



(ASX:ABX)

Ionic Adsorption Clay Rare Earths in Tasmania

International Mining and Resources Conference

Sydney International Conference Centre – Tuesday 31 October, 4:50pm AEDT

Mark Cooksey

Managing Director and CEO

31 October 2023

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Prices for aluminium fluoride (AlF₃) were sourced from Asian Metals, China Customs and verified by comparison with prices from Bloomberg. The price actually achieved will depend upon market conditions at the time of sale.

Competent Person Statement

The information in this report that relate to Exploration Information and Mineral Resources are based on information compiled by Ian Levy who is a member of The Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Mr Levy is a qualified geologist and a director of ABx Group Limited.

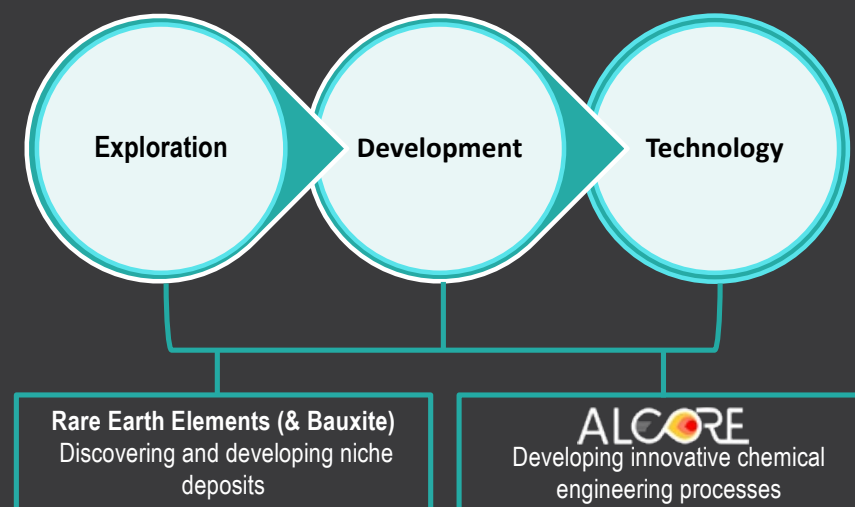
Mr Levy has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Levy has consented in writing to the inclusion in this report of the Exploration Information in the form and context in which it appears.

Delivering materials for a cleaner future

- Discovering and developing an ionic adsorption clay rare earth project in northern Tasmania
- Establishing a plant to produce hydrogen fluoride and aluminium fluoride from recycled industrial waste, to replace imports (ALCORE)

Legacy business

- Mining and enhancing bauxite resources for the cement, aluminium and fertiliser industries



Corporate Overview

ASX code: ABX

Listed	Issued shares	Options	52-week range	Average daily volume (3 months)	Market cap (@\$0.07)	Cash @ 27 Oct 2023	Shareholders
24 Dec 2009 @ \$0.20	242.3m	11.0m	\$0.07- \$0.16	170,000	\$17m	\$6.5m	2,527

