

## Long-Life WA Vanadium Project with Near-Term Development Potential

Technology Metals Australia (TMT) is focused on progressing its 100%-owned Murchison Technology Metals Project (MTMP), located near Meekatharra in Western Australia. The MTMP is one of the highest-grade, lowest-cost vanadium projects globally, underpinned by dual revenue streams:

- production of **vanadium pentoxide** (added to steel for strength/corrosion resistance, providing a key ‘green steel’ input with emerging uses in renewable applications)
- an attractive **ilmenite by-product** (a titanium-dioxide ore mineral used as a feedstock for the titanium pigment industry) produced over the first 8–10 years of mine life.

After the publication of robust economic fundamentals in the Integration Study, completed in August 2022, commercial tendering and optimisation are underway. TMT expects the Board will make a development decision early CY23.

The Project benefits from the energy transition tailwinds, and we believe attracting the necessary funding to move into full construction and production is only a matter of time. Our risked NPV/share of A\$0.75 compares favourably to the current share price of A\$0.35.

### Compelling Integration Study: Ilmenite Augments Project Economics

In our view, the Integration Study provides a robust foundation for the Company to confirm a decision to proceed into full construction for the MTMP over the next few months. The study enhanced and extended the 2019 DFS to incorporate both of the MTMP’s key deposits, amalgamating the Gabanintha vanadium and Yarrabubba vanadium/ilmenite deposits under a single processing facility at Gabanintha (20km from Yarrabubba).

### Vanadium: Critical, Clean Metal; Emerging Uses

Vanadium is primarily used to improve the strength and corrosion resistance of steel. However, we expect major demand growth from the uptake in vanadium redox flow batteries, which are an important part of integrated renewable energy supply solutions. Vanadium is on the 2022 list of US critical minerals, highlighting its strategic importance in essential US manufacturing.

Attractive funding for the Company’s estimated A\$604m Capex will be vital in unlocking MTMP’s clear latent value. We believe vanadium’s status as a critical clean metal for green technology advancement and the MTMP’s first-class location in WA make a suitable funding solution highly probable.

### Valuation: A\$0.75 – Overlooked, High-Quality Critical Minerals Exposure

Our risked NPV for TMT is A\$0.75/share (fully diluted). TMT provides exposure to a rare, high-quality critical minerals project backed by capable management and numerous near-term de-risking catalysts which could unlock significant shareholder value over the next few months: commercial tendering outcomes, project finance negotiations and a commitment to develop. We expect that with financing in place, construction could begin within 6 months. Key risks include project delays, escalation in capital costs and the company being unable to secure required offtakes.



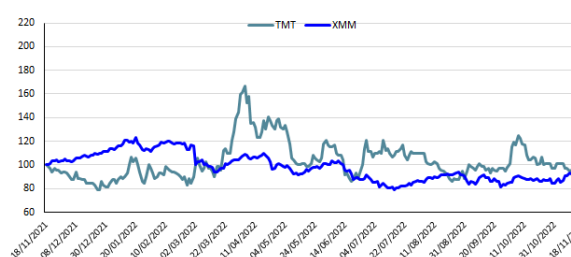
Technology Metals Australia (ASX:TMT) is an ASX-listed company focused on exploring and developing its flagship, 100%-owned Murchison Technology Metals Project (MTMP) located 50km SE of Meekatharra in the mid-west of Western Australia. The MTMP, comprising the Gabanintha and Yarrabubba vanadium deposits, is one of the world’s highest-grade vanadium projects with the lowest-quartile operating costs once developed.

Stock	ASX: TMT
Price	A\$0.35
Market cap	A\$72.4m
Valuation (per share)	A\$0.75

#### Next steps

Jan 2023	Complete commercial tendering process
Q1 2023	Optimise project economics
Q1 2023	Development decision
Q2 2023	Secure project funding

#### TMT share price (A\$) – 1 year



Source: FactSet.

**Jonathan Sharp**

jonathan.sharp@mstaccess.com.au

## Exhibit 1 – TMT: company summary – year-end 30 June

TECHNOLOGY METALS AUSTRALIA LIMITED						TMT.AX
<b>Year end 30 June</b>						
<b>MARKET DATA</b>						
Share Price	A\$/sh				0.35	
52 week low/high	A\$/sh		0.27		0.62	
Valuation	A\$/sh				0.75	
Market Cap (A\$m)	A\$m				72	
Net Cash / (Debt) (A\$m)	A\$m				19	
Enterprise Value (A\$m)	A\$m				54	
Shares on Issue	m				210	
Options/Performance shares	m				20	
Other Equity	m				436	
Potential Diluted Shares on Issue	m				666	
<b>INVESTMENT FUNDAMENTALS</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Reported NPAT	A\$m	(2)	(2)	(4)	(4)	104
Underlying NPAT	A\$m	(2)	(2)	(4)	(4)	104
EPS Reported (undiluted)	¢ps	n/m	n/m	n/m	n/m	15.7¢
EPS Underlying (undiluted)	¢ps	n/m	n/m	n/m	n/m	15.7¢
Underlying EPS Growth	%	-185.2%	-27.5%	107.3%	-49.3%	-1909.7%
P/E Reported (undiluted)	x	n/m	n/m	n/m	n/m	2.2
P/E Underlying (undiluted)	x	n/m	n/m	n/m	n/m	2.2
Operating Cash Flow / Share	A\$	(0.01)	(0.00)	(0.01)	(0.00)	0.21
Price / Operating Cash Flow	x	(51.0)	(131.6)	(28.8)	(85.0)	1.7
Free Cash Flow / Share	A\$	(0.04)	(0.04)	(0.02)	(0.99)	0.16
Price / Free Cash Flow	x	(8.3)	(9.6)	(20.2)	(0.3)	2.2
Free Cash Flow Yield	%	-12.0%	-10.5%	-5.0%	-286.4%	45.5%
Book Value / Share	A\$	0.22	0.25	0.24	0.46	0.65
Price / Book	x	1.58	1.37	1.44	0.74	0.53
NTA / Share	A\$	0.22	0.25	0.24	0.46	0.65
Price / NTA	x	1.58	1.37	1.44	0.74	0.53
Year End Shares	m	150	210	210	666	666
Market Cap (spot)	A\$m	52	72	72	230	230
Net Cash / (Debt)	A\$m	6	19	15	(381)	(277)
Enterprise Value	A\$m	46	54	57	611	506
EV / EBITDA	x	(25.3)x	(21.5)x	(13.1)x	(12.8)x	0.3x
Net Debt / Enterprise Value		(0.1)	(0.3)	(0.3)	7.1	5.1
<b>PRODUCTION AND PRICING</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
V2O5 Flake Production	kt	-	-	-	-	10
Ilmenite Production	kt	-	-	-	-	120
Vanadium Price (US\$/lb)	US\$/lb	-	-	11.3	11.6	11.8
Ilmenite 45-50% (US\$/t)	US\$/t	-	-	266.5	273.2	280.0
AUDUSD	:	-	-	0.70	0.70	0.70
<b>12-Month Relative Performance vs S&amp;P/ASX Metals &amp; Mining</b>						
<b>Profit &amp; Loss (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Sales		-	-	-	-	402
Expenses		(2)	(2)	(4)	(4)	(208)
<b>EBITDA</b>		<b>(2)</b>	<b>(2)</b>	<b>(4)</b>	<b>(4)</b>	<b>194</b>
D&A		(0)	(0)	(0)	(0)	(33)
<b>EBIT</b>		<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(4)</b>	<b>161</b>
Interest		0	0	1	0	(11)
Tax		1	1	-	-	(45)
<b>Underlying NPAT</b>		<b>(2)</b>	<b>(2)</b>	<b>(4)</b>	<b>(4)</b>	<b>104</b>
Exceptionals		-	-	-	-	-
<b>Reported Profit</b>		<b>(2)</b>	<b>(2)</b>	<b>(4)</b>	<b>(4)</b>	<b>104</b>
<b>Balance Sheet (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Cash		6	19	15	11	116
Receivables		0	1	1	1	33
Inventory		-	-	-	-	20
PP&E		-	-	1	656	657
Exploration		28	35	35	35	35
Other		-	-	-	-	-
<b>Assets</b>		<b>34</b>	<b>54</b>	<b>51</b>	<b>702</b>	<b>861</b>
Creditors		1	1	1	1	33
Debt		-	-	-	392	392
Other		-	-	-	-	-
<b>Liabilities</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>393</b>	<b>425</b>
<b>Net Assets</b>		<b>33</b>	<b>53</b>	<b>50</b>	<b>309</b>	<b>435</b>
<b>Cashflow (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Cash From Operations		(1)	(1)	(3)	(3)	195
Interest		-	-	-	-	(45)
Tax		-	0	1	0	(11)
<b>Net Cash From Operations</b>		<b>(1)</b>	<b>(1)</b>	<b>(3)</b>	<b>(3)</b>	<b>139</b>
Capex		(0)	(0)	(0)	(654)	(33)
Exploration		(5)	(7)	(1)	(1)	(1)
Investments		-	-	-	-	-
<b>Free Cash Flow</b>		<b>(6)</b>	<b>(8)</b>	<b>(4)</b>	<b>(658)</b>	<b>104</b>
Equity		9	21	-	262	-
Borrowings		-	-	-	392	-
Dividend		-	-	-	-	-
<b>Net Increase / (Decrease) in Cash</b>		<b>2</b>	<b>13</b>	<b>(4)</b>	<b>(4)</b>	<b>104</b>

Source: Company reports, MST Access.

## Investment Thesis: World-Class Vanadium Project + Tier 1 Location

TMT owns 100% of its flagship asset, the world-class Murchison Technology Metals Project (MTMP), located in the Tier 1 mining jurisdiction of Western Australia, just 50km south of the inland town of Meekatharra. The Project straddles two of the world's leading undeveloped vanadium deposits, Gabanintha and Yarrabubba. It has a high-grade vanadium resource, recoverable ilmenite credits at Yarrabubba, and first-quartile operating costs.

We initiate coverage with a valuation of A\$0.75/share, and expect numerous de-risking catalysts to emerge over the next few months. These include commercial tendering outcomes, project finance negotiations and a commitment to develop. With financing in place, we expect MTMP construction could begin within 6 months. While global cost inflation continues, long-term vanadium price expectations are subject to upside pressure as vanadium redox flow batteries (VRFBs) are further understood and incorporated into the demand/supply models.

### Flagship Project: Murchison Technology Metals Project (MTMP), Western Australia

In August 2022, TMT published a comprehensive 'Integration Study' on the MTMP. As an extension of the prior DFS completed for Gabanintha vanadium in isolation, the Integration Study incorporated the significant value identified at Yarrabubba and the potential for significant ilmenite by-product credits. The study estimated strong life-of-mine EBITDA margins of ~46%, which are likely to be much higher over the first 9 years of the operation, given that ilmenite production is weighted towards that period. TMT expects first production at MTMP in 2025, assuming critical tasks are completed as per the current schedule (primarily offtake and financing).

The Integration Study outlines a compelling investment proposition around one of the world's most significant undeveloped vanadium deposits, providing a solid platform to rapidly move the MTMP towards construction and production. While the study's Gabanintha component has been completed to an advanced level, further optimisation potential exists concerning Yarrabubba.

#### Key operational and financial characteristics of existing project

- **Meaningful Ore Reserve:** 44.5mt Ore Reserve grading 0.89% V<sub>2</sub>O<sub>5</sub>; significant uplift in the Ore Reserve at Yarrabubba (+69%) to 15.9mt grading 0.87% V<sub>2</sub>O<sub>5</sub> and 10% TiO<sub>2</sub>
- **very long operation life of 25 years** (reserve life = 22.5 years), including 10.5mt of material currently classified as Inferred Resource within the Ore Reserve pit designs (we think this will be included as exploration and definition work advances)
- **lowest-quartile operating costs** from a simple operation and advantageous ilmenite by-product revenue
- **simple operations:** conventional mining and processing in a Tier 1 location for mining development (Western Australia); straightforward open-pit truck and excavator mining operation with a strip ratio of 5.95:1
- **easy access to global export markets** from strong links to port export infrastructure at Fremantle (for V<sub>2</sub>O<sub>5</sub> product) and Geraldton (for TiO<sub>2</sub> product)
- **maximised early cashflows and economic returns:** average annual vanadium production of 12.5ktpa V<sub>2</sub>O<sub>5</sub> flake and 1.1mt ilmenite (grading ~47%), expected to be predominantly in the first 9 years of operation life
- **LOM revenue >A\$8bn**, assuming of A\$10.50/lb for vanadium (conservative), US\$260/t for ilmenite concentrate

#### Key opportunities for additional value capture beyond existing project definition

- **conversion of the 10.5mt Inferred Resources** and inclusion of these into the economic model
- **pull-forward of ilmenite production profile** at Yarrabubba
- **moderated key cost assumptions** vs. the Integration Study when the ongoing inflation outlook was uncertain
- **value-adding processing options** to produce and sell finished products directly to customers.

#### Infrastructure

Infrastructure solutions have been well established and include a standalone power station, an integrated waste storage facility, borefield for water supply, gas supply via pipeline access and 8km additional haul road connection to the Yarrabubba project.

