



 ASX:MEI

# INVESTOR PRESENTATION

**Caldeira Project Scoping Study**

*The world's highest grade ionic adsorption clay REE project*

SEPTEMBER 2024



# DISCLAIMER



These materials prepared by Meteoric Resources NL (“Meteoric” or the “Company”) include forward looking statements. Forward looking statements can generally be identified by the use of forward looking words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “continue”, and “guidance”, or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, performance and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licenses and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

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Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the Company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in these materials speak only at the date of issue. Subject to any continuing obligations under applicable law or any relevant securities exchange listing rules, in providing this information the Company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.

The information in this presentation that relates to Mineral Resource Estimates at the Cupim Vermelho Norte and the Dona Maria 1 & 2 prospects was prepared by BNA Mining Solutions and released on the ASX platform on 1 May 2023. The information in this release that relates to Mineral Resource Estimates at the Soberbo and Capão del Mel deposits was prepared by BNA Mining Solutions and released on the ASX platform on 14 May and 13 June 2024 respectively. The information in this release that relates to Mineral Resource Estimates at the Figueira deposit was prepared by BNA Mining Solutions and released on the ASX platform on 5 August 2024. The Company confirms that it is not aware of any new information or data that materially affects the Mineral Resources in this publication. The Company confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The Company confirms that the form and context in which the BNA Mining Solutions findings are presented have not been materially modified.

This presentation includes exploration results, estimates of Mineral Resources and scoping study results. The Company has previously reported these results and estimates in ASX announcements dated 16 December 2022, 1 May 2023, 27 June 2023, 24 July 2023, 31 August 2023, 27 September 2023, 8 December 2023, 14 December 2023, 30 January 2024, 29 February 2024, 14 May 2024 and 13 June 2024, 8 July 2024 and 5 August 2024. The Company confirms that it is not aware of any new information or data that materially affects the information included in previous announcements (as may be cross referenced in the body of this announcement) and that all material assumptions and technical parameters underpinning the exploration results and Mineral Resource estimates continue to apply and have not materially changed.

All references to the scoping study and its outcomes in this presentation relate to ASX announcement *Caldeira Project Scoping Study confirms potential for the world’s lowest cost source of rare earths with outstanding financial metrics* dated 8 July 2024. Please refer to the ASX announcement for full details and supporting information.

# COMPANY OVERVIEW

MEI SNAPSHOT	
ASX Code	MEI
Share Price (09/09/24)	A\$0.09
Shares on Issue	2,291M
Options / Rights	156M
Market Capitalisation	A\$206M
Cash (31/06/2024) pro forma	A\$44M

BOARD AND MANAGEMENT	
Executive Chairman	Dr Andrew Tunks
Executive Director	Dr Marcelo de Carvalho
Non-Executive Director	Dr Paul Kitto
Non-Executive Director	Mr. Peter Gundy
Non-Executive Director	Dr Nomi Prins
Chief Executive Officer	Nick Holthouse
Chief Financial Officer	Stuart Gale



## RARE EARTHS AND WHY WE NEED THEM



## 4 REE have permanent magnet power

praseodymium 59 Pr	neodymium 60 Nd
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## Light Rare Earth Elements (LREE)

terbium 65 <b>Tb</b>	dysprosium 66 <b>Dy</b>
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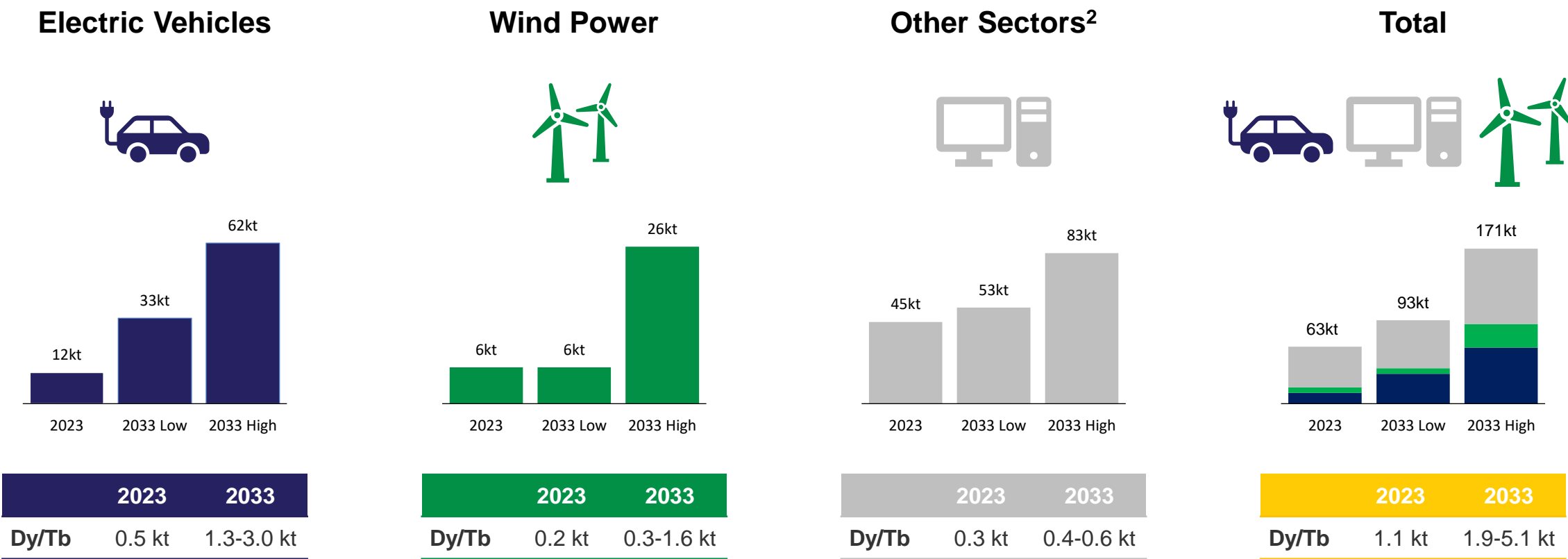
## Heavy Rare Earth Elements (HREE)