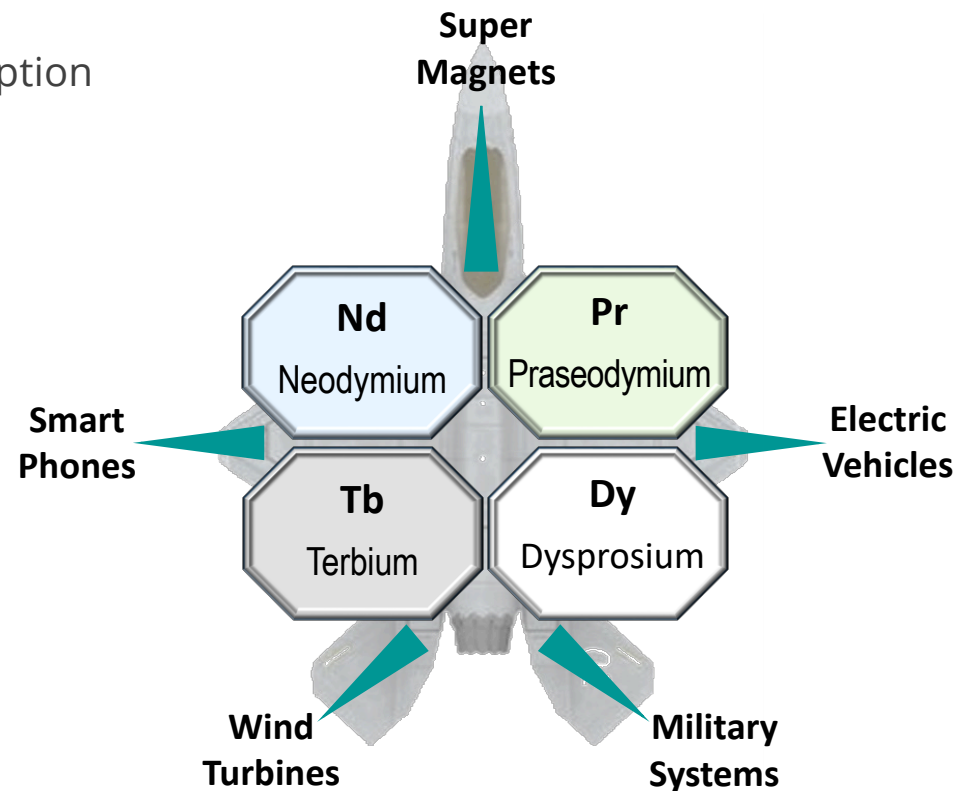
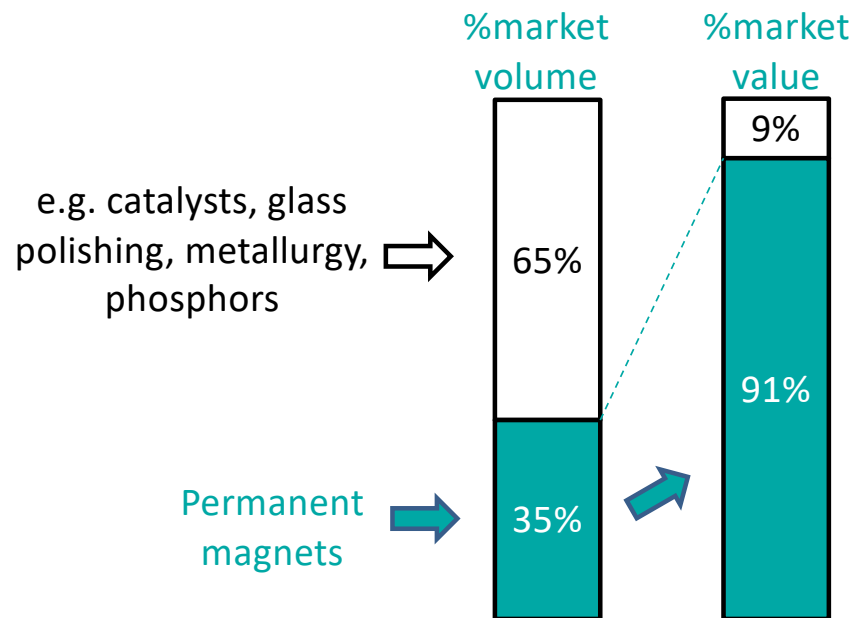
Major Shareholders	Shares	%
Peter Palan and Clare Palan	9.2 m	3.8
Afron Pty Ltd	7.2 m	3.0
Shareholders Mutual Alliance	7.0 m	2.9
Justevian Pty Ltd	5.8 m	2.4
Yarraandoo Pty Ltd	5.6 m	2.3
HSBC Custody Nominees	5.6 m	2.3
Top 20 shareholders	73.0 m	30.1
Remainder	169.4 m	69.9



Resources: 27 million tonnes rare earths and 130 million tonnes bauxite

Permanent magnet rare earths (PREE)

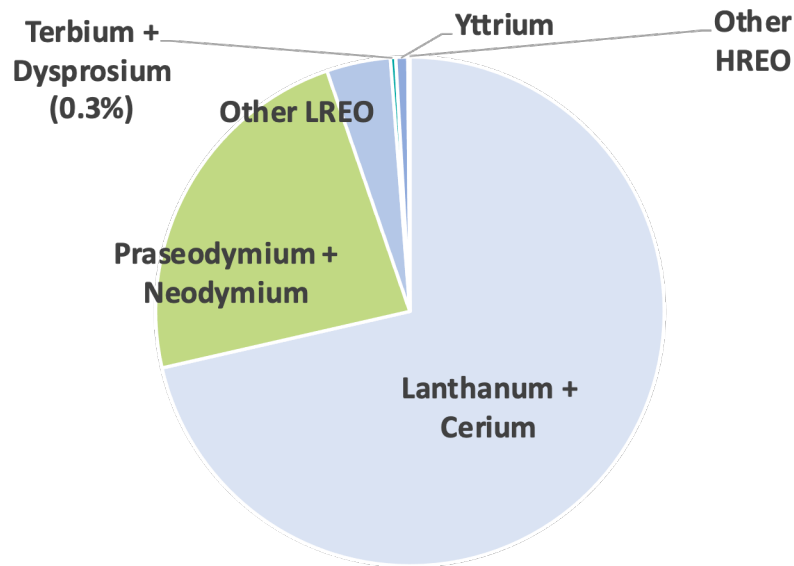
- Essential for electric vehicles and wind turbines
- Represent over 90% of value of rare earths consumption
- Forecast to grow at 7% per year to 2040



