

Hastings releases first assay results

On the 16th of September 2016, Hastings Technology Metals Ltd. (ASX: HAS) published the first assay results from the infill drilling programme at their Fraser's deposit within the Yangibana Project. The aim of the current drilling programme is primarily to provide a large composite sample for pilot plant processing work.

As a first assay, the results exceeded expectations in that grades in the north eastern portion of the deposit are higher than the grades produced from previous drilling of the area.

Following the completion of the Fraser's drill programme, the drill rig was relocated to other targets in the South West area of the project, where the company is attempting to increase its resources in the Eastern Belt at Yangibana. The Eastern Belt mineralisation is recognised as the main economic driver of the Yangibana Project, boasting around 33% TREO neodymium oxide at Bald Hill South and more than 40% at Fraser's deposit. The Company is therefore dedicated to improving the neodymium content of those deposits in particular as the higher the content of neodymium in the Monazite ore body, the more profitable the operation.

The total JORC resource statement was estimated in the company's pre-feasibility study, published in April. Using a cut off grade of 0.25% neodymium oxide equivalent, the results showed a total resource of 132,500 tonnes of TREO including:

- 33,900 tonnes of neodymium oxide
- 8,950 tonnes of praseodymium oxide
- 920 tonnes of europium oxide
- 590 tonnes of dysprosium oxide

In addition to the advancement of its drill programme,

Hastings also received a research and development tax offset rebate of \$746,000 with a further \$52,000 expected to follow.

According to the development timeline provided in the pre-feasibility study, the Company is on schedule. Hastings is expected to produce a bankable feasibility study by the end of 1H17 and simultaneously look at financing options for the construction phase. The hope is that they will produce their maiden production by the last quarter of 2018.

The news of the drilling results was received positively from the market as the Company's share price rose sharply on the 15th of September in the wake of the announcement from \$0.086 to \$0.089, reaching a high of \$0.09.

Hastings Technology Metals – Make It a Double

Divining the tea leaves of Hastings Rare Metals (ASX: HAS) latest press release takes some doing. The moving parts are so many and so varied. The keys to understanding are:

- Focus on the main mineable area
- Ignore the partly-owned pieces of the puzzle (except Yangibana North)
- Ignore the smaller and peripheral deposits that go to make up the global resource

The reason for doing this is not only to minimize confusion with relation to the proliferation of different deposit names but because the mining studies have commenced with pit optimizations utilizing the indicated Resources at Bald Hill South, Fraser's, Yangibana West and Yangibana North deposits.

To wrack one's brain with the parts of the deposit that won't be in a pit design is to needlessly torture oneself.

An Important Aside

The Yangibana-REM Joint Venture is the owner of some of the concessions at Yangibana with Hastings holding 70% of the JV. Interestingly the "REM" in question is the AIM-listed Rare Earth Minerals PLC (LON: REM), which is the same entity which is the largest shareholder in Bacanora (TSX-V: BCN), which I wrote of recently in relation to its deal with Tesla on the Sonora Lithium deposit in Mexico. It is also the partner in the Cinovec Tin-Lithium project in the Czech Republic that Lithium Australia (the former Cobre Montana) is involved in.

The map below shows the current state of the tenements.



It is important to note that the main targets, Fraser's, Bald Hill and Yangibana South are all on the 100% owned territory, while the large and interesting Yangibana North deposit (with a grade of 1.46% TREO) is in the JV territory. The smaller deposits are in the hatched blue mining lease area in the middle which is held by the JV.

Resource

The latest release is focused on the expanded resource. Hitherto the main indication of the potential at Yangibana had been as a result of drilling in 2014, which led to the definition of JORC resources totaling 6.79 million tonnes at 1.5% TREO including 0.35% Nd₂O₃.



However the latest resource has nearly doubled the tonnage, while the grade of TREO has dropped by around a third. Unfortunately the Neodymium grades were not stated in an apples-to-apples mode to make comparisons easier. They have

used a Neodymium Oxide equivalent rather than breaking down the individual metals and used a percentage rather than the formerly used PPM measure.



Total project resources are now estimated to contain approximately:

- 33,900 tonnes of Nd_2O_3
- 8,950 tonnes of Pr_2O_3
- 590 tonnes of Dy_2O_3
- 920 tonnes of Eu_2O_3

Yangibana

Hastings tenements cover the bulk of the Gifford Creek Carbonatite Complex. The primary mineralisation targets within the Yangibana Project are narrow, discontinuously outcropping ironstone dykes related to this carbonatite complex. These ironstones are considered to be a younger phase which has cut across the carbonatite dykes, possibly leaching and upgrading Rare Earths (and base metals) from the older dykes.

