

# ASX Announcement

## AVL to test Neomet mineral recovery process

### AVL engages Sedgman for initial metal recovery testwork

#### Highlights:

- AVL engages with Sedgman for initial test work on near surface oxidised Gabanintha ore.
- Tests will evaluate selected materials from Gabanintha using the Neomet polymetallic low cost, high recovery proprietary hydrometallurgical process.
- AVL to send samples of selected Gabanintha mineralisation to Montreal to conduct the Neomet testing.

Australian Vanadium Limited (ASX:AVL, “the Company” or AVL”) is pleased to announce that it has engaged with Sedgman to undertake a review of the behaviour of certain mineralised materials from Gabanintha using the low cost, high polymetallic recovery proprietary hydrometallurgical Neomet process.

AVL will send sample materials to be initially tested through a standard Neomet bench scale testing facility in the Montreal laboratory. The initial tests will be conducted free-of-charge to AVL.

The proprietary process has demonstrated its ability to extract and recover over 95% of secondary metals at a commercial grade, with a metal purity of over 99.5%. The process enables the extraction of  $V_2O_5$ ,  $TiO_2$  and  $Fe_3O_2$  from TVM (titaniferous vanadiferous magnetite) ores such as Gabanintha. The process seeks to generate maximum value of in-situ metal credits

A unique closed HCl (Hydrochloric acid) leaching circuit for acid regeneration and reuse/recycle is used in the process.

Initial test work will focus on Gabanintha’s high-grade oxide ROM (run of mine) ore. Oxide TVM ores generally show lower magnetic recovery to concentrate than transitional or fresh ore and therefore are not as economic to process using a traditional salt-roast pyrometallurgical process. AVL is evaluating both traditional and non-traditional processing routes as it looks to maximise the value of its world class TVM resource at Gabanintha.

Conducting an initial testing round with Sedgman opens up an opportunity to extract metal credits from the whole of AVL’s 91.4 million tonne deposit at Gabanintha (see AVL ASX announcement 10 November 2015).

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#### ASX ANNOUNCEMENT

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#### Projects:

Gabanintha - Vanadium  
Blesberg, South Africa - Lithium/Tantalum  
Nowthanna Hill – Uranium/Vanadium



All studies AVL has undertaken to date have focused on magnetic concentration of its mineralised materials and the technically mature pyrometallurgical process. Pyrometallurgical processes are energy intensive, requiring ore to be roasted at ~850°C for 2 hours. Where possible, hydrometallurgical methods can be economically preferred substitutes in some situations, particularly when reagents such as acid can be efficiently recycled.

The near surface Gabanintha oxide ores can be accessed with a low stripping ratio in shallow open cut mining, relative to transitional and fresh ores which lie below them. The technology can combine low cost heap leaching with a closed HCl acid regeneration circuit for a high (V, Ti and Fe >95%) metal recovery.

Managing Director Vincent Algar commented, “When considering options for developing Gabanintha, we should have all options on the table. We already have demonstrated excellent concentrate recovery from our past work and new work is underway to improve that further. This initial Neomet test work will allow us to get visibility on potential recovery of other valuable metal credits.”

Sedgman’s expertise in metallurgy and minerals processing, working with the “Neomet” proprietary technology, has shown high recovery and high purity products can be obtained from complex TVM ores similar to Gabanintha.

For further information, please contact:

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### **About Sedgman**

Sedgman is a market leader in the design, construction and operation of mineral processing plants. With 35 years of experience, a full range of services is provided from testwork, feasibility studies, consulting, engineering design, procurement, project delivery and operations.

<http://sedgman.com/>

### **About Australian Vanadium Limited**

AVL is a diversified resource company with an integrated strategy with respect to energy storage, seeking to offer investors a unique exposure to all aspects of the vanadium value chain – from resource through to steel and energy storage opportunities as well as other energy storage metals exposure through the acquisition and evaluation of lithium/tantalum projects.

