



**TECHNOLOGY**  
METALS AUSTRALIA LIMITED

**ASX Announcement**

**28 April 2022**

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#### **Directors**

Michael Fry:  
**Chairman**

Ian Prentice:  
**Managing Director**

Jacqueline Murray:  
**Director**

Sonu Cheema:  
**Director and Company Secretary**

#### **Issued Capital**

207,641,222 ("TMT") Fully Paid  
Ordinary Shares

17,533,335 – Unquoted Options –  
various exercise prices and dates

4,525,000 Performance Rights

**ASX Code: TMT**

**FRA Code: TN6**



## **KILN FEED AWARD LAUNCHES MTMP IMPLEMENTATION PHASE**

- Notice to Proceed with FEED Services on key roasting kiln section of the MTMP processing plant issued to leading kiln supplier, Danish company FLSMIDTH.
- FEED Services to be provided as detailed in the June 2020 Notice of Award based on standard vanadium processing technology.
- TMT has a strong collaborative working relationship with FLSMIDTH on the back of extensive testwork programs completed in support of the MTMP development.
- FEED work will be guided by recent testwork results to design the optimal kiln sizing and operating parameters.
- TMT will engage with EKF, the Danish Export Credit agency, to pursue opportunities for export credit financing support.
- Marks a key milestone in the progression of the MTMP into the Implementation Phase.

The Board of Technology Metals Australia Limited (ASX: **TMT**) (**Technology Metals, or the Company**) is pleased to announce that the Company has issued a Notice to Proceed ("**NTP**") with Front-End Engineering and Design ("**FEED**") Services to FLSMIDTH as per the binding Notice of Award ("**NoA**") executed in June 2020. The NoA contemplates FLSMIDTH supplying the key roasting kiln ("**the Equipment**") section of the Murchison Technology Metals Project ("**MTMP**") processing plant.

FLSMIDTH is a Danish engineering company based in Copenhagen, Denmark with almost 10,100 employees worldwide. It is a leading supplier of production facilities, equipment and service solutions to the mining and cement industries and has demonstrated World leading expertise in rotary roasting kilns.

FLSMIDTH supplied equipment qualifies for export credit agency financing support through Denmark's EKF, subject to EKF board approval and thorough due diligence. Technology Metals is actively pursuing the opportunity to access this funding support as an important part of the overall MTMP funding strategy.

#### **Managing Director Ian Prentice commented:**

*"Issuing the Notice to Proceed to the FEED stage to industry leaders FLSmidth is an incredibly important step for the MTMP, building on the +4 years collaboration between the companies and confirming the application of standard processing technologies.*

*This formal engagement with FLSmidth marks the first major step in the Implementation Phase of the Project, aimed at accelerating delivery of the world's next large scale primary vanadium producer."*

## **INTEGRATED MTMP – STRATEGIC RATIONALE**

The Murchison Technology Metals Project (“**MTMP**”) consists of the Gabanintha Project (“**Gabanintha**”) and the Yarrabubba Project (“**Yarrabubba**”), located to the south of Meekatharra in the mid west of Western Australia (see Figure 1). Gabanintha was the subject of a Definitive Feasibility Study as a stand-alone vanadium development project, delivering robust economics over an initial 16 year mine life. The satellite Yarrabubba deposit offers higher vanadium in concentrate grades (than Gabanintha) and the opportunity to produce a highly sought after titanium co-product, making it an attractive addition to the MTMP.

The integration of Yarrabubba into the MTMP, and the resultant opportunity to enhance the economics of the project as well as accelerate the delivery of vanadium production, combined with the advanced stage of Gabanintha approvals, provides opportunities to actively progress offtake discussions with a range of counterparties across a range of industries and geographic jurisdictions.

The MTMP will be a long term, low cost stable producer of high purity vanadium, a critical mineral with a vital role to play in the efficient and effective deployment of renewable energy and reduction of emissions. The Project will also be a producer of the highly sought-after titanium by-product whilst mining and processing ore from Yarrabubba.