hydrogen 1 H																		helium 2 He																	
lithium 3 Li		beryllium 4 Be												boron 5 B		carbon 6 C		nitrogen 7 N		oxygen 8 O		fluorine 9 F		neon 10 Ne											
sodium 11 Na		magnesium 12 Mg		Light Rare Earth Elements LREEs			Heavy Rare Earth Elements HREEs			High Value, High Demand Elements													aluminium 13 Al		silicon 14 Si		phosphorus 15 P		sulfur 16 S		chlorine 17 Cl		argon 18 Ar		
potassium 19 K		calcium 20 Ca		scandium 21 Sc		titanium 22 Ti		vanadium 23 V		chromium 24 Cr		manganese 25 Mn		iron 26 Fe		cobalt 27 Co		nickel 28 Ni		copper 29 Cu		zinc 30 Zn		gallium 31 Ga		germanium 32 Ge		arsenic 33 As		selenium 34 Se		bromine 35 Br		krypton 36 Kr	
rubidium 37 Rb		strontium 38 Sr		yttrium 39 Y		zirconium 40 Zr		niobium 41 Nb		molybdenum 42 Mo		technetium 43 Tc		ruthenium 44 Ru		rhodium 45 Rh		palladium 46 Pd		silver 47 Ag		cadmium 48 Cd		indium 49 In		tin 50 Sn		antimony 51 Sb		tellurium 52 Te		iodine 53 I		xenon 54 Xe	
caesium 55 Cs		barium 56 Ba				hafnium 72 Hf		tantalum 73 Ta		tungsten 74 W		rhenium 75 Re		osmium 76 Os		iridium 77 Ir		platinum 78 Pt		gold 79 Au		mercury 80 Hg		thallium 81 Tl		lead 82 Pb		bismuth 83 Bi		polonium 84 Po		astatine 85 At		radon 86 Rn	
francium 87 Fr		radium 88 Ra				rutherfordium 104 Rf		dubnium 105 Db		seaborgium 106 Sg		bohrium 107 Bh		hassium 108 Hs		meitnerium 109 Mt		darmstadtium 110 Ds		roentgenium 111 Rg															
lanthanum 57 La		cerium 58 Ce		praseodymium 59 Pr		neodymium 60 Nd		promethium 61 Pm		samarium 62 Sm		europium 63 Eu		gadolinium 64 Gd		terbium 65 Tb		dysprosium 66 Dy		holmium 67 Ho		erbium 68 Er		thulium 69 Tm		ytterbium 70 Yb		lutetium 71 Lu							
actinium 89 Ac		thorium 90 Th		protactinium 91 Pa		uranium 92 U		neptunium 93 Np		plutonium 94 Pu		americium 95 Am		curium 96 Cm		berkelium 97 Bk		californium 98 Cf		einsteinium 99 Es		fermium 100 Fm		mendelevium 101 Md		nobelium 102 No		lawrencium 103 Lr							

# STRONG DEMAND FUNDAMENTALS

Global demand forecasts for NdPr depend on the market penetration of renewable energy technologies

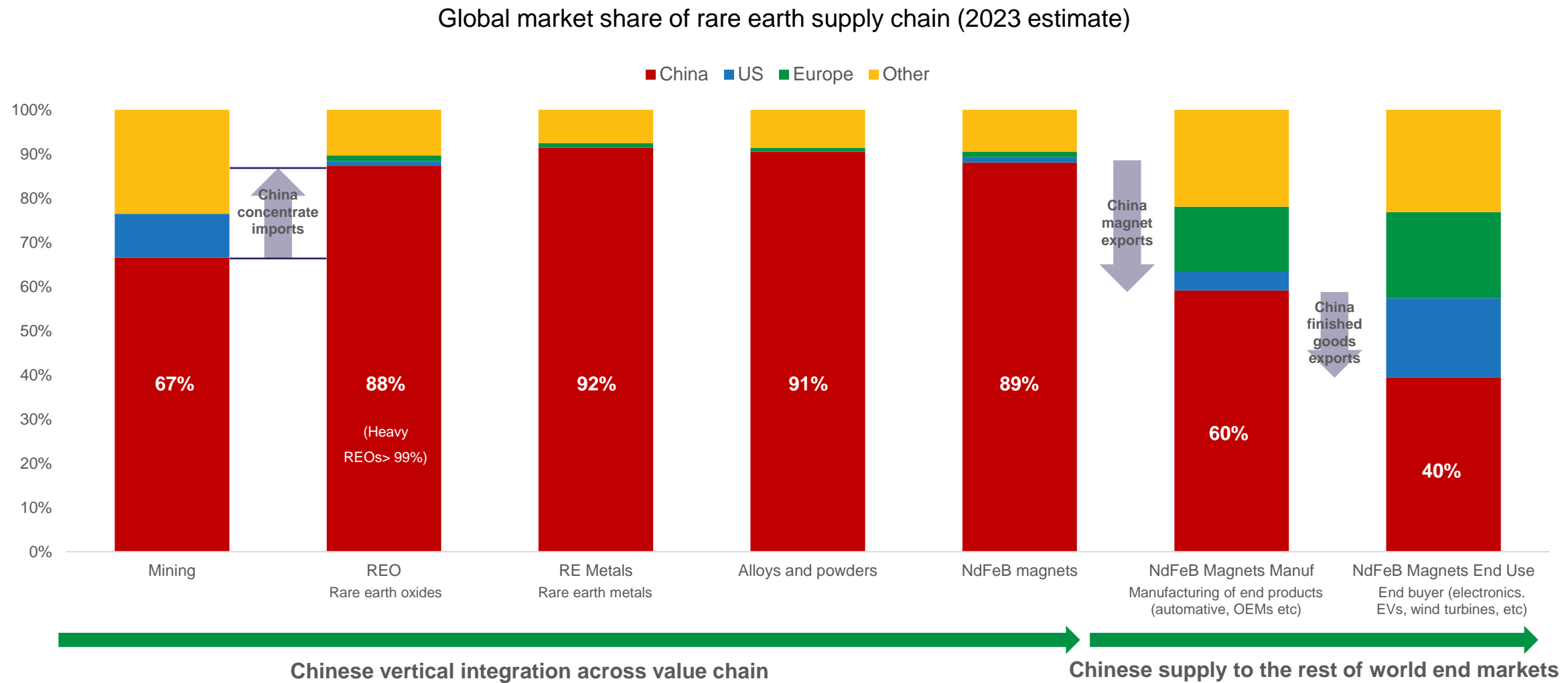
## Global Demand for NdPr (kt)<sup>1</sup>



Source: Iluka Resources ASX announcement dated 19 June 2024, Notes: 1. Iluka’s estimate with inputs from Adamas, Project Blue, Argus and other data sources 2. Other automotive uses, consumer electronics, cordless power tools, industrial applications, speakers, home appliances etc.

