



(ASX:ABX)

Ionic Adsorption Clay Rare Earths in Tasmania

Noosa Mining Investor Conference

Mark Cooksey

Managing Director and CEO

19 July 2023



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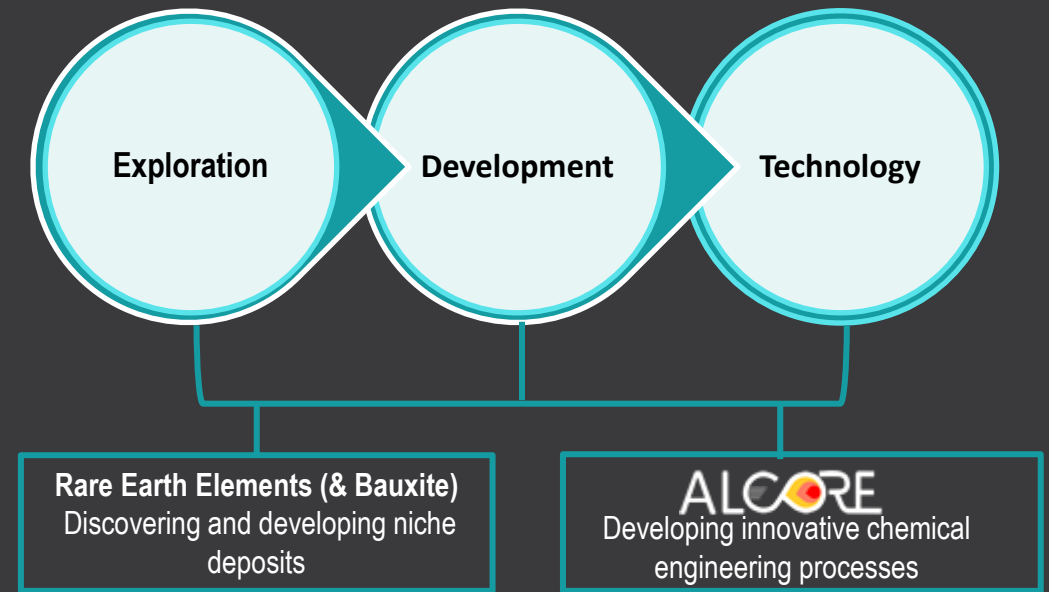
Competent Person Statement

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

1. Discovering and developing an ionic adsorption clay rare earth project in northern Tasmania
2. Establishing a plant to produce hydrogen fluoride and aluminium fluoride from recycled industrial waste, to replace imports (ALCORE)
3. Mining and enhancing bauxite resources for the cement, aluminium and fertiliser industries



Board of Directors

Hon Paul Lennon AO (Chair)



- Premier of Tasmania 2004-2008
- Deputy Premier and Minister for Infrastructure, Energy & Resources 1998-2004
- Principal Paramul Pty Ltd 2009-

Dr Mark Cooksey (Managing Director and CEO)



- More than 20 years with Rio Tinto and CSIRO
- Worked closely with aluminium and other metal industries
- Significant experience in commercialising new technologies and processes
- PhD in Chemical & Materials Engineering

Ian Levy (Director)



- 30 years of senior management and geological experience with multiple commodities, including at WMC and Pancontinental Mining
- 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

Ken Boundy (Non-Executive Director)



- 20 years leading companies and divisions in wine, food, building materials and tourism industries
- Chair and Non-Executive on 21 private and public boards
- Executive experience in corporate development, M&A and marketing

Corporate Overview

ASX code: **ABX**

Listed	Issued shares	Options	52-week range	Average daily volume (3 months)	Market cap (@\$0.10)	Cash @ 17 July 2023	Shareholders
24 Dec 2009 @ \$0.20	223.6m	1.6m	\$0.10- \$0.18	139,000	\$22m	\$5.5m	2,529

