

CORPORATE PRESENTATION | 28 NOVEMBER 2022



HASTINGS TECHNOLOGY METALS LIMITED | ASX : HAS

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#### All currency amounts are in A\$ unless stated otherwise.

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#### **Competent Persons' Statement**

The information in this release that relates to Mineral Resources is based on information compiled by David Princep and Lyn Widenbar. Both Mr. Princep and Mr Widenbar are independent consultants to the Company and members of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Princep and Mr Widenbar have 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").

The information in this announcement that relates to the Ore Reserves at Bald Hill, Fraser's, Auer, Auer North, Yangibana West and Yangibana North is based on information reviewed or work undertaken by Mr. Stephen O'Grady, member of the Australasian Institute of Mining and Metallurgy, and a Director of Intermine Engineering Consultants. Mr O'Grady 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 O'Grady 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 (General Manager Processing) of Hastings Technology Metals Limited. Ms. Marriott are members of the AusIMM and 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 owns shares in the company and participate in the company employee share plan. Ms. Marriott consents to the inclusion in this announcement of the matters based on their information in the form and context in which it appears.

The information in this announcement that relates to Exploration Results in relation to the Yangibana Project is based on information compiled by Mr. Andrew Ford BSc (Hons), a Competent Person, who is a member of the Australian Institute of Mining and Metallurgy. Mr. Ford is a full-time employee of the company and has sufficient experience that is relevant to the activity being undertaken to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. The Qualified Person has verified the data disclosed in this release, including sampling, analytical and test data underlying the information contained in this release. Mr. Ford consents to the inclusion in the announcement of the matters based on his information in the form and context in which it appears.

# **Corporate** Overview

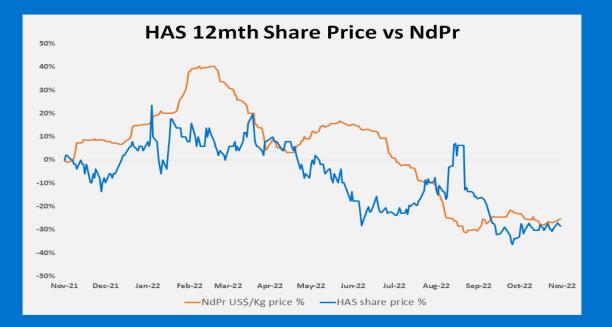
Australia's next rare earth producer

- Developing the Yangibana Rare Earths project located in the Upper Gascoyne and Pilbara regions of Western Australia
- World leading composition of NdPr in RE basket more than double the world average
- Over 70% of first 10-year production secured via offtake agreements

KEY SHAREHOLDERS	
L1 Capital	11.8%
Top 20 Shareholders	44.7%
Board & Management	5.5%

### **CAPITAL STRUCTURE**

ASX Code	HAS
ASX Share Price (25 Nov 2022)	\$3.61
Shares on Issue	126.676m
Market Capitalisation	\$457.3m
Cash (30 Sept 2022)	\$176.9m
Debt (30 Sept 2022)	Nil
Enterprise Value	\$283.1m







### **INVESTMENT OVERVIEW**

# Australia's Next Rare Earths Producer

		• NdPr is critical to the global energy transition - permanent magnets are key components of EV's and wind turbines with no substitute
	lobally significant supplier of NdPr	• NdPr market expected to be in significant supply deficit by late 2020s - Yangibana estimated to account for 6-8% of global NdPr supply
		• Rare Earths deemed a critical mineral by the EU Commission, US Department of Energy and Australian Critical Minerals Office
ر (		World leading composition of NdPr in RE basket – more than double the world average
Uni	que deposit in Tier I jurisdiction	• Ore grades significantly improved by beneficiation – producing a high grade concentrate containing up to 27% total rare earth oxides
	junisaletten	Located in Tier 1 mining jurisdiction of Western Australia, Onslow well serviced with major existing infrastructure
		• 16.7Mt Ore Reserve; 15 year mine life producing 15,000tpa of high grade Mixed Rare Earth Carbonate ("MREC")
-3 1	Attractive project economics	<ul> <li>NPV<sub>8</sub> (post-tax) of A\$1,012m and post-tax IRR of 26%<sup>1</sup></li> </ul>
	economics	Significant exploration upside to expand existing Mineral Resources and discover new rare earth deposits
		<ul> <li>~70% of production is contracted for the first 10 years via agreements in place with thyssenkrupp and Skyrock; MOU with Solvay</li> </ul>
	fftake secured & strategic investment in Neo	<ul> <li>Acquisition of ~20% strategic stake in Neo Performance Materials (NEO.TSX) favourably positions Hastings within the full mine-to-magnet supply chain, underpinned by a A\$150m Exchangeable Notes in Hastings by Wyloo Metals<sup>2</sup></li> </ul>
		<ul> <li>Northern Australia Infrastructure Facility ("NAIF") has approved A\$140m loan facility underpinning debt funding requirements</li> </ul>
Fun	ding well advanced,	<ul> <li>Well advanced on discussions with other debt and equity providers for remaining funding</li> </ul>
	NAIF secured	<ul> <li>~A\$176.9m of cash on balance sheet as at 30 September 2022</li> </ul>
	erienced leadership	<ul> <li>Board and Executive Leadership Team with a proven track-record of delivering success for shareholders</li> </ul>
	trongly aligned to shareholders	<ul> <li>Shareholder alignment with the Board &amp; KMP's currently holding a collective ~5.5% (including ~5.2% by Executive Chairman Charles Lew)</li> </ul>

<sup>1</sup> Refer ASX announcement "Yangibana Project NPV8 Increases 84% to A\$1 Billion (post-tax)" dated 21 February 2022

<sup>2</sup> Refer ASX announcement "Agreement to acquire strategic shareholding in Neo Performance Materials and cornerstone investment in Hastings by Wyloo Metals" dated 26 August 2022



