Australian VANADIUM LIMITED

ASX ANNOUNCEMENT **6TH APRIL 2022**

BANKABLE FEASIBILITY STUDY FOR THE AUSTRALIAN VANADIUM PROJECT

Feasibility Study results reflect the Australian Vanadium Project's value as a critical and battery mineral project and provides a strong commercial case for development.

PROJECT HIGHLIGHTS

- AVL's Bankable Feasibility Study (BFS) confirms the Australian Vanadium Project as a potential globally significant primary vanadium producer targeting **critical mineral**, **steel** and **energy storage** markets.
- Australian Government grant of A$49M awarded under the Modern Manufacturing Initiative Collaboration Stream[1] to support the Project to production.
- Technical studies completed, including three years of extensive piloting testwork, supporting robust processing flowsheets, de-risking the Project towards funding and delivery.
- Pre-tax **$NPV_{7.5}$ of A$833M** and **equity IRR 20.6%** based on US$10.50/lb **$V_2O_5$** price, **A$604M** upfront pre-production capital excluding contingency.
- Updated **Ore Reserve of 30.9Mt at 1.09% V_2O_5** comprised of a **Proved Reserve** of **10.5Mt at 1.11% V_2O_5** (vanadium pentoxide) and a **Probable Reserve** of **20.4Mt at 1.07% V_2O_5**[2].
- Anticipated initial **mine life of 25 years**, supporting a long-life, consistent ore feed operation on AVL's granted mining lease.
- Strategic separation of processing plant from minesite and concentrator allows access to competitive natural gas near Geraldton, local workforce and Iron Titanium (**FeTi**) coproduct sales opportunities through the Port of Geraldton.
- Average annual vanadium production of **24.7 Mlbs V_2O_5 (11,200t)** as a **99.5% V_2O_5** high purity flake and **900,000 dry tonnes per annum of FeTi** coproduct.
- Forecast vanadium **recovery to concentrate** of **74.2%** life of mine, supported by pilot testing and comparable to current international primary vanadium operations.
- Innovative process flowsheet recovers **90%** of vanadium in concentrate, utilising tried-and-tested grate kiln technology, with valuable reductions in gas consumption and CO_2 emissions.
- Approvals well advanced and Environmental, Social and Governance (ESG) standards and action plans in place.
- Global critical mineral vanadium market seeing strong growth in demand and pricing (currently over **US$12/lb V_2O_5**) with the battery sector showing accelerated uptake in vanadium redox flow batteries.

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[1] See ASX announcement dated 16th March 2022 *'AVL Awarded $49 Million Federal Government Manufacturing Collaboration Grant'*
[2] Rounding is applied

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FINANCIAL OUTCOMES

- Wood Australia Pty Ltd (Wood), a leading engineering firm with valuable expertise in vanadium and similar mineral processing, has undertaken the engineering and design, providing an overall accuracy for the capital and operating cost estimates of ±15%.
- Level of study provides a basis for engagement with financing institutions including NAIF, Export Finance Australia and many of the international resource banks.
- Australian Government grant of A$49M awarded under the Modern Manufacturing Initiative Collaboration Stream[1] provides strong additional support to Project funding requirements.
- Project pre-tax $NPV_{7.5}$ of A$833M.
- Equity Project IRR 20.6%.
- Project payback of 7.3 years after first production.
- Project annual EBITDA average for 25 years of A$175M.
- Total Project EBITDA of $4.4B.
- Upside case offers pre-tax $NPV_{7.5}$ of $1,287M assuming US$12/lb V_2O_5 price. This increases to $1,450M with additional improvements in operating expense of 10%.
- C1 operating cost of US$4.43/lb V_2O_5 competitive with world primary vanadium producers, includes FeTi coproduct credit.
- Pre-production plant and associated infrastructure capital cost of US$435M (A$604M), excluding any grant payments and before contingency.

