



ASX Announcement

21 February 2022

YANGIBANA PROJECT NPV₈ INCREASES 84% to A\$1 BILLION (post tax)

Yangibana is on track to be Australia's next new significant Rare Earth project, with targeted first production in September Q 2024

KEY HIGHLIGHTS

- Post-tax **Net Present Value₈** ("NPV₈") increases by 84% to \$1,012 million.
- Post-tax **Internal Rate of Return** ("IRR") of 26%.
- Life of Mine pre-tax **Free Operating Cashflow** increases by 71% to \$4,376 million.
- Revised **capital cost estimated** at A\$582 million (including contingency is \$658 million)
- Project is 'shovel-ready' following a comprehensive review and assessment of current inflationary pressures present in Western Australia.
- **Capital payback** period forecast at 2.7 years from commencement of production.
- Production of 3,400tpa of NdPr Oxides capable of supplying up to 8% of forecast global NdPr demand.
- Discussions on funding options with suitable partners continue to progress.
- \$20 million early works program to deliver the core site infrastructure at Yangibana is well underway.

Australia's next rare earths producer, Hastings Technology Metals Ltd (**ASX: HAS**) (**Hastings** or the **Company**) is pleased to announce significant progress on, and improved project economics for, its Yangibana Rare Earths Project (**Yangibana**), in Western Australia's Gascoyne region.

The updated project economics, based on a Definitive Feasibility Study (DFS) completed by Hastings in 2017 and revised in late 2021, follows an extensive and comprehensive review period, extending over three years, which has sought to de-risk project execution, optimise the flowsheet and enhance project economics. Key to this process was validating the capex required to bring Yangibana into operation considering the current inflationary environment and tightening labour market in Western Australia.

Following this review period, the management team now have a high degree of confidence in the quantum of capital required and are proceeding to finalise funding arrangements for Yangibana ahead of proposed commencement of plant construction activities forecast to commence in H2 2022. The \$20 million early works program to deliver the core site infrastructure at Yangibana is underway with plant and personnel achieving good progress to date.

Commenting on the revised project economics, Hastings Technology Metals Executive Chairman, Charles Lew said:

“Today is a significant milestone for the Hastings team that is the result of an extensive amount of work carried out over a number of years. The updated project economics tell a story of a world-class rare earths project that will be capable not only of delivering up to 8% of global NdPr demand for a period of at least 15 years but generate significant, long-term value for all shareholders.

“The Hastings team has done a tremendous job since 2017 to optimise and de-risk the Yangibana project, both technically and commercially, to make it an even more compelling investment proposition. Since its discovery in 2014, we were always confident in the quality of the rare earths resource endowment at Yangibana. As it turned out, the steady progress we have made over the years has converged with a strong global rare earths magnet market underpinned by the global energy transition and electric mobility. As the updated project economics demonstrate, Yangibana will be a financially and operationally robust, long-life project.

“We are well advanced on discussions with a range of funding partners (in addition to NAIF) and are now focused on finalising the appropriate capital structure that best positions Hastings for success in bringing Yangibana into production by 2024. This includes undertaking a corporate transaction or seeking a joint venture partner(s).”

Table 1. Key Project Parameters

Parameters	Item	2022 Update	2019 Update
Production Rate	Mixed Rare Earth Carbonate (MREC)	15,000 tpa Contains 3,400 tpa of NdPr Oxides	15,000 tpa Contains 3,400 tpa of NdPr Oxides
Operating Life	Years	15 ¹	12
Ore Reserve	Mt	16.7Mt @ 0.95% TREO	12.2Mt @ 1.12% TREO
Personnel (onsite and offsite rosters)	Construction: peak workforce Operations: steady state	~500 250 over 2 sites (includes 120 contractors)	No change
Costs	Total Capital Cost OPEX (A\$/kg TREO)	\$658M ³ \$24.17	\$516M ⁴ \$21.40
Economic assumptions	NdPr price (life-of-mine average) Exchange rate	US\$112/kg A\$1.00/US\$0.71	US\$103/kg A\$1.00/US\$0.71
Return metrics	Annual EBITDA (average LOM) Post-tax NPV ₈ Post-tax IRR	\$295 M \$1,012 M 26%	\$183 M \$549 M 21%

