

21 March 2019

## INITIAL ORE SORTING RESULT ENCOURAGING

- **Initial ore sorting test rejected 37% of the mass supplied to the ore sorter, retaining 92.2% of the TREO.**
- **Best improvement seen in the 8 to 25mm size fraction, achieving an upgrade of 157% in TREO grade.**
- **Ore sorting result indicates potential for further optimisation of processing not captured in current project scope.**

### Introduction

Hastings Technology Metals Limited (ASX: HAS) (“Hastings” or “the Company”) is pleased to announce that it has received the results from an initial sample sent for ore sorting testing:

Hastings recently initiated investigation to test the suitability of a sample of Yangibana mineralisation, sourced from low-grade diamond drill core, to test whether ore sorting technology might provide an opportunity to further improve on the current proposed processing route. A tier 1 ore sorting vendor has now completed testing the amenability of Yangibana sample to various types of ore sorting technology.

The test work determined that the low-grade drill core was able to be upgraded using an off-the-shelf ore sorter with an X-ray transmission (XRT) sensor.

XRT sensors are able to differentiate between the higher density mineralisation and lower density gangue minerals.

The sample used for this initial test was derived from narrow, low grade ironstone lenses located in the hangingwall and footwall to the current Mineral Resources at four of the Yangibana deposits. These intervals were mixed with peripheral diluting material comprising granite and metamorphic rock types.

The sample was screened to produce 8-25mm and 25-60mm sorted fractions as well as an unsorted -8mm fines fraction. Both coarser size fractions were found to be very conducive to ore sorting and had very similar head grades.

***The test upgraded the head grade of the sample by 45%, achieved 37% rejection of the sample mass and resulted in an overall TREO recovery of 92.2%.***

***More impressively, in the 8 to 25mm size fraction the head grade of the sample was upgraded by 157%. This was because the 8-25mm sorted fraction had an increased degree of mineral liberation.***

This first pass test provides encouraging results to now conduct a more extensive test work program to confirm the recovery and mass rejection projections across all mineralisation types, and to confirm the optimum ore sorting technology that might be used on the Yangibana project.

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### Board

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Jean Claude Steinmetz  
(Non-Executive Director)

Mal Randall  
(Non-Executive Director)

Neil Hackett (Non-Executive  
Director and Company  
Secretary)

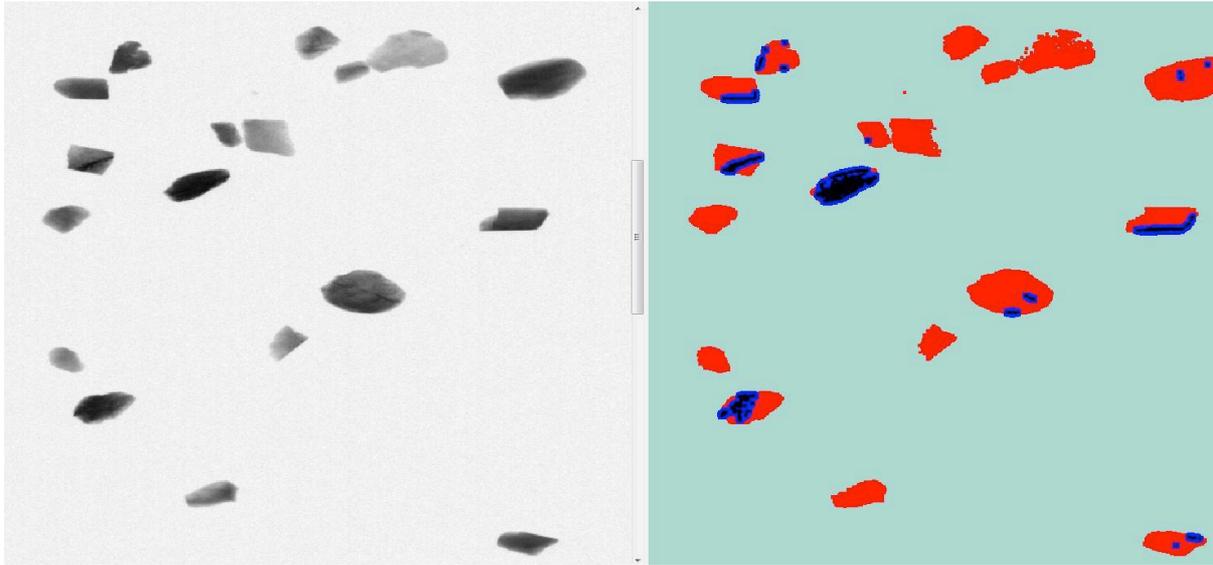


Figure 1: Raw (left) and processed (right) XRT images of high and low-density particles. High density particles (ironstone) are shown in blue/black, while low density particles (granite and metamorphic) are shown in red. This image shows particles from the Yangibana 25-60mm feed material. Low density particles associated with gangue material are sorted to the waste stream.

