ASX Announcement

Gabanintha Presents Robust Base Case for Pre-Feasibility Study

Strong project fundamentals support ongoing detailed Pre-Feasibility Study optimisation

Highlights:

- An initial vanadium production scenario has been developed for the Gabanintha Vanadium Project as part of the ongoing Pre-Feasibility Study (PFS). This base case demonstrates robust project fundamentals, competitive product costs and financials, with further optimisation potential.
- Opportunities exist to further reduce costs and increase revenue through mine optimisation and alternative processing strategies.
- Metallurgical test work is continuing to further define ore characteristics and vanadium recoveries.
- The PFS is proceeding on schedule which will allow AVL to move quickly into piloting and Definitive Feasibility Study upon completion.
- Detailed infill drilling on the inferred component of the current production scenario is complete, awaiting assay results.

Cautionary Statements

These results are based on a preliminary technical and economic study of the potential viability of developing an open pit mine and standalone vanadium plant to be constructed onsite at Australian Vanadium Limited's Gabanintha Vanadium Project. The study referred to in this announcement is based on low level technical and preliminary economic assessments and is insufficient to support estimation of ore reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the study will be realised. The results should not be considered a profit forecast or production forecast.

The production target referred to in this presentation is based on 43% Measured Resources, 20% Indicated Resources and 37% Inferred Resources for the life of mine. The mine plan comprises 100% of current global Measured resources, 96% of current global Indicated resources, and 11% of current global Inferred resources. The Company has concluded that it has reasonable grounds for disclosing a production target that includes a modest amount of Inferred material. However, there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Measured or Indicated Mineral Resources or that the production target or the economic assessment will be realised.

The study is based on the material assumptions described elsewhere in this announcement (table page 30-34). These include assumptions about availability of funding. While the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the study will be achieved. To achieve the potential mine development outcomes indicated in the study, additional funding will be required. Investors should note that there is no certainty that the Company will be able to raise funding when needed.

26 September 2018

ASX ANNOUNCEMENT

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Projects:

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

Cautionary Statements (Cont.)

However, the Company has concluded that it has a reasonable basis for providing the forward-looking statements included in this announcement and believes it has "reasonable basis" to expect it will be able to fund the development of the AVL Gabanintha Vanadium Project.

To achieve the range of outcomes indicated in this announcement, funding in the order of US$360 million will likely be required. Investors should note that there is no certainty that Australian Vanadium Limited will be able to raise the amount of funding required or when it will be needed. It is also possible that such funding may only be available on terms that dilute or otherwise affect the value of the Company's existing shares. It is also possible that Australian Vanadium Limited could pursue other strategies to provide alternative funding options. Given the uncertainties involved, investors should not make any investment decisions based solely on the results presented in this announcement.

Forward Looking Statements

Some of the statements contained in this report are forward looking statements. Forward looking statements include, but are not limited to, statements concerning estimates of tonnages, expected costs, statements relating to the continued advancement of Australian Vanadium Limited's projects and other statements that are not historical facts. When used in this report, and on other published information of Australian Vanadium Limited, the words such as 'aim', 'could', 'estimate', 'expect', 'intend', 'may', 'potential', 'should' and similar expressions are forward looking statements.

Although Australian Vanadium Limited believes that the expectations reflected in the forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that the actual results will be consistent with these forward-looking statements. Various factors could cause actual results to differ from these forward-looking statements including the potential that Australian Vanadium Limited's project may experience technical, geological, metallurgical and mechanical problems, changes in vanadium price and other risks not anticipated by Australian Vanadium Limited.

Australian Vanadium Limited is pleased to report this summary of the study in a fair and balanced way and believes that it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any mining of mineralised material, modifying factors, production targets and operating cost estimates. This announcement has been compiled by Australian Vanadium Limited from the information provided by the various contributors to the announcement.

Production Scenario Summary

- Planned vanadium pentoxide (V_2O_5) refinery at Gabanintha site with a production rate of approximately **22.5Mlb V_2O_5 (10,100t) per annum over an initial mine life of 17 years**, with potential to extend operations along strike for an additional 8km which could extend the mine life.

- Open pit mining and beneficiation operation producing approximately **900,000 tonnes per annum** at a planned grade of **1.39% V_2O_5** of magnetic concentrate.

- Average operating expenses estimated at **US$4.13/lb V_2O_5 equivalent** (±35%), competitive with the world's lowest quartile producers.

- Capital costs of approximately **US$360M** (±35%). This includes owner's costs, contingencies and gas pipeline investment.

- The Net Present Value (NPV) ranges between US$191 million and $2.37 billion dollars, depending on the pricing assumption. The NPV is estimated at **US$1.1B** using a Life of Mine V_2O_5 commodity price forecast of US$13/lb. At current V_2O_5 market prices of US$20/lb, project NPV is **US$2.4B**, highlighting the project's upside potential. At a US$8/lb V_2O_5 price, the NPV is US$191M, indicating a robust project. Other financial parameters are:

Price US$/lb V_2O_5	Year 1-5	$8/lb	$13/lb	$13/lb	$20/lb
	Year 6-17	$8/lb	$8/lb	$13/lb	$20/lb
$NPV_{8\%}$	US$M	**$191**	**$575**	**$1,099**	**$2,370**
IRR	%	**14.5%**	**33.6%**	**39.5%**	**69.8%**
Opex	US$/lb	**$4.28**	**$4.28**	**$4.28**	**$4.28**
Opex (V_2O_5 Equiv) [1.]	US$/lb	**$4.13**	**$4.13**	**$4.13**	**$4.13**
UDCF	US$M	**$705**	**$1,193**	**$2,386**	**$4,739**

1.Opex after base metals concentrate credits. See cost section, material assumptions table page 32.

- The current project scenario utilises 43% Measured resources, 20% Indicated resources, and 37% Inferred resources. The inferred resources are not a determining factor for project viability. See table 4, figure 4, table 5, and table 6 below.

Australian Vanadium Limited (ASX: AVL, "the Company" or "AVL") is pleased to announce an update to the ongoing pre-feasibility study (PFS) at its 100% owned Gabanintha vanadium deposit in Gabanintha, Western Australia. An initial base case has been developed and the results indicate robust economics based on an industry standard, low-risk method of beneficiation and refining.

The project is based on a proposed open pit mine; crushing, milling and beneficiation plant (CMB); and refining plant for final conversion and sale of high quality vanadium pentoxide (V_2O_5) for use in steel, specialty alloys and developing energy storage markets. The initial findings are encouraging and highlight AVL's potential to become a new low-cost vanadium producer. Options analysis is being undertaken as a normal component of the PFS with the target of confirming an optimised case to be taken into DFS at a later date . In parallel with the options work, capital costs are being developed to the required accuracy level of ±25%. This report contains an outline of material assumptions on pages 30-34.

Managing Director Vincent Algar comments, “Our intention with the ongoing feasibility study work is to understand and design a long-life, low-cost vanadium pentoxide and cobalt concentrate production facility. It is essential that all technical aspects are understood and the capital and operating costs minimised, given the cyclical nature of the vanadium markets. Achievement of this objective will contribute greatly to a robust business case which will allow continuity of operation across a range of business conditions.”

Introduction

The purpose of this announcement is to provide an update on progress of the PFS and outline activities going forward. AVL and its partners are committed to providing a well designed, low-cost, viable project. As part of this commitment, a high level of diligence has been taken to assure the PFS is well founded.

AVL’s team has many years of expertise in vanadium processing design and operation globally. We believe that this expertise is critical for the best project outcome. The base case has been developed and capital and operating costs determined at a ±35% level of accuracy..

The next steps in the PFS include designing and costing a number of options with the potential to improve project financial metrics. Once these options have been explored, the PFS will progress through to the establishment of a final operational design, where opex and capex will be estimated to within ±25%. Major equipment Requests for Quotation (RFQs) have been developed and are being issued wiith quotations expected in the following weeks. AVL advises that the final PFS is on schedule and on budget for completion in December 2018.

Key Outcomes of Base Case

All material assumptions used are included elsewhere in this announcement (pages 30-34). This information includes preliminary pit shells, estimated mining and production schedules and metallurgical testing relevant to vanadium and base metals processing and recovery. Capital costs were based on a process design criteria provided by technical experts within AVL and by external consultants, preliminary quotations and database costs and are considered to be at a ±35% level of estimation. Where possible, pricing for reagents was determined through supplier quotations. Labour rates were derived with the aid of an external human resource consultant. Mining costs, pit designs and mine scheduling were performed externally, based on parameters provided by AVL.

The study base case for the Gabanintha pre-feasibility study consists of:

- A vanadium pentoxide (V_2O_5) refinery at the Gabanintha site with an annual production rate of approximately 22.5 million pounds of V_2O_5 per annum (10,100tpa) with an initial mine life of 17 years based on existing Measured, Indicated and a portion of the Inferred Mineral Resources.

- Open pit mining and beneficiation operation producing an estimated 900,000t of magnetic concentrate at planned grade of 1.39% V_2O_5 and a low 1.5% SiO_2 content.
- Average mass yield from the concentrator is estimated at 62.1% for the life of mine. This is exceptionally high versus other current operating vanadium operations, allowing for a compact and effective crushing and milling operation.
- A base metals circuit will extract an estimated 1500 tpa sulphide concentrate containing Cobalt, Nickel, and Copper[1]. The project viablilty is not dependant on the mining and sale of base metals contained in the schedule.
- Base metal sales account for less than 2% of estimated overall gross revenues for the life of the project.
- Operating expenses are currently estimated at US$4.13/lb V_2O_5 equivalent[2] (±35%), assuring a low-cost operation that will be healthy throughout the vanadium business cycles.
- Intitial indicative capital costs of US$362M (±35%).
- The current project scenario utilises 43% Measured resources, 20% Indicated resources, and 37% Inferred resources. The inferred resources are not a determining factor for project viability. See table 4, figure 4, table 5, and table 6 below.

In Table 1 below, NPV and IRR are reported at various V_2O_5 pricing assumptions. Assuming a V_2O_5 price of US$13/lb, NPV is $1.1bn, with an IRR of 39.5%. At current market prices, NPV is $2.37bn. Using US$8.00/lb V_2O_5, the NPV of $191m highlights that the project is robust and offers returns even at conservative pricing assumptions. The project breaks even at a V_2O_5 price of $6.95/lb for the life of the project. Project sensitivities are shown in Figure 1 and 2 below.

Table 1 Key Financial Metrics For Base Case

Price US$/lb V_2O_5	Year 1-5	$8/lb	$13/lb	$13/lb	$20/lb
	Year 6-17	$8/lb	$8/lb	$13/lb	$20/lb
$NPV_{8\%}$	M US$	**$191**	**$575**	**$1,099**	**$2,370**
IRR	%	**14.5%**	**33.6%**	**39.5%**	**69.8%**
Opex	US$/lb	**$4.28**	**$4.28**	**$4.28**	**$4.28**
Opex (V_2O_5 Equiv) [2]	US$/lb	**$4.13**	**$4.13**	**$4.13**	**$4.13**
UDCF	M US$	**$705**	**$1,193**	**$2,386**	**$4,739**

[1] Bryah Resources Limited holds the rights to nickel, copper and gold recovered from any production, however AVL will benefit from this development in processing due to its 14% holding in Bryah (ASX: BYH).
[2] V_2O_5 equivalent pricing is determined by subtracting average base metal credits from average operating expenses through the life of mine.

