



TECHNOLOGY
METALS AUSTRALIA LIMITED

VANADIUM FOR A CLEANER FUTURE

**121 MINING INVESTMENT
EMEA & AMERICAS
SEPTEMBER 2022**

ASX:TMT



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Competent Person's Statement

The information in this report that relates to Exploration Results are based on information compiled by Mr John McDougall. Mr McDougall is the Company's Exploration Manager and a member of the Australian Institute of Geoscientists. Mr McDougall has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this report and to the activity which they are 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' (**JORC Code**). Mr McDougall consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources is based on information compiled by Mr Aaron Meakin. Mr Aaron Meakin is a Principal Consultant of CSA Global Pty Ltd and is a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. Mr Aaron Meakin has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Aaron Meakin consent to the disclosure of the information in this announcement in the form and context in which it appears.

The information that relates to Ore Reserves is based on information compiled by Mr Ross Cheyne of Orelogy who takes overall responsibility for the Report as Competent Person. Mr Cheyne is a Fellow of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Person in terms of the JORC (2012 Edition). The Competent Person, Ross Cheyne has reviewed the Ore Reserve statement and given permission for the publication of this information in the form and context within which it appears.

The information in this report that relates to the Processing and Metallurgy for the Murchison Technology Metals project is based on and fairly represents, information and supporting documentation compiled by Mr Brett Morgan, a full-time employee of Technology Metals Australia. Mr Morgan is a Member of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Person in terms of the JORC (2012 Edition). The Competent Person, Brett Morgan consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Pursuant to LR-5-19-1 production target and financial forecast: Refer ASX Release - 5 August 2022 for full details of the MTMP Ore Reserve update: Financial Metrics at long term average price of US\$10.50/lb V2O5.

Pursuant to LR-5-19-2 production target and financial forecast: The material assumptions as per the ASX release on 5 August 2022 continue to apply and have not materially changed.

Refer to ASX Releases on 5 August 2022 for full details of global Murchison Technology Metals Project Ore Reserve, and Yarrabubba Vanadium and Ilmenite Ore Reserves.

Capital Structure

TMT

ASX Code

\$18.6m

Cash
(As at 30 June 2022)

\$74.5m

Market Cap
(As at 5 September 2022)

209.8m

Shares on Issue

16.2m

Unlisted Options¹
(Various exercise)v

5.52m

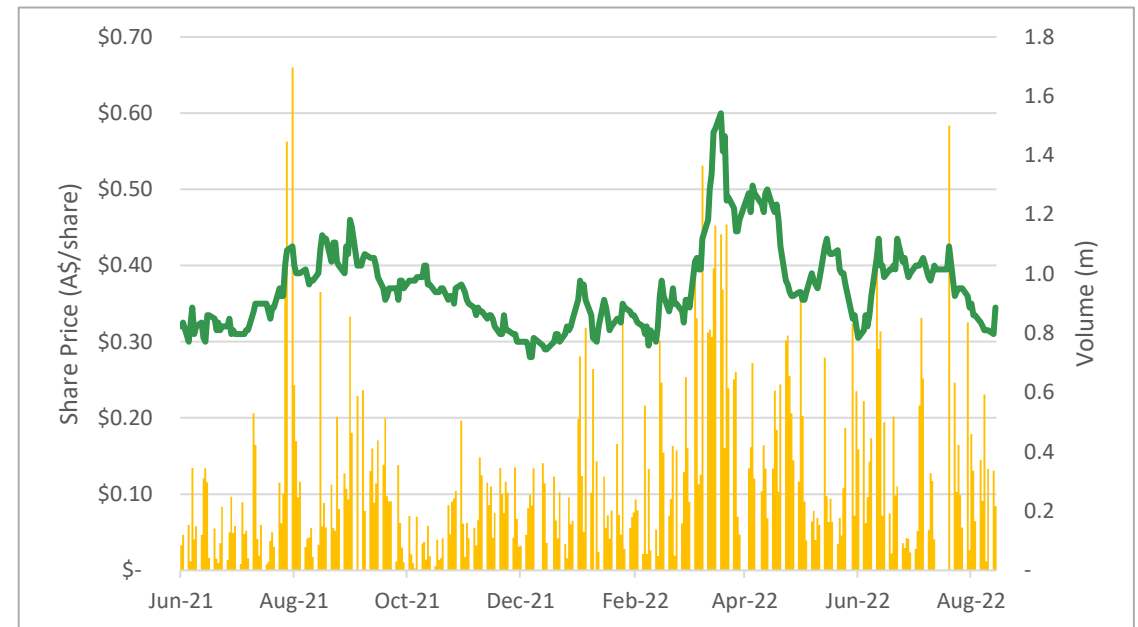
Performance Rights²

Holder Name	Holding (%)
Resource Capital Fund VII L.P.	17.2%
BNP Paribas Nominees	10.0%
Standard Pastoral Company	6.7%
Retzos Group	5.2%
TOTAL TOP 20	57.6%
Board and Management holdings (fully diluted)	9.4%

*Based on issued capital as at 5 September 2022

¹ Includes 14.35m director and employee options – 3.9m vested, balance vest on project development hurdles

² 50% vest on MTMP FID, 50% vest on first production



EXPERIENCED BOARD & MANAGEMENT



Michael Fry
Non-Exec Chairman

Michael holds a Bachelor of Commerce degree from the University of Western Australia, is a Fellow of the Financial Services Institute of Australasia, and is a past member of the Australian Stock Exchange. Mr Fry has extensive corporate and commercial experience, financial and capital market knowledge and a background in corporate treasury management.



Ian Prentice
Managing Director

Ian holds a Bachelor of Science (Geology) from the University of Western Australia and has over 30 years experience in the global mining industry, spanning exploration, development and open cut and underground mining. Ian is a Member of the Australasian Institute of Mining and Metallurgy.

Dave English
Chief Operating Officer

David is a mining professional with over 30 years operations and project development experience working in the Western Australian resources industry.

Mr English was General Manager Operations at the Windimurra Vanadium Project from February 2008 until February 2010 involved in the process of re-developing the project.

Elisha Civil
Chief Financial Officer

Elisha is a Chartered Accountant with over 20 years' experience in the resources sector including General Manager Finance at Regis Resources, and Group Manager Finance and Tax at Fortescue Metals Group.

Ms Civil holds an MBA from the University of Western Australia, and a Bachelor of Commerce from Murdoch University.



Jacqueline Murray
Non-Exec Director

Jacqueline is a Partner at Resource Capital Funds (RCF) and has worked within the mining industry for over 20 years.

Ms Murray joined RCF in 2012 after working in business analysis and improvement roles with BHP Billiton. Prior to this she worked in various geotechnical engineering roles in underground and open pit operations within BHP Billiton and WMC Resources.



Dr. Carmen Letton
Non-Exec Director

Carmen is a mining engineer and mineral economist with 35 years of global experience and a diverse background in senior leadership roles in operations, business improvement and operational excellence.

Dr. Letton was most recently the Head of Resource Development and Life of Asset Planning (Asset Strategy Development) at Anglo American, having previously worked at BHP Billiton, Rio Tinto, Newmont, Newcrest and a number of other international mining companies.

Sonu Cheema
Company Secretary

Sonu is a Partner at Cicero Group with over 10 years' experience working with public and private companies in Australia and abroad. Roles and responsibilities held by Mr Cheema include completion and preparation of management and ASX financial reports, investor relations, initial public offers, mergers and acquisitions, management of capital raising activities and auditor liaison.

John McDougall
Exploration Manager

John holds a Bachelor of Science with Honours (Geology) from the University of Tasmania and has over 20 years experience in mineral exploration, with iron ore, base and precious metals experience.

John has been managing the geological data acquisition at Gabanintha and Yarrabubba since February 2017.