## Vanadium Markets – Steel Usage Strengthened by Battery Demand

While vanadium is relatively unknown to Australian equity investors, it is increasingly vital for global decarbonisation. Over 90% of vanadium is used as an additive in steel production to strengthen and protect steel against corrosion while significantly reducing its weight. This substantially decreases total steel requirements for a structure, reducing carbon emissions. As a result, we see vanadium becoming increasingly critical to satisfy market demand for ‘green steel’ and help realise ESG benefits in an energy-intensive industry that is integral to the world economy.

Additionally, vanadium is a critical part of innovative energy storage solutions for large-scale renewable energy infrastructure, which has been held back by grid infrastructure and base-load capacity limitations, making long-duration storage solutions essential. Medium to long-lasting vanadium redox flow batteries (VRFBs) are increasingly popular, given their suitability for integration with renewable energy infrastructure, and currently account for 5% of global vanadium demand. We believe they will likely gain acceptance and increase penetration rates in the near future, thereby increasing demand for vanadium and tilting the market balance in favour of demand in the long run.

### Near-Term Catalysts

- Ongoing: Commercial tendering process and Ore Reserve upgrade
- End-CY2022: Development decision
- 1HCY23: Financial close on project financing solution; early works – upgrading roads, borefield, site camp
- 2HCY23: Proceed into full construction

### Valuation – A\$0.75/share – Compelling Value for A Robust Project

Our risked NPV for TMT is A\$0.75/share, fully diluted for remaining equity finance requirements to fund project capex (our estimate of A\$654m). Key assumptions include a long-term real vanadium price of A\$11.00/lb (escalated), ilmenite price of US\$260/t (FOB, real) and AUD/USD of 0.70. Our valuation implies significant upside from the current share price.

Near-term risks include project and approval delays, cost escalation, failure to obtain offtake agreements, and an inability to obtain attractive debt financing for project financing.

We believe these risks are offset by the MTMP’s ideal location in a Tier 1 mining jurisdiction, strong fundamental tailwinds for vanadium demand in green steel production, and the advancement of VRFBs to support the broad decarbonisation push. TMT’s Board and management have a broad suite of qualifications spanning technical expertise, project development and project financing, giving the company the right skill set to lead the project through the remaining stages of development and into full construction and production over the near term.

### Financials – Offtake Negotiations and Commercial Tendering to Unlock Advancement of Financing Discussions

TMT’s leadership team is focused on updating and optimising the Integration Study and bankable financial model. The process should progress to formal proposals from possible project financing partners by early-2023. According to management, construction will begin in 2HCY23, and financial close is targeted for 1HCY23.

We note that TMT recently signed an MOU with Indian steel giant Tata Steel which sets up a framework for discussing off-take agreements and indicates that Tata will consider potential downstream processing solutions and financing support for the MTMP.

We expect MTMP should be able to secure a debt package of at least 60% (~A\$390m) of our estimated pre-production Capex (A\$654m) and assume the balance comes from equity raising at 50¢/share.

Overall, we believe that the high quality of the MTMP positions it to realise an attractive finance solution to transition into full production by 2025. TMT’s cash at bank of A\$15.1m (as of 30 September 2022) represents a healthy funding position to advance the current phase of works towards FID while the broader project financing package is secured.

## The Murchison Technology Metals Project: Differentiated Critical Industrial Minerals Project

### Overview of Flagship Project, the Murchison Technology Metals Project (MTMP)

The MTMP is one of the largest undeveloped vanadium projects in the world, with first-quartile operating cost estimates and a Tier 1 location in the supportive mining jurisdiction of Western Australia (WA).

MTMP straddles two deposits, Gabanintha to the north (the site of the processing plant) and Yarrabubba to the south (which contains substantial quantities of high-value ilmenite by-products). The Company expects the ilmenite to contribute a significant secondary income stream for the project, helping to support its overall solid economic fundamentals.

TMT is on track to successfully develop the project into a globally significant primary vanadium operation and benefit from structural tailwinds. Several factors will likely awaken substantial interest in high-quality potential vanadium supplies, including:

- growing demand for battery-related metals
- US efforts to establish new supplies of critical minerals domestically on home soil or in allies
- Increased geopolitical tensions between Western countries and China, the latter of which currently dominates vanadium supply.

The project capital expenditure is not insignificant relative to the company's current market capitalisation. However, given the de-risking catalysts over FY23, we expect TMT to re-rate substantially. Furthermore, TMT has highly credible potential financiers already aligned with the company and project, primarily Resource Capital Funds (RCF: 17.2% shareholder) and Tata Steel. We note that it is unusual for a project at this stage of development to have achieved alignment with such high-profile potential counterparties and see this as a strong vote of confidence in the project. TMT's sensible strategic decisions give us a high degree of confidence in the development timeline. This indicates the potential for the company to generate early solid cash flows in 2025.

### Resources and Reserves

The project currently hosts an Ore Reserve of 44.5mt grading 0.89% V<sub>2</sub>O<sub>5</sub> and has an additional 10.5mt of Inferred Resources grading 0.5% V<sub>2</sub>O<sub>5</sub>, which sits within the current Ore Reserve pit designs. The MTMP straddles two deposits which make up the total combined Ore Reserve:

- the ilmenite-rich Yarrabubba deposit (36% of Ore Reserve): 15.9mt grading 0.87% V<sub>2</sub>O<sub>5</sub> and 10% TiO<sub>2</sub>
- the large, high-grade Gabanintha deposit (64% of Ore Reserve): 28.6mt grading 0.91% V<sub>2</sub>O<sub>5</sub>.

The total Ore Reserve includes both deposits, each with distinct metallurgical properties and economic profiles. Yarrabubba ore has been earmarked for preferential treatment despite its requirement for trucking to the process plant, given the strong contribution from ilmenite by-product revenue.

TMT delivered a 26% increase in its measured and indicated resource in November 2022. We expect this increase will significant growth in the Proven Ore Reserves.

The MTMP's ore reserve estimate is seen in Exhibit 2, at 44.48Mt at 0.89% V<sub>2</sub>O<sub>5</sub>. The total resource is seen in Exhibit 3, at 153.7Mt at 0.8% V<sub>2</sub>O<sub>5</sub>, with a b breakdown shown in Appendix 2.

Exhibit 2 – MTMP Ore Reserve Estimate

Deposit	Ex-Pit Ore				Magnetic Conc.		Non-Magnetic Conc		Rec V202%	Rec Ilmenite	Waste	Total
	Mt	V <sub>2</sub> O <sub>5</sub> %	TiO <sub>2</sub> %	Mass Yield	Mt	V <sub>2</sub> O <sub>5</sub> %	Mt	TiO <sub>2</sub> %	M lb	kt	Mt	Mt
Yarrabubba Probable	15.88	0.87%	10.0%	44.40%	7.04	1.61%	8.84	12.35%	202.7	1132.6	110.1	126.0
<b>Yarrabubba Total</b>	<b>15.88</b>	<b>0.87%</b>	<b>10.0%</b>	<b>44.4%</b>	<b>7.04</b>	<b>1.61%</b>	<b>8.84</b>	<b>12.35%</b>	<b>202.7</b>	<b>1132.6</b>	<b>110.1</b>	<b>126.0</b>
Gabanintha Probable	1.12	0.95%		69.80%	0.78	1.30%			18.1			
Gabanintha Proven	27.48	0.90%		57.10%	15.69	1.31%			369.4		154.5	183.1
<b>Gabanintha Total</b>	<b>28.6</b>	<b>0.91%</b>	<b>10.7%</b>	<b>57.6</b>	<b>16.47</b>	<b>1.31%</b>			<b>387.5</b>	<b>0.000</b>		
<b>MTMP Total</b>	<b>44.48</b>	<b>0.89%</b>	<b>10.50%</b>	<b>52.90%</b>	<b>23.52</b>	<b>1.40%</b>	<b>8.84</b>	<b>12.35</b>	<b>590.3</b>	<b>1132.6</b>	<b>264.6</b>	<b>309.1</b>

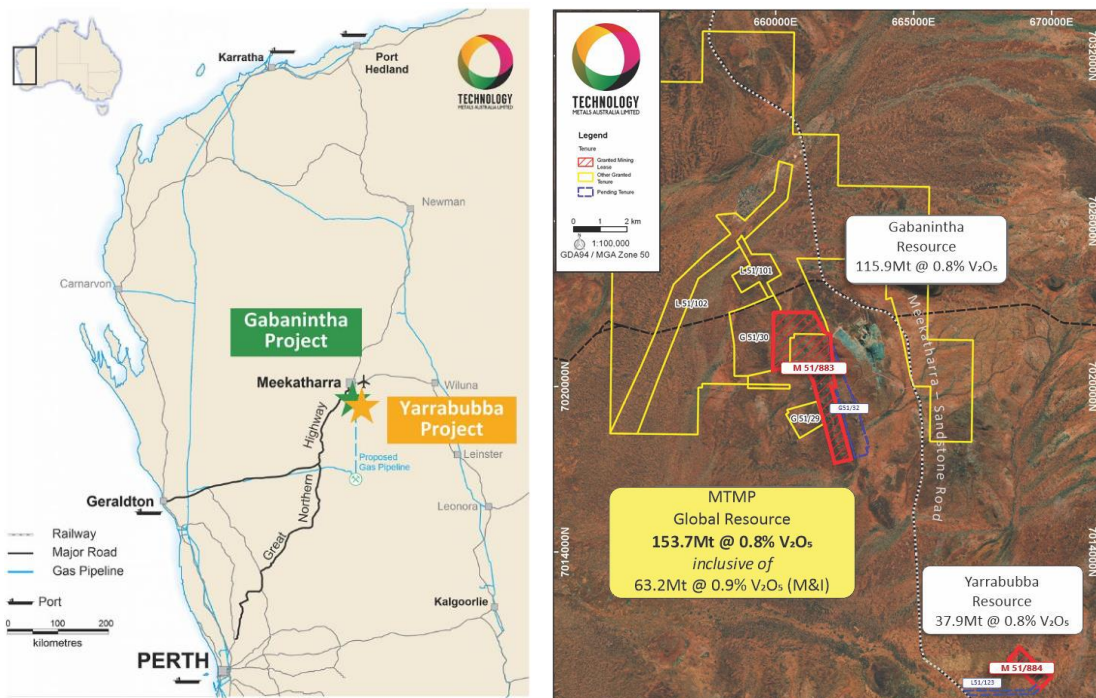
Source: Company reports.

### Location: close to transport, workforce and infrastructure, in a favourable jurisdiction

A key project advantage is its location in WA, close to the town of Meekatharra (50 km to the north; population ~700). An existing airfield is located at Meekatharra, which is suitable for transporting a fly-in/fly-out workforce from Perth. Furthermore, the community of Cue (population 350) is relatively close to the project site (~90km away). The project is located on favourable topography in a stable and supportive jurisdiction for mining development. This jurisdiction enables easy access to a highly skilled workforce and provides excellent linkages to critical infrastructures such as sealed roads and ports.

Vanadium pentoxide is an intermediate product that typically undergoes further processing before being sold to end customers; a seaborne export market is crucial. Therefore, end markets will likely be industrial customers in developing regions such as Asia and India as well as developed regions such as Japan, Korea, Europe, and North America. Therefore, the Ports of Fremantle and Geraldton (earmarked as gateways to export TMT's product) are ideally situated relative to the operation site and accessible via existing road infrastructure.

Exhibit 3 – Project location with project resources: a regional map



Source: Company reports.

### Geology: favourable orebody – fresh ore close to surface

The defined mine plan is underpinned by simple geology and significant quantities of ore located close to surface, with magnetite outcrops and thick zones of ore providing ideal foundations for a low-risk open-cut mining operation.

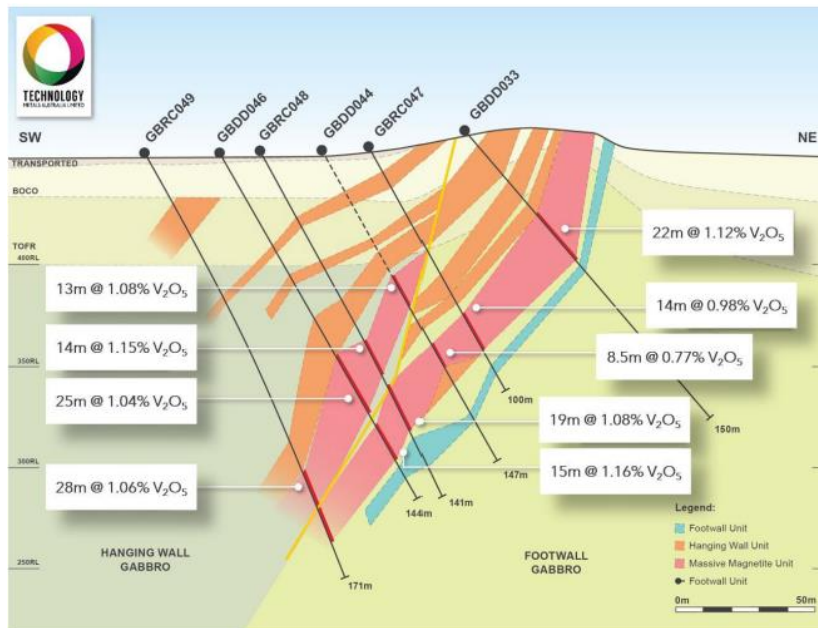
Exhibit 4 – Massive magnetite outcrops at Gabanintha and Yarrabubba



Source: Company reports, MST.

