

ersonal use only

Australian  
VANADIUM  
LIMITED



ASX:AVL

# Macquarie WA Forum Presentation

November 2023



# Compliance & Cautionary Forward-looking Statements

The views expressed in this Presentation contain information derived from publicly available sources that have not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of the information.

## ASX Listing Rules 5.19 and 5.23

### ASX Listing Rule 5.19

The information in this Presentation relating to production targets, or forecast financial information derived from a production target, is extracted from the announcement titled "Bankable Feasibility Study for the Australian Vanadium Project" released to the ASX on 6 April 2022 which is available on the Company's website [www.australianvanadium.com.au](http://www.australianvanadium.com.au).

The Company confirms that all material assumptions underpinning the production target, or the forecast financial information derived from a production target, in the original market announcement continue to apply and have not materially changed.

### ASX Listing Rule 5.23

The information in this Presentation relating to exploration results and mineral resource and ore reserve estimates for the Australian Vanadium Project is extracted from the announcement titled "Bankable Feasibility Study for the Australian Vanadium Project" released to the ASX on 6 April 2022 which is available on the Company's website [www.australianvanadium.com.au](http://www.australianvanadium.com.au).

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the original market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the competent person's findings are presented have not been materially modified from the original market announcement.

## Forward Looking Statements

This Presentation may contain certain forward-looking statements with respect to matters including but not limited to the financial condition, results of operations and business of AVL and certain of the plans and objectives of AVL with respect to these items. These forward-looking statements are not historical facts but rather are based on AVL's current expectations, estimates and projections about the industry in which AVL operates and its beliefs and assumptions.

Words such as "anticipates," "considers," "expects," "intends," "plans," "believes," "seeks," "estimates," "guidance" and similar expressions are intended to identify forward looking statements and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those risks or uncertainties inherent in the industry in which AVL operates.

These statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and other factors, some of which are beyond the control of AVL, are difficult to predict and could cause actual results to differ materially from those expressed or forecasted in the forward-looking statements. Such risks include, but are not limited to resource risk, metal price volatility, currency fluctuations, increased production costs and variances in ore grade or recovery rates from those assumed in mining plans, as well as political and operational risks in the countries and states in which we sell our product to, and government regulation and judicial outcomes. For more detailed discussion of such risks and other factors, see the Company's Annual Reports, as well as the Company's other filings.

AVL cautions shareholders and prospective shareholders not to place undue reliance on these forward-looking statements, which relate only to events as of the date on which the statements are made.



# Australian Vanadium Limited



Project located in Western Australia, with access to key infrastructure including gas, rail and port



BFS completed highlighting strong project metrics including cash cost sub US\$5/lb  $V_2O_5$  and 25+ year mine life



Simple open pit mining, with proven processing method for reduced development and technical risk



Project to deliver diversified source of vanadium supply to a market currently dominated by Russia, China and South Africa



Vanadium demand supported by global steel growth, with upside from fully commercialised battery technology ideal for the rapid growth long duration stationary energy storage market



A\$32.5M in cash at 30 September 2023



Announced merger with Technology Metals Australia Limited to create leading Australian vanadium developer



# Strong vanadium market fundamentals



85% of global supply sourced from China, Russia and South Africa



Expected demand acceleration from vanadium flow batteries (VFBs)



