

Heavy Rare Earths Limited

ACN 648 991 039



*Supporting a cleaner and sustainable
future through critical minerals*

ASX: HRE

September 2023

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COMPETENT PERSONS STATEMENT

The Exploration Results and Mineral Resources contained in this Document have been extracted from the Independent Geologist's Report included in the Company's IPO Prospectus, a copy of which was lodged with ASIC on 5 July 2022, and from an ASX releases dated 1 December 2022, 3 January 2023, 31 January 2023, 1 March 2023, 29 March 2023, 12 April 2023, 1 May 2023 and 12 July 2023. The Company confirms that it is not aware of any new information or data that materially affects the Exploration Results or Mineral Resources as contained in the Company's IPO Prospectus or in the 1 December 2022, 3 January 2023, 31 January 2023, 1 March 2023, 29 March 2023, 12 April 2023, 1 May 2023 and 12 July 2023 ASX releases. All material assumptions and technical parameters underpinning the Mineral Resources in the Company's IPO Prospectus continue to apply and have not materially changed.

Value Proposition

Rare Earths: Ongoing supply side issues and forecast demand side strength in e-mobility and wind power supports a high rare earth price environment

Key Project: Cowalinya clay-hosted rare earth project in Western Australia, one of the world's premier mining jurisdictions

Maiden Resource¹: Shallow Inferred Resource of **28 Mt @ 625 ppm TREO** with magnet rare earths Pr, Nd, Tb and Dy comprising 25% of the mix

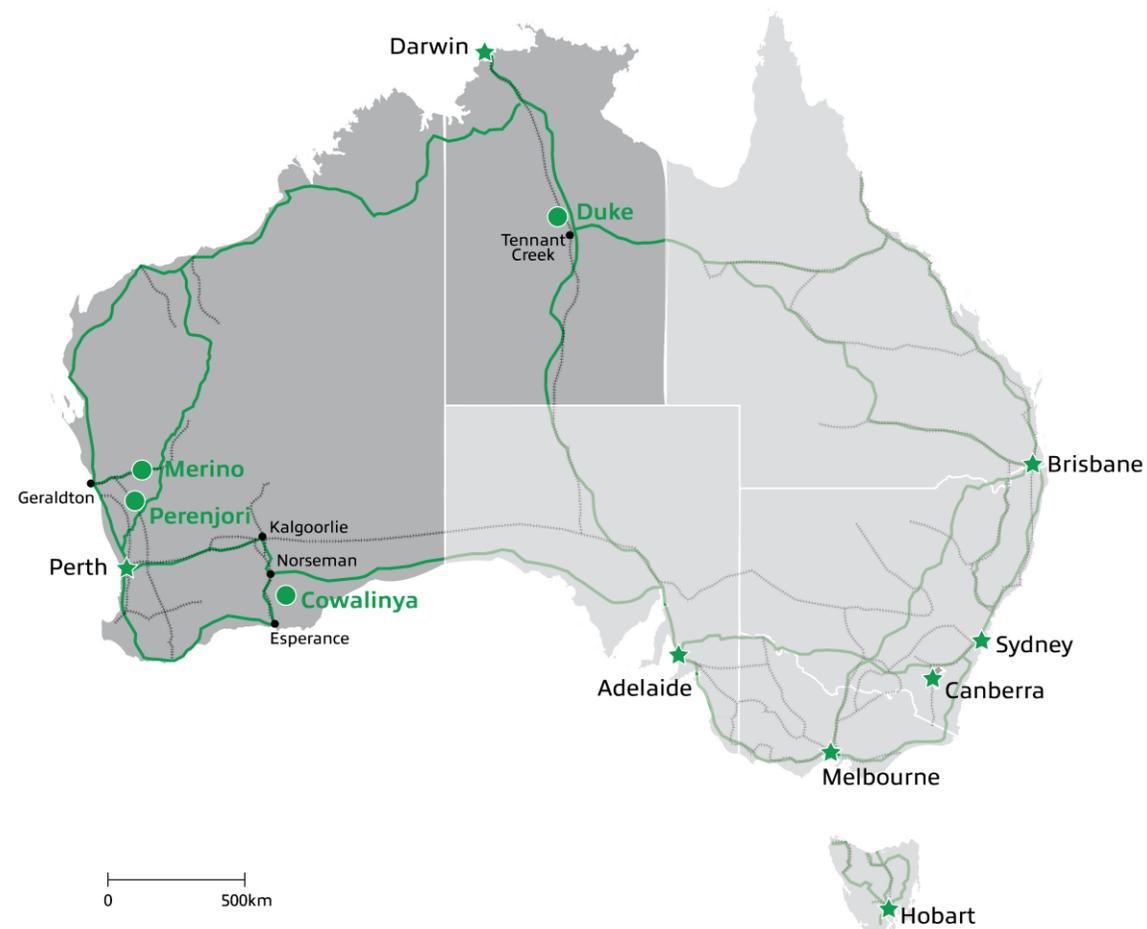
Resource Expansion: New **Mineral Resources** for Cowalinya this month

Focused Metallurgy: Results justify **accelerating metallurgical program** with increased focus on downstream development

Discovery Upside: Maiden **Exploration Target** for Cowalinya and first-pass exploration at Duke

Strong Team: Richard Brescianini – 16 years' rare earths experience; supported by key technical and operational consultants David Ross, Andy Wilde and Gavin Beer

John Byrne – 45 years' development experience bringing mines into production.



