



**TECHNOLOGY**  
METALS AUSTRALIA LIMITED

ASX Announcement

20 May 2020

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#### Directors

Michael Fry:  
**Chairman**

Ian Prentice:  
**Managing Director**

Sonu Cheema:  
**Director and Company Secretary**

#### Issued Capital

108,140,000 ("TMT") Fully Paid  
Ordinary Shares

14,888,750 – Quoted Options  
("TMT0") exercisable at \$0.40 on or  
before 24 May 2020

14,258,334 – Unquoted Options –  
various exercise prices and dates

ASX Code: TMT, TMT0

FRA Code: TN6



# MOU SIGNED WITH LEADING VANADIUM REDOX FLOW BATTERY COMPANY

## HIGHLIGHTS

- Memorandum of Understanding executed with Big Power Electrical Technology Xiangyang Inc. Co., Ltd.
- Agreement to investigate establishing a Joint Venture to produce vanadium electrolyte and VRFB manufacturing in Australia.
- MoU establishes the framework for a Binding V<sub>2</sub>O<sub>5</sub> Offtake Agreement covering up to 5,000 Tpa of TMT's proposed average 12,800 Tpa V<sub>2</sub>O<sub>5</sub> production.
- Big Power is one of the world's leading VRFB development and manufacturing companies, having deployed VRFB systems to over 20 locations globally.
- The MoU marks an important diversification of customer base and scope to participate in downstream processing.
- Significant portion of TMT's proposed production covered under binding offtake and MoU, including the 2,000 Tpa under the recently announced CNMNC binding offtake.

**Managing Director Ian Prentice commented;** "Our vision is for the very high purity Gabanintha vanadium product to play a significant role in the development of the domestic VRFB industry and this MoU marks a key first step in achieving that vision. The diversification of customer base is also a key support for the development of the globally significant GVP".

**Mr Yu Longhai, Executive Director & General Manager of VRFB for Big Power said,** "We are very pleased to have established this relationship with Technology Metals Australia and aim to progress our offtake and joint venture discussions based on the principles of mutual benefit and respect. This is an exciting opportunity for both parties, and we are very focused on developing this relationship".

**Minister Bill Johnston, Western Australian Minister for Mines & Petroleum; Energy commented,** "I congratulate Technology Metals Australia on their MoU with Big Power which demonstrates the strength of Western Australia's burgeoning chemical processing and battery technology sector. Vanadium is proving to be a key component in battery technology and renewable energy storage, and has been influential in forming the Western Australian Future Battery Industry Strategy, which was officially launched in January 2019".

Technology Metals Australia Limited (ASX: **TMT**) ("**Technology Metals**" or the "**Company**") is pleased to announce the execution of a non-binding Memorandum of Understanding ("**MoU**") with Big Power Electrical Technology Xiangyang Inc. Co., Ltd. ("**Big Power**"). The MoU covers establishing a binding V<sub>2</sub>O<sub>5</sub> offtake agreement over vanadium production from the Gabanintha Vanadium Project ("**Project**" or "**GVP**") and a joint venture ("**JV**") to investigate the opportunity to produce vanadium electrolyte and establish a Vanadium Redox Flow Battery ("**VRFB**") manufacturing base in Australia.

TMT and Big Power have agreed to use their best endeavours to negotiate a definitive and binding offtake agreement ("**Agreement**") for the supply and purchase of vanadium pentoxide ("**V<sub>2</sub>O<sub>5</sub>**") product that the Company intends to produce from the Project. The Company and Big Power also intend to negotiate the establishment of a JV to produce vanadium electrolyte / establish a VRFB manufacturing base in Australia, utilising Big Power's proprietary VRFB technology and TMT's premium high purity vanadium product. Big Power, headquartered in Xiangyang, Hubei Province, Peoples Republic of China, is one of the World's leading VRFB research, development and manufacturing companies, having supplied VRFB systems to over 20 locations globally.

Execution of this MoU with Big Power is a further significant milestone for the Company, not only delivering an important diversification of customer base into the emerging VRFB market but also a significant first step in TMT's vision of becoming a key participant in the stationary storage battery market. This establishing relationship underscores the value and importance of the very high purity vanadium pentoxide to be produced from the World class large scale, low cost, long life GVP.

The JV contemplated in the MoU provides the scope to bring together Big Power's world leading proprietary VRFB technology and TMT's very high purity product to establish a significant downstream value add industry, producing vanadium electrolyte and potentially developing a VRFB manufacturing base to target the rapidly emerging stationary storage battery market opportunities in Australia. This opportunity further enhances the significant economic and social benefits for the Mid-West region of Western Australia, the State and the Nation that the development of Gabanintha is expected to generate over a long period of time.