Supportive long-term prices

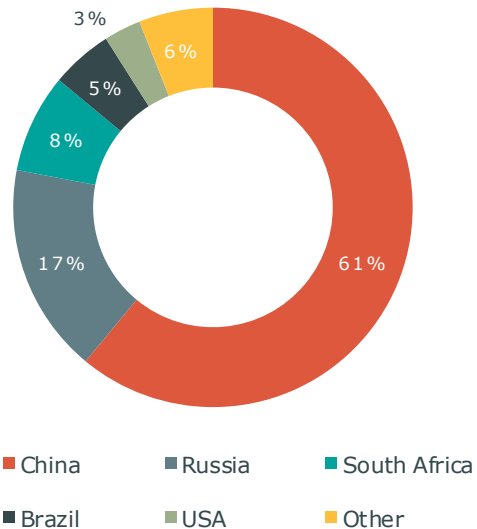


Classified as a critical mineral in the US, EU, UK & Japan

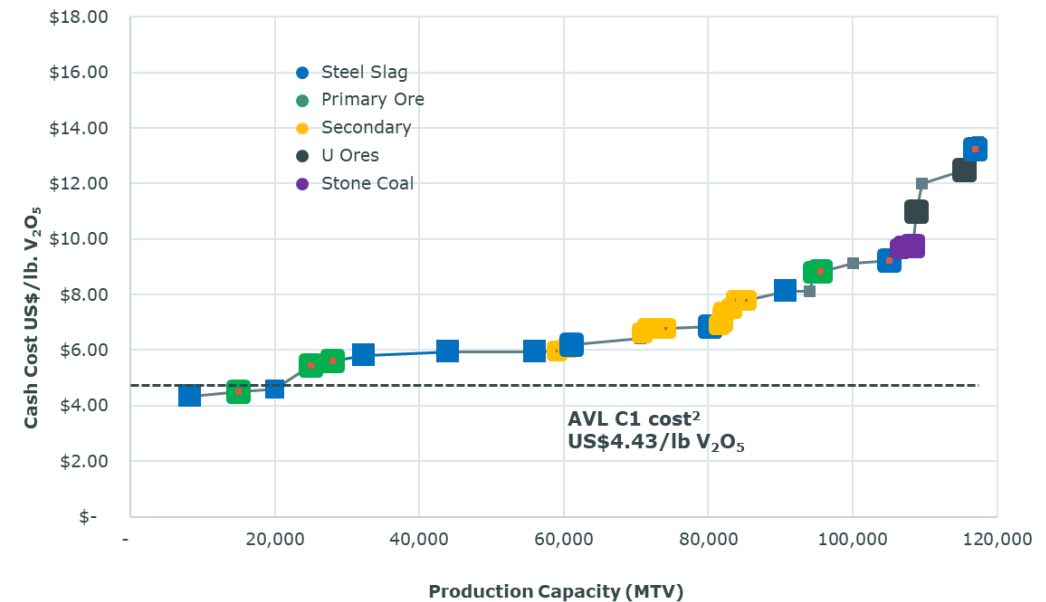


Steep cost curve driven by multiple production routes

Market Supply<sup>1</sup>



2022 V<sub>2</sub>O<sub>5</sub> Cost Curve





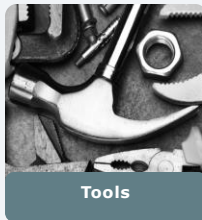
# Vanadium Demand

Vanadium market demand currently dominated by use in the steel industry, although its exposure to the energy transition through VFBs could provide a sizeable diversification from steel.