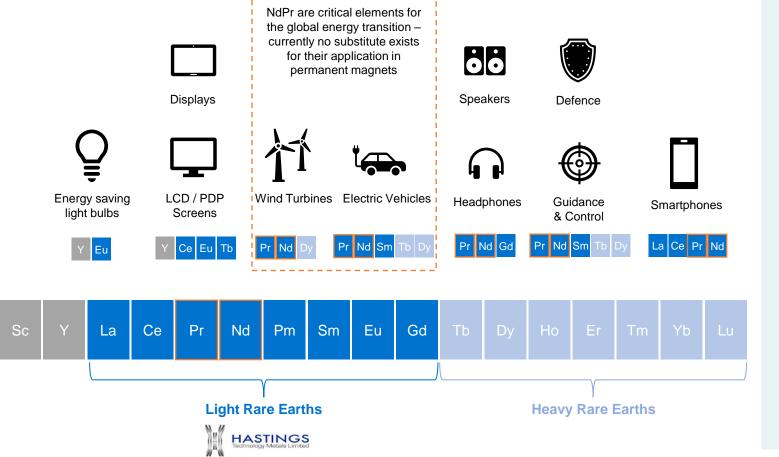


### **OUR CORE MARKETS**

# Rare Earths in the Spotlight

NdPr oxide is a critical input for NdFeB magnets used in Wind Turbines and Electric Vehicles

### Rare Earth Applications



### Significant Support from Governments



"Australian Government's Critical Mineral Facility to provide AUD 1.25 billion to fund the development of a domestic rare earth refinery"



"The economic importance of the rare earths value chain becomes obvious by looking at the emerging electric vehicle market"



"The European Commission considers rare earths to be amongst the most resource-critical raw materials"

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*"U.S. needs more mines to boost rare earths supply chain, Pentagon says"* 



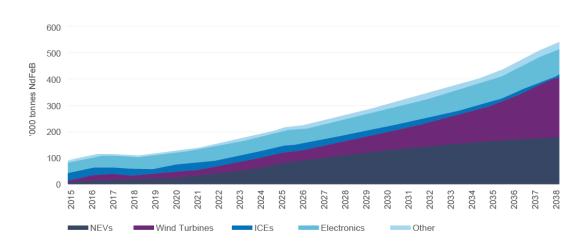
"This project [Yangibana] will help meet the growing global demand for critical minerals, supporting Australia's position as a world-leading producer"

Source: 1) Rare Earth Magnets and Motors: A European Call for Action. A report by the Rare Earth Magnets and Motors Cluster of the European Raw Materials Alliance. Berlin 2021, Reuters, Asia financial

# Global Supply Deficit Approaching Reality...

Market for NdPr will be in deficit over coming decade due to strong demand growth

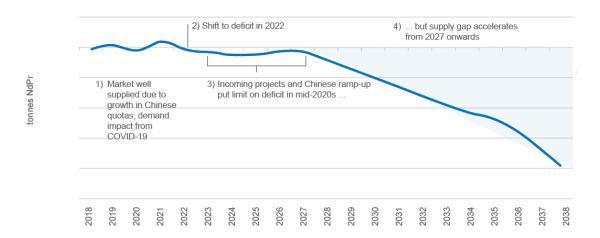
### NdFeB Demand



### Global NdFeB demand will increase 3.9x over the period 2021-2038 (CAGR 8.3%)

Source: Rare Earths Market Outlook, CRU International Ltd, August 2021 ICE = Internal combustion engine

### NdPr market imbalance



Sizeable supply gap emerges in later part of this decade due to time lag in new mine investment

Yangibana expected to supply 6-8% of global NdPr requirements when it comes online

(Yangibana = 3.750 Kt p.a./ Market Demand 58.0 Kt p.a Source: CRU Jan 2021

### ... Set to Support Robust NdPr Prices

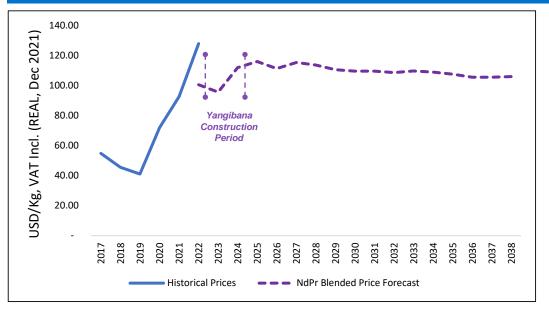
### NdPr Oxide Price (Jan 2020 to Nov 2022)



### NdPr Oxide prices have moderated after strong price increases over 2021/22, however remain elevated above long-term average

Source: Asian Metals, 21 November 2022

### Indicative NdPr Price 2022 to 2038



### NdPr prices anticipated to strengthen during Yangibana construction and into operations phase

Source: Arithmetic mean average of pricing from following reports:

- Adamas (Rare Earth Magnet Market Outlook to 2030), April 2021
- Wood Mackenzie (Rare Earth Markets 2021: Outlook to 2050), December 2021
- CRU Report Commissioned by Yangibana Project Finance Lenders, August 2021







