



**Investor Presentation**

*29 April 2024*

# **Building a Mega-Scale Ionic Rare Earth Project In Brazil**



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## **Competent person statement**

The information in this report that relates to exploration results is based on information compiled by Mr. Antonio de Castro, BSc (Hons), MAusIMM, CREA, who acts as BCM's Senior Consulting Geologist through the consultancy firm, ADC Geologia Ltda. Mr. de Castro has sufficient experience which is relevant to the type of deposit under consideration and to the reporting of exploration results and analytical and metallurgical test work to qualify as a competent person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. Castro consents to the report being issued in the form and context in which it appears.

## **Exploration results and mineral resources**

The information in this Presentation that relates to Exploration Results and Adelar target Mineral Resources is based upon and fairly represents information previously released to the ASX on 26 May 2022, 30 May 2022, 1 June 2022, 9 June 2022, 10 June 2022, 5 July 2022, 7 July 2022, 14 July 2022, 21 July 2022, 27 July 2022, 29 July 2022, 5 August 2022, 19 August 2022, 26 August 2022, 2 September 2022, 9 September 2022, 16 September 2022, 23 September 2022, 4 October 2022, 14 October 2022, and 25 October 2022.

The information in this Presentation that relates to REE Exploration Results and EMA Mineral Resources is based upon and fairly represents information previously released to ASX on 22 May 2023, 17 July 2023, 19 July 2023, 31 July 2023, 13 September 2023, 19 October 2023, 06 December 2023, 06 February 2024, 22 February 2024, 13 March 2024, 02 April 2024 and 22 April 2024.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcement and, in the case of mineral resource estimate, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

# Brazilian REE Landscape

**EMA Rare Earths**  
**Apuí Rare Earths**

30 km south from Apuí

**Três Estados PGE**

60 km south from Apuí



# Brazil – Large Mining Country

**US\$50 billion** in total capex investment predicted for the 2023-2027 period.

**77%** of Brazil's energy produced from renewable sources at two cents per kilowatt hour.

*“Brazil is one of the few countries with good relations between the West and the East, allowing it to work with many different countries”*

*ideal for rare earths production.*

Source: Global Business Reports, Brazil Mining 2023

KPMG, IBRAM, Instituto Brasileiro de Geografia e Estatística 2022, United Nations 2022, Banco Central 2023

**250<sub>B</sub>**

R\$ Revenue

**86.2<sub>B</sub>**

R\$ Taxes & Tributes

**7.3<sub>k</sub>**

Companies

**2.25<sub>M</sub>**

Indirect Jobs

**>90**

Minerals Produced

**204<sub>k</sub>**

Direct Jobs

**1.05<sub>B</sub>**

Estimated Production

# What makes Ema Unique



- ✓ **>1Bt – large tonnage**
- ✓ **Low-cost mining**
- ✓ **Low-cost processing**
- ✓ **31% MREO composition**
- ✓ **<50% of area drilled**

- ✓ **Up to 83% – exceptional recoveries of the big 4 REE elements**
- ✓ **Low 30min leach times**
- ✓ **pH4 leaching or higher**
- ✓ **Ambient temperature leaching**
- ✓ **Low dosage <2% Ammonia sulphate addition**

# ASX REE Peers



Market Cap



ASX Companies as of close 26.04.24

# 31% MREO class leading

## Light Rare Earth Elements



- ✓ Electric Vehicles
- ✓ Wind Turbines

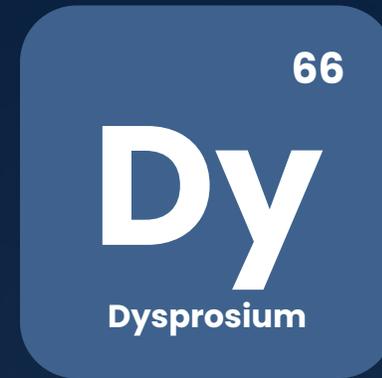


- ✓ Electric Vehicles
- ✓ Wind Turbines
- ✓ Semiconductors

**LREE Composition 28%**



## Heavy Rare Earth Elements



- ✓ Electric Vehicles
- ✓ Wind Turbines
- ✓ Semiconductors
- ✓ Nuclear Reactors



- ✓ Electric Vehicles
- ✓ Wind Turbines
- ✓ Semiconductors
- ✓ Xray's
- ✓ High Temp Fuel Cells