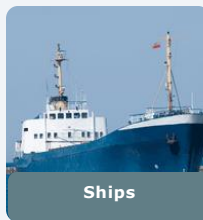
**Steel**  
87%

**Critical minerals**  
6%

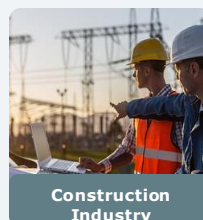
**Energy Storage**  
7%



Tools



Ships



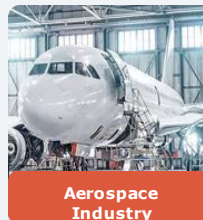
Construction Industry



Trains



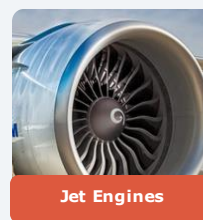
3D Printing



Aerospace Industry



Chemical Uses



Jet Engines



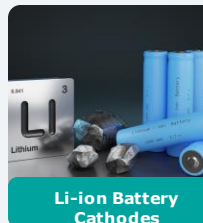
Vanadium Flow Batteries



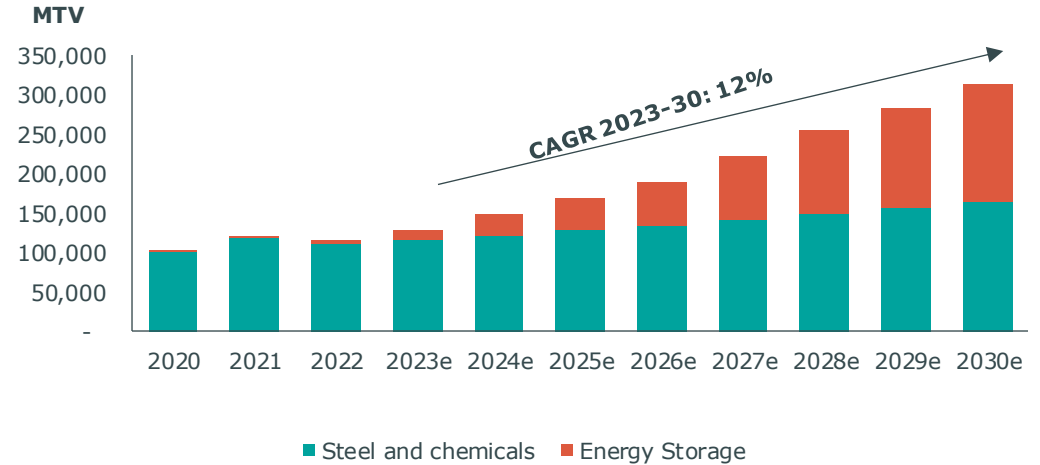
Standalone Power Stations



EV Charging

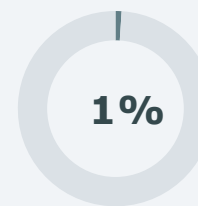


Li-ion Battery Cathodes

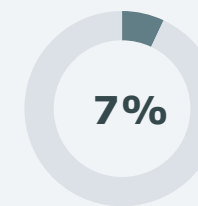


## Vanadium demand from batteries

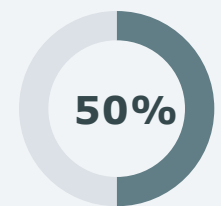
2019(a)



2022(a)



2030(f)



# VFB Technical Merit



**Non-flammable**  
making it one of the  
safest and most stable  
battery chemistries



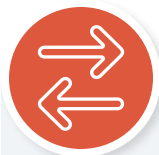
Multiple daily cycles,  
with **100% depth of  
discharge** available



Vanadium electrolyte can  
be **reused indefinitely**  
or recycled for use in  
steel market or VFBs



**Low lifecycle cost** over  
**25+ years** lifespan and  
**>4h** long duration



**Easy to scale** power  
and energy separately



Little to  
**no degradation in  
performance** over time



# AVL and TMT Merger overview

**In September 2023 AVL and TMT announced a Board recommended merger via Scheme of Arrangement – with a combined market capitalisation of A\$217 million (pro-forma)**



# AVL and TMT Merger Update

- TMT Board of Directors have unanimously recommended the scheme
- Draft Scheme booklet lodged with the Australian Securities Investment Commission (ASIC)
- Integration working group has been formed and commenced workstreams on:
  - Integration strategy
  - Updated resource modelling to inform revised mine plan
  - Synergy identification and implementation
  - Flowsheet and project infrastructure optimisation



*AVL and TMT integration workshop*

## Scheme timetable

Event	Date
First court hearing	Early December 2023
TMT to dispatch Scheme documents to TMT shareholders	Early December 2023
Scheme meeting	January 2024
Second court hearing	January 2024
Effective date	January 2024
Implementation date	January/February 2024

Dates are indicative only and subject to change without notice. The timetable can be delayed by a range of factors outside of the control of AVL and TMT. AVL and TMT reserve the right to alter the dates at their discretion and without notice, subject to the ASX Listing Rules, the Corporations Act 2001 (Cth) and other applicable laws and regulatory approvals. cv



# Pit to Battery Strategy - Vanadium Electrolyte Project

## AVL is focused on developing vanadium market opportunities

- The Company is building a 33MWh per annum electrolyte plant in Perth, co-funded through part of a \$3.69M Federal Government Grant
- The plant uses US Vanadium's proven electrolyte manufacturing technology, greatly reducing development risk
- Commissioning on the plant has commenced, with Primero undertaking EPC
- Electrolyte supply targeted for 2024

