



Emá Scoping Study

26 February 2025

In-situ recovery Rare Earths

Ultra Low Capex

Ultra Low Opex Production

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Competent person statement

The information in this announcement that relates to the Ema Mineral Resource is based on and fairly represents information compiled by Mr. Antonio de Castro (acts as BCM's Senior Consulting Geologist through the consultancy firm, ADC Geologia Ltda) and Mr. Leonardo Rocha (associate of GE21 Consultoria Mineral Ltda). Mr. de Castro is a member of the Australasian Institute of Mining and Metallurgy, and Mr. Rocha is a member of Australasian Institute of Geoscientists. Both have sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserve Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. de Castro is the Competent Person for the geological and mineralization model database (including all drilling information). Mr. Rocha is the Competent Person for the construction of the 3D geology/mineralisation model plus the mineral resource estimation. Mr Leonardo Rocha undertook a site visit to the Ema Project between July 11 and 15, 2024. Mr de Castro has planned, managed and/or conducted work programmes for the Ema/Ema East Project, including drilling. He has visited the site on numerous occasions. Mr. de Castro and Mr. Rocha consent to the inclusion in this report of the matters on their information in the form and context in which they appear.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original release continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the relevant original market announcements. Refer to the attached Appendices for further information on the Mineral Resource Estimate and metal equivalents. "Ema Rare Earth Project Scoping Study", dated 26 February 2025.

All material assumptions underpinning the production targets and forecast financial information derived from the production targets in the previous announcement continue to apply and have not materially changed and are considered preliminary in nature.

Exploration results and mineral resources

The information in this Presentation that relates to Exploration Results and Mineral Resources is based upon and fairly represents information previously released to the ASX on 22 May 2023, 6 June 2023, 17 July 2023, 31 July 2023, 13 September 2023, 3 October 2023, 19 October 2023, 7 December 2023, 29 January 2024, 6 February 2024, 22 February 2024, 13 March 2024, 3 April 2024, 22 April 2024, 3 May 2024, 20 May 2024, 8 July 2024, 2 August 2024, 6 August 2024, 19 August 2024, 8 October, 11 November, 19 November, 14 January, 21 January, 17 February and 21 February.

This presentation has been approved for release by the Board of Directors.

Brazilian REE Landscape

EMA Rare Earths Project

30 km south from Apuí



In-situ recovery mining

The most cost effective, environmentally friendly method of mining



RIGHT Geology

Weathering less
than 20m deep



RIGHT Style of Mineralisation

Ore grades directly
above bedrock



RIGHT Hydrogeology

Permeable orebody
Non-fractured bedrock



RIGHT Chemistry

High recoveries and
Ionic leaching



RIGHT Reagents

MgSO₄
Non-aggressive fluids
ESG compliant



RIGHT Product

MREC with 98% purity



Brazilian
Critical Minerals

**In-situ recovery is a well understood rare
earth mining method**

**Significant contributor to current world
production output**



NO
Land Clearing



NO
Open Pit Mining



NO
Dirty Mining
Equipment



NO
Noisy Dusty Tuck
Haulage

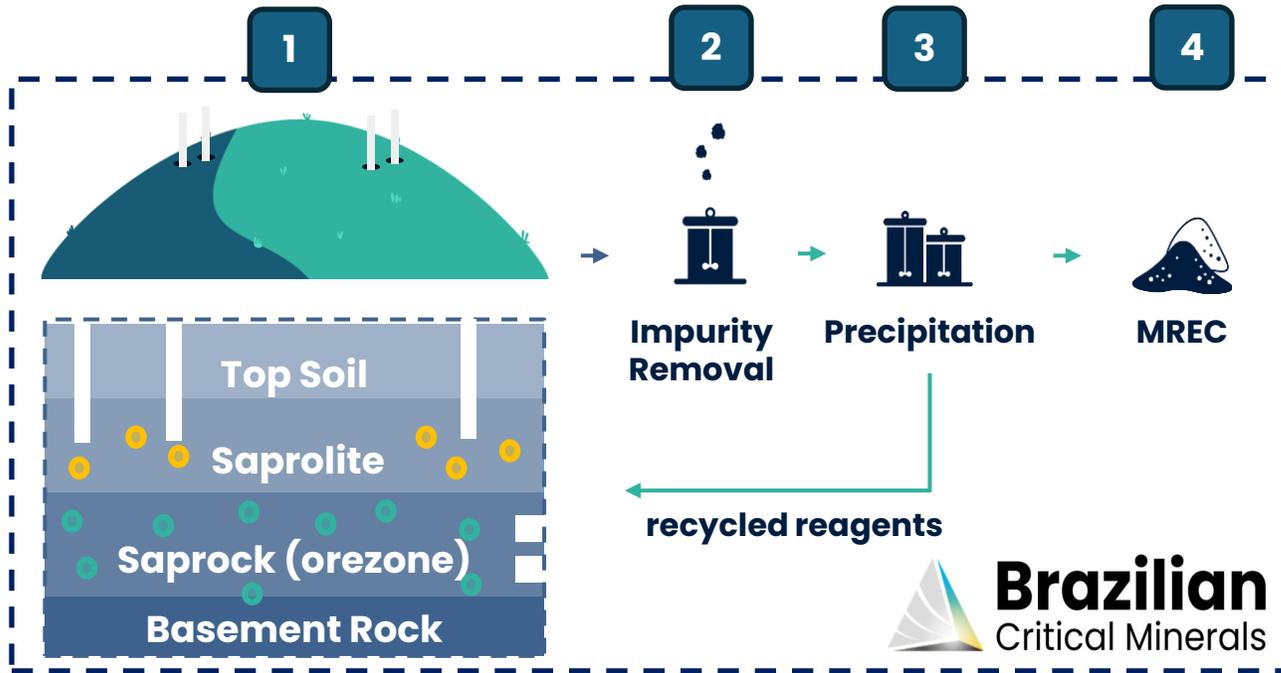


NO
Large Processing
Facility



NO
Need for
Reclamation

4-step flow sheet enables very low Capex – US\$55M



Insitu leach – low CAPEX – low OPEX

Multiples lower Capex vs all other REE projects

Processing Plant
Steps 2 – 3 – 4



Highly Profitable at US\$60/kg NdPr (Spot Price)