## **NOTICE TO PROCEED WITH KILN FEED SERVICES**

Technology Metals has issued a NtP with FEED Services to FLSMIDTH as contemplated in the binding NoA between the parties that was executed in June 2020, confirming FLSMIDTH as the preferred supplier of the key roasting kiln section of the MTMP vanadium processing plant. FLSMIDTH are kiln experts, offering advanced, custom-tailored rotary kiln solutions, with recent experience in the design, installation and support of roasting kilns for vanadium operations.

The Company has maintained a collaborative relationship with FLSMIDTH from the Project's Definitive Feasibility Study (“**DFS**”) phase in 2018 / 2019 through to the most recent comprehensive roast-leach testwork programs completed as a critical component of the MTMP Integration Study<sup>1</sup>. Data generated from these testwork programs will be utilised by FLSMIDTH to progress the FEED Services, detailing design for the roasting kiln section of the vanadium processing plant.

It is envisaged that the FEED Services will be completed in 26 weeks, following which, subject to written approval from the Company, FLSMIDTH shall proceed to progress long lead procurement and fabrication activities in relation to the Equipment.

The NtP with FLSMIDTH is a key component of TMT's strategy to progress the MTMP into the Implementation Phase and enable the advanced ordering of long lead items and the acceleration towards production from the world's next large scale primary vanadium mine.

## **EUROPEAN EXPORT CREDIT AGENCY**

Equipment and technology supplied by FLSMIDTH qualifies for financing support through the Danish export credit agency EKF, subject to EKF board approval and thorough due diligence processes. FLSMIDTH will engage in the process of obtaining support from EKF.

EKF and FLSMIDTH have co-operated for more than 90 years with projects all over the world. As a result, FLSMIDTH is one of EKF's highly valued customers. EKF have historically been able to support FLSMIDTH's global business with financing solutions which may not necessarily be suited for a typical bank loan.

Technology Metals is actively pursuing the opportunity to access export credit agency funding support through EKF, with the assistance of FLSMIDTH, as an important part of the overall Project funding strategy.

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<sup>1</sup> TMT ASX announcement, 21 April 2022: Outstanding Results from MTMP Roast-Leach Testwork

**ABOUT FLSMIDTH**

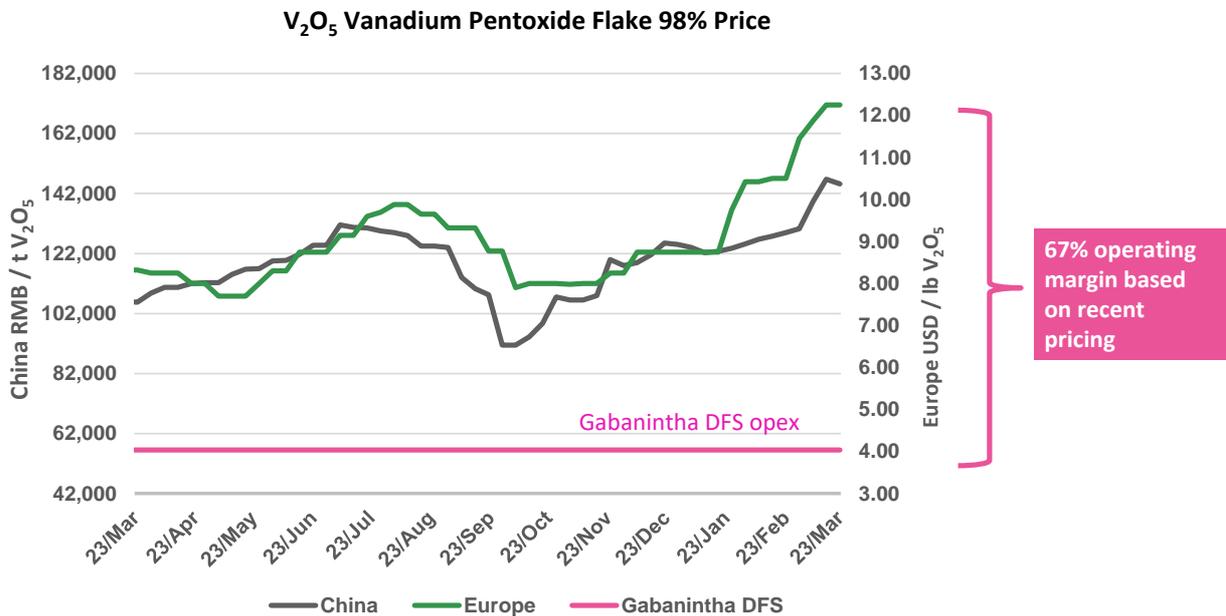
FLSmidth provides sustainable productivity to the global mining and cement industries. We deliver market-leading engineering, equipment and service solutions that enable our customers to improve performance, drive down costs and reduce environmental impact. Our operations span the globe and we are close to ~10,100 employees, present in more than 60 countries. In 2021, FLSmidth generated revenue of DKK 17.6 billion. MissionZero is our sustainability ambition towards zero emissions in mining and cement by 2030. FLSmidth works within fully validated Science-Based Targets, our commitment to keep global warming below 1.5°C and to becoming carbon neutral in our own operations by 2030. [www.flsmidth.com](http://www.flsmidth.com).