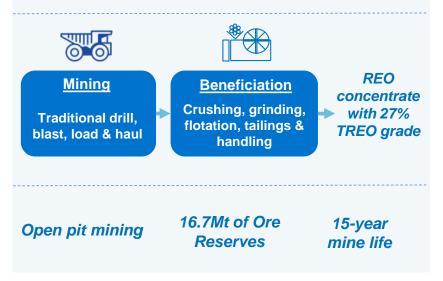
### YANGIBANA OVERVIEW

# Yangibana Rare Earths Project

### Proven and de-risked flowsheet delivering high-value MREC product to global market

### Upstream - Yangibana Mine Site and Beneficiation plant

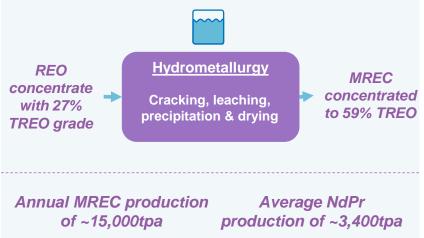
- Located in the Gascoyne Region, Western Australia
- Traditional drill, blast, load & haul mining operation
- Ore Beneficiation (crushing, grinding, flotation and tailings handling)
  - Upgrades concentrate to 27% TREO grade
- Final product: REO concentrate will be transported to the Onslow Hydrometallurgical plant





#### Downstream – Onslow Hydrometallurgical Plant

- Located in the Onslow Region, Western Australia
- Hydromet plant to crack and leach monazite hosted rare earths concentrate using sulphuric acid and heat
- Plant to produce a mixed rare earth carbonate ("MREC")
- Final product (MREC) concentrated to 59% TREO
- MREC to be shipped to oxide separation facilities currently existing in China, south-east Asia and Europe to produce final RE oxides

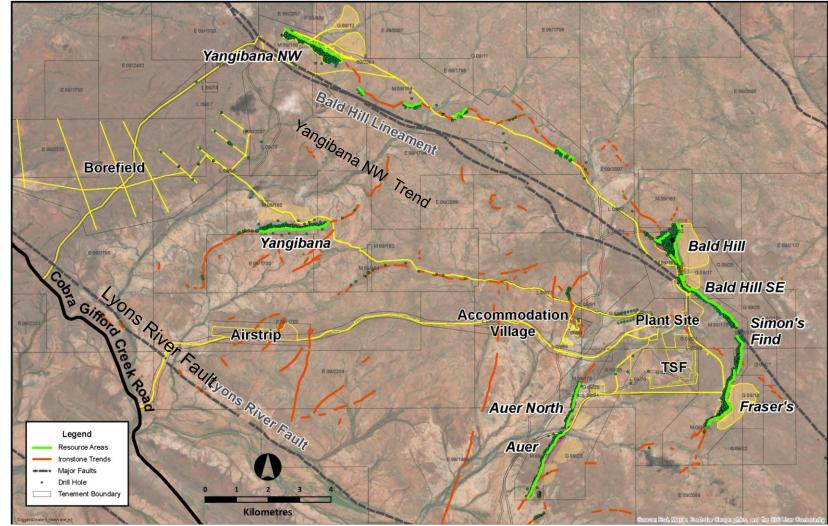


# Exceptional upside: Opportunities abound

- Existing 27.4Mt Mineral Resource has been defined over 24km of strike length (green lines).
- Additional exploration potential strike length of 42km identified (orange Lines)



Ironstone showing orange monazite crystals



# Early Construction in Progress

- Construction of Mine Village, Access Road and airstrip well underway
- 80 Person Fly Camp fully occupied







### **Project** Overview

### Operational Fly Camp supporting early construction workforce



Figure 1. Yangibana Fly Camp



Figure 2. Permanent village site clearing at Yangibana

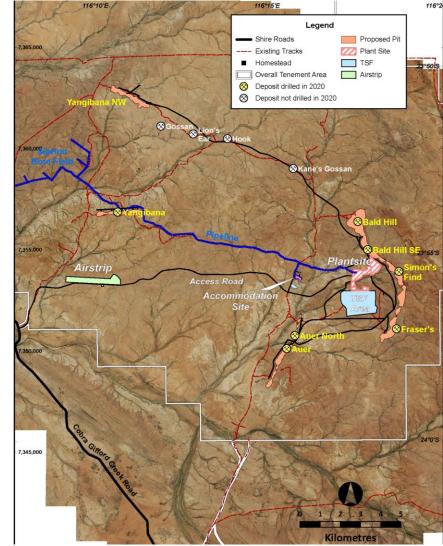




Figure 3. First blast initiated at Yangibana



Figure 4. Turkeys nest for construction water





### YANGIBANA COMMERCIALS

# Updated DFS Key Metrics<sup>1</sup>

### Hastings Revised issued February 2022

NPV <sub>8</sub> (post-tax)	A\$1,012M
IRR / Payback	26% / 2.7 years
Сарех	~A\$658M (incl. Growth allowances & Contingency)
NdPr Oxide Price	US\$112/kg (average LOM)
Average Annual EBITDA	A\$295M p.a.
Орех	A\$24.17/kg TREO (real, January 2022)
Initial Mine Life	15 Years



**Ore Reserve** 

16.70 Mt @ 0.95% TREO and 0.35% Nd<sub>2</sub>O<sub>3</sub>+Pr<sub>6</sub>O<sub>11</sub>



 Mineral Resource (M/I/I)

 29.93 Mt @ 0.93% TREO and

 0.32% Nd<sub>2</sub>O<sub>3</sub>+Pr<sub>6</sub>O<sub>11</sub>



### Production

Mixed Rare Earth Carbonate: 15,000 tpa Containing NdPr Oxide: ~3,400 tpa



15 year Life of Mine1.2 Mtpa ore feed



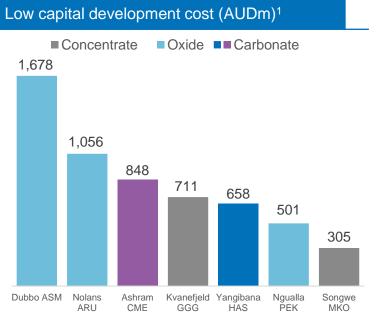
Opex: A\$24.17 per kg TREO



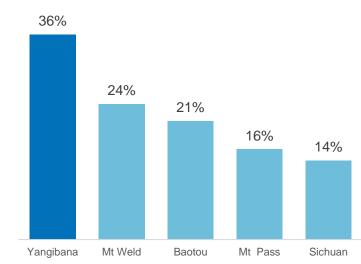
**Total Free Operating Cash Flow** 

A\$4,376 M

# Yangibana Project **Exceeding On All Key Metrics**



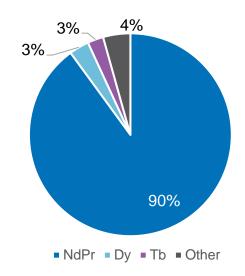
- AUD658m total capital cost •
  - Low capital intensity compared to other projects