# RARE EARTH SUPPLY CHAIN DOMINATED BY CHINA'S VERTICAL INTEGRATION

China accounts for approximately ~90% of all rare earth oxide production globally; and effectively 100% of all heavy rare earth oxide production



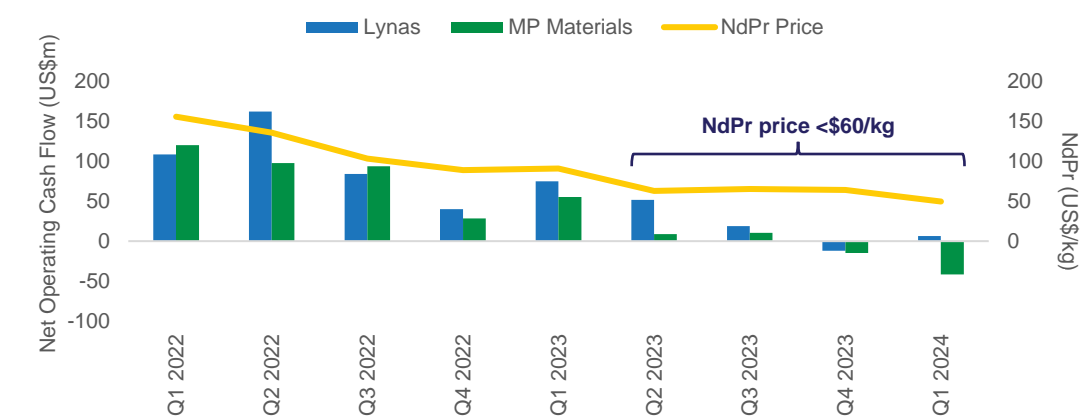
Source: Iluka Resources ASX announcement dated 19 June 2024

# PRICE SETTINGS FOR RARE EARTHS ARE NOT SUSTAINABLE

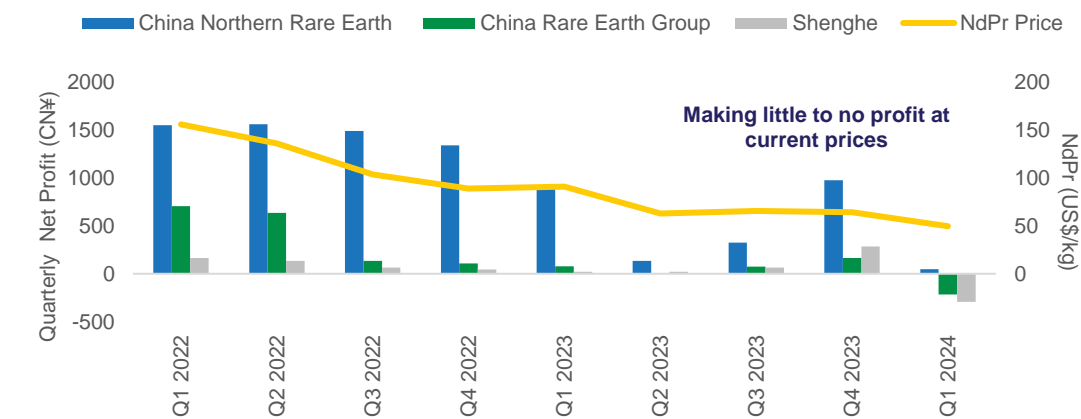
China has consolidated its rare earths enterprises, forming two mega conglomerates that have enhanced China's purchasing power