  Assumptions 0.72 USD/1 AUD | US$10.50/lb long term average V_2O_5 price | cost estimation at ±15% level of accuracy | All $ figures are A$ unless stated otherwise

Managing Director Vincent Algar comments, "*The high standard of feasibility study that the AVL team and its consultants have completed is a significant milestone for the Company. The positive economic results of the study have occurred in an environment of global inflationary pressure, COVID-19 related impacts and geopolitical instability. We have attempted to accommodate potential areas of challenge by building them into our assumptions and remaining agile when efficiency opportunities present. The award of the $49M MMI grant provides further vindication of the importance and relevance of the Australian Vanadium Project and we acknowledge the responsibility placed upon us, as all Australians are now stakeholders in our work. We are in a period of growing demand for vanadium from both steel and energy storage markets. The robust designs and financials presented in this work firm the pathway to new vanadium production and sets the Project apart as the most advanced new primary vanadium project globally. The thorough study process has reduced risks and therefore increased confidence for parties looking to invest in the future of vanadium from a stable mining region. The Company is now in a position to progress through funding, final engineering, procurement, construction and into production.*"

ASX Chapter 5 Compliance and Cautionary Statement

The production targets referred to in this announcement are based on 27% Measured Resources, 52% Indicated Resources and 21% Inferred Resources for the 25-year life of mine from a JORC Mineral Resource Estimate released to the ASX on 1st November 2021. The Mine plan comprises 93% of current global Measured Resources and 74% of global Indicated Resources.

The Company has used Inferred Mineral Resources as part of the production scenario and the impact of the use of inferred mineralisation is included in the report. There is a low level of confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised. The economic feasibility of the

Project has been assessed excluding the Inferred material, in order to develop and confirm an Ore Reserve for the Project, confirming the use of Inferred mineralisation is not a determining factor in the viability of the Project.

The Ore Reserves and Mineral Resource Estimate have been prepared by Competent Persons, with Competent Persons' Statements in Appendix 1.

Processing and engineering designs for the BFS have been developed to a ±15% level of accuracy.

The Company has concluded that it has a reasonable basis for providing the forward-looking statements and forecasted financial information included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement and all material assumptions, including the JORC modifying factors (Appendix 5, JORC Table 1, Section 4), upon which the forecast financial information is based, are disclosed in this announcement. This announcement has been prepared in accordance with JORC Code 2012 and the ASX Listing Rules.

All material assumptions relating to production and financial forecasts are detailed within this report. Material assumptions are summarised in Appendix 2 on page 58, economic outcomes in Section 11, page 44 and the full Ore Reserve statement is in Appendix 3 on page 61.

Table 1 Project Metrics and Financial Summary

Production Metrics		
Category	**Value**	
Mine Life	25 years	
Mineral Resource	239.0Mt at 0.73% V_2O_5	
Ore Reserve	30.9Mt at 1.09% V_2O_5	
Concentrate produced pa	894,718 t (dry basis)	
V_2O_5 production pa	24.7M lbs	
FeTi coproduct sales pa	915,505 t (dry basis)	
Financial Summary		
Project Economics	**A$**	**US$**
Equity IRR	20.6%	
Payback from first production	7.3 years	
Pre-tax $NPV_{7.5}$ @ US$10.50/lb V_2O_5	833M	600M
Post-tax $NPV_{7.5}$ @ US$10.50/lb V_2O_5	507M	365M
EBITDA (Project)	4.4B	3.18B
EBITDA pa	175M	126M
Net Profit After Taxes (Project)	2.2B	1.6B
Initial Capex excluding contingency	604M	435M
Average annual C1[3] cost	6.15/lb V_2O_5	4.43/lb V_2O_5
Average annual C3[4] cost	8.49/lb V_2O_5	6.11/lb V_2O_5

The Australian Vanadium Project Overview

The Australian Vanadium Project ("the Project") consists of 15 tenements covering 200 sq km and held 100% by Australian Vanadium Limited, an Australian company listed on the Australian

[3] C1 costs are direct costs, including costs incurred in mining and processing (labour, power, reagents, and materials) plus local G&A, freight and realisation and selling costs. Any by-product revenue is credited against costs at this stage.
[4] C3 costs are the fully allocated costs for the project. It is the sum of the (C1) costs, depreciation, depletion, and amortisation, indirect costs and net interest charges.

Securities Exchange (ASX: AVL). Mining Lease M51/878 has been granted for a period of 21 years and covers 87% of the Mineral Resource, with the balance of the Inferred Mineral Resource located on E51/843, overlain by Mining Lease Application MLA51/897, owned 100% by AVL (see Figure 3).

