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Metals & Mining Research

Best Undeveloped Projects

November 2022

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NOT COVERED

Current Price	$0.35
Market Cap	$73M

Ticker:	**TMT**
Sector:	**Metals & Mining**
Shares on Issue (m):	**209.8**
Market Cap ($m):	**73.4**
Cash Est. ($m)	15.1
Debt Est. ($m)	0.0
Enterprise Value ($m):	**58.3**
52 wk High/Low:	**$0.60** **$0.28**
12m Av Daily Vol (m):	**0.3**

Projects	**Stage**
MTMP	Completed Feasibility

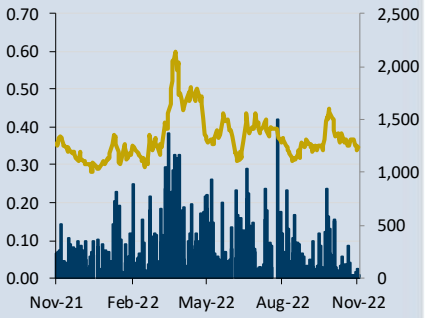
Mineral Reserve	**Mt**	**%V_2O_5**	**V_2O_5 (t)**
MTMP	44.0	0.89	392

Cashflows	**2021**	**2022**
Operating Cashflow	-1.0	-0.6
Investing Cashflow	-5.2	-7.0
Financing Cashflow	8.6	20.6
Cash Balance	5.6	18.6

Directors:	
Michael Fry	Non-Executive Chairman
Ian Prentice	Managing Director
Carmen Letton	Non-Executive Director
Jacqueline Murray	Non-Executive Director

Substantial Shareholders:	**%**
Resource Capital Fund	17.2%
Board & Management	8.8%

Share Price Graph and Trading Volumes



Technology Metals (TMT)

MTMP vanadium – Mission Critical

John Macdonald

Quick Read

Development of the MTMP's high quality vanadiferous titanomagnetite deposits in Western Australia would expand and stabilise vanadium supplies that are forecast to come under strain due to battery demand.

Overview

VRFB adventure: The Murchison Technology Metals Project (MTMP) aims to capitalise on growing vanadium demand driven by the energy storage advantages of vanadium redox flow batteries (VRFBs).

Critical: Current vanadium suppliers are concentrated in China and Russia. The US DOI and the European Commission have each placed vanadium on their critical minerals lists. Wood Mackenzie expects VRFB installations to grow 9% pa through to 2031, requiring a trebling of raw vanadium supplies in the interim.

Study done: TMT's August 2022 feasibility studies conclude the MTMP can be brought on to supply about 5% of the current world market for vanadium pentoxide (V_2O_5) for a capital cost of $600M. The Company is closing on environmental approval ahead of the start of a financing drive.

The MTMP has relatively high-grade reserves (44Mt at 0.89% V_2O_5) of titanomagnetite ore in proximity to energy infrastructure. Importantly for titanomagnetite resources, a high proportion of reserves is unoxidised relatively close to surface. TMT estimates an 8% discount rate, pre-tax NPV of A$940M and an internal rate of return of 23%, assuming US$10.50/lb V_2O_5 and US$250/t ilmenite. The starting project life is 25 years.

Double act: TMT and Australian Vanadium Ltd (AVL) are independently pursuing vanadium project developments that are geographically and technically intertwined. Both projects are post feasibility and pre-funding.

Downstream potential: In collaboration with Australian Government backed FBICRC (Future Battery Industries Cooperative Research Centre) and Chinese electrolyte supplier LE System Co., TMT is studying the feasibility of producing vanadium electrolyte in Australia from vanadium pentoxide feedstock. Vanadium electrolyte is raw material for VRFBs.

Risks: The main risks are associated with project funding and specialty metal market uncertainty. TMT signed a non-binding MOU with Tata Steel in October 2022 as a precursor to offtake discussions.

MTMP

Technology Metals Australia Limited (TMT) was incorporated May 2016. The Company's focus has been on the Murchison Technology Metals Project, 40 km south east of Meekatharra, in the mid-west of Western Australia. Vanadium and ilmenite mineralisation occurs in titanomagnetite at the base of a layered mafic intrusion.

TMT updated a 2019 feasibility study in August 2022, based on plans to mine and process 46Mt open pit ore reserves and produce 13ktpa V_2O_5 flake for sale to steel and vanadium redox battery manufacturers over 25 years. The updated study included reserves on two non-contiguous tenement blocks, 15km apart, at Gabanintha and Yarabubba. Together Gabanintha and Yarrabubba form the Murchison Technology Metals Project (MTMP). TMT's August 2022 estimate of pre-production capital cost was $600M.

TMT is studying the feasibility of producing vanadium electrolyte in Australia from vanadium pentoxide feedstock. Vanadium electrolyte is raw material for VRFBs

The MTMP brackets Australian Vanadium Ltd (AVL) and its Australian Vanadium Project (AVP) which is based on the same unit in the mafic intrusion between Gabanintha and Yarrabubba. In April 2022 AVL completed-feasibility studies of the AVP, estimating 31Mt open pit ore reserves and production of 11ktpa V_2O_5 flake, to be developed at a cost of $600M.

AVL and TMT have remained independent, pursuing development streams with common technical elements, and separate marketing and financing strategies. As of November 2022 neither company is funded or priced to reflect fair value for development, with EVs of $100M (AVL, $24M net cash) and $60M (TMT, $15M net cash) respectively. For the purposes of this report we choose to focus on TMT, as the cheaper entry, and recognise that ideally the two projects will be exploited as one.

MTMP vanadium occurs within titano-magnetite; a vanadium bearing ore mineral for which there are commercially established extraction processes (magnetic separation, roasting of the magnetite concentrate at 1200°C, leaching and re-precipitation followed by de-ammoniation and calcination to form a vanadium pentoxide powder). TMT tested a 14t bulk sample as part of the 2020 FS, recovering 77% of the V_2O_5 in ore to 99.5% pure V2O5 flake powder. In 2022 TMT introduced an ilmenite recovery circuit to processing plans.

APA (APA:ASX) is preparing licences, initial engineering design and other early work associated with building a gas spur line to Gabanintha. APA started building the Northern Goldfields Interconnect (NGI) pipeline from Geraldton to Leinster in May 2022, which will bring the line to within 150km of the proposed MTMP plant site.

Categorised a critical mineral and a battery metal by the US DOI and European Commission, (80%) of vanadium is used in steel alloys. Consumption in vanadium redox flow batteries was about 5% of the total market in 2022. VRFBs are relatively long lifespan and safe energy storage options where energy density is not important. Future VRFB driven vanadium consumption growth is a key incentive behind MTMP's development. China (60%), Russia (20%) and South Africa (10%) are currently the main primary vanadium producers, each predominantly from titanomagnetite deposit types. Russian supply disruption and falling Chinese steel consumption affected vanadium prices in turn during 2022.