

## **CEO Presentation at Sydney Resources Round-Up**

In accordance with the requirements of Listing Rule 3.1 we submit the attached material being presented at the Sydney Resources Round-Up being held at the Hyatt Regency Sydney, 161 Sussex Street, Sydney.

Dr Mark Cooksey, CEO is making the presentation at 2:45pm AEST on Wednesday 4 May 2022 in the Fresh Auditorium.

Shareholders and the public are welcome to attend our presentation.

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ASX Release authorised by Mark Cooksey, CEO



(ASX:ABX)

# Sydney Resources Round-Up

Mark Cooksey, CEO

4 May 2022



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Prices for aluminium fluoride (AlF<sub>3</sub>) 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.

# Corporate Overview

ASX code: **ABX**

Listed	Current Issued shares	Options	52 week range	Average daily volume	Market cap (@ \$0.18)	Cash @ 28 Apr '22	Shareholders
24 Dec 2009 @ \$0.20	223.6m	78.8m @ \$0.20	\$0.097-\$0.21	570,000	\$40.2m	\$5.3m	2,456

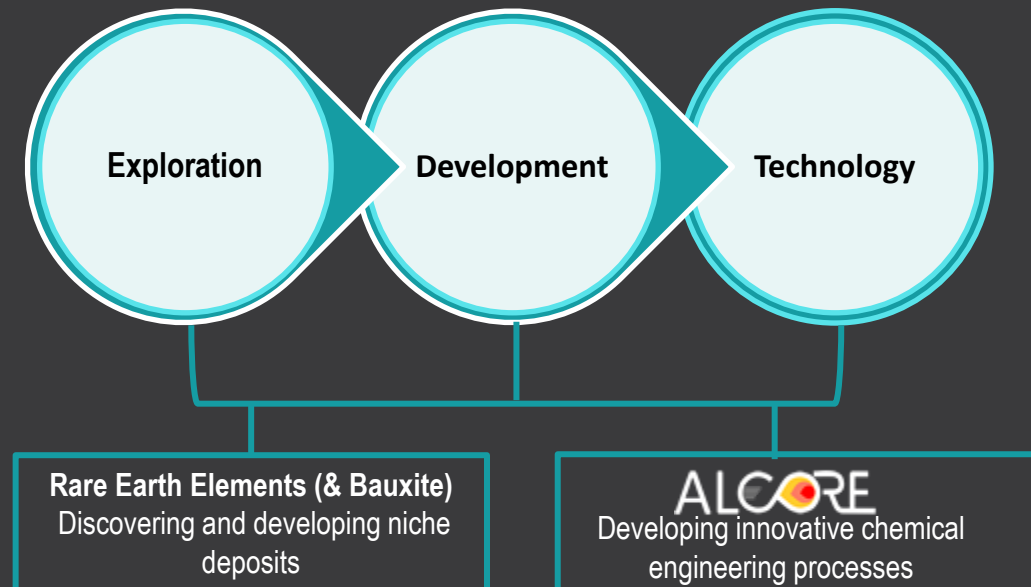
Major Shareholders	Shares	%
Justevian Pty Limited	5.8 m	2.6
HSBC Custody Nominees	5.7 m	2.6
Yarraandoo Pty Ltd	5.6 m	2.5
Afron Pty Ltd	5.4 m	2.4
Top 20 shareholders	60.1 m	26.9
Remainder	163.5 m	73.1



Resources: **130 million tonnes bauxite**

## Creating new sources and technologies for the supply of strategic minerals and chemicals:

1. Multiple discoveries of the ideal type of rare earth deposit in northern Tasmania
2. Production of aluminium fluoride, essential for aluminium smelting, from recycled waste
3. Mining and enhancing the value of bauxite resources for cement, aluminium and fertilisers.