**HREE Composition 3%**

# EMA Rare Earths



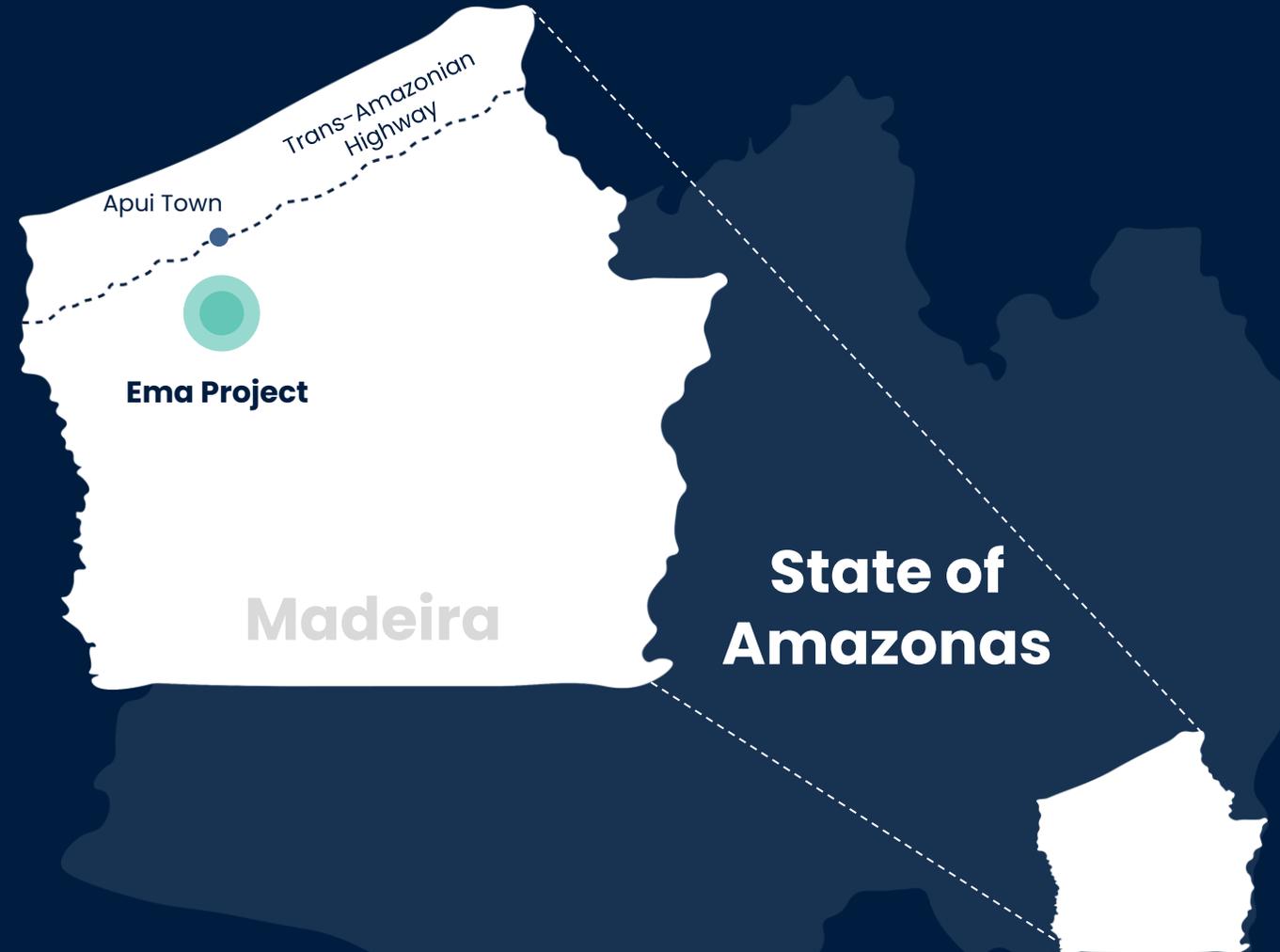
## Significant Ionic REE deposit

- one of the worlds largest tonnage fully ionic REE deposits >1Bt
- mineralisation maximum 30m below surface
- huge upside for expansion of tonnes and grade
- sg of only 1.34g/cc utilised
- high-grade core of 331Mt @ 977ppm
- MREO content 31% of basket
- some of the best recoveries for any ionic clay deposit

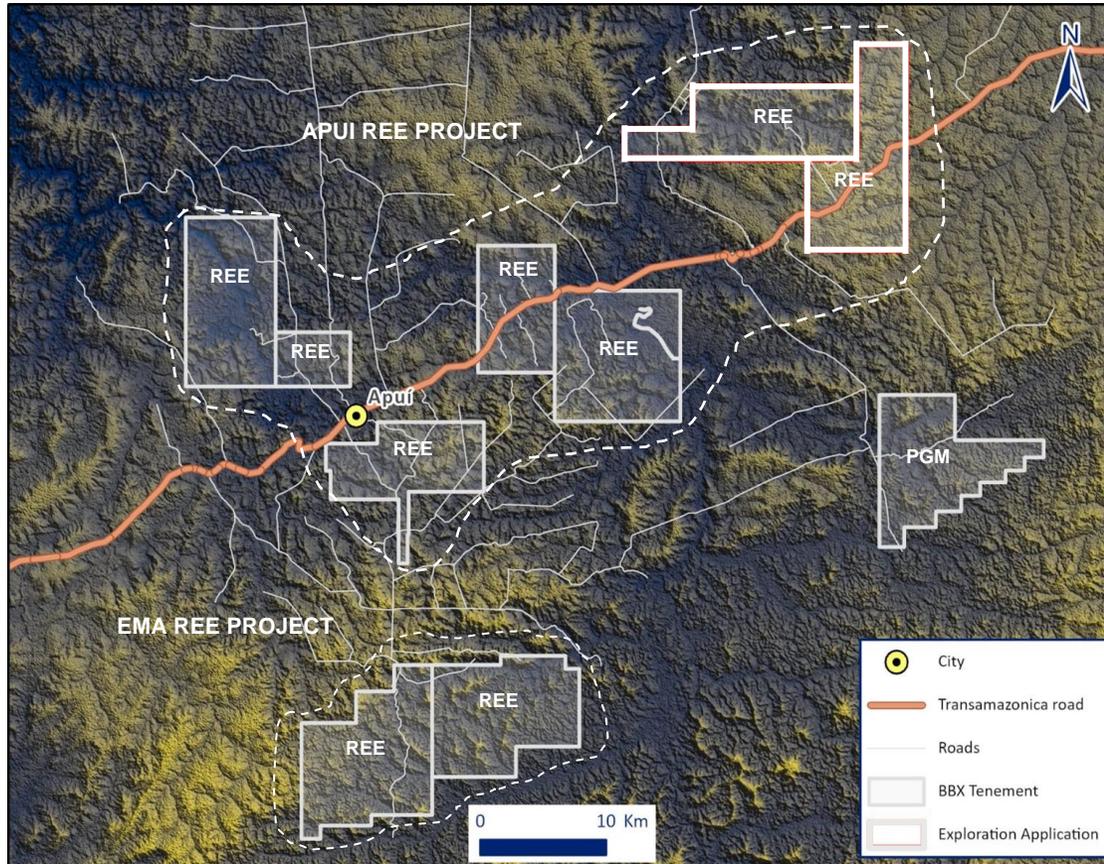
Ema deposit is similar to most common iREE deposits in China.

These deposits account for nearly 38% of ionic production in South China.