The ironstone dykes have been shown to carry anomalous Rare Earths associated with monazite mineralisation. The carbonatite dykes themselves, along with the associated fenitic alteration, are considered to be sourced from an as yet undiscovered carbonatite intrusion which the company feels might have significant Rare Earth potential as well as possible base metal potential.



These ironstone lenses have been explored previously to a limited extent. Twelve targets for rare earths were tested with limited drilling in the 1980s. The map above shows the various deposits scattered around the carbonatite. The string of deposits numbered one to six are mainly the JV deposits,

while the others are more dispersed and represent the 100% owned deposits.

The ironstones comprise variable contents of iron oxides and hydroxides, silicates and quartz. Near surface manganese oxides decrease with depth and are replaced by primary carbonate minerals. The rare earths content is largely hosted by monazite with lesser bastnasite and apatite.

The ironstone lenses pinch and swell along strike and with depth, generally ranging from one to eight metres in thickness. The ironstone lenses are often surrounded by fenitised host rocks. Barren quartz veins are also locally associated with the ironstones. Below can be seen the type of outcrop (here at Yangibana North) that makes the deposit so much easier to explore and eventually mine.



Ease of Access

The vast majority of the identified resource lies in the near surface oxidized zone. Below can be seen a cross-section of the Yangibana North part of the deposit with the Rare Earths being exceptionally near to the surface and indeed being in a relatively easily mineable band only ten metres in vertical thickness that outcrops at surface. This helps put Hastings in contention with some of the Xenotime deposits in Western Australia that are also at surface.



Beyond this proximity to the surface, the Rare Earths mineralisation contains unusually high neodymium values with its oxide, Nd_2O_3 , averaging 4000ppm or 25% of TREO.

Conclusion

Being “Rare anything” in the mining space these days is like being a “dot.com” back in 2000-2001. So it’s not unsurprising

that Hastings Rare Metals has joined the exodus with the announcement of a name change to Hastings Technology Metals. This move though does not disguise the fact that Hastings' resource has made a quantum leap in its latest announcements, with some reduction in grade but a massive increase in size. Usually "size does not matter" to us but in this case with the deposit at Yangibana so close to surface it's a case of the more the merrier. Large and accessible has to be better than Rare Earth deposits in the frozen north or even worse, in the frozen north AND under a lake. The words that come to mind when pondering these aberrations of the first flush of the Rare Earth boom were "what were they thinking?" The answer, alas, is that they were not thinking.

The next step looks to us to be the narrowing down of the targets by overlaying a concept of what some pit shells might look like and then focusing exploration efforts on upgrading those parts of the deposit to Measured status. The, as always, we repeat the Jack Lifton mantra that REE projects need to be right-sized.

The way things are going Hastings may very well overhaul some of the "household names" of the REE space in Australia and elbow itself to the front of the crowd.

Spratly Islands' dispute redirects investors to Hastings heavy rare earths

☒ China is expanding the Spratly Islands in the South China Sea in contested waters that the US is following closely. A little too closely the Chinese think. This could affect the

rare earth trade that China controls. As a result, the west will be looking more closely at deposits outside of China, like the one in Australia owned by Hastings Rare Metals Ltd, (ASX: HAS).

Tensions in the Spratly Islands have sparked interest in what these events may do to the price of rare earths, and rare earth companies. The dispute is largely over potential oil reserves, but the events are reminiscent of the China-Japan dispute over the Senkaku islands in 2011 that caused China to cut off rare earth supplies to Japan. And current tensions with the US makes people wonder if China would use rare earths as a bargaining chip to get control of these islands. Finding other viable sources, especially in the Asia-Pacific area are always a concern. Hastings has a deposit of heavy rare earths that may benefit from all this in the race to supply minerals from outside of China. And maybe China knows something about deep sea mining of rare earths that the Japanese have said is unfeasible. Perhaps that would be a reason to build islands?

Regardless of why China is expanding the Spratlies and building an airport, these sorts of tensions usually push up the price of materials that are both shipped through the region, and sourced nearby. The world is hugely dependent on China for rare earths and if they experience negative repercussions from claiming islands that several countries claim, and are closest to the Philippines, then they may retaliate in a sector that all modern technology needs. The import-dependence, and the fact that China controls over 90% of the supply means that deposits in western countries like Hastings' are being examined closely as a way to lessen dependence on China.

