



**TECHNOLOGY**  
METALS AUSTRALIA LIMITED

# TECHNOLOGY METALS FOR A CLEANER FUTURE

**BRISBANE MINING**  
**ENERGY & MINERALS**

MARCH 2022



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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 Daniel Grosso an employee of CSA Global Pty Ltd. Mr Grosso takes overall responsibility for the Report as Competent Person. Mr Grosso 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, Daniel Grosso 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 Yarrabubba and Gabanintha projects 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 which he is undertaking, to qualify as a 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 - 21 August 2019 for full details of the DFS: Financial Metrics at long term historical average price of US\$8.78/lb V2O5.

Pursuant to LR-5-19-2 production target and financial forecast: The material assumptions as per the ASX release on 21 August 2019 continue to apply and have not materially changed.



# WHY INVEST IN TMT?

**World class critical minerals  
in a Tier 1 jurisdiction**

## **Murchison Technology Metals Project**

- Large, long-life high purity vanadium production
- Lowest cost quartile
- Offtake agreements in place
- Environmental approvals nearing completion

## **Part of the future energy solution**

- Downstream vanadium electrolyte strategy
- Potential for high purity product to be used in Australia based Vanadium Electrolyte production

## **Nationally significant project**

- Critical mineral across OECD nations
- Importance recognised by Federal and State Governments





# MURCHISON TECHNOLOGY METALS PROJECT



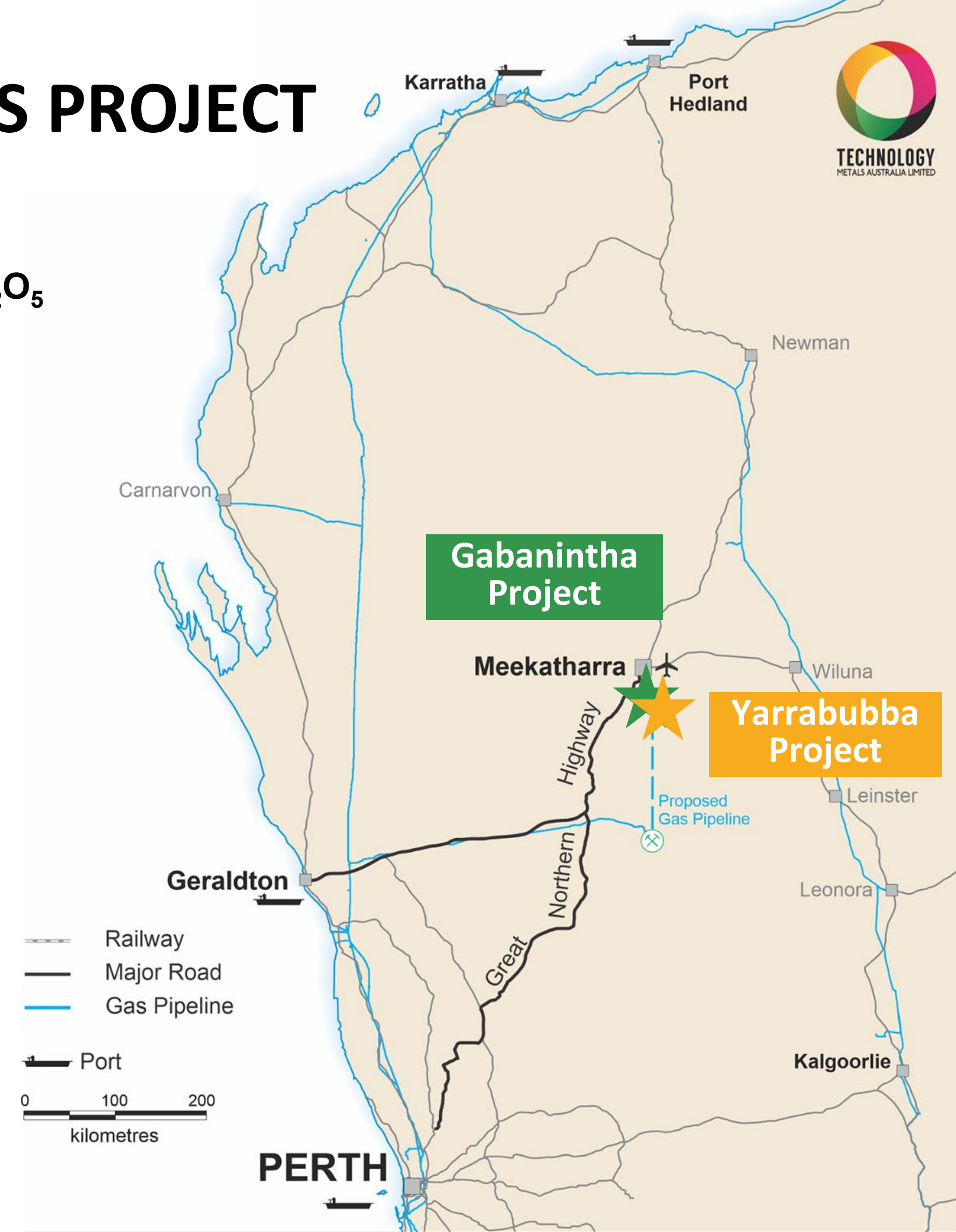
High-quality, high-grade resource of 79.8Mt at 1.1%  $V_2O_5$   
Targeting +25 year life based on M&I resource of 50.2Mt at 0.9%  $V_2O_5$

## GABANINTHA VANADIUM

- DFS completed
- Large, long-life high purity vanadium project
- Lowest cost quartile at US\$4.04/lb  $V_2O_5$
- Pre-tax NPV<sub>8</sub> A\$1,320M, IRR 34%<sup>1</sup>
- Offtake agreements in place with steel and battery industry
- Key permitting and approvals progressing

## YARRABUBBA VANADIUM

- High grade  $V_2O_5$  in magnetite concentrate
- Same geological setting as Gabanintha
- Ability to produce titanium by-product from tails stream
- Potential to materially enhance project economics
- Likely to extend MTMP mine life beyond 25 years