1. Based on updated Ore Reserves (Refer ASX Announcement: Yangibana Rare Earths Project Significant Ore Reserve tonnes increase of 37% NdPr tonnes up 18% to 58kt, 27th July 2021⁵)
2. All dollar values presented in Australian dollars unless specified.
3. Includes contingency. Excludes working capital, funding costs and Build Own Operate / Transfer (BOO/T) items partially funded by contractors.
4. Refer ASX Announcement: Yangibana Project Capital Cost Estimate Reduced By ~A\$68m Or 13%, 29 July 2020
5. *The Company is not aware of any new information or data that materially affects the information included in the relevant market announcement and, in the case of estimates of mineral resources or ore reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.*

PROJECT CAPITAL COST UPDATE

A re-estimation of the entire project scope, comprising both the mine and beneficiation plant at Yangibana and the decoupled hydrometallurgical plant has been instigated and completed to reflect the re-location of the hydrometallurgical plant to Onslow (refer ASX announcement dated 2 August 2021: *Onslow Selected for Yangibana RE Hydrometallurgical Plant*) and re-organisation of key infrastructure in support of this move.

Overall, Hastings has seen increases of ~13% in labour rates and equipment costs since the July 2020 capital estimate (Refer ASX Announcement dated 29th July 2020: *\$68m CAPEX Reduction Through Relocation of Hydromet Plant*) due to current construction market conditions. Additionally, the large volume of major infrastructure projects throughout Western Australia has resulted in pressure on prices of concrete and steel, labour, consumables, and shipping costs. Higher costs have been partially offset by value engineering and capital optimisation work completed by the Company over the last 9 months.

The direct capital cost for all production and infrastructure is estimated at \$354 million. The indirect capital cost, including owner's costs, project management costs (including growth allowances) is \$228 million, resulting in a total capital cost of \$582M pre contingency. The Company has conservatively allotted an additional 13% of contingency for a total capital cost of \$658 million.

Capital breakdown by project area is presented in Table 1. The capital estimate excludes the capital costs for components of infrastructure or equipment which are to be provided by contractors, service providers, utilities or BOO/T type arrangements. These items are covered in the operating cost estimate.

Table 2. Capital Cost Estimate

Cost Centre	2022 Update (\$m)	2020 Update (\$m) ¹
Early Infrastructure Capital Cost	\$20	\$0
<u>Direct Capital Cost</u>		
Plant	\$234	\$181
Supporting Infrastructure	\$16	\$87
Services	\$76	\$50
Other	\$8	\$9
<u>Indirect Capital Cost</u>		
Construction Facilities	\$123	\$122 (combined)
Owner's Cost	\$105	
Total Capital Cost (pre-contingency)	\$582	\$449
Contingency (15%)	\$76	\$67
Total Capital Cost (post-contingency)	\$658	\$516

1. Refer ASX Announcement: Yangibana Project Capital Cost Estimate Reduced By ~A\$68m Or 13%, 29 July 2020

The updated capital cost of \$582 million (excluding contingency and funding costs) reflects refreshed and current pricing from major contractors. Hastings has worked with these contractors throughout 2021 to maximise the value of the project by optimising design and execution planning, as well maintaining processing capacity at 15,000 tonnes of Mixed Rare Earths Carbonate (MREC) per annum.

CAPITAL COST ESTIMATE STRUCTURE

The capital cost estimate was developed in conjunction with direction from DRA Global regarding the Yangibana project scope and estimation methodology and is consistent with an AACE International Class 2 level. The estimate is based on revised quotes received from third parties and updated market rates as of 31 July 2021. Major items of equipment have pricing current as of 15 December 2021.

The capital cost estimate includes all the necessary costs associated with engineering, drafting, procurement, construction, construction management, commissioning of the processing facility and associated infrastructure, mining infrastructure, first fills of plant reagents, consumables, pre-operations costs, and spare parts.