**Figure 1:** Big Power VRFB System at Xiangyang Used for Peak Shifting

TMT is looking forward to continuing to work closely with the Western Australian Government's Lead Agency team, the Northern Australia Infrastructure Facility ("NAIF") and other Government agencies as it progresses the development of Gabanintha to be a producer of vanadium, a critical mineral with a vital role to play in the efficient and effective deployment of renewable energy. Vanadium's strategic importance to the Australian economy has been recognised with its inclusion on the Australian Government's list of critical minerals, further underlined with the establishment of the Critical Minerals Facilitation Office ("CMFO") at the beginning of 2020. This importance is further emphasised by the Western Australian Government's support for critical minerals projects as part of its "Future Battery Industry Strategy".

The offtake component of the MoU is a further step in delivering certainty on customer engagement and volume of product sales, creating a strong foundation for GVP's financing and development.

#### **KEY TERMS DEFINED IN THE TMT – BIG PAWER MOU**

The MoU between TMT and Big Power establishes a framework for ongoing discussions and negotiations aimed at delivering a definitive and binding offtake agreement ("**Agreement**") and the establishment of a JV for vanadium electrolyte / VRFB manufacturing in Australia. Key terms that have been defined and agreed upon in the MoU are:

- Minimum annual quantity of V<sub>2</sub>O<sub>5</sub> to be purchased of 1,000 Tpa on a take-or-pay basis,
- Maximum annual quantity of V<sub>2</sub>O<sub>5</sub> to be purchased of 5,000 Tpa subject to product availability,
- Big Power to purchase such quantity of product that is available, up to 1,000 Tpa, during the ramp-up and commissioning phase of the Project,
- Pricing to be negotiated based on the average of the European V<sub>2</sub>O<sub>5</sub> FOB price as published by Metal Bulletin and FerroAlloyNet,
- Sales to be based on CIP at Big Power's selected port of choice in China,
- Minimum term of five (5) years with an option to renew for an additional five (5) years,
- Big Power to provide its proprietary VRFB technology exclusively in Australia to the JV, subject to agreement of a suitable Sales and Marketing Plan, and
- Big Power to provide technology and in-kind support to assist in the timely development of the JV.

The next steps to progress towards finalising the Agreement include due diligence to be completed by both parties in conjunction with further refinement and agreement of the key off take terms. The parties intend to complete site visits as part of the due diligence process.

The MoU is effective until 30 December 2020 unless the parties mutually agree to formally terminate or extend the term.

#### **ABOUT BIG PAWER ELECTRICAL TECHNOLOGY XIANGYANG INC. CO., LTD**

Big Power Electrical Technology Xiangyang Inc. Co., Ltd, established in 2002, is a leader in the R&D, manufacture, sales and technical service of motor soft starting and supporting high-tech enterprises with electrical control equipment and stationary energy storage systems. Big Power, which plans to list on the Science and Technology Innovation Board of the Shanghai Stock Exchange (SSE Star Market), the Chinese equivalent of the NASDAQ, has 420 employees, including 120 in R&D, and exports equipment to Africa, Australia, South East Asia, Turkey, Russia.

Big Power commenced R&D in to VRFB development in 2009 and established its industrial production platform in 2014, having to date deployed over 20 VRFB's across Asia, including Singapore, South Korea and India. The Big Power VRFB R&D team is considered to be one of the top six R&D teams in the World. It has been listed as one of the key companies in the China Torch Program, a national

program actively seeking dynamic and high technology innovation. Big Pauer, with its operational base in Xiangyang, Hubei Province, Peoples Republic of China, has 19 patents in place covering all key components of the VRFB technology. Big Pauer is considered to be in the top 3 of VRFB enterprises in China, with only Dalian Rongce, Big Pauer and VRB Energy having MW scale projects.

## **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 likely 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 VRB'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.