These deposits are typified by good quality, a high percentage of iREEs (>65%), and high metallurgical recoveries.



# Brazilian Rare Earths Landscape



## EMA REE Project

- Two large tenements – 189km<sup>2</sup>
- 1.02Bt Mineral Resource
- Rhyolite hosted – very similar to Chinese Ionic REE producers
- Mineralisation from surface
- Large Area – <50% drilled, potential for large addition to resource

## APUI REE Project

- Newly acquired, seven tenements totally 510km<sup>2</sup>
- Significant results including **5m at 1,942 ppm** TREO.
- Similar mineralization and surface proximity to Emma REE Project

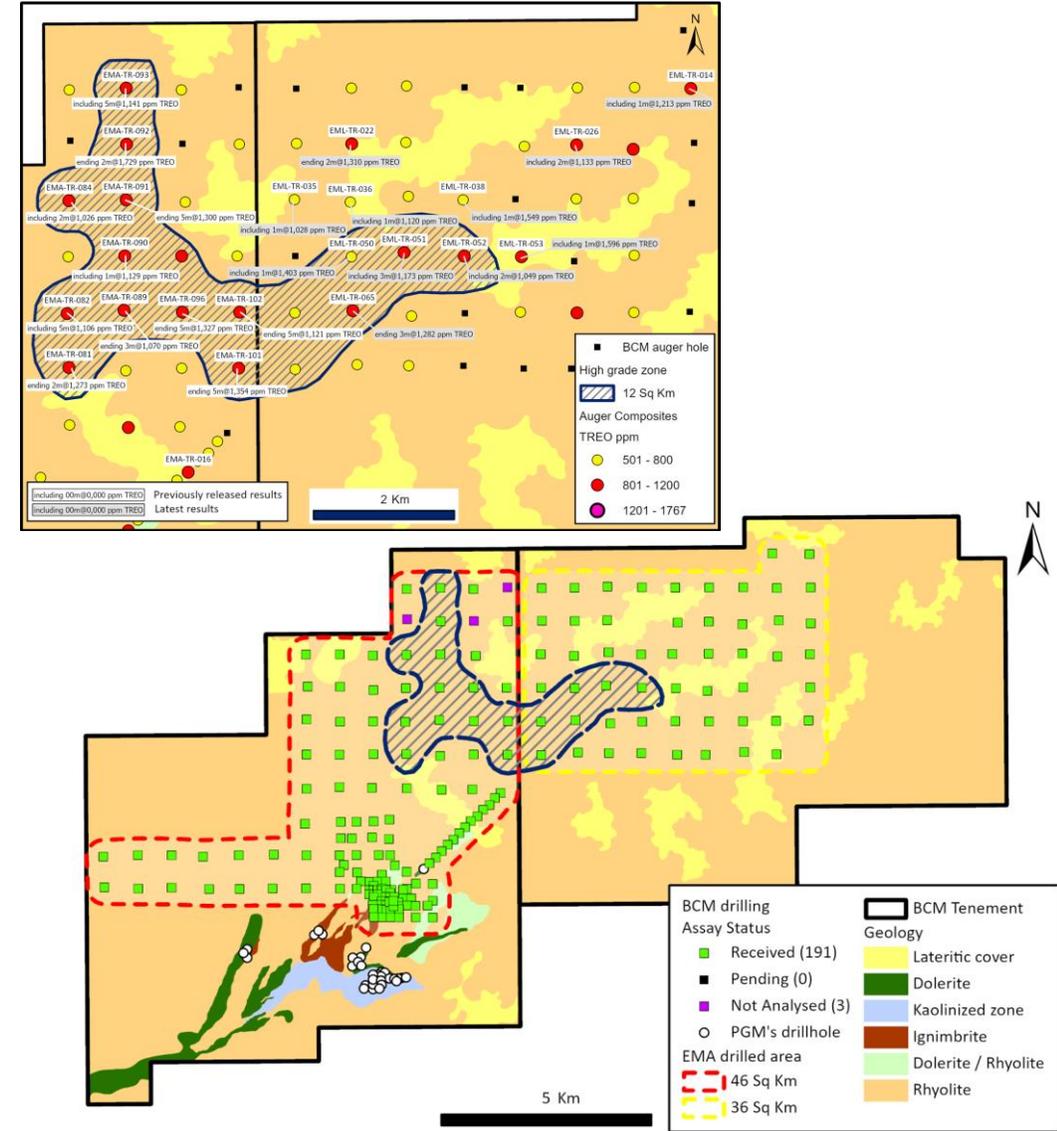
# EMA Rare Earths



- **High-grade zone (>1000ppm TREO) extends over 12 km<sup>2</sup>**
- **Consistent MREO high-grades in the lower horizon (31% of basket)**
- **Mineralisation open in all directions**
- **Mineral Resource Estimation only over 46% covering only 82km<sup>2</sup> drilled of the 189km<sup>2</sup> available**

## Significant results:

- 8m@1098ppm TREO from 6m (TR-096); including 5m@1327ppm TREO ending in 1478ppm TREO
- 10m@1069ppm TREO from 11m (TR-091), including 5m@1300ppm TREO ending in 1329ppm TREO
- 7m@1149ppm TREO from 10m (TR-101), including 5m@1354ppm TREO ending in 1526ppm TREO
- 7m@1038ppm TREO from 7m (TR-102), including, 5m@1120ppm TREO ending in 898ppm TREO
- 10m@1059ppm TREO from 10m (TR-110) including 5m@1202ppm TREO ending in 941ppm TREO
- 8m@921ppm TREO from 10m (TR-092), including 3m@1436ppm TREO ending in 1880ppm TREO



# EMA Rare Earths



## Emma REE Project 2024 Global Mineral Resource Estimate-@COG 500ppm TREO

JORC Category	Tonnes Mt	TREO ppm	Pr <sub>6</sub> O <sub>11</sub> ppm	Nd <sub>2</sub> O <sub>3</sub> ppm	Tb <sub>4</sub> O <sub>7</sub> ppm	Dy <sub>2</sub> O <sub>3</sub> ppm	MREO ppm	MREO:TREO %
Inferred	1,017	793	45	154	4	13	216	27