The overall project capital cost estimate was developed by DRA Global together with Hastings' technical personnel based on an Engineering, Procurement, Construction and Management (EPCM) approach for the process plants, and with Hastings directly managing infrastructure works utilising Hastings's experienced project team.

The \$582 million capital cost estimate (pre-contingency) is based on completion of basic engineering, material take-offs from 3D models and piping and instrumentation diagrams, as well as updated price quotations for major equipment, bulk commodities, and installation. Unit rates for installation were based on market enquiries to appropriate Western Australian contractors, with most restricting validity to a 30-day period.

The estimate pricing was obtained in third quarter of 2021 (3Q21) and is in Australian dollars (A\$). The overall capital estimate has an estimated accuracy of -10 /+15% and as is considered a Class 2 or Definitive Feasibility Study level estimate. Hastings has also completed a Monte Carlo simulation to understand all the uncertainties and risk factors and how they affect the total project cost. The output of the Monte Carlo simulation resulted in a statistical level of confidence (P50) of 15% contingency. This contingency will be used to cover costs that were not included in the base project estimate.

The capital estimate was prepared using a Work Breakdown Structure (WBS), which delineates the various areas of the project. Individual estimates were prepared for each area covering all engineering disciplines. The capital estimate has been structured into the following major categories:

- Direct costs for each site;
- Indirect costs for each site;
- Owner's Costs; and
- Contingency.

PROJECT OPERATING COST UPDATE

The operating philosophy is based on industry proven operations and maintenance strategies. The Yangibana project benefits from a cost-effective bulk material open pit mining method suitable for an experienced mining contractor, a conventional processing solution and an efficient mine-to-ship logistics route.

The operating costs are based on an open pit mining operation producing up to 1.5Mtpa of ore to feed to the plant. The ore will be treated by ore sorting, crushing, grinding, beneficiation and hydrometallurgy recovery. The life-of-mine (LOM) plan operating costs are estimated to be \$24.17 per kg of TREO produced.

Table 3. Operating Cost Estimate Summary

Cost Centre	Unit Cost (A\$/kg TREO)
Mining	\$5.87
Processing	\$15.75
Site G & A	\$1.43
Corporate	\$1.13
Total	\$24.17

The operating cost estimate for mining is based on a mining services contractor model with 6 open pits to be mined.

The processing plant and supporting infrastructure costs are based on the provision of all new equipment in the plant and consider costs associated with the existing site conditions and project location. The operating costs for the processing operation include reagents, consumables, labour, power, maintenance, and processing general costs.

Site general and administration (G&A) costs, as they relate to overall site and head office costs rather than specifically to mining or processing are included.

PROJECT IMPLEMENTATION AND OPERATIONS

Yangibana has a 27 month construction timeline from scheduled commencement of main construction in Q3 2022 as shown in Figure 1. The critical path for commencement of main construction is ordering and fabricating the long lead items (e.g., acid baked kiln, off-gas scrubber and SAG mill).