VANADIUM REDUCES EMISSIONS VIA STEEL ALLOYS AND BATTERIES

- Iron - Steel sector one of the largest CO₂ emitters
- **Adding vanadium** reduces steel weight, increases capacity and reduces steel requirement

= CO₂ Savings

- **Vanadium redox flow batteries** (VRFB) ideal for time-shifting large amounts of energy for later use (long duration energy storage)
- Increases use of renewables, reducing fossil fuels

= CO₂ Savings

Strong, authentic and reliable corporate citizen



- ✓ Focused on long-term relationships with all stakeholders
- ✓ Develop, nurture and look after our people
- ✓ Energy and water efficiency

RENEWABLE ENERGY NEEDS LONG DURATION STORAGE

Recent global events highlighting urgent need for long duration storage

Gas supply challenges into EU from Russia

Increased power system instability from removal of thermal energy generation and rapid integration of large-scale renewable capacities

Australian Energy Market Operator's (AEMO) suspension of Australia's National Energy Market and subsequent management of spot electricity market for a week

Extensive political and corporate commitments to reach Net Zero by 2050

Long Duration Energy Storage is needed to make "solar power available when the sun isn't shining and keeping wind energy on tap when there's no breeze"

USA Department of Energy, June 2022

"We need a big increase in storage so we can store the renewable energy during the day and use it in the evening."

Chris Bowen, Federal Minister for Climate Change and Energy, April 2022

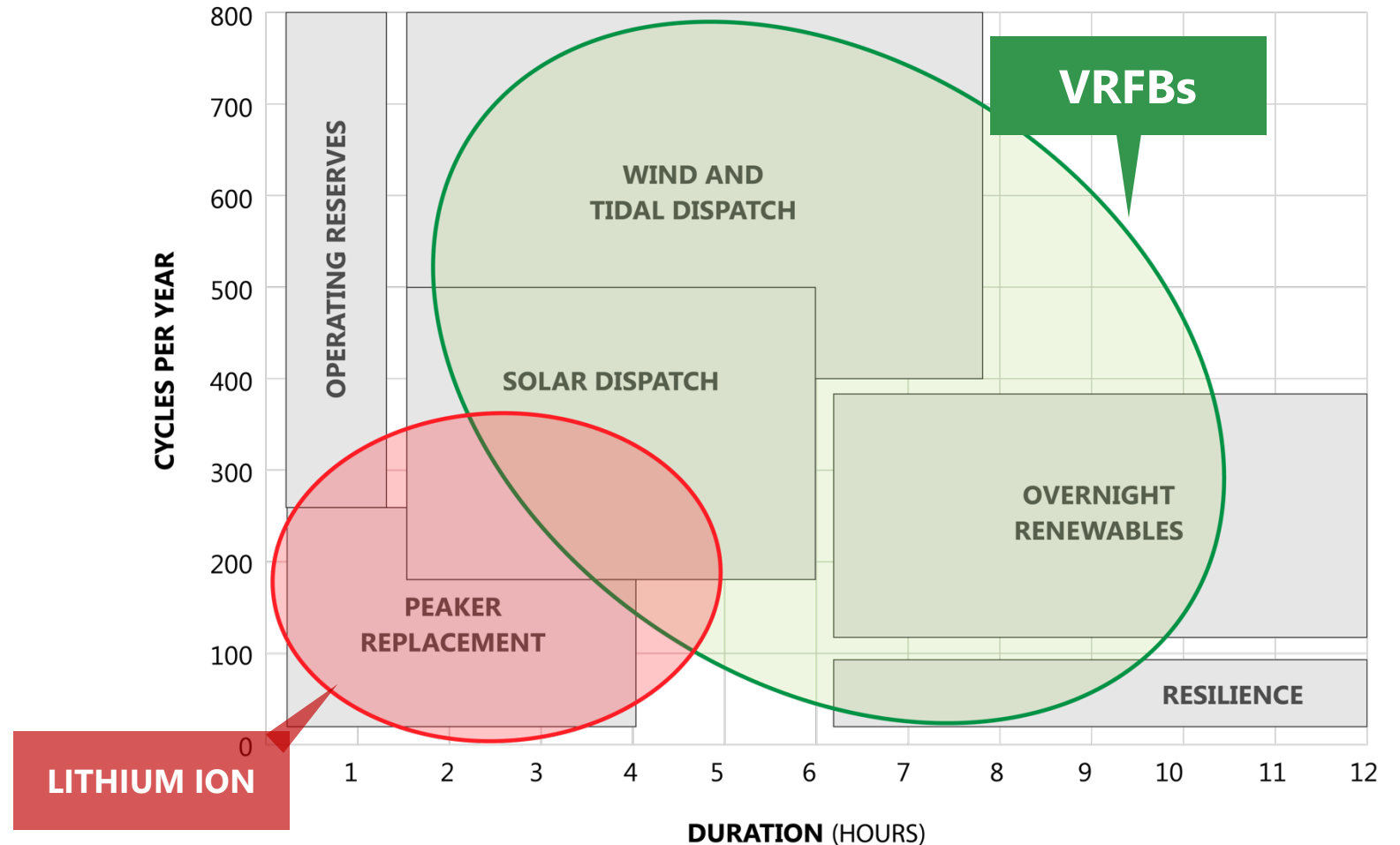
"Renewables and storage are a top priority. Energy storage will increase flexibility and energy security, providing energy shifting through a wide array of technologies."

European Directorate-General for Energy, Deputy Director-General Metschild Woersdoerfer, July 2022

Cost efficiently time-shift large amounts of previously generated energy for later use

“Vanadium RFBs are **‘state-of-the-art’** due to comparatively high energy density, low maintenance costs and long operational lifetimes.”

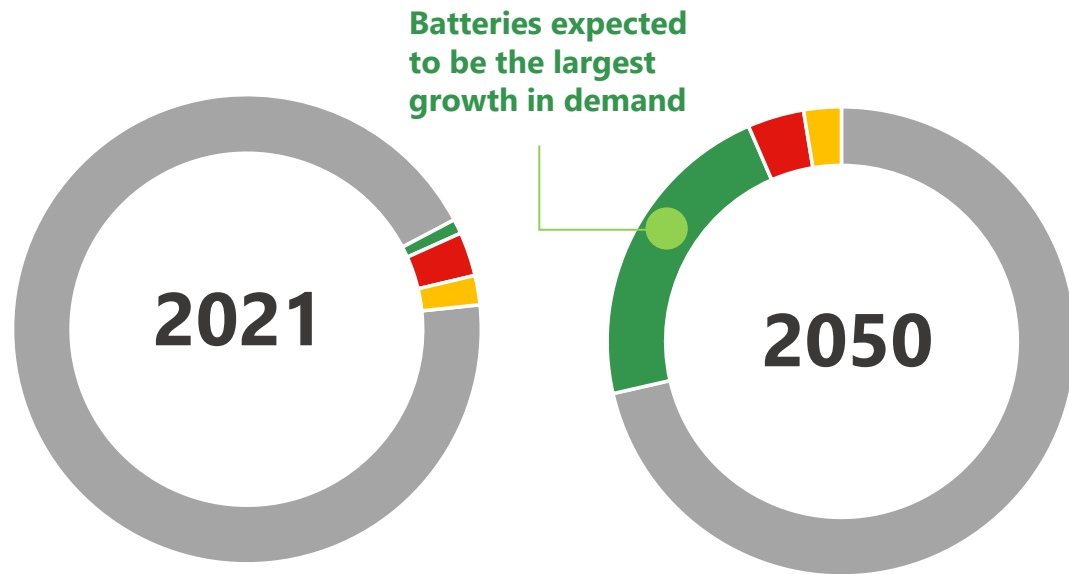
The Future of Energy Storage, An Interdisciplinary MIT Study, 2022



KEY BATTERY GROWTH MARKETS IN EUROPE AND USA

Expected to require 150,000t V₂O₅ annually by 2031

- Annual VRFB installations expected to grow 9% pa until 2050
- By 2031, annual installed VRFB energy capacity expected to reach 5.8 GWh in North America and 9.3 GWh in Western Europe