## Emma REE Project 2024 Mineral Resource Estimate – by cut-off grade

JORC Category	cut-off ppm TREO	Tonnes Mt	TREO ppm	NdPr ppm	DyTb ppm	MREO ppm	MREO:TREO %
Inferred	0	1,340	694	163	15	178	26
<b>Inferred</b>	<b>500</b>	<b>1,017</b>	<b>793</b>	<b>199</b>	<b>17</b>	<b>216</b>	<b>27</b>
Inferred	600	863	836	218	18	236	28
Inferred	700	685	885	237	20	257	29
Inferred	800	494	936	259	21	280	30
Inferred	900	331	977	278	22	300	31

sg 1.34g/cc

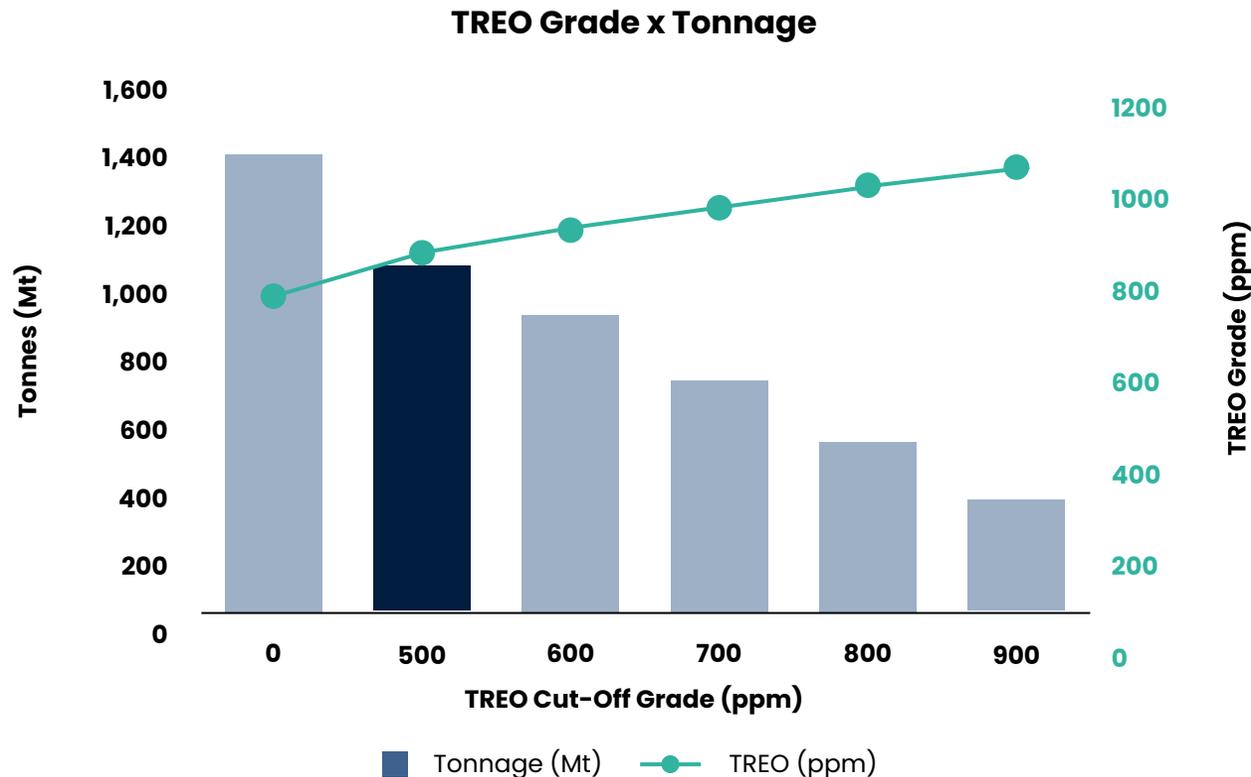
46% of area drilled

31% MREO

# EMA Rare Earths



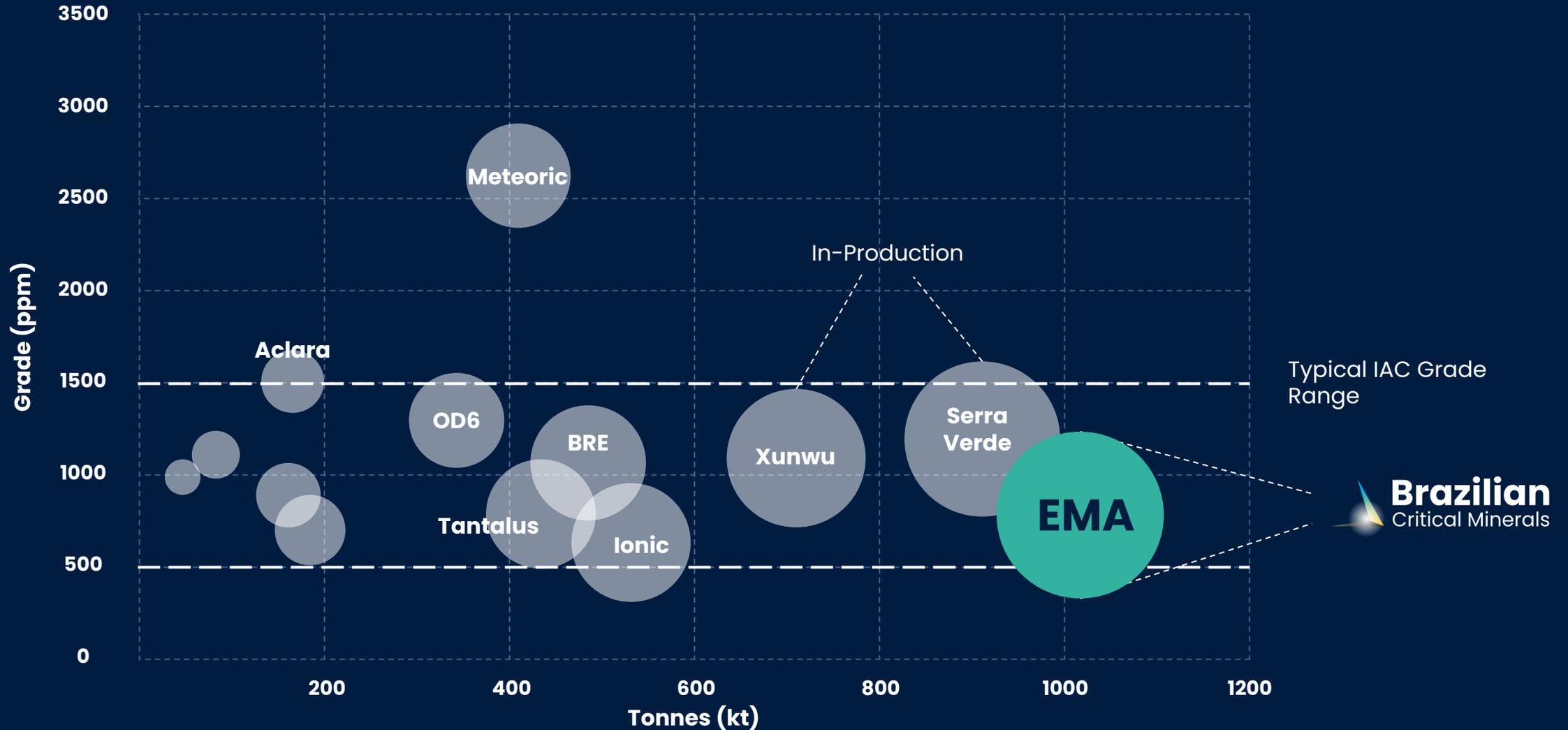
Emma REE Project 2024 Mineral Resource Estimate – by cut-off grade



## Fully ionic clay deposit

- Large volume
- High-grade core
- Low impurities
- High recoveries

# Rare Earth Clay Deposits



# Ema metallurgical results



Hole	Intercept (m)	Nd % recovery	Pr % recovery	Dy% recovery	Tb% recovery
TR-101	10	76	74	47	54
TR-059	6	66	61	56	83
TR-071	13	71	62	45	52
TR-059	5	66	66	52	55
TR-110	10	65	61	43	50

- Outstanding recoveries of magnetic rare earth oxides (MREO), up to 83%, from metallurgical testwork
- Recoveries achieved using standard weak ammonium sulphate leaching solution, pH 4, at ambient temperatures over low leach times of only 30 minutes duration