The simple geology and outcropping orebody make it ideal for open-pit mining. The highest grades are contained within the 15–25m thick massive magnetite unit where grades average 48% Fe, 1.1% V<sub>2</sub>O<sub>5</sub> and 12% TiO<sub>2</sub>. These characteristics provide a high degree of confidence in the grade profile and metallurgical characteristics likely to be encountered early in the operation life, which is always a crucial period in establishing a strong platform for ongoing economic returns and shareholder value creation.

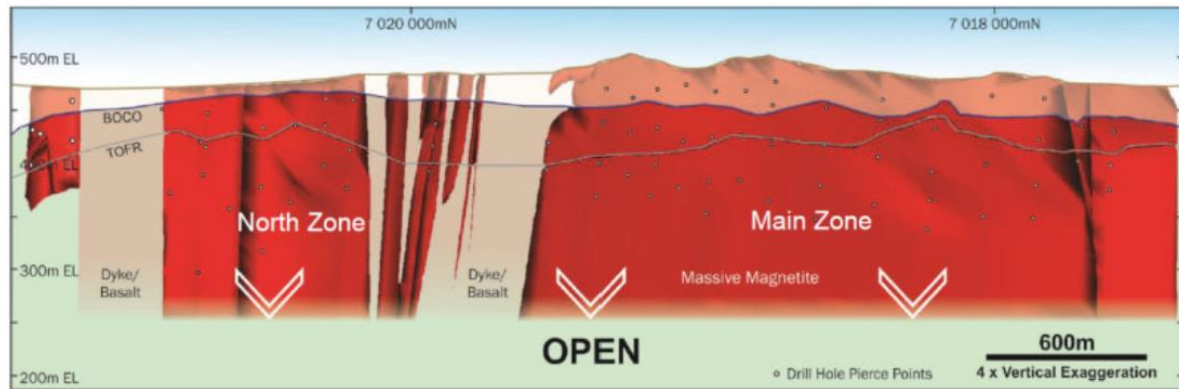
Exhibit 5 – Geology sets the MTMP apart



Source: Company reports.

Importantly the orebody has been subjected to a relatively shallow weathering profile (Exhibit 6). The weathering of the mineralised units directly impacts the recoveries of vanadium. The vanadium at Gabanintha and Yarrabubba is associated with magnetic magnetite; hence, magnetic separation is the first step in processing. However, oxidised magnetite is not magnetic and cannot be efficiently separated from the gangue minerals (silica, alumina). Hence, initial mining production is focused on the transition and fresh zones close to the surface.

Exhibit 6 – GWKP formation (long section: Northern Block – Massive Magnetite Zone)



Source: Company reports.

## Project Development: Integration Study Provides Compelling Potential

### Parameters: 25-year project, conventional operation and robust economics

The MTMP 'Integration Study' released in August 2022 extended the 2019 Gabanintha DFS by incorporating the Yarrabubba deposit (a distinct, ilmenite-rich deposit located to the South of Gabanintha), which required adding ilmenite recovery circuits. A vital component of the study was to gain confidence in the metallurgical recovery potential of Yarrabubba ore. The study confirmed the ore could be processed within the Gabanintha flowsheet in conjunction with an additional ilmenite recovery circuit.

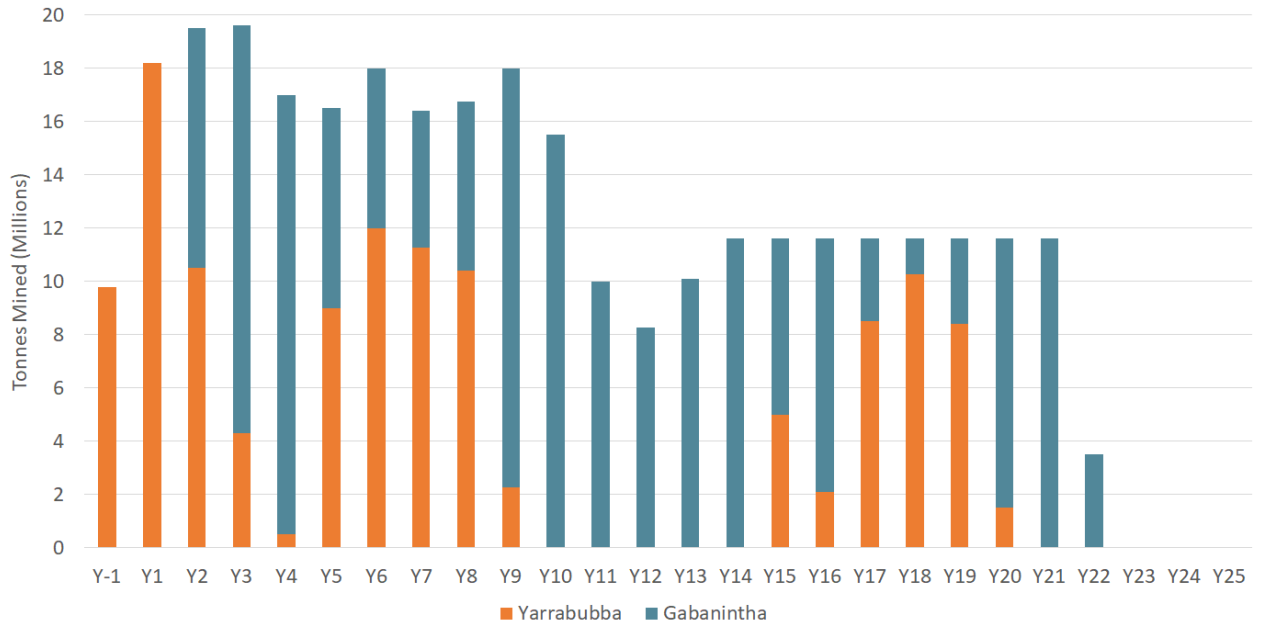
The mining schedule established within the Integration Study is focused on Yarrabubba ore at the front end of the mine plan, given the strong economic profile of Yarrabubba ore driven by the ilmenite by-product credits. However, the Yarrabubba pit is expected to be mined across 3 discontinuous phases. This plan is related to requirements to stockpile and rehandle waste rock into completed pit shells over the life of the mine to manage tenement boundary constraints. However, if this constraint is removed, we believe it presents an opportunity to maximise the economics of the overall mine plan by bringing forward Yarrabubba's ore production.

The mine plan outlined in the Integration Study is based on extracting the 44.5mt Ore Reserve for 22.5 years of production (including 6 months pre-strip ahead of first ore). The potential 25-year operation life incorporates an additional 10.5mt of Inferred Resources material within the existing pit designs, which is lower grade (0.5%  $V_2O_5$ ) material. Therefore, our base-case financial model does not include the 10.5mt Inferred material. However, with further drilling, we highlight the potential incremental feed, which could provide low-cost production at the end of the operation life.

The negligible reliance of the current mine plan on Mineral Resources outside the Ore Reserve is a further strength indicator that de-risks the technical/operational risks at MTMP, given the relatively high degree of certainty underpinning the currently defined project parameters.

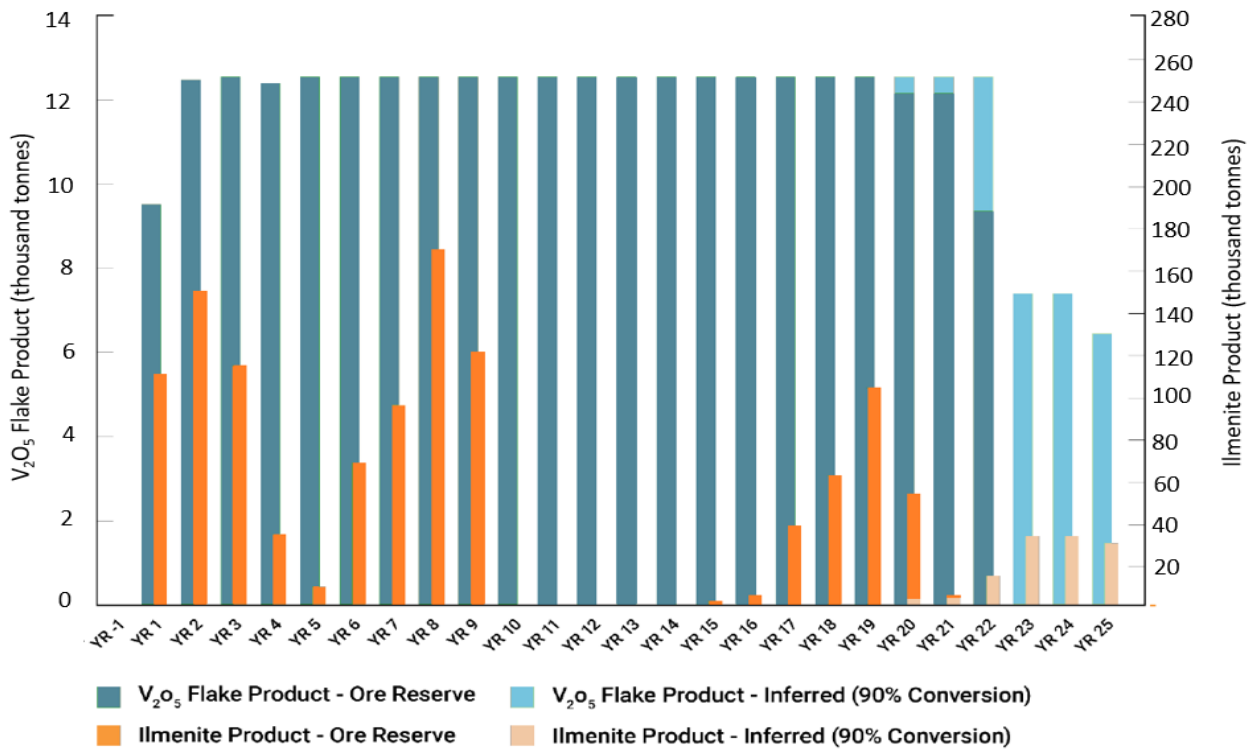


Exhibit 7 – MTMP mine production schedule – by deposit



Source: Company reports, MST.

Exhibit 8 – MTMP updated mine production schedule – by product



Source: Company reports, MST.

### Timeline: construction to commence in 2023, first production in 2025

With the plant design completed and competitive tendering underway to finalise the key economic parameters, TMT expects early project works to commence over the next 6 months (e.g., road and camp upgrades) before moving into full construction in 2023, followed by an ~18-month phase of capital works.

As such, the MTMP project should be able to achieve first production in 2025, given the current advanced stage of development pending the execution of an attractive project financing package. The pre-production capital cost for the project established by the Integration Study is A\$604m (including 12% contingency). Although inflation pressures are expected over the near term, we expect the strong operating margins and low-risk mining and processing present a robust investment proposition that investors should well receive.

#### Exhibit 9 – Implementation phase timeline



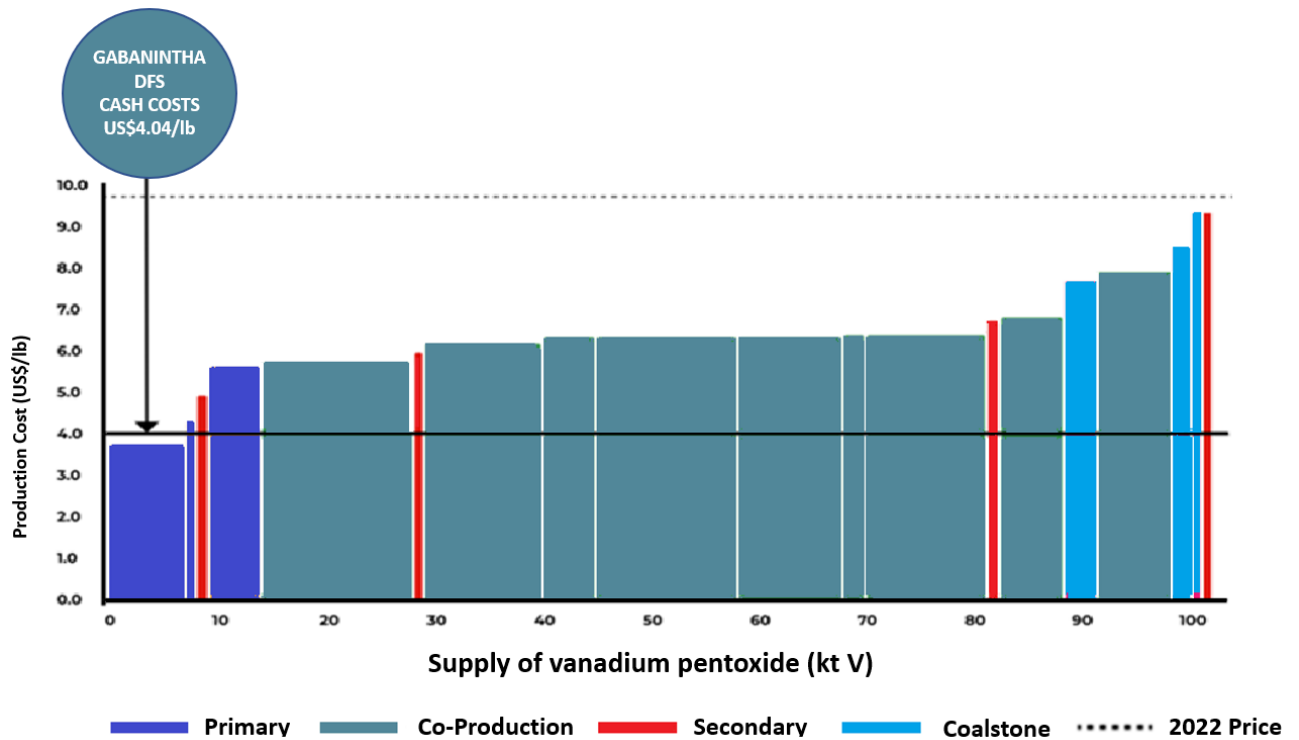
Source: Company reports, reproduced by MST.