# Segments



Rare earth discoveries in northern Tasmania



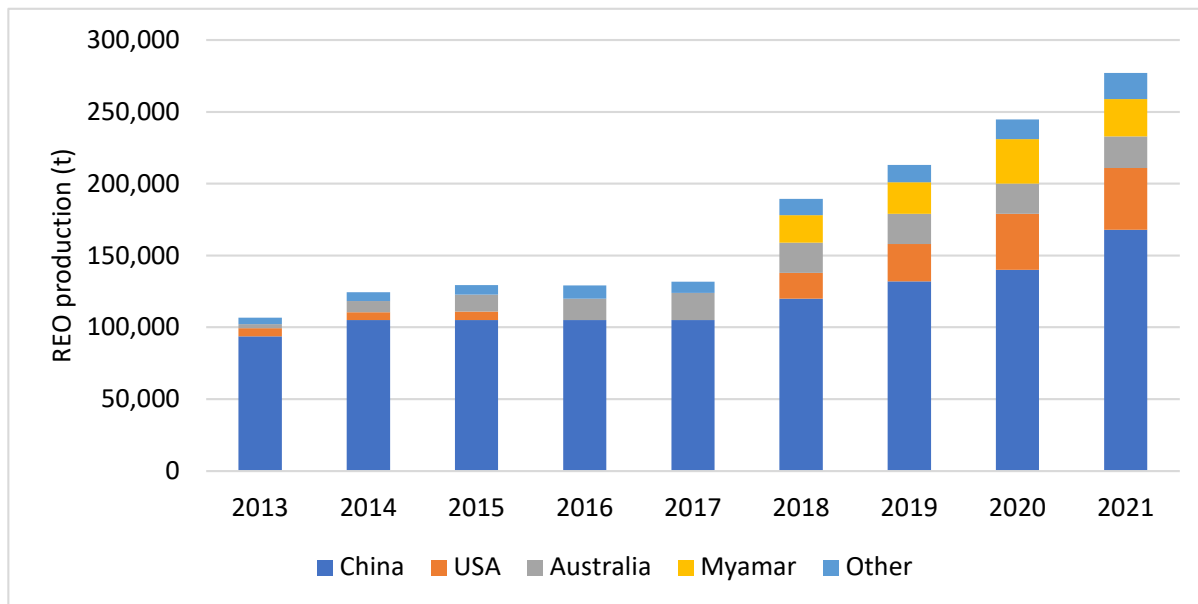
ALCORE Aluminium fluoride production technology



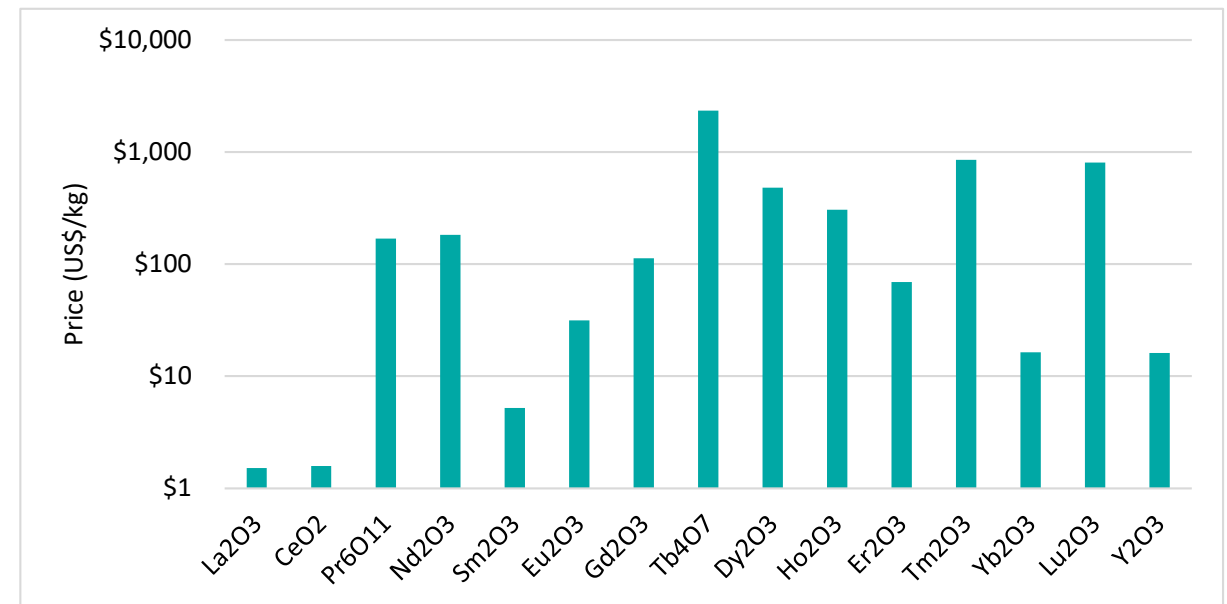
Bauxite operations in Queensland and Tasmania

# ABx's potential rare earth elements

- 15+ rare earth elements (REEs) used in wide variety of applications, with demand growing rapidly
- China dominates rare earths markets
- Prices of different rare earths vary significantly because:
  - Proportions of supply do not match proportions of demand
  - Rare earths difficult to substitute