¹ See pp 109 of the Independent Geologist's Report contained in HRE's IPO Prospectus.

Corporate Snapshot

Capital Structure	ASX: HRE
Shares on Issue	68.3 million
Market Capitalisation (@ \$0.10)	~\$7 million
Cash (@ 30/6/23)	~\$2.1 million
Debt	Nil
Enterprise Value	~\$4.4 million
Top 20 Holders	~42%



Non-Executive Chairman – John Byrne

Mr Byrne has 40 years' experience in the natural resource industry as a financial analyst, investor and mine developer. John has been Chairman and CEO of numerous successful resource companies, including Western Coal Corp which was capitalised at less than C\$1 million when he joined, and was sold for C\$3.3 billion in 2010.

Executive Director – Richard Brescianini

Mr Brescianini is a qualified geoscientist with an Honours degree from the University of Tasmania and is a member of the Australian Institute of Geoscientists and Australian Society of Exploration Geophysicists. Richard commenced his career in mineral exploration with BHP Minerals in 1987 working in teams focused on the discovery of base and precious metal deposits across Australia and North America. More recent experience includes Director of the Northern Territory Government's Geological Survey and working for rare earths developer, Arafura Rare Earths, in the executive management team.

Non-Executive Director – Ryan Skeen

Mr Skeen has a background in financial and economic markets, with expertise in providing investment and strategic advice to emerging companies. Ryan is largely focused on exploration in gold, rare earths and base metals. He is currently Chief Executive Officer of a junior gold and base metals explorer with projects in Victoria and Western Australia.

Company Secretary & Chief Financial Officer – Justin Mouchacca

Mr Mouchacca is a Chartered Accountant and Fellow of the Governance Institute of Australia with over 15 years' experience in public company responsibilities including statutory, corporate governance and financial reporting requirements. Since July 2019, Mr Mouchacca has been principal of JM Corporate Services and is Company Secretary and Financial Officer for a number of ASX-listed entities and unlisted public companies.

Clay-Hosted Project – Cowalinya WA

- The **Cowalinya clay-hosted rare earth project** is 100 per cent owned by HRE and comprises three granted exploration licenses covering 250 km²
- Cowalinya is on **unallocated crown land** 70 kilometres south-east of Norseman, 45 kilometres east of the Coolgardie-Esperance Highway and rail line, and 110 kilometres north-east of the Port of Esperance
- The mineralisation being investigated is shallow, flat-lying, supergene concentrations of rare earths in saprolite, similar in style to the southern Chinese ion adsorption clay deposits, the **world's main supply source of heavy rare earths**
- Drilling at Cowalinya by HRE in 2021 established the project's maiden Inferred Mineral Resource of **28 million tonnes @ 625 ppm TREO**¹
- Drilling by HRE in 2022 discovered **extensive new developments of rare earth mineralisation**²
- Metallurgical test work in 2022 and 2023 on rare earth mineralisation from Cowalinya has delivered **excellent results**³



¹ See pp 109 of the Independent Geologist's Report contained in HRE's IPO Prospectus.

² Refer to HRE ASX announcements 01/12/22, 03/01/23, 31/01/23, 01/03/23, 29/03/23, 12/04/23, 01/05/23.

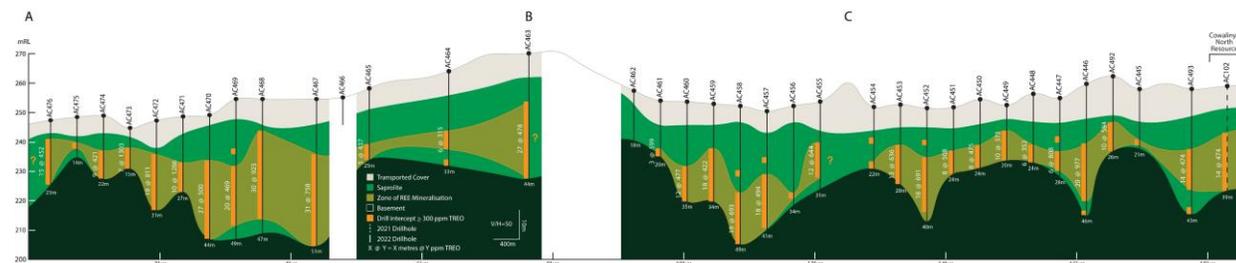
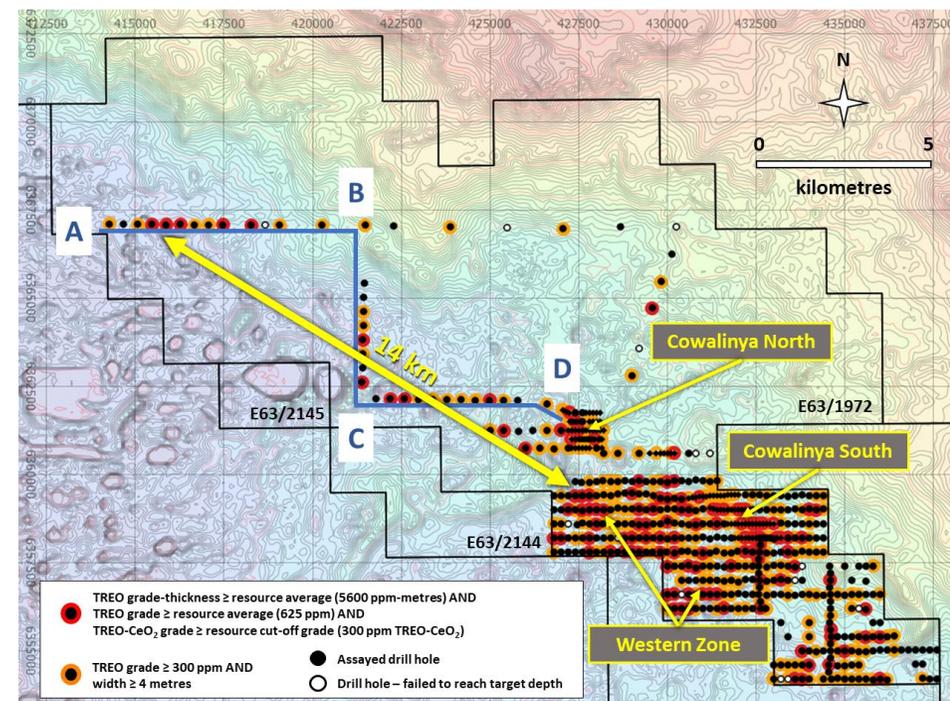
³ Refer to HRE ASX announcements 13/12/22, 12/07/23.