- Leachability response now confirms majority portion of the defined 82km<sup>2</sup> of rare earth mineralisation contains ionic clays
- Remaining 107km<sup>2</sup> of the Ema project remains un-drilled and un-tested
- Results demonstrate mineralisation is suited to processing through conventional processing facilities common in China
- Further metallurgical optimisation and flowsheet development work has commenced at the ANSTO facility in Sydney

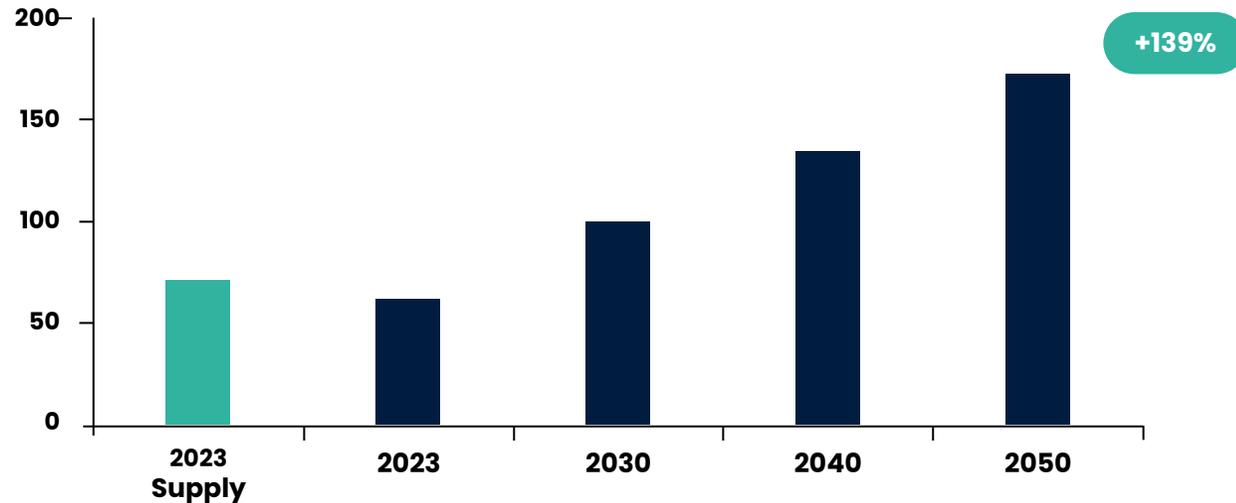
- **pH4**
- **30min leaching**
- **Ambient temps**
- **Very low ammonia sulphate dosage**

**Fully ionic clay deposit**

# Significant Future Global Demand



Nd & Pr (kt REE)



## EV's & Wind turbines driving demand

### Additional new Mines needed by 2030

“Magnet demand to remain the largest growing sector for rare earths”

# Next Steps for EMA



## Scheduled program of activities – Rapidly advancing

Results suggest that the Ema deposit is similar to most common iREE deposits in China. These are deposits developed on top of felsic volcanic rocks and account for nearly 38% of the total of such type deposits in South China.

These deposits are typified by good quality, a high percentage of iREEs (>65%), and high metallurgical recoveries.