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

Ian Prentice  
**Managing Director**  
**Technology Metals Australia Limited**

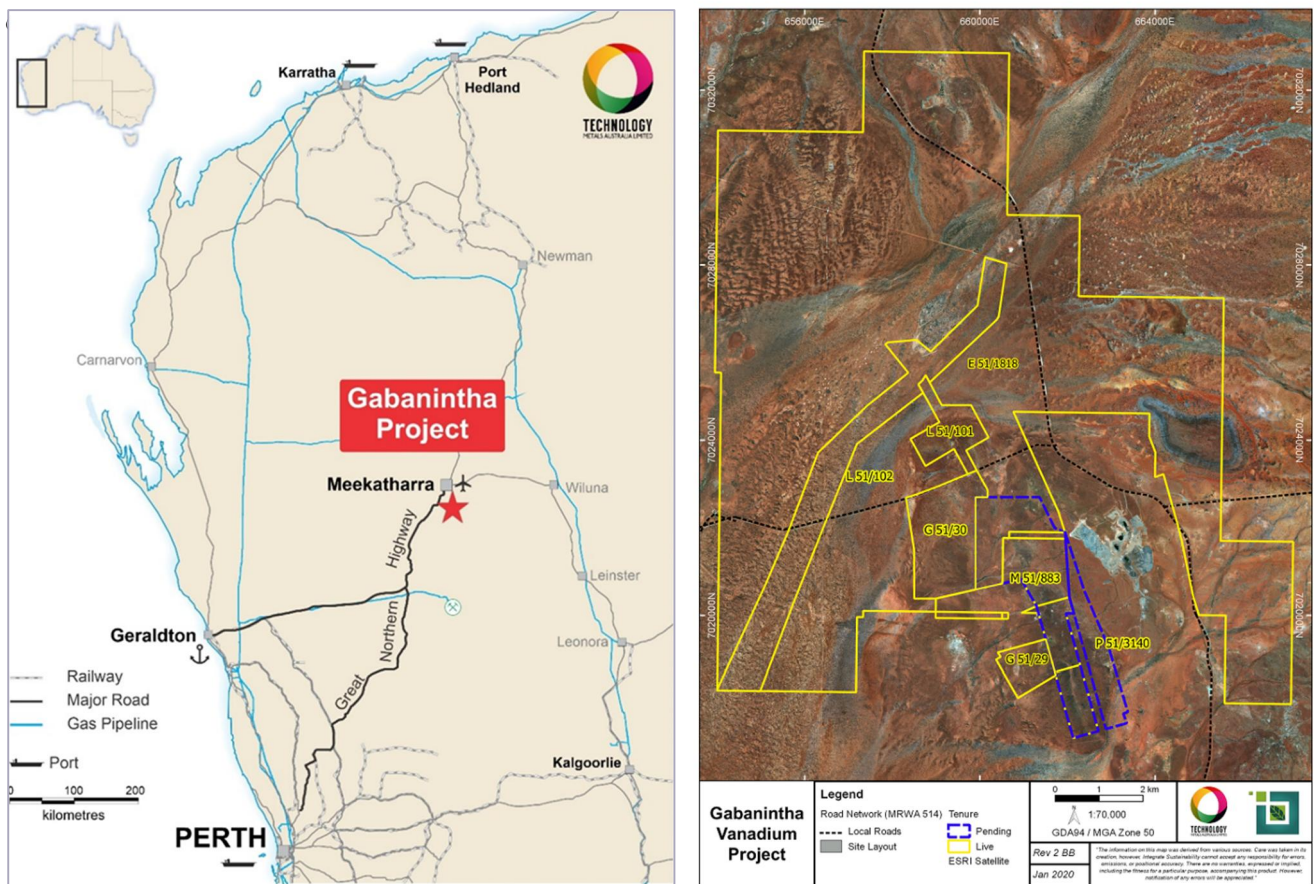
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**About Technology Metals Australia Limited**

**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 Gabanintha Vanadium 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<sub>2</sub>O<sub>5</sub> flake product to both the steel market and the emerging vanadium redox battery (VRB) market.

The Project consists of eleven granted tenements and three applications (including two Mining Leases) divided between the Northern Block of Tenements (12 tenements) and the Southern Tenement (2 tenements). Vanadium mineralisation is hosted by a north west – south east trending layered mafic igneous unit with a distinct magnetic signature. Mineralisation at Gabanintha is similar to the Windimurra Vanadium Deposit, located 270km to the south, and the Barrambie Vanadium-Titanium Deposit, located 155km to the south east. The key difference between Gabanintha and these deposits is the consistent presence of the high-grade massive vanadium – titanium – magnetite basal unit, which results in an overall higher grade for the Gabanintha Vanadium Project.



GVP Location and Tenure

Data from the Company's 2017 and 2018 drilling programs including 111 RC holes and 53 HQ and PQ diamond holes at the Northern Block and 23 RC holes (for 2,232 m) at the Southern Tenement) 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 Project. The Resource estimate confirms the position of the Gabanintha Vanadium Project as one of the highest grade vanadium projects in the world.

