HASTINGS
Technology Metals Limited

25 November 2019

95% RECOVERY of ORE and 52% IMPROVEMENT IN HEAD GRADE FROM BULK ORE SORTING TRIAL

- **95.1% recovery of contained Nd_2O_3+Pr_6O_{11} on 1.8 tonne sorted bulk sample.**
- **52% increase in head grade from 0.71% to 1.08% Nd_2O_3+Pr_6O_{11}.**
- **37.1% of the sample mass rejected from ore sorting testwork.**
- **Standard commercial ore sorting technology, X-Ray transmission (XRT), has proven to be extremely effective at removing dilution on samples used in the testing program.**
- **Technical and engineering programs will continue to investigate the operating scenarios where benefits can be realised for the project.**

Hastings Technology Metals Limited (ASX: HAS) ("Hastings" or "the Company") is pleased to announce successful completion of bulk sample testing through an ore sorting circuit. These outstanding results confirm earlier results from smaller drill core derived samples, which were tested with two different ore sorter vendors.

Previous small-scale test work has shown that off-the-shelf x-ray transmission (XRT) ore sorting technology could be applied to separate out a barren waste stream from the ore. This presents an opportunity to remove waste dilution material from the mining process before the material is fed into the processing plant, potentially resulting in energy and reagent savings in the beneficiation circuit.

The crushed bulk ore sample of 1.8 tonnes was screened into two size fractions -10.5mm and +10.5mm. The sortable fraction (+10.5mm) after being diluted with waste material at either 35% or 60% proportions was screened on a Tomra commercial sorter using XRT technology at 32 tonnes per hour feed rate.

In the base case sorted ore sample, crushed and screened to +10.5mm and diluted with 35% waste material, a total of 37.1% of the sample mass was rejected at a grade of 0.09% Nd_2O_3+Pr_6O_{11}, representing a loss of Nd_2O_3+Pr_6O_{11} of just 4.9% or an overall recovery of 95.1% Nd_2O_3+Pr_6O_{11} in the Ore. A corresponding 52% increase or upgrade in the ore head grade was achieved from 0.71% to 1.08% Nd_2O_3+Pr_6O_{11}.

In the sorted sample diluted with 60% waste material, the ore sorting test work program achieved an upgrade factor of 2.16 taking the feed grade from 0.43% Nd_2O_3+Pr_6O_{11} to 0.93% Nd_2O_3+Pr_6O_{11}, whilst recovering 90.6% of the Nd_2O_3+Pr_6O_{11}.

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The sorting tests of the sortable fraction showed that the standard commercial Tomra technology was able to successfully sort the Yangibana ore using XRT technology.

Andrew Reid, Hastings Chief Operating Officer, said *"the Yangibana orebody continues to amaze us. Not only with its world-class ratios of* Nd_2O_3+Pr_6O_{11}, *but now these results have confirmed that ore sorting presents a real and future prospect to gain higher operational efficiencies from the Yangibana Processing Plant"*

Figure 1: TOMRA ore sorter used for the bulk ore sorting sample

Detailed quantitative mineralogy is pending on the ore sorting waste stream. However, the results indicate that the REO rejected in the ore sorter waste stream is not composed heavily with liberated monazite, but rather with low-grade REO intergrowths which would not be recovered in the flotation process. The benefit for the Yangibana project is in removing this barren gangue early in the process flowsheet, with potential benefits gained in streamlining the efficiency of the beneficiation plant.

The full opportunity for including ore sorting technology into the Yangibana process flowsheet is still being assessed. Based on these testwork results, technical and engineering programs will continue to investigate the benefits that can be realised across the project.

Figure 2: Yangibana ore being feeding to the ore sorter at 32 tonnes per hour

Competent Person Statements

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.

TERMINOLOGY USED IN THIS REPORT

Total Rare Earths Oxides, TREO, is the sum of the oxides of the light rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm) and 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).

About Hastings Technology Metals

Yangibana Project

Hastings Technology Metals Limited (ASX: HAS, “Hastings” or “the Company”) is advancing its Yangibana Rare Earths Project in the Upper Gascoyne Region of Western Australia towards production. The proposed beneficiation and hydro metallurgy processing plant will treat rare earths deposits, predominantly monazite, hosting high neodymium and praseodymium contents to produce a mixed rare earths carbonate that will be further refined into individual rare earth oxides at processing plants overseas.

Neodymium and praseodymium are vital components in the manufacture of permanent magnets which is used in a wide and expanding range of advanced and high-tech products including electric

vehicles, wind turbines, robotics, medical applications and others. Hastings aims to become the next significant producer of neodymium and praseodymium outside of China.

Hastings holds 100% interest in the most significant deposits within the overall project, and 70% interest in additional deposits that will be developed at a later date, all held under Mining Leases. Numerous prospects have been identified warranting detailed exploration to further extend the life of the project.

Brockman 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).

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

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

For further information on the Company and its projects visit www.hastingstechmetals.com

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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
Sampling techniques	• *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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent*	• Samples were selected at Bald Hill where ironstones crop out at surface. The ironstone outcrops represent the oxidised and highly weathered portion of the carbonatite-phoscorite dykes that are host to mineralisation. The nature of the sampling using a 30T excavator limits the material that could be sampled to outcropping ores and waste materials, that occur from surface to approximately 2 metres.

Criteria	JORC Code explanation	Commentary
	sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	• *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).*	• N/A
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• N/A
Logging	• *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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	N/A
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• N/A
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *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.* • *Nature of quality control procedures adopted (eg*	• Assays were carried out by ALS on samples provided by the Ore Sorter company.

Criteria	JORC Code explanation	Commentary
	standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• N/A
Location of data points	• *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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• N/A
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• N/A
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• N/A
Sample security	• *The measures taken to ensure sample security.*	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. •
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• N/A

Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
Mineral tenement and	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures,*	• Drilling has been undertaken on numerous tenements within the Yangibana Project. • All Yangibana tenements are in good standing

Criteria	JORC Code explanation	Commentary
land tenure status	*partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *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.*	and no known impediments exist. • 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. • 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.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• 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.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Yangibana ironstones within the Yangibana Project are part of an extensive REE-mineralised system associated with the Gifford Creek Carbonatite Complex. • These ironstone lenses have been explored previously for base metals, manganese, uranium, diamonds and rare earths. • 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.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• N/A

Data aggregation methods	• *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.* • *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.*	• N/A.

Criteria	JORC Code explanation	Commentary
	• *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *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').*	• N/A
Diagrams	• *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.*	• N/A
Balanced reporting	• *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.*	• Only one sample has been tested so all results are being reported.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• N/A
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions, depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Further assessment is ongoing to understand the representativeness of samples.