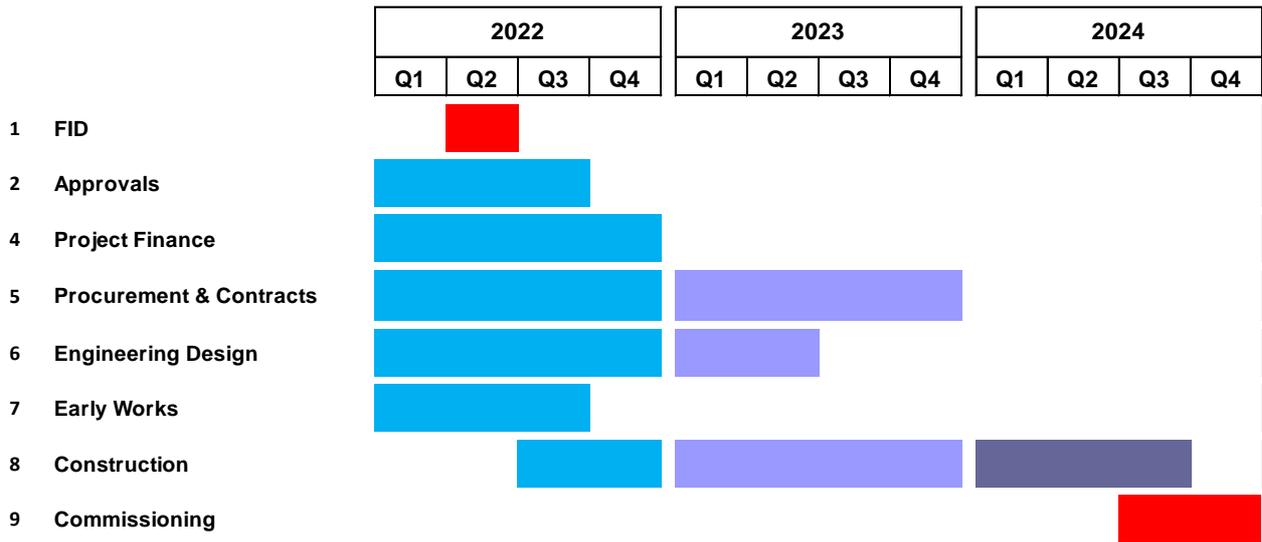


Figure 1. Yangibana Project Schedule

Main plant construction is planned to commence in Q3 2022. A \$20 million early works program to deliver key initial enabling infrastructure and access roads commenced in Q3 2021. The main construction phase will commence with the Yangibana processing plant and end with completion of the Onslow hydrometallurgical plant in Q3 2024. The construction workforce (onsite and offsite) will average approximately 250 personnel over the construction period, generating up to 500 jobs.

Key objectives of the contracting strategy include providing cost certainty by maximising the number of lump sum contracts reducing construction interfaces and execution complexity by minimising the number of contract packages. As part of the EPCM scope, DRA Global will enable single point of accountability through contract models where the contractor is responsible for the design as well as achieving cost and schedule targets.

Production and sales will occur over approximately 15 years and total 194,000 tonnes of MREC. Sales will commence in 2025 for MREC, with steady state sales reaching approximately 15,000 tpa 2026.

TENURE AND APPROVALS

Hastings has tenure covering an area of approximately 587.2km² pursuant to the Mining Act 1978 (WA), the Land Administration Act 1997 (WA) and the Port Authorities Act 1999 (WA). All primary environmental permits required for initial construction activities have been granted. An access agreement is in place with the underlying pastoral leaseholder. A road user agreement is well advanced with the Shires of Ashburton, Carnarvon and Upper Gascoyne.

Hastings is situated on the traditional lands of the Thiin-Mah Warriyangka, Tharrkari and Jiwarli people (TMWTJ), as recognised by the Federal Court. Hastings has agreements in place with the Traditional Owner groups that provide for full and informed consents, consultation, environmental protections, compensation and other non-monetary benefits. Heritage surveys have been completed across the Yangibana project footprint over the past three years and registered sites and other heritage places have been identified with the assistance of the Traditional Owner groups. Further site heritage work will be completed as required.

The Hastings DFS environmental approval was set at a Public Environmental Review (PER) level of assessment administered under a joint agreement by the WA Environmental Protection Authority (EPA) and the Federal Department of Agriculture, Water and Environment (DAWE). A public review was completed in 2019 with Ministerial Part IV Approval received in August 2019. Commonwealth EPBC Act Approval was received in April 2020.

Due to ongoing optimisation and expansion of the Yangibana project, elements located within the current tenure envelope required further environmental assessment and approvals. This assessment also involved a PER level assessment. Approval for these extensions is targeted for 1H 2023 and this will not impact main construction activities.

A series of industry standard secondary approvals and authorisations are also required (some already granted), with each of these tending to focus on specific areas of the project. These approvals are managed over much smaller timeframes and are targeted to be secured ahead of commencement of construction of each project element.

MARKET ANALYSIS (PRICING ASSUMPTIONS)

Extensive rare earths industry analysis has been completed by Hastings with the support of independent market experts. Hastings has concluded that there is an attractive market opportunity for rare earths, in particular Neodymium and Praseodymium, from reliable a source in a Tier 1 mining jurisdiction over the medium to long term.