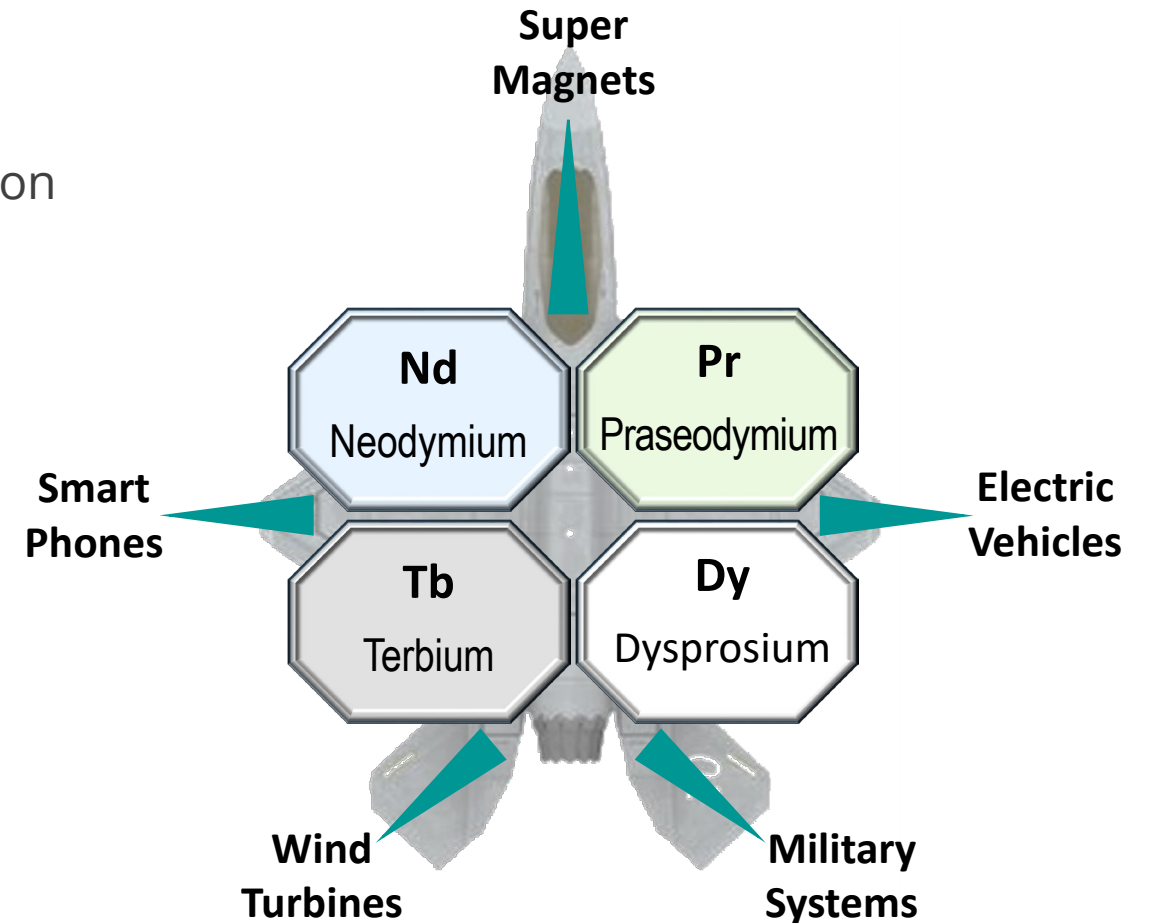
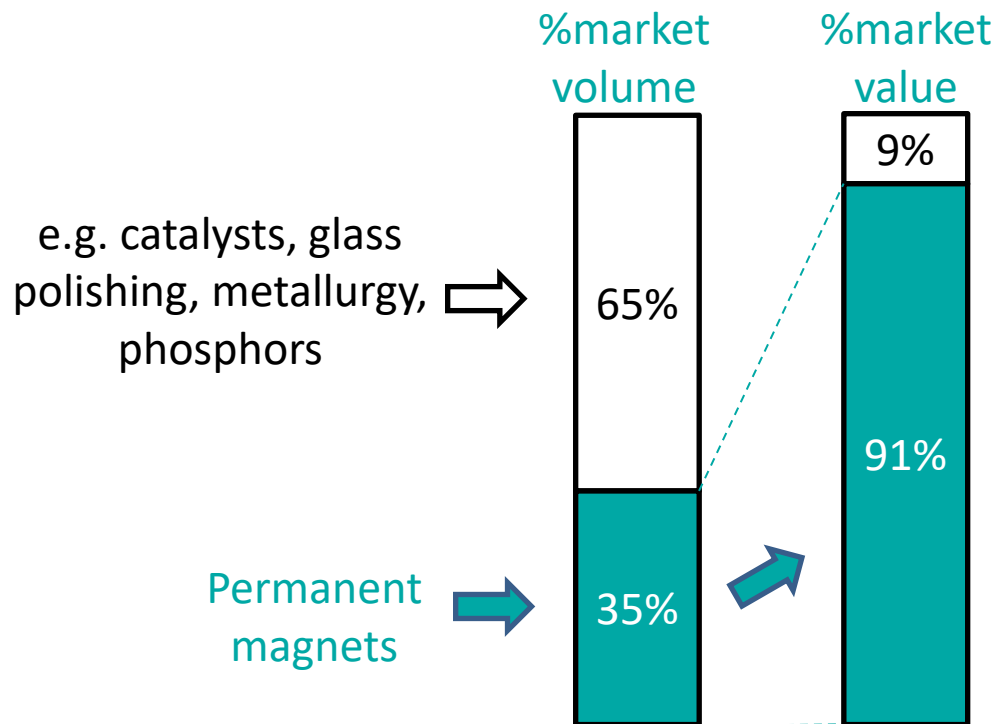
Major Shareholders	Shares	%
Shareholders Mutual Alliance	7.0 m	3.1
HSBC Custody Nominees	5.9 m	2.6
Justevian Pty Ltd	5.8 m	2.6
Afron Pty Ltd	5.7 m	2.5
Yarraandoo Pty Ltd	5.6 m	2.5
Peter Palan and Clare Palan	4.8 m	2.2
Top 20 shareholders	64.1 m	28.6
Remainder	159.5 m	71.4