# Why Invest



## Strong Demand for REEs & PGMs

- Strong demand driven by clean energy technologies.
- Excellent bioleaching results to date (~16g/t Pd 8-10 x upgrade)
- PGM MRE upgrade expected following completion of bioleaching pilot plant testing.
- PGMs highly important to hydrogen technologies.



## Large Ionic Clay REE

- Two key REE projects covering a huge area of over 700km<sup>2</sup>.
- >1Bt maiden resource
- High grade of 331Mt @ 977ppm
- Mineralisation at surface
- <50% of tenements are drilled
- Low cost open pit mining methods
- REE demand continues to grow for EV and wind energy markets.
- EV sales expected to increase to 80m units per annum by 2050



## Exceptional REE Ionic Opportunity

- Metallurgical tests confirm deposit is fully ionic
- Outstanding recovery results to date are world class
- Ore leaches easily with cheap low strength low dosage acid
- Quick leaching over 30mins
- Leaching at ambient temperatures
- Low reagent strength required, high impurity rejection in final product

# Corporate Overview

**740<sub>M</sub>**

Shares on Issue

**49.2<sub>M</sub>**

Performance Rights

**2.5<sub>c</sub>**

Share Price (19/4/2024)

**18.5<sub>M</sub>**

Market Cap



## Board of Directors



**Jeremy Robinson**

Non-Executive Chairman



**Andrew Reid**

Managing Director



**Ken Kluksdahl**

Non-Executive Director



**Abby Smith**

Non-Executive Director

# Investor Milestones



## Rare Earths

- Emerging REE explorer/developer
- 9 tenements totalling 700KM2
- >1Bt Mineral Resource
- Aggressive auger drilling program to commence
- Exceptional REE recoveries
- <50% of tenement drilled

## PGMs

- Tres Estados project – PGM open pit resource
- Bioleach optimisation has produced significant results
- Physical metal recovery following bioleaching process
- Bioleaching pilot plant underway
- MRE upgrade – based on bioleach re-assay

# Três Estados Precious Metals

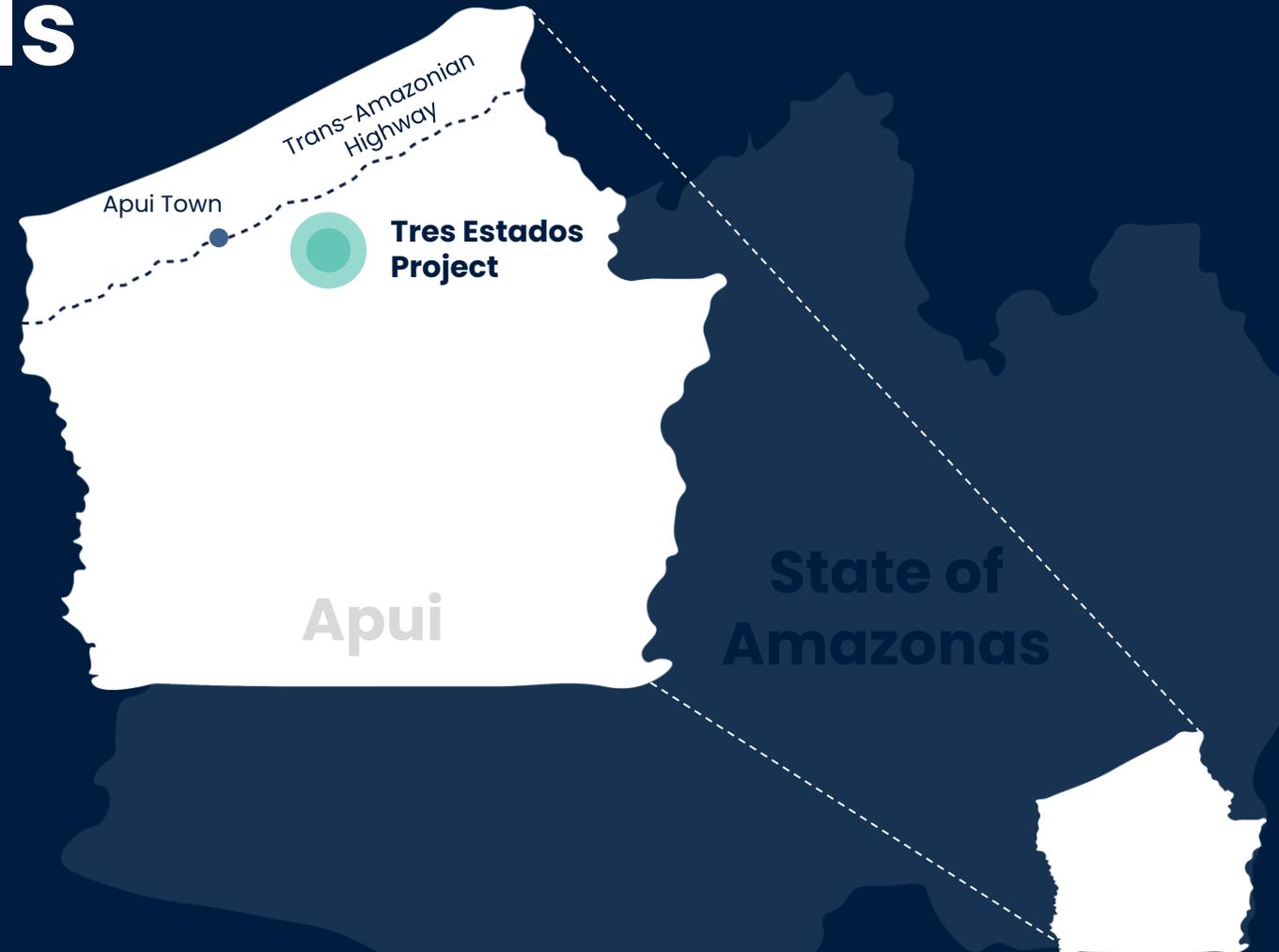


## Geology and mineralisation

- Tenement located over a series of gabbroic intrusions defined by prominent E-W and NE-SW magnetic anomalies, local gold-in-soil geochemical anomalies and shallow artisanal gold workings;
- The principal NE-SW magnetic feature and geochemical anomaly is about 1 km wide and 4km long;

## JORC resource

- MRE containing 725,230 ounces of combined platinum, palladium, iridium, rhodium and gold.
- The MRE covers only 9% of the known gabbroic bodies at Três Estados;
- The Mineral Resource is located at or near surface and is very amenable to surface mining techniques.