Cowalinya Resources – establishing project capacity and longevity

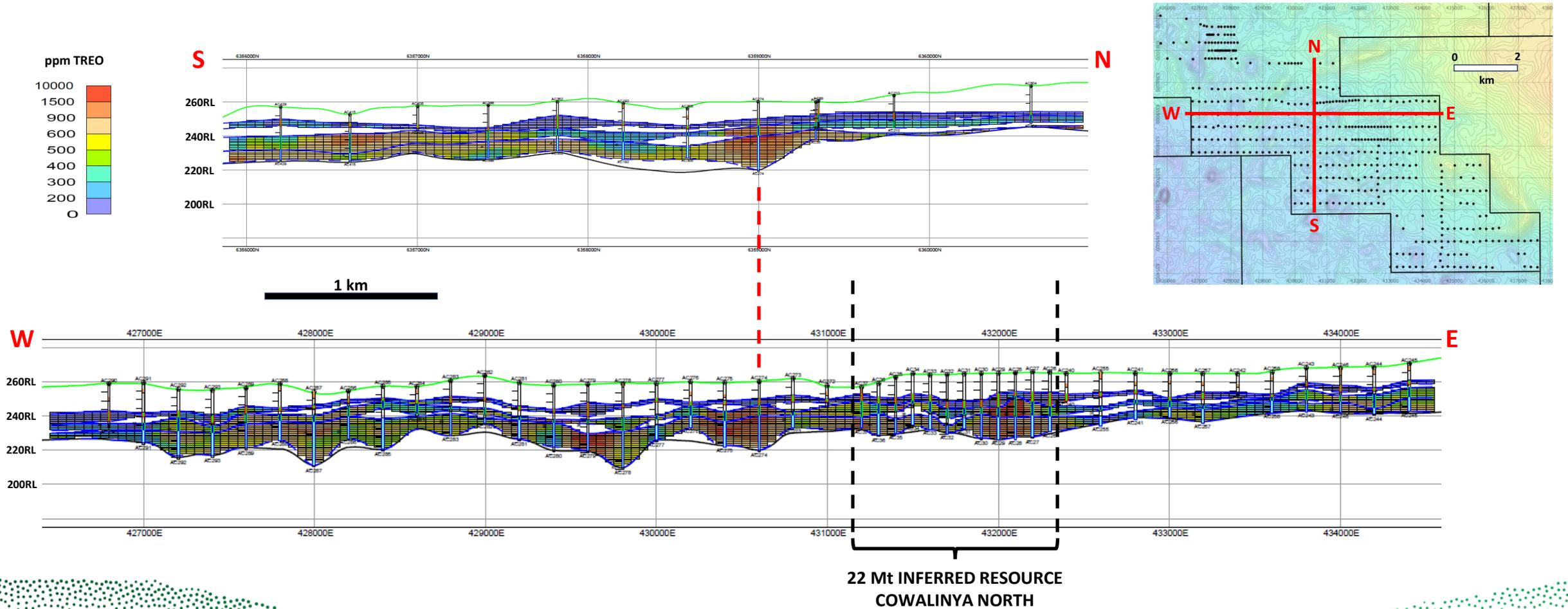
- HRE completed a 441-hole, 12,569-metre exploration and resource expansion drilling program on E63/1972 in Q3-Q4 2022
- Drilling discovered a **substantial new Western Zone of rare earth mineralisation** adjacent to existing resource
- Significant mineralised drill intercepts¹ include:
 - 19 metres @ 3190 ppm TREO including 8 metres @ 5382 ppm TREO (AC225)
 - 10 metres @ 1580 ppm TREO including 4 metres @ 2486 ppm TREO (AC279)
 - 14 metres @ 1278 ppm TREO including 4 metres @ 3040 ppm TREO (AC440)
 - 26 metres @ 1201 ppm TREO including 8 metres @ 3057 ppm TREO (AC360)
- New mineralised drill intercepts **up to 14 kilometres from Western Zone**² include:
 - 12 metres @ 1690 ppm TREO including 2 metres @ 5192 ppm TREO (AC487)
 - 10 metres @ 1286 ppm TREO (AC471)
- HRE anticipates a **material increase in Mineral Resources** in Q3 2023
- Maiden **Exploration Target** for project also expected in Q3 2023

¹ Refer to HRE ASX announcements 01/12/22, 03/01/23, 31/01/23, 01/03/23, 29/03/23, 12/04/23.