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

Permanent magnets

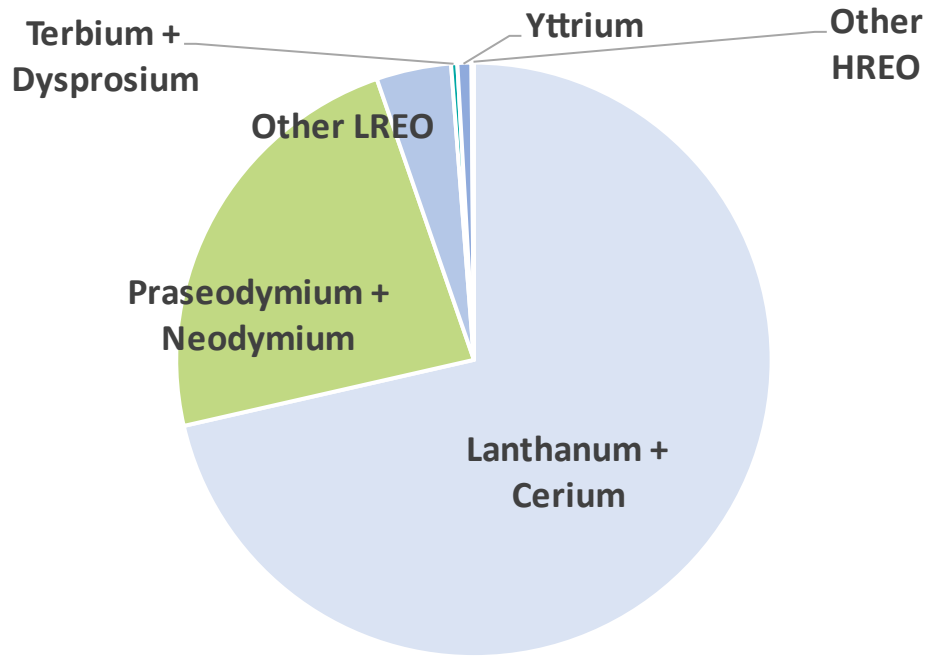
- Essential for electric vehicles and wind turbines
- Represent over 90% of value of rare earths consumption
- Forecast to grow at 7% per year to 2040



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

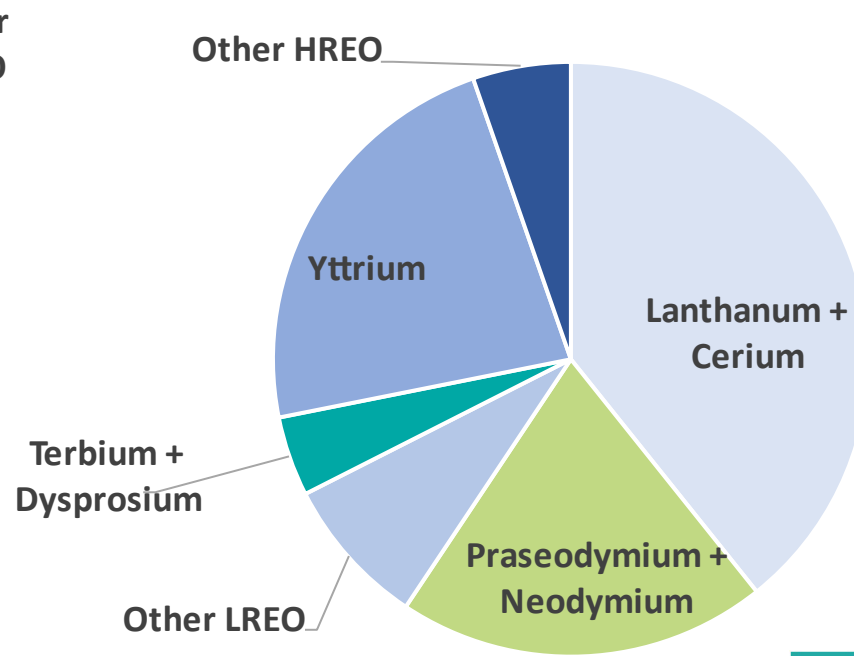
Ionic adsorption clay (IAC) rare earth deposits

- Currently only mined in southern China
- Less complex processing: lower costs and shorter time to production
- Contain much higher proportion of higher value, heavy rare earths



Hard rock: Mount Weld (Lynas)