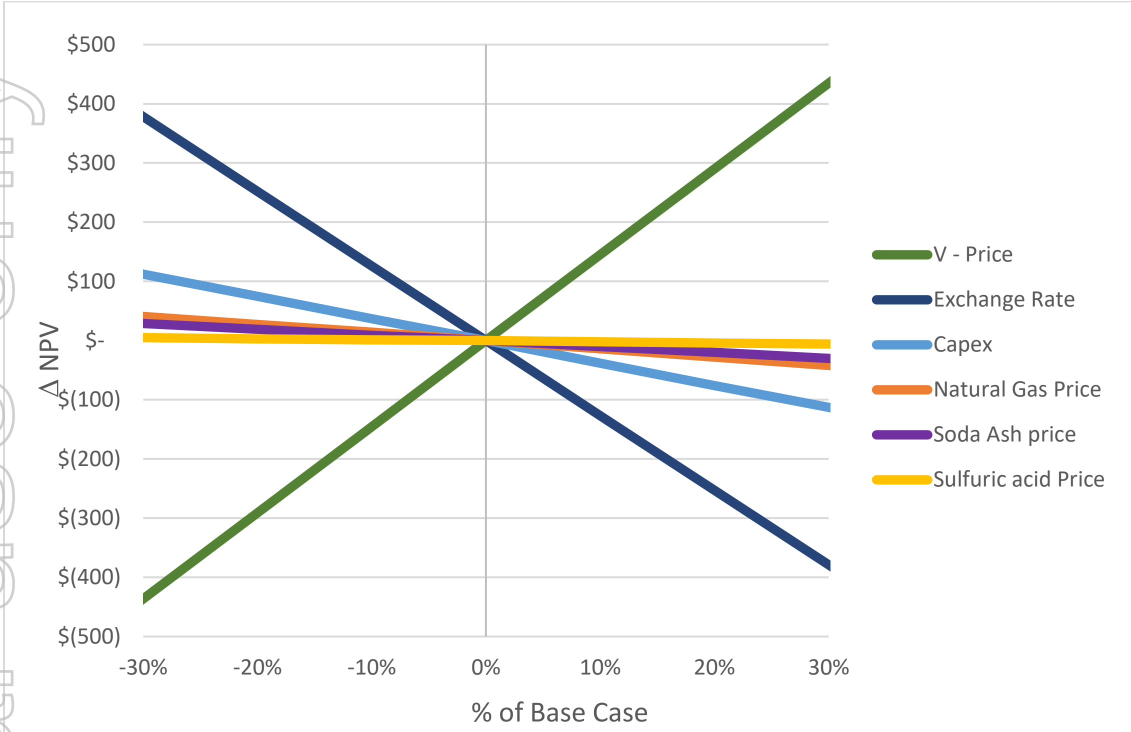

Figure 1 NPV Sensitivity Chart

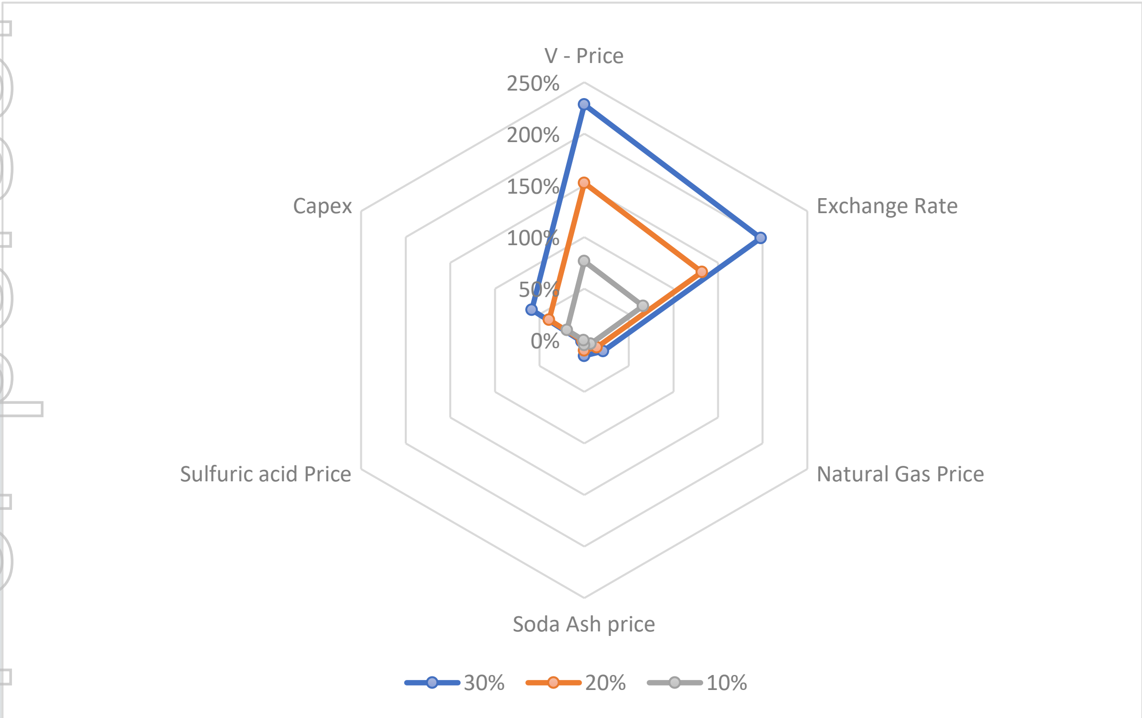

Figure 2 Sensitivity Spider Graph

Critical Factors

Material assumptions used in this report are outlined in the Material Assumptions Table on pages 30-34.

Vanadium Pricing Assumption

An indicative economic analysis of the Gabanintha vanadium project has been performed using current cost estimates at four pricing assumptions. A summary of the outcomes is presented in Table 1. Current Metals Bulletin (MB) published V_2O_5 pricing is US$20/lb. AVL believes that there is significant upside for vanadium pricing in the mid-term. However, it is the Company's view that a vanadium project must be economically viable in low priced market conditions. AVL has therefore used a price of US$8.00/lb for mine modeling and pit optimisation. The LMB 15 year mean price is US$8.30/lb. Figure 3 below shows the MB 15 year V_2O_5 pricing.

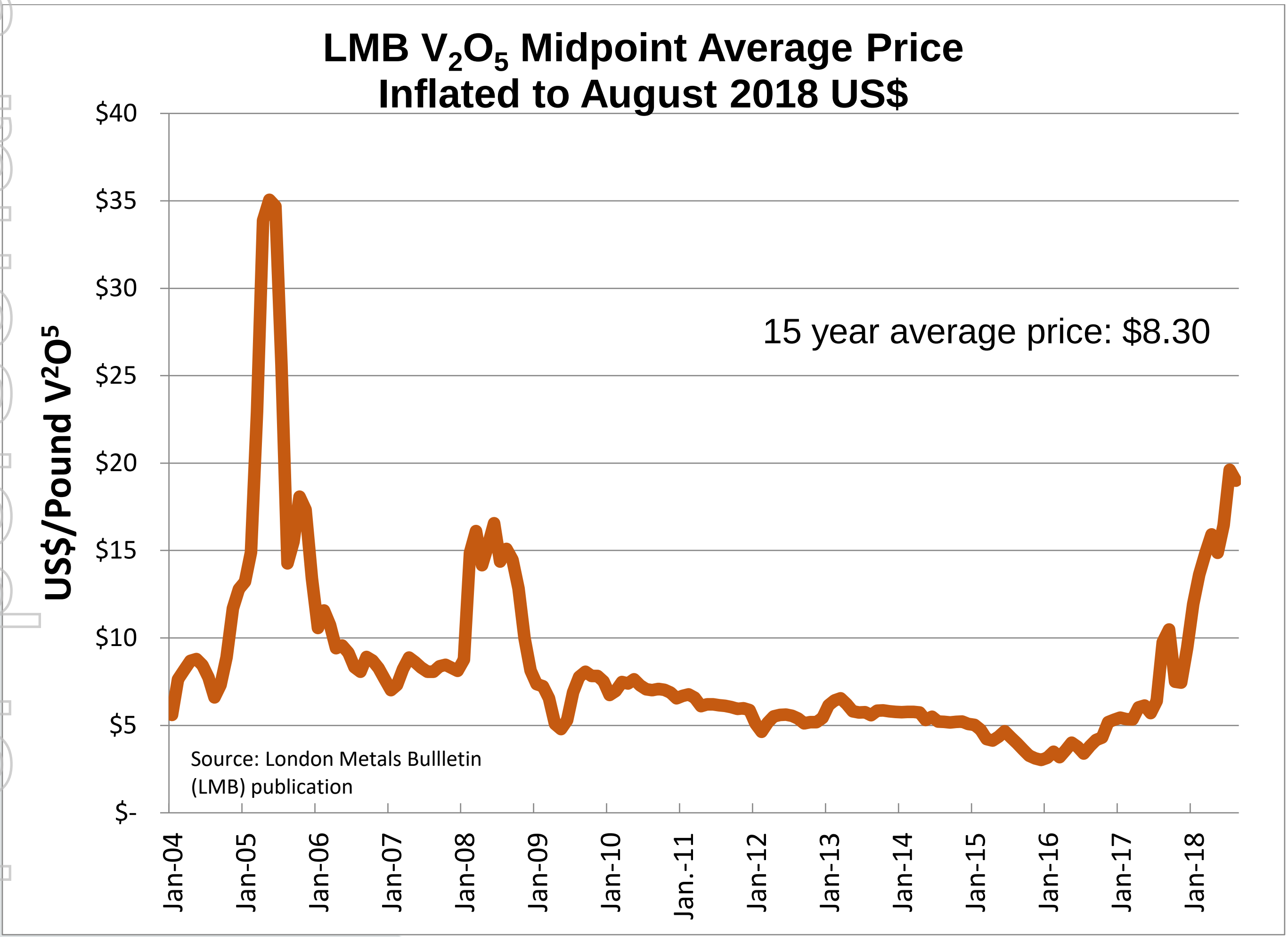

Figure 3 LMB V_2O_5 Midpoint Average Price

Vanadium Recovery from Oxidised Material

See Material Assumptions Table (pg 30-34), Metallurgical Factors section.

Vanadium bearing oxidised massive titaniferous magnetite occurs near surface along the entire length of the Gabanintha orebody. As such, this material will be mined early in the mine schedule. AVL has performed a limited number (6) of benchscale metallurgical tests on oxidised composite samples, for which both magnetic and gravity separation processes have demonstrated potential to upgrade vanadium. Small scale medium intensity (2600G) magnetic variability tests (122 of) have been undertaken on oxidised samples, mostly from the upper profile (within 30-40m of surface). The results indicate variation along strike in the degree and depth of oxidation and a general trend of increasing magnetic yield and improving concentrate quality with depth from surface.

For the interim, the weighted average magnetic vanadium recovery achieved in the variability tests (40% V_2O_5) has been applied to blocks from the upper well oxidised zone, as the basis of mine modelling. A more gradational averaging approach has been applied to estimate vanadium recovery from material in the transitional profile below using a correlation derived by reference to Satmagan[3] measurements. The estimated transitional zone vanadium recovery increases from 70% at the upper oxide boundary to 89% at the basal fresh rock interface.

Further variability testing is being planned to support a Definitive Feasibility Study (DFS), designed to better understand, characterise and predict the metallurgical performance of material within the weathered horizon. The Company believes that there is a significant opportunity to improve mining and milling economics once this comprehensive testing program is completed.