Brazilian
Critical Minerals

Annual Production (LOM avg)

8,700t MREC
4,800t TREO
1,800t MREO

Pre-production Capital

US\$55M
includes 35% contingency

Mine Life

20 years – starter area
only

Cash Costs

US\$6.15/kg TREO
US\$16.95/kg NdPr

Free Cash Flow (post-tax LOM)

US\$67Mpa

Free Cash Flow (post-tax Spot)

US\$48Mpa

Total free Cash (post-tax LOM)

US\$1.3B

NPV₈ (post-tax LOM)

US\$498M

NPV₈ (post-tax Spot)

US\$355M

IRR (LOM)

55%

IRR (Spot)

52%

Payback Period

~2.4 years

Capex and Operating Costs



Capex	Unit	Spot	LOM
Pre-production capital expenditure	US\$M	55	55
LOM sustaining capital expenditure	US\$ / year	1.59	1.59

Unit cash operating costs	Unit	Spot	LOM
Annual operating cost	US\$M	29.4	29.4
Annual operating cost	US\$/kg TREO	6.15	6.15
Annual AISC	US\$/kg TREO	6.69	6.69

Capex of US\$55M includes **35%** contingency

Lowest published **Capex** to produce high value mixed rare earth carbonate (**MREC**)

In-situ recovery capable of producing REO at world's **lowest** possible **cost structure and highest margins**

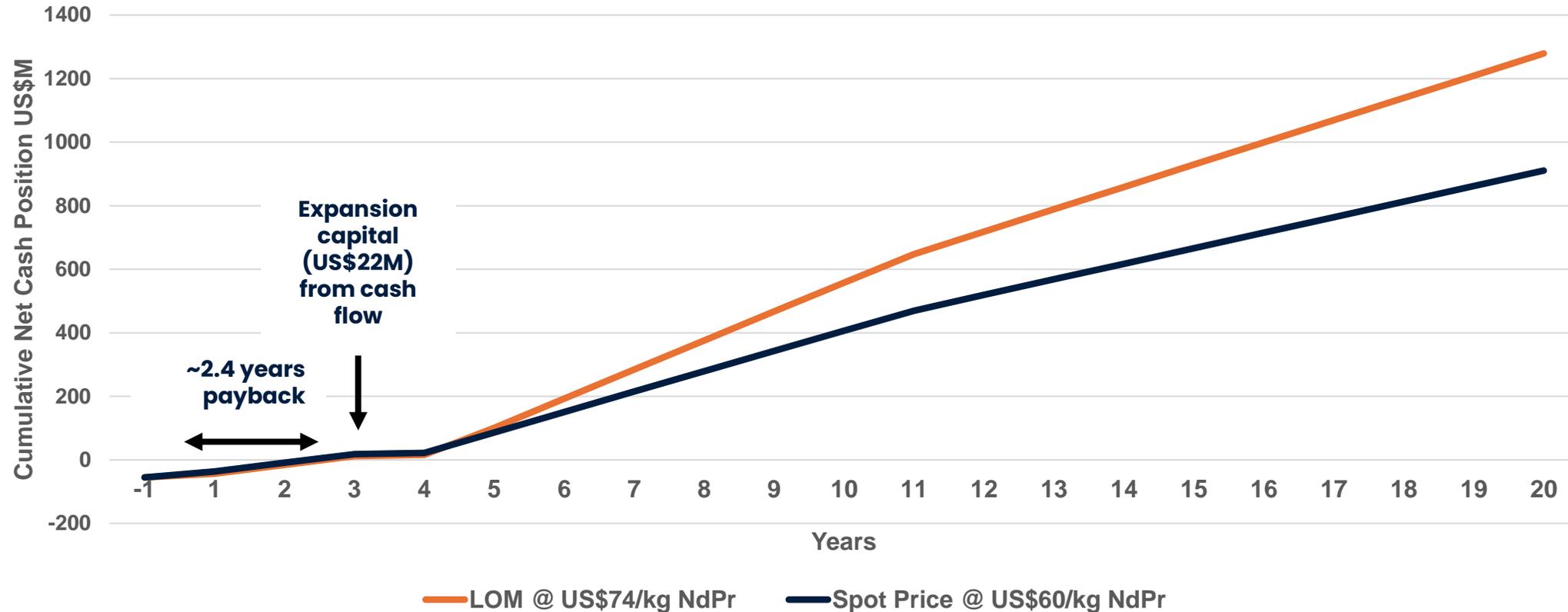
Capex Cost



CAPEX	US\$M	% of total
Direct Costs		
Equipment	6.01	11.8%
Materials	1.50	2.9%
Plant Construction	17.11	33.5%
Wellfield Installation	4.62	9.1%
Indirect Costs		
EPCM	5.27	10.3%
Owner's Cost	1.46	2.9%
Other	1.83	3.6%
Contingency (35%)	13.23	25.9%
Sub-Total	51.03	100%
Pre-production drilling	4.10	
Total	55.23	

- Project is **simple, low-risk** and **quick to establish**
- **Pre-production Capex Ultra low**
- Largest cost centres are **well field setup** and **plant earthworks**
- **Ideal geology and topography** allow for **ISR** to develop **Lowest Opex and Capex** of any rare earth project in development producing an MREC

US\$55M Capex – 2.4 year Payback



LOM NPV – US\$498M (post-tax)

Spot NPV – US\$355M (post-tax)