² Refer to HRE ASX announcement 01/05/23.

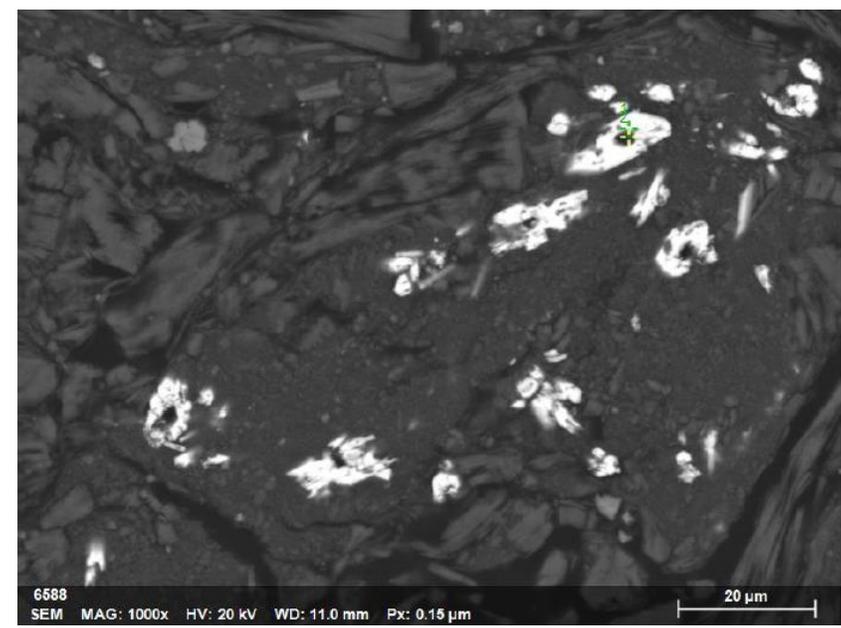


Cowalinya Resources – cross sections showing block grades

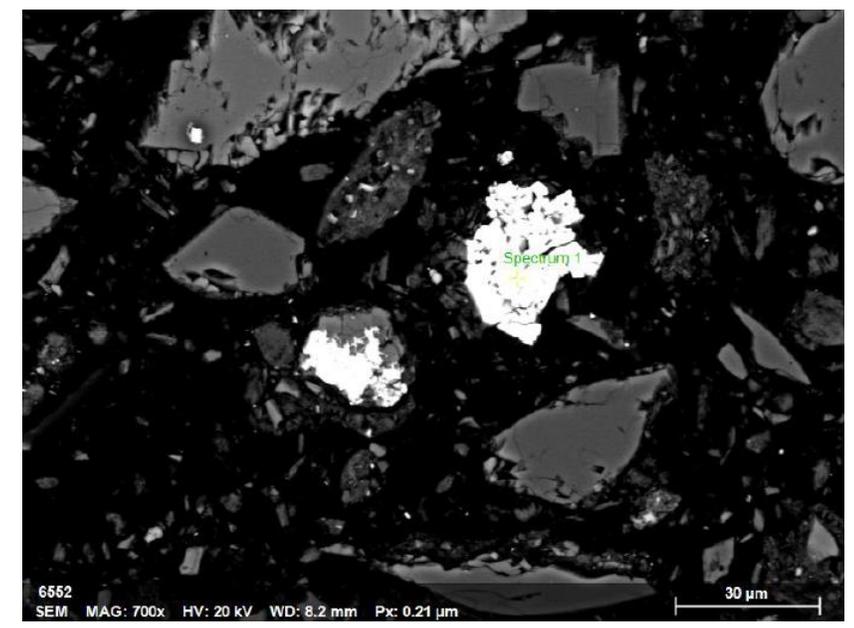


Cowalinya Mineralogy – an important part of the puzzle

- Mineral characterisation on saprolite using optical, SEM, XRD
- Mineralogy dominated by quartz and kaolinite
- Accessory minerals mica, jarosite, illite, halloysite, K-feldspar, albite
- Fine-grained (<10-20µm) rare earth minerals monazite and xenotime (often hosted as inclusions) in kaolinite
- High rare earth recoveries using hydrochloric acid indicates presence of acid soluble minerals (?apatite ?rhabdophane ?churchite)
- HRE is sponsoring MRIWA research project *Characterisation of clay-hosted REE deposits in Western Australia*

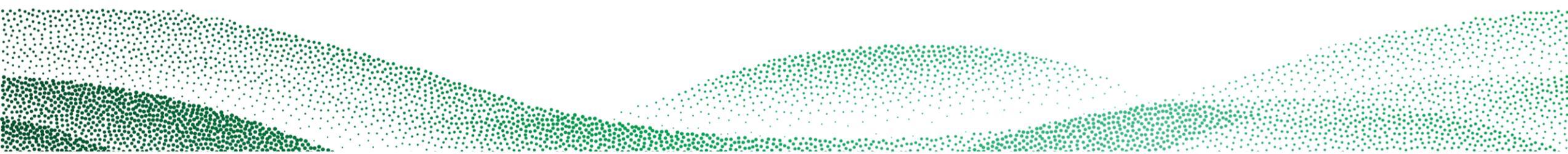


Nd-rich monazite (27% Nd₂O₃) in kaolinite



Composite grains of xenotime / monazite (28% Y₂O₃) in kaolinite

- Mineralogical characterisation is important in the context of rare earth recovery efficiency to commercial product