Western RE producers quarterly net operating cash flow vs NdPr price<sup>1</sup>

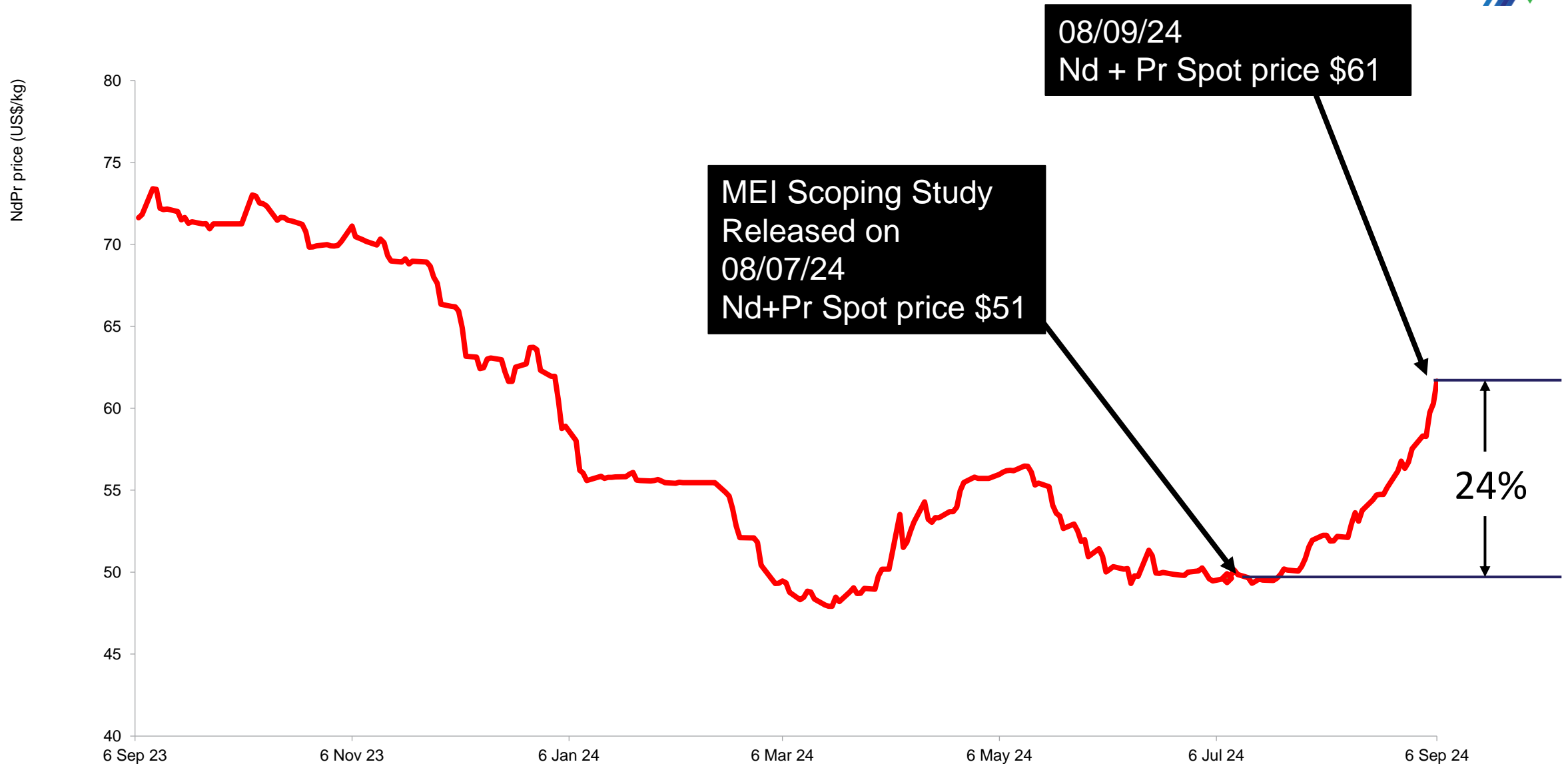


Chinese RE producers quarterly net profit vs NdPr price



Source: Iluka Resources ASX announcement dated 19 June 2024, Notes: 1. Net profit excluding non-recurring gains and losses. Lynas Rare Earths converted from A\$ to US\$ at a rate of 1:0.65

# Updated Nd+Pr Price

























Bloomberg SHRAPNOX index.



# RARE EARTH DEPOSIT TYPES AND COMPARABLES



Ionic clay allows for expedited development timelines, reduced capex and lower opex than hard rock peers

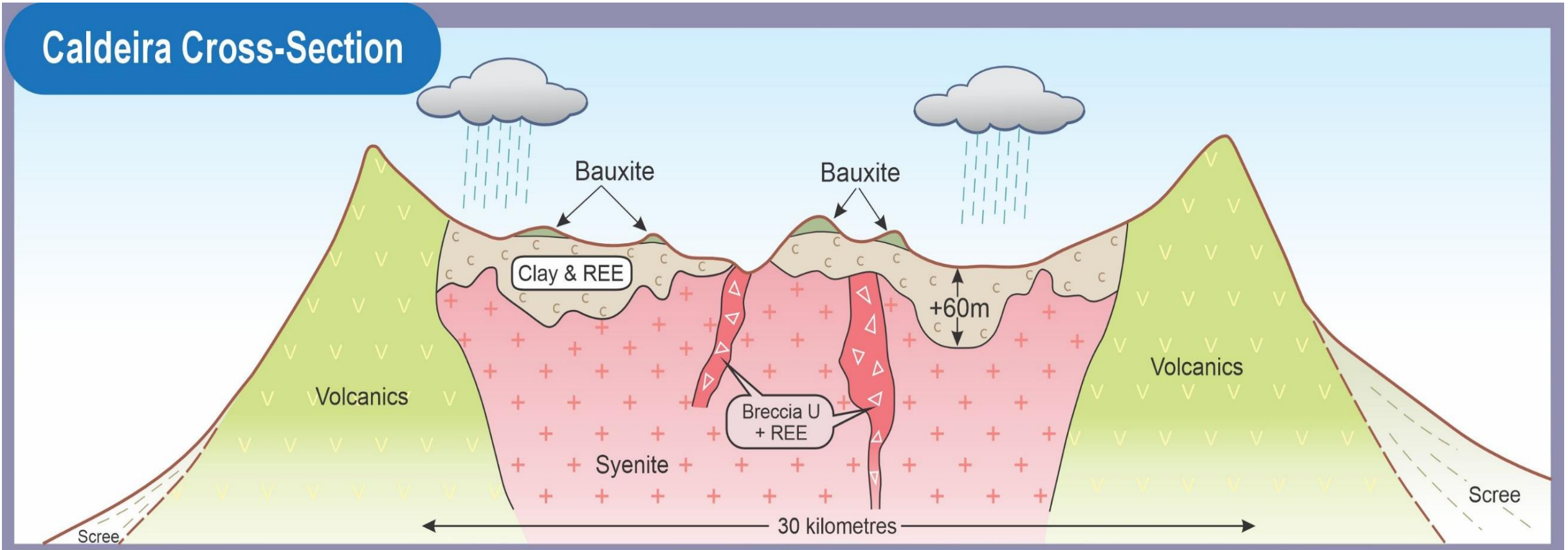
	Ionic Clay-hosted REE	Hard Rock-hosted REE
	  	    
<b>Investment</b>	 <ul style="list-style-type: none"> <li>Lower initial capex allows for increased scalability</li> <li>Typically, ~US\$15/kg TREO annual output (<i>capital intensity</i>)<sup>1</sup></li> </ul>	 <ul style="list-style-type: none"> <li>Typically ~US\$150/kg TREO annual output (<i>capital intensity</i>)</li> </ul>
<b>Mining</b>	 <ul style="list-style-type: none"> <li>Surface mining, with minimal stripping of waste material</li> <li>Pits backfilled leaving no tailings or waste dumps</li> </ul>	 <ul style="list-style-type: none"> <li>Drill and blast with large mining fleet (typically, with high strip ratios)</li> <li>Capital-intensive open cut and underground operations required</li> </ul>
<b>Processing</b>	 <ul style="list-style-type: none"> <li>Simple dissolution of REE from clay in ammonium sulphate</li> <li>High recoveries and no radioactive waste streams</li> </ul>	 <ul style="list-style-type: none"> <li>High temperature mineral cracking using strong reagents for REE minerals</li> <li>Lower recoveries and tailings often radioactive and are costly to dispose of</li> </ul>
<b>Exploration</b>	 <ul style="list-style-type: none"> <li>Quick and inexpensive – shallow aircore drilling into at-surface deeply weathered granite (clays)</li> </ul>	 <ul style="list-style-type: none"> <li>Similar to other hard rock base minerals requiring substantial drilling and geochemistry</li> </ul>
<b>Payability &amp; Products</b>	 <ul style="list-style-type: none"> <li>Contains both high value light and heavy REEs (NdPr &amp; DyTb)</li> </ul>	 <ul style="list-style-type: none"> <li>Typically light REEs only (NdPr)</li> </ul>
<b>Established Operations</b>	 <ul style="list-style-type: none"> <li>Serra Verde Brazil</li> </ul>	 <ul style="list-style-type: none"> <li>Mountain Pass (USA)</li> <li>Mt Weld (Australia)</li> </ul>
<b>Location</b>	 <ul style="list-style-type: none"> <li>Predominantly mined in China and Myanmar</li> <li>Brazil is an emerging jurisdiction</li> </ul>	 <ul style="list-style-type: none"> <li>Majority of production based in China</li> <li>Operations in Australia (Mt Weld) and USA (Mountain Pass)</li> </ul>