### Project financials: first-quartile costs = robust through-the-cycle margins

**EBITDA:** Based on Integration Study assumptions, the MTMP is expected to generate an average annual EBITDA of A\$182m. However, we see upside early in the operation life, given that the Yarrabubba ilmenite contribution is weighted towards the first nine years. In addition, higher grades of vanadium are likely to be prioritised in mine scheduling.

**Production costs:** While no explicit AISC assumptions were provided in the August 2022 Integration Study, the cash cost estimates of US\$4.04/lb in the 2019 DFS represented the lowest production cost globally of vanadium pentoxide (see Exhibit 10). We expect that, while inflationary pressure will have increased this headline production cost estimate, adding Yarrabubba ore to the schedule will likely provide downward pressure. Therefore, while we await further disclosures from the bankable financial model, we forecast the LOM MTMP production costs (on an AISC basis) to be ~US\$5–6/lb.

Exhibit 10 – 2022 vanadium cost curve



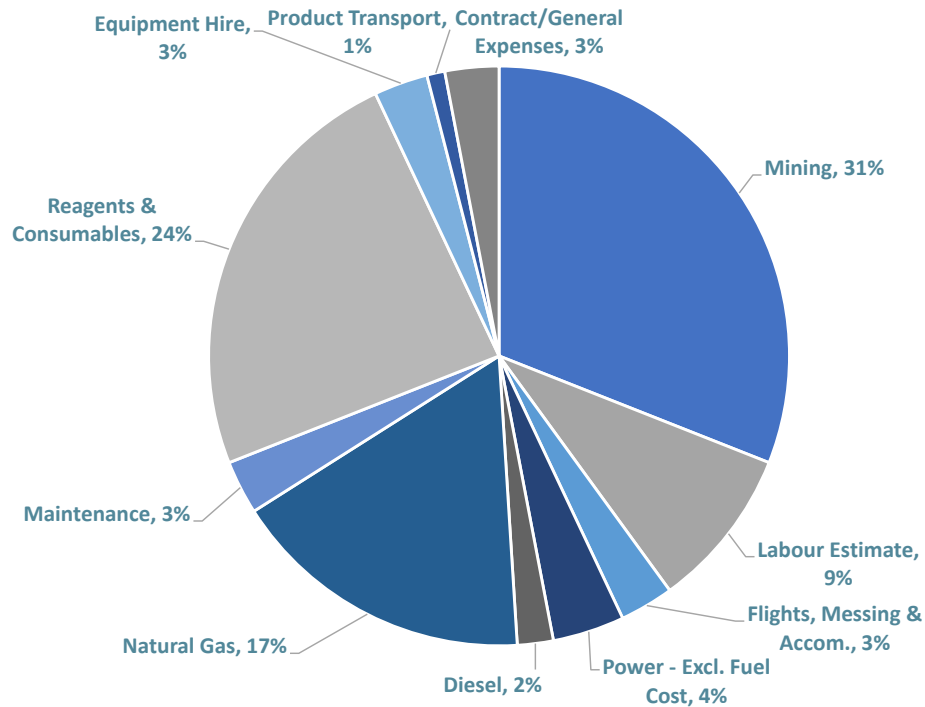
Source: Company reports, MST, Wood Mackenzie.

Several key advantages underpin MTMP’s expected high-margin, low-cost economic profile, specifically:

- **geology:** outcropping orebody comprised of thick zones of mineralisation; open-pit, large-scale mining operation providing strong productivity and efficiency; simple metallurgy, which requires conventional processing; high expected metallurgical recovery rates
- **by-product credits:** contribution from Yarrabubba ilmenite production – strong by-product credit profile
- **location:** workforce availability in WA with direct access to FIFO employees ex-Perth
- **infrastructure:** established sealed road infrastructure from mine site to coastal ports for product exports (key options include Fremantle and Geraldton); water availability from nearby borefields; site gas connection via a pipeline to be constructed by APA.

As the commercial tender process advances, detailed operating cost disclosures will be updated throughout FY23. Considering that mining costs represented 31% of operating costs in the 2019 DFS (see Exhibit 11), we expect their contribution to the final cost structure to be substantial.

Exhibit 11 – Operating cost estimate by cost centre: 2019 DFS (Gabanintha deposit only)



Source: Company reports, MST, Wood Mackenzie.

Given the significance of mining costs to the overall cost profile, we highlight the Integration Study's economic model incorporated elevated related costs given the high oil price environment at that time. These include:

- diesel prices of A\$1.66/L
- bulk explosives prices of \$1,400/t.

After the government rebate, mining companies are paying ~\$1.80/L (as of October 2022). The inherent uncertainty of oil prices, particularly against the current geopolitical backdrop, makes it difficult to anticipate the trajectory of diesel prices over the next 12–24 months. However, we believe current assumptions are reasonable, with prices over the medium-term regressing to the mean.

### Permits and approvals: process underway

Given WA's established mining industry and robust regulation, we expect the primary risk related to permitting and approval processes will be their timely completion. TMT's management is well aware of this and is focused on the project's critical tasks to minimise project slippage. Notably, the Environmental Approval Process (EPA) is underway, with management highlighting continued engagement and consultation with key stakeholders.

The gas pipeline to be constructed by APA is also undergoing environmental and heritage approvals. With a clearly defined route, this phase of work should be completed by the end of CY2022. Gas supply is critical to the MTMP. Nevertheless, it will not be required until the completion of construction. As such, the lead time to complete this crucial piece of infrastructure looks comfortable in our view.

### Recent events

- November 2022: 26% increase in Measured and Indicated Resource
- October 2022: MOU executed with Tata Steel
- August 2022: TMT becomes key investor in FBICRC's Development of Electrolytes Project; MTMP Integration Study released
- June 2022: Gas pipeline early works agreement with APA
- November 2021: 110% increase in Yarrabubba Mineral Resource
- September 2021: RCF cornerstones \$20m placement

## Forward work plan – next steps to progress the project

- 4QCY22: Development decision; complete commercial competitive tendering process
- 1QCY23: Update bankable financial model with information from the commercial competitive tendering process
- 1HCY23: Secure EPA approvals
- CY2023: Marketing – secure additional binding offtake agreements for initial production
- 1HCY23: Commence early project works; financial close/funding solutions secured
- mid-CY2023: Full construction to commence
- end-2024: Commissioning phase to commence
- CY2025: First production

## Mining and Processing

With the TMT management's deep experience in the mining sector combined with its lack of operational complexity, we believe the company can deliver steady and predictable mine performance to feed material to the process.

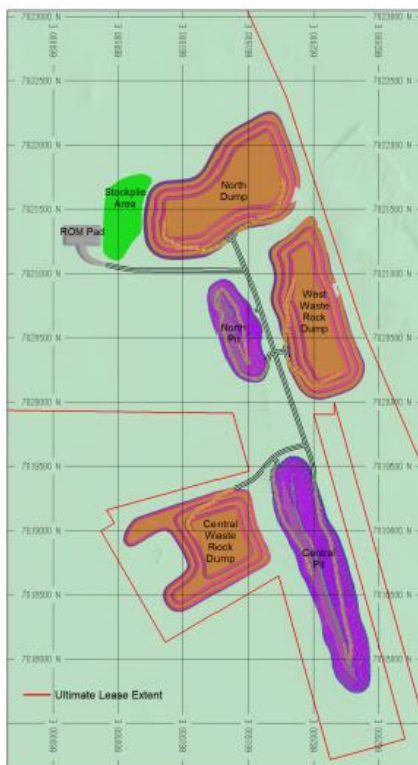
### Mining method

MTMP is a simple open-pit operation that uses conventional truck and excavator mining techniques. Current designs use 100t rigid body dump trucks with maximum depth across the 3 pits.

The Gabanintha pits ('North' and 'Central') have relatively simple access via dual-lane ramps. However, Yarrabubba is more complex – it is currently expected to be mined in 3 stages due to progressive backfill requirements (which preclude the usage of shared ramps) and independent access requirements related to the boundary constraint (the pit will reach ~30m of the neighbouring tenement in some locations).

Topography at the project site is relatively flat, weather conditions typically arid with little vegetation, and seasonal rainfall, which the company does not expect will interrupt mining operations.

Exhibit 12 – Gabanintha site layout (LHS); Yarrabubba landscape: flat and arid (RHS)



Source: Company reports.

The Integration Study relies upon contract mining, reducing the upfront capital investment required for equipment purchases. This also presents an opportunity for incremental operating cost reductions in the future upon a transition to owner-operator mining.

From a mining perspective, the MTMP is relatively simple. Notably, geology and geotechnical risks are low, helping to minimise higher-than-expected mining dilution and unforeseen geotechnical issues.

## Processing method

The process plant has been designed to target the average annual production of 12.5ktpa vanadium pentoxide flake. The 2019 DFS summarises the process in 6 distinct stages (in relation to Gabanintha):

**Stage 1: Crushing and screening.** ROM ore is crushed down to an 80% passing size of 8mm. Allowance has been made for Coarse Dry Magnetic Separation to remove coarsely liberated gangue from the vanadium-bearing magnetite required with additional crushing capacity in future when processing lower-grade disseminated ore.

**Stage 2: Grinding and wet magnetic separation.** The ~8mm material is ground down to an 80% passing size of 150 µm followed by wet magnetic separation to remove finely liberated gangue from the vanadium-bearing magnetite.

**Stage 3: Roasting.** The vanadium-bearing magnetite concentrate is mixed with a sodium-based salt and roasted at approximately 1,250C, converting the vanadium pentoxide in the ore to water-soluble sodium metavanadate. FLSmidth has used data generated from the pilot scale rotary kiln test work to assist in engineering design, sizing and cost estimate studies for the 'roasting' section of the processing circuit.

**Stage 4: Leaching and precipitation.** The sodium metavanadate is leached out of the roasted product with water, followed by re-precipitation of the vanadium in the form of ammonium metavanadate.

**Stage 5: De-ammoniation and calcination.** The ammonia is removed from the precipitated product to form a vanadium pentoxide powder. This powder is melted and cooled to produce the final vanadium pentoxide flake product.

**Stage 6: Packaging.** In the final processing stage, the saleable product is packaged to meet the requirements for offtake.

TMT expects the process design to deliver end-to-end process recovery of 77% on fresh ore from Gabanintha. In addition, the Yarrabubba Mineral Resource Estimate noted that metallurgical test work on Yarrabubba ore resulted in comparable vanadium recovery rates to Gabanintha.

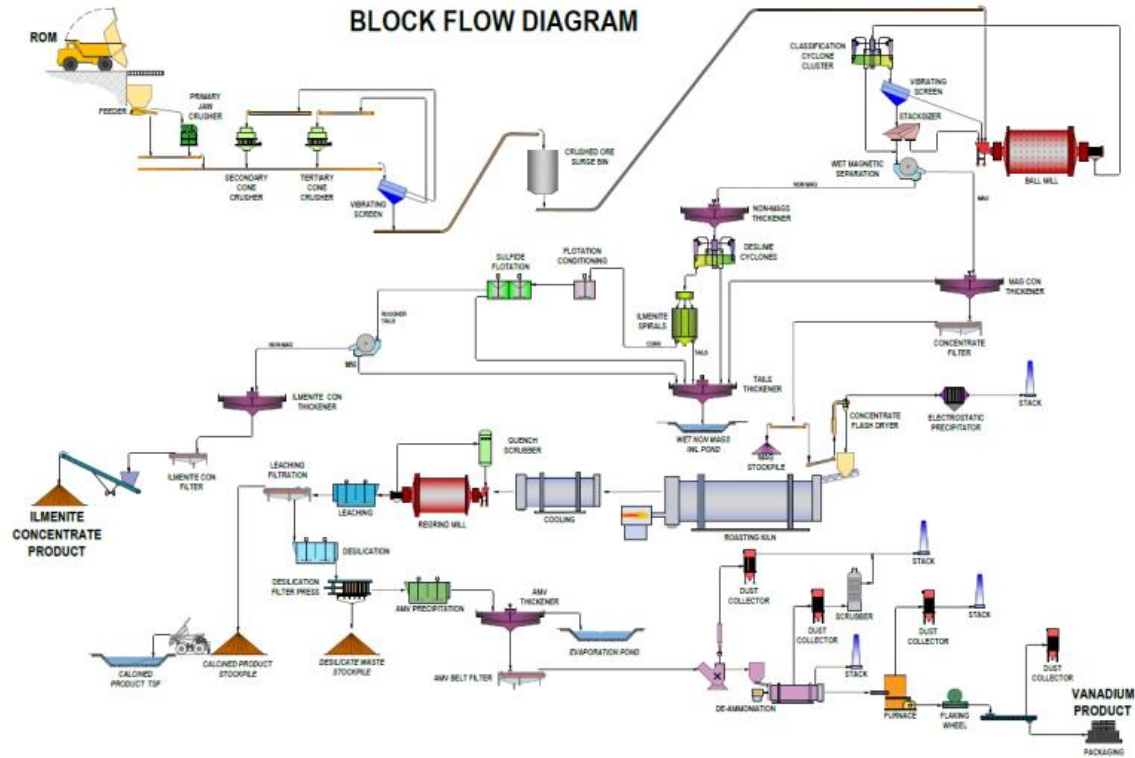
## Understanding the Gabanintha and Yarrabubba ore

The Gabanintha and Yarrabubba ore differs due to geological alterations which allow the recovery of ilmenite in the Yarrabubba ore to non-magnetic tails to be processed through a dedicated ilmenite gravity and floatation circuit consisting of:

- cyclone deslime
- spirals circuit
- sulphide flotation
- wet magnetic separation.