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



Ionic clay: Deep Leads **ABx Group**

Source: ABX ASX Release, 18 July 2023

• 98% of world's Dy comes from ionic clay projects in China

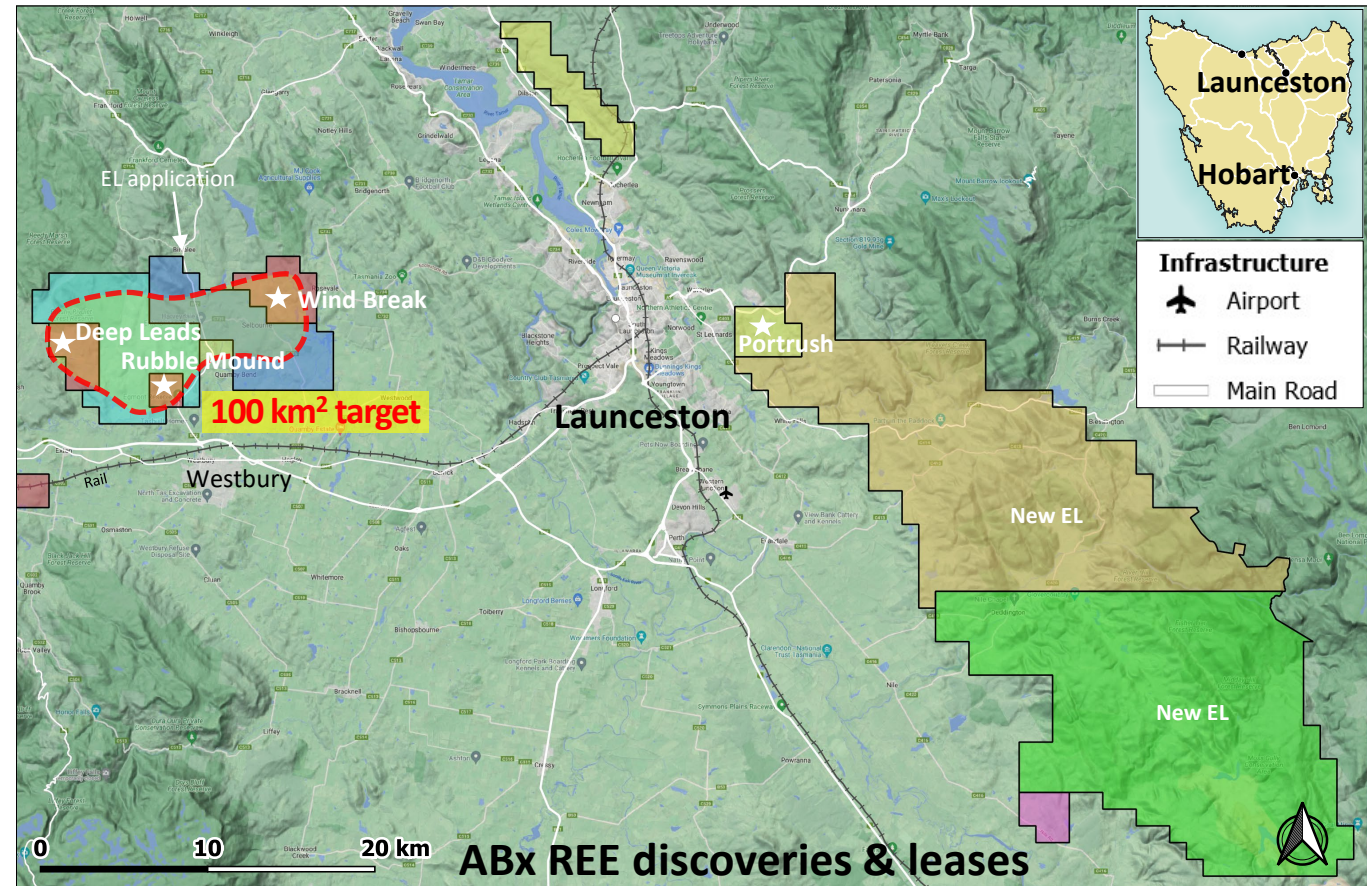
ABx rare earth discoveries in Tasmania

- ABx is the first company to discover rare earths in Tasmania
- Deep Leads and Rubble Mound have **highest reported extractions from any clay-hosted REE prospect in Australia:** they are ionic adsorption clays¹

- Four discoveries spanning 52 km ⁽²⁾
- Very low levels of radioactive elements (thorium and uranium)