Source: (1) Hochschild Mining plc, Capital Markets Presentation, September 2021

# The two types of Rare Earth Deposits

Primary vs Secondary

## Caldeira Cross-Section



# TIER 1 RARE EARTHS DEPOSIT IN WORLD CLASS LOCATION

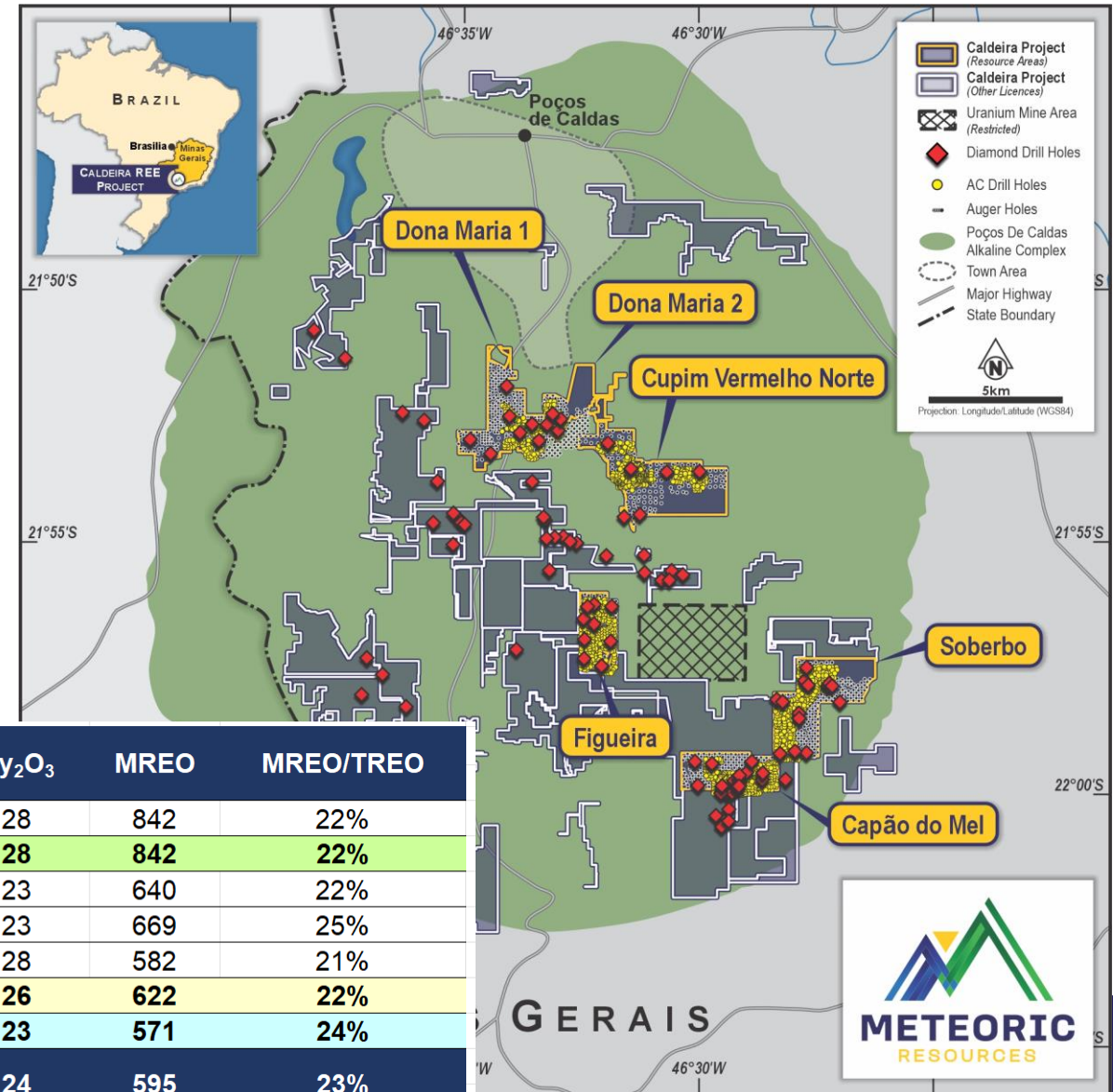
Phase 1 will focus on the southern licenses and target high grade zones with open-cut mining



- PIADD001 – 143m @ 6,406ppm TREO [0m], with
  - 6m @ 10,378ppm TREO [9m],
  - 6m @ 11,664ppm TREO [21m], and
  - 8m @ 23,946ppm TREO [85m]
- CVSDD0004 – 200m @ 3,387ppm TREO [0m] including:
  - 16m @ 4,199ppm TREO [3m] and 28m @ 6,859ppm TREO [31m], with
  - 5m @ 11,888ppm TREO [36m] and 5m @ 10,726ppm TREO [44m]
- COQDD0002 – 24m @ 4,127ppm TREO [1m]
- AGODD0002 - 37m @ 3,143ppm TREO [0m]
- BDPDD0002 - 31m @ 5,727ppm TREO [0m], with 4m @ 10,454ppm TREO [26m]
- BDPDD0003 - 25m @ 5,391ppm TREO [6m], with 3m @ 10,685ppm TREO [22m].