**ABOUT EKF**

EKF is Denmark’s Export Credit Agency, owned and guaranteed by the Danish state, operates as a modern financial enterprise. EKF helps Danish export by making it possible and attractive for customers abroad to purchase Danish products from Danish companies. It does so by helping raise financing and by insuring companies and banks against the potential financial and political risks of trading with other countries. It assists both large and small companies and is happy to provide solutions tailored to each company’s specific needs. [www.ekf.dk/en](http://www.ekf.dk/en)

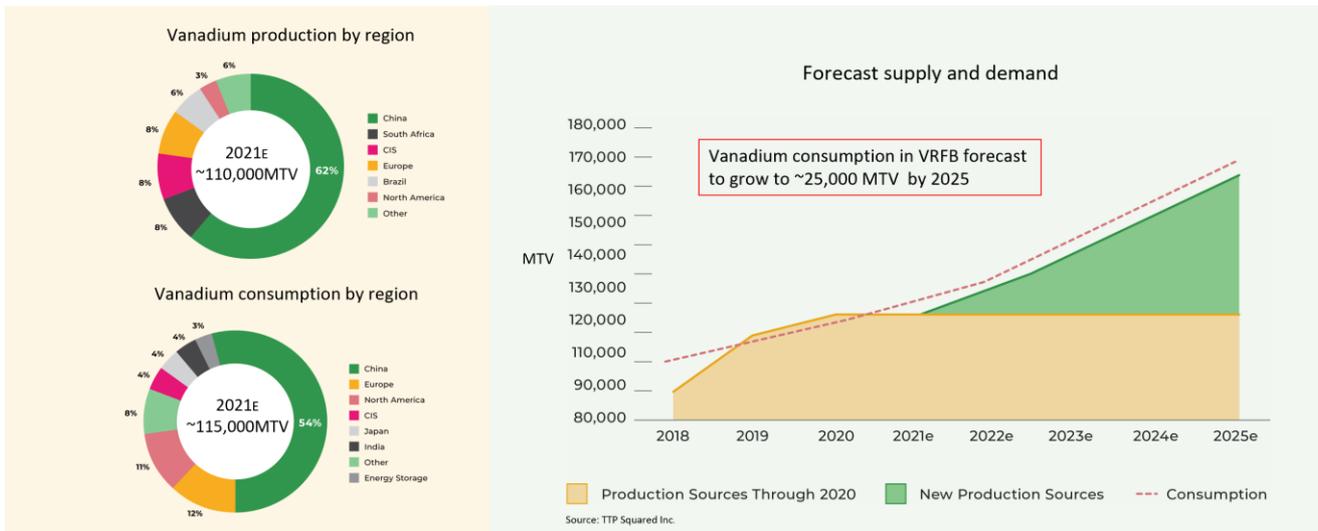
**VANADIUM MARKET OUTLOOK**

The global vanadium price has appreciated significantly over the past 12 months (Figure 1) as global economies are starting to recover from the impacts of the COVID-19 pandemic. Stimulus spending focused on enhanced infrastructure has supported the growth in use of construction steel and a clear focus on reducing global emissions resulting in increasing deployment of renewable energy and the associated increased requirements for grid scale stationary storage solutions such as VRFB’s.