¹Source: ABX ASX Release, 2 February 2023

²Source: ABX ASX Release, 16 March 2022



Source: ABX ASX Release, 18 July 2023

Rare Earths Resource Estimate

- 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)
27 Mt ⁽³⁾	250	803	603

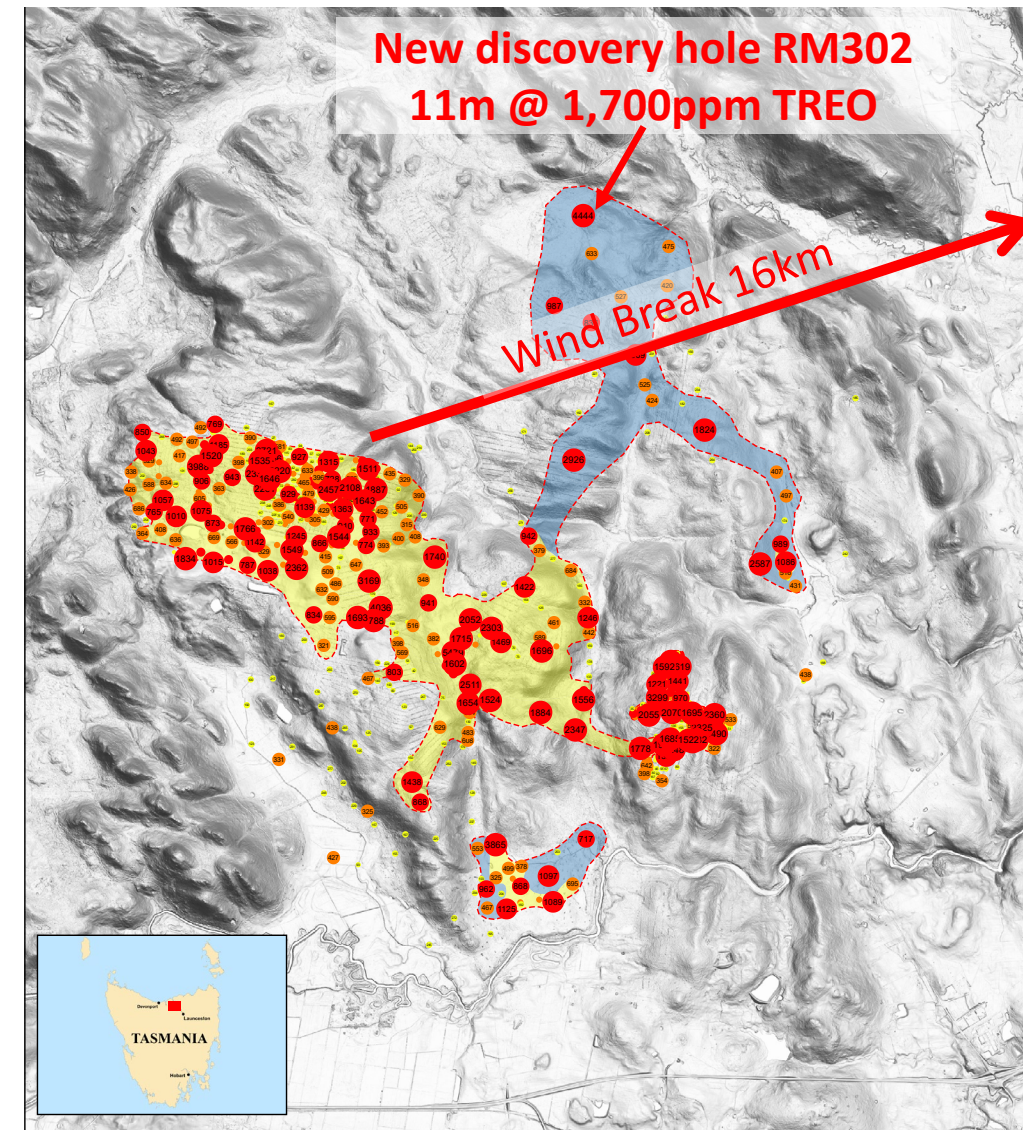
Holes drilled	Metres drilled (m)	Metres assayed (m)	From (m)	To (m)
681	6,728	3,145	4.5	12.1

- Resource based on only 22% of current estimated mineralised area

¹Source: ABX ASX Release, 18 July 2023

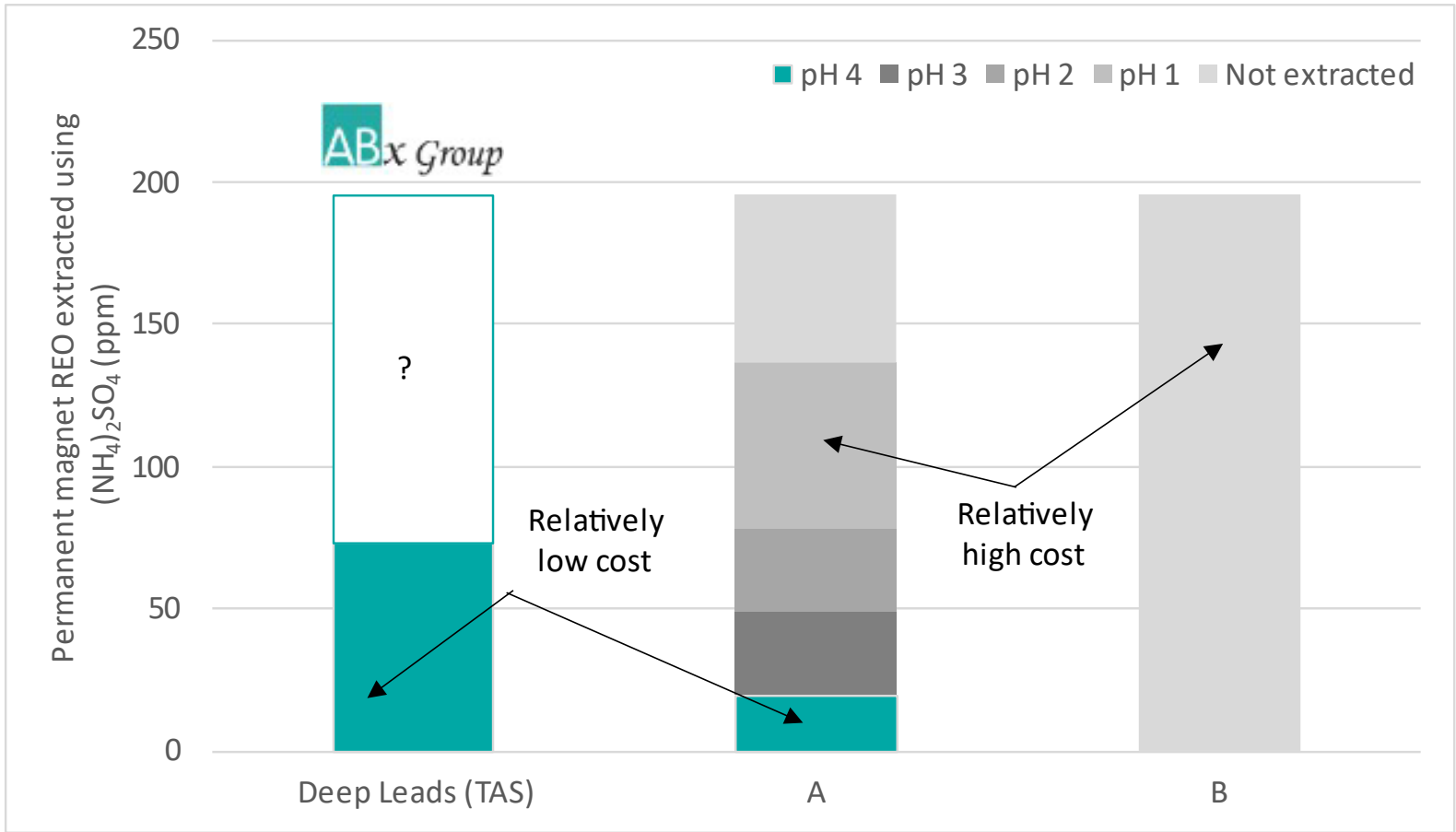
²Source: ABX ASX Release, 23 November 2022