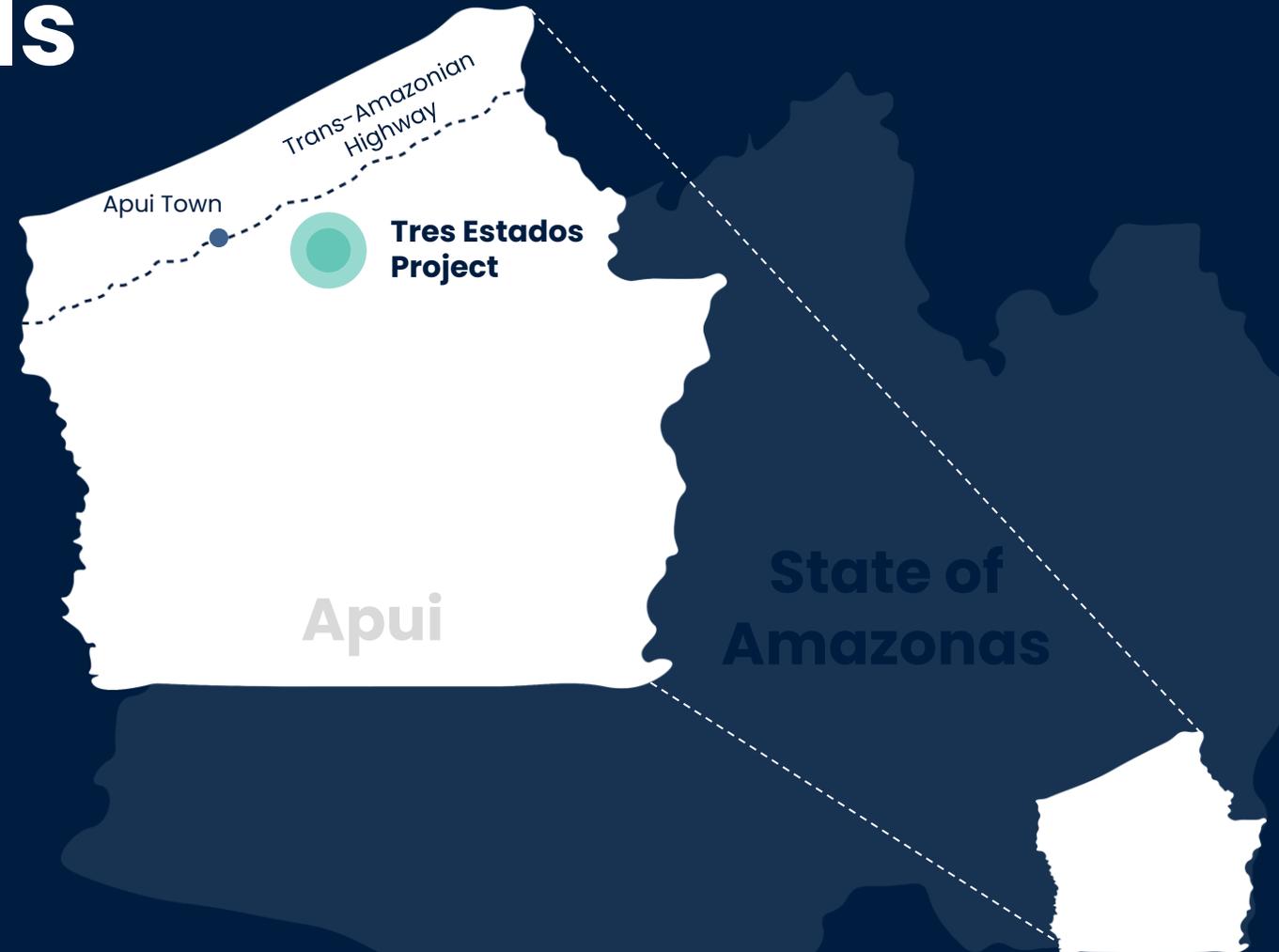


# Três Estados Precious Metals



## Bioleach test work

- Highly positive bioleach recoveries (16.2 g/t PGM) following 8-day leach.
- In-country (Brazil) lab scale pilot plant operating
- Significant MRE upgrade following bioleach assays.
- Metal recovered following bioleaching process



# Três Estados Precious Metals



## Mineral resource estimate

Inferred JORC Mineral Resource Estimate for Três Estados contains a total of 725,300 ounces of combined platinum, palladium, iridium, rhodium and gold.

### Adelar Target

Zone	Class	Tonnes Mt	Pt g/t	Rh g/t	Pd g/t	Au g/t	Ir g/t	5E PGM g/t	5E PGM koz
Oxide	Inferred	4.98	0.874	0.015	0.015	0.016	0.126	1.047	167.6
Fresh		13.16	0.919	0.017	0.010	0.040	0.158	1.144	484.2
<b>Total</b>		18.14	0.907	0.016	0.012	0.033	0.149	1.117	651.7