Gas and Reagent Pricing

See Material Assumptions Table (pg 30-34), Costs section.

Used both for power generation and heat for vanadium roasting, natural gas comprises 19% of the base case operating cost (opex). Likewise, the sodium reagent used for roasting accounts for another 12% of overall operating costs. Pricing estimates for natural gas are based on quotes for gas delivery to site from energy infrastructure providers; sodium roasting reagent pricing is based on market quotations. AVL believes that there is a potential to substitute lower cost sodium sources and work is underway to explore this as part of the ongoing options studies.

Refinery Flowsheet and Design Basis

See Material Assumptions Table (pg 30-34), Process Design Criteria section.

Metallurgical testing to date has focused on characterising material types and supporting a concentrator flowsheet. No testing of the refinery flowsheet, including the roast leach extraction and purification of vanadium, has been undertaken to date. As such, the refinery is assumed to follow a typical industry proven flowsheet path for which the engineers working on the study have applied benchmark design criteria from other similar projects.

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[3] SATMAGAN (Saturation Magnetic Analyser) is a laboratory method to determine the proportion of magnetic iron oxide (Fe_3O_4) present.

The first phase of benchscale roast and leach testing has been designed and will be applied to a fresh composite magnetic concentrate sample. Learnings from this testwork will be used to support the flowsheet and guide pilot testwork planning for a DFS.

Next Steps

Options Study, PFS Report timeline

Earlier in 2018, the Company began work with the selected consultants on the PFS for the Gabanintha Vanadium Project. The goal of the PFS is to define the most cost effective and lowest risk methods for the mining, milling and production of vanadium products. The overall project timing is on schedule for PFS delivery in December 2018. The Company will provide updates as the phases are progressed. The study is divided into three phases which are:

- Phase 1 – develop a mining and production base case using current metallurgical testwork results and proven processing technologies as a basis.
- Phase 2 – define, analyse and compare a series of options that can potentially lower overall project risk or improve the project financial metrics.
- Phase 3 – complete the PFS engineering and estimating to deliver a quality study that demonstrates the potential strong economic returns likely over the life of the project.

Early works in progress to scope and prepare the required inputs for a comprehensive DFS. On successful completion of all PFS phases, the Company will make a decision regarding progressing the project to completion of a DFS, funding requirements and advancing towards production at Gabanintha.

Project Background

This report describes the Mineral Resource estimation and economic analyses to a (±35%) level of accuracy for Gabanintha, which is located 740km northeast of Perth and 42km SSE of Meekatharra in the Murchison District, Western Australia. Gabanintha consists of 11 tenements covering 760 sq km. Gabanintha is held 100% by Australian Vanadium Limited, an Australian listed company. Mining Lease Application M51/878 is currently awaiting approval and covers about 70% of the mineral resource, with the balance of the inferred Mineral Resource located on E51/843, owned 100% by AVL.

The mineral deposit consists of a basal massive magnetite zone (10m - 15m in drilled thickness), containing greater than 0.8% V_2O_5, overlain by up to five lower grade mineralised magnetite banded gabbro units between 5 and 30m thick, separated by thin waste zones (<0.3% V_2O_5). Vanadium mineralisation is found in the basal massive magnetite horizon, as well as the lower grade banded magnetite gabbro horizons overlying the main high grade unit. (See typical cross section Figure 5).

The sequence is overlain in places by a lateritic domain, a transported domain (occasionally mineralised) and a thin barren surface cover domain. The deposit is affected by a number of regional scale faults which break the deposit into a series of kilometre scale blocks. The larger blocks show relatively little sign of internal deformation, with strong consistency in the layering being visible in drilling and over long distances between drillholes.

The resource model is based on information from 182 drillholes, (17 diamond, 165 reverse circulation) for 16,287m drilled by AVL (formerly Yellow Rock Resources Limited) between 2008, 2009 and 2015.

The internal AVL team has unique expertise in process design, start-up and operation of vanadium operations throughout the world. AVL has partnered with a similar team of outstanding professionals across multiple disciplines to assure that the Gabanintha Project Study is of the highest quality. The external team includes input and services from:

Wood Group PLC	Plant Design and Costing, Options Study and overall compilation of the PFS
Mike Woolery	Vanadium Process Design Consulting
Andre Breytenbach	Vanadium Process Design Consulting
Trepanier Pty Ltd	Geology and Resources
Croeser Pty Ltd	Pit Design, Optimisation, Mine Scheduling
Dempers & Seymour	Geotechnical Consulting
Umwelt	Environmental and Heritage Consulting
Geologica Pty Ltd	Geology and Resources
Biologic	Flora and Fauna Level 2 Surveys and Consulting
AQ2	Hydrogeology
Golder	Preliminary Tailings Location, TSF Design
Adaman	Energy and Logistics
Clean Energy Fuels	Energy Market Supply and Delivery
Just HR	Human Resources Planning
Bureau Veritas (BV)	Assaying, Mineralogy and Metallurgical Testing

Resource Estimate

See Material Assumptions Table (pg 30-34), Mineral Resource Estimate section.

The most recent Mineral Resource estimate completed and reported in compliance with the JORC Code 2012 was carried out by Trepanier Pty Ltd and Geologica Pty Ltd, resulting in the estimation of Measured, Indicated and Inferred Mineral Resources. All mineralised domains were constructed using geological information and considering a nominal cutoff for inclusion of above 0.4% V_2O_5 for the low-grade ore zones and above 0.7% V_2O_5 within the high-grade zone in the Mineral Resource estimate for a total resource of:

- 175.5 million tonnes at 0.77 % V_2O_5 containing 1,348,300 tonnes of V2O5;
- A discrete high-grade zone of 93.6 million tonnes at 1.00% V_2O_5 containing 936,000t V_2O_5;
- Discrete low-grade zones of 77.5 million tonnes at 0.50% V_2O_5 containing 384,000t V_2O_5.
- Combined Measured and Indicated Mineral Resources of 34.1 million tonnes at 0.77% V_2O_5 in low and high-grade domains containing 263,000t V_2O_5, suitable to underpin a long life, low-cost, high-grade feed, open-cut mining operation.

Table 2 summarises the results of the current Mineral Resource estimate by High-Grade (HG), Low-Grade domains (LG2-5) and Transported domains (Trans 6-8).

Table 2 Gabanintha Project - Mineral Resource estimate by domain and resource classification using a nominal 0.4% V_2O_5 wireframed cut-off for low grade and nominal 0.7% V_2O_5 wireframed cut-off for high grade (total numbers may not add up due to rounding)

Zone	Classification	Mt	V_2O_5 %	Fe %	TiO_2 %	SiO_2 %	Al_2O_3 %	LOI %
HG 10	Measured	10.1	1.11	42.7	12.6	10.3	8.0	4.0
	Indicated	4.9	1.09	43.3	12.1	10.5	7.8	3.7
	Inferred	78.6	0.98	42.4	11.2	11.4	7.6	3.4
	Sub-total	**93.6**	**1.00**	**42.5**	**11.4**	**11.3**	**7.6**	**3.5**
LG 2-5	Measured	-	-	-	-	-	-	-
	Indicated	19.1	0.51	23.9	7.0	27.8	18.1	8.7
	Inferred	58.5	0.49	25.5	6.7	27.5	16.5	7.4
	Sub-total	**77.5**	**0.50**	**25.1**	**6.8**	**27.5**	**16.9**	**7.7**
Transported 6-8	Measured	-	-	-	-	-	-	-
	Indicated	-	-	-	-	-	-	-
	Inferred	4.3	0.65	28.1	7.2	24.7	16.7	8.5
	Sub-total	**4.3**	**0.65**	**28.1**	**7.2**	**24.7**	**16.7**	**8.5**
Total	Measured	10.1	1.11	42.7	12.6	10.3	8.0	4.0
	Indicated	24.0	0.63	27.9	8.0	24.2	16.0	7.7
	Inferred	141.4	0.77	35.0	9.2	18.5	11.5	5.2
	Sub-total	**175.5**	**0.77**	**34.5**	**9.3**	**18.8**	**11.9**	**5.5**

Mineral Resource Estimation - Base Metals and Sulphur

See Material Assumptions Table (pg 30-34), Mineral Resource Estimate section.

On the 22nd May 2018 (*see AVL ASX announcement: Cobalt added to Vanadium at Gabanintha*), AVL announced the successful recovery of cobalt, nickel and copper in a sulphide concentrate at Gabanintha, adding another saleable battery metal opportunity. To evaluate the available sulphide hosted base metal content (cobalt, nickel and copper), the May 2018 resource model includes the estimation of these elements and sulphur in the fresh material as Inferred Resource material.

Table 3 below shows the sulphide hosted base metal material classified as Inferred Resources. The base metal sulphide mineral resource is potentially economically recoverable following metallurgical test work conducted by the Company. The base metal sulphide mineralisation has been found to consistently report to the non-magnetic fraction during the separation of the vanadium bearing magnetite, effectively delivering a sulphide by-product for further concentration by flotation.

Table 3 Mineral Resource for base metals and sulphur constrained to Domain 10 (high-grade vanadium domain) for Fault Block 20 fresh material

Zone	Classification	Mt	Co ppm	Ni ppm	Cu ppm	S %
High-grade Fault Block 20 Fresh material	Measured	9.3	187	598	236	0.06
	Indicated	4.5	186	614	219	0.11
	Inferred	7.1	193	657	237	0.08
	Total	**20.9**	**189**	**622**	**233**	**0.08**

Mining

See Material Assumptions Table (pg 30-34), Mining Assumptions section.

The initial Gabanintha open pit is planned to be 2,700 metres long, 380m wide and 220m deep. This layout suggests that the open pit design could be relatively efficient and access for mine scheduling should be better than average. The current estimated open pit life is 17 years. The pit designs contain approximately 22.7Mt of ore at an average grade of 1.05% V_2O_5 and is expected to be mined along with 144Mt of waste for an overall strip ratio of 6.3. The optimisation of the pit shells uses a base price of US$8/lb. The pit design on which the base case is considered contains 43% Measured Resources, 20% Indicated Resources and 37% Inferred Resources.

A preliminary mining schedule is shown in Table 6 below and illustrated in Figure 4 Below. The current schedule of extraction includes a large portion of Inferred Resources in years 4-7 inclusive. The Company is confident that it has reasonable grounds for relying on the inclusion of these Inferred Resources based on the following:

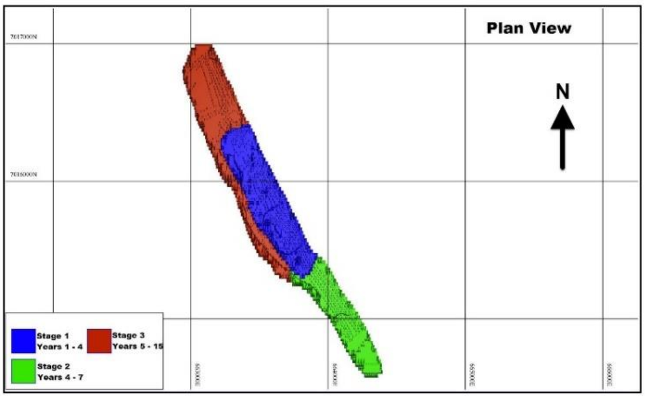
- The Inferred Mineral Resources to be mined in year 4-7 display similar characteristics to those mined in previous and subsequent years in the schedule.
- The selection of Inferred mineral resources in the current schedule is preliminary based on nested optimisation shells and can be shifted to later years.
- The Inferred Resources that constitute the proposed schedule in years 4-7 are currently the subject of an infill RC resource drilling program that is completed awaiting assay. The Company intends to utilise the new drilling information to update and upgrade the mineral resource estimate prior to completion of the PFS.