# CORPORATE OVERVIEW

## CAPITAL STRUCTURE

**TMT**

ASX Code

**\$21.7M**

Cash *(as at 31 December 2021)*

**\$83.5M**

Market Cap *(As at 22 March 2022)*

**203.7m**

Shares on Issue

**20.5M**

Unlisted Options<sup>1</sup> *(Various exercise)*

**3.65m**

Performance Rights<sup>2</sup>

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

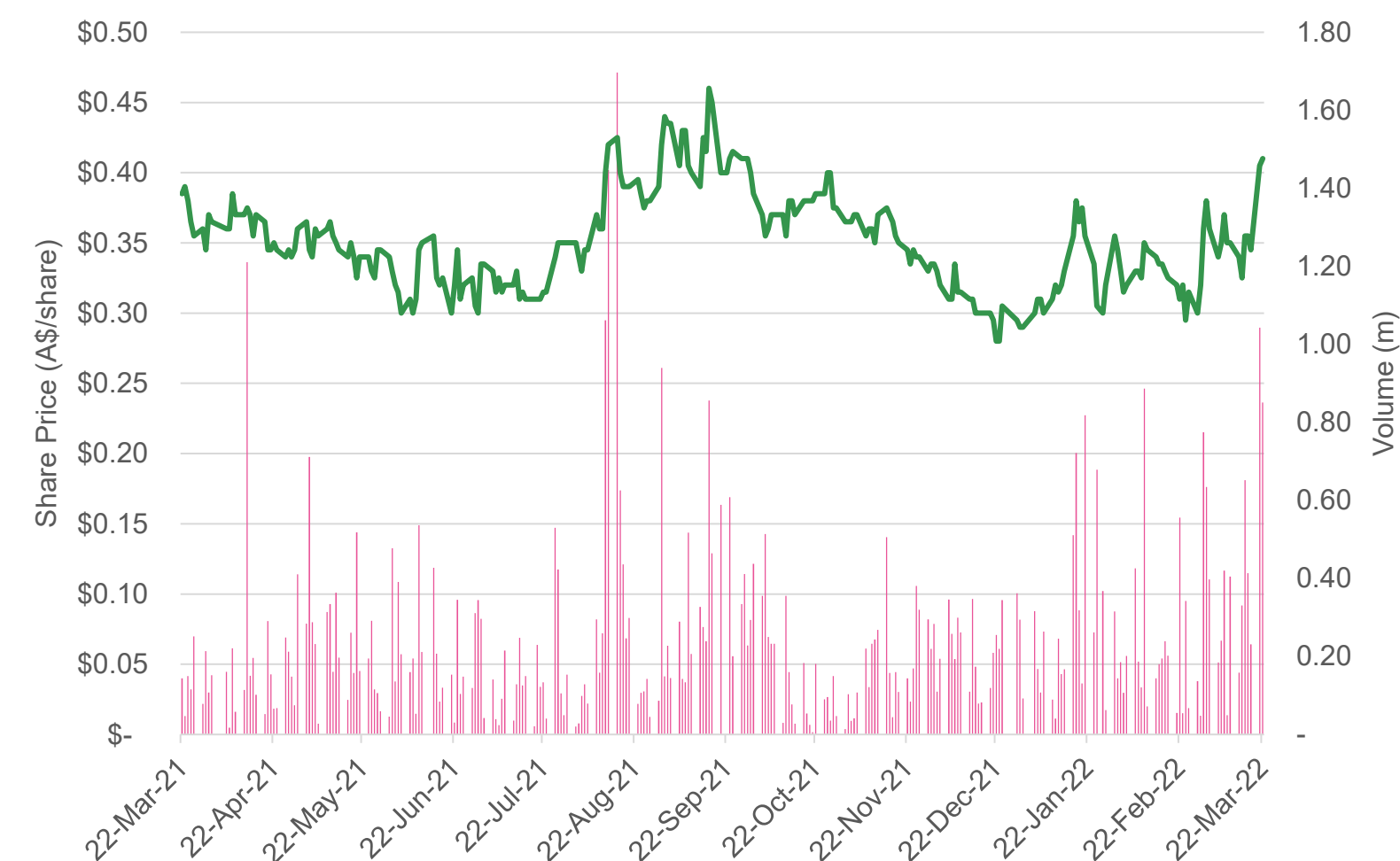
<sup>2</sup> 50% vest on MTMP FID, 50% vest on first production

## RESOURCE CAPITAL FUND VII L.P. SECURED AS CORNERSTONE SHAREHOLDER



Holder Name	Holding (%)
Resource Capital Fund VII L.P.	17.7%
BNP Paribas Nominees	7.9%
Great Southern Flour Mills	6.9%
Retzos Group	4.8%
<b>TOTAL TOP 20</b>	<b>56.0%</b>
Board and Management holdings (fully diluted)	7.9%

\*Based on issued capital as at 21 March 2022





# EXPERIENCED BOARD AND MANAGEMENT

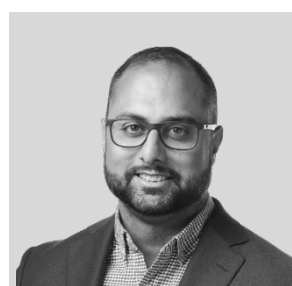


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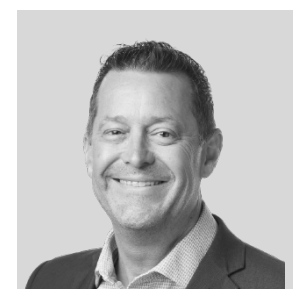
**Michael Fry**  
Non-Exec Chairman

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.



**Sonu Cheema**  
Non-Exec Dir/CoSec

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.



**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.



**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.

Mrs 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.



**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.



**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.



# ENVIRONMENT, SOCIAL & GOVERNANCE

BUILDING A GLOBALLY RELEVANT RESOURCES COMPANY



## Environment

Constructive consultation with WA EPA supporting progress on the GVP ERD.

Early engagement with Traditional Owners and Pastoralists to minimise impacts.