Cowalinya Metallurgy – the key to technical and commercial viability

COMPOSITE	HEAD ASSAY (ppm TREO)	FINES (-25µm) ASSAY ¹ (ppm TREO)	UPGRADE ¹	FINES MASS ¹ (% of total mass)	MAGNET RARE EARTHS RECOVERY TO FINES ¹	MAGNET RARE EARTHS EXTRACTION TO LEACH ²	HYDROCHLORIC ACID CONSUMPTION ² (kg/t)
SM01	1045	2050	2.0	37.8%	81.1%	86.3%	15.2
SM02	750	1270	1.7	51.6%	91.7%	84.5%	3.8
SM03	1383	3674	2.7	27.0%	68.1%	91.3%	13.6
SM04	1280	1575	1.2	59.9%	91.6%	84.5%	12.8
SM06	754	1929	2.6	29.4%	79.5%	83.8%	37.8
SM07	938	1662	1.8	43.6%	87.4%	75.6%	15.8
SM12	1376	2642	1.9	46.6%	86.9%	81.7%	20.0
SM13	1326	2140	1.6	41.1%	67.5%	75.3%	26.0
AVERAGE			1.9	42.1%	81.7%	82.9%	18.1

- **Excellent progress** being made on metallurgical program by Strategic Metallurgy
- Simple screening recovers **81.7% (max. 91.7%)** of magnet rare earths in **42.1% (min. 27.0%)** of feed mass with **1.9x (max. 2.7x)** grade uplift
- Diagnostic leaching extracts **82.9% (max. 91.3%)** of magnet rare earths consuming **18.1 kg/t (min. 3.8 kg/t)** of hydrochloric acid

TREO = La₂O₃ + CeO₂ + Pr₆O₁₁ + Nd₂O₃ + Sm₂O₃ + Eu₂O₃ + Gd₂O₃ + Tb₄O₇ + Dy₂O₃ + Ho₂O₃ + Er₂O₃ + Tm₂O₃ + Yb₂O₃ + Lu₂O₃ + Y₂O₃.

MAGNET RARE EARTHS = Pr + Nd + Tb + Dy.

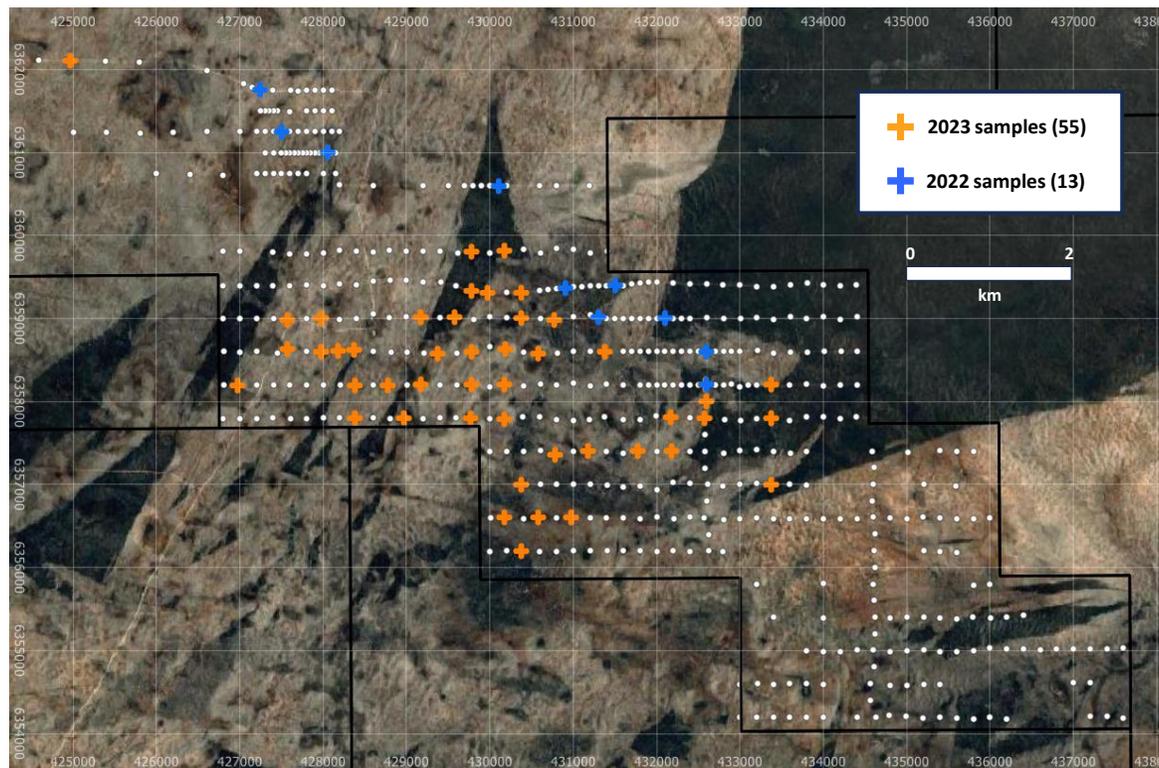
ACID CONSUMPTION expressed in kilograms of hydrochloric acid (HCl) per tonne of fines (-25µm) fraction.