**Figure 1:** Vanadium Pentoxide (98% flake) Price – China vs Europe

In recent times, the European vanadium price appreciation has accelerated significantly as a result of the conflict in Ukraine, with the expectation of significant supply disruptions following sanctions on Russia. Russia (CIS) directly accounted for approximately 8% of global vanadium supply in 2021 (Figure 2: Vanadium Supply and Demand), with a further 5 – 6% of global vanadium supply indirectly attributable to Russia. The chart below also highlights China’s dominant position in the vanadium market.



**Figure 2:** Vanadium Supply and Demand

Figure 2: Vanadium Supply and Demand also highlights the forecast supply – demand dynamics of the global vanadium industry, excluding any potential short to midterm impacts of supply disruptions resulting from the conflict in Ukraine.

The chart highlights consistent growth in consumption from 2018, accelerating slightly from mid-2022 with an expected increase in vanadium use in VRFB's. Demand is forecast to grow to more than 160,000 MTV (~285,000 MT V<sub>2</sub>O<sub>5</sub> equivalent) from 2021 levels of around 115,000 MTV (~205,000 MT V<sub>2</sub>O<sub>5</sub> equivalent). This demand is expected to consistently outstrip supply, maintaining pressure for elevated vanadium prices over the forecast period, with production to meet this demand growth forecast to come from increased output from existing suppliers supplemented by new primary supply sources such as the MTMP.

## ABOUT VANADIUM

Vanadium is a hard, silvery grey, ductile and malleable speciality metal with a resistance to corrosion, good structural strength and stability against alkalis, acids and salt water. The elemental metal is rarely found in nature. The main use of vanadium is in the steel industry where it is primarily used in metal alloys such as rebar and structural steel, high-speed tools, titanium alloys and aircraft. The addition of a small amount of vanadium can increase steel strength by up to 100% and reduces weight by up to 30%. Vanadium high-carbon steel alloys contain in the order of 0.15 to 0.25% vanadium while high-speed tool steels, used in surgical instruments and speciality tools, contain in the range of 1 to 5% vanadium content. Global economic growth and increased intensity of use of vanadium in steel in developing countries will drive near term growth in vanadium demand.

An emerging and very significant use for vanadium is the rapidly developing energy storage (battery) sector with the expanding use and increasing penetration of the vanadium redox flow batteries ("VRFB's"). VRFB's are a rechargeable flow battery that uses vanadium in different oxidation states to store energy, using the unique ability of vanadium to exist in solution in four different oxidation states. VRB's provide an efficient storage and re-supply solution for renewable energy – being able to time-shift large amounts of previously generated energy for later use – ideally suited to micro-grid to large scale energy storage solutions (grid stabilisation). Some of the unique advantages of VRFB's are:

- a lifespan of 20 years with very high cycle life (up to 20,000 cycles) and no capacity loss,
- rapid recharge and discharge,
- easily scalable into large MW applications,
- excellent long-term charge retention,
- improved safety (non-flammable) compared to Li-ion batteries, and

- can discharge to 100% with no damage.

Global economic growth and increased intensity of use of vanadium in steel in developing countries will drive near term growth in vanadium demand.

This announcement has been authorised by the Board of Technology Metals Australia Limited.