*“Hastings intends to further pursue test work on this technology, to quickly determine the potential benefits that can be made to the Yangibana Project, said its Executive Chairman, Charles Lew.*

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

**Total Rare Earths Oxides, TREO**, is the sum of the oxides of the light rare earths elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm) and the heavy rare earths elements europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y).

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## **About Hastings Technology Metals**

### *Yangibana Project*

Hastings Technology Metals (ASX:HAS, the Company) is advancing the Yangibana Rare Earths Project towards production following the completion of a positive Definitive Feasibility Study in November 2017. The Yangibana Project hosts rare earths deposits rich in neodymium and praseodymium, elements vital to permanent magnets that provide many critical components of wide-ranging high-tech products, including electric vehicles, renewable energy wind turbines, robotics, medical applications and others. The Company aims to be the next significant producer of neodymium and praseodymium outside of China.

The established Yangibana reserves and resources are predominantly within tenements held 100% by Hastings, with the majority in granted Mining Leases. Lesser resources are held in a joint venture in which Hastings holds a 70% interest and as the majority participant, has been appointed as the manager of the joint venture.

The November 2017 Yangibana Project DFS established JORC Probable Ore Reserves of 5.15 million tonnes at 1.12% total rare earths oxides (TREO) including 0.41% neodymium and praseodymium oxides ( $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ ). This Ore Reserve was the basis of the initial operation at a planned production rate of up to 15,000 tonnes per annum (tpa.) MREC including 3,400 tpa. of  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ . The July 2018 Yangibana Probable Ore Reserve increased to 7.74 million tonnes at 1.13% TREO including 0.43%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ . The January 2019 Probable Ore Reserve has increased this to 10.35 million tonnes at 1.22% TREO including 0.43%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ . The increase in Probable Ore Reserves is demonstrated by additional Pre-Feasibility Study work that supports extension of production over more than 10 years.

Including the above Ore Reserves, the Project has JORC Measured Mineral Resources of 4.7 million tonnes at 1.17% TREO including 0.42%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ , JORC Indicated Mineral Resources of 8.6 million tonnes at 1.24% TREO including 0.41%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ , and JORC Inferred Mineral Resources of 8.4 million tonnes at 1.09% TREO including 0.36%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ , providing total JORC Measured, Indicated and Inferred Mineral Resources of 21.7 million tonnes at 1.17% TREO including 0.39%  $\text{Nd}_2\text{O}_3+\text{Pr}_6\text{O}_{11}$ .

Many more areas of the Company's deposits have the potential for additional resources and exploration programmes are in place to evaluate these areas in future plus the numerous other targets identified to date.

### *Brockman Project*

The Company is also progressing a Mining Lease application over the Brockman Rare Earths and Rare Metals Project.

The Brockman deposit, near Halls Creek in Western Australia, contains JORC Indicated and Inferred Mineral Resources, estimated using the guidelines of JORC Code (2012 Edition, totalling 41.4 million tonnes (comprising 32.3 million tonnes Indicated Mineral Resources and 9.1 million tonnes Inferred Mineral Resources) at 0.21% TREO, including 0.18% HREO, plus 0.36%  $\text{Nb}_2\text{O}_5$  and 0.90%  $\text{ZrO}_2$ .

The Company aims to capitalise on the strong demand for critical rare earths created by the expanding demand for new technology products.

### **Competent Person Statements**

The information in this announcement that relates to Mineral Resources is based on information compiled by Lynn Widenbar. Mr. Widenbar is an independent consultant to the Company and a member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Widenbar 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"). Consents to include statements in this announcement have been provided in previous announcements entitled "Final 2017 JORC Resource Update Including Auer and Auer North Results" dated 22nd November 2017; "Yangibana Project Resources Now Exceed 20.5 Million Tonnes" dated 12th October 2017; "Another Major Increase In JORC Resources From Current Yangibana Drilling" dated 24th July 2017 and "Increase in Measured and Indicated Resources at Yangibana Project" dated 22nd November 2018.