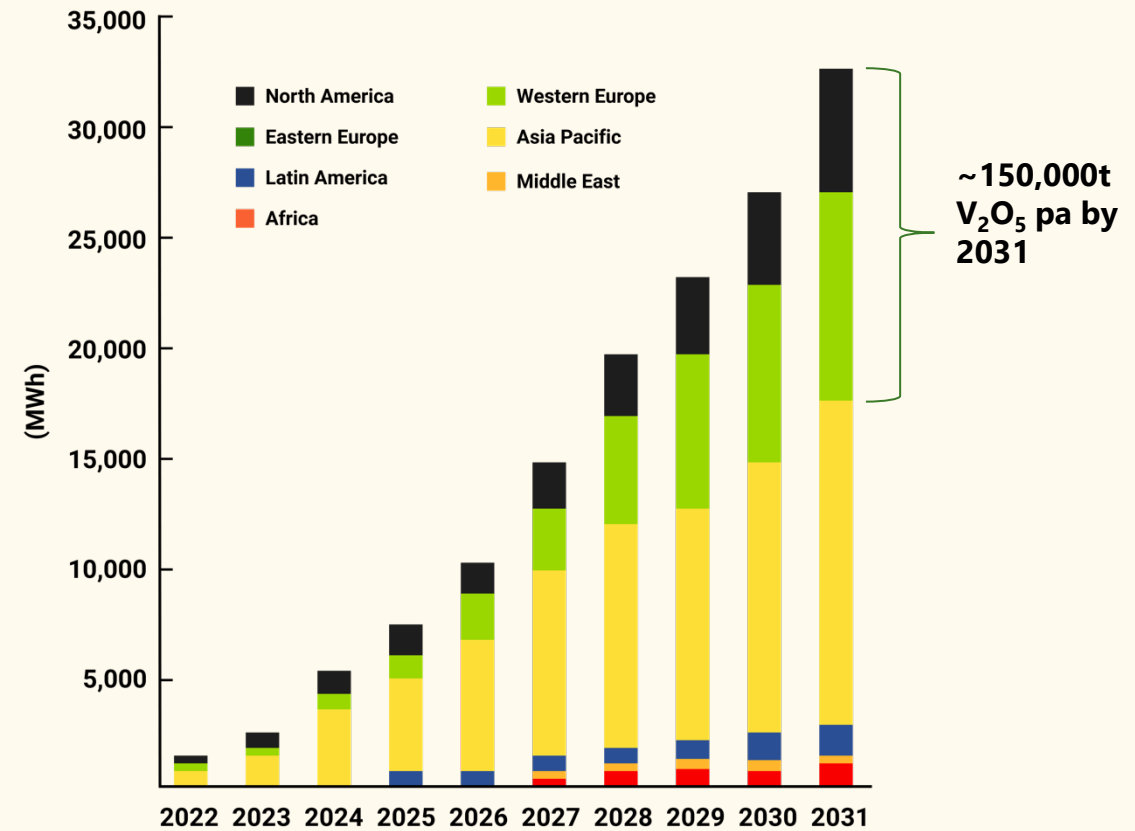


Global vanadium demand by share of first use

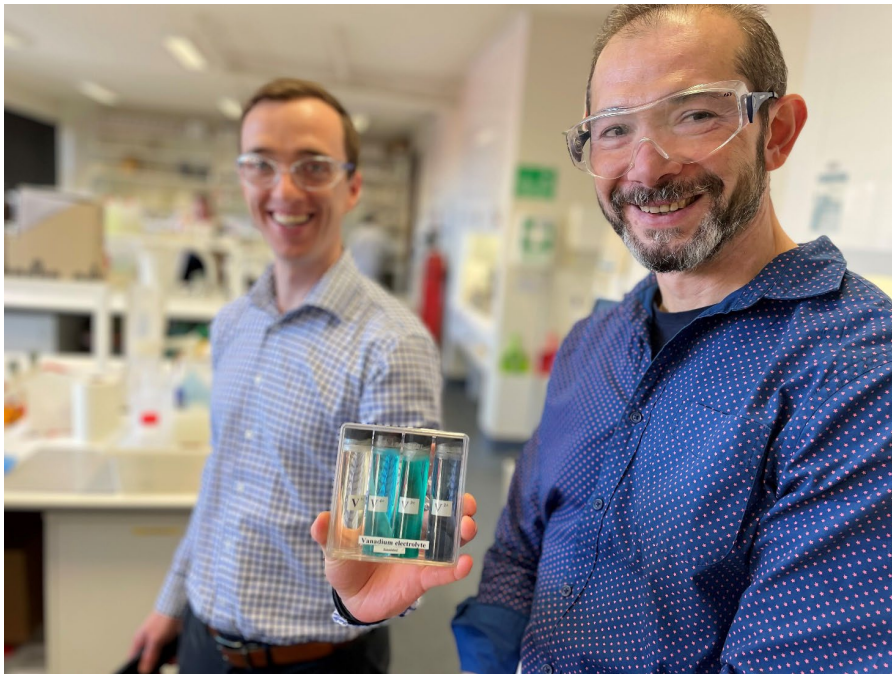
Source: Wood Mackenzie



Forecast annual installed VRFB deployment



Source: Guidehouse Insights



- **vLYTE** subsidiary established to add value to the high-quality MTMP vanadium and support the development of VRFB
- Downstream processing opportunities being investigated with leading Japanese vanadium electrolyte company LE System
- Progressing a feasibility study into vanadium electrolyte production with technical support from LE System
- Key investor in Government backed Future Battery Industries Cooperative Research Centre (FBICRC) "Development of Electrolyte Project"
- Working with global battery manufacturers and renewable energy generators as part of downstream processing strategy

Vanadium is one of the 35 critical minerals essential to USA economic and national security



PRIMARY PRODUCERS

South Africa: 8%
Brazil: 6%
MTMP: 6%

CO-PRODUCT PRODUCERS

Russia: 16%
China: 62%
North America: 3%

*2021 Estimates
Source: TTP Squared Inc*

- Current largest vanadium sources are co-product producers in China 62% and Russia 16%
- MTMP to supply 6% of the world market