Source: Rare Earth Industry Association (<https://www.global-reia.org/about-rare-earth/>)

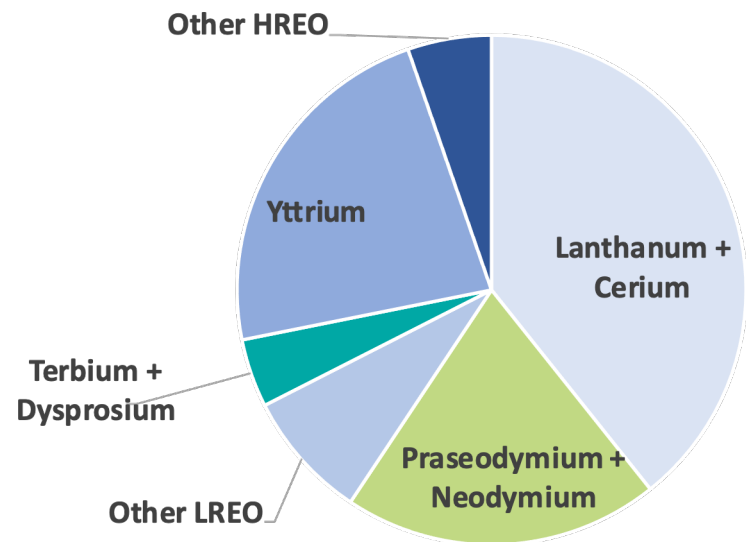
Character of a clay-hosted rare earth deposit

- Exist on a spectrum from 'REE mineral'-clay mixtures to REE-ions adsorbed on/in clays
- Higher contained value than most hard rock deposits due to high (relative) heavy rare earth content



Hard rock: Mount Weld (Lynas)

Source: D.J. Packey and D. Kingsnorth, Resources Policy, 48(2016) 112-116



Deep Leads 

Source: ABX ASX Release, 18 July 2023

Requirements for an ionic clay rare earth project

Feature	Aspects
Mineral Resource	Size, grade, strip ratio, radionuclides
Process	Reagent consumption, yield, product quality
Infrastructure	Transport, energy, water
Jurisdiction	Regulatory approval, community support, government support, supply chain security
Resources	People, finance, intellectual property, partnerships