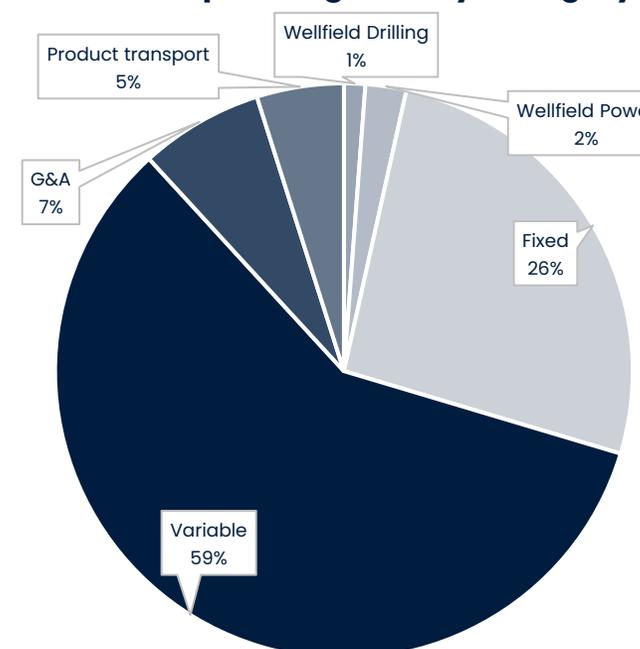
LOM Pricing – US\$74*/kg NdPr avg

Spot Pricing – US\$60*/kg NdPr avg

Operating Costs

Operating Costs (Real LOM)	Average Cost Annual (US\$M)	Total Cost LOM (US\$M)
Well Field Drilling	0.34	7.1
Well Field Pumping	0.67	13.6
Process Plant		
Fixed – Average LOM	7.62	155
Variable – Average LOM	17.36	347
G & A – Average LOM	2.00	41
Product transport – Average LOM	1.44	29
Total	29.43	593
	Unit	US\$/kg
Operating Cost (LOM)	US\$/kg TREO	6.15
Operating Cost (LOM) – AISC	US\$/kg TREO	6.69
Operating Cost (LOM)	US\$/kg NdPr	16.95

Annual Operating Cost by Category

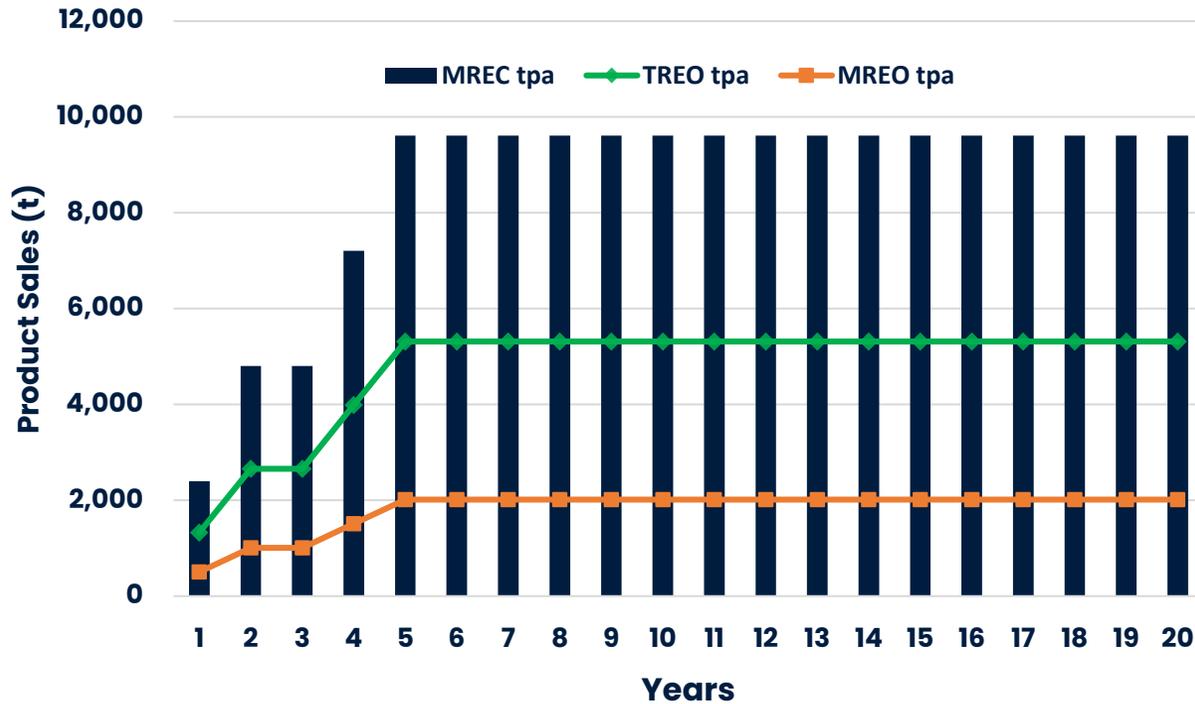


- ISR Recovery Mining – common in REE ionic clay extraction
- Simple process flowsheet, 4 steps to final product
- High metallurgical recoveries of key REE elements
- Green, ESG complaint, magnesium sulfate reagent usage
- Owner operator power generation
- Access to local processing water
- Access to local transport infrastructure
- All transport costs are CIF Asia
- Accommodation facilities in nearby towns