Russia represented 16% of world production in 2021

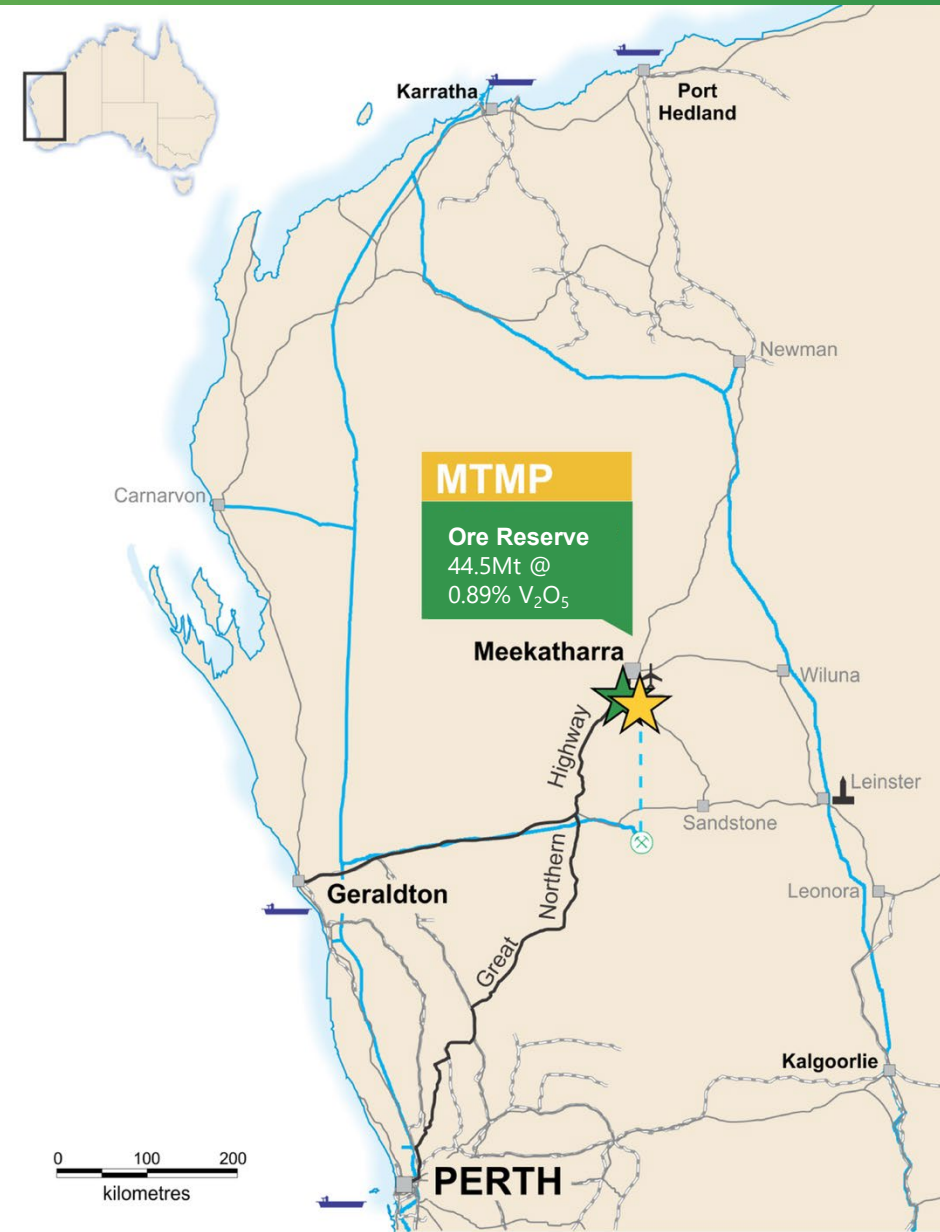
- Australia is part of the USA led Minerals Security Partnership

"... ongoing and secure supplies of critical minerals will be crucial to the modern renewable technologies that will ultimately help our two countries, and the world, achieve our net-zero ambitions."

The Hon Madeleine King MP, 12 July 2022

Vanadium from a stable jurisdiction

- TMT's vanadium project, the Murchison Technology Metals Project (MTMP), is located in mid-west Australia
- **A politically and geographically stable jurisdiction**
- **Tier one mining country**, providing knowledgeable employees, supportive government, high ESG standards
- **Ready access** to key infrastructure
- **Close to ports** via existing sealed highways
- **Availability of land** for value-adding downstream (vanadium electrolyte and/or ferrovandium) processing



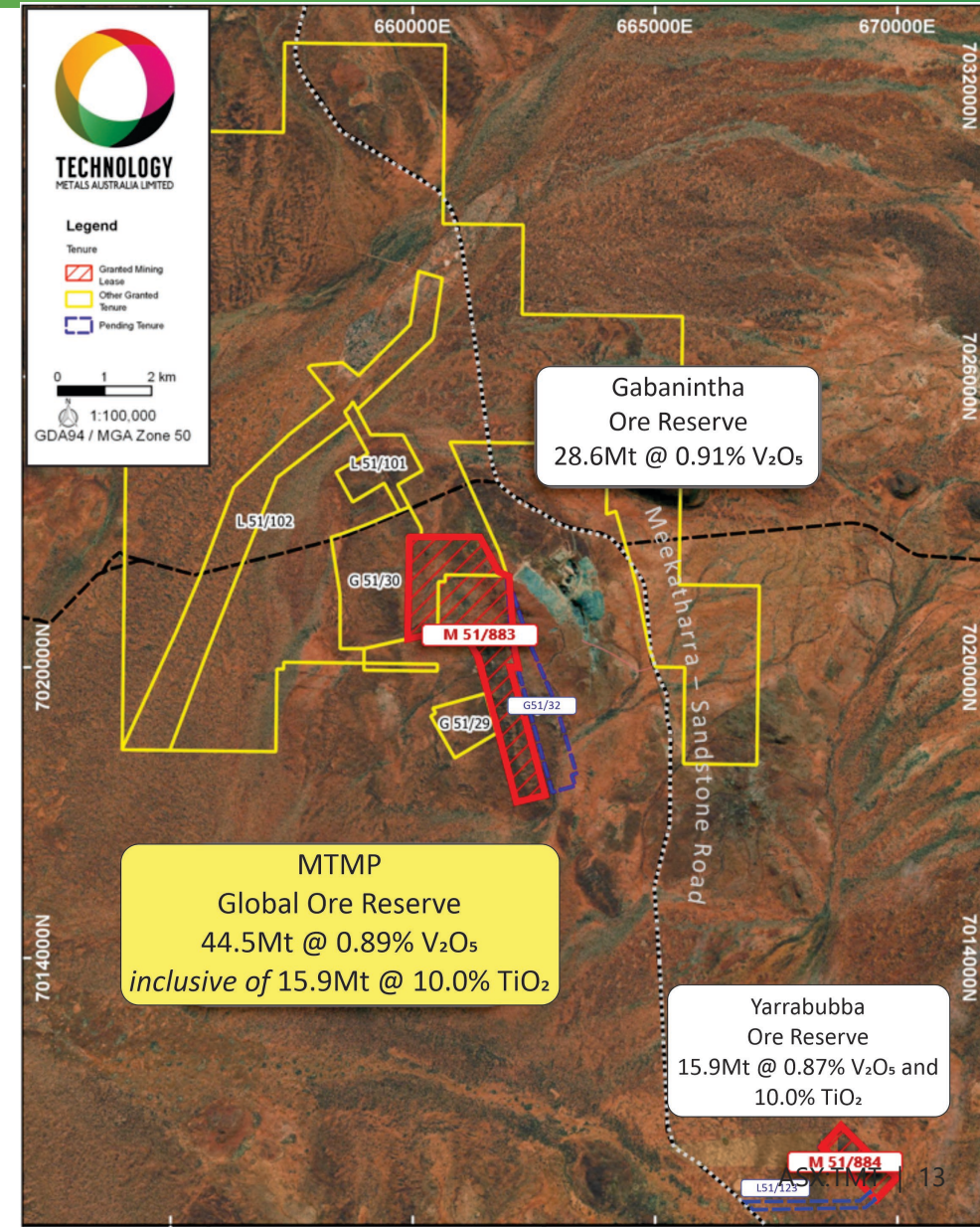
ONE OF THE LARGEST SINGLE VANADIUM MINES GLOBALLY

Provides confidence that future supply can be met

- Global Ore Reserve of 44.5Mt @ 0.89% V_2O_5
- Conventional process flowsheet underpinned by extensive pilot test work
- Traditional open pit mining
- Mine life +25 years
- Production capacity ~12,500tpa V_2O_5 (~96,500tpa ilmenite*)