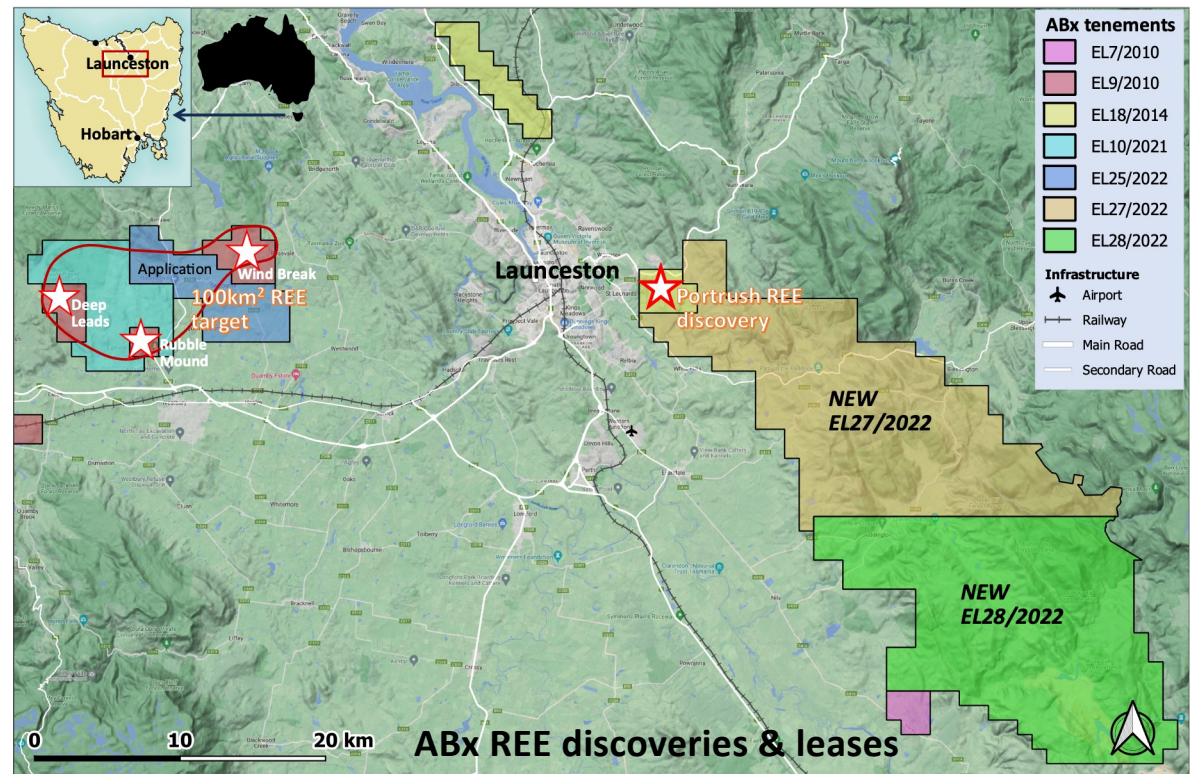
ABx rare earth discoveries in Tasmania

ABx is the first company to discover rare earths in Tasmania

- Four discoveries spanning 100 km² ⁽¹⁾
- Newly granted tenements add >482 km² ⁽²⁾

¹ Source: ABX ASX Release, 16 March 2022

² Source: ABX ASX Release, 26 September 2023



Source: ABX ASX Release, 27 September 2023

Rare Earths Resource Estimate

- Most recent upgrade announced 18 July 2023¹
- Six-fold increase since maiden estimate in November 2022²

Size	Cut-off (ppm TREO-CeO ₂)	Mean TREO (ppm)	Mean TREO-CeO ₂ (ppm)	DyTb ⁴ (%TREO)
27 Mt ³	250	803	603	4.3%

Holes drilled	Metres drilled (m)	Metres assayed (m)	From (m)	To (m)
681	6,728	3,145	4.5	12.1

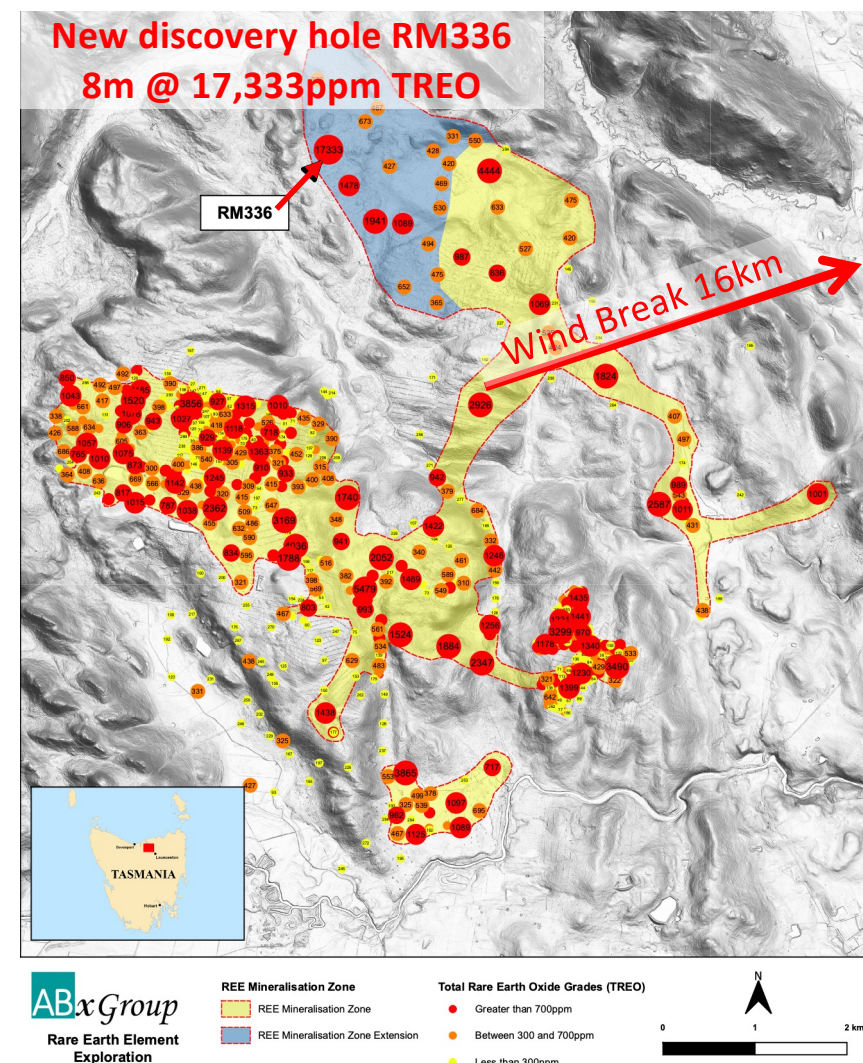
Resource based on only 22% of current estimated mineralised area