AVERAGE calculated on composites identified as preferred material types (SM01, SM02, SM03, SM04, SM06, SM07, SM12, SM13).

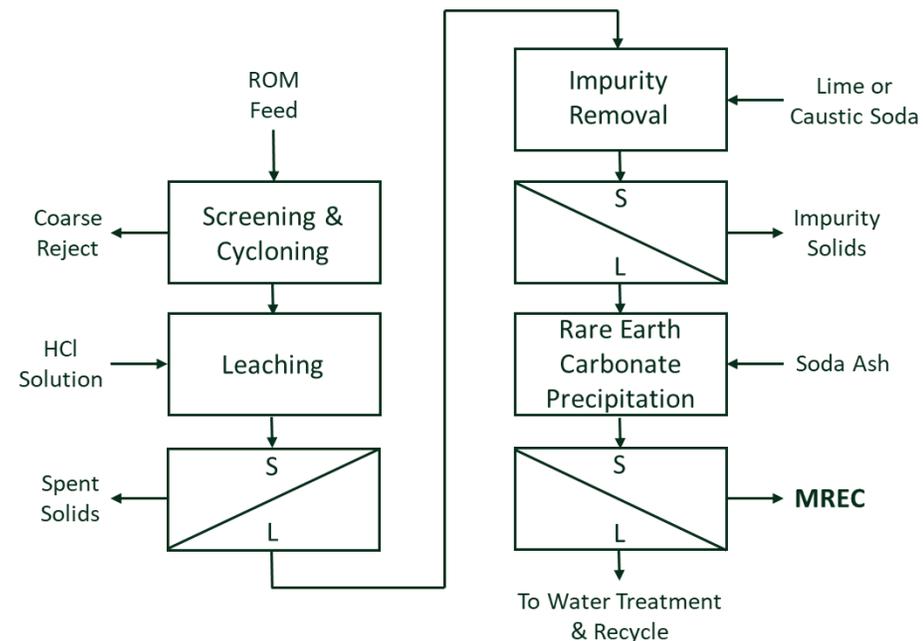
¹ Refer to HRE ASX announcement 13/12/22.

² Refer to HRE ASX announcement 12/07/23. Diagnostic leach test work conducted in weak HCl solution (1-2% residual HCl) at 10% solids and 50°C on the -25µm fraction from 13 mineralised saprolite composites.

Cowalinya Metallurgy – current phases



General flowsheet to treat clay-hosted rare earth mineralisation producing an MREC product

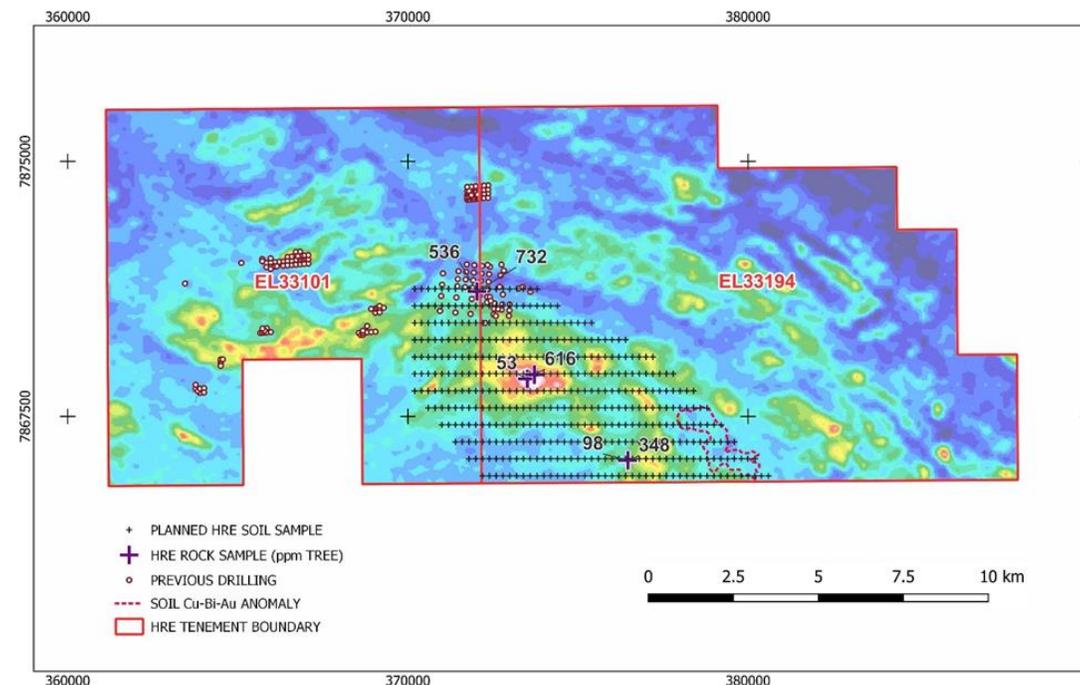
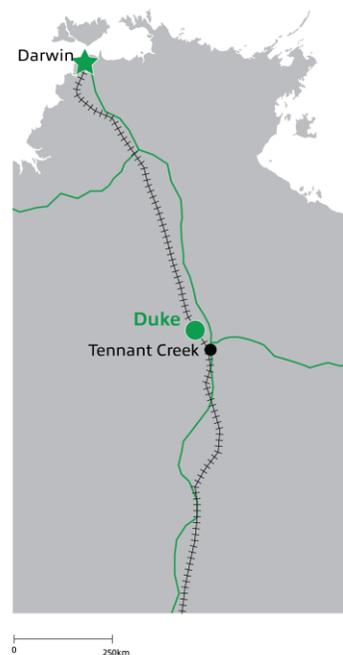


- Sizing and diagnostic leaching results justify accelerating metallurgical program to **extend variability test work** by 55 composites and produce **Mixed Rare Earth Carbonate product samples for customer assessment** in Q4 2023¹

¹ Refer to HRE ASX announcement 12/07/23.