The Project is based on a proposed open cut mine of the Vanadium Titanium Magnetite orebody, a crushing, milling and beneficiation (CMB) plant and a vanadium processing plant. Concentrate produced at the CMB will be transported to a vanadium processing plant located near Geraldton, for final conversion to high quality vanadium pentoxide, for sale or further conversion and use in steel and energy storage, catalyst, chemical and defence applications.

The coastal processing plant location is a key strategic differentiator to all current global primary vanadium producers, utilising the unique gas, road and port infrastructure of the world class mining region of mid-western Western Australia (see Figure 1).

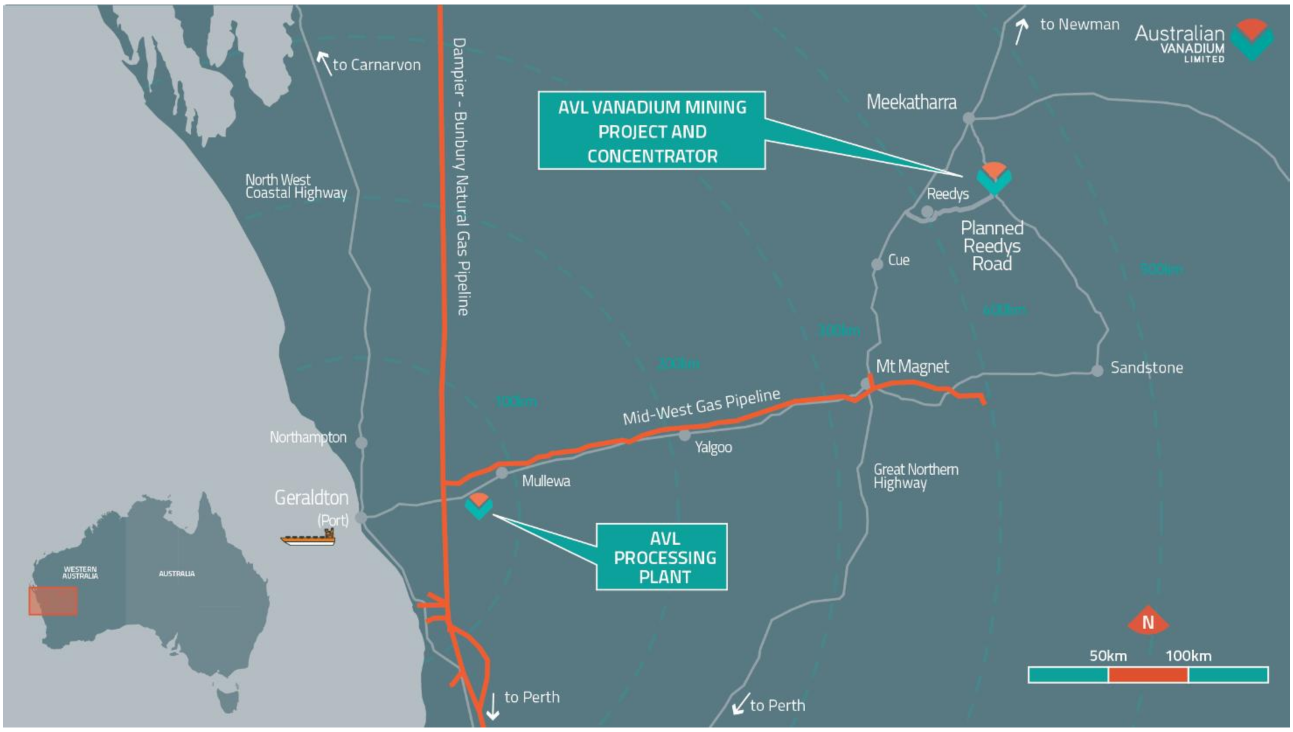

Figure 1 Location of the Australian Vanadium Project

Mine Schedule

The use of Inferred Resources is not a determining factor for Project viability.

The current Project Mine Plan utilises 27% Measured Resources, 52% Indicated Resources and 21% Inferred Resources. The Measured and Indicated material has been assessed separately and has been classified as a 2012 JORC Ore Reserve, as shown in Table 2.

