guidelines of the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (2012 JORC Code) and also represents the first MROR statement for the Company.

This statement is to be reviewed and updated annually in accordance with Section 15 of the 2012 JORC Code. The nominated annual review date for this MROR statement is 30 June.

The Company's Mineral Resources have increased at both the Brockman and Yangibana projects. The information in this statement has been extracted from the relevant reports as indicated below in each Mineral Resource table.

The-Brockman mineral resource estimate was reported in December 2015 in accordance with the guidelines of the 2012 JORC Code. The Company is not aware of any new information or data that materially affects the information included in the relevant market releases for this estimate. The Company confirms that all material assumptions and technical parameters underpinning the estimate in the relevant market releases continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented here have not been materially modified.

The Yangibana Resource estimate was first reported in October 2015 in accordance with the 2012 JORC Code. The Company is not aware of any new information or data that materially affects the information included in the relevant market releases for this estimate. The Company confirms that all material assumptions and technical parameters underpinning the estimate in the relevant market releases continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented here have not been materially modified.

## **MINERAL RESOURCES**

As at 31 December 2015 the Company's Mineral Resources are:

# **Brockman Project**

Category	Tonnes	%	%	%	%
		$Nb_2O_5$	ZrO <sub>2</sub>	TREO	HREO
Indicated	32,300,000	0.36	0.90	0.21	0.18
Inferred	9,100,000	0.35	0.89	0.21	0.18
TOTAL	41,400.000	0.36	0.90	0.21	0.18

Table 1: Brockman Rare Metals-Rare Earths Resource at a 1,500ppm Nb<sub>2</sub>O<sub>5</sub> cut-off. December 2015.



- \* TREO is the sum of the oxides of the heavy rare earth elements (HREO) and the light rare earth elements (LREO).
- \* HREO is the sum of the oxides of the heavy rare earth elements europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y).

**LREO** is the sum of the oxides of the light rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm).

The Hastings Rare Metals Mineral Resource was first reported in the December 2015 Quarterly Report in accordance with the 2004 JORC Code, available to view at <a href="https://www.hastingsraremetals.com">www.hastingsraremetals.com</a>).