We expect the resulting ilmenite product recovered from the gravity beneficiation to contain TiO<sub>2</sub> grades of 46–47.5%.

Exhibit 13 – Simplified flowsheet for MTMP



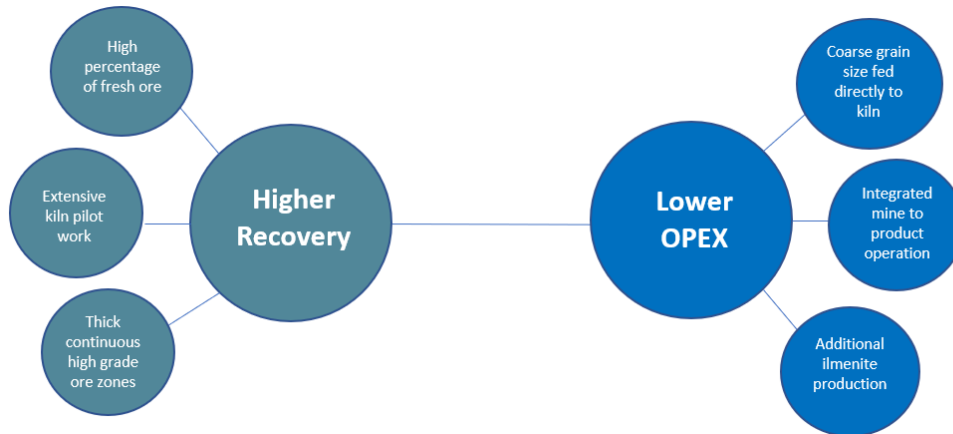
Source: Company reports.

The successful metallurgical testwork on Gabanintha and Yarrabubba ore has indicated that vanadium extractability is highly recoverable. The unique geological aspects which contribute to this, outlined in the 2019 DFS (in relation to Gabanintha), are:

- coarse grain size of the high-grade massive magnetite ore allows efficient liberation of deleterious minerals during the beneficiation stage at a coarse grind size, allowing more cost-effective magnetic beneficiation and processing through the salt roast stage
- very shallow oxidation of the orebody enables excellent recoveries from fresh ore early in the mine life – limited losses at the beneficiation stage distinguishes its Gabanintha deposit from most existing operations and other potential development projects
- the high-grade massive magnetite ore has excellent continuity and demonstrates outstanding width and grade consistency, providing for simple and low-cost mining.

The high vanadium recoveries are a crucial advantage of the project, contributing to the lower opex and robust economic fundamentals. TMT expects the vanadium product to be of high purity with associated potential for premium pricing (not factored into the Company’s current financial assumptions).

Exhibit 14 – Critical advantages of the MTMP



Source: Company reports.

The conventional salt roast process being adopted at MTMP is proven technology which poses a reduced risk profile and reinforces the project's economic certainty. The finished product of high-purity vanadium pentoxide is an intermediate product, which will be on-sold for further processing depending on the end-customer usage requirements (e.g. ferrovandium for steel production). As such, the current processing infrastructure depends on strong relationships with offtake partners.

### TMT's End Products

TMT will produce two end products: vanadium pentoxide flake; and an ilmenite concentrate.

#### Vanadium Pentoxide Flake

Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) flake is primarily used as a vanadium intermediary product which is then used to produce ferrovandium. Ferrovandium is an alloy formed by combining iron and vanadium (with the proportion of vanadium ranging from 35% to 85%). It is used as a strengthening or hardening agent in the manufacturing of high-strength steel.

#### Ilmenite Concentrate

Titanium dioxide minerals (ilmenite, rutile, and leucosene) are used mainly as feedstock for the world's titanium dioxide (TiO<sub>2</sub>) pigment industry. Ilmenite accounts for 92% of the world's titanium mineral production. TMT expects its ilmenite concentrate product to have a 46–47.5% TiO<sub>2</sub> grade.

Titanium feedstocks are primarily used to produce TiO<sub>2</sub> pigments (~93% of global titanium consumption, used to whiten paints, plastics and paper) and titanium metals (~7%).

Exhibit 15 – TMT's End Products: Vanadium Pentoxide Flake & Ilmenite Concentrate



Source: Company reports & Oushi Metals.



## Downstream Opportunities: Potential Collaboration with Tata Provides Scope for Value Add

TMT recently signed a Memorandum of Understanding (MOU) with Tata Steel to explore potential binding commercial agreements. We believe that these could encompass the following:

- offtake for vanadium pentoxide
- offtake for other downstream vanadium products
- downstream technical collaboration, including potential joint development of ferrovanadium production infrastructure in WA and India
- potential investment from Tata into TMT or directly into the MTMP.

Given that Tata is a large steel producer, the final products it requires are ferrovanadium and vanadium nitrogen. In addition, the Indian steel industry is undergoing significant growth, which includes higher-value steel production requiring a higher vanadium intensity<sup>1</sup>.

While MOUs with large industrial customers are not unusual in mining, the Tata agreement with TMT is significant because, based on our understanding, it is the first agreement to be struck directly between a steel producer and a primary vanadium producer. Given the likely cost benefits to both parties, we believe a binding long-term partnership will likely emerge as discussions continue.

The addition of downstream processing to MTMP, particularly in Australia, could add significant value over time by helping the company boost profitability by facilitating flexibility in production. This is due to the price structures evident in markets for vanadium pentoxide vs ferrovanadium or other potential products.

We do not incorporate any valuation upside for the range of possible outcomes from the MOU with Tata. However, the MOU is highly significant in signalling the market's demand for reliable long-term supplies of high-quality vanadium.

---

<sup>1</sup> Intensity is measured in kilograms of vanadium per tonne of crude steel produced

## Global Vanadium Market: Emerging Energy Storage Demand Signals Tight Markets Ahead

### What is Vanadium

Vanadium is a ductile, malleable specialty metal that is durable, corrosion resistant, and has good structural strength and stability against alkalis, acids, and saltwater. The elemental metal is rarely found in nature.

Most vanadium is used as a steel alloy called ferrovanadium (formed by combining iron and vanadium with a vanadium content range of 35–85%). Adding a small amount of vanadium, steel strength can be increased by 80% and weight reduced by 30%.

### Demand: Chinese Steelmakers – The Key Customers

#### Steel industry remains main source of demand – decarbonisation angle emerging

Most global vanadium (>90%) is used in the steel industry, primarily as an alloy for the production of high-strength steel. Vanadium in steel production is generally consumed as ferrovanadium, improving the steel's strength and therefore reducing the steel required (by weight) to achieve comparable outcomes relative to ordinary steel products.

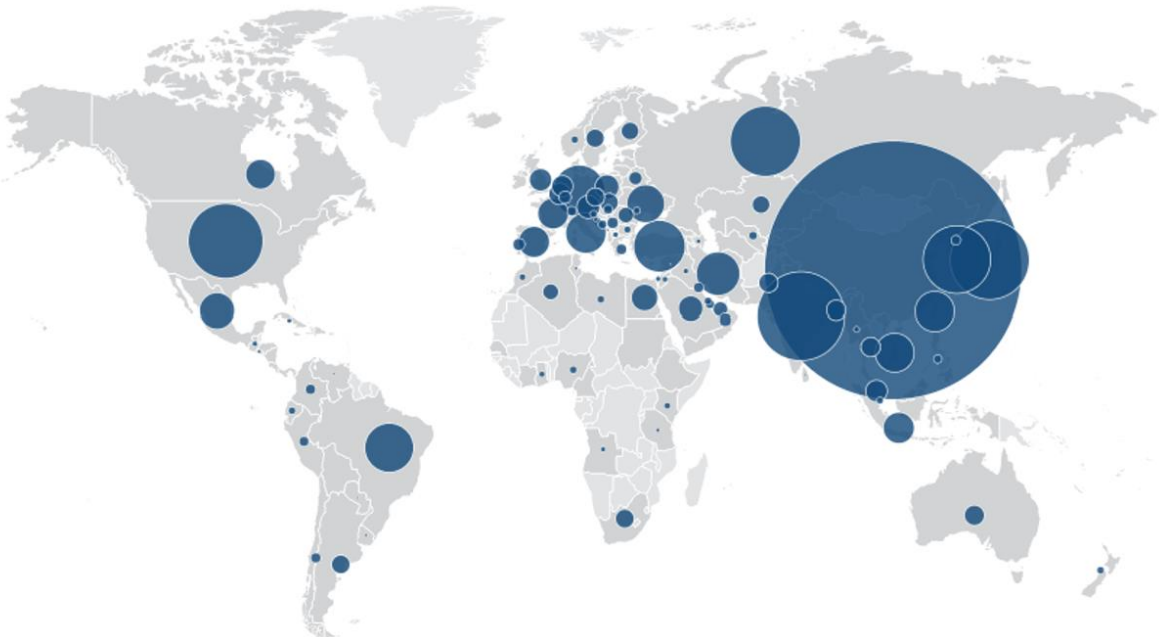
As vanadium makes steel of comparable strength significantly lighter, it can have a significant potential impact on decarbonisation initiatives by allowing given strength requirements (e.g. in construction or engineering) to be achieved with less steel. Vanadium alloys are also increasingly used in automotive manufacturing to reduce weight and increase fuel efficiency to meet regulatory standards.

Emerging use cases for vanadium exist in relation to decarbonisation trends, given the potential for vanadium redox flow batteries (VRFBs) to provide medium- to long-duration storage and discharge solutions as part of renewable energy infrastructure investments.

### Global steel production and vanadium consumption dominated by China

China is the world's largest steel producer by a significant margin, accounting for >50% of total global steel production in 2021 according to the World Steel Association.

Exhibit 16 – Total production of crude steel (bubble size = country value)



Source: World Steel Association.

Over recent years, as geopolitical tensions have risen between China and Western countries, global consumers have been focused on building more resilient supply chains less exposed to concentrated geopolitical risks. The current war between Russia and Ukraine has underlined many of these concerns – most notably, with respect to Germany's gas dependence on Russia.

Given China's dominance in global steel production, it is similarly positioned in the production and consumption of vanadium, providing tailwinds for potential new vanadium suppliers in stable geopolitical ally nations such as Australia.

Most steel is consumed in building and infrastructure, providing a strong link between demand for steel/vanadium and general investment and economic activity. Steel consumption has grown steadily over an extended timeframe as living standards have risen and significant investment in infrastructure has occurred in many developing nations (notably China).

Exhibit 17 – Steel consumption by end-market usage



Source: World Steel Association.

## Supply: Opaque Market Obscures Green Potential

Vanadium is generally traded as ferrovanadium, which can be obtained from vanadium-bearing slag or vanadium pentoxide. The EU is the largest exporter of ferrovanadium. Supply contracts are typically struck on long-term agreements with minimal product available in a spot market.

Given the opaque, contract-based nature of the vanadium market, comprehensive long-term forecast price information based on bottom-up demand/supply models is not widely available. As a result, we believe that insufficient consideration has been given to vanadium's role in the relentless decarbonisation push in both 'green steel' as well as rapidly growing potential new markets, most notably VRFBs.

## Production: China Is Top Producer Globally

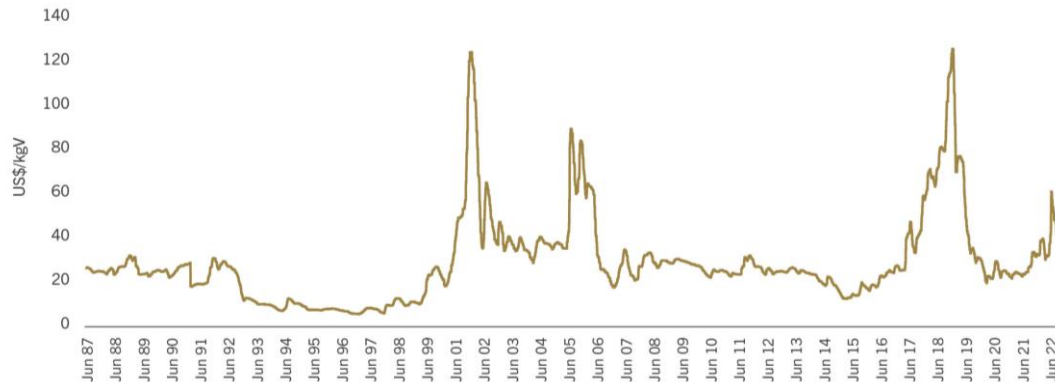
Nearly all of the world's vanadium is derived from mineral concentrates (typically vanadium-rich and titanium-rich magnetite) separated from mined ore or as a by-product of steel-making slags.