Promote energy efficiency and minimise water usage.

Policy of mitigation, minimisation and rehabilitation.



## Social / Community

Policy in place to support local procurement and employment wherever practical.

Support community events and activities – developing a social licence to operate.

Generate training, business and work opportunities for Traditional Owners.

Pursue downstream processing options to ensure value add and skills development.



## Governance

Instilling a culture of high ethical standards throughout the group and its activities.

Aim to always operate in a safe and respectful manner.

Focus on active risk management throughout the business.

Develop, nurture and maintain our people.



# STRATEGIC PLAN

TO PRODUCE STRATEGIC TECHNOLOGY  
METALS THAT REDUCE EMISSIONS AND  
PRODUCE EMISSIONS FREE POWER





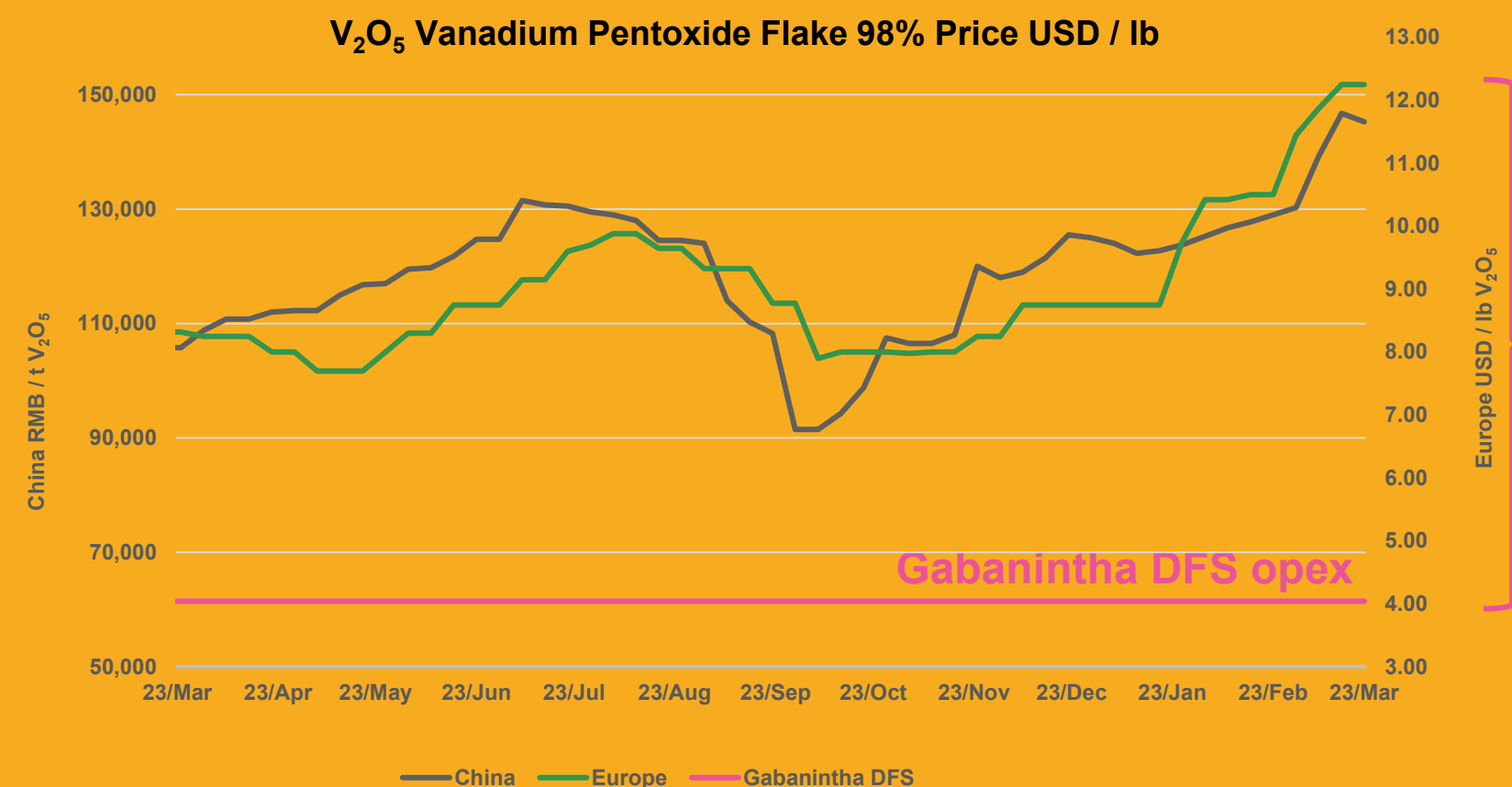
# VANADIUM

## A CRITICAL MINERAL SUPPORTING NET ZERO

- Vanadium has an important role to play enabling higher quality, stronger steel, lowering emissions.
- Savings by including vanadium in rebar represented 1.5% of the total 2019 CO<sub>2</sub> emissions from Chinese industrial processes<sup>1</sup>.
- It is used in very large-scale batteries (VRFB) that don't degrade over time, ideal for support of renewable energy.
- Tightening market with steel consumption China and improving demand in Europe and North America.

**“We see significant growth in demand for vanadium - which we foresee due to its growing use in high grade steel and flow batteries.”**