# Yangibana Project

Deposit	Tenement	Ind/Inf	Tonnes	% TREO	Nd2O3	Pr203	Dy2O3	Eu2O3	Ce2O3	Er203	Gd2O3	Ho2O3	La203	Lu203	Sm2O3	Tb2O3	Tm2O3	Y2O3	Yb2O3
Bald Hill South	M9/157	Ind	3,247,131	0.82	2873	632	59	72	3236	10.2	172	6.3	974	0.66	339	17.6	1.00	153	5.1
Bald Hill South	P9/467	Ind	51,009	0.78	2791	602	67	82	2991	10.0	196	6.7	862	0.59	370	20.5	0.91	163	4.7
Bald Hill South	M9/157	Inf	728,619	0.64	2268	500	53	58	2475	9.3	140	5.7	698	0.56	271	15.1	0.88	140	4.3
Bald Hill South	P9/467	Inf	107,515	0.83	3011	641	81	86	3047	13.9	217	8.7	918	0.79	385	23.5	1.30	205	6.6
Bald Hill North	E9/1049	Inf	101,703	0.43	1582	327	39	43	1590	7.0	105	4.2	482	0.47	201	11.3	0.70	104	3.5
Bald Hill		Total	4,235,976	0.78	2741	602	58	69	3058	10.1	166	6.2	912	0.64	325	17.2	0.98	151	5.0
Frasers	M9/158	Ind	629,535	0.94	3437	838	58	65	3901	9.3	15	6.2	728	0.5	320	16.6	0.9	145	4.4
Frasers	M9/158	Inf	505,743	0.59	2115	500	40	42	2505	7.2	10	4.5	425	0.4	205	11.0	0.7	113	3.2
Frasers	E9/2018	Inf	35,400	0.46	1827	423	16	27	1869	2.6	56	1.6	359	0.1	154	4.6	0.3	41	1.4
Frasers		Total	1,170,678	0.77	2817	680	49	54	3237	8.2	129	5.3	586	0.4	265	13.8	0.8	128	3.8
Yangibana West	M9/160	Ind	1,479,893	0.99	2246	616	42	82	4637	5.7	187	4.0	1920	0.3	342	15.2	0.5	93	2.5
Yangibana North	M9/159	Ind	2,718,269	1.46	3061	910	43	89	7155	5.5	205	3.9	3058	0.3	394	15.5	0.5	92	2.5
Yangibana West	M9/160	Inf	294,638	1.47	3229	931	51	102	7076	6.5	239	4.7	2897	0.4	448	18.5	0.6	108	2.8
Yangibana North	M9/159	Inf	471,000	1.55	3235	962	45	94	5558	6.6	225	4.7	2300	0.4	408	18.2	0.6	109	2.8
Gossan	M9/159	Inf	220,522	1.07	2132	660	22	55	5368	2.91	113	2.03	2311	0.16	255	8.27	0.28	50	1.39
Hook	M9/159	Inf	348,819	1.09	1866	611	30	49	5513	3.71	114	2.70	2660	0.22	203	10.18	0.31	64	1.51
Kanes Gossan	M9/159	Inf	577,828	1.16	2520	773	42	57	6361	5.45	147	4.07	2454	0.30	270	14.69	0.45	93	1.97
Lions Ear	M9/159	Inf	842,034	1.42	2844	846	42	81	7014	4.45	188	3.73	3114	0.21	343	15.21	0.37	84	1.74
		Total	6,953,002	1.31	2746	810	42	82	6286	5	190	4	2671	0.3	356	15	0.5	90	2
Total Indicated			8,125,836	1.11	2865	738	50	79	4852	7.75	185	5.10	1824	0.48	357	16.40	0.73	121	3.70
Total Inferred			4,233,819	1.09	2531	703	43	67	4964	6.28	159	4.33	1960	0.35	299	14.44	0.56	103	2.69
Grand Total			12,359,656	1.10	2750	726	48	75	4891	7.25	176	4.83	1870	0.44	337	15.73	0.67	115	3.36

Table 2: Yangibana Rare Earths Resources at a 2,500ppm TREO cut-off, October 2015



The Yangibana Mineral Resource was first reported October 2015 in accordance with the 2012 JORC Code (refer to ASX Release dated 6 October 2014 titled 'Yangibana Project Confirmed As A Significant Neodymium Project Following Major Increase In JORC Resources', available to view at <a href="www.hastingsraremetals.com">www.hastingsraremetals.com</a>).

#### **ORE RESERVES**

As at 31 December 2015 the Company had no reportable Ore Reserves in accordance with the 2012 JORC Code.

#### **GOVERNANCE SUMMARY**

The Mineral Resource estimates listed in this report are subject to Hastings Rare Metals' governance arrangements and internal controls.

Hastings Rare Metals Mineral Resource estimates are derived by Competent Persons (CP) with the relevant experience in the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking. Geology models in all instances are prepared in conjunction with Hastings Rare Metals staff. The CP carries out reviews of the quality and suitability of the data underlying the Mineral Resource estimate, including a site visit. Hastings Rare Metals' management conducts its own internal review of the estimate to ensure that it honours the data correctly and has been classified and reported in accordance with the JORC Code.

# **COMPETENT PERSONS' STATEMENT**

The information in this report that relates to Mineral Resources at the Brockman and Yangibana Deposits is based on information compiled by Mr Simon Coxhell of CoxsRocks Pty Ltd, who is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) and is a consultant to Hastings Technology Metals Limited. Mr Coxhell has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 and 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Coxhell consents to the inclusion in this report of the matters based on his information in the form and context in which they appears.

The information in this report that relates to Exploration Results is based on information compiled by Mr Andy Border. Andy Border is an employee of the Company and is a Member of the Australian Institute of Mining and Metallurgy. Mr Border has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this presentation and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code"). Mr Border consents to the inclusion in this report of the matters based on his information in the form and context in which they appears.