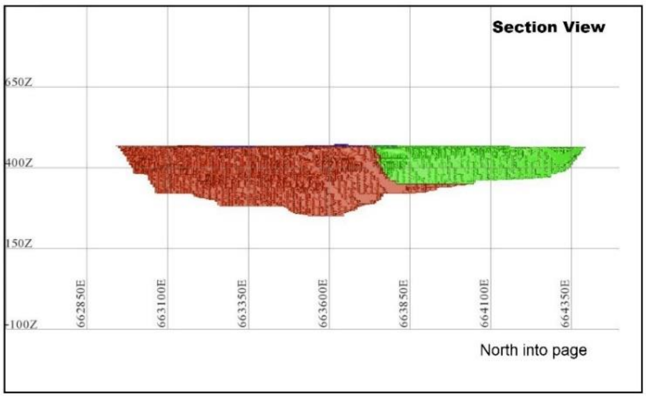
The current mining schedule was designed as a series of nested pits within the ultimate pit shell, mined in 100 metre north-south strips. As such, overall project measures of NPV and IRR are not significantly impacted if mining of Inferred resources were extracted later in the life of mine schedule.

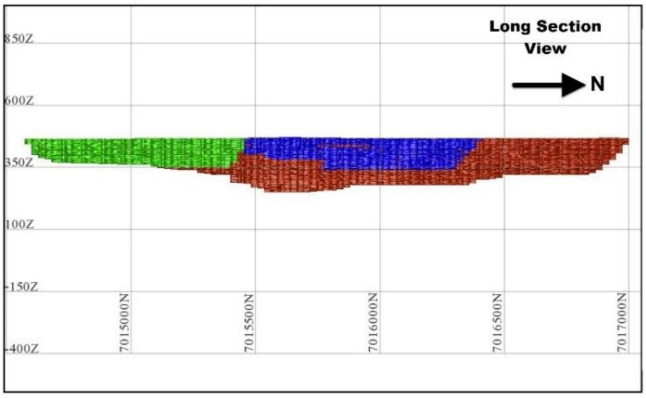
Given that there is a low level of geological confidence associated with Inferred Mineral Resources, there is a risk of lower vanadium content and/or recovery when mining these resources. For example, the impact of a 10% recovery loss across all Inferred Resources in this pit shell applied in year 7 would drop the NPV_8 from US$191 million to US$154 million, a difference of US$37 million. The IRR would fall from 14.5% to 13.4%.

The company is confident that financial impact of the inclusion of Inferred Resources in this model is acceptable and would have a minimal impact on the overall project economics.

Table 4 Preliminary Mine schedule annually by material type (annual material movements)







Stage	Material Type	Oxidation	Tonnes	V_2O_5 %
1	High Grade	Oxide	2,044,558	1.125
		Transitional	2,491,027	1.104
		Fresh	1,922,420	1.093
		All High Grade	6,458,005	1.107
	Low Grade*	All	13,119,005	0.525
	Waste	All	22,646,746	
2	High Grade	Oxide	856,534	1.013
		Transitional	2,203,798	1.014
		Fresh	1,044,293	1.026
		All High Grade	4,104,625	1.017
	Low Grade*	All	5,601,107	0.478
	Waste	All	18,565,830	
3	High Grade	Oxide	1,079,238	1.059
		Transitional	2,150,357	1.043
		Fresh	9,681,901	1.093
		All High Grade	12,911,496	1.082
	Low Grade*	All	19,837,531	0.486
	Waste	All	62,784,875	

Figure 4 Gabanintha Pit Design and Staging (years)

Pit Design

See Material Assumptions Table (pg 30-34), Mining Assumptions section.

A pit slope angle of 45 degrees in all directions and rock types was used as a conservative starting angle. A geotechnical study has been commenced and will be used to inform further pit optimisation and pit design work. This work includes televiewer data and modeling of the geotechnical data throughout the length of the optimum pit.

Mining costs used for the pit optimisation were based on benchmark mining costs derived from experience with three similar projects. Mining costs were coded into the resource block model based on the material and weathering codes. Mining factors used for the pit optimisation include 95% ore recovery and 5% dilution.

The average pit optimisation mining cost based on the benchmark mining costs is $3.50/tonne of rock mined. All pit optimisation runs were restricted to the domain code 10 (massive magnetite), the high grade ore zone, along three fault blocks noted as 17, 20 and 22. Optimisation considered Measured, Indicated and Inferred material in domain 10 as potential ore within the fault block contraints. The CMB operation is divided into two modes such that high base metal fresh ore is processed separately to allow for base metal recovery.

A summary of the mining schedule is provided in table 5 below. A detailed material schedule within the selected pit shell was used as the base for the pit stage designs and the final limits design. Table 6 summarizes the current mining schedule per year. It includes the ratio of materials by current resource classification.

Table 5 Mining Schedule Material Summary

Material Type	Ore Tonnes (Mt)	Con Tonnes (Mt)	V2O5 in Con (x1000t)	V2O5 prod (t)
Oxide	4.0	1.3	18.7	15,097
Transitional	6.8	4.3	60.3	48,588
Fresh-Low Sulfur	2.4	1.6	22.4	18,027
Fresh-High Sulfur	10.2	6.9	96.7	77,970
Total	**23.3**	**14.2**	**198.1**	**159,681**

Total Waste	144
W:O Ratio	6.2

Table 6 Detailed Mining Schedule by Resource Category

Ore Mined		Total	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11	Yr 12	Yr 13	Yr 14	Yr 15
Measured	million tons	**10.1**	1.4	2.2	2.0	0.5	0.0	0.0	0.3	0.7	1.0	1.2	0.6	0.2	0.0	0.0	0.0
Indicated	million tons	**4.7**	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.3	0.5	1.2	0.9	0.6	0.3	0.0
Inferred	million tons	**8.5**	0.0	0.0	0.0	0.8	1.3	1.0	0.8	0.2	0.2	0.2	0.7	0.8	1.2	0.8	0.5
Total	**million tonnes**	**23.3**	**1.36**	**2.30**	**2.19**	**1.39**	**1.44**	**1.10**	**1.15**	**1.10**	**1.47**	**1.93**	**2.48**	**1.96**	**1.84**	**1.06**	**0.52**
Measured	%	**43.3**	100.0	94.9	90.5	39.1	0.5	2.6	28.2	62.6	66.2	62.6	23.2	10.5	0.6	0.0	0.0
Indicated	%	**20.2**	0.0	5.1	9.5	5.8	9.6	3.0	4.3	18.1	18.8	28.4	49.5	47.2	32.3	25.8	7.5
Inferred	%	**36.5**	0.0	0.0	0.0	55.2	89.9	94.5	67.4	19.3	15.1	8.9	27.3	42.3	67.1	74.2	92.5
Total	**%**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The following guidelines were used in the pit design process:

- Hanging wall batter slope angles of 75 degrees with a 5 metre berm every 20m from the base of the pit to 440 mRL.
- From 440 mRL batter slope angles of 60 degrees with a 5 metre berm every 20m.
- Foot wall batter slope angles of 60 degrees with a 5 metre berm every 20m from the base of the pit all the way to surface.
- All ramp gradients are 1 in 10 or 10%.

- From surface to the 380 mRL the ramp width is 24 metres, comfortable two way traffic for 90 tonne dump trucks.
- From the 380 mRL to the 300 mRL the ramp is 22m wide which is still wide enough for two way traffic.
- From the 300 mRL to 280 mRL the ramp is 18m wide which is one way only.
- From the 280 mRL to 250 mRL the ramp is 15m wide.

Geotechnical work

See Material Assumptions Table (pg 30-34), Mining Assumptions section.

Geotechnical logging and televiewer data were collected in 2015 from nine diamond drill holes upon completion of a drilling program. In 2018 a preliminary report by geotechnical consultants Dempers and Seymour (D&S) provided a high-level review and provided recommendations for work to be completed as part of the PFS. The aim of the increased geotechnical knowledge is to ensure safe and low-risk pit design and extraction throughout mine development.

Stage 1 of the geotechnical work for the PFS has been completed. This included:

- Compilation and validation of geotechnical drill hole logs.
- Creation of a 3D Mining Rock Mass Model (MRMM) of relevant rock mass parameters and ratings.
- Determination of preliminary pit slope angles suitable for pit optimisation studies to be undertaken by AVL.

The raw data used for this project consisted of nine drillholes logged by AVL and validated by D&S. The compiled database was then used to construct the MRMM. In total, the database consists of 1,007m of geotechnical data covering the project area. The block models were validated against the raw data visually in section and plan.

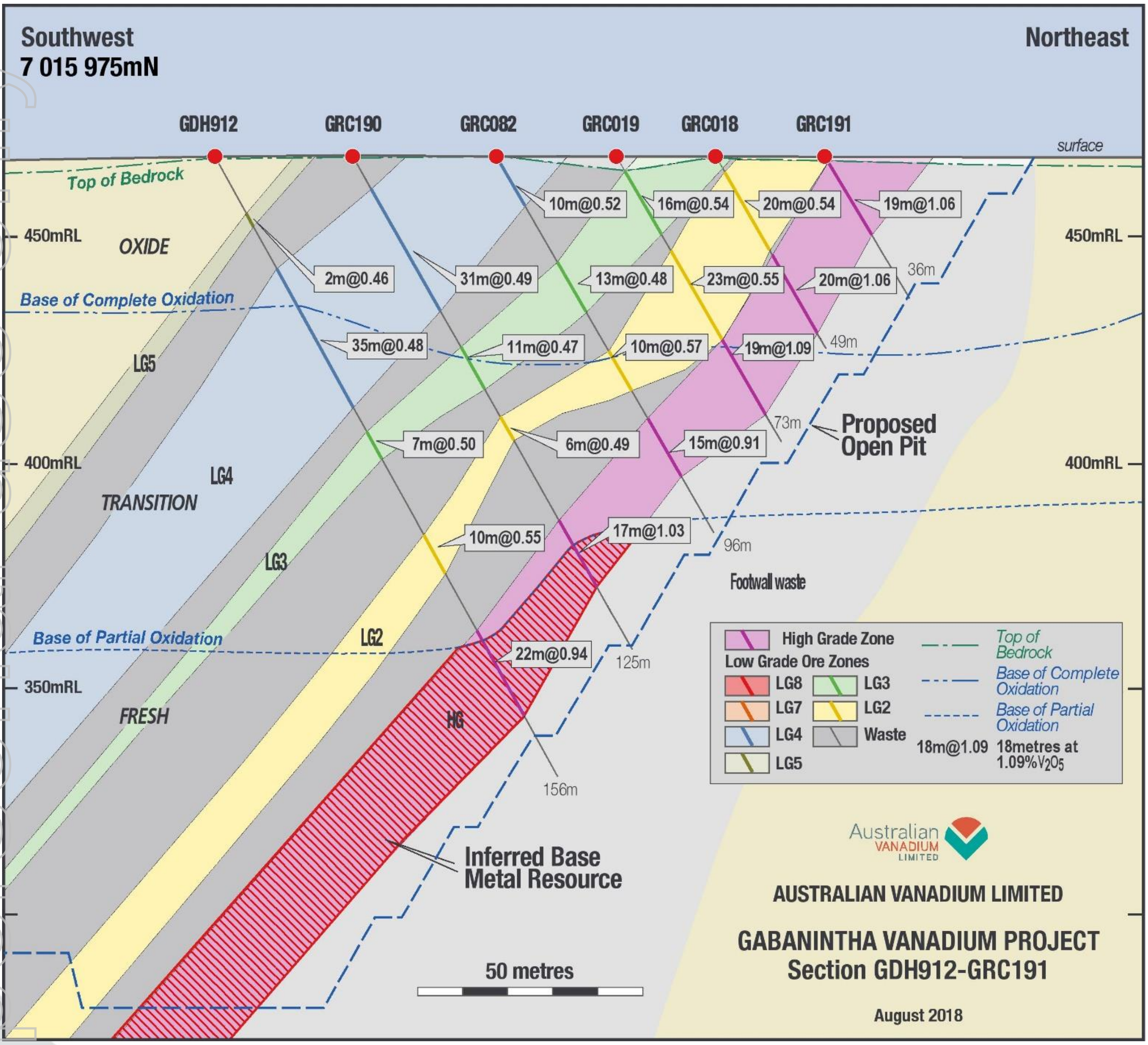


Figure 5 Proposed Open Pit Cross Section showing Footwall

Based on the MRMM, the inter ramp slope angles given in Table 7 are recommended.