No vanadium mines currently operate in Australia. China, the world's top vanadium producer, accounted for 61% of global vanadium supply in 2021. Most of this was derived from co-production, as most slag producers are Chinese steel mills. Russia is the second-largest producer (17% of 2021 global supply), and South Africa is the third-largest (7%).

## Pricing: Volatility Evident

Vanadium has exhibited long-term trends of periods of relatively prolonged price stability interspersed with extreme upside volatility.

Exhibit 18 – Ferrovanadium (FeV) historical LMB price (US\$/kgV)



Source: Bushveld Minerals, Metal Bulletin (price as of 10 June 2022).

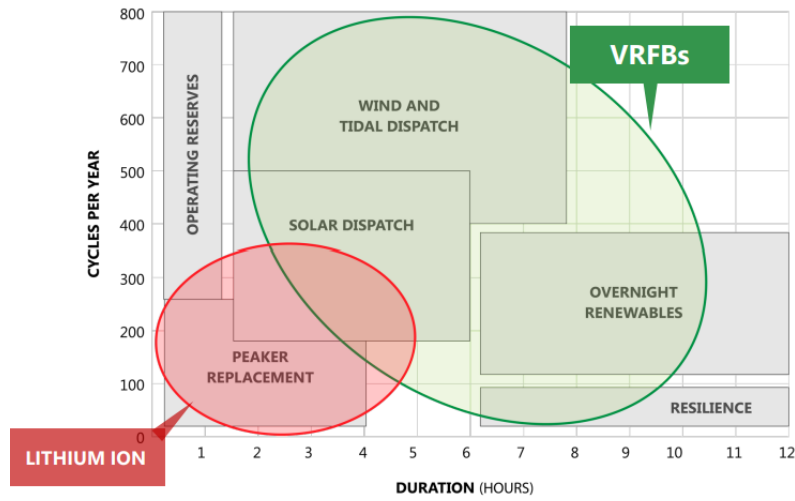
Vanadium markets are likely to be disconnected and consolidated due to steel market fundamentals, which determine the majority of supply as a by-product. Consequently, supply disruptions, such as those associated with the current Russia/Ukraine conflict, can cause significant price volatility.

## New Markets: Vanadium Redox Flow Batteries for Long-Duration Energy Storage Represent Most Significant Potential Growth on 30-Year Horizon

Renewable energy infrastructure needs complementary storage solutions to stabilise and prolong their discharge capabilities relative to the weather-dependent generation profile. Lithium-ion batteries, the leading technology in electric vehicles (EVs), are unlikely to present a workable solution. Lithium-ion storage solutions in large-scale energy infrastructure remain too costly and present technical limitations that are not easily overcome.

VRFBs have significant potential to unlock more reliable renewable energy supply solutions. According to *The Future of Energy Storage, An Interdisciplinary MIT Study* (2022), 'Vanadium RFBs are "state-of-the-art" due to comparatively high energy density, low maintenance costs and long operational lifetimes'.

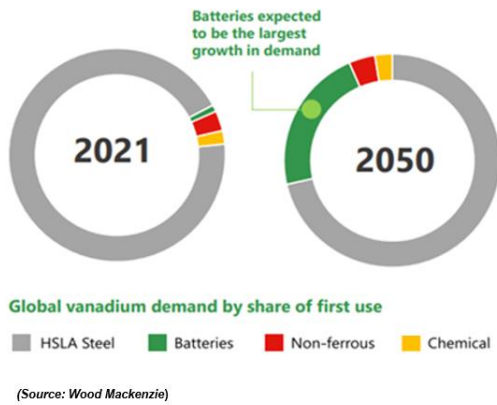
Exhibit 19 – Market position of VRFBs versus lithium-ion batteries



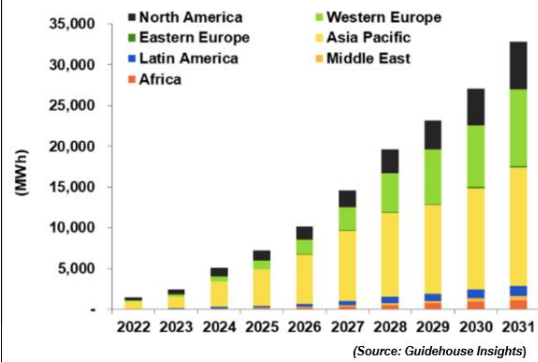
Source: The Future of Energy Storage, An Interdisciplinary MIT Study, 2022.

Given the advantages of VRFBs and the continued rapid growth in renewable energy infrastructure investment, Wood Mackenzie estimates that VRFB installations will grow by 9% pa until 2050. Based on these forecasts, batteries represent the most significant potential growth in demand for vanadium over the next 30 years.

Exhibit 20 – Projected demand growth in VRFBs



Annual Installed VRFB Utility-Scale and Commercial and Industrial Battery Deployment Energy Capacity by Region, All Application Segments, World Markets: 2022-2031



Source: Company Reports, Wood Mackenzie & Guidehouse Insights.

We expect vanadium's role in 'green steel' and advancements in battery technology will drive its increased use over time, causing demand to exceed supply and driving up vanadium prices.

Our forecasts

Vanadium prices are likely to see strong support as longer-term demand outweighs supply.

Vanadium demand will continue to be driven by increased steel consumption in developing countries as infrastructure spend expands and urbanisation continues. However, we see the development of VRFBs, in the transition to the new 'green economy', creating significant tailwinds for future prices.

## Valuation: Unique Low-Risk Operation with Robust Economic Fundamentals and Strong Structural Tailwinds

TMT stock is trading at a discount to fair value based on our detailed financial analysis of TMT's flagship MTMP. We believe vanadium is an under-appreciated critical metal with strong structural tailwinds, and we see the potential for tight medium-term fundamentals in the vanadium market. These factors, combined with the strength of the underlying MTMP, are underlined by the large global entities aligning themselves with TMT's MTMP project (Tata and RCF).

We value the stock at A\$0.75/share, which implies an upside of 114% to the current share price.

### Valuation Summary

Exhibit 21 – Base-case valuation summary

NPV OF PROJECTS	A\$M	EQUITY VALUE A\$/SHARE FULLY DILUTED	Valuation Methodology
MTMP	479	0.72	60% probability weighting Project NPV
Exploration and Investments	30	0.05	MST Estimate
<b>ENTERPRISE NPV</b>	<b>509</b>	<b>0.76</b>	
Add: Cash	15	0.02	As reported 30 Sep 2022
Add: Options Cash	6	0.01	MST Estimate
<b>EQUITY VALUE PRE SG&amp;A</b>	<b>524</b>	<b>0.79</b>	
SG&A	(25)	(0.04)	NPV of Corporate Costs
<b>EQUITY VALUE</b>	<b>499</b>	<b>0.75</b>	

Source: MST Access.

### Base-case valuation – risked NPV of A\$0.75/share, fully diluted

MTMP has a substantial Ore Reserve of 44.5mt, which provides a very long 22.5-year operation life based on the production plan scheduled under the August 2022 Integration Study.

Exploration success would contribute most to material valuation upside if high-grade material could be added to the current operational plan. Given the long operation life, incremental years of mine life at the end of the current plan, at a lower grade, would likely provide only limited leverage to additional value creation (although it may defer rehabilitation costs which can be beneficial).

We have applied a 60% probability weighting to the project given the advanced stage of the development pending a financing solution and FID.

Given the materiality of MTMP to TMT's overall valuation and the current strategic focus on the project, we have not performed a detailed valuation on any of TMT's other assets but have applied a nominal value of A\$30m.

### Key assumptions to our NPV valuation

Our base-case NPV valuation is built upon a mine plan which aligns with that compiled by the technical experts under the recently published Integration Study. The critical headline metrics are shown in Exhibit 22.

We have used a 10% discount rate (nominal), a vanadium price of US\$11.00/lb and an ilmenite price of US\$260/t (both long-term real). In addition, we assume a project timeline that commences construction in CY2023 and achieves first production in CY2025 after a construction period of approximately 18 months. We regard this timeline as reasonable given the location of the project and our knowledge of other mining projects in development.

We assume the project capital expenditure to be A\$654m, funded by 60% debt and 40% equity (at a 50c issue price). Accordingly, our valuation does not incorporate the benefit of any additional potential project expansions,

downstream investments or exploration success which may increase the scale of such expansions or extend the operation life.

Our valuation assumes TMT will pay tax from the first year of production. However, the company is likely to have significant capital allowances from the upfront investment, which should defer the payment of corporate cash tax for several years. Given the inherent difficulties in anticipating the potential timing of corporate tax payments (linked to the realised commodity price profile), we adopt a conservative stance.

**Exhibit 22 – DFS assumptions underpinning our base-case valuation**

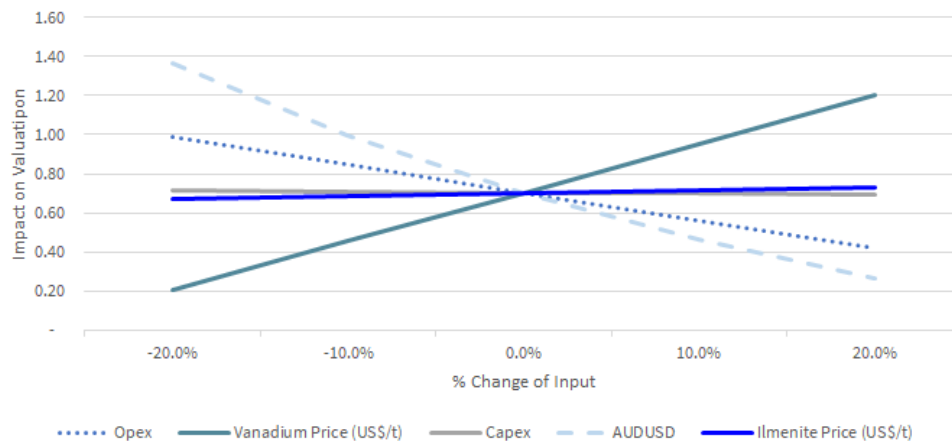
Assumptions	MST
<b>PROJECT ASSUMPTIONS</b>	
Project Ownership (%)	100%
Strip Ratio (waste : ore)	5.95
Average Diluted Mining Grade (% V2O5)	0.89%
Average V2O5 Production (ktpa)	12.5
Mine Life (years)	22.5
Capex (A\$m, real)	654
Ore Reserve (mt)	44.5
Ore Reserve Grade (% V2O5)	0.89%
<b>COST &amp; FINANCING ASSUMPTIONS</b>	
Discount Rate (%)	10.0%
Inflation Rate (%)	2.5%
AISC (US\$/lb)	5.65
Pre-Tax NPV (A\$m)	1,276
Post-Tax NPV (A\$m)	798
<b>PRICING &amp; EXCHANGE RATE ASSUMPTIONS</b>	
AUDUSD	0.70
V2O5 Flake Price (US\$/lb)	11.00
47% TiO2 Ilmenite Concentrate Price (US\$/t)	260
Royalty Rate (%)	5.0%
Corporate Tax Rate (%)	30.0%

Source: MST Access, TMT.

**Key sensitivities**

Our valuation is most sensitive to assumptions on the vanadium price and AUD/USD exchange rate, as well as (to a lesser extent) capital and operating costs. Exhibit 23 shows how our base-case valuation would change from a variation in these assumptions.

**Exhibit 23 – Sensitivity analysis to key financial modelling assumptions**



Source: MST Access.

## Positive Catalysts for the Share Price and Valuation

### Completion of the bankable financial model

The bankable financial model represents a significant step forward for the project and signifies a basis for its funding and project timing. This study is expected to be completed in early CY2023. The completion of this study will support the recommendation to the Board to make a Development Decision – which is targeted at enabling the Company to proceed with ordering long lead items and early works ahead of the FID.

### Funding of Project

The funding of capital expenditure relating to major resource developments for small companies is always a significant challenge. Therefore, delivering a competitive funding package for the project would be a major de-risking catalyst for the stock.

### Resource Upgrade

Exploration success which leads to significant upside in available tonnes of ore, or significant discoveries of high-grade material capable of being processed early in the operation life, would be an important positive development for the prospects of the project and the overall company valuation.

### Binding Offtake Agreement

TMT has established a non-binding MOU with Indian steel maker Tata Steel Limited, one of the world's largest steel companies. The importance of having reliable, stable vanadium supplies to meet their customer's future product requirements. Therefore, we view the MOU as an indication of a future offtake agreement with TMT.

### Other Potential share price catalyst

- **Vanadium price increase:** The valuation and share price sentiment is highly sensitive to vanadium prices. Increases in the price of vanadium would positively affect the valuation.
- **USD depreciation:** The valuation is highly sensitive to the USD/AUD. USD depreciation would have a positive effect on the valuation.
- **Chinese post-COVID recovery:** If China relaxes its previously steadfast COVID measures, steel mills are expected to bounce back in demand. This will have a positive impact on the demand for vanadium.



## Risks to the Share Price and Valuation

We highlight the key risks to the share price and our valuation below, noting that early-stage mining projects have a number of critical risks which need careful management and consideration.