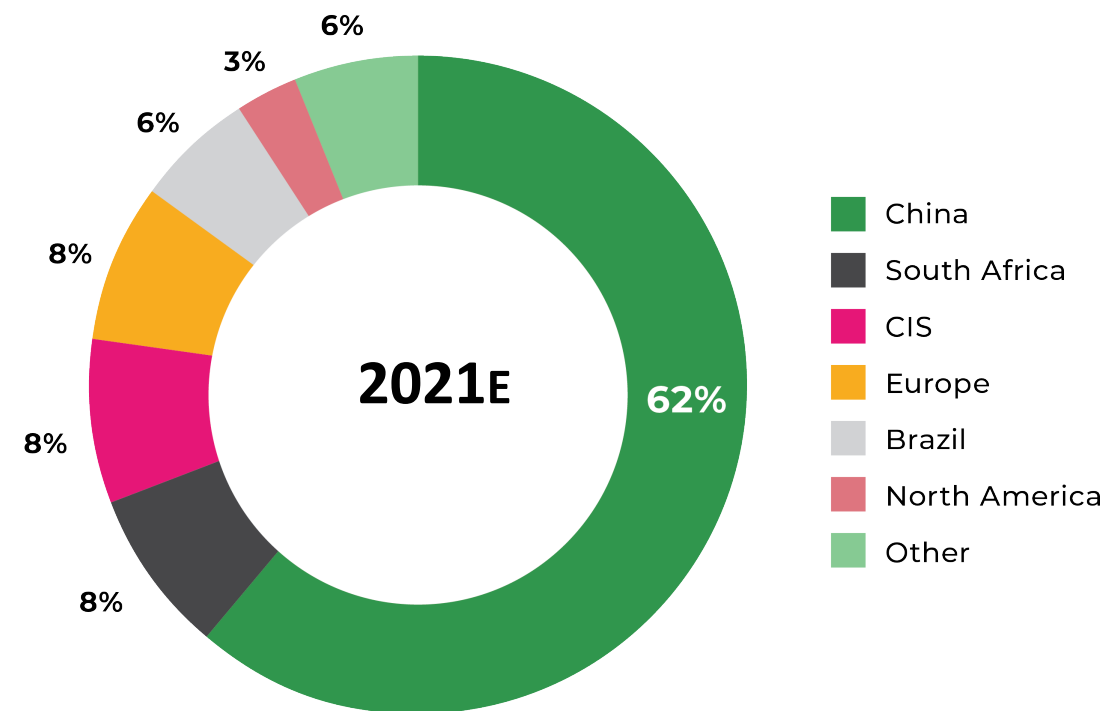
Sir Mick Davis, former Xstrata plc CEO



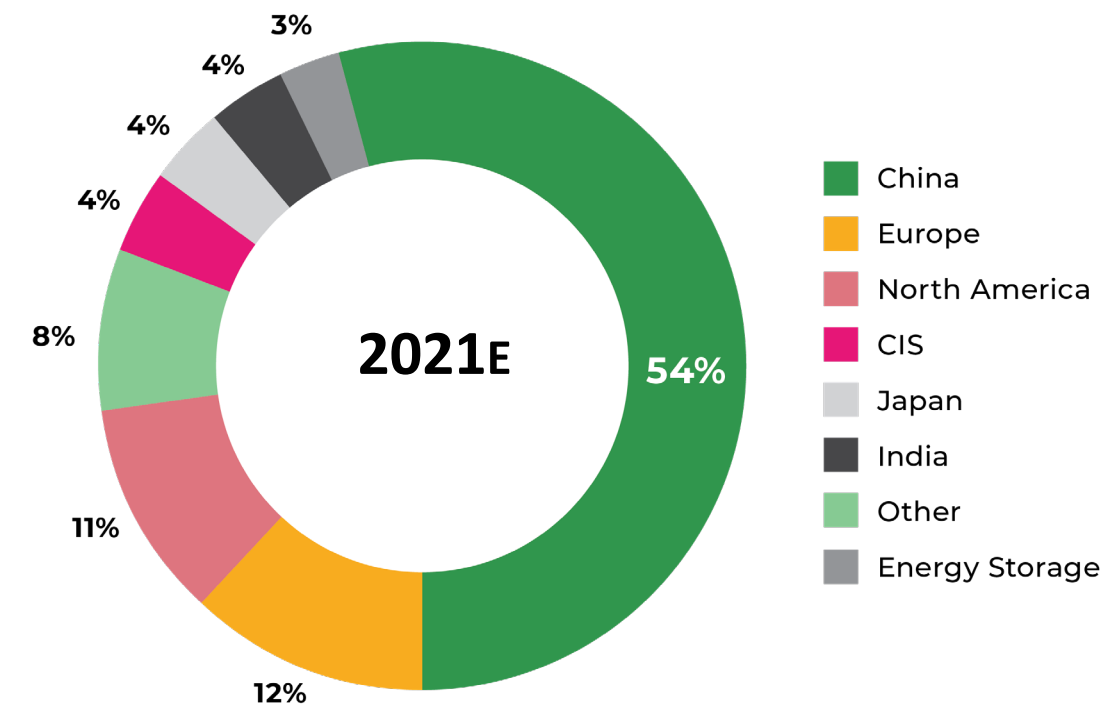


# A MARKET IN NEED OF NEW SUPPLY

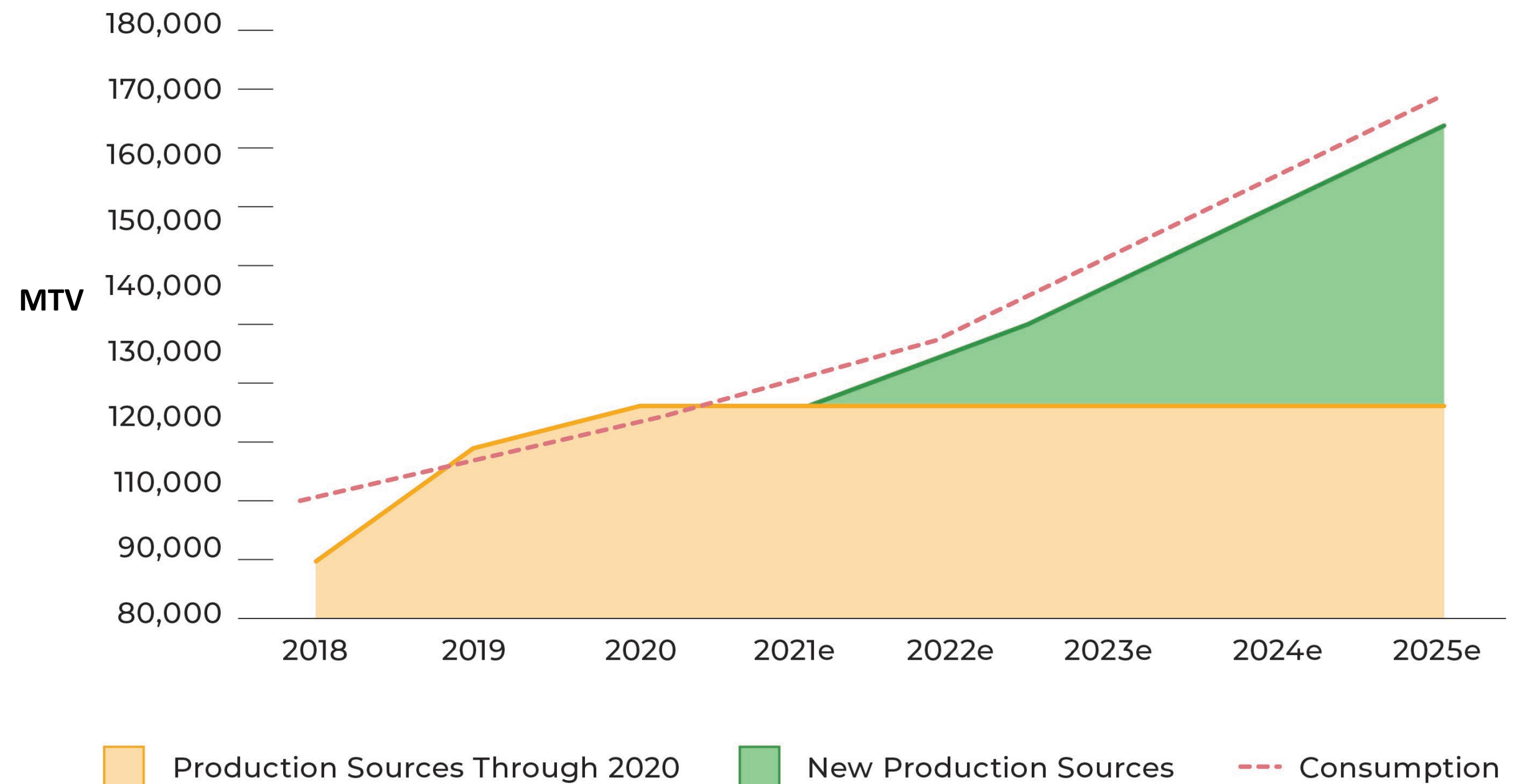
## VANADIUM PRODUCTION BY REGION



## VANADIUM CONSUMPTION BY REGION



## FORECAST SUPPLY AND DEMAND



Source: TTP Squared Inc.

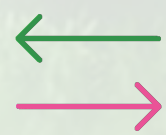
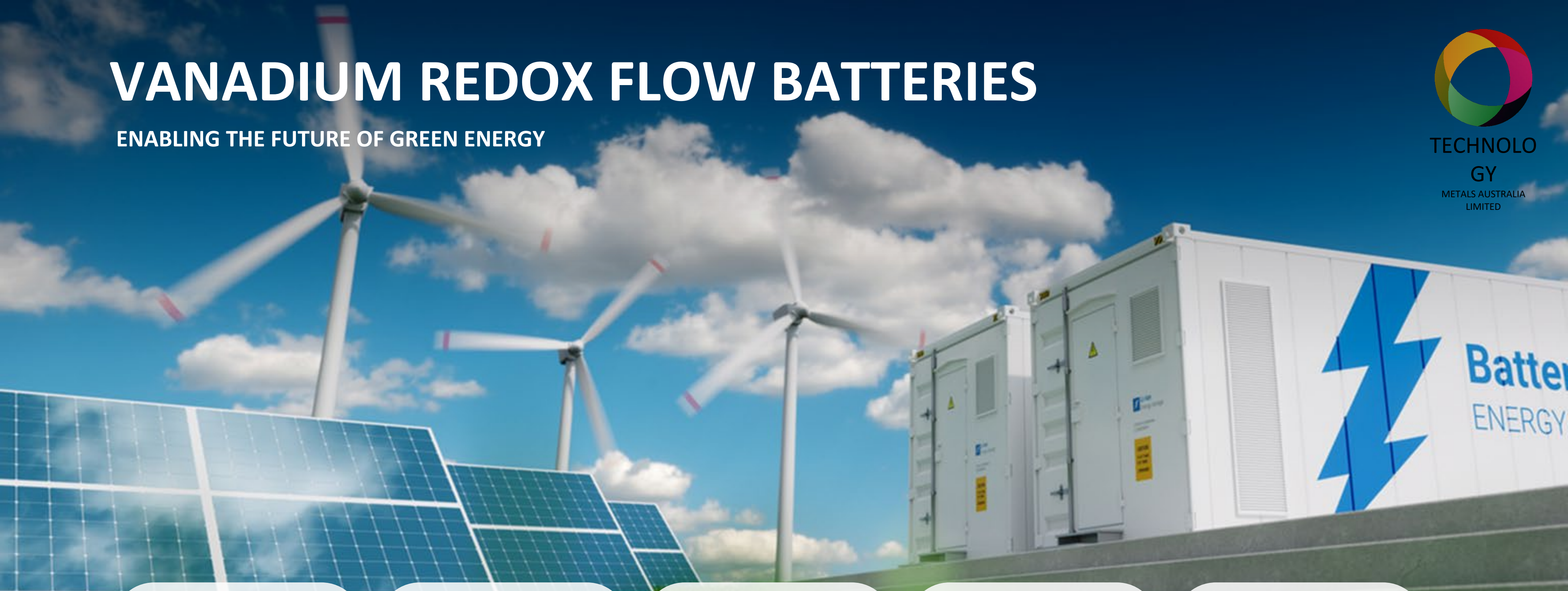


# VANADIUM REDOX FLOW BATTERIES

ENABLING THE FUTURE OF GREEN ENERGY



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LIMITED



## No Degradation

Performance remains constant with excellent long term charge retention



## Low Energy Cost

Over its 20+ year lifespan, VRFB technology offers the lowest cost per kWh stored (LCOE)



## Safety

The vanadium electrolyte is water based and is totally non-flammable



## Sustainability

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



## Long Life

VRFB's can easily last more than 20 years with very high cycle life (up to 20,000 cycles)



# VRFB AND ELECTROLYTE STRATEGY

## PART OF THE ENERGY SOLUTION



- MoU with LE System to jointly undertake a Feasibility Study into vanadium electrolyte production in Australia using TMT's high purity vanadium.
- Vanadium electrolyte business plan being deployed:
  - Production centres contemplated on western and eastern seabords of Australia.
  - Competitive advantage as a very low-cost primary producer of high purity vanadium.
  - Long term – stable supplier able to provide certainty for VRFB developers.
  - Significant political support for decarbonization opportunities.
- Discussions initiated with VRFB manufacturers with regards to the establishment of Australian VRFB deployment.
- Evolution of the MTMP from a high purity  $V_2O_5$  producer into downstream applications forms part of TMT's sustainability strategy.