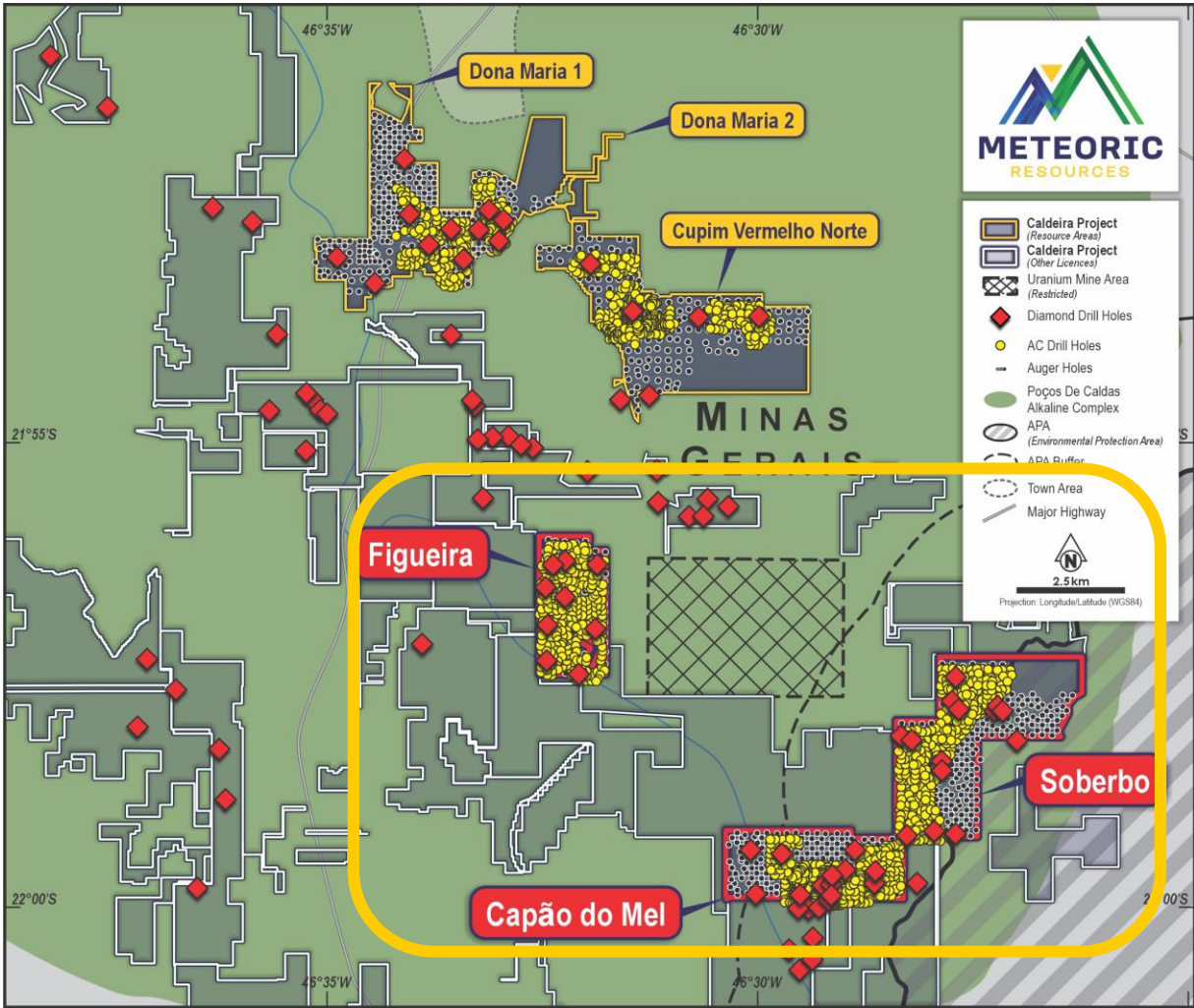
## Mineral Resources as of 05/08/2024

Licence	Category	Tonnes	TREO	Pr <sub>6</sub> O <sub>11</sub>	Nd <sub>2</sub> O <sub>3</sub>	Tb <sub>4</sub> O <sub>7</sub>	Dy <sub>2</sub> O <sub>3</sub>	MREO	MREO/TREO
Capão do Mel	Measured	11	3,888	222	586	6	28	842	22%
<b>Total</b>	<b>Measured</b>	<b>11</b>	<b>3,888</b>	<b>222</b>	<b>586</b>	<b>6</b>	<b>28</b>	<b>842</b>	<b>22%</b>
Capão do Mel	Indicated	74	2,908	163	449	5	23	640	22%
Soberbo	Indicated	86	2,730	165	476	5	23	669	25%
Figueira	Indicated	138	2,844	145	403	5	28	582	21%
<b>Total</b>	<b>Indicated</b>	<b>298</b>	<b>2,827</b>	<b>155</b>	<b>436</b>	<b>5</b>	<b>26</b>	<b>622</b>	<b>22%</b>
<b>Total</b>	<b>Inferred</b>	<b>431</b>	<b>2,363</b>	<b>138</b>	<b>406</b>	<b>4</b>	<b>23</b>	<b>571</b>	<b>24%</b>
<b>Total</b>	<b>M + I + I</b>	<b>740</b>	<b>2,572</b>	<b>146</b>	<b>420</b>	<b>5</b>	<b>24</b>	<b>595</b>	<b>23%</b>