AVL is advancing the development of its 100%-owned, world-class Gabanintha vanadium project. The Gabanintha Vanadium Project is currently one of the highest-grade vanadium projects being advanced globally with existing Measured Resources of 7.0Mt at 1.09% grade V<sub>2</sub>O<sub>5</sub>, Indicated Resources of 17.8Mt at 0.68% grade V<sub>2</sub>O<sub>5</sub> and Inferred Resources of 66.7Mt at 0.83% grade V<sub>2</sub>O<sub>5</sub>, a total of 91.4Mt, grading 0.82% V<sub>2</sub>O<sub>5</sub> and containing a discrete high-grade zone of 56.8Mt, grading 1.0% V<sub>2</sub>O<sub>5</sub> reported in compliance with the JORC Code 2012 (see YRR ASX Announcement 10 November 2015).

AVL has developed a local production capacity for high-purity vanadium electrolyte, which forms a key component of vanadium redox flow batteries (VRB).

AVL, through its 100%-owned subsidiary VSUN Energy Pty Ltd, is actively marketing VRB in Australia through a distribution agreement with world-leading flow battery manufacturer, GILDEMEISTER Energy Storage GmbH.

As part of its broader energy metals focus, AVL has also commenced a staged acquisition of a controlling 50.03% interest in the Blesberg Lithium-Tantalum Project in South Africa (see ASX Announcement 21 December 2016).

### Competent Person Statement – Mineral Resource Estimation

The information relating to the Gabanintha Project 2015 Mineral Resource estimate reported in this announcement is based on information compiled by Mr John Tyrrell. Mr Tyrrell is a Member of The Australian Institute of Mining and Metallurgy (AusIMM) and a full time employee of AMC (AMC Consultants Pty Ltd). Mr Tyrrell has more than 25 years' experience in the field of Mineral Resource Estimation. He has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and in resource model development 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'. Mr. Tyrrell consents to the inclusion in the report of the matters based on the information made available to him, in the form and context in which it appears.

The information is extracted from the report entitled "Substantial high-grade vanadium resource highlights Gabanintha's world-class potential" released to ASX on 10 November 2015 and is available on the company website at [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, in the case of estimates of Mineral Resource or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant 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 has not been materially modified from the original market announcement.

### Appendix 1 - Gabanintha Project – Mineral Resource estimate using a 0.3% V<sub>2</sub>O<sub>5</sub> cutoff for low grade and 0.7% V<sub>2</sub>O<sub>5</sub> cutoff for high grade

(total numbers may not add up due to rounding)

Material	JORC Resource Class	Million Tonnes	In situ bulk density	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%
High grade	Measured	7.0	3.73	1.09	43	12	10	8	3.4
	Indicated	4.3	3.29	1.07	41	12	12	9	4.6
	Inferred	45.5	3.67	0.97	42	11	12	8	2.8
<b>Subtotal</b>		<b>56.8</b>	<b>3.65</b>	<b>1.00</b>	<b>42</b>	<b>11</b>	<b>12</b>	<b>8</b>	<b>3.0</b>
Low grade	Indicated	13.4	2.39	0.55	24	7	27	19	8.7
	Inferred	21.1	2.48	0.53	25	7	27	17	7.0
<b>Subtotal</b>		<b>34.6</b>	<b>2.45</b>	<b>0.53</b>	<b>25</b>	<b>7</b>	<b>27</b>	<b>18</b>	<b>7.6</b>
<b>Subtotal</b>	<b>Measured</b>	7.0	3.73	1.09	43	12	10	8	3.4
<b>Subtotal</b>	<b>Indicated</b>	17.8	2.61	0.68	28	8	23	16	7.7
<b>Subtotal</b>	<b>Inferred</b>	66.7	3.29	0.83	37	10	17	11	4.1
	<b>TOTAL</b>	<b>91.4</b>	<b>3.19</b>	<b>0.82</b>	<b>35</b>	<b>10</b>	<b>18</b>	<b>11</b>	<b>4.8</b>