For, and on behalf of, the Board of the Company,

Ian Prentice

**Managing Director**  
**Technology Metals Australia Limited**

Andrew Rowell

White Noise Communications

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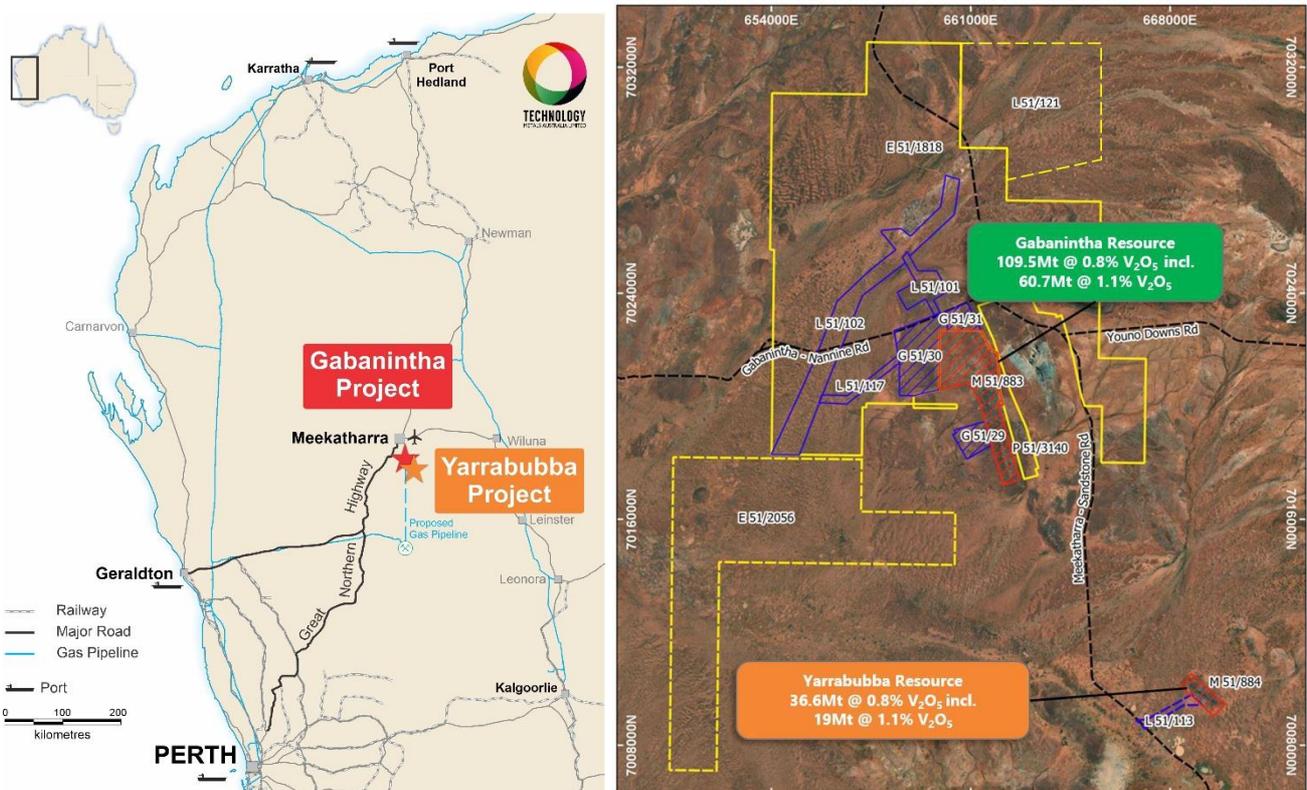
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### **About Technology Metals Australia Limited**

**Technology Metals Australia Limited (ASX: TMT)** was incorporated on 20 May 2016 for the primary purpose of identifying exploration projects in Australia and overseas with the aim of discovering commercially significant mineral deposits. The Company's primary exploration focus has been on the Murchison Technology Metals Project located 40 km south east of Meekatharra in the mid-west region of Western Australia with the aim to develop this project to potentially supply high-quality  $V_2O_5$  flake product to both the steel market and the emerging vanadium redox battery (VRFB) market.