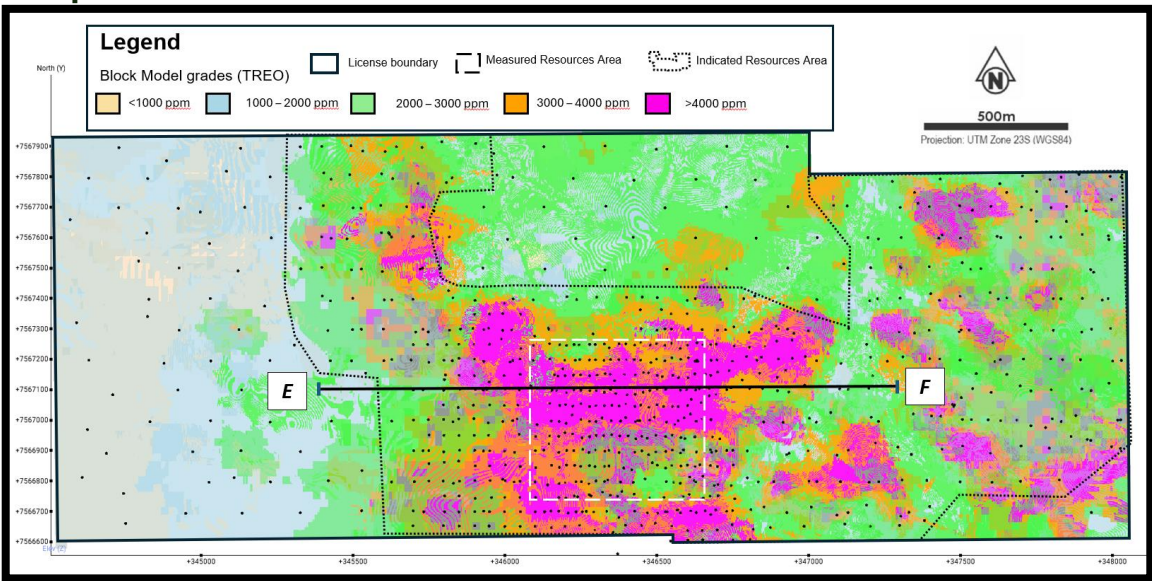




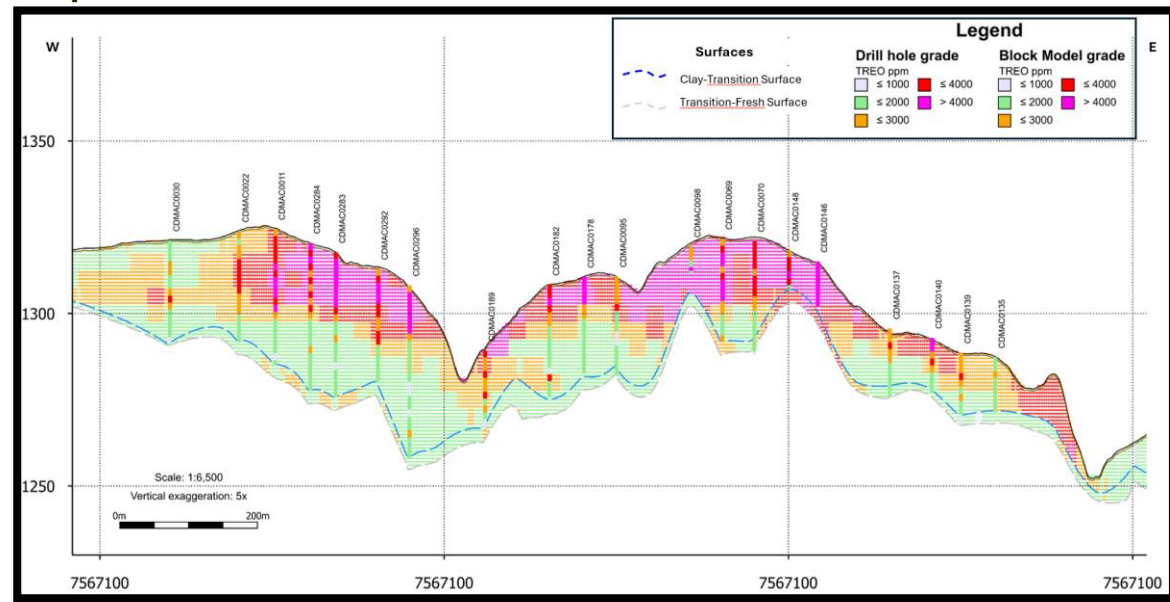
# The Southern Process Hub – Module 1



## Capão do Mel - Plan view



## Capão do Mel - Plan view



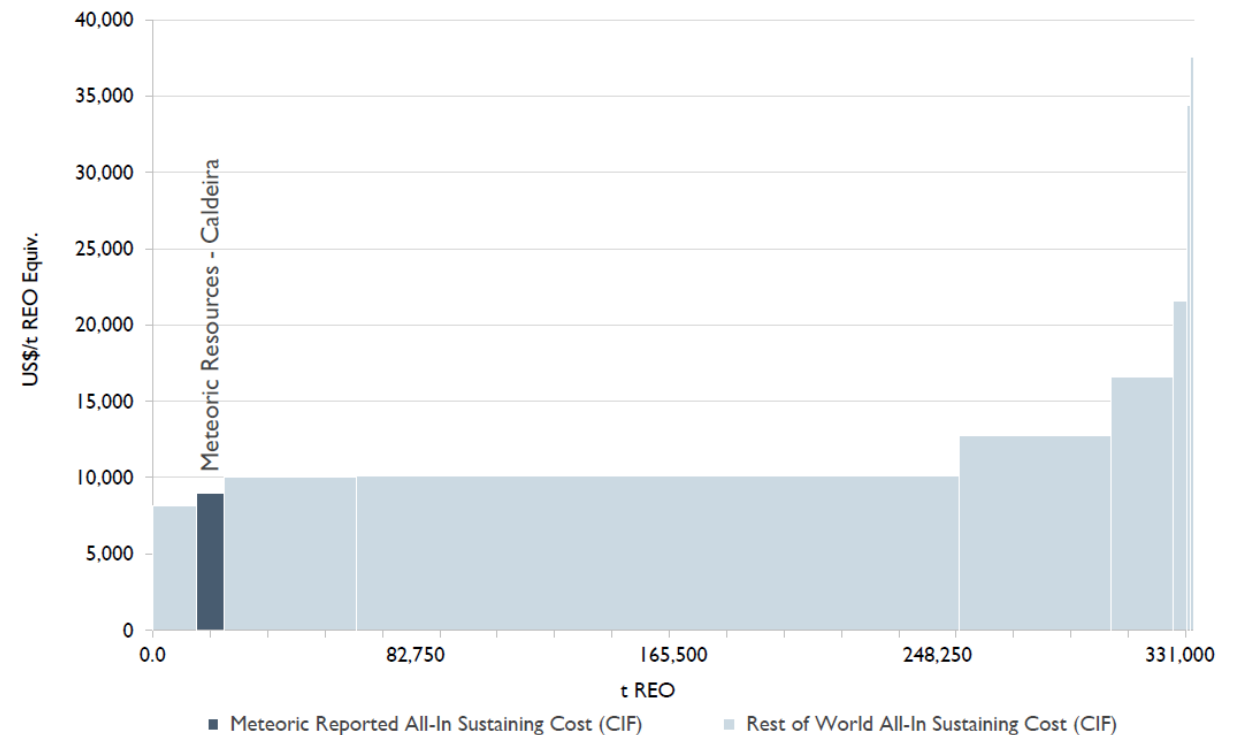
# OPERATING COSTS

Production from Caldeira will be placed at the bottom of the industry cost curve



- Outstanding operating cost efficiency driven by low input costs
- 100% site-based renewable power
- Ready access to skilled labour
- Adjacent to dedicated infrastructure
- Free dig material with short hauling distance
- Low mining strip ratio (0.12:1 waste:ore)
- Simple and low cost AMSUL processing flowsheet delivering high metallurgical recoveries
- Owner-operated mining fleet to manage mining, ore and waste transportation (at \$2.02/t) over multiple shallow open pits
- Processing costs of US\$9.52/t
- Annual sustaining capital estimate of US\$6M for LOM