36% LoM NdPr content<sup>2</sup>

36% LoM NdPr content – surpassing ٠ global leaders





- 90% of expected Yangibana revenues to come from NdPr
  - NdPr is a key input factor in the green economy

1) Capex numbers for: Songwe sourced from PFS released 23 Sep 2014 - Feasibility Study due in Q1 2022, Ngualla sourced from BFS release 12 April 2017 - BFS optimisation / update commenced in August and is currently ongoing, Kvanefjeld sourced from New World Metals Conference - 9 December 2020, Ashram sourced from: NI 43-101 Technical Report revised 7 January 2015, Nolans sourced from Bell Potter Unearthed Natural Resources Conference - 10. February 2022 and Dubbo sourced from Optimisation Study - 7 Dec 2021 (previously 1,297). FX rate of USD:AUD of 0.71 and CAD:AUD of 0.9

2) Hastings Tech Metals, Thematic Firing, Ord Minnett, 15 December 2020

3) ASX announcement "Yangibana Project NPV8 Increases 84% to A\$1 Billion (post-tax)" dated 21 February 2022

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### Corporate Presentation, 28 November 2022

# Yangibana Project – Funding

Hastings continues to advance funding discussions and target to deliver first production from Yangibana in late 2024

#### **Status of Funding Discussions**

- A\$140m NAIF loan facility secured in February 2022. Increased NAIF facility currently being negotiated
- US\$130m conditional credit approval obtained from KFW Ipex Bank
- US\$350m Nordic Bond market sounding in 2022 exceeded expectations
- Hastings continues to evaluate strategic proposals and expects to be in a position to finalise the preferred funding pathway by Q1/2 2023
- Barrenjoey appointed as financial adviser and King & Wood Mallesons as legal adviser to assist with strategic discussions
- KPMG Corporate Finance is acting as project finance adviser and Herbert Smith Freehills as legal adviser in relation to the project finance package

# Current Q1/2 2023

### Early Works

Village; Airstrip earthworks, detailed designs, ordering of long-lead items (e.g. acid bake kiln, off-gas scrubber and SAG mill)

**Near-Term Project Execution** 

### Project Funding

Funding proposals received and final pathway agreed

#### Main Construction

Q2 2023

Beneficiation plant construction start Q2 2023; Hydrometallurgical plant construction start Q3 2023

All funding discussions are preliminary in nature. There is no guarantee that any discussions will result in firm funding proposals or would be recommended by the Board or that a transaction will eventuate

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# **Offtake Contracts**

Significant volume contracted for 10 yrs with strong offtake counterparties

Counterparty	thyssenkrupp <sup>2</sup>	SCHAEFFLER <sup>1</sup>	SOLVAY 3	neo
Counterparty	thyssenkrupp Materials Trading GmbH ("TMT")	Schaeffler Technologies AG ("Schaeffler Tech")	Solvay	Neo Performance Materials <sup>4</sup>
Counterparty headquartered	Essen, Germany	Herzogenaurach,ny	Brussels, Belgium	Toronto, Canada
Counterparty website	https://www.thyssenkrupp-materials- trading.com/	https://www.schaeffler.com/fork/	https://solvay.com/en/	https://neomaterials.com/
Agreement type	Binding framework offtake contract. Take or pay once TMT has arranged end buyers for Hastings MREC from its global RE magnet customers. (Hastings takes TMT credit risk.)	Master agreement for long term supply of MREC signed ahead of project agreement to be signed (for European mine to magnet supply chain).	MOU announced 11 Oct 2022 Technical and commercial discussions in progress prior to contract	Acquisition of 20% investment in Neo completed on 14 Oct 2022. Technical and commercial discussions underway.
Agreement term	10 years from production start	10+ years from production start	5 years (tbc)	In discussions
Quantity	Year 1-5: 9,000tpa MREC Year 6-10: 5,000tpa MREC	Volume to match ramp schedule (tba)	2,500 tpa MREC	~ 5,000tpa

<sup>1</sup> Refer ASX announcement "Hastings Signs Long Term Master Agreement with German Automotive Tier 1 Supplier, Schaeffler Technologies AG", dated 3 June 2020

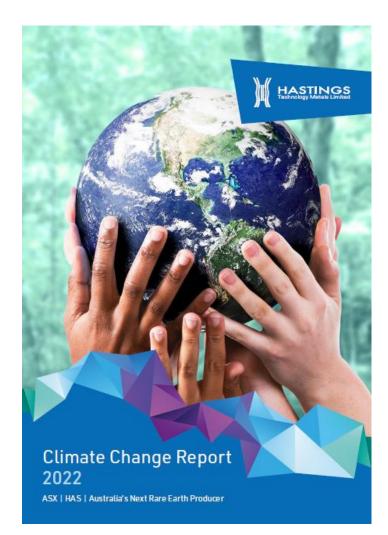
<sup>2</sup> Refer ASX announcement "Hastings Signs Major Offtake with thyssenkrupp Materials Trading GmbH", dated 20 April 2021

<sup>3</sup> Refer ASX announcement "Solvay and Hastings Sign MOU for Supply of MREC", dated 11 October 2022

<sup>4</sup> Refer ASX announcement "Completion of Acquisition of Strategic Stake in Neo", dated 14 October 2022

# **ESG Risk rating - Medium**

Hastings ranked 4th globally out of 159 companies by Sustainalytics



Score of 22.6 (Medium risk)

Diversified Metals Mining subindustry:

• Ranked 4th out of 159 companies

Diversified Metals industry:

- sustainalytics a Morningstar company RATED
- Ranked 9th out of 193 companies
- Oversight of ESG by the Board Leading a high performing team and driving the right culture.
- Transparent disclosures Continuous improvements each year:
  - 2nd Sustainability Report released and aligned with Global Reporting Initiative (GRI) standards.
  - Inaugural Climate Change Report released
- Comprehensive due diligence audits completed by 3rd party experts as part of Project finance loan terms.
- Voluntary Native Title Agreement Foundation of our engagement with the Traditional Owners.

