



**HASTINGS**  
Technology Metals Limited

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## UP-GRADED BENEFICIATED CONCENTRATE CONTAINS IN EXCESS OF 10% NEODYMIUM OXIDE

### HIGHLIGHTS

- Latest grinding and flotation test work on the composite sample from the Eastern Belt mineralisation (Hastings 100%) at Yangibana produces a superior beneficiated concentrate
- The flotation tests achieved:
  - 30.1% Rare Earths Oxides (recovery 78%)
  - 10.2% Nd<sub>2</sub>O<sub>3</sub> and 2.34% Pr<sub>2</sub>O<sub>3</sub> (with average recovery 79%)
  - Low Iron oxide content (12%)
  - Mass pull of only 3.1% (i.e. only 3.1% of the original mass is required to be treated through the subsequent hydrometallurgy processing)
- Treatment of this upgraded concentrate potentially requires lower reagent usage, gives higher product recoveries, and leads to significantly reduced capital and operating costs compared to the previous concentrate as incorporated in the recent Scoping Study evaluation
- Further improvements may be anticipated with future “optimising” beneficiation test work

## DETAILS

Hastings Technology Metals Limited (**ASX:HAS**) is pleased to announce the latest results of beneficiation test work carried out on the neodymium-rich mineralisation from the Eastern Belt that occurs in tenements in which Hastings holds 100% interest.

Kwan-Yu Wong, principal of mineral processing consultancy KYSKY Investments Pty Limited, has successfully completed bench-scale test work producing an upgraded beneficiated concentrate from the Eastern Belt Master Composite (EBMC) by a new multi-stage grinding and flotation method. He noted that these results are “by far the most promising and preferred (beneficiation) processing regime examined so far”.

The EBMC is a composite of mineralised drill samples derived from intersections along the Eastern Belt of the Yangibana Project (all 100% owned by Hasting) and include those from Bald Hill South and Fraser’s deposits.

It is planned that the early years of any exploitation of the Yangibana Project will be from the Eastern Belt.

The latest results relate to a further improvement of the Beneficiation Flotation Flow Sheet (Figure 1), which now comprises:

1. A primary coarse grind to a  $P_{80}$  of 90  $\mu\text{m}$  (ie 80% of the particles are less than 90  $\mu\text{m}$  in size);
2. Followed by flotation resulting in a concentrate comprising 20% of the original mass;
3. Then a secondary grind to a  $P_{80}$  of 20  $\mu\text{m}$ ;
4. Followed by flotation on this finer-ground concentrate, comprising a rougher float followed by three stages of cleaning.