### Company-and project-specific risks

- **Access to funding:** there is no guarantee that sufficient funding will be available to advance or develop the Project. The inability to secure funding would be a major negative for the stock.
- **Offtake risks:** any binding offtake agreements with firm visibility on volumes and prices would be a significant de-risking catalyst for the project. Such agreements are critical, given that the MTMP's final product is an intermediate, so a lack of progress or failure to sign such agreements represents a major risk.
- **Delays to development:** the Integration Study is a major milestone for the company as it demonstrates the broad economics of the project. Any delays in moving into construction would be a negative for the stock and would gradually see the information from the recent study become less current and, therefore, less reliable.
- **Commercialisation risk:** an inability to commercialise projects due to a failure to obtain final approvals, secure funding for construction or obtain access to key infrastructure would undermine the viability of the business and have a negative impact on the share price.
- **Key person dependence:** individuals, including the CEO, may have relationships and experience critical to advancing the MTMP. The loss of such personnel would significantly compromise TMT's ability to advance the project.
- **Cost inflation:** inflation is currently a significant emerging theme globally and is particularly acute within the mining industry. Any inflation in operational or capital costs without a corresponding increase in the commodity price will compress the project's margins and potentially undermine its economics and viability.

### Macro risks

- Vanadium and ilmenite price decreases – this is the key valuation sensitivity
- Foreign exchange rates
- Increasing interest rates and the potential impact on the cost of debt finance

### Country-specific risks

Given the project is in Western Australia, we regard these risks as low. However, ensuring that the local community and Indigenous groups support the project is essential.

## Financials: Large Counterparties Provide Promising Outlook

TMT has flagged that it aims to finalise project funding by the end of FY23. Currently, the company is focused on refining the bankable model inputs with commercial tendering information and completing the EPA process. However, in the first half of CY2023, we expect the focus will turn to finance negotiations given the additional certainty provided by the tendering process data and potential further de-risking from ongoing offtake discussions.

The company is considering various financing options, including typical project finance options. These include:

- sovereign bank/export credit agency finance
- equipment and contractor finance
- project finance
- partner finance
- offtake and working capital-related finance
- equity.

The MTMP Integration Study capital expenditure estimated was reviewed in 2022, with a revised estimate of A\$604m, that includes 12% contingency. We include an additional A\$50m of contingency on top of the company's ~A\$64m, meaning ~\$110m, or >20% of our budgeted capex, is contingency and escalations. Management expects the project to secure ~60% of the funding required as debt.

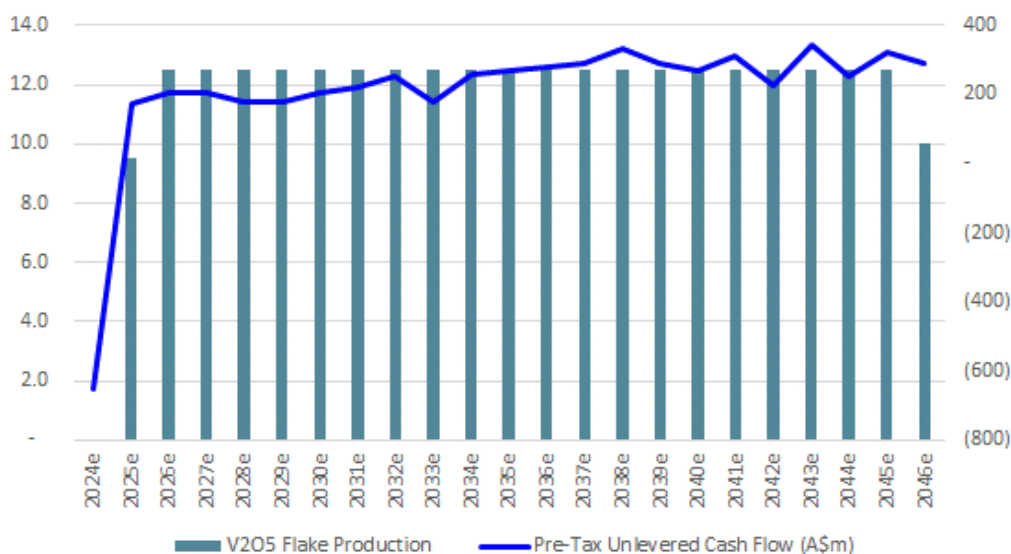
We think TMT is in a favourable position to attract debt funding of this level (~A\$390m) on attractive terms.

We expect the balance of funding to be secured from an equity raising (~A\$260m). We assume the equity funding is raised at a share price of 50¢. While ~A\$260m of equity raising is significant for TMT (given its current market capitalisation of ~A\$72.4m), we anticipate that with numerous de-risking catalysts on the horizon in FY23, the stock will re-rate and close this discount. However, other financing options exist, such as selling down a stake at the project level, given the importance of MTMP's product in the global vanadium market.

Early indications are that the project has strong prospects of securing low-cost, long-duration finance from sovereign/export-credit facilities, supported by more typical project finance and potential support from offtakers or other counterparties (RCF). Such finance will unlock the final hurdle to take MTMP into production in the near term. The company has cash in hand of A\$15.1m (as of 30 September 2022), providing sufficient funding to proceed through the balance of works planned over this financial year. If early capital works are committed to in order to confirm long-lead time orders and accelerate the project timeline, additional funding may be in FY23.

We assume MTMP will commence production in CY2025, with most of the Capex incurred in the prior year (CY2024).

Exhibit 24 – Production and cash flow



Source: MST Access.

## Environmental, Social and Governance (ESG)

ESG factors play an integral role in many investors' decision-making.

### Environmental

The project is required to obtain Environmental Approvals under the Environmental Protection Act 1986 (WA) (EP Act), and Western Australia has a robust environmental protection process, given the dominance of the mining industry in the state. Numerous ecological surveys have been conducted at site as part of this process. Given the arid landscape and relatively flat topography, we believe that the critical environmental risks, such as waste containment and management, are relatively low-risk.

### Social

The MTMP is situated on pastoral stations and the traditional lands of the local Yugunga-Nya People. Work has already begun between TNT and local Aboriginal groups to negotiate a heritage protection plan and conduct surveys.

Should the project proceed into production, it will generate significant employment, including numerous roles for skilled and highly paid mining industry personnel. Employees will be primarily sourced from fly-in/fly-out directly from Perth; however, the company has a local procurement and employment policy that applies as appropriate.

### Governance

#### ASX Corporate Governance Principles and Recommendations

TMT has adopted the Corporate Governance Principles and Recommendations published by the ASX Corporate Governance Council. Some highlights include:

- The Board's qualifications are appropriate for the business.
- The Board has four members.
- The Board's remuneration structure, risk assessment and policies are in line with market practices.
- Due to the current small size of the company, separate risk, nominations, remuneration and audit committees have not been created on the Board.

#### Board of Directors

The Board is responsible for the corporate governance of TMT. The Board develops strategies for TMT, reviews strategic objectives and monitors performance against those activities. The specific goals and responsibilities of the Board are outlined in TMT's Corporate Governance Plan. The Board intends to maintain a Board Skills Matrix to ensure that the Board has the skills to discharge its obligations effectively.

The Board consists of four directors. The Board intends to maintain a Board Skills Matrix to ensure that the Board has the skills to discharge its obligations effectively.

The Board complies with ASX regulations guiding a minimum of 50% independent directors. As the Company grows its business and becomes larger, we would expect the board to become larger and a greater degree of independent members.

Exhibit 25 – Board composition and skill matrix

Board Skill	Non-Exec Chair	MD	NED	NED
	Michael Fry	Ian Prentice	Jacqueline Murray	Carmen Letton
Leadership	✓	✓	✓	✓
Strategy	✓	✓	✓	✓
Financial & Legal	✓	-	-	-
Geology	-	✓	✓	-
Project Development	-	✓	✓	✓
Mining	-	✓	✓	✓
International Experience	-	✓	-	✓
Health, Safety and Environment	-	✓	✓	✓
Stakeholder Management	✓	✓	✓	✓
Corporate Governance	✓	✓	-	-

Source: MST Access.

## Board of Directors and Key Management

**Michael Fry – Non-Executive Chairman:** Mr Fry was appointed in May 2016 and is also currently the Non-Executive chairman of the oil and gas company Brookside Energy Limited. He has extensive corporate and commercial experience, financial and capital markets knowledge and a background in corporate treasury management. Mr Fry was also previously Non-Executive Chairman of oil and gas company Challenger Energy Limited and Non-Executive Chairman of oil and gas explorer Norwest Energy NL. Additionally, Mr Fry served as a board member of Precious Metals Australia Limited, which owned and operated the Windimurra Vanadium operation in Western Australia.

Mr Fry holds a Bachelor of Commerce from the University of Western Australia and is a Fellow of the Financial Services Institute of Australasia. He is a past member of the Australian Securities Exchange.

**Ian Prentice – Managing Director:** Mr Prentice is the founding Executive Director of Technology Metals Australia, with over 30 years of experience in the global mining industry spanning exploration, reviewing resource projects for potential acquisition, development and open-cut and underground mining. He has extensive global resource industry and equity capital markets knowledge, with a proven track record of high-quality corporate management and technical excellence. He has served as Director for several ASX-listed resource companies and was involved in a diverse array of activities, ranging from exploration and project acquisition in Asia and Africa to gold production in Australia.

Mr Prentice holds a Bachelor of Science (Geology) from the University of Western Australia and is a Member of the Australasian Institute of Mining and Metallurgy.

**Dr Carmen Letton – Non-Executive Director:** Dr Letton is a mining engineer and mineral economist with 35 years of global mining experience and diverse background in senior leadership roles in operations, business improvement and operational excellence. More recently focused on corporate and asset strategy development, she has extensive technical expertise in open-pit and underground mines across multiple commodities and the many stages of asset development. 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 several other international mining companies. Dr Letton was selected as one of the '100 Global Inspirational Women in Mining' in 2016 and 2018 by Women in Mining UK. She holds a PhD Mineral Economics from the University of Queensland and a Bachelor of Engineering (Hon) (Mining) from the Western Australian School of Mines, Kalgoorlie.

**Jacqueline Murray – Non-Executive Director:** Ms Murray 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. Ms Murray holds an MBA from Melbourne Business School and a Bachelor of Geological Engineering from RMIT University. She is a graduate of the Australian Institute of Company Directors and currently serves on the Board of Directors of Alliance Mining Commodities and Khoemacau Copper Mining.

**Sonu Cheema – Company Secretary:** Mr Cheema is a Partner at Cicero Group with over ten years of 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. Currently, Mr Cheema is Company Secretary for ASX-listed companies Corizon Limited, Avira Resources Limited, Yojee Limited and Comet Resources Limited. Mr Cheema has completed a Bachelor of Commerce majoring in Accounting at Curtin University and is a CPA member. Mr Cheema's core competencies and key areas of focus include Financial Reporting, Taxation, Management Accounting and Governance.

**David English – Chief Operating Officer:** Mr English is a mining professional with a wealth of project development and operational experience from nearly 30 years of working in the mining industry, including some of Western Australia's major recent project developments. His experience includes Project Manager for IGO Limited's Nova Nickel project and Sandfire Resources' DeGrussa Project, General Manager Operations at the Windimurra Vanadium Project, Project Consultant to the Oz Minerals' West Musgrave Project and Project Director for the Covalent Lithium feasibility study.

**Elisha Civil – Chief Financial Officer:** Ms Civil holds an MBA from the University of Western Australia, a Bachelor of Commerce (Accounting, Banking & Finance) from Murdoch University and has completed the Governance Institute of Australia's Diploma of Applied Corporate Governance. She has over 20 years' experience as a finance professional in the resources sector since commencing her career and qualifying as a Chartered Accountant with Ernst & Young in Australia and Canada. Her experience includes General Manager Finance at Regis Resources, where she was integral in the establishment of key financial management systems and processes as the company built from an explorer to a producer, and most recently Group Manager Finance and Tax at Fortescue Metals Group, responsible for all aspects of financial reporting and tax governance for the group.

**John McDougall – Exploration Manager:** Mr McDougall 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. Mr McDougall is a Member of the Australian Institute of Geoscientists. He previously served as Exploration Manager for an ASX-listed iron ore resource company, and has relevant consulting experience in Western Australia and Tasmania. Mr McDougall has been managing the geological data acquisition at Gabanintha and Yarrabubba since February 2017.

**Brett Morgan – Senior Metallurgist:** Mr Morgan holds a Bachelor of Science (Chemistry) and Bachelor of Science (Extractive Metallurgy) from Curtin University and the Western Australian School of Mines. He is a member of the Australasian Institute of Mining and Metallurgy. Mr Morgan is an experienced metallurgist and has previously been based in consulting, through which he has gained experience across a broad range of commodities with a focus on vanadium, iron ore, mineral sands and gold. He has been managing the metallurgical testing programs for TMT since the initial work in 2017.

**Jason Barnett – Business Development, Energy Storage:** Mr Barnett is a geologist with over 15 years' experience on Australian and international resource projects. He complemented his resource industry background with a Master of Business Administration (MBA). Mr Barnett was a resource geologist for five years, gaining valuable experience in estimating precious and base metals, early evaluation of mineral deposits and early-level scoping studies.