Long Life – Ultra Low Opex

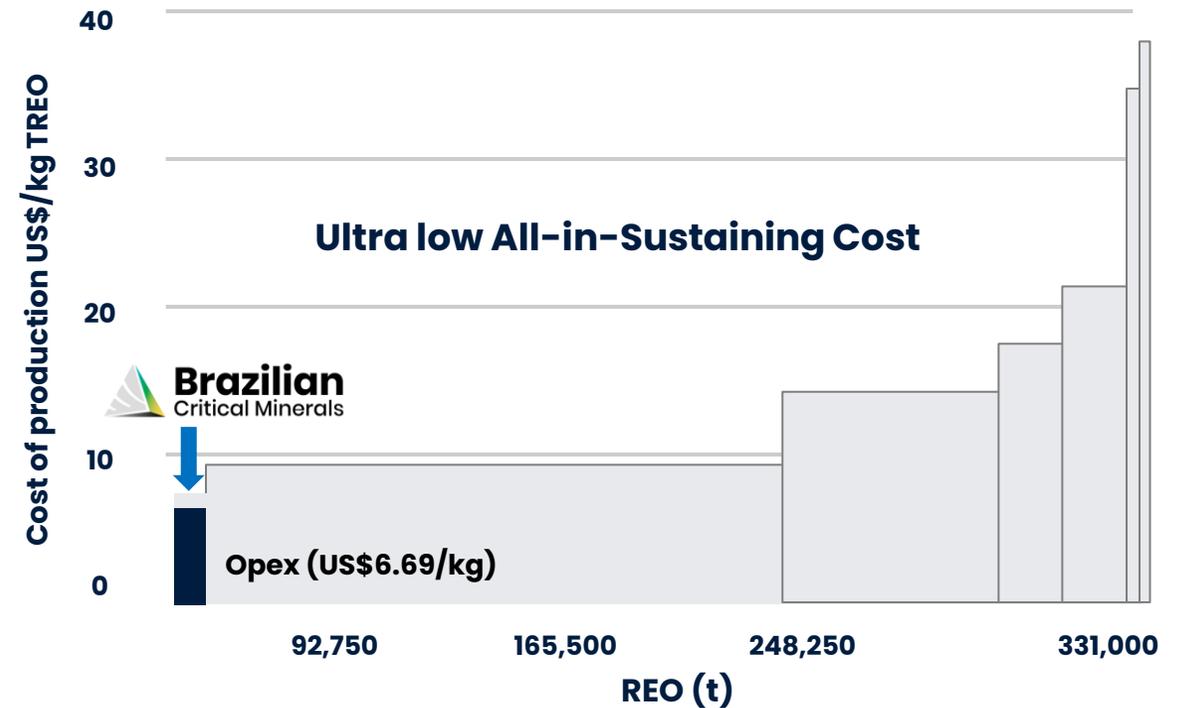


Annual Production Profile



MREC ~ 8,700tpa, inclusive of
~ 4,800tpa TREO, containing
~ 1,800tpa MREO

2024 REO Cash Cost Curve



LOM (AISC) US\$6.69/kg TREO



Key Financial Measures



Cashflow & Earnings Metrics	Unit	Spot	LOM
Annual Revenue	US\$M	143	182
Revenue (gross)	US\$M	2,869	3,634
Project net cashflow (post-tax)	US\$M	911	1,279

Em able to generate exceptional returns post-tax at current **spot** prices

NPV, returns and key metrics	Unit	Spot	LOM
NPV ₈ % (post-tax, ungeared)	US\$M	355	498
IRR (post-tax, nominal basis)	%	52	55
Payback period (post-tax, from first production)	Years	2.4	2.4
Capital efficiency (post-tax NPV / capex)	%	449	601

Rare Earth Pricing	Unit	Spot	LOM
R\$/US\$ (long term forecast)	USr	0.174	0.174
TREO price forecast	US\$/kg	30	37
NdPr price forecast	US\$/kg	60	74

Passes the Stress Test



Post-tax (LOM) US\$	Base Case (NPV US\$498M, IRR 55%)				
(US\$M)	\$66/kg NdPr	\$60/kg NdPr flat	\$53/kg NdPr flat	Opex 50% higher	Plant Capex 50% higher
NPV	394	355	265	398	461
Discount Rate	8%	8%	8%	8%	8%
IRR	47%	52%	40%	45%	41%
CE (NPV/Capex)	476%	428%	321%	481%	376%

- **US\$66/kg NdPr** – 13% lower than LOM avg price (US\$74/kg), escalated in year 5
- **US\$60/kg NdPr** – 24% lower than LOM avg price (US\$74/kg) maintained flat
- **US\$53/kg NdPr** – 40% lower than LOM avg price (US\$74/kg) maintained flat
- Project **not sensitive** to Capex and Opex cost fluctuations

Under every **stressed scenario** the project is **extremely cash flow positive**

Brazilian Ionic Clay projects



	Unit	BCM	MEI	Aclara	VMM
		Scoping	Scoping	PEA	Scoping
Date		Feb 2025	Oct 2024	Sep 2024	Feb 2025
Project		Ema	Caldeira	Carina	Colossus
Mine Life	years	20	20	22	20
Price Forecast - LOM	US\$/kg (NdPr)	74	111	197	90
NPV (pre-tax)	US\$M	668	1,403	2,337	1,433
IRR (pre-tax)	%	63	40	32	43
Price Forecast - Spot	US\$/kg (NdPr)	60	60	n/a	60
NPV (post-tax)	US\$M	355	174	n/a	388
IRR (post-tax)	%	52	15	n/a	20
Capex	US\$M	55	403	593	373
Inclusive Capex Contingency	%	35	35	30	30
Operating Cost (LOM)	US\$/kg TREO	6.15	6.74	27.60	6.00
Operating Cost (LOM)	US\$/kg NdPr	16.95	20.41	96.69	16.86
Payability	%	70	70	87	70