Hastings has two deposits of heavy rare earths in Western Australia, Yangibana, and Brockman. They released a news release May 20th, regarding pre-feasibility (PFS), drilling at Yangibana. Their first target is the high neodymium

mineralisation at Bald Hill South. A new target that was drilled in the 1980's will also be tested. They have also applied for a fourth mining lease, at Yangibana West, which will also be drilled as part of the PFS program. In late 2014 Hastings finished a Scoping Study of the Yangibana Project that confirmed the economic viability of the Project. In early 2015 they commenced work on the Pre-Feasibility Study.

When the PFS is released, if it infers that this could be a producing source of these critical heavy rare earths, it may speed up the process. If tensions continue, it could spur the west to produce rare earths more quickly. What is certain is that China will continue to control the industry whether there are price or availability shocks or not. To lessen dependence on China for these minerals, the west will be looking towards the news about deposits of heavy rare earths like Hastings'.

Hastings raises 6.5 million ahead of pre-feasibility study for Yangibana Project



Hastings Rare Metals Ltd. ('Hastings', ASX: HAS) owns, or has controlling interests in, two major rare earths (REE) projects in Western Australia: the Hastings Project and the Yangibana Project. Hastings has full ownership of the Hastings Project, which is developing a JORC resource, containing Dysprosium, Yttrium, Zirconium and Niobium among other rare earths. As for the Yangibana Project, Hastings maintains 70% control in a joint venture with Rare Earth Minerals PLC ('REM', LON: REM)

and its deposits contain several critical demand REE's including neodymium.

Hastings has recently announced the raising of AUD\$ 6.5 million (with the possibility to raise an additional AUD\$ 2.5 million) through a share placement in support of its 70% joint venture partner REM to fund a prefeasibility study (PFS) for the Yangibana Rare Earths Project in the Gascoyne Region of Western Australia. The placement reflects the favorable results of an independent Scoping Study for Yangibana, which predicts excellent project economics based on relatively low capital investment and high returns in view of its potential to deliver a great variety of critical rare earths. The injection of funds allows for the Project to advance to the next development stages even as Hastings enjoyed a good cash position ahead of the placement.

The project is relatively inexpensive, given that it needs an additional AUD\$ 390 million investment, while having an estimated value of around a billion dollars – which is what most rare earth projects cost. The PFS will provide a better assessment of the costs while including mining lease applications, mine engineering, processing, regulatory matters as well as environmental and social impact (relations with local indigenous populations) studies. Until the PFS is completed, a previous scoping study suggests that the Yangibana Project is rich in neodymium oxide, praseodymium, dysprosium oxide and europium oxide, which are some of the highest demand critical rare earths featuring high potential recovery rates.

Last November, Hastings, announced that Yangibana's JORC mineral resource had been increased from 45,000 tons of total rare earth oxides (TREO) to 103,000 tons (with grade improving from 1.34% TREO to 1.73% TREO). Moreover, the JORC update continued to show that the resource presents a high volume of high demand REE's including 23,500 tons of neodymium oxide, 6,500 tons of praseodymium oxide, 360 tons of dysprosium oxide

and 625 tons of europium oxide.

At the 'Hastings Project', Hastings is targeting the eventual production of yttrium oxide, niobium oxide and zirconium oxide, making the Project very attractive for high technology companies looking to secure critical rare metal supplies outside of China – which, for the time being, remains the main, if not the only, producer of dysprosium. The high density of the HREE mineralization is especially significant given that europium, terbium, dysprosium and yttrium all have their own 'individual' markets. One of the most high demand HREE's is dysprosium and the historical metallurgical results from the Hastings resource pilot plant tests have yielded recoveries of around 75% for Yttrium and Dysprosium, 80% for Niobium and Zirconium.

The rare earth market is especially in Europe important because it does not have resources comparable to those in North America, Africa or the former Soviet Bloc countries and Hastings has had the foresight to take advantage of an Australian trade mission to target the European market, which is in a scramble to secure reliable supplies of REE's. Hastings' mineralogy, moreover, is conducive to the delivery of a high grade beneficiation product, which will not require a large or very complex processing facility: the smaller the processing plant will be, the lower the capital costs (CAPEX) for comparable rare earth oxide (REO) output capacity. Indeed, the rare earth mineral at Hastings is xenotime, which is one of the minerals that can best be beneficiated into high grade mineral concentrates. Other minerals can also lead to good REO values but not as economically as xenotime, given lower grade and higher CAPEX for the same REO output with more by-product.