¹ABX ASX Release, 18 July 2023

²ABX ASX Release, 23 November 2022

³24 Mt inferred and 4 Mt indicated

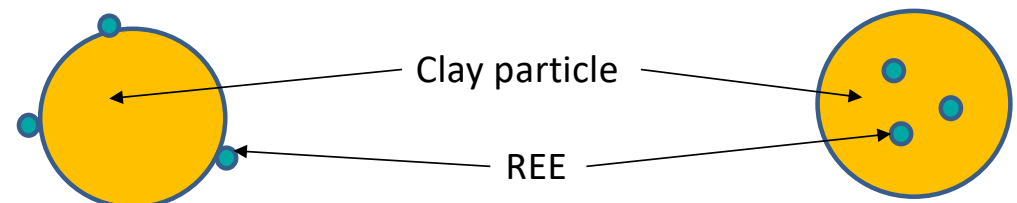
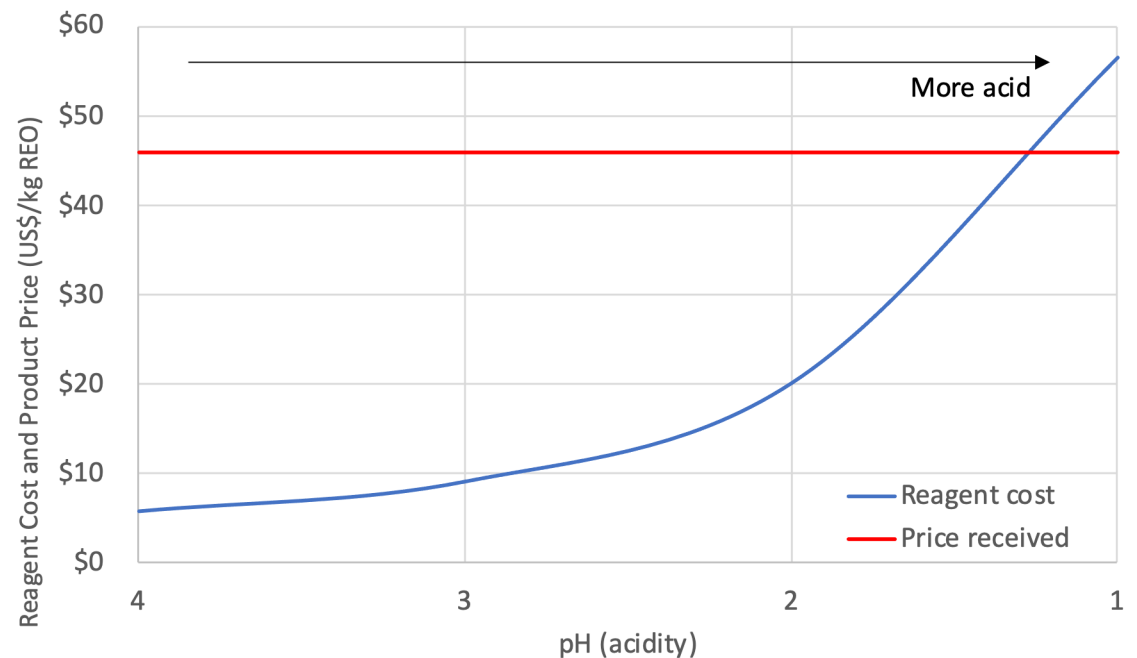
⁴DyTb = Dy₂O₃ + Tb₄O₇