Currently, there are only two sizeable commercial mining operations for rare earths outside of China. This market is forecast to grow significantly and become more diversified as suppliers seek ex-China supply alternatives. As a result the NdPr oxide price forecasts exhibit strong growth over the next decade at a rate of 8% CAGR.

CRU, a leading independent speciality minerals expert, forecasts accelerating demand for rare earth prices linked to the manufacture of permanent magnets amid the spectre of international trade barriers. Another independent expert, Wood Mackenzie, says that demand growth is forecast to continue strongly for rare earth elements has been led by the magnet industry because of the transition from industrial and petroleum applications to energy transition markets. Wood Mackenzie has forecast demand for magnet applications to increase at a CAGR of 3.8% between 2020 and 2050 and reach 174.5kt REO at the end of the forecast period. Demand for the key magnet elements, neodymium and praseodymium, will increase significantly throughout the period to 2035. Demand growth is linked to increased market penetration of electric vehicles, improved energy efficiency of utilities and greater wind energy generation.

The Yangibana project is unique as the composition of the ore contains a significant proportion of in-demand materials required for the manufacture of permanent magnets (neodymium and praseodymium); see Table 4 below. NdPr represents up to 52% of TREO in deposits at Yangibana, more than three times the world average and NdPr represents over 90% of forecast revenue from Yangibana.

Based on current spot prices, Yangibana would deliver a basket price of more than US\$74/kg of TREO contained within the MREC final product.

RE Oxide (Grade)	REO		Asian Metal EXW (USD)		Basket Price EXW USD
	Distribution		Mid-Point Spot Price		Mid-Point Spot Price
La2O3 (3N)	11.2%		\$ 1.26		\$ 0.14
CeO2 (3N)	41.7%		\$ 1.33		\$ 0.55
Pr6O11 (2N5)	8.0%		\$ 148.21		\$ 11.86
Nd2O3 (2N5)	32.6%		\$ 170.17		\$ 55.48
Sm2O3 (3N)	3.3%		\$ 4.51		\$ 0.15
Eu2O3 (5N)	0.7%		\$ 32.62		\$ 0.21
Gd2O3 (2N5)	1.4%		\$ 89.01		\$ 1.24
Tb4O7 (4N)	0.1%		\$ 2,148.72		\$ 2.58
Dy2O3 (2N5)	0.3%		\$ 472.09		\$ 1.56
Ho2O3 (2N5)	0.03%		\$ 265.45		\$ 0.08
Er2O3 (2N5)	0.04%		\$ 56.85		\$ 0.02
Yb2O3 (4N)	0.03%		\$ 18.12		\$ 0.00
Lu2O3 (4N)	0.01%		\$ 815.57		\$ 0.10
Y2O3 (5N)	0.6%		\$ 12.94		\$ 0.08
MREC Basket Price					\$ 74.05

Table 4. Yangibana basket price based on Asian Metals Ex-Works US\$ spot prices, 10 February 2022

Forecast prices have been sourced from several independent consulting groups that provide market supply and demand analysis and price forecasts. The independent price outlook used in this update is based on NdPr oxide market supply and demand dynamics driven by macroeconomic and geopolitical events, global projections of NdFeB magnets and the forecast production and supply balance.

Hastings has utilised a blended consensus price in its financial evaluation of the Yangibana project. A consensus price for NdPr oxide has been derived from a rolling forward average calculation utilising prices forecast on a real basis from three independent market analysts. The consensus price for NdPr oxide of US\$112.00/kg is a conservative price estimate given the spot price is currently at approximately US\$170/kg.

Yangibana's project economics are highly sensitive to changes in NdPr price. Based on the current Asian Metals spot price for Nd₂O₃+Pr₆O₁₁ oxides of approximately US\$170/kg, the post-tax NPV₈ and IRR increase to \$2,358 million and 40% respectively.