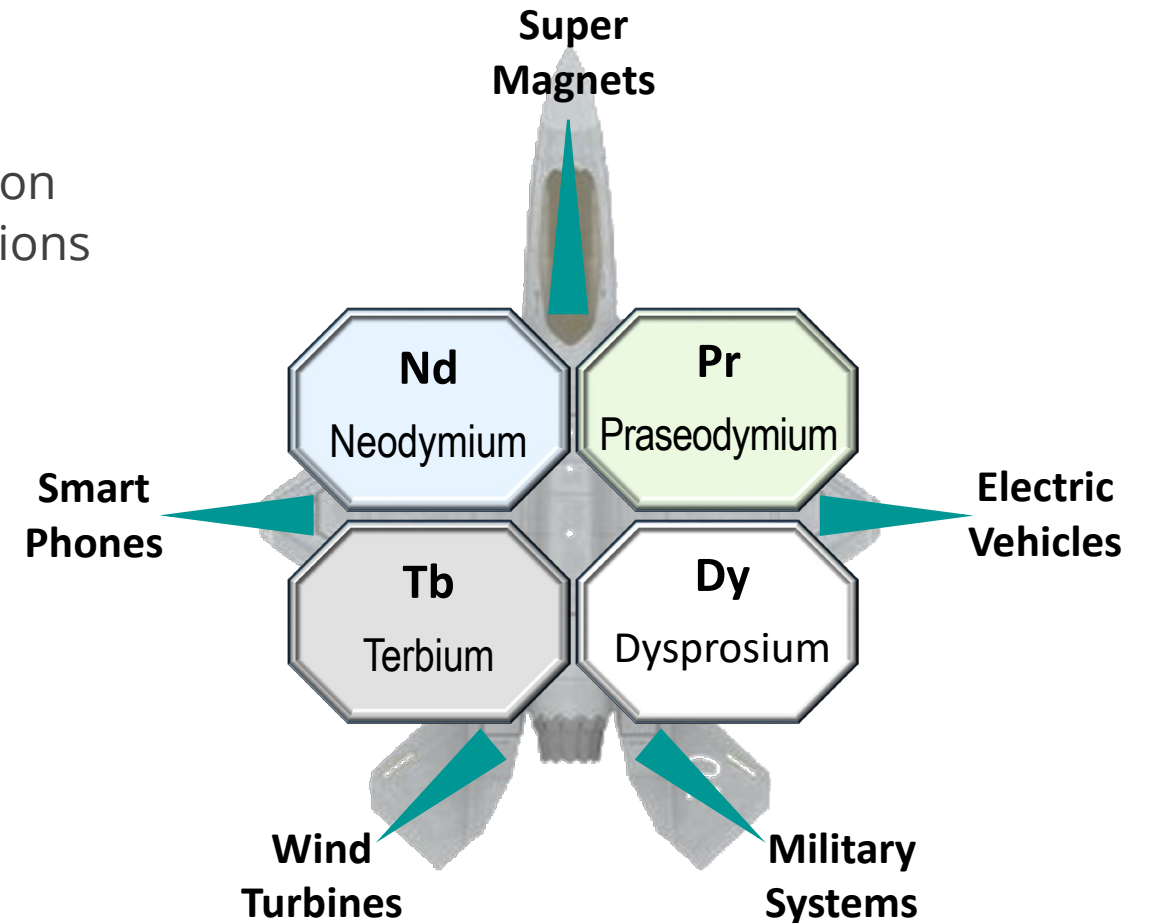
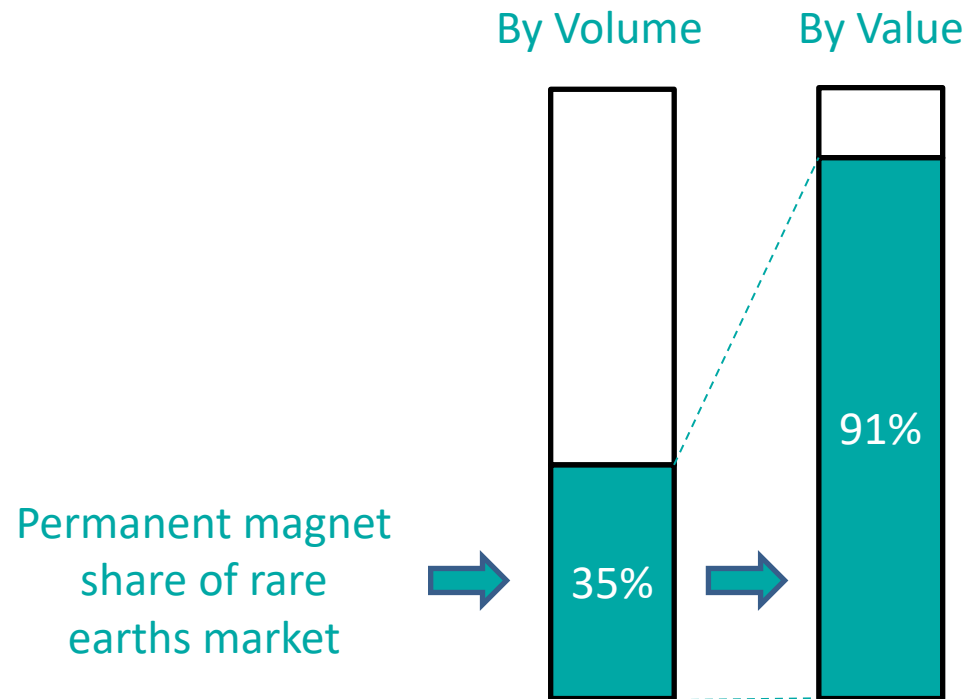
Source: USGS (excludes unregulated production in China)