Not all clays are created equal pH is king

- Charts shows indicative reagent cost and product prices, based on published data
- As pH decreases, reagent cost alone can be higher than product price

- Position on cost curve heavily dependent on pH required to achieve significant extraction
- There is a threshold pH below which the production cost is likely to be higher than revenue



Infrastructure

Transport

- <20 km to major highway
- <100 km to deepwater Bell Bay port

Labour

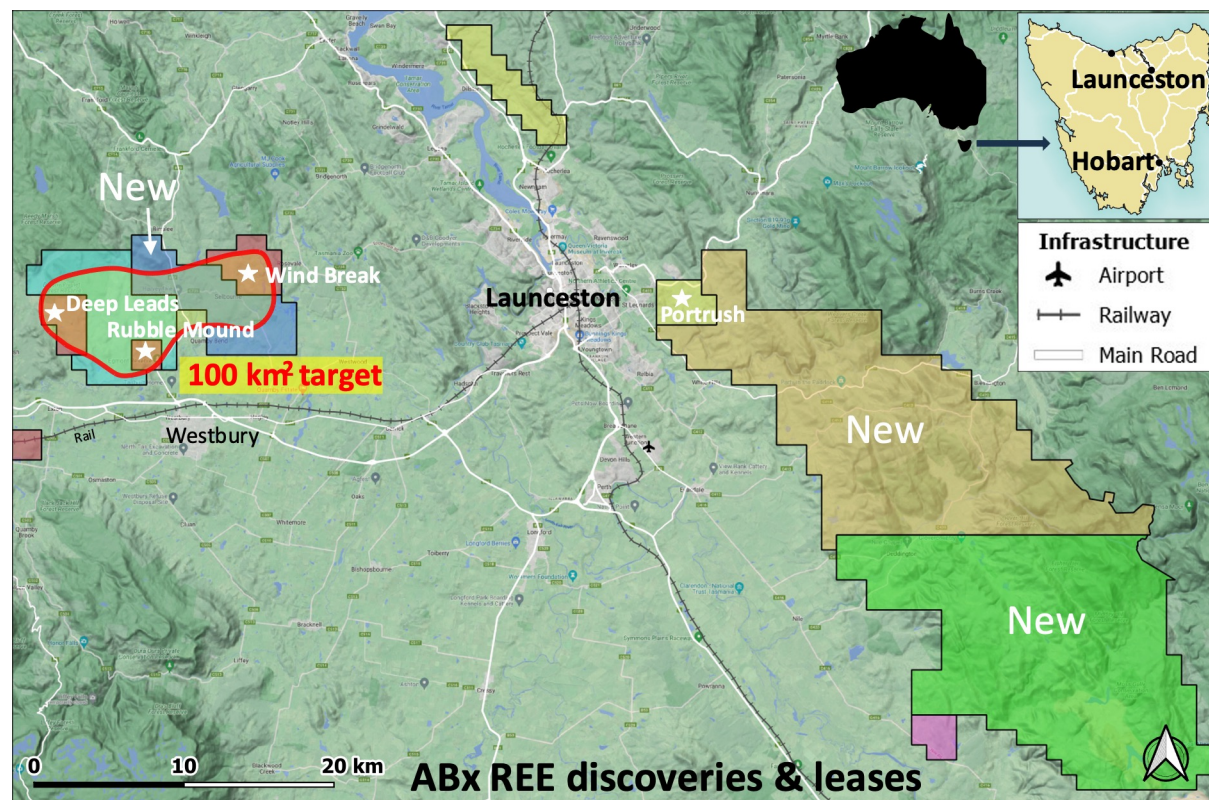
- <50 km to Launceston (pop 65,000)