Capex - US\$55M

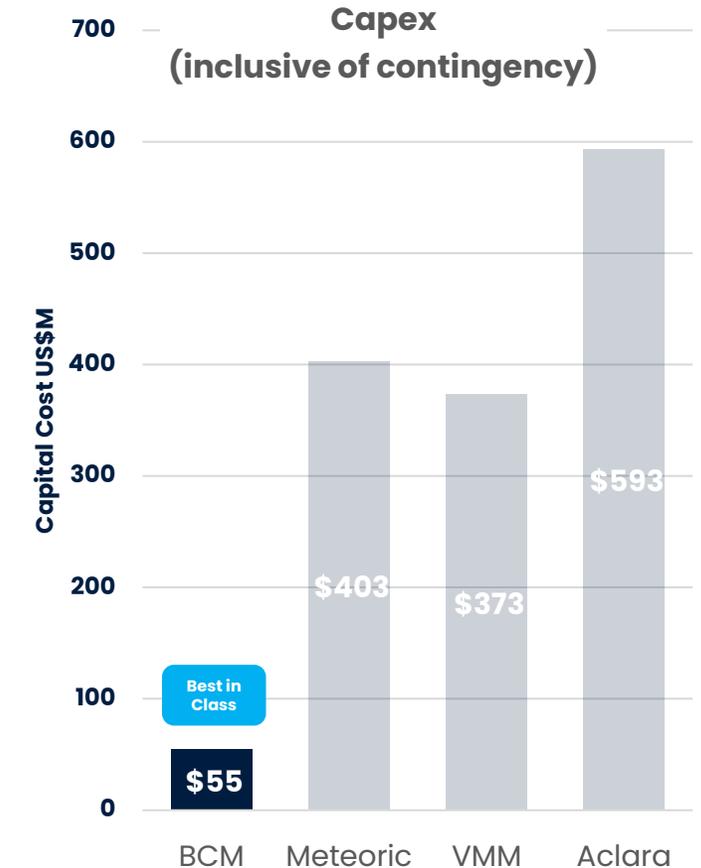
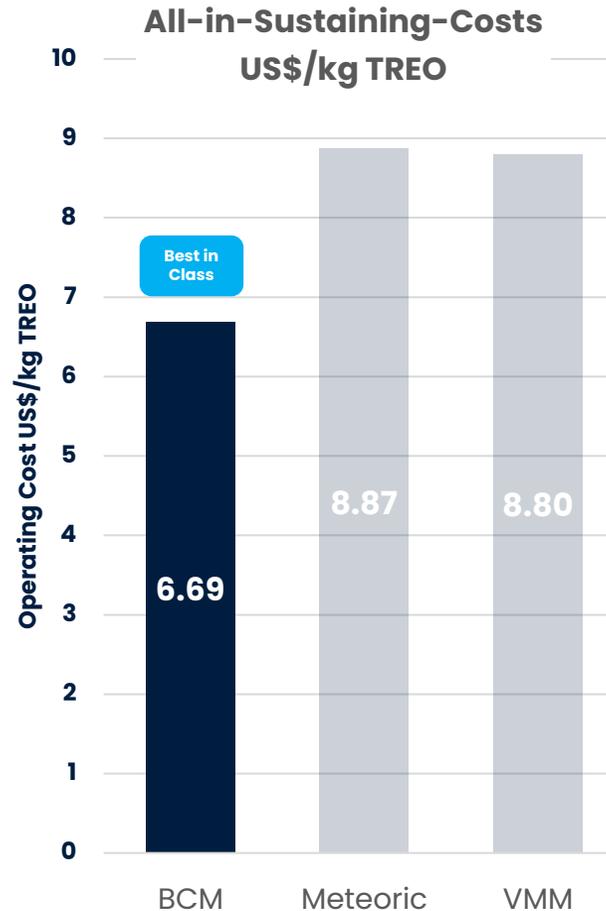
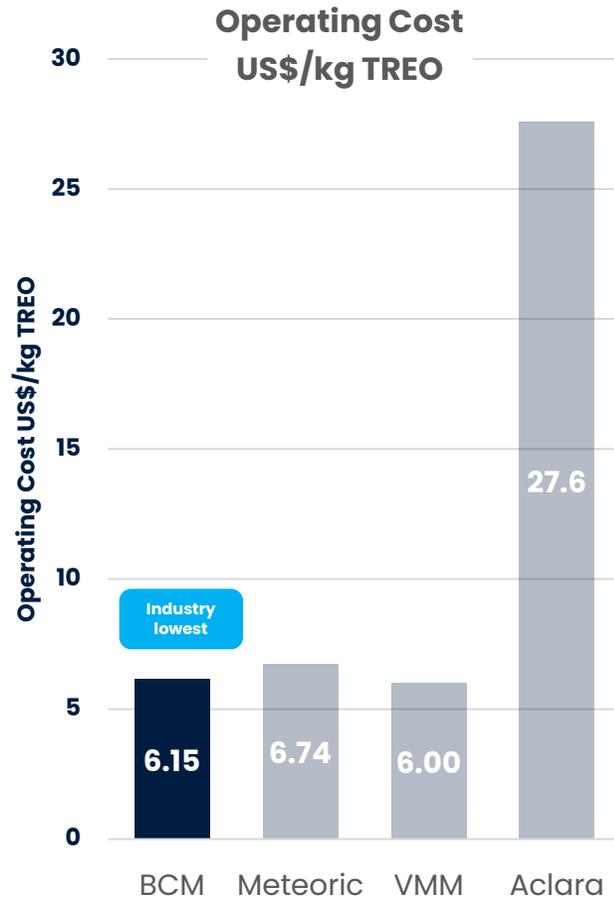
- 7 x smaller than MEI
- 7 x smaller than VMM
- 11 x smaller than Aclara