Note: logarithmic scale

# Permanent magnets

- Essential for electric vehicles and wind turbines
- Represent over 90% of value of rare earths consumption
- Forecast to grow faster than other rare earth applications

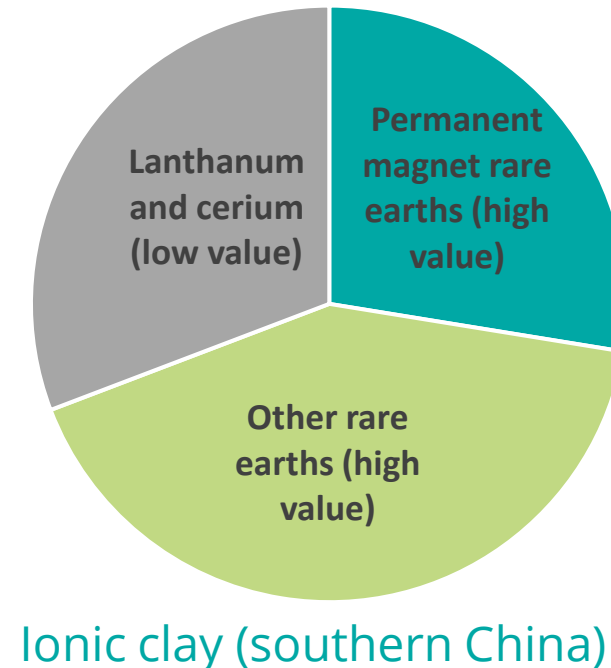
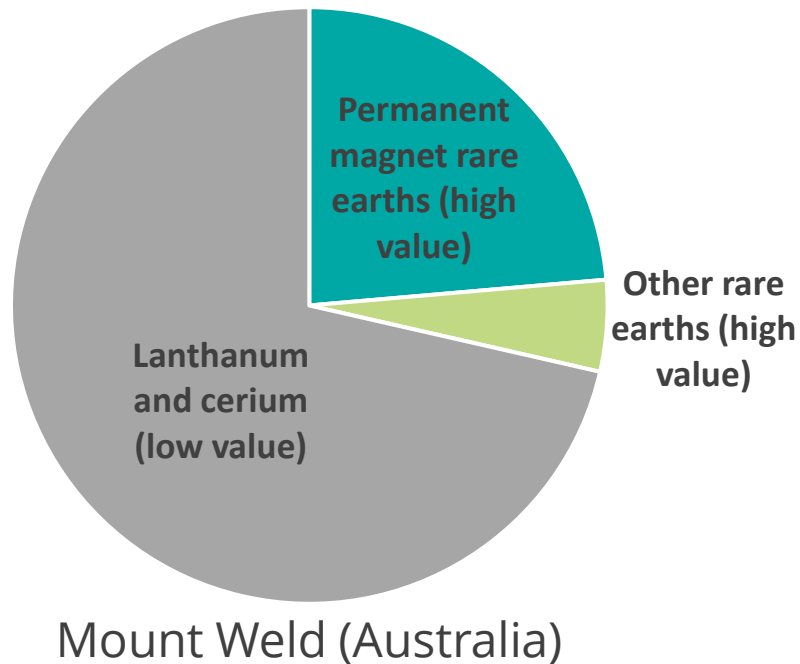


