

# CONSTRUCTION OF VANADIUM ELECTROLYTE MANUFACTURING FACILITY UNDERWAY

*Long lead time items received and EPC contract awarded*

## KEY POINTS

- Construction is underway at AVL's vanadium electrolyte facility in Western Australia.
- AVL and Primero Group have signed an engineering, procurement and construction (EPC) contract for Primero Group to undertake the construction of the facility.
- U.S. Vanadium LLC (USV) proven electrolyte manufacturing technology being deployed, de-risking construction and start-up.<sup>1</sup>
- Facility designed to produce up to 33MWh per year of vanadium flow battery (VFB) high purity electrolyte.
- Australian Government grant of \$3.69 million co-funding commercial vanadium electrolyte facility development.<sup>2</sup>

Australian Vanadium Limited (ASX: AVL, "the Company" or "AVL") has appointed engineering group Primero Group Limited (a subsidiary of NRW Holdings, ASX: NWH), to construct its vanadium electrolyte manufacturing facility in Western Australia. Most long lead items have now been received.

The Company has appointed experienced operations professional Simon Rough to safely manage the facility through construction and into production. Simon's extensive experience in vanadium processing and sulphuric acid production makes him a perfect fit to lead the team to successful production of high-quality electrolyte.

CEO, Graham Arvidson comments, *"It is satisfying to see the progress being achieved by the team as AVL's vanadium electrolyte manufacturing plant starts to take shape. Using USV's proven electrolyte manufacturing technology, AVL aims to become a trusted supplier of vanadium electrolyte within Australia and beyond. We are pleased to have welcomed Simon onboard to manage the facility and work with the existing team, utilising in house electrolyte knowledge and relationships that have been built with companies such as USV and VFB manufacturers. The implementation of the electrolyte plant provides an ideal opportunity for AVL to put into practice, test and further mature*

<sup>1</sup> See ASX announcement dated 11 August 2021 'AVL Secures Vanadium Electrolyte Manufacturing Technology'

<sup>2</sup> See ASX announcement dated 21 July 2021 'AVL Awarded \$3.69M Federal Government Manufacturing Grant'

*its systems, processes and management systems that will ultimately underpin the larger Australian Vanadium Project.”*



**Figure 1** Equipment for vanadium electrolyte production – L-R bag unit and electrolyte tank

Simon Rough has 20 years of processing and operational experience. He has safely led high performing teams in hydro and pyrometallurgical operations, vanadium processing and sulphuric acid production.

AVL holds the exclusive licence of USV’s process technology for manufacturing vanadium electrolyte for Australia and New Zealand.<sup>1</sup> This technology has been used for the design of the vanadium electrolyte manufacturing facility which is being built in the northern Perth suburb of Wangara. Partnering with Primero Group, AVL has developed the facility design to comply with Australian standards and requirements.

Until production of vanadium oxides from AVL’s Midwest Processing Hub commences, vanadium oxide feedstock for the electrolyte facility will be sourced through AVL’s agreement with USV and third-party sources.

AVL was awarded a \$3.69 million Federal Government grant in 2021,<sup>2</sup> with part of the funding allocated to building and operating a commercial vanadium electrolyte manufacturing facility in Western Australia, to support the commercialisation of VFBs.

AVL aims to produce vanadium electrolyte for commercial use in VFBs by November 2023 and is working on offtake agreements for the produced product.

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*This announcement has been produced in accordance with the Company’s published continuous disclosure policy and has been approved by the Board*

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## ABOUT AUSTRALIAN VANADIUM LTD

AVL is a resource company focused on vanadium, seeking to offer investors a unique exposure to all aspects of the vanadium value chain – from resource through to steel and energy storage opportunities. AVL is advancing the development of its world-class Australian Vanadium Project at Gabanintha. The Australian Vanadium Project is one of the most advanced vanadium projects being developed globally, with 239Mt at 0.73% vanadium pentoxide ( $V_2O_5$ ), containing a high-grade zone of 95.6Mt at 1.07%  $V_2O_5$  and an Ore Reserve of 30.9Mt at 1.09%  $V_2O_5$  comprised of a Proved Reserve of 5Mt at 1.11%  $V_2O_5$  and a Probable Reserve of 20.4Mt at 1.07%  $V_2O_5$ , reported in compliance with the JORC Code 2012 (see ASX announcement dated 1<sup>st</sup> November 2021 '*Mineral Resource Update at the Australian Vanadium Project*' and ASX announcement dated 6<sup>th</sup> April 2022 '*Bankable Feasibility Study for the Australian Vanadium Project*').