Table 7 Recommended Pit Inter Ramp Slope Angles

DOMAIN	MATERIAL	IR SLOPE
NW	Weathered	38
	Fresh	52
NE	Weathered	36
	Fresh	52
SE	Weathered	42
	Fresh	48
SW	Weathered	42
	Fresh	52

The base case pit was designed on the assumption of 45% in all directions and rock types. This geotechnical information will be incorporated into the ultimate design for the final PFS. Core logging of existing and new drilling will also be undertaken in the next phase of the PFS to firm up the geotechnical model.

Metallurgy

See Material Assumptions Table (pg 30-34), Metallurgical Factors section.

Introduction

A significant body of metallurgical testwork has been undertaken on the project over the past 3 years. Test work commenced in 2015 with RC drill sample material (*see AVL ASX announcement: 7 December 2015*) and continued with work on diamond drill core samples in 2017/2018 (*see AVL ASX announcements: 20 February 2018, 24 April 2018, 22 May 2018 and 5 July 2018*).

The first phase of metallurgical investigation focused on testing the response of a range of material types (LG-Ox, HG-Ox, LG-Tr, HG-Tr, LG-Fr and HG-Fr)[4] to beneficiation techniques such as particle sizing classification, magnetic separation, shaking table and heavy liquid separation. For some of the testwork, grind size variation (P_{80} = 75, 212 and 500 microns) was also investigated. The initial benchscale testing highlighted that high-grade massive titano-magnetite material was amenable to magnetic separation. These learnings were applied to the second testwork campaign conducted in 2017/18 on diamond core samples of the massive iron mineralisation (HG zone). This more detailed program included benchscale comminution, magnetic separation and sulphide flotation testwork. A composite magnetic concentrate sample has been prepared from this work and is currently undergoing benchscale roast and leach testwork.

Sampling

The recent metallurgical testwork was based on 24 massive titano-magnetite samples derived from contiguous intervals of Gabanintha diamond drill core. The metallurgical samples were selected at discrete intervals within 10 diamond drill holes. Depth of samples ranged from 14m from surface to 187m below surface across 915m of Northing, thereby representing a significant portion of the current Measured and Indicated Resource area. The sampling specifically considered the distinction of material types within the massive titano-magnetite.

Comminution

Benchscale comminution tests were carried out to establish rock competency, grinding energy demand and wear characteristics to support design criteria for the concentrator flowsheet. Five samples of each material type were each individually subject to SMC Testing, Bond abrasion index (Ai) and Bond ball mill work index (BWi) testing. Results from these tests are summarised below and in Table 6.

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[4] LG – Low Grade, HG – High Grade, Ox – Oxide, Tr – Transitional, Fr - Fresh

- The Bond ball mill indices and rock competency as measured by SMC tests indicates a moderate and relatively consistent comminution energy demand regardless of oxidation zone. This characteristic, augers well for achieving a capital efficient comminution design and maintaining a relatively uniform mill power draw when changing between feed types.
- Abrasion index testwork indicates low to average wear rates can be expected for mill media and wear components within the comminution circuit.
- Collectively the benchscale comminution properties and high specific gravity indicate suitability to an AG or SAG primary milling circuit.

Table 8 Average comminution properties by material type

Material Type	SCSE [kWh/t]	S.G	Ai	BWi [kWh/t]
Fresh (5 samples)	7.66	3.88	0.28	17.58
Transitional (5 samples)	6.48	3.37	0.17	14.48
Oxide (5 samples)	6.40	3.65	0.12	17.44

Beneficiation

See Material Assumptions Table (pg 30-34), Metallurgical Factors section.

Magnetic Separation

Gabanintha's massive fresh titano-magnetite zone exhibits extremely well developed coarse crystalline igneous textures. The majority of vanadium hosted in massive magnetite can be recovered using magnetic separation. To facilitate a preliminary design of the concentrator flowsheet, beneficiation testwork was performed to quantify sample separation characteristics. Grinding to P_{80} 106 microns and magnetically separating the 24 test samples showed average metallurgical vanadium recoveries of 92.3%, 87.8% and 45.3% for fresh, transitional and oxide samples respectively. A summary of testwork results is shown in Table 9 below.

Table 9 Weighted average magnetic separation characteristics by material type

Material Type	Stream	Fe [%]	SiO_2 [%]	Al_2O_3 [%]	V_2O_5 [%]	V_2O_5 Recovery
Fresh	Calc.Head Grade	47.65	7.27	5.67	1.13	
(10 Samples)	**Mag Con Grade**	**57.28**	**0.55**	**2.27**	**1.42**	**92%**
Transitional	Calc. Head Grade	41.86	11.16	7.64	1.13	
(9 Samples)	**Mag Con Grade**	**52.32**	**1.68**	**3.18**	**1.45**	**88%**
Oxide	Calc. Head Grade	47.04	6.13	6.41	1.23	
(5 Samples)	**Mag Con Grade**	**52.68**	**1.70**	**3.28**	**1.38**	**45%**

Low silica and alumina concentrate grades have been demonstrated in all oxidation zones with V_2O_5 grades approximately 1.4%. The fresh concentrates are consistently clean with potential to blend out higher silica and alumina in the transitional and oxide concentrates.

The metallurgical and mineralogical investigations to date indicate a reasonable potential to improve the vanadium recovery from oxide material and this aspect provides a value improvement initiative for a DFS.

Sulphide Flotation

Sulphide minerals have been identified within interstitial silicates of the fresh massive titano-magnetite. Upon grinding and magnetically separating samples of fresh material, the majority of contained silicates report to the non-magnetic fraction. The process of magnetically upgrading the vanadium therefore acts as a means to upgrade sulphides in the non-magnetic stream.

Preliminary benchscale flotation tests on samples of the non-magnetic tails have demonstrated potential to recover a sulphide concentrate potentially payable in cobalt, nickel and copper. The upgrade and concentrate quality are indicated to be more pronounced with higher grade vanadium feed material. The success of the flotation work to date has motivated the addition of a sulphide recovery circuit to the concentrator flowsheet.

Results from the sulphide recovery testwork are outlined in Table 10 below:

Table 10 Sulphide recovery testwork – Magnetic separation and flotation test data

Magnetic Separation Ref.	**Sample ID**		
	2 Fr	**7 Fr**	**Bulk Composite**
Feed Grades[5]			
V_2O_5 %	1.34	1.23	1.09
S %	0.19	0.23	0.17
Co ppm	240	260	210

[5] *Feed and non-magnetic stream grades are calculated based on measurements of the downstream product streams*

Ni ppm	940	1020	740
Cu ppm	230	280	180
Magnetic Stream V_2O_5 Grade (%)	**1.44**	**1.37**	**1.36**
Non Magnetic Stream Mass Recovery (%)	10.2	12.5	25.7
Non Magnetic Stream Grades[5] (%)			
S	1.63	1.58	0.68
Co	0.13	0.13	0.05
Ni	0.18	0.21	0.09
Cu	0.07	0.10	0.04
Flotation Test Reference	**2 Fr 4113/2**	**7 Fr 4113/3**	**BC 4113/2**
Flotation Concentrate 1 Grades (%)			
S	26.5	31.0	31.5
Co	1.71	2.02	1.54
Ni	1.61	2.58	1.36
Cu	0.82	1.70	0.94
Total Base Metals in Cleaner Concentrate 1 (%)	**4.14**	**6.30**	**3.84**

Process Flowsheet

See Material Assumptions Table (pg 30-34), Process Design Criteria section.

The PFS is being developed based on a concentrator and refinery processing facility located at the Gabanintha site. The preliminary design is based on a 1.45 Mtpa concentrator capacity generating 0.90 Mtpa of magnetic concentrate to feed the refinery. The concentrator allows for campaign treatment of higher grade base metals feed for concurrent recovery of a base metals sulphide concentrate.

High level flowsheet schematics for each are illustrated in Figures 6 and 7.