Source: Rare Earth Industry Association (<https://www.global-reia.org/about-rare-earth/>)



# Ionic absorption clay (IAC) rare earth deposits

- Currently only mined in southern China
- Contain much higher proportion of higher value rare earths, such as those required for permanent magnets (Nd, Pr, Dy, Tb)
- Less complex processing: lower costs and shorter time to production



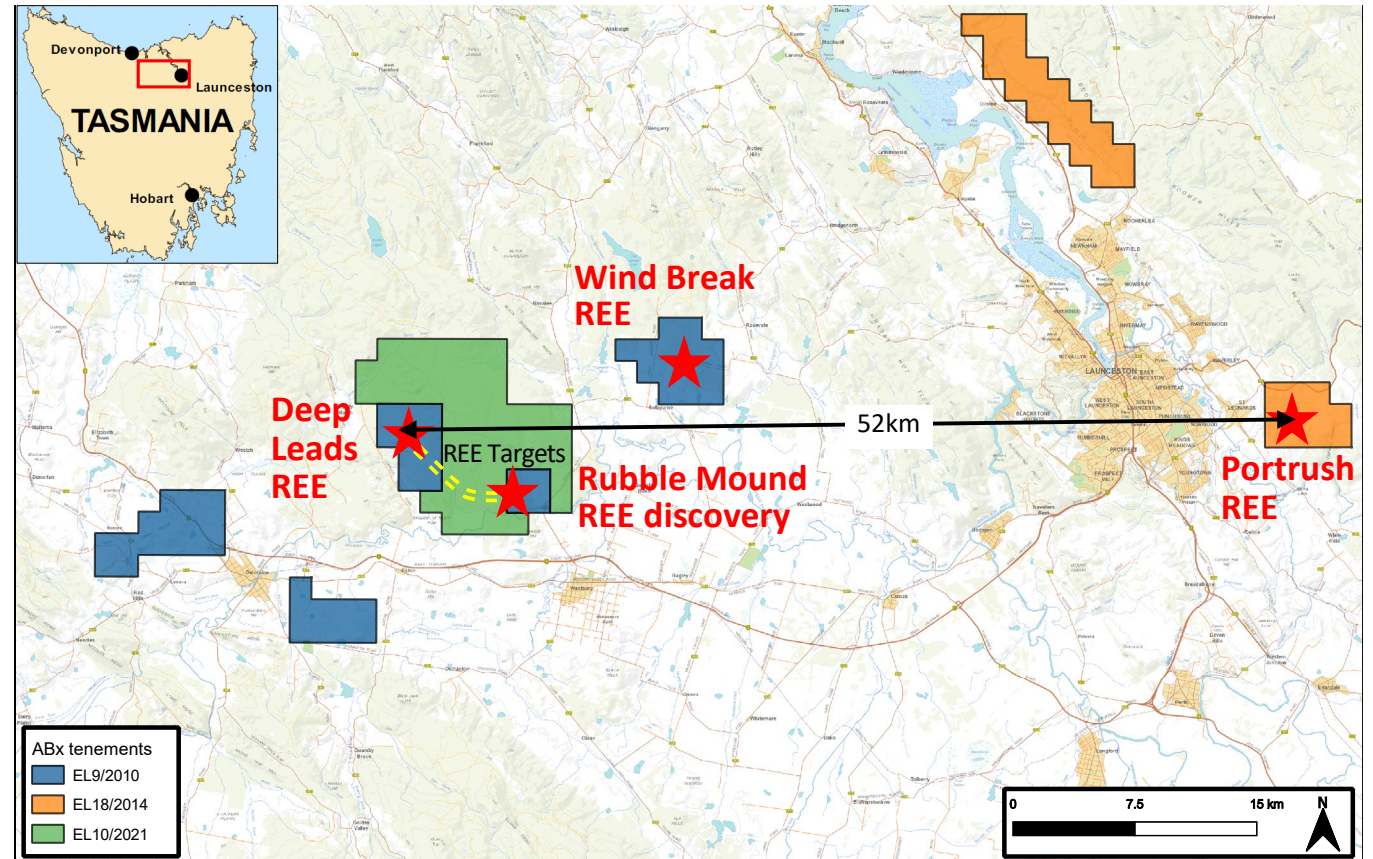
Source: D.J. Packey and D. Kingsnorth, Resources Policy, 48(2016) 112-116.