Table 2 Ore Reserve Statement as at April 2022, at a cut-off grade of 0.7% V_2O_5

Ore Reserve	Mt	V_2O_5%	Fe_2O_3%	TiO_2%	SiO_2%	LOI%	V_2O_5 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
Total Ore	**30.9**	**1.09**	**62.8**	**12.4**	**9.3**	**3.2**	**223.8**	Strip Ratio	7.7

Note: Tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.

The Inferred material mined is stockpiled and not processed until the last quarter of the mine life, from Year 19 onwards (see Figure 2).

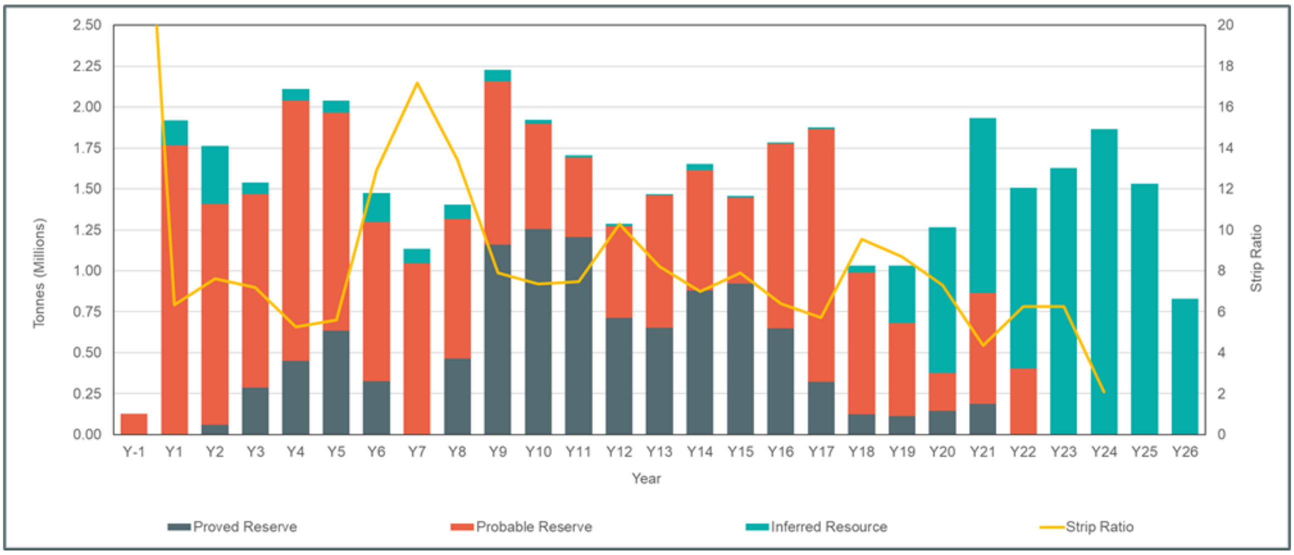

Figure 2 Annualised Ore Movement by JORC Category

As with the 2020 PFS Update[5], the 2022 BFS mine plan utilises the lower strip ratio southern pits to reduce total mining requirements in the early years. However, the requirement to feed the CMB plant with ore that delivers a relatively consistent recovery and associated mass yield requires that a feed blending strategy is applied and so multiple mining areas are open. Hence the strip ratio increases through Year 6 to Year 8 as the high strip ratio pits come on line. Table 3 below indicates the quantities of Proved and Probable Reserves and Inferred Resources mined over the course of the schedule.