**LE SYSTEM CO., Ltd.**

LE SYSTEM Co., Ltd.



# MURCHISON TECHNOLOGY METALS PROJECT

## KEY PROJECT PARTNERS



### WA Government

Lead Agency Support  
Future Battery Industry  
Supporting downstream processing.

### NAIF

Engagement with Federal Government agency  
Part of strategic funding approach.

### WA EPA

Environmental approvals  
Constructive consultation underway

### APA

Gas transportation agreement  
Lower gas transportation costs; access to emerging Perth Basin gas fields.

### FLSmidth

Equipment vendor engagement  
Kiln supply agreement executed.

Ongoing market engagement for product offtake / funding options  
CNMNC, LE System, Shaanxi Fengyuan, Big Power.



# GABANINTHA VANADIUM

WORLD-CLASS DEVELOPMENT READY PROJECT

## MINING RESERVE

29.6Mt  
@ 0.88% V<sub>2</sub>O<sub>5</sub>

## MINE LIFE

+16years

## PROCESSING PLANT

27.9Mlb  
V<sub>2</sub>O<sub>5</sub> pa

## HIGH PURITY PRODUCT

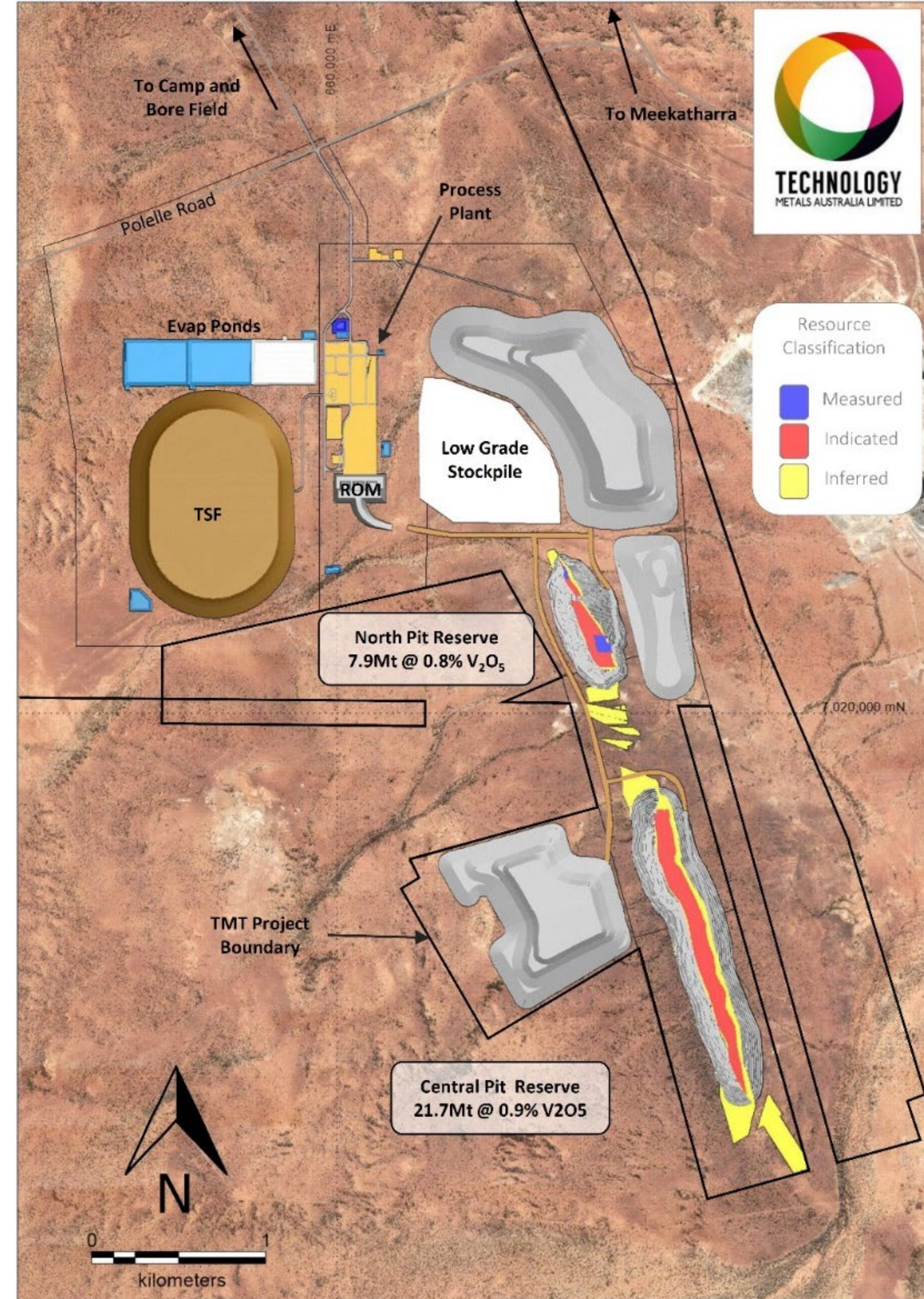
>99% V<sub>2</sub>O<sub>5</sub>

## OPEX

US\$4.04  
/ lb V<sub>2</sub>O<sub>5</sub>

- One of the highest grade vanadium deposits in the world.
- Ore body characterised by **shallow oxidation** profile
- Life of mine<sup>1</sup> **revenue of A\$7.0Bn.**
- Average annual EBITDA of **A\$255 million.**
- Lowest cost quartile **operating costs at US\$4.04/lb V<sub>2</sub>O<sub>5</sub>.**
- **Premium purity product (>99%)** supporting the movement to Net Zero 2050.
- Site of integrated processing facility for MTMP.
- Mining licences granted, environmental approvals nearing completion.
- Gas supply MoU in place.
- Solar farm location identified for future power generation.