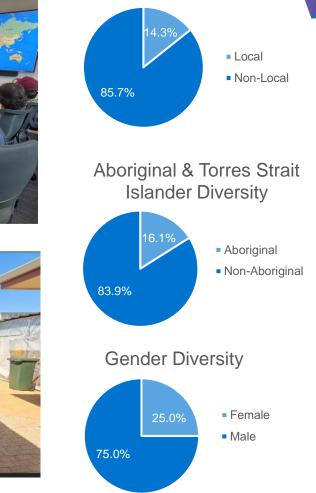
# From Junior Explorer to Producer

Local Matters – doing business locally

- Working to develop the local talent pipeline through early engagement with schools and local training institutions
- Directly engaging with local businesses in Carnarvon and Onslow to support the early works on site
- Construction workforce will peak at 500 people across the two sites
- Ongoing operations will directly employ approximately 300 people across the two sites for mining, village services and two process facilities. FIFO from Perth, Carnarvon and residential in Onslow.
- Employee diversity working on strategies to maintain and increase diversity in the site workforce



#### Local Workforce Diversity



Site diversity snapshot as at 30 June 2022.





### **UPCOMING MILESTONES**

# Yangibana Project Upcoming Milestones

Project progress accelerating with early siteworks currently underway

Q1/2 2023 Q1 2023 Funding complete early works

Mid-2023

Main construction commence Late 2024

Commission beneficiation plant

Q1/2 2025

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Commission hydromet plant Mid-2025

Delivery of maiden MREC volumes to key customers

engineering

and



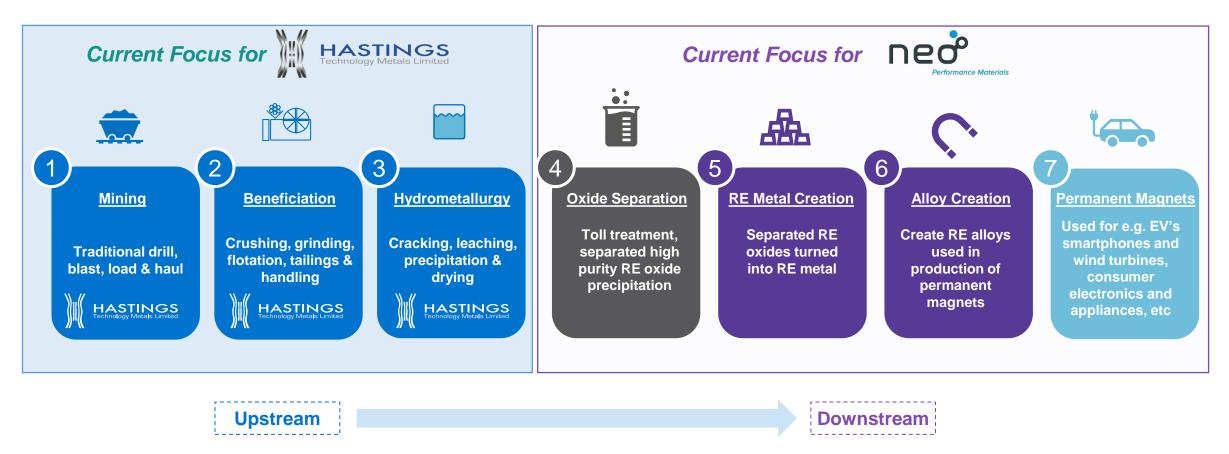




### **GLOBAL OPPORTUNITY**

# HAS 2.0: Mine-to-Magnet Strategy

Hastings 1.0 is focused on the delivery of the Yangibana Project. The 20% strategic investment in Neo<sup>1</sup> enables Hastings to pursue its mine-to-magnet business strategy.

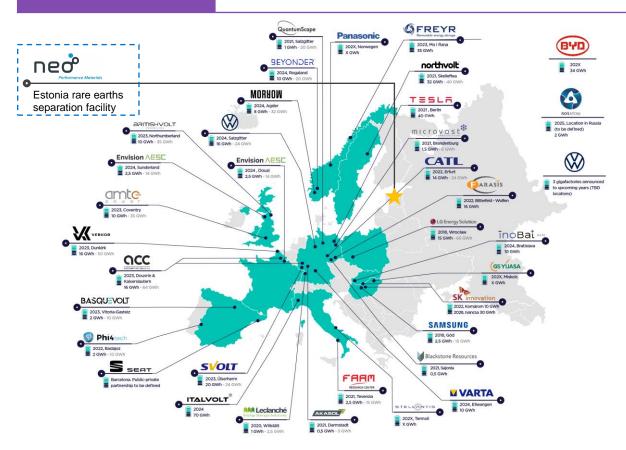


1. Refer ASX announcement "Agreement to acquire strategic shareholding in Neo Performance Materials and cornerstone investment in Hastings by Wyloo Metals" dated 26 August 2022

# Europe to be a Key Market for EVs

Europe is expected to be a major hub for the production of EVs and therefore a key source of demand for NdFeB permanent magnets

European Gigafactories<sup>1</sup>



Note: (1) CIC EnergiGUNE analysis as of February 2022.