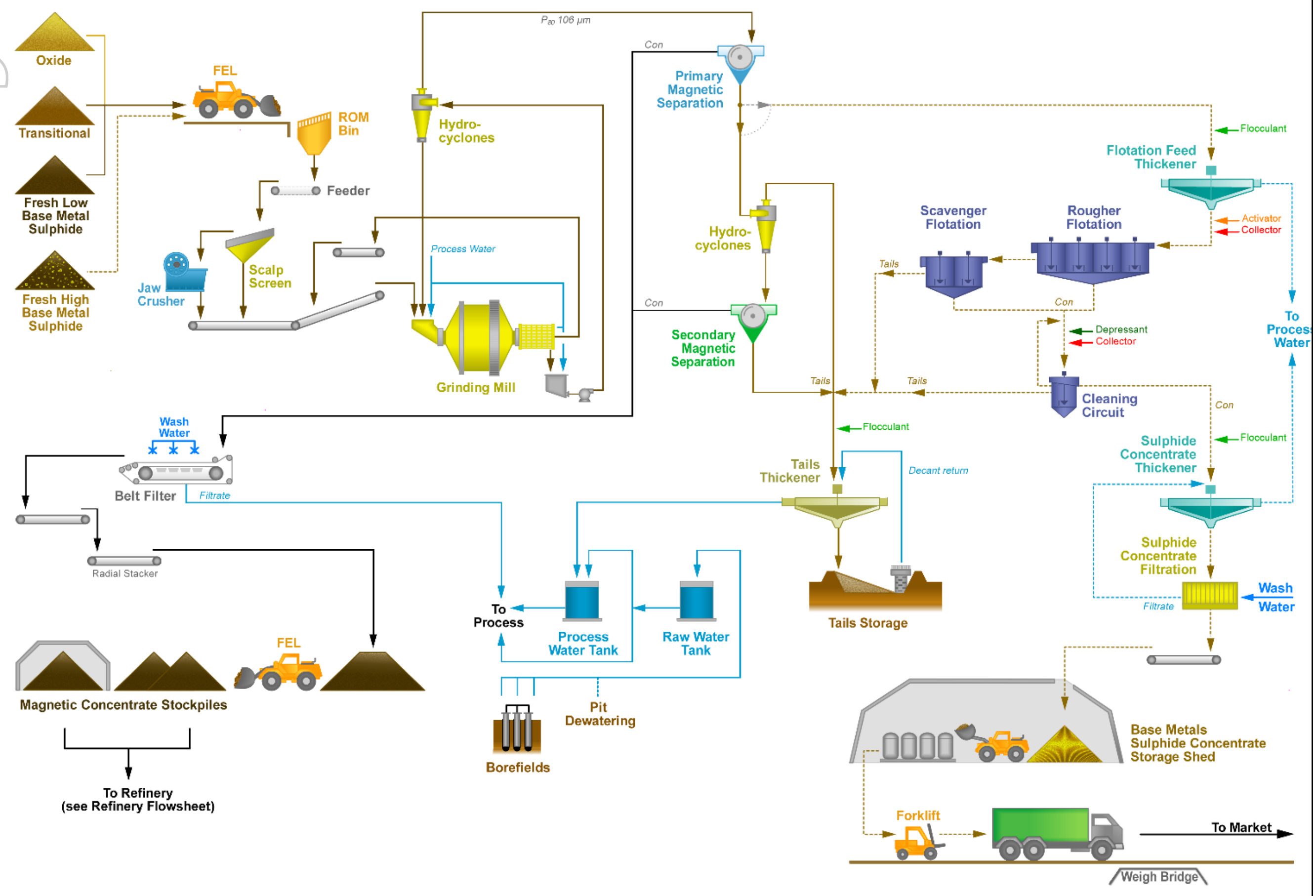

Figure 6 Concentrator Flowsheet Schematic

The concentrator flowsheet includes a 180 t/h crushing, milling, and beneficiation (CMB) circuit based on comminution testwork outlined in the metallurgical section above. The circuit is comprised of a primary jaw crusher followed by a single stage mill in closed circuit with hydroclones. The design is based on a grind size P_{80} of 106 µm. Vanadium is upgraded via magnetic separation and de-sliming cyclones to produce a concentrate which is filtered and stacked. Tailings from the circuit are pumped to a dedicated tails storage facility.

The CMB circuit design and operating strategy allows campaigning of either a blended oxide, transistional, and fresh feed or a fresh high sulphide feed. During the high sulphide campaigns, non-magnetic tails from the magnetic separation circuit will be fed to flotation to produce a base metal sulphide concentrate for direct sale.

Magnetic concentrate is blend controlled to target a 1.4% V_2O_5 and 1.5% SiO_2 feed to the refinery circuit.

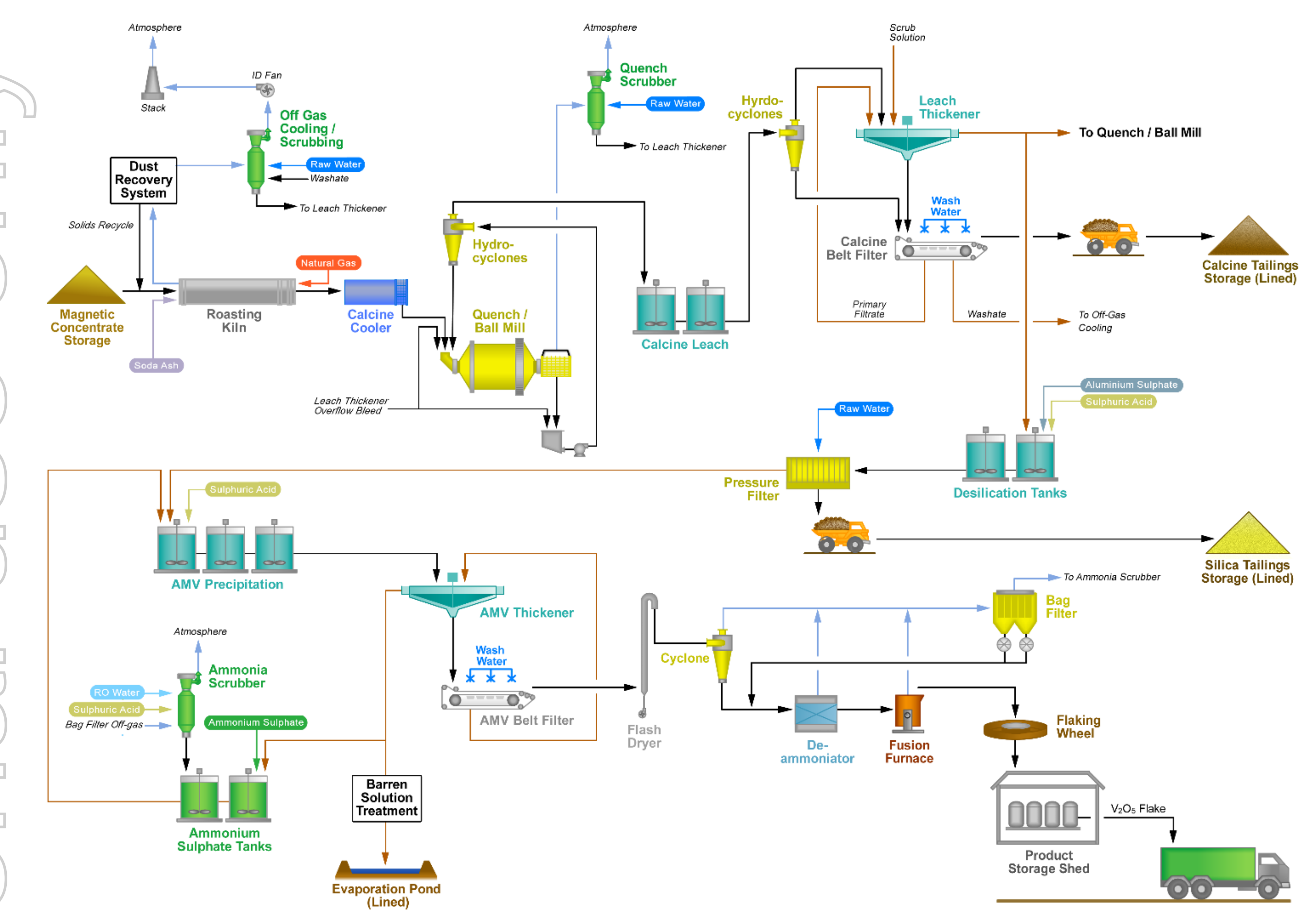

Figure 7 Refinery Flowsheet Schematic

The refinery flowsheet is based on an industry standard processing route to generate approximately 22.5M pounds per annum of V_2O_5.

The magnetic concentrate is roasted with a sodium carbonate salt to convert vanadium to a water soluble form. Calcine from the cooling kiln is quenched, leached and filtered to discard a solid iron and titanium rich tailings. Filtrate enriched in vanadium undergoes a desilication process to reduce silica and alumina, followed by ammonium vanadate (AMV) precipitation. Filtered solid ammonium vanadate is dried in a flash drier, heated to recover ammonia and fused to form the V_2O_5 flake product. The base case includes bagging of the flake, transport and international sales of containerised product via the port of Fremantle.

The roasting kiln is sized for a nominal feed rate of 120 dry tonnes per hour. Natural gas is assumed to be the fuel source for both process heating and electrical power generation.

Off gas from the roasting process is cleaned and wet scrubbed before release to the atmosphere. All tails from the refinery flowsheet (calcine, desilication cake and the barren solution bleed stream) are proposed to be stored in lined facilities. Provision for a barren solution treatment circuit has been allowed for and will be confirmed with testwork.

Project Infrastructure

See Material Assumptions Table (pg 30-34), Capital Costs section.

The Gabanintha project location is remote and will require infrastructure to be built to support the mining and process operations (see Figure 8). The base case has provided capital and operating costs based on the infrastructure typical of nearby mines. This includes:

Power

A standalone island power station fired by natural gas will be built. The base case assumes the power station will be managed under a build, own, operate (BOO) contract but the PFS is reviewing all options.

Borefields

Water will be sourced from suitable bores located within the AVL mineral tenements. Work is underway to identify and test these locations.

Camp

A permanent accommodation village will be constructed at a suitable location, sufficient to support the operations team. The facilities will include messing and recreational facilities typical for remote facilities. Workers will be bused from Meekatharra airport and options to house some workers in the local community will be considered in future phases.

Roads

The Gabanintha operations will require significant supplies delivered by road and a purpose-built access road will be constructed to ensure ease of access to the mine site. The route and cost of this will be further developed in the PFS.

Other infrastructure

Allowances have been included for administration and storage buildings, mine and plant workshops, communications, emergency power, security, waste and refuse management.

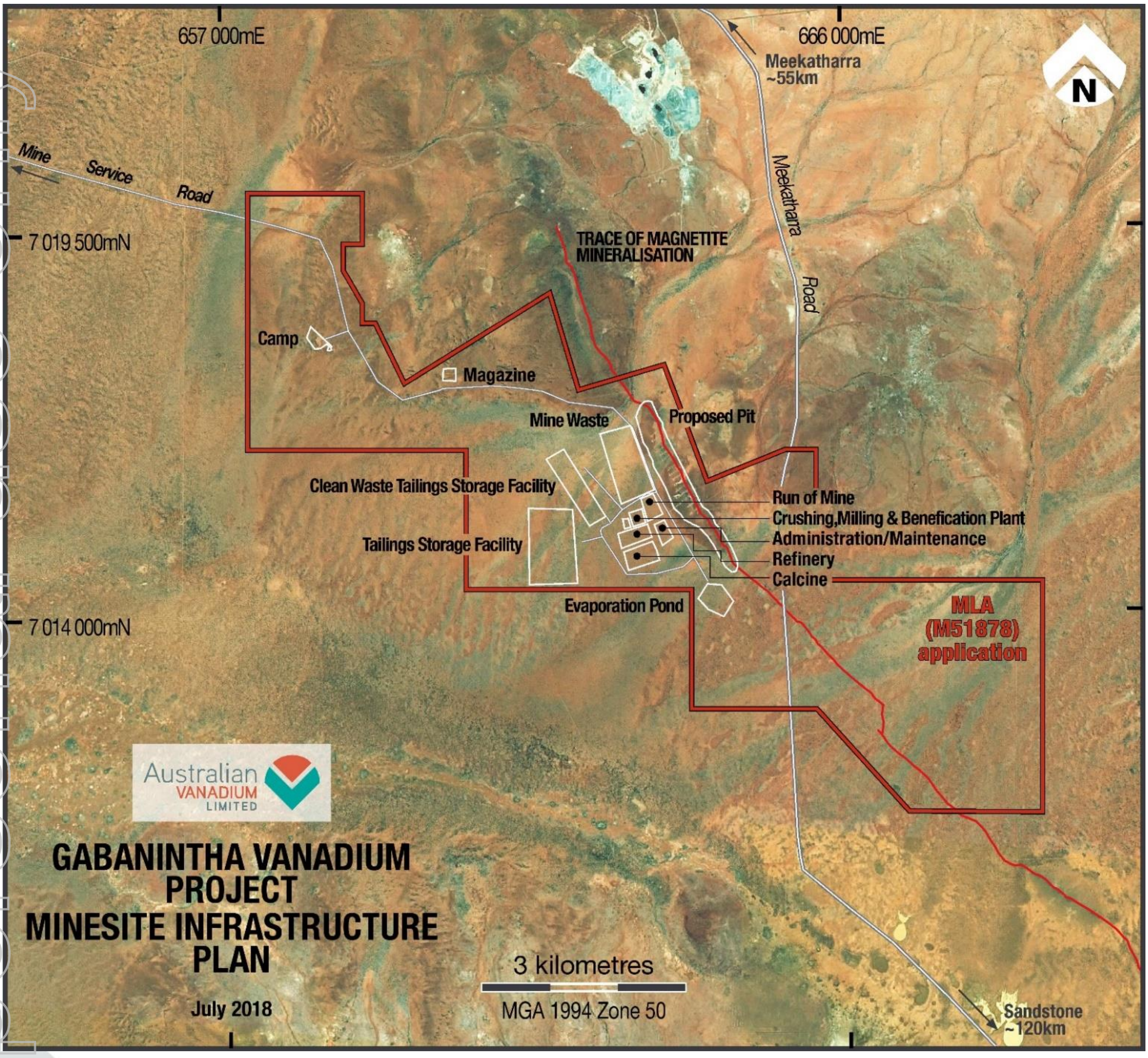

Figure 8 Infrastructure Location Diagram (Initial Proposed) Gabanintha Project

Tailings Storage Facility

AVL engaged Golder Associates (Golder) to undertake a design of the CMB plant tailings storage facility (TSF). The design assumes conventional wet tailings at 53% solids by mass, with an average deposition rate of 550,000tpa. Gabanintha mine waste rock will be the major material of construction for the TSF embankment walls.