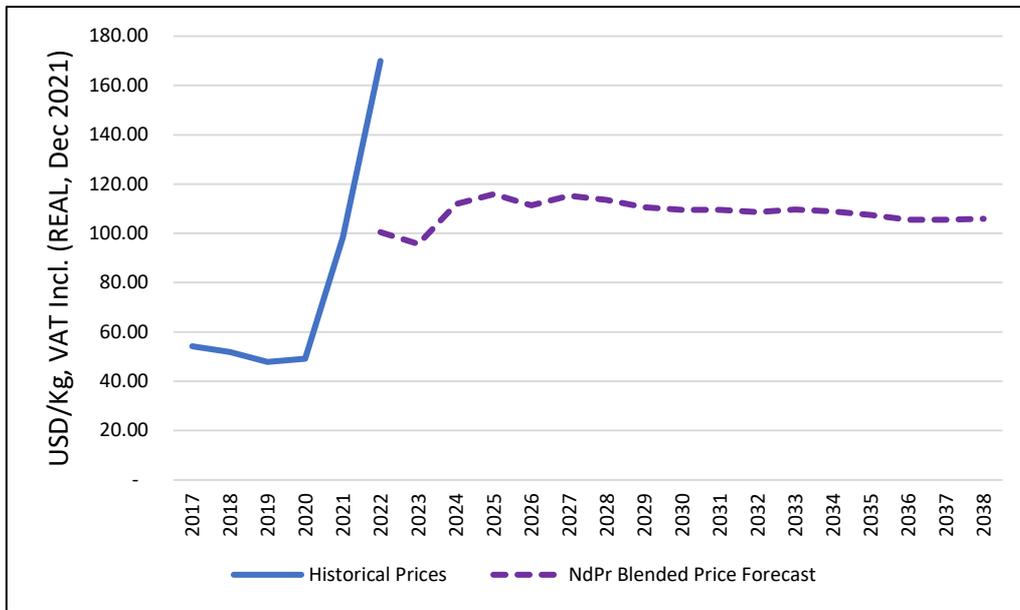


Figure 2: Actual and forecast NdPr oxide prices over the expected Yangibana project life

Hastings has already signed several long-term off-take agreements as well as a number of non-binding memoranda of understanding (MOUs) with experienced, top-tier counterparties operating in the rare earths market, accounting for ~77% of offtake over the first five years of Yangibana’s production.

FUNDING

As discussed in the Project Capital Cost update section and summarised in Table 2 above, Hastings requires \$658m (including contingency) to fund the development of Yangibana into production. The Board’s objective is to achieve funding certainty while maintaining flexibility in ensuring that the project remains on schedule for production in 2024 and creating value for its shareholders.

As part of its ongoing discussions with a range of funding partners, Hastings has received Board approval from the Northern Australia Infrastructure Facility (NAIF) for a \$140 million 12 ½-year tenor loan facility.¹ The NAIF loan is one of a number of options that the Board and Management are currently considering in its assessment of the appropriate funding structure having regard to the above objectives.

Discussions with funding partners in addition to NAIF (both debt and equity) are well advanced and continue to progress positively. However, there is no guarantee the positive funding conditions will continue into the future. It is also possible that the Company could pursue other strategies to provide alternative funding including undertaking a corporate transaction or seeking a joint venture partner(s). The ultimate financing structure for Yangibana will be determined in due course and the Board will ensure it continues to update the market as and when appropriate.

¹ Refer ASX Announcement: NAIF approves \$140m loan for Yangibana Rare Earths Project, 2nd February 2022

KEY RISKS AND OPPORTUNITIES

As an integral part of the project optimisation activities, key project risks have been assessed to understand the material consequences and opportunities associated with developing the Yangibana project. This process is critical to the Company's ongoing risk management and supports strategic and operational decision making.

The risk assessment indicates that while the project has sound fundamental characteristics across all aspects, there remain several material risks that relate specifically to mining and processing complexity and controlling operating costs and efficiencies. The assessment also confirms the rigour of management activities undertaken on the project to date.

The key risks include:

- Delays in finalising project capital funding or final project construction permits
- An increase in working capital or pre-production expenditure resulting in top-up funding being required
- Negative movements in commodity prices
- Performance of delivery partners across key performance indicators of quality, schedule, cost and safety; and
- Process performance relating to plant throughput, recovery, grade and specification.