"Volkswagen's product portfolio is focused on electric mobility. The last purely combustion-driven platform will be developed in 2026. After that, only electric vehicles will be developed. ... Volkswagen is aiming to increase the proportion of unit sales accounted for by purely electric vehicles to at least 70 percent in Europe and to more than 50 percent in North America and China by 2030. In 2030, nine out of 14 Volkswagen models will be purely electric vehicles"

- Volkswagen Website, On The Way to Zero - The General Strategy

"We have a focus on becoming a pure electric mobility brand by 2030, which is in line with our purpose. Expansion in Europe, our largest sales region, is crucial to our shift to electrification and continued growth"

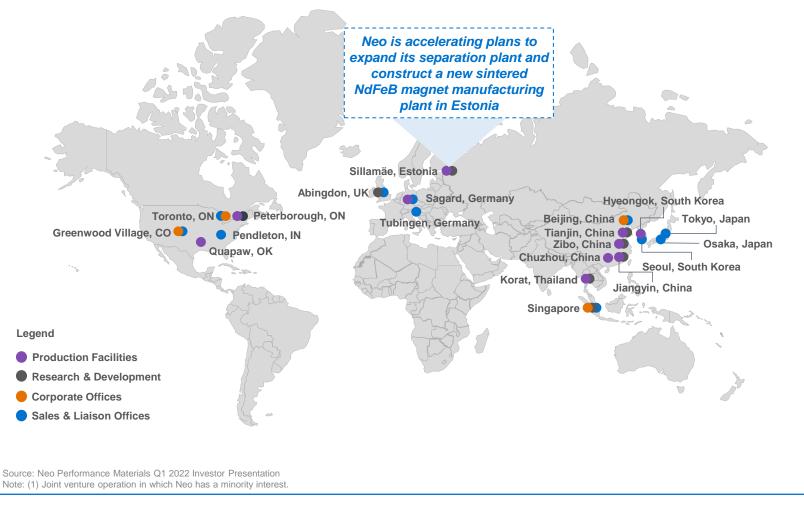
- Jim Rowan, CEO of Volvo Cars

"The EU has committed to the goal of becoming climate neutral by 2050. The raw materials needs to facilitate this energy transition are massive, and Europe urgently needs to secure their supply. This Action Plan outlines the steps we must take to ensure that the rare earth elements upon which the EU Green Deal relies remain available for European industry and society"

 Bernd Schäfer, CEO of EIT RawMaterials – the Innovation Community which manages the European Raw Materials Alliance

# Global Operating Footprint - neo

NEO's rare earth separation and rare metals facility currently operating in Europe facilitates the setting up of sintered NdFeB magnet plant in Europe



### **REE Separation**

- Sillamäe, Estonia
- Zibo, China
- Jiangyin, China

#### **REE Metal Production**

- Rayong, Thailand<sup>1</sup>
- Jiangxi Province, China<sup>1</sup>

#### **REE Alloy + Magnetic Powders**

- Korat, Thailand
- Tianjin, China

#### **REE Magnets**

- Tianjin, China
- Chuzhou, China

#### **REE Environmental Catalyst Materials**

- Sillamäe, Estonia
- Zibo, China

#### **LED / Electronic specialties**

- Hyeongok, South Korea
- Quapaw, Oklahoma, US

#### **Rare Metals Refining / Recycling**

- Sillamäe, Estonia
- Sagard, Germany
- Peterborough, Ontario, CAN





### SUMMARY

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# Australia's Next Rare Earths Producer

	Globally significant supplier of NdPr	<ul> <li>Yangibana's mixed rare earth carbonate (MREC) product is estimated to account for 6-8% of global NdPr supply<sup>1</sup></li> </ul>
		<ul> <li>~70% of production is contracted for the first 10 years</li> </ul>
Tim	Offtake secured with blue- chip counterparties	<ul> <li>Offtake Agreement signed with thyssenkrup in April 2021;</li> </ul>
		<ul> <li>MOU with Solvay signed in October 2022</li> </ul>
	Funding well advanced,	<ul> <li>Northern Australian Infrastructure Facility ("NAIF") has approved a A\$140m loan facility</li> </ul>
	NAIF secured	<ul> <li>A\$176.9M of cash on balance sheet as at 30 September 2022</li> </ul>
	Strategic Investment in Downstream Processing	<ul> <li>19.9% Stake in Neo Performance Materials (TSX:NEO), a market leading producer of NdFeB magnets and rare earth materials globally; acquired in October 2022</li> </ul>

<sup>1</sup> Refer ASX announcement "Yangibana Project NPV8 Increases 84% to A\$1 Billion (post-tax)" dated 21 February 2022





### **APPENDICES**

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Corporate Presentation, 28 November 2022

# **Accomplished** Board of Directors

#### Jean Claude Steinmetz Non Executive Director

- Joined the Board in Jul 2016
- Chief Operating Officer for Lynas Corporation 2013 -2015
- 25+ years in the chemical industry with Rhodia and General Electric
- Chairman of the Auto Plastic and Innovative Materials Committee of Sino-EU Chemical Manufacturers Association

Bruce McFadzean Non Executive Director

- Joined the Board in Jan 2021
- Managing Director of Sheffield Resources since 2015
- 40+ years in the global resource industry including 15+ years with BHP Billiton & Rio Tinto
- Led successful financing and operation of mines around the world

- Charles Lew Executive Chairman
- Took over HAS in Dec 2013
   and appointed Chairman
- 30+ years investment banking experience in London and Singapore
- Entrepreneur with business experience in macro hedge fund, F&B and real estate
- MD of ABN Amro Investment Bank Singapore 1997 - 2000
- Independent Non Executive
  Director of Malaysia's RHB
  Banking Group 2004 2016