## Appendixes

### Appendix 1 – A Brief Overview of the Titanium Dioxide Market

#### Titanium Dioxide Minerals

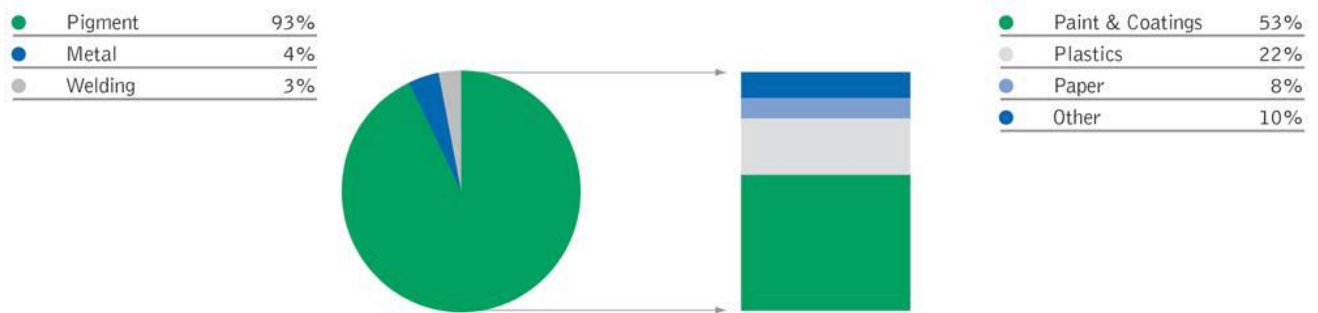
Titanium dioxide minerals (ilmenite, rutile, and leucosene) are used mainly as feedstock for the world’s titanium dioxide (TiO<sub>2</sub>) pigment industry. Ilmenite accounts for 92% of the world’s titanium mineral production.

The content of Titanium dioxide varies within these minerals with Ilmenite, which is a by-product of the Yarrabubba deposit, containing 45-63% TiO<sub>2</sub>.

#### Application & End-User

Titanium dioxide feedstock is primarily used as a whitening pigment (~93%) in paints, plastics and paper. The raw minerals are also used in the manufacture of titanium metal (~4%) and welding flux wire cord (3%), as shown in Exhibit 26.

Exhibit 26 – Breakdown of titanium dioxide feedstock markets by end-use sector

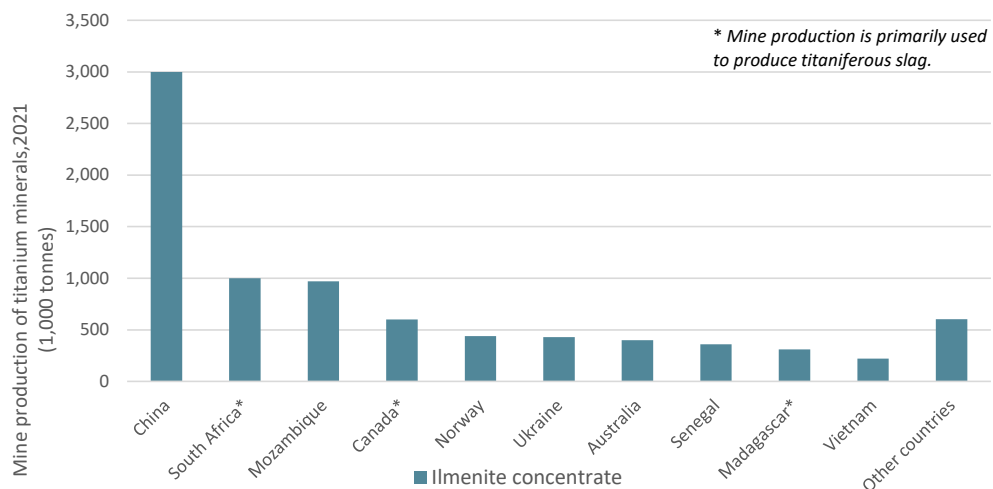


Source: Iluka, Mineral Sands: An Overview of the Industry

#### Production

China is the leading producer and consumer of titanium mineral concentrates, accounting for 36% of global production of ilmenite.

Exhibit 27 – Global mine production of ilmenite minerals by country, 2021 - Top 10



Source: U.S. Geological Survey, Mineral Commodity Summaries, January 2022

### Demand and Availability of Supply

Titanium dioxide demand has closely tracked real global GDP growth historically. Pigment 'quality of life' nature translates to consumption growth as GDP per capita expands. In western economies there is significantly higher TiO<sub>2</sub> pigment consumption per capita versus developing countries.

Furthermore, due to the lacklustre pricing environment in the mining industry for the last 10 years, there has been little investment in exploration and hence no discoveries of major new deposits. This trend has been apparent in the mineral sands industry (a major supplier of TiO<sub>2</sub>), with no major mineral sand discoveries for the past 20 years or so.

### Price and Pricing

Ilmenite pricing is strongly correlated to global real GDP growth and other indicators such as urbanisation and construction activity. There may be short-term ilmenite downward pricing pressures due to the macro environment. However, we expect longer-term growth for titanium pigment will continue to increase, while issues around supply will create pricing tailwinds for the industry. In summary, we expect supply issues and steady demand growth will provide TMT with a defensive by-product with long-term pricing and industry tailwinds.

## Appendix 2 – Global Resource for the Murchison Technology Metals Project by ore type and Classification

Exhibit 28 – Global Resource for the MTMP by ore type and Classification

Classification	Material	Mt	V <sub>2</sub> O <sub>5</sub> %	Fe %	Al <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	TiO <sub>2</sub> %	LOI %	P %	S %
Measured	Massive	4.4	1.1	48.1	5.5	7.3	12.4	-0.4	0.01	0.3
Yarrabubba)	Disseminated	1.5	0.6	30	10.8	23.4	7.7	2.5	0.01	0.2
Measured	Massive	5.1	1.1	46.9	5.7	8.4	12.1	-0.2	0.01	0.3
Gabanimtha)	Disseminated	1.1	0.8	36.4	7.9	19.6	9	0.5	0.01	0.2
Measured	Massive + disseminated	12.1	1	44.3	6.5	10.9	11.4	0.1	0.01	0.2
Indicated	Massive	8	1.1	48.1	5.4	7.1	12.5	0	0.01	0.3
Yarrabubba)	Disseminated	6.9	0.6	28.4	12.5	25.2	7.2	2.6	0.02	0.3
Indicated	Massive	19.5	1.1	48.9	5.2	6.2	12.8	-0.1	0.01	0.2
Gabanimtha)	Disseminated	16.7	0.6	27.3	13.3	26.7	7	3	0.03	0.2
Indicated	Massive + disseminated	51.2	0.9	39	8.9	15.6	10.1	1.3	0.02	0.2
<b>Measured plus Indicated</b>	<b>Massive + disseminated</b>	<b>63.2</b>	<b>0.9</b>	<b>40</b>	<b>8.4</b>	<b>14.7</b>	<b>10.4</b>	<b>1.1</b>	<b>0.02</b>	<b>0.2</b>
Inferred	Massive	5.7	1.1	47.4	5.6	7.8	12.3	0.1	0.01	0.3
Yarrabubba)	Disseminated	11.4	0.6	27.9	12.6	25.8	7.2	2	0.02	0.4
Inferred	Massive	36.5	1.1	46.7	6	8.3	12.3	0.4	0.01	0.2
Gabanimtha)	Disseminated	36.9	0.5	26.6	12.9	27.6	6.9	3.4	0.03	0.3
Inferred	Massive + disseminated	90.5	0.8	36.2	9.6	18.3	9.5	1.8	0.02	0.2
<b>TOTAL</b>	<b>Massive + disseminated</b>	<b>153.7</b>	<b>0.8</b>	<b>37.7</b>	<b>9.1</b>	<b>16.8</b>	<b>9.8</b>	<b>1.5</b>	<b>0.02</b>	<b>0.2</b>

Source: Company Reports

\*Notes provided by the Company:

- Mineral Resources are reported in accordance with the JORC Code (2012 Edition).
- Mineral Resources were estimated within constraining wireframe solids using a nominal 0.9% V<sub>2</sub>O<sub>5</sub> lower cut-off grade for the massive magnetite zones and using a nominal 0.4% V<sub>2</sub>O<sub>5</sub> lower cut-off grade for the banded and disseminated mineralisation zones.
- Mineral Resources are quoted from all classified blocks within the wireframe solids above a lower cut-off grade of 0.4% V<sub>2</sub>O<sub>5</sub>.
- Differences may occur due to rounding. Yarrabubba Measured and Indicated Mineral Resources are reported above an open pit optimised pit shell. Inferred Mineral Resources are reported to a lower RL limit of 250 mRL. Gabanimtha Measured and Indicated Mineral Resources are reported above a lower RL limit of 240 to 280 mRL that approximates the Ore Reserve pit shells. Inferred Mineral Resources are reported to a lower RL limit of 170 mRL.



## Disclaimers and Disclosures

MST Access is a registered business name of MST Financial Services Pty Ltd (ACN 617 475 180 "MST Financial") which is a limited liability company incorporated in Australia on 10 April 2017 and holds an Australian Financial Services Licence (Number: 500 557). This research is issued in Australia through MST Access which is the research division of MST Financial. The research and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by MST Access is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

This report has been commissioned by Technology Metals Australia Limited and prepared and issued by Jonathon Sharp of MST Access in consideration of a fee payable by Technology Metals Australia Limited. MST Access receives fees from the company referred to in this document, for research services and other financial services or advice we may provide to that company.

MST Financial also provides equity capital markets ("ECM") and corporate advisory services through its capital markets division, MST Capital Markets ("MST Capital"). MST Capital provides these services to a range of companies including clients of the MST Access service. As such, MST Capital may in future provide ECM and/or corporate advisory services to the company that is the subject of this research report and, accordingly, may receive fees from the company for providing such services. However, MST Financial has measures in place to ensure the independence of its research division is maintained, including information barriers between its Capital Markets and Research teams. In addition, neither MST Access, nor any of its research analysts, receive any financial benefit that is based on the revenues generated by MST Capital Markets or any other division of MST Financial.

The analyst has received assistance from the company in preparing this document. The company has provided the analyst with communication with senior management and information on the company and industry. As part of due diligence, the analyst has independently and critically reviewed the assistance and information provided by the company to form the opinions expressed in the report. Diligent care has been taken by the analyst to maintain an honest and fair objectivity in writing this report and making the recommendation. Where MST Access has been commissioned to prepare content and receives fees for its preparation, please note that NO part of the fee, compensation or employee remuneration paid will either directly or indirectly impact the content provided.

**Accuracy of content:** All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of MST Access at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results and estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

**Exclusion of liability:** To the fullest extent allowed by law, MST Access shall not be liable for any direct, indirect or consequential losses, loss

of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained in this report. No guarantees or warranties regarding accuracy, completeness or fitness for purpose are provided by MST Access, and under no circumstances will any of MST Financial's officers, representatives, associates or agents be liable for any loss or damage, whether direct, incidental or consequential, caused by reliance on or use of the content.

## General Advice Warning

MST Access Research may not be construed as personal advice or recommendation. MST encourages investors to seek independent financial advice regarding the suitability of investments for their individual circumstances and recommends that investments be independently evaluated. Investments involve risks and the value of any investment or income may go down as well as up. Investors may not get back the full amount invested. Past performance is not indicative of future performance. Estimates of future performance are based on assumptions that may not be realised. If provided, and unless otherwise stated, the closing price provided is that of the primary exchange for the issuer's securities or investments. The information contained within MST Access Research is published solely for information purposes and is not a solicitation or offer to buy or sell any financial instrument or participate in any trading or investment strategy. Analysis contained within MST Access Research publications is based upon publicly available information and may include numerous assumptions. Investors should be aware that different assumptions can and do result in materially different results.

MST Access Research is distributed only as may be permitted by law. It is not intended for distribution or use by any person or entity located in a jurisdiction where distribution, publication, availability or use would be prohibited. MST makes no claim that MST Access Research content may be lawfully viewed or accessed outside of Australia. Access to MST Access Research content may not be legal for certain persons and in certain jurisdictions. If you access this service or content from outside of Australia, you are responsible for compliance with the laws of your jurisdiction and/or the jurisdiction of the third party receiving such content. MST Access Research is provided to our clients through our proprietary research portal and distributed electronically by MST to its MST Access clients. Some MST Access Research products may also be made available to its clients via third party vendors or distributed through alternative electronic means as a convenience. Such alternative distribution methods are at MST's discretion.

## Access and Use

Any access to or use of MST Access Research is subject to the [Terms and Conditions](#) of MST Access Research. By accessing or using MST Access Research you hereby agree to be bound by our Terms and Conditions and hereby consent to MST collecting and using your personal data (including cookies) in accordance with our [Privacy Policy](#) (<https://mstfinancial.com.au/privacy-policy/>), including for the purpose of a) setting your preferences and b) collecting readership data so we may deliver an improved and personalised service to you. If you do not agree to our Terms and Conditions and/or if you do not wish to consent to MST's use of your personal data, please do not access this service.

Copyright of the information contained within MST Access Research (including trademarks and service marks) are the property of their respective owners. MST Access Research, video interviews and other materials, or any portion thereof, may not be reprinted, reproduced, sold or redistributed without the prior written consent of MST.