Water

- High availability in Tasmania

Energy

- Close to major transmission lines



Jurisdiction

Australia

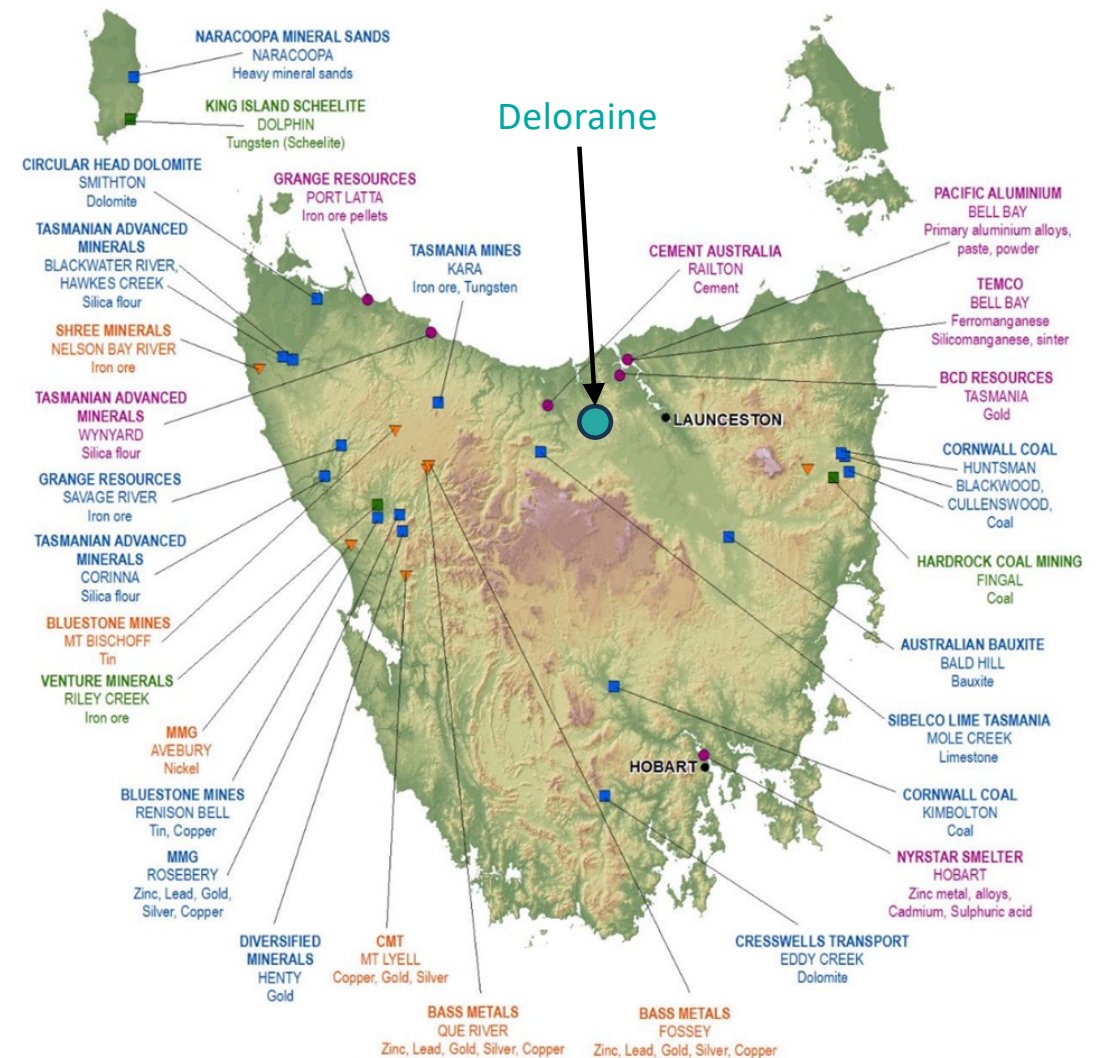
- NATO partner
- Major mining jurisdiction

Tasmania

- Extensive mining history: tin, copper, zinc, lead, gold
- Supportive regulatory environment

Deloraine region

- Mostly commercial forest plantations



Resources People

- High calibre geologists and engineers, with experience in resource development, process development, and production
- ABx active in Tasmania since 2010
 - Excellent reputation with landholders, regulators and government
 - Mined bauxite 2015 to 2020, now fully rehabilitated
 - Mine lease application in progress for second bauxite mine

Ian Levy (geology)



- 30 years of senior management and geological experience with multiple commodities, including at WMC
- Previously CEO of Allegiance Mining and Director of Gloucester Coal
- Member of JORC for 11 years (4 years as Vice Chairman) and Federal President, Australian Institute of Geoscientists

Dr Mark Cooksey (chemical engineering)



- More than 20 years with Rio Tinto and CSIRO
- Significant experience in developing and commercialising new processes in minerals and metals industry
- PhD in Chemical & Materials Engineering