Industry **low Opex** and **Capex**

Industry **high NPV** and **IRR**

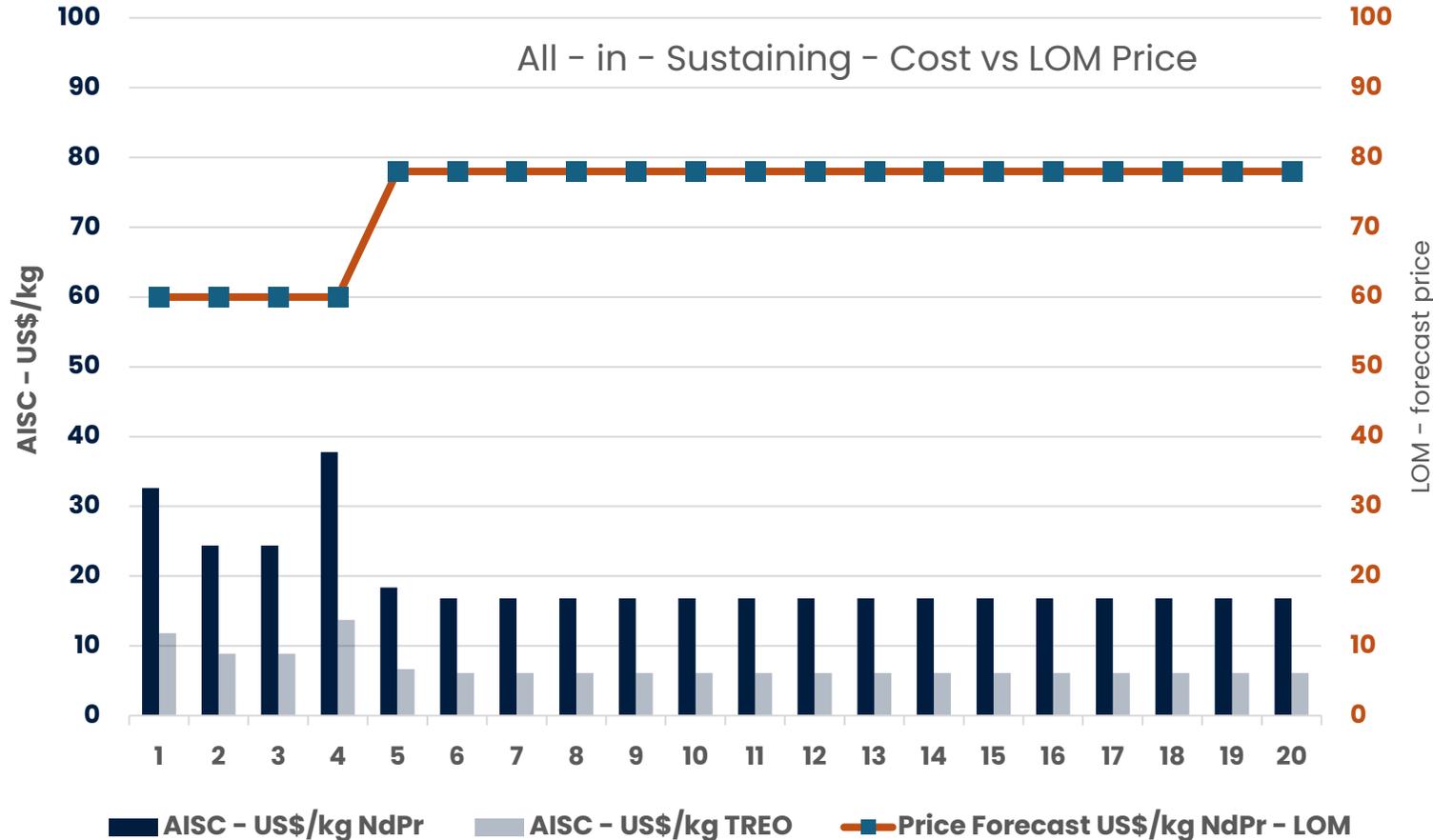
Brazilian Ionic Clay projects

ISR: Simple extraction & flow sheet drives ultra-low capex and opex



Industry leading Capex and Opex of any rare earth project

Brazilian Ionic Clay - AISC



Lowest LOM Price –
US\$74/kg

Low All in Sustaining Cost –
US\$6.69/kg TREO

(Lowest for any REE project generating an MREC)