1 - TMT ASX announcement 21 August 2019 for full details of the DFS: Financial Metrics at long term forecast price of US\$10.88/lb V<sub>2</sub>O<sub>5</sub>



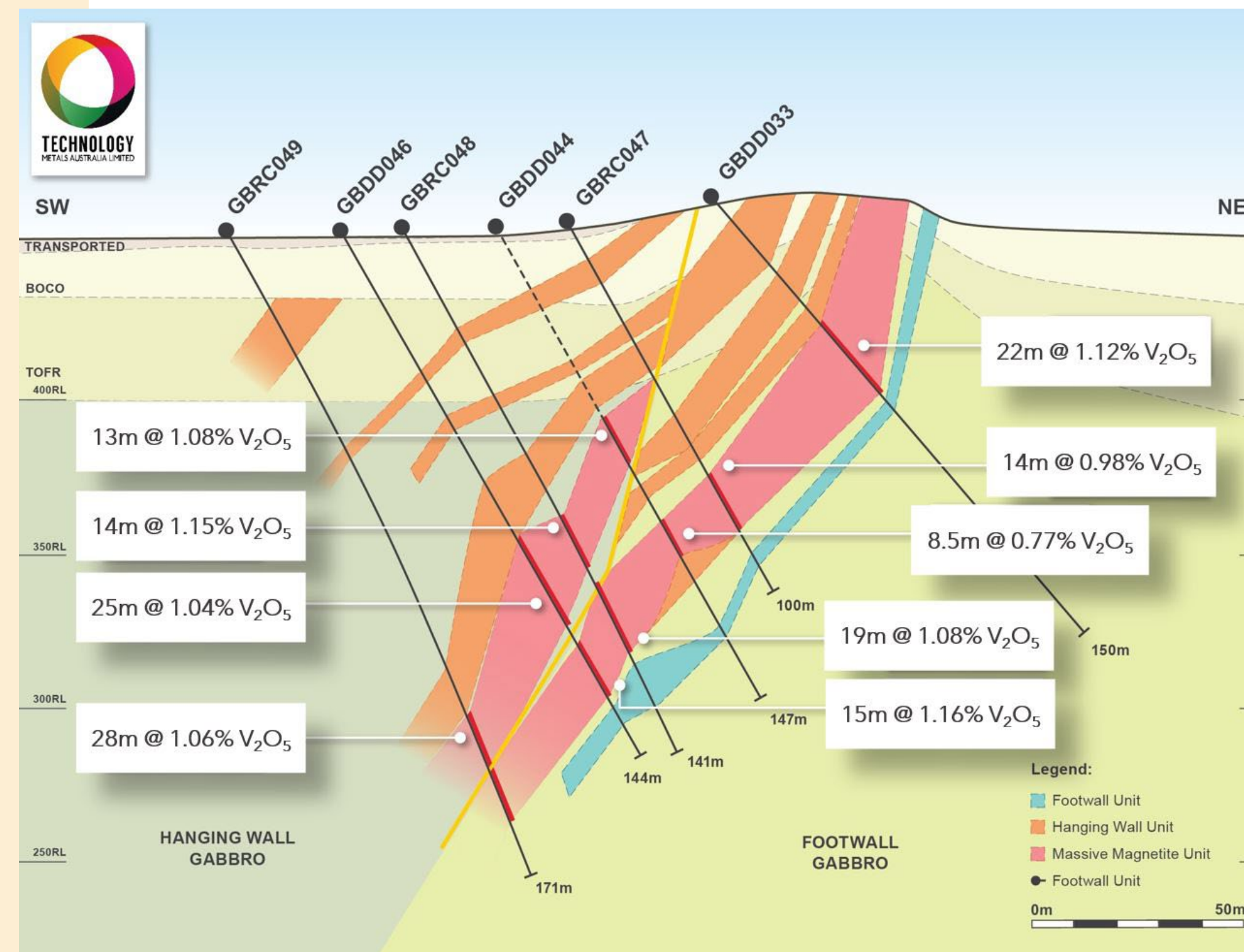


# YARRABUBBA VANADIUM

HIGH GRADE HIGH VALUE ADDITION TO THE MTMP



- Yarrabubba resources and reserves were not included in the Gabanintha DFS.
- Mineral Resource<sup>1</sup> upgraded to 36.6Mt at 0.8% V<sub>2</sub>O<sub>5</sub>, with a **high-grade** component of **19Mt at 1.1% V<sub>2</sub>O<sub>5</sub>**.
- Same geological horizon as Gabanintha.
- Up to **1.6% V<sub>2</sub>O<sub>5</sub> in concentrate**; ~25% higher than Gabanintha.
- Key attributes for Yarrabubba:
  - High in-situ grades with very high mass recoveries
  - Ability to separate large portion of titanium from non mag tails.
  - **Very shallow oxidation profile**
  - Thick high-grade zones near surface