The Project consists of twelve granted tenements and two applications divided between the Gabanintha Vanadium Project (12 tenements) and the Yarrabubba Project (2 tenements). Vanadium mineralisation is hosted by a north west – south east trending layered mafic igneous unit with a distinct magnetic signature. A key differentiation between Gabanintha and a number of other vanadium deposits is the consistent presence of the high-grade massive vanadium – titanium – magnetite basal unit, which results in an overall higher grade for the Murchison Technology Metals Project.



**Figure 3: MTMP Location and Tenure**

Data from the Company's 2017, 2018 drilling programs, including 111 RC holes and 53 HQ and PQ diamond holes at the Gabanintha Project and 46 RC holes and 27 PQ sized diamond holes completed in late 2018 and 2020/21 at the Yarrabubba Project, has been used by independent geological consultants CSA Global to generate a global Inferred and Indicated Mineral Resource estimate, reported in accordance with the JORC Code 2012 edition, for the combined Projects. The Resource estimate confirms the position of the Murchison Technology Metals Project as one of the highest grade vanadium projects in the world.

Global Mineral Resource estimate for the MTMP as at 9 November 2021

Material Type	Classification	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%
Massive Magnetite	<b>Measured (North)</b>	<b>1.2</b>	<b>1.0</b>	<b>44.7</b>	<b>6.2</b>	<b>10.4</b>	<b>11.4</b>	<b>0.0</b>	<b>0.009</b>	<b>0.2</b>
	Indicated (North)	18.5	1.1	49.1	5.2	5.8	12.9	-0.1	0.007	0.2
	Indicated (South)	12.0	1.1	48.2	5.4	7.4	12.5	1.8	0.010	0.3
	<b>Total Indicated</b>	<b>30.6</b>	<b>1.1</b>	<b>48.8</b>	<b>5.3</b>	<b>6.4</b>	<b>12.7</b>	<b>0.6</b>	<b>0.008</b>	<b>0.2</b>
	Inferred (North)	41.0	1.1	47.7	5.6	7.1	12.6	0.3	0.008	0.2
	Inferred (South)	7.0	1.1	47.4	5.7	8.3	12.3	2.1	0.010	0.3
	<b>Total Inferred</b>	<b>48.1</b>	<b>1.1</b>	<b>47.7</b>	<b>5.6</b>	<b>7.3</b>	<b>12.6</b>	<b>0.5</b>	<b>0.008</b>	<b>0.2</b>
	<b>Massive Global</b>	<b>79.8</b>	<b>1.1</b>	<b>48.1</b>	<b>5.5</b>	<b>7.0</b>	<b>12.6</b>	<b>0.6</b>	<b>0.008</b>	<b>0.2</b>
Disseminated / Banded Magnetite	Indicated (North)	10.3	0.6	28.6	13.1	25.5	7.5	3.0	0.030	0.2
	Indicated (South)	8.1	0.6	28.5	12.0	25.2	7.3	2.4	0.018	0.2
	<b>Total Indicated</b>	<b>18.4</b>	<b>0.6</b>	<b>28.6</b>	<b>12.6</b>	<b>25.4</b>	<b>7.4</b>	<b>2.7</b>	<b>0.025</b>	<b>0.2</b>
	Inferred (North)	38.5	0.5	27.1	12.7	27.4	6.9	3.3	0.027	0.2
	Inferred (South)	9.4	0.5	26.6	13.3	27.1	6.9	2.4	0.014	0.3
	<b>Total Inferred</b>	<b>47.9</b>	<b>0.5</b>	<b>27.0</b>	<b>12.8</b>	<b>27.4</b>	<b>6.9</b>	<b>3.1</b>	<b>0.025</b>	<b>0.2</b>
	<b>Diss / Band Global</b>	<b>66.3</b>	<b>0.5</b>	<b>27.4</b>	<b>12.8</b>	<b>26.8</b>	<b>7.0</b>	<b>3.0</b>	<b>0.025</b>	<b>0.2</b>
<b>Combined</b>	<b>Global Combined</b>	<b>146.2</b>	<b>0.8</b>	<b>38.7</b>	<b>8.8</b>	<b>16.0</b>	<b>10.1</b>	<b>1.7</b>	<b>0.016</b>	<b>0.2</b>