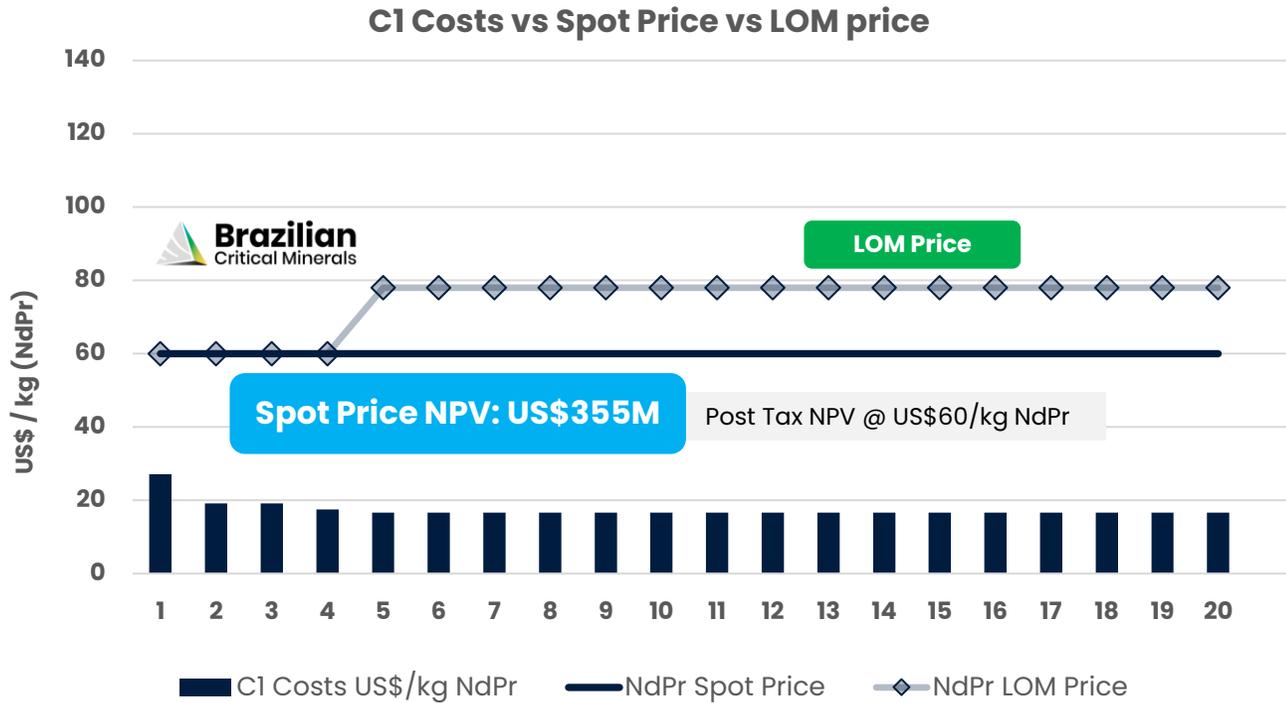
High Margins and Profitability

High NPV post tax

15% corporate tax rate used for first 10 years



Brazilian Ionic Clay – REE Prices



**LOM Price US\$74/kg –
NPV US\$498M**

Lowest avg price used for any REE project

**Spot Price US\$60/kg –
NPV US\$355M**

Superior returns at different price points

Project does not require elevated REE prices to generate strong returns

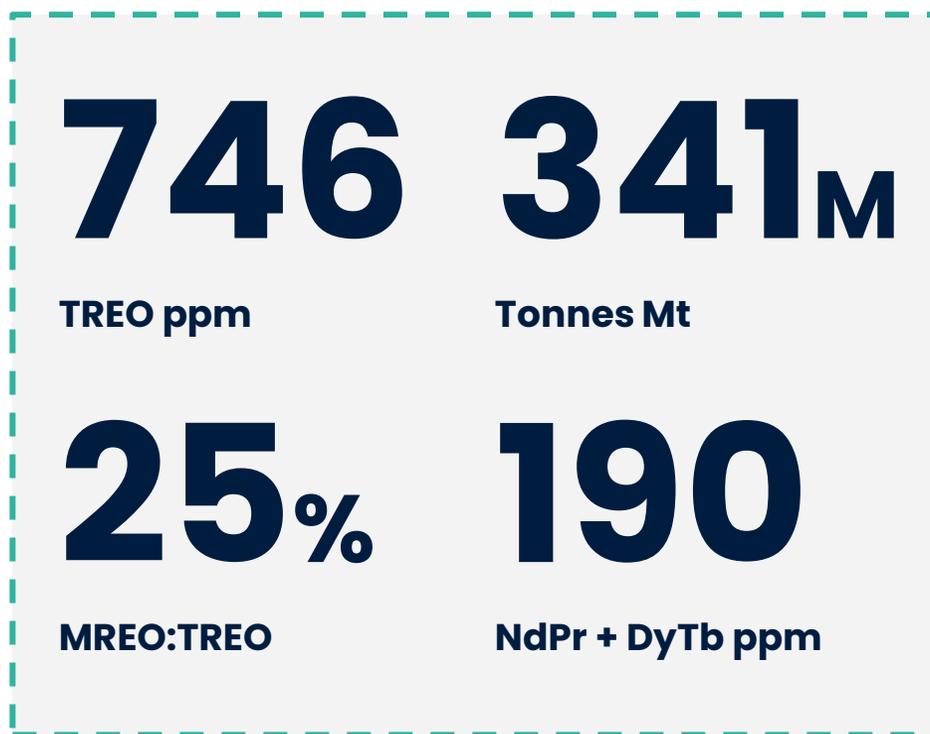


Large Resource Base



Central Starter Area Mineral Resource Estimate – February 2025

73% of Central Starter Area classified as Indicated Resource



Ema REE Project 2025 Mineral Resource Estimate – Central Starter Zone

JORC Category	cut-off ppm TREO	Tonnes Mt	TREO ppm	NdPr ppm	DyTb ppm	MREO ppm	MREO:TREO %
Indicated	500	248	759	176	16	192	25
Inferred	500	93	712	168	16	185	26
*Total	500	341	746	174	16	190	25

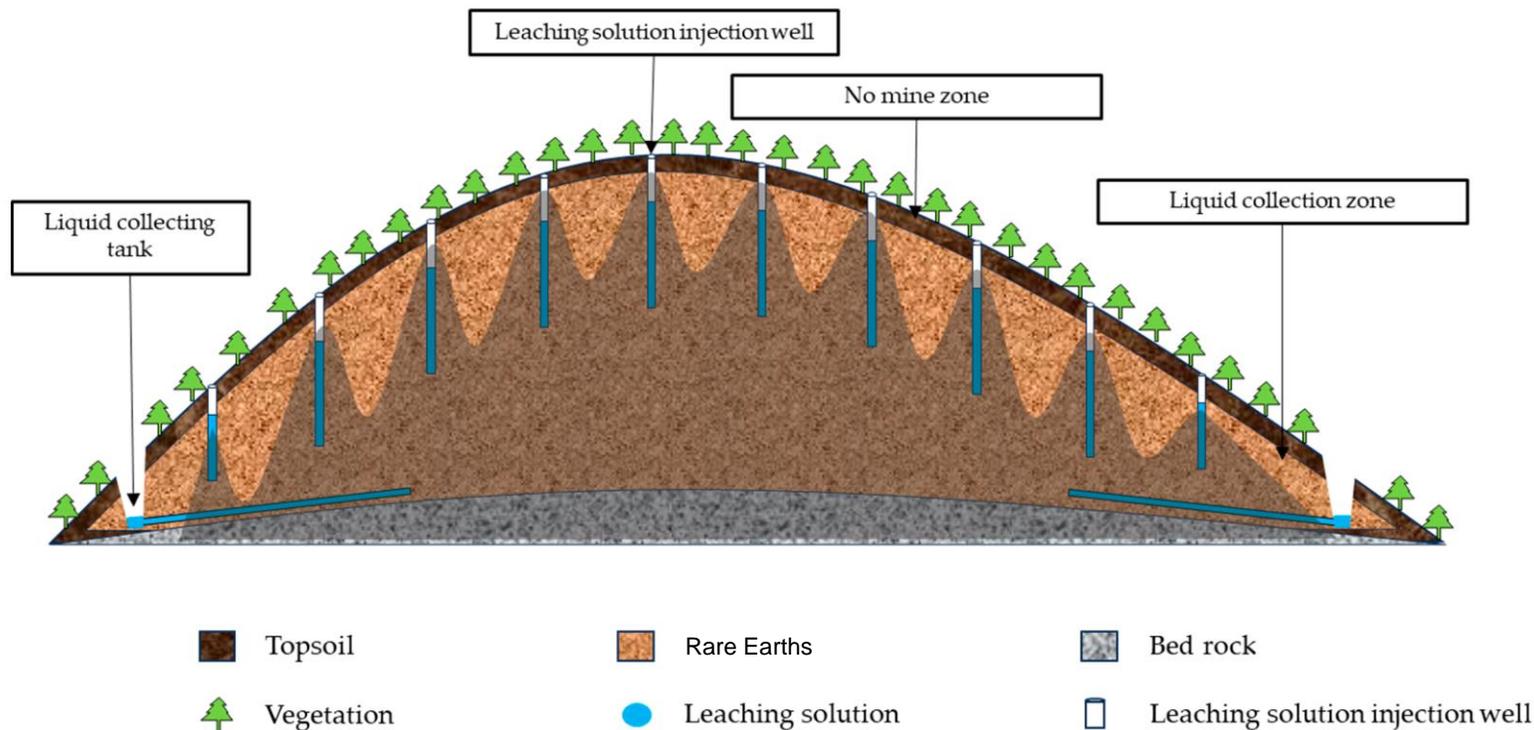
Ema REE Project 2025 Mineral Resource Estimate – Global MRE