# ABx rare earth discoveries in Tasmania

- ABx is the first company to discover rare earths in Tasmania
- Four discoveries spanning 52 km

## Tick all the boxes

1. Rare earth deposits appear to be IAC type
2. Shallow depth, typically 6-16 metres from surface
3. Very low levels of radioactive elements (thorium and uranium)



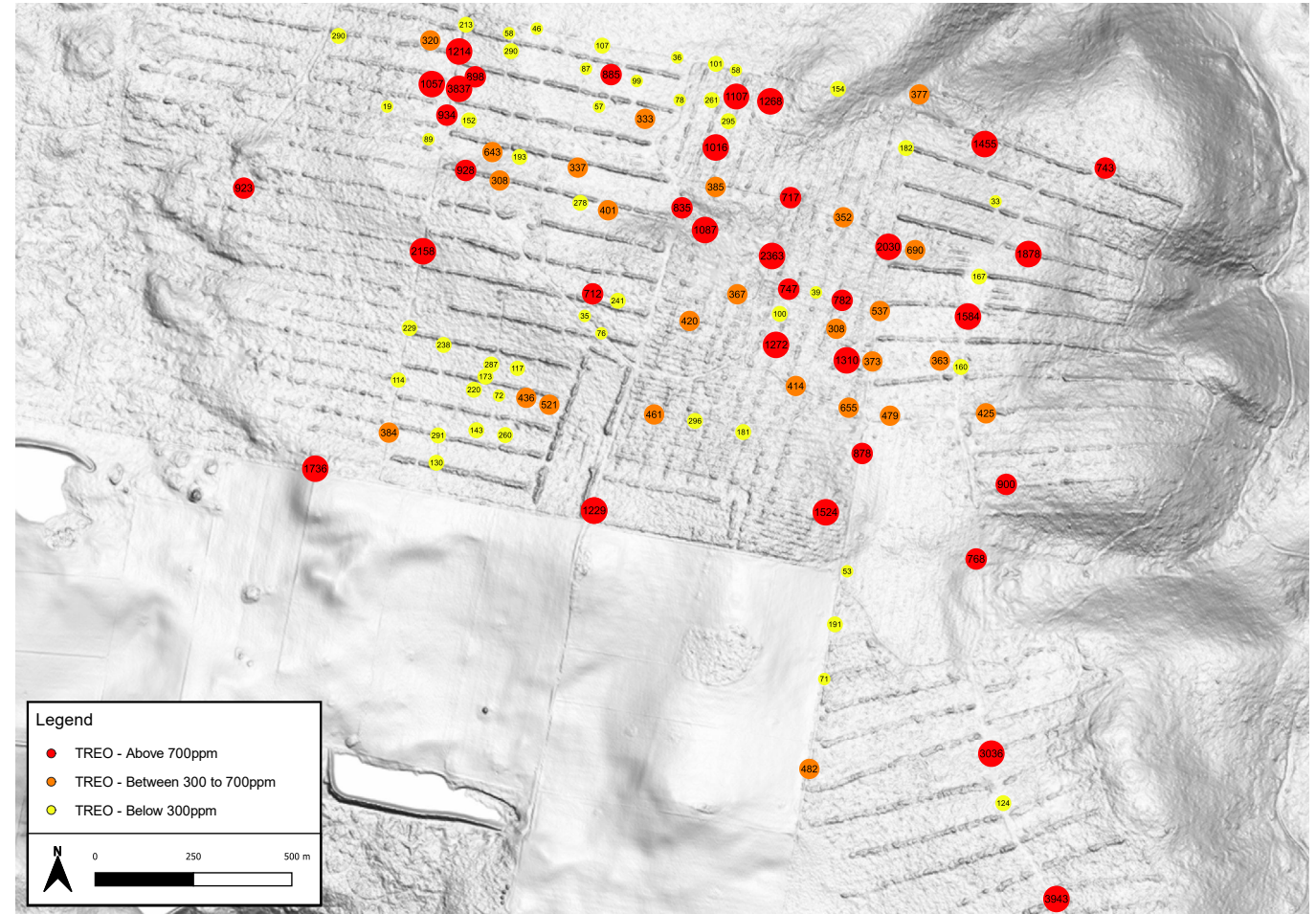
# ABx rare earths strategy

## Strategy

- Rapidly develop low-cost production of rare earth concentrates
- Operate only where welcomed