*\* Note: The 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. The Mineral Resources are quoted from all classified blocks within these 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.*

Data from the previous global Mineral Resource estimate and the 2019 DFS on the GVP were used by independent consultants CSA Global to generate a Proven and Probable Ore Reserve estimate based on the Measured and Indicated Mineral Resource of 39.6 Mt at 0.9% V<sub>2</sub>O<sub>5</sub> located at Gabanintha and Yarrabubba (see ASX announcement dated 16 September 2020). Work is underway to update the Proven and Probable Ore Reserve estimate for the MTMP as part of the Yarrabubba integration work.

Ore Reserve Estimate as at 15 September 2020

Reserve Category	Tonnes (Mt)	Grade V <sub>2</sub> O <sub>5</sub> %	Contained V <sub>2</sub> O <sub>5</sub> Tonnes (Mt)
Proven	1.1	0.96	0.01
Probable	37.9	0.90	0.34
<b>Total</b>	<b>39.0</b>	<b>0.90</b>	<b>0.26</b>

- Note: Includes allowance for mining recovery (98% for massive magnetite ore and 95% for banded and disseminated ore) and mining dilution applied as a 1 metre dilution skin; resulting in a North Pit dilution for massive magnetite ore of 13% at 0.45% V<sub>2</sub>O<sub>5</sub>, and North Pit dilution for banded and disseminated ore of 29% at 0.0% V<sub>2</sub>O<sub>5</sub>; a Central Pit dilution for massive magnetite ore of 10% at 0.46% V<sub>2</sub>O<sub>5</sub>, and Central Pit dilution for banded and disseminated ore of 20% at 0.0%

V<sub>2</sub>O<sub>5</sub>; a Southern Pit dilution for massive magnetite ore of 12% at 0.49% V<sub>2</sub>O<sub>5</sub>, and Southern Pit dilution for banded and disseminated ore of 15% at 0.21% V<sub>2</sub>O<sub>5</sub>)

- Rounding errors may occur

<b>Capital Structure</b>	
Fully Paid Ordinary Shares on Issue	207.6m
Unquoted Options (\$0.20 – 10/05/23 expiry) <sup>1</sup>	8.00m
Unquoted Options (\$0.50 – 01/01/24 expiry) <sup>2</sup>	3.775m
Unquoted Options (\$0.25 – 15/06/22 expiry)	2.18m
Unquoted Options (\$0.60 – 30/06/25 expiry) <sup>3</sup>	3.575m
Class B Performance Rights <sup>4</sup>	2.450m
Class D Performance Rights <sup>5</sup>	2.075m

1. Director and employee options – 3.875m vested on grant of the mining licences, 4.125 million vest on MTMP FID.
2. Employee options – 3.775million vest and subject to the Company making a final investment decision (FID) for the MTMP prior to 30 October 2023.
3. Employee options vest subject to the Company achieving first commercial production from the MTMP prior to 30 June 2025.
4. Each Class B Performance Right is a right to receive one fully paid ordinary share in TMT, subject to the terms of the employee incentive scheme and subject to the Company making a final investment decision (FID) for the MTMP prior to 30 October 2023.
5. Each Class D Performance Right is a right to receive one fully paid ordinary share in TMT, subject to the terms of the employee incentive scheme and subject to the Company achieving first commercial production from the MTMP prior to 30 June 2025.

### Forward-Looking Statements

This document includes forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Technology Metal Australia Limited's planned exploration programs, corporate activities and any, and all, statements that are not historical facts. When used in this document, words such as "could," "plan," "estimate," "expect," "intend," "may", "potential," "should" and similar expressions are forward-looking statements. Technology Metal Australia Limited believes that it has a reasonable basis for its forward-looking statements; however, forward-looking statements involve risks and uncertainties and no assurance can be given that actual future results will be consistent with these forward-looking statements. All figures presented in this document are unaudited and this document does not contain any forecasts of profitability or loss.

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