Guy Robertson Finance Director

- Served on the Board of Hastings since Oct 2012
- 30+ years CFO experience
- CFO for various ASX listed junior mining companies
- Senior finance executive in Jardine Matheson Group in Hong Kong and Australia including Jardine Lloyd Thompson, Colliers Jardine, and Franklins Limited

#### Mal Randall

**Non Executive Director** 

- Joined the Board in Feb
  2019
- 45+ years extensive experience in corporate, management and marketing in the resources sector including 25+ years with the Rio Tinto group of companies

- Neil Hackett Non Executive Director
- Joined the Board in Nov 2018
- 15+ years ASX Director, Company Secretary with mining and industrial experience
- Corporate Finance and Regulatory Experience ASIC 1990-1999
- Independent Corporate Governance Advisor and AICD Facilitator



# **Experienced** Senior Management Team

#### **Alwyn Vorster Chief Executive Officer**

- Joined Hastings in Nov-22 with 30+ years experience in the mining industry and 12-years as CEO of ASX companies
- MD of BCI Minerals: MD of Iron Ore Holdings; CEO of API Management. Senior marketing roles in Rio Tinto Iron Ore and Kumba Resources

#### **Andrew Ford GM** Exploration

- · Joined Hastings in June 2021 with +30 years of exploration and mine development experience.
- Lead technical teams throughout Australia, as well as Africa, USA, Europe and Asia.
- · Previously COO with Rubicon Resources and Peninsula Minerals

#### Matthew Allen **Chief Financial Officer**

- · Joined Hastings in 2021 with 20+ years experience in finance. operational & management of public companies in resource sector
- · CFO and Managing Director of Otto Energy Ltd in the US, and spent 8 vears as Finance Manager at Woodside Energy

#### **Nick Holthouse** Acting COO

- · Joined Hastings in Feb 2019 with 30+ years experience in surface & underground mining operations, engineering & surveying in commodities - gold, uranium, coal and base metals
- Managed, commissioned / operated mines & process plants in remote regions
- Merdeka Mining, Finders Resources, CSA Global



#### Dr Lara Jefferson **GM Sustainability**

- Joined Hastings in July 2016 worked as GM Environment. Permitting and Government Relations before becoming GM Sustainability in 2021
- More than 30 years experience in a variety of environmental roles, including the preparation of environmental approvals, government and stakeholder consultation and compliance and sustainability reporting

#### **Nick Bennett**

**Acting Project Director** 

- Joined Hastings in 2021 with 30+ years experience in mining and metals
- Over 20 years experience in executing studies and projects in the chemical and mineral processing industry
- Previously with Ausenco, MSP Engineering and First Quantum
- · Skilled in project development from concept through to commissioning



#### **Narelle Marriott**

Manager Process **Development** 

- Joined Hastings in late 2014 working on early metallurgical process development
- A minerals process engineer with 20 years experience in the mining industry across Nickel, Iron Ore and Rare Earths industries
- · Experience in operations, flowsheet development, project engineering, R&D and project improvement



#### **Rachael Ward-Prvce** Human Resources Manager

- Joined Hastings in April 2021 with 18+ years experience in all facets of human resources management
- Recruited and built teams for domestic and international operations
- Newmont Australia. Resolute Mining, Iluka Resources, Alcoa

#### Lisa McGrath **GM** Environment

- Joined Hastings in October 2021 with over 25 years experience in gold and mineral sands mining
- Over 16 years with Iluka Resources with broad experience across environmental approvals, project delivery, sustainability and business risk



#### **Valerie Quay** Legal Counsel

- Joined Hastings in 2017, with 10+ year experience in cross culture and multi jurisdiction matters in corporate law, management and strategy consulting
- Barrister at Law, Middle Temple UK and Masters in Law (LLM) International Business Transactions and previously at Herbert Smith Freehills London and McKinsey & Co



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**Cathal Smith Commercial Counsel** 

- · Joined Hastings in March 2022 with +20 years of experience advising clients in the resources and energy sectors.
- Worked extensively international and domestically both in-house and in international law firms

# **Mineral Resources and Reserves**

### Yangibana Project – Total JORC Mineral Resources <sup>(1)</sup>

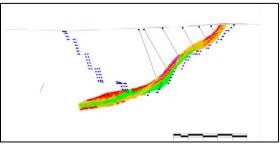
AS AT 11 OCTOBER 2022

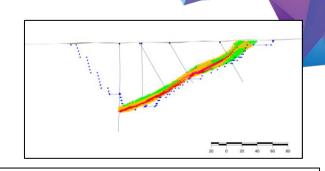
Category	Million Tonnes	%TREO	%Nd <sub>2</sub> O <sub>3</sub> +Pr <sub>6</sub> O <sub>11</sub>	TREO Tonnes
Measured	4.97	0.96	0.37	47,721
Indicated	19.51	0.88	0.32	171,936
Sub-total	24.49	0.90	0.33	219,657
Inferred	5.45	1.05	0.31	57,298
TOTAL	29.93	0.93	0.32	276,955

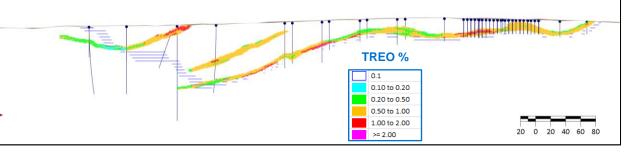
### Yangibana Project – Total JORC Ore Reserves as <sup>(2)</sup>