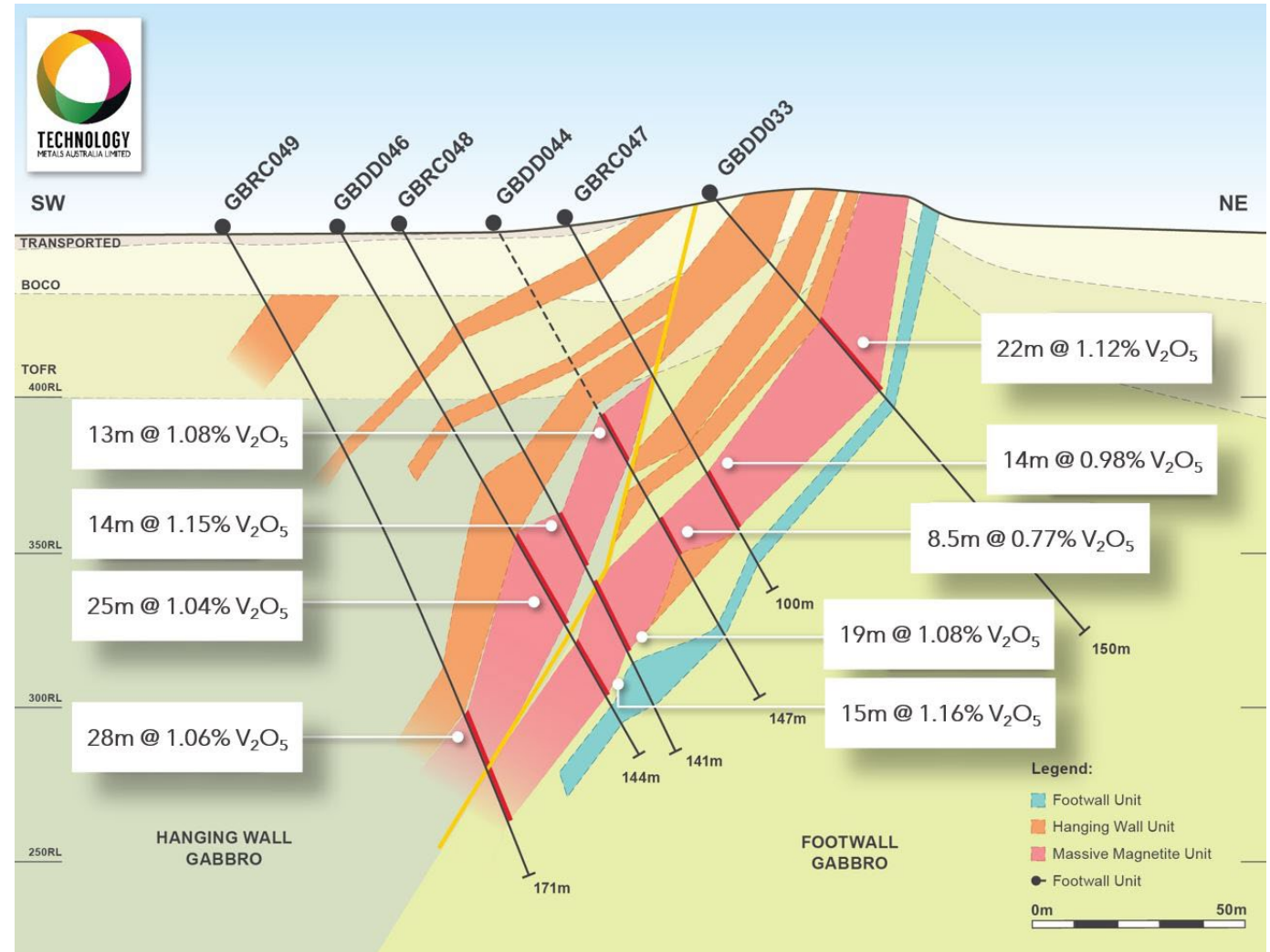


Yarrabubba Deposit looking North



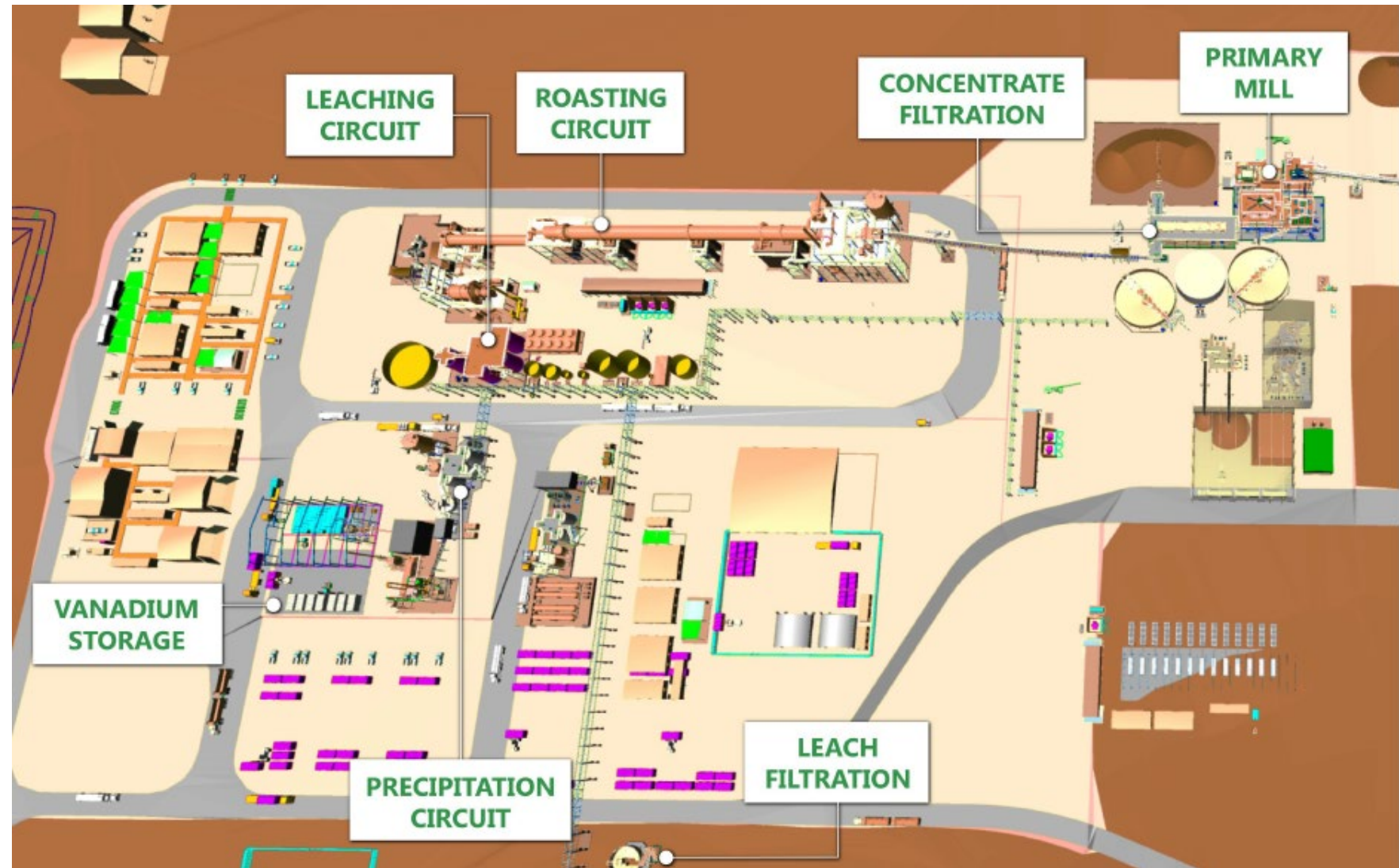
CRITICAL ADVANTAGES SET MTMP APART

- **High quality orebody** with high proportion of fresh ore close to surface
- Thick, continuous high grade ore zones
- Single low intensity magnetic separation at coarse grain size
- **High recovery at coarse grain size** for direct feed to kiln
- Integrated mine to product operation
- Reliable low cost energy source