The proposed TSF comprises two adjacent square cells, each with initial internal dimensions of approximately 400 m by 400 m (18 ha), as shown in Figure 9. Cell 1 will be constructed first with capacity to store the first year of tailings production. Cell 2 will be constructed during the first year of operation, in preparation to receive tailings in year 2. Thereafter, tailings deposition will rotate between the two cells over the remaining life of the TSF. A decant tower will be constructed in the centre of each cell utilising a rockfill filter to return water at an average annual rate of 170,000 m^3. There is currently no requirement for the TSF to be lined. The cost estimate for the conceptual design is summarised in Table 11 below.

Next steps include a site visit conducted by Golder, geochemical investigations and value engineering trade-offs.

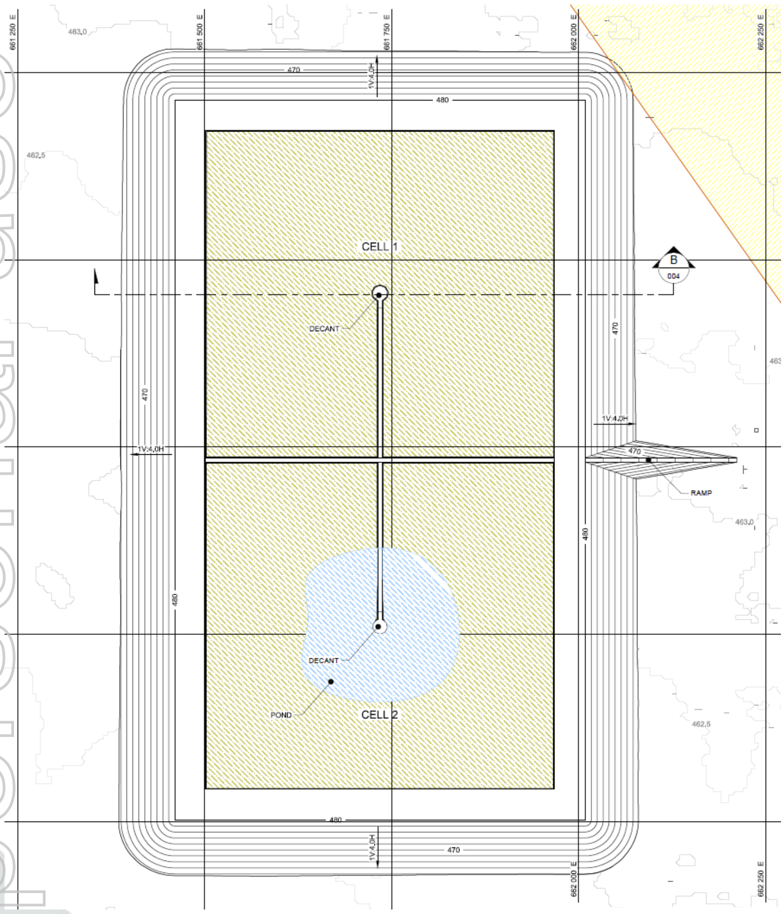

Figure 9 Tailings Storage Facility Plan (not to scale)

Table 11 Conceptual TSF Cost Estimate

Type	Initial Construction (Year -1)	Operations (Year 1-17)[6]	Reclamation (Year 18)
Total Capital Cost	$1,700,000	$1,700,000	$4,30,000
Total Sustaining Capital and Operating Cost	-	$36,500,000	-

6 Capital costs incurred in Year 1, remaining sustaining capital and operating costs spread across Year 1 to 17.

Environmental and Heritage

See Material Assumptions Table (pg 30-34), Evironmental and Social sections.

Key environmental baseline studies have been undertaken for the Project, including two-season detailed ecological surveys. There were no conservation-significant flora or vertebrate fauna species detected in the proposed Project area. Locations of potential short-range endemic (SRE) terrestrial invertebrates will be avoided by selective placement of infrastructure.

Potential SRE subterranean fauna (troglofauna and stygofauna) were detected within the study area. If these species are determined to be restricted in distribution and if the Project will significantly impact on their known habitat, the Project will require assessment by the Environmental Protection Authority (EPA). The base case approvals timeline assumes this as a worst-case scenario. However, if it can be demonstrated that the Project is not likely to have a significant impact on SRE fauna, the timeframes for approval are likely to be drastically reduced. The forward work plan prioritises further studies to determine the potential distribution of these species and to quantify the possible impact from the Project. Similar projects have used habitat mapping to successfully demonstrate that potential SRE subterranean fauna were likely to occur outside of the zone of impact.

Three palaeochannels underlie the Project area. These may be potential sources of groundwater for mining, processing and domestic use. The forward work plan includes work to resolve the locations and quantities of groundwater abstraction and model the expected groundwater drawdown as a result of the Project.

A preliminary mine closure cost estimate has been prepared for the Project, based on the preliminary site layout plan.

There are no known Aboriginal heritage sites within the Project area. Negotiations are ongoing between AVL and the Yugunga-Nya Native Title Claimant Group to facilitate a mining agreement.

Economic Analysis

See Material Assumptions Table (pg 30-34), Costs, Market Assessment, and Economic sections.

An economic model has been developed to determine project financial viability. The model uses the most current information at the time of this release. Critical assumptions for the model were:

- AUD/USD exchange rate of $0.74
- 17 year straight line depreciation for capex based on the life of mine
- 8% cost of capital
- Owner's costs totalling US$43m, which includes owner's contingency and working capital

Project Sensitivity

The project is highly sensitive to price and the AUD/USD exchange rate while being relatively insensitive to natural gas, and soda ash pricing. A 10% increase in V-price has a US$145 million impact on NPV. Likewise, a 10% increase in the exchange rate impacts project NPV by US$126 million. A 10% change in Capex has a US$37 million impact, while natural gas and soda ash pricing has a US$14 million and US$9 million impact respectively.

Funding

The Company has funding in place to complete the PFS. This includes Cash at Bank of $4.4m at time of reporting. Budget estimates from major consultants of $1 million have been factored in for the September and December 2018 quarters and the Board is confident that sufficient funding is in place.

In the event of a positive PFS, the first funding stage will be to complete the DFS. Funding for pilot plant test work and intial stages of the DFS is expected to be provided by existing working capital and through funds raised by the exercise of listed options (AVLO, strike price 2c per share, ex 31 Dec 2018). These options are "in the money" and currently represent potential funds of $7.55m for the Company. Budget estimated for the completion of this phase are not yet completed.

The Board believes that there are strong "reasonable grounds" to assume that future funding will be available for the completion of the PFS, DFS, pilot studies and pre-production capital as envisaged in this announcement, on the following basis:

a) AVL's Board has a financing track record and experience in developing projects. Daniel Harris, Technical Director of the Company has over 40 years' corporate and operational experience in vanadium companies and operations. Mr Harris' most recently oversaw the closure and sale process of the Windimurra vanadium mine (subsidiary of Atlantic Limited), served as an interim Managing Director of Atlas Iron Limited and is Non-Executive Director of Paladin Ltd. Directors Vincent Algar and Leslie Ingraham have both been active in capital markets for over 10 years and have raised well over $50m each while managing junior resource companies.

b) AVL is confident that it can continue to increase the quantity and quality of the mineral resources at the Project, extending the mine life beyond what is contemplated in this study. Resource extension drilling is currently underway, with the intention of upgrading a section of Inferred resource to Indicated by infill drilling. Additional drilling will be conducted during the DFS to further extend the resource to the south. The Company holds a total of 11.5km of known Ti-V-Fe mineralisation (identified through drilling) and of this, 9.5km is located on the mining licence application M51/878. The Gabanintha Ti-V-Fe deposit has been well drilled along its length, sufficient to confirm continuity of mineralisation. The deposit has been drilled to depths of 300m below surface and mineralisation appears to continue at depth. The Project is located in the Meekatharra region of Western Australia. The region is well serviced by road infrastructure and has a long history of mining operations. Western Australia is considered one of the world's top mining jurisdictions and a low risk investment destination. Australia is home to significant sources of equity and debt capital and has very active resource focused capital markets.

c) The vanadium price is currently trading at greater than 10 year high prices of over US$19.59/lb V_2O_5 (V_2O_5 spot price source: Metal Bulletin). Long term pricing of US$8/lb

V_2O_5 is the approximate 15 year long term average of the traded vanadium pentoxide price averaged over European and Chinese markets (See Figure 3). The strong recent price increases are being driven in part by new demand for vanadium for use in steel products and more recently for use in vanadium redox flow battery technology, which is undergoing a rapid rise at the present time. This increase, beyond the long-term average price, is currently being driven by a number of factors:

i. Long term supply disruption (particularly from South Africa) after long low price and low demand periods;
ii. Changes to usage of vanadium in China rebar steel products;
iii. Limited or slow new mine production, and
iv. Chinese smelter environmental shutdowns.

The improvements to the market conditions and an encouraging future outlook for demand for vanadium products enhances the Company's view of securing successful funding for the project. The Company is also able to pursue other methods of value realisation to assist funding the project, such as a partial sale of the asset, long term offtake and joint venture arrangements.

d) AVL has been listed continuously since 2007. During that time the Company has held the Gabanintha asset, but the project has not always been the primary focus of the Company's activities. The Company successfully raised $13.5 million from listing until 2014. Since early 2014 and the commencement of the current energy storage boom, AVL has renewed its focus on Gabanintha and has raised additional capital between 2014 and 2018 totaling $15.3M to advance the asset. A total of 5 capital raisings on Gabanintha have been successfully completed at successively higher share prices since 2014. The Company has previously demonstrated and is confident in the ability of the Board and management to raise suitable amounts of equity from existing and new retail and institutional investors to fund the project requirements.

e) The strong production and economic outcomes delivered by the study are considered by the Board to be sufficiently robust to provide confidence in the Company's ability to fund pre-production capital through conventional debt and equity financing. The Company has been active in seeking out partners in key markets such as China. In June 2018 AVL announced that it had signed a Non-Binding Memorandum of Understanding (MOU) with the Win-Win Development Group (Win-Win), a private steel and alloy producer based in Chengdu, China. Win-Win is currently building a 5,000tpa vanadium carbon nitride (VCN) production line which requires approximately 7,000-8,000tpa of 98% V_2O_5. The first stage will require 2,000-3,000tpa and be operational in 2019 and the second stage is planned for the following year. Win-Win has a shareholding in an operating production line currently producing 2,400tpa of VCN products for existing steel companies.