³24 Mt inferred and 4 Mt indicated



Not all clays are created equal

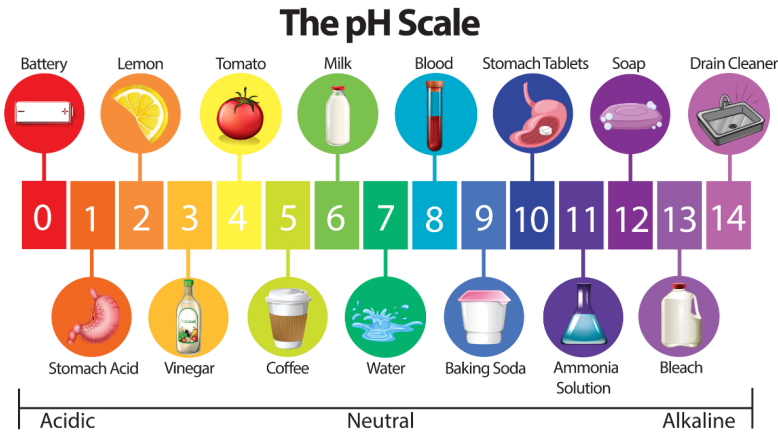
pH is king



Permanent magnet REO = $\text{Pr}_6\text{O}_{11} + \text{Nd}_2\text{O}_3 + \text{Tb}_4\text{O}_7 + \text{Dy}_2\text{O}_3$

Source: ABX ASX release, 2 February 2023

- Deposits A and B are hypothetical (same grade)
- Processing cost increases significantly as pH decreases
 - Acid consumption
 - Impurity removal

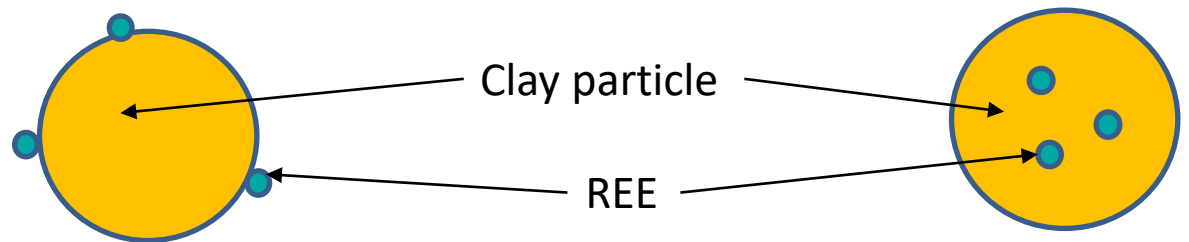
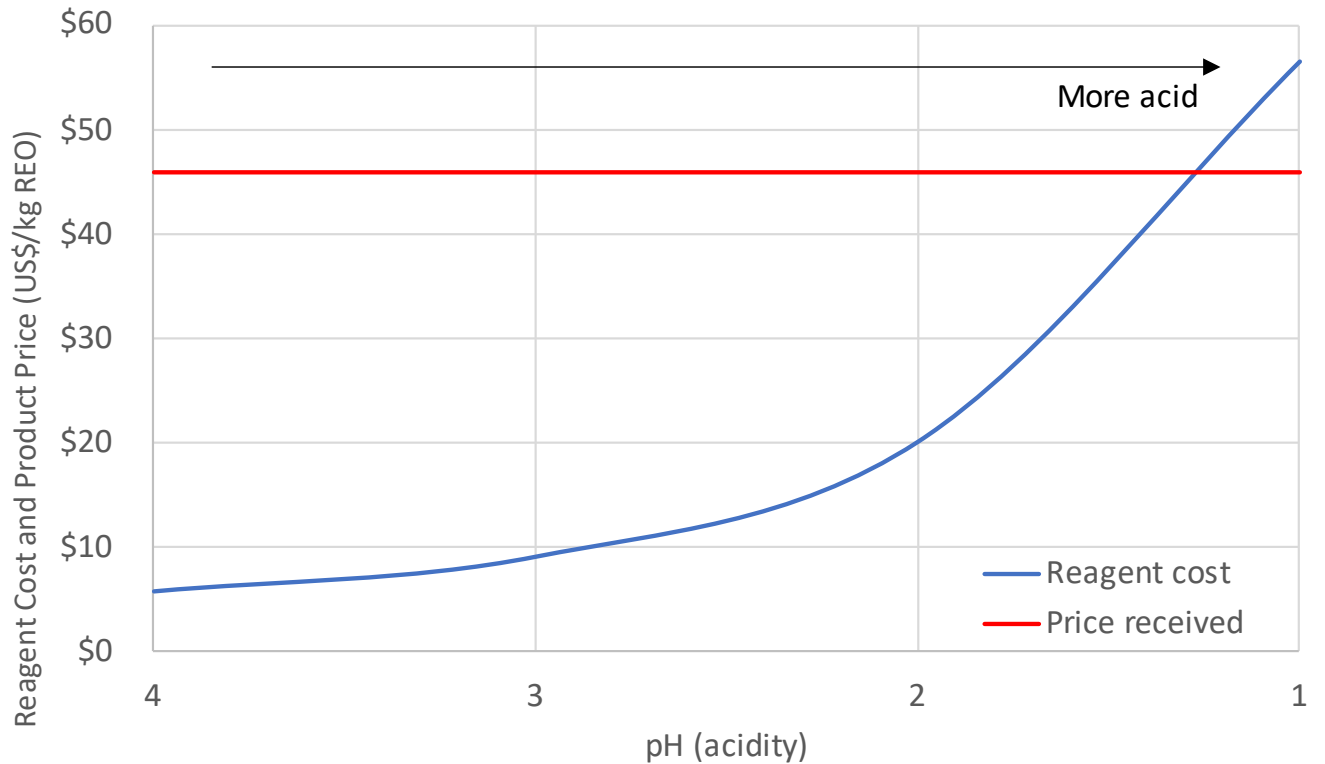