## 2022 Plan

- Metallurgical testing to determine recovery via leaching
- Further drilling campaigns in newly granted exploration licence EL10/2021
- Enhance ABx's exploration technology to find more rare earths
- Sample characterisation to understand clay mineralogy



# Segments



Rare earth discoveries in northern Tasmania



ALCORE Aluminium fluoride production technology



Bauxite operations in Queensland and Tasmania

# Aluminium fluoride from aluminium smelter waste

Aluminium fluoride ( $\text{AlF}_3$ ): essential for aluminium smelting

- 1.2 million tonnes produced globally per year worth US\$1.5 billion (US\$1,000-1,800 per tonne)
- 50% produced in China, mainly for Chinese smelters
- Australia imports 100% of requirements, mostly from China



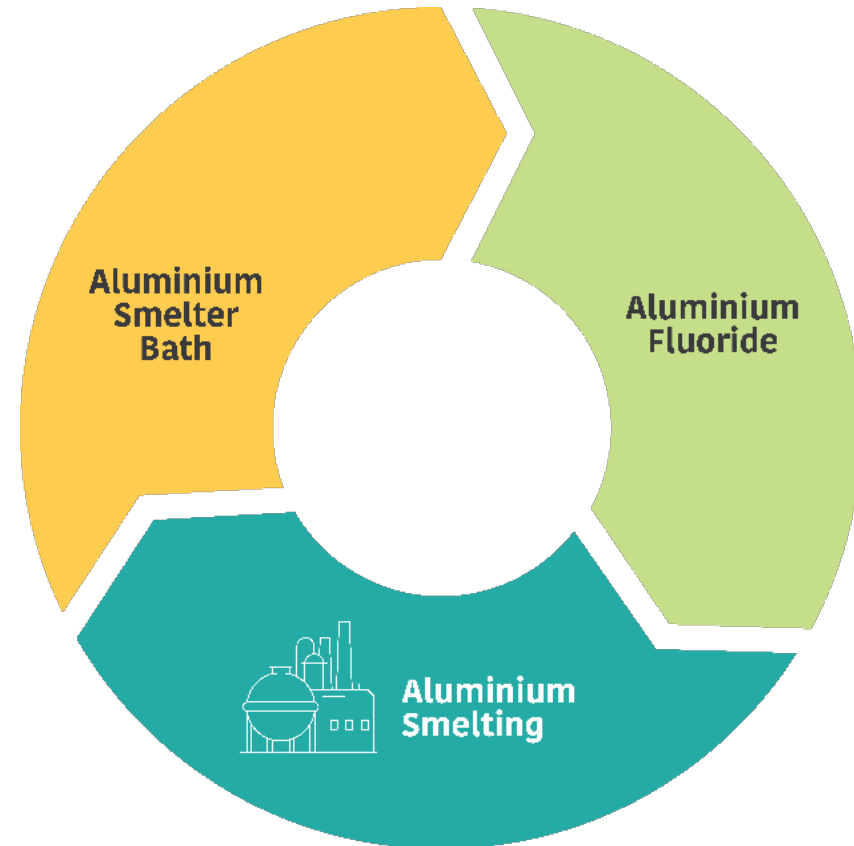
- Traditionally produced from high-cost aluminium hydroxide and fluorspar
- Achievable specification – product purity risk is low
- Mature market – dozens of customers globally

‘Tapped bath’: aluminium smelter bath waste

- Fluorine is lost from smelter in ‘tapped bath’
- Only attractive market is new smelter construction
- Market for tapped bath has moved into oversupply
- Tapped bath is a low-cost source of fluorine

# ALCORE Process to produce aluminium fluoride

- ABx's 83%-owned refining technology subsidiary
- Developing processes to produce aluminium fluoride using:
  - Fluorine from tapped bath
  - Aluminium from dross or bauxite
- Exemplary illustration of circular economy



# ALCORE Process economics

- Based on long term aluminium fluoride prices and exchange rates, and estimated costs
- For 20,000 t/y aluminium fluoride
- Attractive margins under all scenarios

Aluminium source	Scenario	AlF <sub>3</sub> price (US\$/t)	FX rate USD:AUD	AlF <sub>3</sub> price (A\$/t)	Operating cost (A\$/t AlF <sub>3</sub> )	Operating margin (A\$/t AlF <sub>3</sub> )	EBITDA (A\$m)
Aluminium hydroxide	Baseline	\$1,220	0.75	\$1,630	\$1,250	\$1,130	\$23m
Dross	Baseline	\$1,220	0.75	\$1,630	\$1,050	\$1,330	\$27m
Aluminium hydroxide	Optimistic	\$1,400	0.70	\$2,000	\$930	\$1,880	\$38m
Dross	Optimistic	\$1,400	0.70	\$2,000	\$770	\$2,040	\$41m