The information in this announcement that relates to the Ore Reserves at Bald Hill, Fraser's, Auer, Auer North, Yangibana, Yangibana West and Yangibana North is based on information reviewed or work undertaken by Mr. Frank Blanchfield, Fellow of the Australasian Institute of Mining and Metallurgy, and an employee of Snowden Mining Industry Consultants. Mr. Blanchfield has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the preparation of mining studies to qualify as a Competent Person as defined by the JORC Code 2012. Mr. Blanchfield consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The scientific and technical information in this announcement and that relates to process metallurgy is based on information reviewed by Ms. Narelle Marriott (Principal Engineer – Beneficiation) and Mr. Zhaobing (Robin) Zhang (Process Engineering Manager) of Hastings Technology Metals Limited. Both Ms. Marriott and Mr. Zhang are members of the AusIMM. Each has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined by the JORC Code 2012. Ms. Marriott and Mr. Zhang consent to the inclusion in this announcement of the matters based on their information in the form and context in which it appears.

## JORC Code, 2012 Edition – Table 1

### Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li>• <i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The initial sample prepared for Ore Sorter testing comprised a composite of core (some whole, some half and some quarter) from six diamond drillholes at four of the Company’s deposits, being Bald Hill, Fraser’s, Yangibana and Yangibana West.</li> <li>• The samples comprise narrow, low-grade ironstone lenses located in the hangingwall and footwall to the current Mineral resources at these deposits mixed with adjacent diluting waste material comprising predominantly granite and fenite with lesser metamorphic rock.</li> <li>• This initial sample is not representative of the expected feed to the processing plant, merely providing an initial test of concept.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>• <i>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).</i></li> </ul>	<ul style="list-style-type: none"> <li>• Diamond drilling at the various targets has been HQ diameter.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Sample recovery was variable.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<p>All diamond drill core has been logged in detail and is considered qualitative. However, the composite sample was a blend of various materials.</p>



Criteria	JORC Code explanation	Commentary
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Assays were carried out by ALS on samples provided by the Ore Sorter company.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Orientation of data in</b>	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and</i></li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>relation to geological structure</b>	<p><i>the extent to which this is known, considering the deposit type.</i></p> <ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	
<b>Sample security</b>	<ul style="list-style-type: none"> <li><i>The measures taken to ensure sample security.</i></li> </ul>	<p>Samples were bagged and marked for transportation using Toll Priority between ALS laboratory in Perth and Ore Sorter facility before the sample preparation for analysis.</p> <ul style="list-style-type: none"> <li></li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drilling has been undertaken on numerous tenements within the Yangibana Project.</li> <li>All Yangibana tenements are in good standing and no known impediments exist.</li> <li>Certain tenements are held 100% by Hastings' subsidiaries whilst others are held in joint venture with Mojito Resources in which Hastings holds a 70% interest.</li> <li>A Native Title Agreement has been negotiated and ratified with the Native Title claimants as reported in the ASX announcement titled "Hastings Signs Native Title Agreement with Thiin-Mah Warriyangha, Tharrkari and Jiwarli People" dated 14th November 2017.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>Ten of the Yangibana prospects were previously drilled to a limited extent by Hurlston Pty Limited in joint venture with Challenger Pty Limited in the late 1980s.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Yangibana ironstones within the Yangibana Project are part of an extensive REE-mineralised system associated with the Gifford Creek Carbonatite Complex.</li> <li>These ironstone lenses have been explored previously for base metals, manganese, uranium, diamonds and rare earths.</li> <li>The ironstones are considered by GSWA to be coeval with the numerous carbonatite sills that occur within Hastings tenements, or at least part of the same magmatic/hydrothermal system.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li><i>A summary of all information material to the understanding of the exploration results</i></li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



Criteria	JORC Code explanation	Commentary
	<p>including a tabulation of the following information for all Material drill holes:</p> <ul style="list-style-type: none"> <li>o easting and northing of the drill hole collar</li> <li>o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>o dip and azimuth of the hole</li> <li>o down hole length and interception depth</li> <li>o hole length.</li> </ul> <ul style="list-style-type: none"> <li>• If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>• Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>• The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>• N/A.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>• These relationships are particularly important in the reporting of Exploration Results.</li> <li>• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>• If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>• Only one sample has been tested so all results are being reported.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>



Criteria	JORC Code explanation	Commentary
	<i>samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>	
<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, 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>• Additional testwork programs being considered when representative samples are available..</li></ul>