Hard Rock Project – Duke NT

- Duke is on a **pastoral lease** and located 50 kilometres north-west of Tennant Creek, 25 kilometres west of the Stuart Highway, and on the Darwin-Adelaide rail line and Amadeus Gas Pipeline
- It comprises two granted exploration licences covering 255 km²
- Outcrop comprises faulted metasedimentary rocks of the Tomkinson and Warramunga provinces of the Tennant Region, separated by an unconformity, and the Warrego Granite
- The Duke area has been explored for Tennant Creek-style ironstone-hosted gold-copper-bismuth, IOCG and unconformity-related uranium, **but not for rare earths**
- The project is being explored by HRE for rare earths in:
 - Unconformity-related hydrothermally-altered breccias and quartz veins similar to Browns Range in Western Australia (Browns Range mineral resources:10.81 Mt @ 0.76% TREO)
 - Saprolite developed on the extensive but poorly outcropping Warrego Granite
- **Assays from first-pass soils program** expected in Q4 2023¹

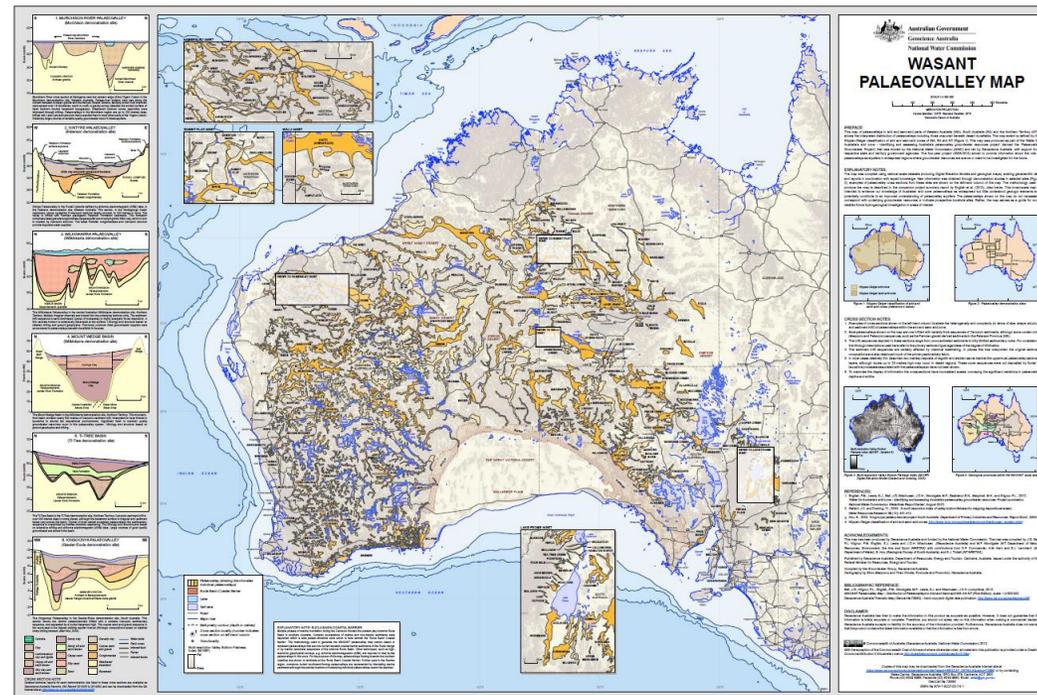
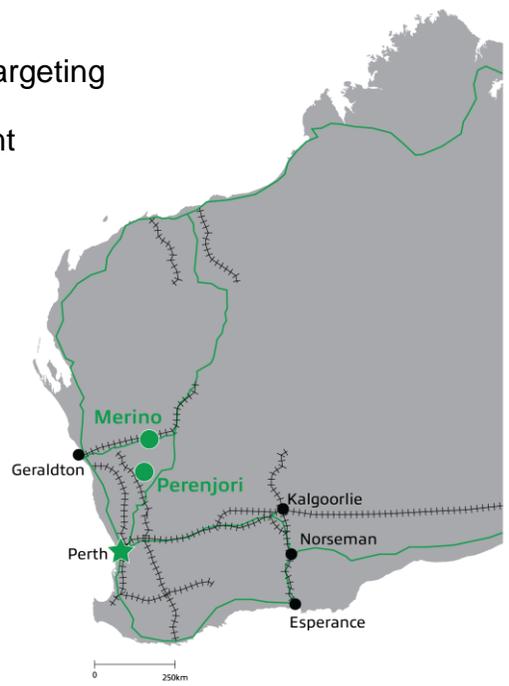


*Duke project tenements showing location of soil survey and historic drilling.
Background image: Th channel from historic airborne radiometric survey.*

¹ Refer to HRE ASX announcement 03/08/23.