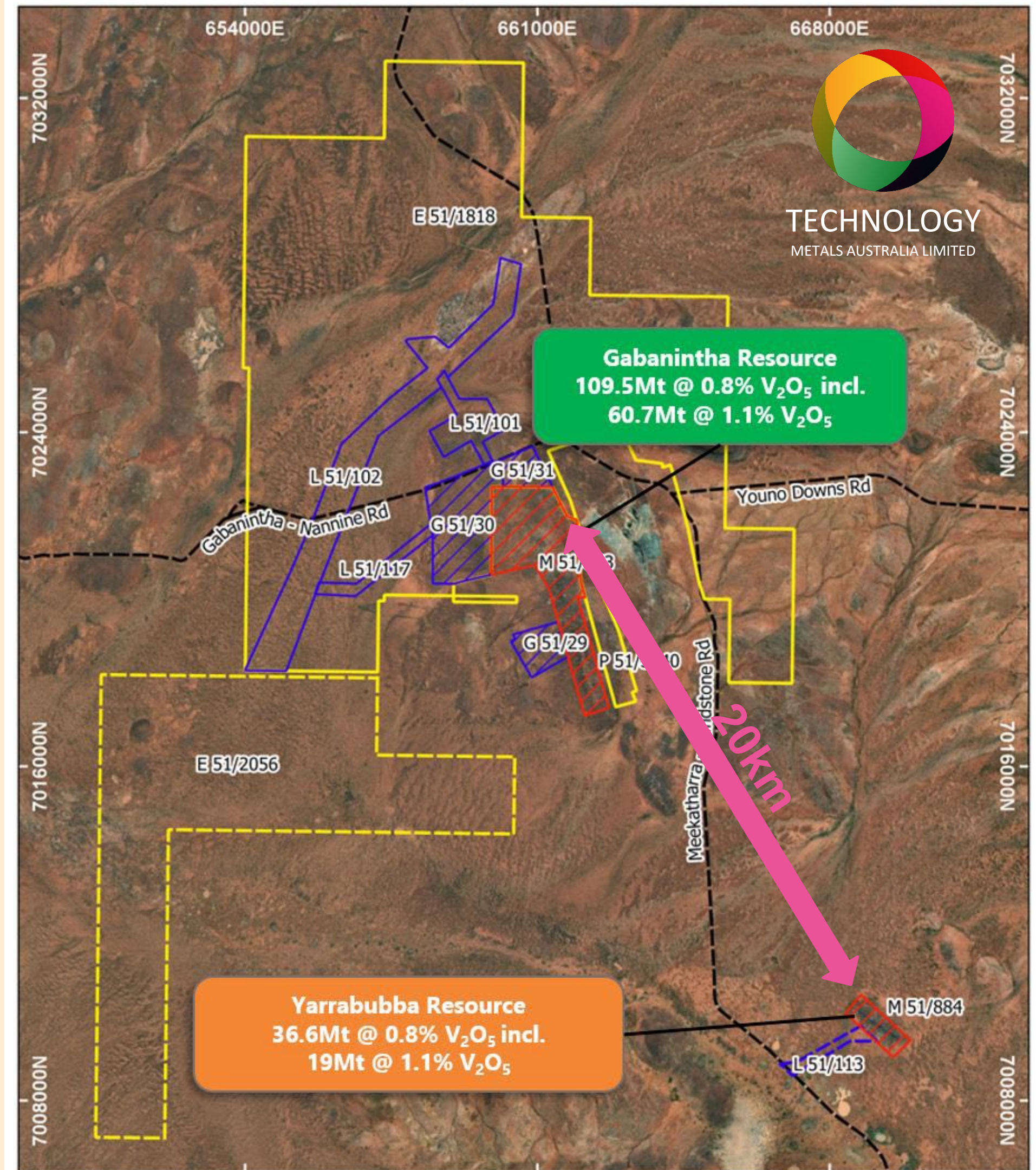




# MTMP INTEGRATION STUDY

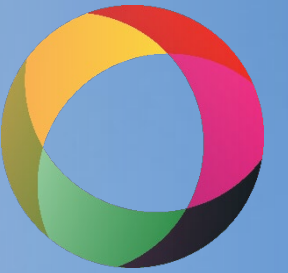
## REDUCING THE DEVELOPMENT RISK

- Yarrabubba has the potential to materially increase the mine life of the MTMP – Global M&I Resource of **50.2Mt at 0.9% V<sub>2</sub>O<sub>5</sub><sup>1</sup>**
- Scope to lower operating costs, reduce the payback period and lower the overall development risk of an integrated MTMP.
- Workstreams underway to inform the Integration Study:
  - Open pit mine scheduling to optimise sequencing of ores.
  - Roast-leach testwork to lock down kiln operating parameters.
  - Grind liberation identifying optimal grind size to maximise vanadium recovery and titanium extraction.
  - Optimisation of process flow sheet design to “right size” the plant to ensure optimal production rates.
  - Drilling to upgrade a portion of the resource to the highest confidence Measured category.
  - Updated ore reserve estimate based on optimal mining schedule.
- MTMP Integration Study on track for delivery in mid 2022.





# TIMETABLE AND NEWS



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Mining leases - granted



Bulk sample generation



Infill Resource drilling



Mineral Resource update



Yarrabubba metallurgical testwork

H1 2022

Resource upgrade drilling

H1 2022

Process plant design optimisation

H1 2022

Yarrabubba ore reserve update

Q2 2022

Integration study completion

Q2/Q3 2022

Environmental approval

Q2/Q3 2022

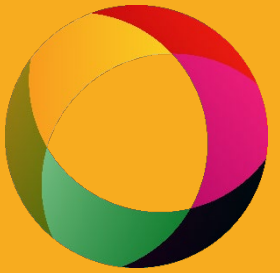
Project development decision

H2 2022





# A COMPELLING INVESTMENT



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## Globally Significant

project with outstanding economics located in a Tier 1 jurisdiction

## Strategic Investor

RCF VII with long-term focus on supporting project development

## Critical Metals

to deliver critical minerals that support a cleaner future

## Delivering

on project development underpinned by high quality technical work

## Team in place

focused on a development strategy to maximise shareholder value

## Stable

operating environment with excellent infrastructure and access





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## CONTACT US

**Ian Prentice**  
Managing Director

 [ian@tmtlimited.com.au](mailto:ian@tmtlimited.com.au)

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Suite 9, 330 Churchill Ave  
Subiaco WA 6008, AUSTRALIA

Ph: +61 8 6489 1600  
Fax: +61 8 6489 1601

 [www.tmtlimited.com.au](http://www.tmtlimited.com.au)

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