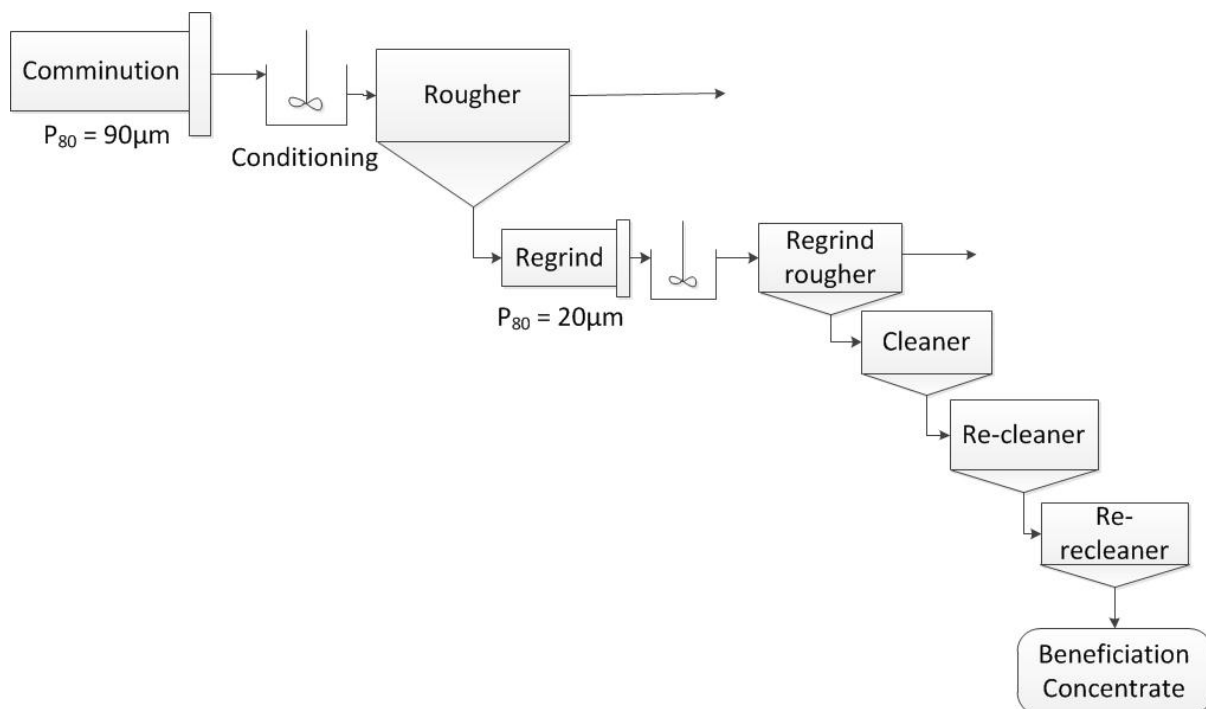


Figure 1 – Schematic beneficiation route

Comparison to the previous flow sheet may be summarised as follows:

- The two-stage grind would only increase capital and operating costs marginally when compared to the previous single-grind option.
- The lower mass pull of the final upgraded concentrate of 3.1% will lead to:
  - A smaller and less expensive hydrometallurgical plant.
  - Hydrometallurgical reagent costs are expected to be significantly lower.
- Reducing the Fe<sub>2</sub>O<sub>3</sub> content from approximately 26% to 12% will lead to:
  - Significant saving in reagent costs.
  - Easier removal of impurities.
  - Lower rare earths losses in impurity removal stages.

The following table shows the differences in composition and highlights the superiority of the latest concentrate.

	Grade (%)					Recovery (%)			
	TREO	Nd <sub>2</sub> O <sub>3</sub>	Pr <sub>6</sub> O <sub>11</sub>	Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Mass	TREO	Nd <sub>2</sub> O <sub>3</sub>	Pr <sub>6</sub> O <sub>11</sub>
PFS concentrate	20.0	6.5	1.5	26.2	7.9	4.9	84	86	87
Up-graded Concentrate	30.1	10.2	2.2	12.1	2.7	3.1	78	79	80

The Pre-Feasibility Study (PFS) that is to be announced in the coming days is based on the former concentrate. The upgraded and superior recent concentrate is anticipated to significantly improve project economics compared to those that will be presented in the PFS. The latest flow sheet and upgraded concentrate reinforces the viability of the Yangibana Project.

Further optimisation and improvement are expected with the next phase of test work to refine the flow sheet, and piloting.

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## 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.*

## 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:-

Where Nd<sub>2</sub>O<sub>3</sub>-Eq =

$$((\text{Nd}_2\text{O}_3\text{grade} + ((\text{Pr}_2\text{O}_3\text{grade} * (\text{Pr}_2\text{O}_3\text{price} / \text{Nd}_2\text{O}_3\text{price})) + (\text{Dy}_2\text{O}_3\text{grade} * (\text{Dy}_2\text{O}_3\text{price} / \text{Nd}_2\text{O}_3\text{price}))) + (\text{Eu}_2\text{O}_3\text{grade} * (\text{Eu}_2\text{O}_3\text{price} / \text{Nd}_2\text{O}_3\text{price})))$$

$$\text{Such that Nd}_2\text{O}_3 \text{ Eq} = \text{Nd}_2\text{O}_3 + (1.1176 \times \text{Pr}_2\text{O}_3) + (6.4706 \times \text{Dy}_2\text{O}_3) + (7.4706 \times \text{Eu}_2\text{O}_3)$$