# ALCORE Technical progress

- Critical processed steps have been demonstrated in laboratory
- Commenced pilot plant program



Customised reactor for  
recovery of fluorine from  
aluminium smelter bath

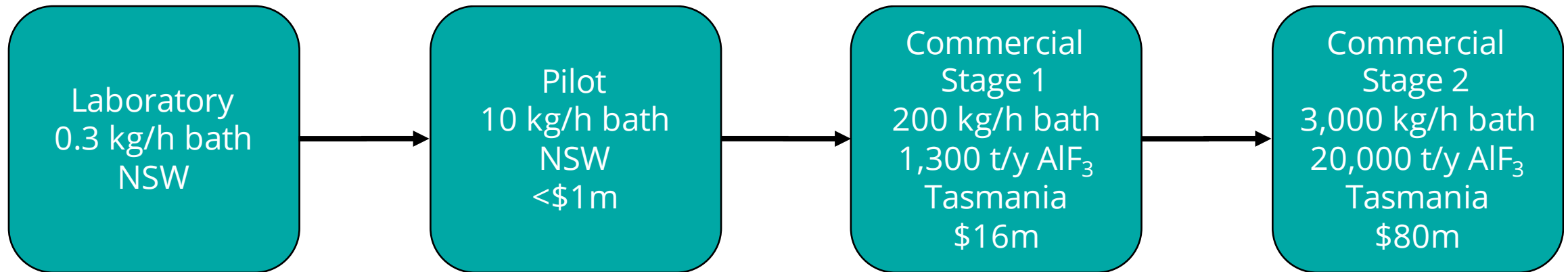
Pilot plant for production  
of precursor chemicals





# ALCORE Process scale-up

- Rigorous scale-up to reduce technical risk
- First aluminium fluoride plant planned for Bell Bay, Tasmania, near existing hydro-powered aluminium smelter. Planned production 20,000 t/y
- Potential for plants in other major aluminium smelting regions
- Potential expansion into other markets, including fluorine chemicals



Received \$7.5m grant, 29 April 2022

# Segments



Rare earth discoveries in northern Tasmania



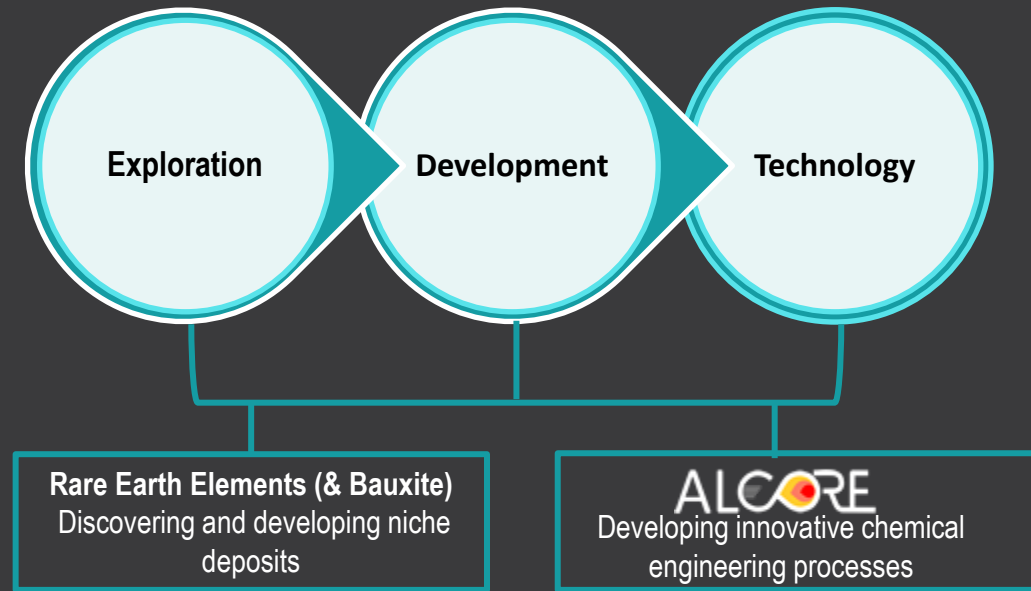
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