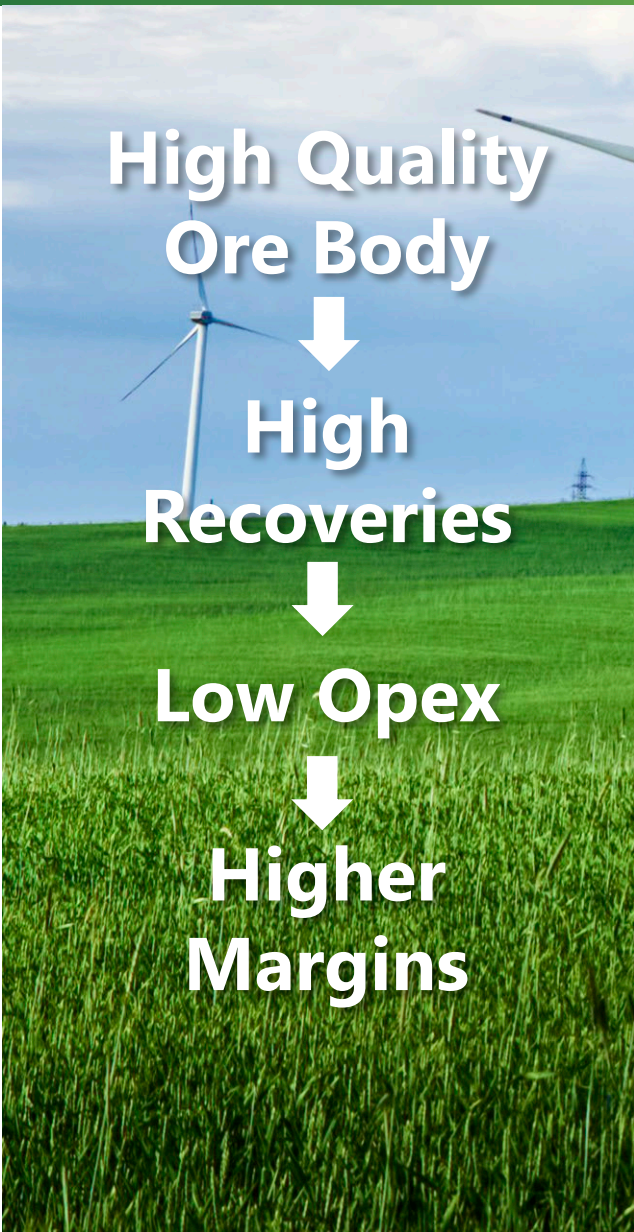


PLANT DESIGN COMPLETE

Enabling commercial competitive tendering to establish updated and reliable economic parameters of the project and ready to award Contracts