VSUN Energy is AVL's 100% owned renewable energy and energy storage subsidiary which is focused on developing the Australian market for vanadium flow batteries for long duration energy storage. VSUN Energy was established in 2016 and is widely respected for its VFB expertise. AVL's vertical integration strategy incorporates processing vanadium to high purity, manufacturing vanadium electrolyte and working with VSUN Energy as it develops projects based on renewable energy generation and VFB energy storage.

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## APPENDIX 1

The Australian Vanadium Project – Mineral Resource estimate by domain and resource classification using a nominal 0.4% V<sub>2</sub>O<sub>5</sub> wireframed cut-off for low-grade and nominal 0.7% V<sub>2</sub>O<sub>5</sub> wireframed cut-off for high-grade (total numbers may not add up due to rounding).

Zone	Category	Mt	V <sub>2</sub> O <sub>5</sub> %	Fe %	TiO <sub>2</sub> %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI %
HG	Measured	11.3	1.14	43.8	13.0	9.2	7.5	3.7
	Indicated	27.5	1.10	45.4	12.5	8.5	6.5	2.9
	Inferred	56.8	1.04	44.6	11.9	9.4	6.9	3.3
	<b>Subtotal</b>	<b>95.6</b>	<b>1.07</b>	<b>44.7</b>	<b>12.2</b>	<b>9.1</b>	<b>6.8</b>	<b>3.2</b>
LG	Indicated	54.9	0.50	24.9	6.8	27.6	17.1	7.9
	Inferred	73.6	0.48	25.0	6.4	28.7	15.4	6.6
	<b>Subtotal</b>	<b>128.5</b>	<b>0.49</b>	<b>24.9</b>	<b>6.6</b>	<b>28.2</b>	<b>16.1</b>	<b>7.2</b>
Transported	Inferred	14.9	0.66	29.0	7.8	24.5	15.1	7.8
	<b>Subtotal</b>	<b>14.9</b>	<b>0.66</b>	<b>29.0</b>	<b>7.8</b>	<b>24.5</b>	<b>15.1</b>	<b>7.8</b>
Total	Measured	11.3	1.14	43.8	13.0	9.2	7.5	3.7
	Indicated	82.4	0.70	31.7	8.7	21.2	13.5	6.2
	Inferred	145.3	0.71	33.0	8.7	20.7	12.0	5.4
	<b>Subtotal</b>	<b>239.0</b>	<b>0.73</b>	<b>33.1</b>	<b>8.9</b>	<b>20.4</b>	<b>12.3</b>	<b>5.6</b>

The Australian Vanadium Project - Ore Reserve Statement as at April 2022, at a cut-off grade of 0.7% V<sub>2</sub>O<sub>5</sub>.

Ore Reserve	Mt	V <sub>2</sub> O <sub>5</sub> %	Fe%	TiO <sub>2</sub> %	SiO <sub>2</sub> %	LOI%	V <sub>2</sub> O <sub>5</sub> production kt	Ore Reserve	Mt
Proved	10.5	1.11	61.6	12.8	9.5	3.7	70.9	Waste	238.5
Probable	20.4	1.07	63.4	12.2	9.2	3.0	152.9	Total Material	269.4
<b>Total Ore</b>	<b>30.9</b>	<b>1.09</b>	<b>62.8</b>	<b>12.4</b>	<b>9.3</b>	<b>3.2</b>	<b>223.8</b>	Strip Ratio	7.7

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## ASX CHAPTER 5 COMPLIANCE AND CAUTIONARY AND FORWARD-LOOKING STATEMENTS

### *ASX Listing Rules 5.19 and 5.23*

#### **ASX Listing Rule 5.19**

The information in this announcement relating to production targets, or forecast financial information derived from a production target, is extracted from the announcement entitled 'Bankable Feasibility Study for the Australian Vanadium Project' released to the ASX on 6<sup>th</sup> 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 announcement relating to exploration results and mineral resource and ore reserve estimates for the Australian Vanadium Project is extracted from the announcement entitled 'Bankable Feasibility Study for the Australian Vanadium Project' released to the ASX on 6<sup>th</sup> 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 release 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

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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 reflect the view of AVL only as of the date of this release.

The forward-looking statements made in this announcement relate only to events as of the date on which the statements are made.

AVL will not undertake any obligation to release publicly any revisions or updates to these forward-looking statements to reflect events, circumstances or unanticipated events occurring after the date of this announcement except as required by law or by any appropriate regulatory authority.