Global Mineral Resource estimate for the Gabanintha Vanadium Project as at 27 March 2019

Material Type	Classification	Tonnage (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>
	<b>Indicated (North)</b>	<b>18.5</b>	<b>1.1</b>	<b>49.1</b>	<b>5.2</b>	<b>5.8</b>	<b>12.9</b>	<b>-0.1</b>	<b>0.007</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)	10.4	1.1	49.1	4.9	5.9	12.6	-0.4	0.004	0.3
	<b>Total Inferred</b>	<b>51.5</b>	<b>1.1</b>	<b>48.0</b>	<b>5.5</b>	<b>6.9</b>	<b>12.6</b>	<b>0.1</b>	<b>0.007</b>	<b>0.2</b>
	<b>Massive Global</b>	<b>71.2</b>	<b>1.1</b>	<b>48.2</b>	<b>5.4</b>	<b>6.7</b>	<b>12.7</b>	<b>0.1</b>	<b>0.007</b>	<b>0.2</b>
Disseminated / Banded Magnetite	<b>Indicated (North)</b>	<b>10.3</b>	<b>0.6</b>	<b>28.6</b>	<b>13.1</b>	<b>25.5</b>	<b>7.5</b>	<b>3.0</b>	<b>0.030</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)	11.1	0.6	30.2	11.9	23.4	7.7	2.4	0.012	0.4
	<b>Total Inferred</b>	<b>49.6</b>	<b>0.6</b>	<b>27.8</b>	<b>12.5</b>	<b>26.5</b>	<b>7.1</b>	<b>3.1</b>	<b>0.024</b>	<b>0.2</b>
	<b>Diss / Band Global</b>	<b>59.9</b>	<b>0.6</b>	<b>27.9</b>	<b>12.6</b>	<b>26.4</b>	<b>7.2</b>	<b>3.1</b>	<b>0.025</b>	<b>0.2</b>
<b>Combined</b>	<b>Global Combined</b>	<b>131</b>	<b>0.9</b>	<b>39.0</b>	<b>8.7</b>	<b>15.7</b>	<b>10.1</b>	<b>1.4</b>	<b>0.015</b>	<b>0.2</b>

\* Note: The Mineral Resource was estimated within constraining wireframe solids using a nominal 0.9% V<sub>2</sub>O<sub>5</sub> lower cut-off grade for the basal massive magnetite zone 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 Resource is 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 global Mineral Resource and the recently completed 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 30.1 Mt at 0.9% V<sub>2</sub>O<sub>5</sub> located within the Northern Block of tenements at Gabanintha.

Ore Reserve Estimate as at 31 May 2018

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	28.5	0.88	0.25
<b>Total</b>	<b>29.6</b>	<b>0.88</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>.)
- Rounding errors may occur

Capital Structure	
Fully Paid Ordinary Shares on Issue	108.14m
Unquoted Options (\$0.20 – 10/05/23 expiry)	8.25m
Unquoted Options (\$0.35 – 12/01/21 expiry)	2.75m
Quoted Options (\$0.40 – 24/05/20 expiry)	14.889m
Unquoted Options (\$0.40 – 24/05/20 expiry)	3.258m

**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 are; 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 Ian Prentice. Mr Prentice is Managing Director of the Company and a member of the Australian Institute of Mining and Metallurgy. Mr Prentice 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 Prentice 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 Grant Louw. Mr Louw is a Principal Consultant with CSA Global and a Member of the Australian Institute of Geoscientists. Mr Louw has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this report and to the activity which he is 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 Louw 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 that relates to Ore Reserves is based on information compiled by Mr Daniel Grosso and reviewed by Mr Karl van Olden, both employees of CSA Global Pty Ltd. Mr van Olden takes overall responsibility for the Report as Competent Person. Mr van Olden is a Fellow of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Person in terms of the JORC (2012 Edition). The Competent Person, Karl van Olden 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 Gabanintha project is based on and fairly represents, information and supporting documentation compiled by Mr Brett Morgan and reviewed by Mr Damian Connelly, both employees of METS Engineering Group Pty Ltd. Mr Connelly takes overall responsibility for the Report as Competent Person. Mr Connelly is a Fellow of The Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity which he is 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'. The Competent Person, Damian Connelly consents to the inclusion in the report of the matters based on his information in the form and context in which it appears