Not all clays are created equal

pH is king

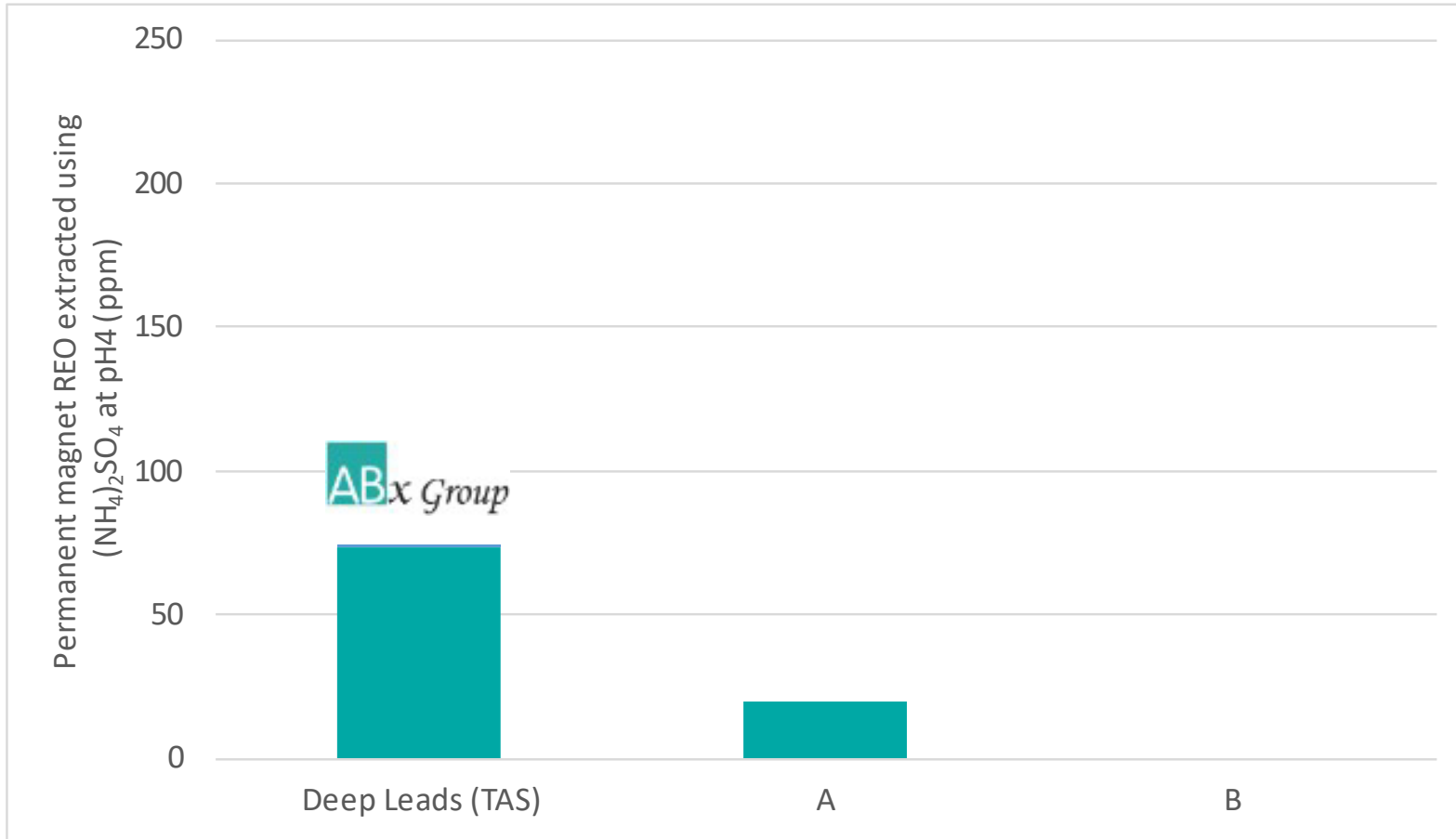
- Charts shows indicative reagent cost and product prices, based on published data
- As pH decreases, reagent cost alone can be higher than product price