Clay-Hosted Projects – Merino & Perenjori WA

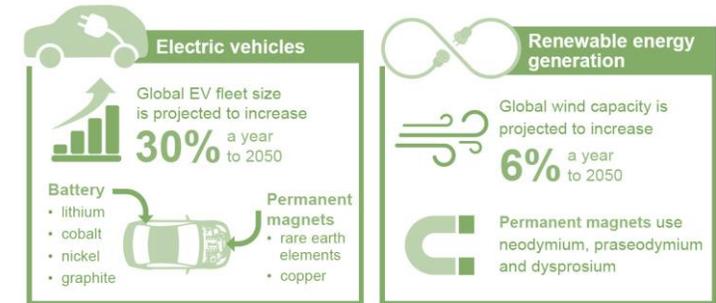
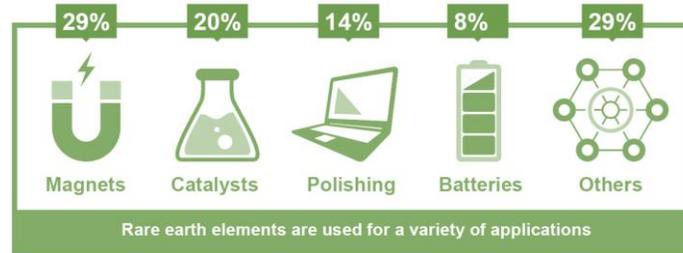
- Two new projects in the Mid West within 250 kilometres of Geraldton
 - Merino (429 km²) comprises two granted exploration licences and one application. Underlying tenure: pastoral lease
 - Perenjori (327 km²) comprises one granted exploration licence and one application. Underlying tenure: pastoral lease and freehold.
- Both areas ranked highly in an internal study targeting ion-adsorption clay-hosted rare earths in palaeochannels on Archaean granitic basement
- Minimal previous exploration – total of 3 holes drilled
- **Neither area has been explored for rare earths**
- First pass work over the next 12 months will involve soil, rock and water bore sampling, and passive seismic



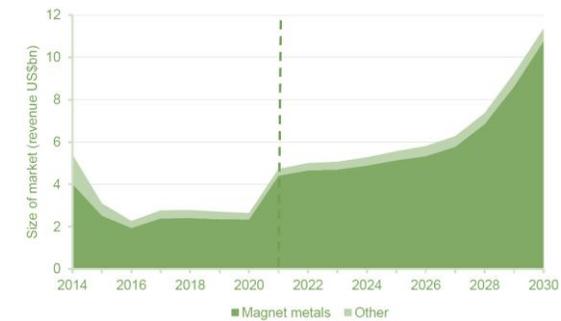
WASANT Palaeovalley Map
<https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search#/metadata/73980>

Rare Earth Market Overview

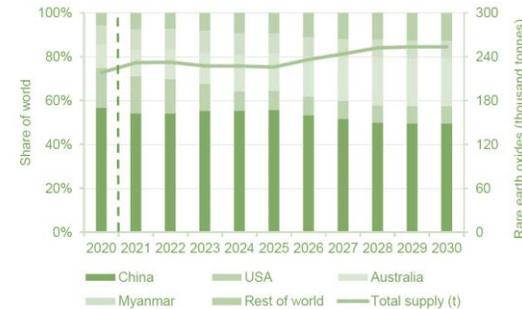
- Rare earths are featured in the official Australian, U.S., European Union and Canadian critical minerals lists
- According to Roskill and the Department of Industry, Science, Energy and Resources in 2021:
 - The global rare earths market was valued at US\$2bn in 2020 and is forecast to grow to \$12bn by 2030
 - Global mine supply is projected to grow by 1.5% p.a. over 10 years to 2030, and refined production of rare earths is projected to grow by 4.6% p.a. to 2030
 - Global consumption of rare earths is projected to grow at 4.0% p.a. to 2030, with rare earth permanent magnet consumption to grow by 6.2% p.a. driven by the strong take-up of low carbon emissions technologies
- In 2022 Adamas Intelligence forecast that:
 - Global production of the magnet rare earths Pr, Nd, Tb and Dy will collectively grow at 5.4% p.a. during 2022 to 2035
 - Global demand for rare earth permanent magnets will increase at a compound annual growth rate of 8.6% over the same period, following an 18.1% jump in consumption in 2021
- The Australian Government actively encourages the development of Australia's rare earths and has provided \$1.74bn in grants and loans to domestic rare earth projects via critical minerals initiatives



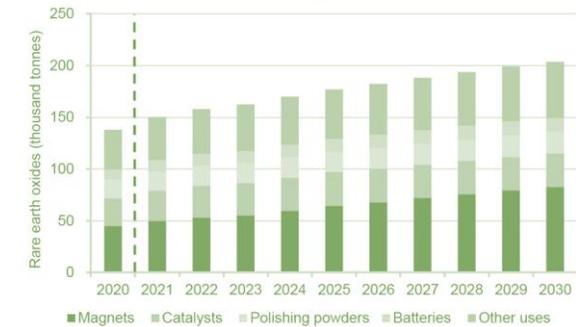
Rare earths market size outlook



Projected rare earths refined production by country



Projected rare earths consumption by end use



All graphics from Australian Government Department of Industry, Science, Energy and Resources, Office of the Chief Economist (2021): Outlook for Selected Critical Minerals.



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