Cost Metrics	Unit	Years 1-5 Average	LOM Average
Annual C1 opex	US\$M	61	64
Annual C1 opex	US\$/kg TREO	5.50	7.04
Annual AISC	US\$/kg TREO	7.00	9.00
NdPr only C1 opex	US\$/kg NdPr	17.60	21.30



C1 opex includes all mining, processing and general and administration costs

# CAPITAL COSTS, FUNDING AND OFFTAKE

Low capital intensity and operating costs make Caldeira a highly financeable project in all market conditions



- Capital costs for the base case 5Mtpa processing facility and mining fleet estimated at US\$297M
- Class 5 estimate (nominal accuracy of +/- 40%) with a 35% contingency for a reported total capital cost estimate of US\$403M

Description	Cost (US\$M)
Equipment	103
Structural and Materials	36
Construction	80
Indirect	72
Mining	6
Contingency	106
<b>Total</b>	<b>403</b>



US\$250M letter  
of support from  
US EXIM Bank



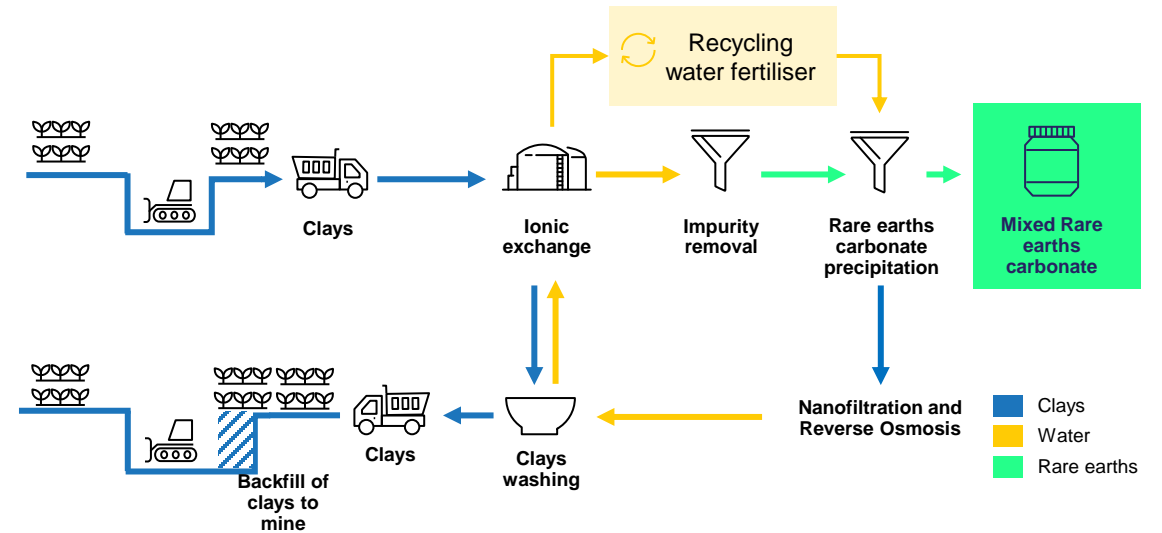
# SIMPLE PROCESS FLOWSHEET WITH NO RADIOACTIVE TAILINGS

Caldeira's favourable ionic clay metallurgy allows Meteoric to produce a refined mixed rare earth carbonate product at a significantly lower cost and energy intensity than hard rock peers

## Key advantages

- 01** Low acidity, short cycle, process driven by ionic clay metallurgy
- 02** No radioactive tailings
- 03** Exceptional recoveries
- 04** Proven process flowsheet and technologies
- 05** Large-scale opportunity

## Process Flowsheet



A simple process with low technical risk  
and high environmental credentials

No drill and  
blast

No tailings  
dams

# INVESTMENT PROPOSITION



Caldeira is the world's most attractive rare earth development project and a true industry disruptor

## For ionic clay rare earth projects, Caldeira has...

- ❑ The most contained metal (**181,031t TREO**)
- ❑ The highest grade (**+4,500ppm**)
- ❑ The highest recoveries (**73% MREO**)

## These industry leading metrics have the potential to deliver...

- ❑ The world's lowest cost rare earth products
- ❑ Low capital intensity per unit of production capacity
- ❑ Strong returns throughout the commodity price cycle

## Caldeira can also be a low impact rare earths operation...

- ❑ Low carbon intensity with 100% renewable power
- ❑ Benign processing using a soluble fertiliser product
- ❑ Dry stacked tailings and backfilling of mining areas





# METEORIC

## CONTACT US

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# CALDEIRA PROJECT RESOURCE ESTIMATES – 740Mt @ 2,572 ppm TREO

World’s Highest Grade Ionic Adsorption Clay REE Deposit (1,000ppm TREO cut-off grade) (ASX 5/8/2024)

Licence	JORC Category	Material Type	Tonnes	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
Capão do Mel	Measured	Clay	11	3,888	222	586	6	28	842	21.7%
Total	Measured		11	3,888	222	586	6	28	842	21.7%
Capão do Mel	Indicated	Clay	74	2,908	163	449	5	23	640	22.0%
Soberbo	Indicated	Clay	86	2,730	165	476	5	23	669	24.5%
Figueira	Indicated	Clay	138	2,844	145	403	5	28	582	20.5%
Total	Indicated		298	2,827	155	436	5	26	622	22.0%
Total	Measured + Indicated		308	2,864	158	441	5	26	629	22.0%
Capão do Mel	Inferred	Clay	32	1,791	79	207	2	13	302	16.9%
Capão do Mel	Inferred	Transition	25	1,752	86	239	3	14	341	19.5%
Soberbo	Inferred	Clay	89	2,713	167	478	5	24	675	24.9%
Soberbo	Inferred	Transition	54	2,207	138	395	4	20	558	25.3%
Figueira	Inferred	Clay	9	3,105	139	379	5	28	551	17.7%
Figueira	Inferred	Transition	24	2,174	115	328	4	21	468	21.5%
Cupim Vermelho Norte	Inferred	Clay	104	2,485	152	472	5	26	655	26.4%
Dona Maria 1 & 2	Inferred	Clay	94	2,320	135	404	5	25	569	24.5%
Total	Inferred		431	2,363	138	406	4	23	571	24.0%
Total	Measured + Indicated + Inferred		740	2,572	146	420	5	24	595	23.1%