- 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



Not all clays are created equal

'Desorbable grade' varies enormously



Permanent magnet REO = Pr_6O_{11} + Nd_2O_3 + Tb_4O_7 + Dy_2O_3

- Deep Leads has the highest 'desorbable grade' (REE extractable at pH 4)

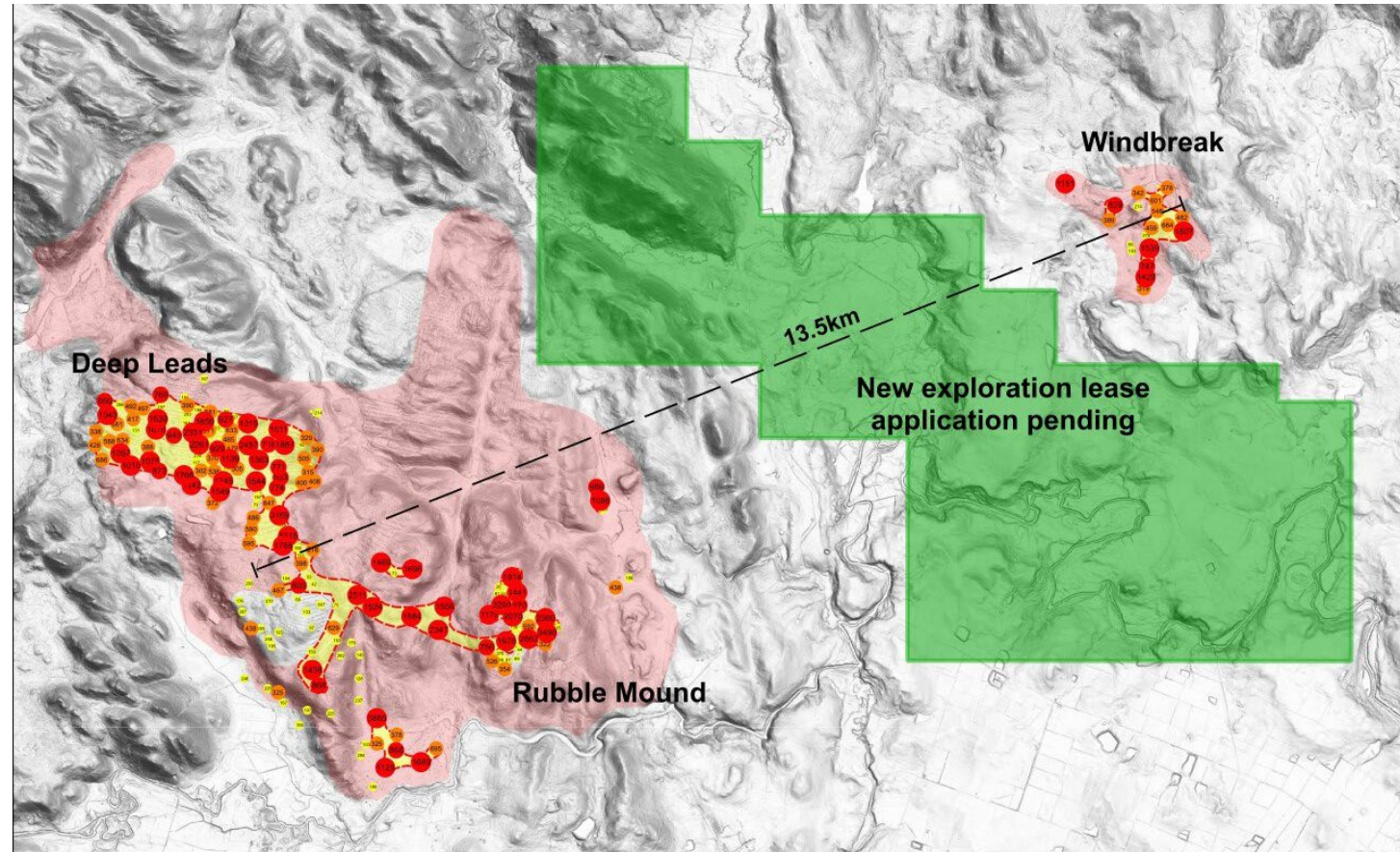
ABx rare earths strategy

Strategy

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

2023 Plan

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





ABx Group Limited

L5 52 Phillip Street
Sydney 2000
Australia

Phone: +61 2 9251 7177

E: corporate@abxgroup.com.au

Mark Cooksey

Managing Director and CEO

E: mcooksey@abxgroup.com.au