#### AT 30 JUNE 2021

Deposit	Mt	%TREO	%Nd <sub>2</sub> O <sub>3</sub> +Pr <sub>6</sub> O <sub>11</sub>	Nd <sub>2</sub> O <sub>3</sub> +Pr <sub>6</sub> O <sub>11</sub> as % of TREO
Bald Hill	6.75	0.86	0.34	39
Fraser's	1.40	1.09	0.47	43
Simon's Find	1.72	0.57	0.30	52
Auer	2.07	0.96	0.35	35
Yangibana	1.35	0.79	0.37	47
Yangibana North	3.42	1.31	0.34	26
TOTAL	16.70	0.95	0.35	38







Category	Mt	%TREO	%Nd <sub>2</sub> O <sub>3</sub> +Pr <sub>6</sub> O <sub>11</sub>	TREO t
Proved	4.69	0.99	0.38	46,605
Probable	12.00	0.93	0.34	111,184
TOTAL	16.70	0.95	0.35	158,419

 Refer ASX announcement "Drilling along 8km long Bald Hill – Frasers trend Increases Indicated Mineral Resources by 50%", dated 11 October 2022

(2) Refer ASX announcement "Yangibana Rare Earths Project Significant Ore Reserve Tonnes increase of 37%, NdPr Tonnes up 18% to 58Kt", dated 27 July 2021

#### Corporate Presentation, 28 November 2022

# **Project Flow Sheet Extensively Tested**

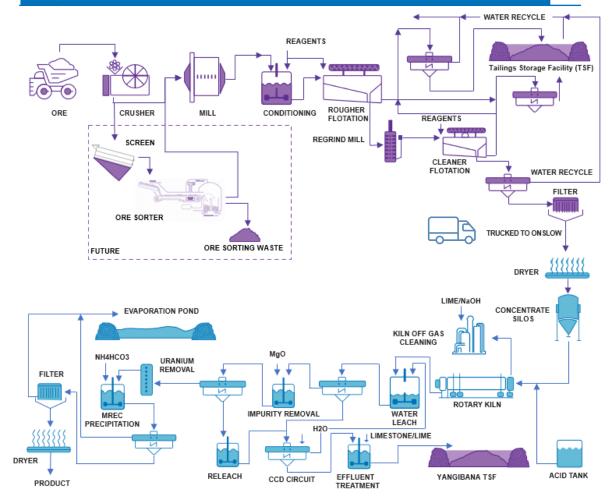
### Yangibana: Beneficiation plant

- The conventional beneficiation process at Yangibana consists of crushing, XRT ore sorting, grinding, regrinding and flotation
- The plant recovers a REO concentrate with an estimated grade of 27% TREO with a projected recovery to concentrate of 87.7% from a feed grade of approximately 1.23% TREO
- A life of mine average of 37 ktpa (dry) of REO concentrate will be produced at Yangibana and then transported to Onslow in road train trucks with an average of 1 truck per day

### Hydrometallurgical plant

- The Hydrometallurgical plant process flowsheet consists of acid bake, water leach, impurity removal and MREC product precipitation
- The plant's location is close to the Horizon power station grid and AGIG gas pipeline, access to water is via the Water Corp bore field located adjacent to the power station
- The Hydrometallurgical plant will have a capacity of 15,000 tpa of a MREC concentrate at a MREC grade of 59%. Total contained TREO content capacity is 8,500tpa
- The process flowsheet of the beneficiation and hydrometallurgy plants was developed by Robin Zhang (ex Lynas Senior Technical Services Manager & Senior Project Development Manager). It was peer reviewed by Michael Vaisey, Lynas' ex-VP Research and Technology

#### Project flow sheet



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# **MREC Concentrate** – Product Composition

#### High value rare earths

Approximately 90% of Yangibana's MREC concentrate revenue is high value NdPr

- High value Terbium and Dysprosium represent
   5.6% of MREC concentrate revenue
- High value rare earth element concentrate compositions leads to Yangibana having a high basket price / high margin project

#### Yangibana MREC Product Composition and Revenue split

RE composition	Name	Hastings MREC composition %	Current Prices (21 Nov 2022) (USD/kg)	LOM NdPr Revenue (USDm)	% Revenue
$Y_2O_3$	Yttrium oxide	0.6%	6.69	5	0.1%
CeO <sub>2</sub>	Cerium oxide	41.7%	1.01	125	1.8%
La <sub>2</sub> O <sub>3</sub>	Lanthanum oxide	11.2%	0.98	45	0.7%
Pr <sub>6</sub> O <sub>11</sub>	Praseodymium oxide	8.0%	96.85	856	12.4%
$Nd_2O_3$	Neodymium oxide	32.6%	100.34	3,307	47.8%
NdPr Oxide	Neodymium- Praseodymium oxide		91.28	2,063	29.8%
$Sm_2O_3$	Samarium oxide	3.3%	3.83	16	0.2%
Eu <sub>2</sub> O <sub>3</sub>	Europium oxide	0.7%	25.92	34	0.5%
$Gd_2O_3$	Gadolinium oxide	1.4%	61.39	67	1.0%
Tb <sub>4</sub> O <sub>7</sub>	Terbium oxide	0.1%	1,846.48	175	2.5%
$Dy_2O_3$	Dysprosium oxide	0.3%	321.92	219	3.1%
Ho <sub>2</sub> O <sub>3</sub>	Holmium oxide	0.0%	102.08	4	0.0%
$Er_2O_3$	Erbium oxide	0.0%	36.58	1	0.0%
Tm <sub>2</sub> O <sub>3</sub>	Thulium oxide	0.0%	0.00	0	0.0%
Yb <sub>2</sub> O <sub>3</sub>	Ytterbium oxide	0.0%	15.12	0	0.0%
Lu <sub>2</sub> O <sub>3</sub>	Lutetium oxide	0.0%	829.18	0	0.0%
	MREC Basket Price	US\$ per kg	\$45.61		

Begin the Future Enabling Green Technologies

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