Ind + Inf	500	943	716	168	16	184	26
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Global MRE 943Mt is inclusive of Central Starter Zone total of 341Mt

In-Situ REE Mining

“highest margin REE operations World wide”



- **Readily leachable clays laden with rare earths**

- Suitable topography
- Impermeable bedrock
- High proportion of silica ~50% in clay allows solution flow
- Lower proportion of clay materials prevents solution blocking
- Volumes of pores (air spaces) in the clay allows solution flow

- **Proven decades old technology**

- **Only green reagents utilised**

- **Using gravity as our natural pumping system**

- **ISR accelerates natural processes in the ground**

Superior Basket Price



SPOT MREC BASKET			BCM		VMM		MEI	
Head Grade (ppm)			965		4,472		4,439	
Reagent			Magnesium Sulfate		Ammonium Sulfate		Ammonium Sulfate	
Time			30 Minutes		30 Minutes		30 Minutes	
pH			4.5		4.5		4.5	
Product			MREC		MREC		MREC	
Oxide	Price (12.02.25) USD/kg		%	Basket \$	%	Basket \$	%	Basket \$
La2O3	\$	0.53	34.7	\$ 0.18	44.5	\$ 0.24	57.6	\$ 0.30
CeO2	\$	1.14	8.9	\$ 0.10	2.4	\$ 0.03	1.4	\$ 0.02
Pr6O11	\$	62.47	7.1	\$ 4.45	8.3	\$ 5.20	8.6	\$ 5.34
Nd2O3	\$	61.36	29.1	\$ 17.88	29.2	\$ 17.89	22.0	\$ 13.50
Sm2O3	\$	2.09	4.6	\$ 0.10	3.2	\$ 0.07	2.4	\$ 0.05
Eu2O3	\$	27.19	0.5	\$ 0.15	0.8	\$ 0.23	0.6	\$ 0.16
Gd2O3	\$	23.15	2.9	\$ 0.67	2.1	\$ 0.49	1.5	\$ 0.35
Tb4O7	\$	859.02	0.3	\$ 2.33	0.3	\$ 2.23	0.2	\$ 1.72
Dy2O3	\$	242.64	1.4	\$ 3.33	1.2	\$ 2.86	0.8	\$ 1.94
Ho2O3	\$	66.24	0.2	\$ 0.16	0.2	\$ 0.14	0.1	\$ 0.07
Er2O3	\$	41.14	0.7	\$ 0.29	0.5	\$ 0.19	0.3	\$ 0.12
Tm2O3	\$	112.40	0.1	\$ 0.11	0.1	\$ 0.06	0.0	\$ 0.01
Yb2O3	\$	14.08	0.6	\$ 0.08	0.3	\$ 0.04	0.1	\$ 0.01
Lu2O3	\$	718.17	0.1	\$ 0.60	0.0	\$ 0.29	0.0	\$ 0.07
Y2O3	\$	5.72	8.7	\$ 0.50	6.9	\$ 0.40	4.5	\$ 0.26
Basket Price US\$/kg (TREO)			\$	30.93	\$	30.34	\$	23.92
Basket Price US\$/kg (NdPrDyTb)			\$	27.99	\$	28.19	\$	22.50
MREO %			37.9		38.9		31.6	
TREO %			100.0		100.0		100.0	

90% Highly comparable

Magnet value in Basket

38% Highly comparable

MREO:TREO – leading composition for Ionic Clay

\$30.93 Best in Class

Value of Basket – highest for Ionic clay

¹ Viridis Mining and Minerals (ASX:VMM) ASX Announcement "Colossus Maiden Mixed Rare Earth Carbonate (MREC) Product 24.09.24
Prices www.giti.sg/markets

Ema – delivering exceptional results



Resource

Large Mineral Resource 943Mt
Starter Area 20 year mine life
38% MREO inside TREO

Geology

Unique attributes similar to Chinese projects allow low-cost ISR mining

Supply

Ultra Low-cost NdPr production
Highly Profitable at current spot price

Capex & Opex

Ultra Low Capex US\$55M
Factor of 5-30 times lower Capex than other REE projects
Opex US\$6.15/kg TREO

Investment

- **NPV US\$498M**
- **IRR 55%**
- **2.4 year payback**

Scoping Study – Key Contributors



Responsibility	Company
Environmental Baseline Studies	 The logo for CERN, consisting of a green stylized 'C' followed by the text "CERN" and "Consultoria e Empreendimentos de Recursos Naturais" below it.
Mineral Resource Estimation, pit shell optimisation and drilling field supervision	 The logo for GE21, featuring the text "GE21" in a bold font, "Consultoria Mineral" below it, and three 3D cubes (yellow, red, grey) to the right.
Geochemical Assay	 The logo for SGS, with the letters "SGS" in a bold, grey font, a vertical orange line to the right, and a horizontal orange line below.
Metallurgical testwork	 The logos for the Australian Government and ANSTO. On the left is the Australian Government crest with the text "Australian Government" below it. On the right is the ANSTO logo, featuring a blue stylized 'A' followed by the text "ANSTO".
Hydrology and Well Field Design	 The logo for WSP, with the letters "WSP" in a bold, red font on a black background.
Process design, concept plant layout and project cost estimate development	 The logo for Ausenco, with the text "Ausenco" in a bold, black font, followed by a circular icon containing a stylized 'C'.



Enquiries

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QUESTIONS