### Tabocal Target

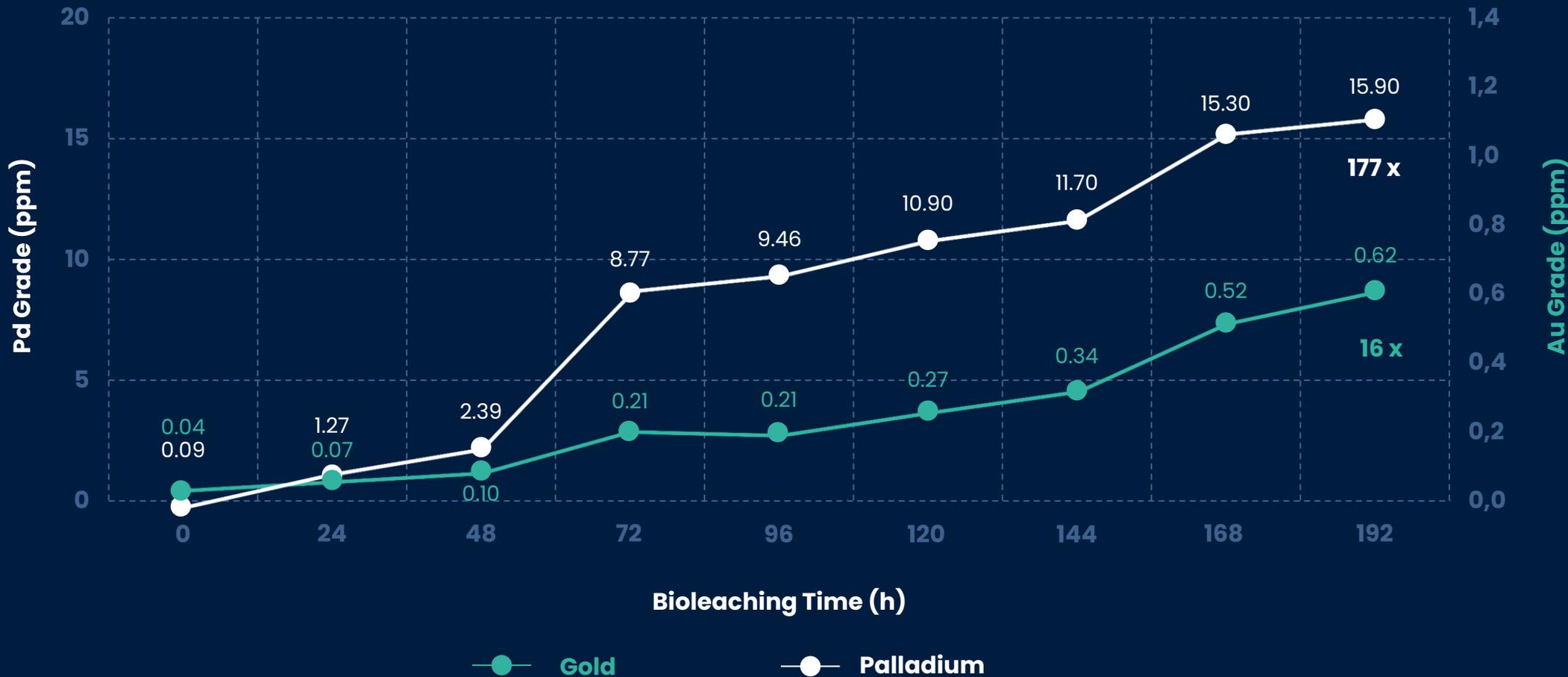
Zone	Class	Tonnes Mt	Pt g/t	Rh g/t	Pd g/t	Au g/t	Ir g/t	5E PGM g/t	5E PGM koz
Oxide	Inferred	0.65	1.73	-	-	-	0.001	1.731	36.2
Fresh		0.86	1.21	-	-	-	0.147	1.357	37.4
<b>Total</b>		1.51	1.43	-	-	-	0.083	1.513	73.5

Summed amounts may not add due to rounding.

# SGS Lab Assay



## results during bio treatment



# Bioleaching Process

**“ Unlocking Earth's riches sustainably with bioleaching excellence ”**



## Pilot Plant Testing – Texas

Testing during 2023 resulted in significant uplifts in Platinum and Gold grades by a factor of 176 and 16 over analysis with fire assay.

Positive results demonstrate the suitability of this bioleaching process.

Full optimisation expected to be completed by Q4 2023.



## Pilot Plant Testing – in Brazil

Pilot plant is now fully functional in Brazil, at BCM's existing laboratory in Catalão.

Major metallurgical program has commenced to determine PGE recoveries, operating efficiency, and cost profile.

Analysis will continue throughout 2024.



## Bioleaching Testing

Testing of all drill holes from the Três Estados MRE area to be completed.

Complete 3<sup>rd</sup> party independent analysis of results

Re-calculate and updated MRE upon successful results.



### **Brazil**

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### **Australia**

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Perth WA 6000

# Thank You.

# References – Mineral Resources



Company	Tonnes (Mt)	Grade (ppm)	Reference
BCM	1017	793	Brazilian Critical Minerals (ASX:BCM) Massive Maiden Mineral Resource for Ema Project 22.04.24
Aclara	168	1,510	Aclara (TSX:ARA) Aclara delivers a positive PEA for its Carina Project in Goias, Brazil 23.01.24
Australian Rare Earths	186	712	Australian Rare EARTHS (ASX:AR3) 84% Increase in Resource for Koppamurra REE Project 19.03.24
Brazilian Rare Earths	485	1071	Brazilian Rare Earths (ASX:BRE) Prospectus - Part 1 19.12.23
Ionic Rare Earths	532	640	Ionic Rare Earths (ASX:IXR) Major Increase to Globally Significant Rare Earth Resource 23.06.20
Longnan	48	1,000	Research Reports
Meteoric	409	2,626	Meteoric Resources (ASX:MEI) Caldeira REE Project Maiden Mineral Resource 01.05.23
OD6 Metals	344	1,308	OD6 (ASX:OD6) Splinter Rock Maiden Mineral Resource 18.07.23
Serra Verde	911	1,200	Research Reports
Tantalus Rare Earths	435	800	Tantalus Rare Earths AG: Tantalus Rare Earths AG resource update published for the companies rare earths project in Madagascar with valuable results 17.12.14
West Cobar Metals	83	1,117	West Cobar Metals (ASX:WC1) Salazar Clay - REE Resource Quadruples 09.08.23
Xinfeng	162	900	Research Reports
Xunwu	710	1,100	Research Reports