Risk treatment strategies and controls were identified and are considered reasonable and effective to reduce the residual risks to an acceptable level suitable for project development. These strategies and controls have been incorporated into the final implementation and management plans for the project.

Potential opportunities to further enhance the project were also identified and these will be subject to review as the Yangibana project develops throughout the operations phase.

The key opportunities include:

- Further optimising the mined pits prior to production as planning and technology improves, thus expanding the mineral resource that can be mined profitably close to the planned processing plant;
- De-bottlenecking the hydrometallurgical plant;
- Upgrading Inferred resources to Measured Indicated resources and converting them to economic Ore Reserves, adding to the project mine life and extending it beyond 15 years, therefore further enhancing the financial returns;
- Improving local and regional business opportunities to enhance the project's contribution to regional benefit;
- Incorporating positive movement in commodity prices above the forecasts;
- Empowering the Traditional Owners and local communities to prosper from the project through career development, jobs training schemes and business improvement; and
- Transferring some major capital items into operating cost items or vice versa, under a build-own-operate-maintain – transfer commercial model.

IMPORTANT NOTICES

The Project aims to produce a Mixed Rare Earth Carbonate (MREC) over 15 years from a defined Ore Reserve of 16.7mt @ 0.95% TREO.

The updated material assumptions as outlined throughout this announcement, include capital and operating cost estimates, production targets, forecast financial information, the availability of funding and the finalisation of tenure and approvals. Hastings has concluded that all material assumptions are based on reasonable grounds and there is a reasonable basis for making the forward-looking statements included in this announcement. However, there is no certainty that they will prove correct, or the outcomes will be achieved.

The processing plant capital cost estimate was compiled by DRA Global and is based on the level of engineering and design completed since 2018. The estimate was developed in conjunction with direction from Hastings regarding the project scope and estimation methodology and is consistent with the AACE International Class 2 accuracy. The owners capital cost estimate portion was completed by Hastings' technical staff and its consultants.

The operating costs were prepared by Hastings for the adequacy and accuracy of inputs and calculated values and conform with a Class 3 estimate with an accuracy of $\pm 10-15\%$. The production rates reported in this announcement and the associated process design were prepared by Hastings. The production rates have been reviewed by Hastings for consistency with the production ramp-up also provided by Hastings.

FORWARD-LOOKING STATEMENTS

This announcement and its attachments contain forward-looking statements. These forward-looking statements are based on Hastings' current expectations and beliefs concerning future events at the date of this announcement and are expressed in good faith. Hastings believes it has reasonable grounds for making the forward-looking statements. However, forward-looking statements are subject to risks, uncertainties and other factors, a number of which are set out above in this announcement, which could cause actual results to differ materially from future results expressed or implied by such forward-looking statements. Consequently, forward-looking statements should not be relied on as a guarantee of future performance. Other than as required by law, including the ASX Listing Rules, Hastings does not undertake or assume any obligation to update or revise any forward-looking statement contained in this announcement or its attachments.

This announcement has been approved by the Board for release to the ASX.

For further information, please contact:

Charles Lew
Executive Chairman
+65 6220 9220

Matthew Allen
Chief Financial Officer
+61 8 6117 8634

Andrew Reid
Chief Operating Officer
+61 8 6117 8621

For media and investor queries, please contact:

Peter Klinger
Cannings Purple
+61 411 251 540
pklinger@canningspurple.com.au

About Hastings Technology Metals Limited

Hastings Technology Metals Limited (ASX: HAS) is a well-managed Perth based rare earths company primed to become the world's next producer of neodymium and praseodymium concentrate (NdPr). NdPr is a vital component used to manufacture permanent magnets used every day in advanced technology products ranging from electric vehicles to wind turbines, robotics, medical applications, digital devices and more.

Hastings' flagship Yangibana project, in the Gascoyne region of Western Australia, contains one of the most highly valued NdPr deposits in the world with NdPr:TREO ratios of up to 52%. The site is permitted for long-life production and with offtake contracts signed and debt finance in advanced stage. Construction is scheduled to take 27 months from Q3 2022.

Hastings also owns and operates the Brockman project, Australia's largest heavy rare earths deposit, near Halls Creek in the Kimberley.

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