Dr Daniel Jewell (chemical engineering)



- 15 years in senior technical roles including at the University of Cambridge, CSIRO, and in industry
- Strong focus on extractive scale-up technologies for metal production for titanium, magnesium, & lithium
- PhD in Chemical Engineering

Requirements for an ionic clay rare earth project

ABx strengths

Feature	ABx
Mineral Resource	• 27 Mt with good prospects for growth • 800 ppm TREO with high proportion of DyTb • Low strip ratio
Process	• pH 4: low cost
Infrastructure	• Close to all major infrastructure, with good access to water
Jurisdiction	• Mining-friendly region, in NATO partner country
Resources	• High calibre people, with strong partnerships

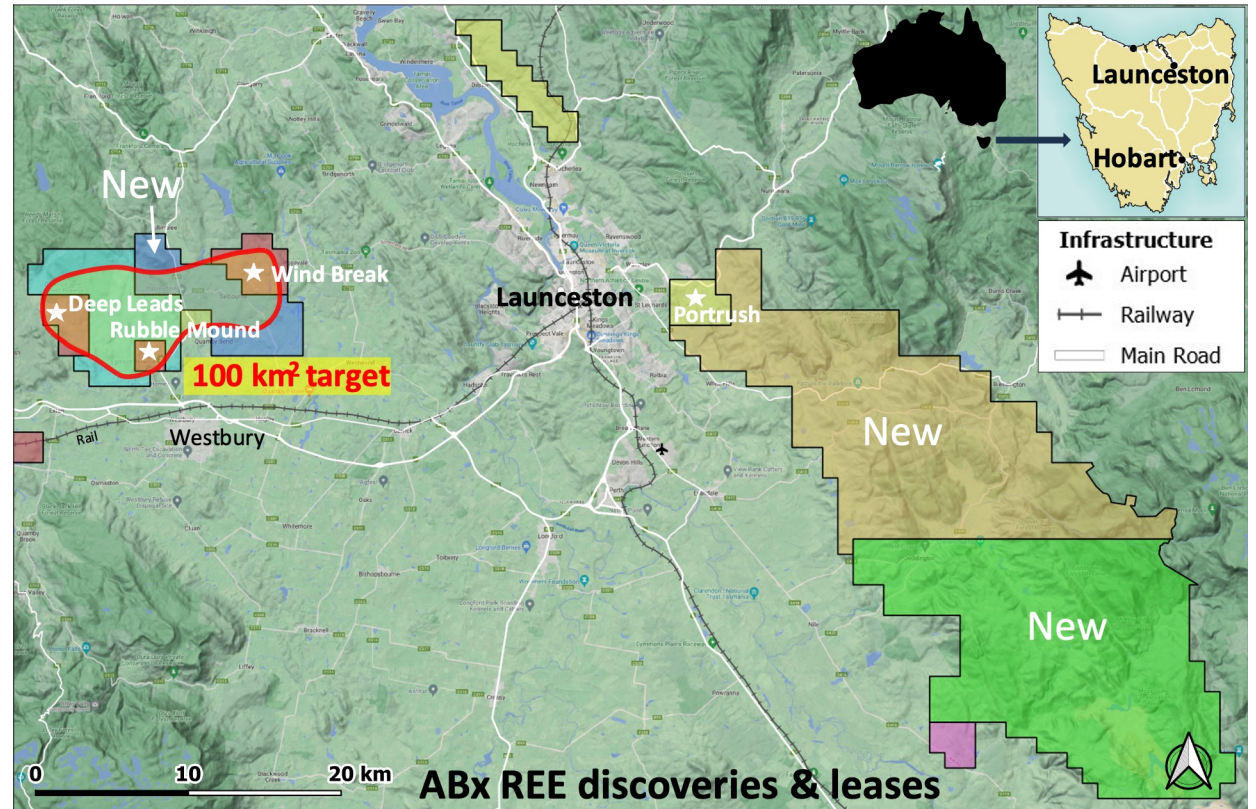
ABx rare earths strategy

Strategy

- Rapidly develop low-cost production of mixed rare earth carbonate
- We operate only where welcomed

Plan

- Deepen engagement with potential customers
- Further drilling campaigns
- Further investigations of metallurgical processing steps and conditions
- Estimate CAPEX and OPEX
- Enhance ABx's exploration technology to find more rare earths





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