LOWEST QUARTILE CASH COST



High Quality
Ore Body



High
Recoveries



Low Opex

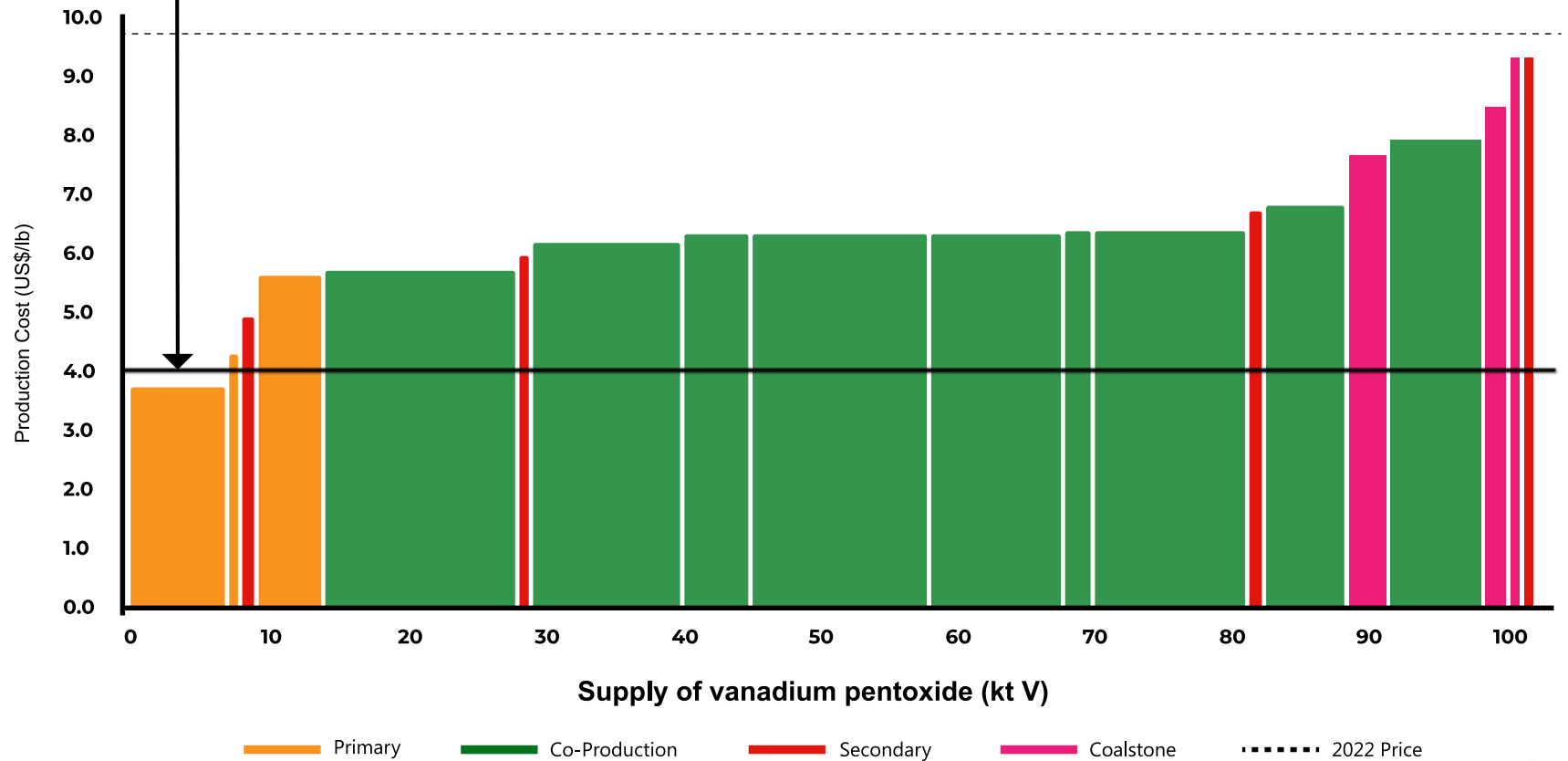


Higher
Margins

GABANINTHA
DFS
CASH COSTS
US\$4.04/lb

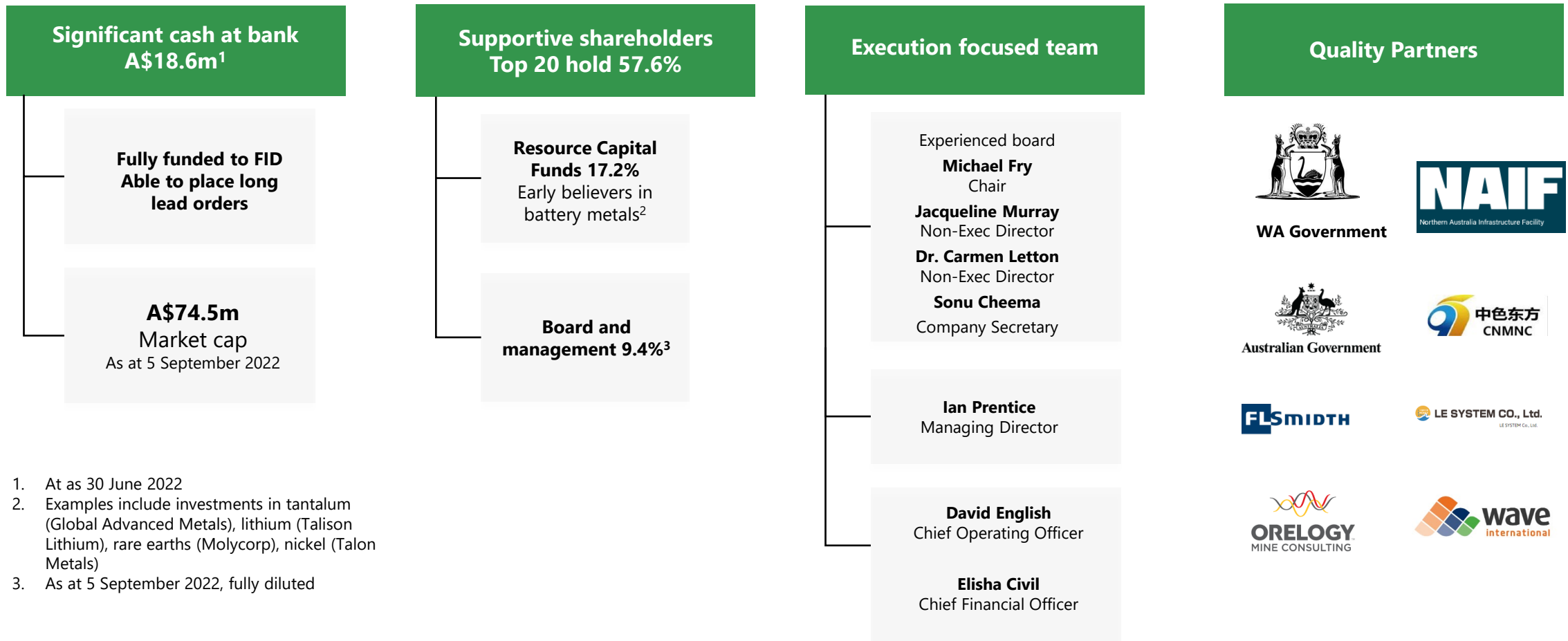
2022 Vanadium operating cost curve

Source: Wood Mackenzie



POISED TO COMMENCE CONSTRUCTION IN 2023

Focused on execution success to maximise returns to shareholders



1. At as 30 June 2022
2. Examples include investments in tantalum (Global Advanced Metals), lithium (Talisson Lithium), rare earths (Molycorp), nickel (Talon Metals)
3. As at 5 September 2022, fully diluted

IMPLEMENTATION PHASE UNDERWAY

- Granted Mining leases ✓
- FLS pilot confirms industry best recovery ✓
- MOU with VRFB Electrolyte Company ✓
- Plant Layout / Design Lockdown ✓
- FLS Kiln FEED underway ✓
- APA gas supply early works underway ✓
- Ore Reserve Update ✓
- Production Schedule – V₂O₅ and TiO₂ ✓
- Resource Upgrade M+I
- Stakeholder Engagement
- Environmental (EPA) approval process
- Development Decision
- Financial Close / Project Development

**Track record of delivery
provides confidence for
execution**



Leveraged to rapid trajectory towards Net Zero

- Vanadium reduces emissions via steel alloys and VRFB batteries
- Recent global events highlight need for longer duration energy storage – VRFBs are ideal
- Demand for vanadium expected to more than double by 2050
- TMT's MTMP will supply low-cost reliable vanadium to these growing markets





TECHNOLOGY
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APPENDIX

VANADIUM IN STEEL ALLOYS REDUCES CO₂ EMISSIONS

Iron - Steel sector one of the largest CO₂ emitters

- 1 tonne steel = 1.85 tonne CO₂ released
- Approximately 8% global CO₂ emissions from steel in 2020
- Inclusion of vanadium enables higher quality, stronger steel, lowering emissions
- Chinese industry reduced 2019 CO₂ emissions by 1.5% by including vanadium in rebar¹



The benefits of upgrading to high-strength vanadium steel



1 - Santos et al, Texas A&M University

WHY VANADIUM BATTERIES?

Safe, stable, reliable, low cost, long life performance



SAFETY

Water based and totally non-flammable, non-combustible, and non-toxic



LOW ENERGY COST

Over its 20+ year lifespan, vanadium batteries offer the lowest cost per kWh stored (LCOE)



EASY TO EXPAND CAPACITY

Battery capacity easily expandable by adding more storage tanks



NO DEGRADATION

Performance remains constant with excellent long term charge retention



SUSTAINABILITY

The vanadium is fully reusable and recyclable at end of battery life



LONG LIFE

Can easily last more than 20 years with very high cycle life (up to 20,000 cycles)



RELIABLE PERFORMANCE

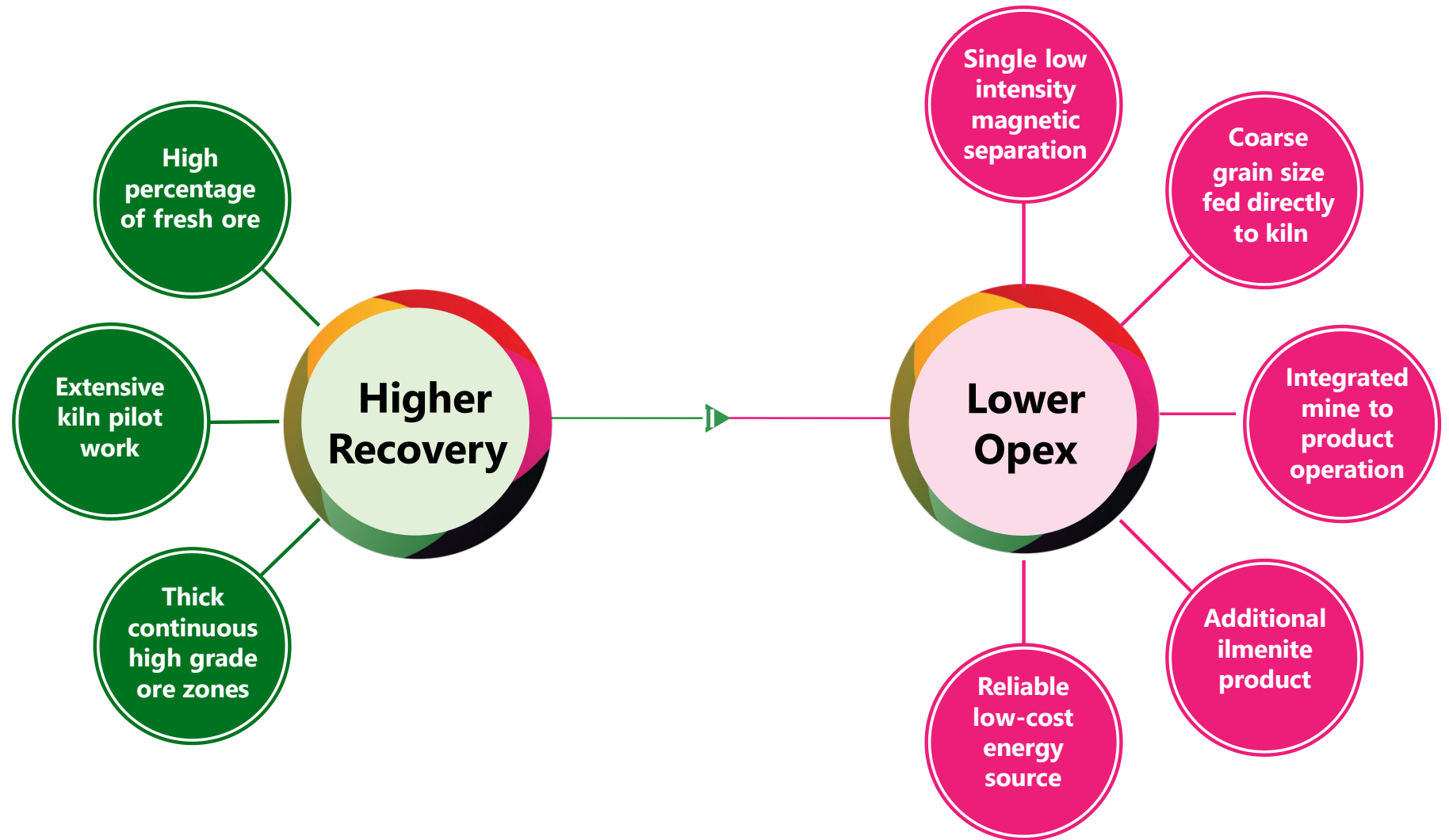
Work in harsh environmental conditions without loss of performance