The MOU focuses co-operation in the following areas;

i. Finance and investment in the Gabanintha Project
ii. Offtake and supply of vanadium products (specifically vanadium pentoxide - V_2O_5) to Win-Win related production facilities in China, and

iii. General collaboration on marketing of vanadium products inside China.

Win-Win Development Group was founded in April 2017 as a subsidiary of the Sichuan Zhongyi Liankong Group. It was created to integrate the steel market supply chain from raw materials to end products, finance, investments and other operations.

In August 2018 AVL and its 100% owned subsidiary VSUN Energy Pty Ltd, announced that they had signed Letters of Intent with German vanadium redox flow battery manufacturer SCHMID, to explore potential supply of vanadium pentoxide and/or electrolyte and to supply SCHMID's vanadium redox flow batteries to potential clients.

f) The Board of AVL is considering other suitable long term investors to enable:

i. access to institutional investors globally;
ii. access to debt funding relationships;
iii. provide additional human resources to maximise the value of the Company;
iv. help define and extend vanadium and cobalt resources at Gabanintha, and
v. develop long term business relationships.

Materials Assumptions Table

Criteria	Commentary
Mineral Resource Estimate	The most recent Mineral Resource estimate was declared on July 5, 2018. The estimate was prepared by a Competent Person in accordance with the JORC Code 2012. The Measured, Indicated and Inferred Mineral Resource estimate for the high-grade zone (HG10 in Table 2) is 93.6Mt at 1.00% V_2O_5 which includes 10Mt at 1.11% V_2O_5 in the Measured Resource category, 4.9Mt at 1.09% V_2O_5 in the Indicated Resource Category and 78.6Mt at 0.98% V_2O_5 in the Inferred Mineral Resource Category. The updated total Measured, Indicated and Inferred Mineral Resource is 175.5 million tonnes (Mt) at 0.77% V_2O_5 which includes a Measured and Indicated Mineral Resource of 34.1Mt at 0.77% V_2O_5. An Inferred base metal Mineral Resource has been defined at Gabanintha of 12.5Mt containing 202ppm Cobalt, 659ppm Nickel, 222ppm Copper and 0.14% Sulphur. The Inferred Mineral Resource is contained exclusively in the fresh massive high-grade magnetite zone (model zone HG10) in Fault Block 20 of the resource model. Approximately 43% of the total production target is in the Measured Resource category, 20% is Indicated Resource, and 37% is Inferred Resource through the life of mine. The mine plan comprises 100% of current global Measured resources, 96% of current global Indicated resources, and 11% of current global Inferred resources The magnetite bearing gabbro sequence hosting the mineralisation strikes 140°-150° and 45° to 65° to the south-west for 11.5km on 100% AVL controlled tenements. The mineral resource has been subdivided into three oxidisation states, oxide, transition and fresh. Each zone exhibits different material characteristics including density, magnetic recovery and hardness.
Study Status	The production target and financial information in this release are based on the Base Case with a ±35% confidence level. Phase 2 of the PFS, an in-depth options study, is now underway. Phase 3 of the PFS, development and costing of an optimised mining and processing facility will complete the PFS work to a ±25% confidence, will immediately follow phase 2.

Mining Assumptions and Factors`	The production target is 22.5 million pounds of refined V_2O_5 per annum, or 900,000 tonnes of magnetic concentrate per annum. This comprises 22.7 Mt of total ore of optimised pit design. Mining will consist of 22.8 million tonnes of ore and 144.3 million tonnes of waste. The mining design has been developed assuming conventional open pit mining methods with 3 excavators of 120 tonne nominal design capacity and a maximum of 11 dump trucks of 90 tonne capacity. Mining costs were based on benchmarks of similar projects and from experience with similar projects. Costs vary by bench and material type but average approximately $3.50/tonne of rock mined inclusive of drill and blast costs. Mining factors for pit optimisation include 95% ore recovery and 5% dilution. Recovery factors were applied to all material types in the pit optimisation. Pit slope angles of 45 degrees in all directions and rock types was used for pit design. For the purpose of modelling the sulphide plant, high sulphur ore was classified based on a calculated Cobalt (Co) concentrate grade of greater than 2.0%.
Cut-off Grades	Cut-off grades have been calculated as 0.36% V_2O_5 for oxide ore, 0.20% V_2O_5 for transitional and 0.22% V_2O_5 for fresh. This is based on the CMB plant costs and recoveries. Due to the grade distribution in the high-grade domain (10), which is the only resource model domain considered ore for the base case, these cut-off grades do not apply. The majority of the blocks in domain 10 have grades that are higher than these calculated cut-offs. Low grade domains are not considered for processing as ore in the base case.
Process Design Criteria	A conventional crushing, milling, and beneficiation (CMB) process has been proposed to produce magnetic concentrate. This concentrate is then further processed to produce vanadium oxide using a standard vanadium roast leach and purification circuit. A flotation plant is proposed for base metal concentration using non-magnetic tailings from fresh magnetite ore. The CMB and sulphide recovery circuit designs are based on preliminary annual average mine schedule data, metallurgical testwork and experience or benchmark information where required. The Refinery flowsheet and design is based on the knowledge and experience of the study team and on knowledge of current and historical vanadium processing facilities.

Metallurgical factors or assumptions	A comminution and beneficiation process using a combination of conventional techniques including crushing, grinding and magnetic separation has been proposed to produce a vanadium bearing magnetic concentrate. For select fresh material, the non-magnetic tail contains base metals (Co, Ni and Cu) hosted sulphides which can be recovered by conventional flotation to produce a base metals concentrate. Metallurgical testwork supports these processes which are well proven and in operation across the mining industry. The metallurgical recoveries adopted for the base case are shown below and were based on testwork on 24 massive titano-magnetite samples derived from contiguous intervals of Gabanintha diamond drill core.

CMB feed type	Concentrator Vanadium Recovery (%)	Refinery Vanadium Recovery (%)
Oxide	40.6	80
Transitional	70 to 89 (a function of RL)	80
Fresh	88 to 95 (a function of head V_2O_5 grade)	81
CMB circuit recovery to sulphide concentrate	% of metal recovered from non magnetic tail stream	
Co	67	
Ni	42	
Cu	63	

Metallurgical characterisation testwork results established by Bureau Veritas Mineral Processing was supplied as raw data to AVL

Capital Costs	Capital Costs are based on process design criteria, material balances and a sized equipment list. The main equipment pricing is sourced from vendor quotes or Wood Group's database from similar projects. Allowances were made for infrastructure and mine support facillities. All costs are estimated in Australian dollars as at Q2 2018, are judged to have an accuracy of -15% +35% and are considered to be at scoping study level in accordance with Wood Group's estimating procedures and Class 4 as defined in the AACE document 18R-97.

Environmental	The base case approvals timeline includes a Public Environmental Review assessment process, as the Project is likely to have a significant impact on troglofauna and stygofauna with restricted distribution. It is assumed that further studies will demonstrate that habitat for the restricted species may occur outside of the zone of impact. The assessment of environmental risks and mitigation strategies is based on approaches used for comparable projects that have been assessed by the Environmental Protection Authority.
Social	AVL has signed heritage agreements with the Yugunga-Nya Claimant Group, managed by the Yamatji Marba Aboriginal Corporation (4 Feb 2015). AVL has conducted three aboriginal heritage clearance programs coinciding with drilling activities at Gabanintha. The company is currently negotiating a mining agreement with the Yugunga-Nya Native Tital Claimant Group ahead of the granting of M51/878.
Costs	All costs in the estimation of the production target and associated financial information were estimated to a ±35% accuracy. Mining costs were based on benchmarks of similar projects and from experience with similar projects. Costs vary by bench and material type but average approximately $3.50/tonne of rock mined inclusive of drill and blast costs. Mining revenues were based on an optimised pit shell using a US$8.00/lb V_2O_5 price. Base metals pricing was assumed to be 65% payability on contained base metals in concentrate. These prices were nickel - AUD$17.27/kg, cobalt – AUD$112.67/kg, and copper – AUD$9.18/kg. Process plant capital and operating costs were supplied by Wood Group and were based on a combination of first principle build up and current pricing and labour costs developed specifically for AVL specifically or from similar projects. Fuel price was assumed to be $0.70/L. Where applicable, transportation costs were assumed to be $0.1/tkm. Gas pricing and some logistics costs were provided from conceptual and scoping studies performed for AVL by Adaman Resources and Clean Energy Fuels Australia. Government royalties are 3.75%, with no other import duties or tariffs allowed for.
Market Assessment	The vanadium market has seen the loss of significant production with the closing of Evraz Highveld in South Africa and Vanchem Vanadium in South Africa in 2015. Largo Resources in Brazil has come online and reached capacity in the second half of 2017, but consumption still outstrips production

	according to data shared by Vanitec, an international vanadium producer and consumer organization of which AVL is a long time member. Global inventories for vanadium have fallen to critically low levels and marketing experts anticipate the trend to continue for 5 years. Demand is anticipated to increase, primarily due to new Chinese rebar specifications which call for higher vanadium concentrations, while there continue to be no immediate sources for new vanadium. Demand is also likely to be impacted by the growing development and utilisation of vanadium redox flow batteries (VRFBs) in the longer term. Based on the current market conditions, AVL has formed the opinion that future vanadium demand will continue to outstrip supply for several years until new suppliers can enter the market. With a supply gap and expected growth in vanadium demand, the mid to long term scenario also looks strong. The current price of vanadium at the time of writing is US$19.59/lb V_2O_5 delivered warehouse Rotterdam (MB). The long term average price is US$8.30/lb V_2O_5 based on 15 years of LMB data. Several recent studies have used long term price predictions at or near 13 US$/lb V_2O_5 [TMT/ASX] [Prophecy Corp/TSX].
Economic	A preliminary project cash flow model has been developed for the base case. The model assumes a 17 year life of mine. Capital costs for the plant have been estimated at US$290Million, with another $73Million that includes owner's costs, pre-strip and owner's contingencies assumed in year 0. Pricing is assumed to be US$8/lb V_2O_5, although several pricing scenarios are presented optionally. The upside case assumes a US$13 per pound of V_2O_5 for the life of mine.
Other	For the purposes of this financial estimate, project development is estimated to begin construction in 2021 and to begin production in 2022. A number of factors can significantly delay project commencement, including funding constraints, environmental permitting, and construction delays among many others.

Competent Person Statement — Mineral Resource Estimation

The information in this report that relates to Mineral Resources is based on and fairly represents information compiled by Mr Lauritz Barnes, (Consultant with Trepanier Pty Ltd) and Mr Brian Davis (Consultant with Geologica Pty Ltd). Mr Davis is a shareholder of Australian Vanadium Limited. Mr Barnes is a member of the Australasian Institute of Mining and Metallurgy and Mr Davis is a member of the Australian Institute of Geoscientists and both have sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Specifically, Mr Barnes is the Competent Person for the estimation and Mr Davis is the Competent Person for the database, geological model and site visits. Mr Barnes and Mr Davis consent to the inclusion in this report of the matters based on their information in the form and context in which they appear.

Competent Person Statement – Metallurgical Results

The information in this statement that relates to Metallurgical Results is based on information compiled by independent consulting metallurgist Brian McNab (CP. B.Sc Extractive Metallurgy), Mr McNab is a Member of The Australasian Institute of Mining and Metallurgy. Brian McNab is employed by Wood Mining and Metals. Mr McNab has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which is undertaken, 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 McNab 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 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.