## Benefits of the electrolyte plant include:

- AVL to be an early mover in electrolyte manufacture in Australia
- Demonstrates AVL's technical capabilities
- Delivers product into a growing demand market and allows for an extended qualification period for the material
- Ensures AVL remains relevant and engaged with all downstream aspects of the vanadium and VFB markets



*AVL and TMT staff visiting AVL's electrolyte manufacturing facility*

# Pit to battery strategy - VSUN Energy

VSUN Energy was launched by AVL in 2016 to grow the VFB market in Australia

## Current Projects

- Horizon Power 78kW/220kWh pilot project in Kununurra, WA
- IGO - supply and installation of an 80kW/300kWh VFB at Nova Nickel Operation
- Water Corporation – successful completion of trial of a 5kW/30kWh VFB
- Victoria – supply and installation of a 20kW/80kWh VFB
- Tender applications up to 50MWh
- VSUN Energy utilises VFB technology from a wide variety of global OEMs including Invinity Energy Systems, CellCube, Sumitomo and VFlow Tech.
- VSUN Energy is building a prototype residential VFB.
- The development of a local Australian VFB market will deliver domestic demand for the potential vanadium supply from the Australian Vanadium Project and vanadium electrolyte supply.



*"Vanadium redox flow batteries are specifically designed to deliver energy over a long period of time, which is crucial for achieving the high levels of decarbonisation we are after."*

**WA Minister for Mines and Energy, Bill Johnston MLA**

# AVL's investment thesis



## World class vanadium orebody

- Advanced project, low cost, 25+ year mine life with strong operating parameters
- Process based on known technology, lowering development risk
- Access to all key infrastructure



## Growing vanadium fundamentals

- Steel demand enough to underpin project offtake
- Increasing demand for vanadium from new sectors and regions
- VFB demand to provide medium term decoupling of vanadium from steel dynamics



## Advancing funding strategies

- \$49M Federal Grant
- Potential lenders consortium progressing due diligence
- Project to be funded by debt, grants and equity
- Advanced state of executing offtake strategies



## Merger creates ASX vanadium leader

- Logical consolidation of adjoining orebodies
- Opportunity to realise tangible synergies around project optimisation, development and funding



# Appendix

# AVL's Board of Directors



**Cliff Lawrenson**  
Non-Executive  
Director

Experienced Chair and extensive executive career in resources, energy, infrastructure and investment banking



**Daniel Harris**  
Non-Executive  
Director

Over 40 years of global vanadium experience, including processing and operation



**Miriam Stanborough AM**  
Non-Executive Director

Chemical engineer, with over 20 years of experience in the mineral processing industry across a range of commodities



**Peter Watson**  
Non-Executive  
Director

Chemical engineer, with 40 years of experience in senior technical, project and management roles, in addition to corporate experience running ASX-listed companies



**Anna Sudlow**  
Non-Executive  
Director

Corporate finance executive with experience in the mining and resources sectors across a range of commodities and jurisdictions

# AVL's Executive Team

International vanadium expertise – track record in project execution and operations



**Graham Arvidson**  
Chief Executive  
Officer

18 years of experience in the mineral sector experience spans vanadium and lithium project development and operations



**Todd Richardson**  
Chief Operating  
Officer

Over 20 years of experience in the vanadium sector and an expert in vanadium process design, commissioning and operations



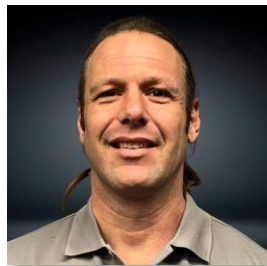
**Louis Mostert**  
Chief Legal and  
Commercial Officer

20 years of experience in project contracting and finance, corporate advisory, mergers and acquisitions



**Tom Plant**  
Chief Financial  
Officer

30 years of experience in various corporate and commercial roles. Strong background in debt and equity funding solutions, investment evaluation and corporate transactions



**Ross Jennings**  
Chief Safety and People  
Officer

Over 18 years of experience in the mining industry and has worked in leadership roles across operations, health, safety and emergency response



**Flormirza Cabalteja**  
Executive General Manager  
Project Delivery –  
Downstream

16 years of experience in the operations and design/commissioning in the minerals sector for nickel, cobalt, vanadium and ammonium phosphate-based fertilizers





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