SINGLE CHEMICAL ELEMENT

Use multiple forms of vanadium to store and release charge – eliminating need for any other elements

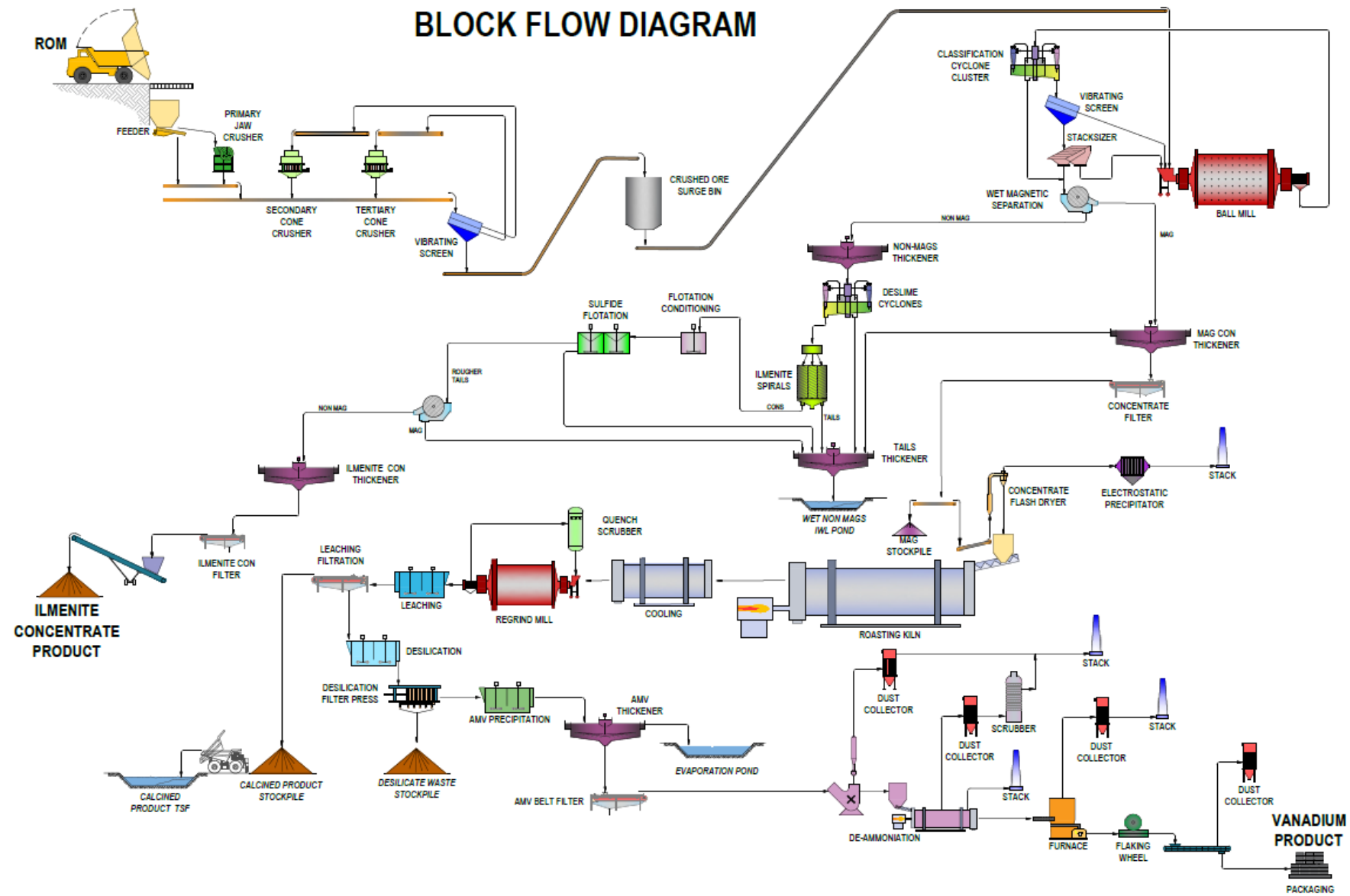
Crucial advantages for MTMP



CONVENTIONAL SALT ROAST PROCESS ROUTE



PROCESS FLOW SHEET SCHEMATIC



MURCHISON TECHNOLOGY METALS PROJECT RESERVE



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Deposit	Ex-Pit Ore				Magnetic Conc.		Non-Magnetic Conc.		Rec. V ₂ O ₅	Rec. Ilmenite	Waste	Total
	Mt	V ₂ O ₅ %	TiO ₂ %	Mass Yield	Mt	V ₂ O ₅ %	Mt	TiO ₂ %	M lb	kt	Mt	Mt
Yarrabubba Probable	15.88	0.87%	10.0%	44.4%	7.04	1.61%	8.84	12.35%	202.7	1132.6	110.1	126.0
Yarrabubba Total	15.88	0.87%	10.0%	44.4%	7.04	1.61%	8.84	12.35%	202.7	1132.6	110.1	126.0
Gabainintha Proven	1.12	0.95%		69.8%	0.78	1.30%			18.1		154.5	183.1
Gabainintha Probable	27.48	0.90%		57.1%	15.69	1.31%			369.4			
Gabainintha Total	28.60	0.91%	10.7%	57.6%	16.47	1.31%			387.5	0.0		
Global MTMP Total	44.48	0.89%	10.5%	52.9%	23.52	1.40%	8.84	12.35%	590.3	1132.6	264.6	309.1

MURCHISON TECHNOLOGY METALS PROJECT RESOURCE



Material Type	Classification	Mt	V ₂ O ₅ %	Fe %	Al ₂ O ₃ %	SiO ₂ %	TiO ₂ %	LOI %	P %	S %
Massive Magnetite	Total Measured (Nth)	1.2	1.0	44.7	6.2	10.4	11.4	0.0	0.009	0.2
	Indicated (North)	18.5	1.1	49.1	5.2	5.8	12.9	-0.1	0.007	0.2
	Indicated (South)	12	1.1	48.2	5.4	7.4	12.5	1.8	0.01	0.3
	Total Indicated	30.6	1.1	48.8	5.3	6.4	12.7	0.6	0.008	0.2
	Inferred (North)	41	1.1	47.7	5.6	7.1	12.6	0.3	0.008	0.2
	Inferred (South)	7	1.1	47.4	5.7	8.3	12.3	2.1	0.01	0.3
	Total Inferred	48.1	1.1	47.7	5.6	7.3	12.6	0.5	0.008	0.2
	Massive Global	79.8	1.1	48.1	5.5	7.0	12.6	0.6	0.008	0.2
Disseminated / Banded Magnetite	Indicated (North)	10.3	0.6	28.6	13.1	25.5	7.5	3	0.03	0.2
	Indicated (South)	8.1	0.6	28.5	12	25.2	7.3	2.4	0.018	0.2
	Total Indicated	18.4	0.6	28.6	12.6	25.4	7.4	2.7	0.025	0.2
	Inferred (North)	38.5	0.5	27.1	12.7	27.4	6.9	3.3	0.027	0.2
	Inferred (South)	9.4	0.5	26.6	13.3	27.1	6.9	2.4	0.014	0.3
	Total Inferred	47.9	0.5	27.0	12.8	27.4	6.9	3.1	0.025	0.2
	Diss / Band Global	66.3	0.5	27.4	12.8	26.8	7.0	3.0	0.025	0.2
Combined Material Types	Global Resource	146.2	0.8	38.7	8.8	16	10.1	1.7	0.016	0.2

Notes: The Mineral Resource was estimated within constraining wireframe solids using a nominal 0.9% V₂O₅ lower cut-off grade for the massive magnetite zone and using a nominal 0.4% V₂O₅ lower cut-off grade for the banded and disseminated magnetite mineralisation zones. The Mineral Resource is quoted from all classified blocks within these wireframe solids above a lower cut-off grade of 0.4% V₂O₅. Differences may occur due to rounding.