Table 3 Detailed Mining Schedule by Reserve and Resource Categories

Class	Unit	TOTAL	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
Proved Reserve	kt	**10,539.7**	0.0	0.0	58.8	287.5	449.0	634.6	324.5	0.0	463.3	1,161.1	1,255.7	1,205.4
Probable Reserve	kt	**20,385.8**	126.7	1,767.3	1,347.8	1,180.3	1,589.1	1,330.4	973.0	1,044.7	851.1	995.8	642.2	484.9
Inferred Resource	kt	**8,231.0**	0.0	153.2	357.2	71.9	72.1	73.3	178.8	91.3	91.1	69.2	23.8	15.2
TOTAL	kt	**39,156.5**	**126.7**	**1,920.5**	**1,763.8**	**1,539.7**	**2,110.2**	**2,038.3**	**1,476.3**	**1,136.0**	**1,405.5**	**2,226.1**	**1,921.7**	**1,705.5**
Proved	%	**27%**	0%	0%	3%	19%	21%	31%	22%	0%	33%	52%	65%	71%
Probable	%	**53%**	100%	92%	76%	77%	75%	65%	66%	92%	61%	45%	33%	28%
Inferred	%	**21%**	0%	8%	20%	5%	3%	4%	12%	8%	6%	3%	1%	1%
TOTAL	%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Waste	kt	**296,523.8**	4,720.6	12,166.7	13,456.7	11,061.0	11,118.6	11,434.1	19,097.0	19,530.6	18,867.3	17,599.9	14,164.5	12,766.8
Total	kt	**335,680.3**	**4,847.3**	**14,087.2**	**15,220.5**	**12,600.7**	**13,228.9**	**13,472.4**	**20,573.3**	**20,666.6**	**20,272.9**	**19,826.0**	**16,086.2**	**14,472.3**
Strip Ratio		7.6	37.3	6.3	7.6	7.2	5.3	5.6	12.9	17.2	13.4	7.9	7.4	7.5

Class	Unit	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Y21	Y22	Y23	Y24
Proved Reserve	kt	713.0	652.0	879.7	920.8	647.9	321.3	122.2	112.1	144.0	186.1	0.5	0.0	0.0
Probable Reserve	kt	558.5	809.0	733.1	527.6	1,130.0	1,543.7	865.4	569.6	231.8	680.0	404.0	0.0	0.0
Inferred Resource	kt	14.1	6.6	41.7	7.6	7.8	11.8	42.7	349.1	890.3	1,065.1	1,101.0	1,628.8	1,867.3
TOTAL	kt	**1,285.6**	**1,467.7**	**1,654.5**	**1,456.0**	**1,785.7**	**1,876.8**	**1,030.3**	**1,030.7**	**1,266.1**	**1,931.2**	**1,505.6**	**1,628.8**	**1,867.3**
Proved	%	55%	44%	53%	63%	36%	17%	12%	11%	11%	10%	0%	0%	0%
Probable	%	43%	55%	44%	36%	63%	82%	84%	55%	18%	35%	27%	0%	0%
Inferred	%	1%	0%	3%	1%	0%	1%	4%	34%	70%	55%	73%	100%	100%
TOTAL	%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Waste	kt	13,220.4	12,040.8	11,584.5	11,518.6	11,436.7	10,751.4	9,832.5	8,966.1	9,264.6	8,425.9	9,418.8	10,168.3	3,911.1
Total	kt	**14,506.0**	**13,508.5**	**13,239.0**	**12,974.6**	**13,222.4**	**12,628.2**	**10,862.8**	**9,996.7**	**10,530.7**	**10,357.1**	**10,924.4**	**11,797.1**	**5,778.4**
Strip Ratio		10.3	8.2	7.0	7.9	6.4	5.7	9.5	8.7	7.3	4.4	6.3	6.2	2.1

Note: Tonnage and percentages used in this table have been rounded to reflect the accuracy of the schedule. Numbers might not add up due to rounding.

[5] See ASX announcement dated 22nd December 2020 *'Technical and Financial PFS Update'*

NEXT STEPS

AVL is currently undertaking regulatory approvals work to allow for the delivery of the Project. On 15th March 2021, AVL submitted a referral to the EPA for proposed mining and beneficiation operations. On 14th April 2021 the EPA determined to assess the Project pending additional information. All additional requested information has been compiled and will be submitted upon completion of the BFS. Concurrently, AVL will also submit a referral for the processing plant site at Tenindewa.

In December of 2021, AVL applied for development approval of the Tenindewa site by the State Development Assessment Unit. A scheme amendment for rezoning has been proposed in conjunction with this application, following guidelines from the City of Geraldton Local Planning Scheme No 1.

A Mining Proposal is well advanced and is anticipated to be submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in May 2022. Work on other critical approvals including works approval and water abstraction licences at both sites are well advanced.

A financial investment decision (FID) is anticipated by fourth quarter of 2022. The Project will be funded through a combination of equity and debt financing and is supported by a $49 million grant from the Australian Government[1]. AVL is working closely with HCF International debt advisors, in partnership with Grant Thornton Australia, to structure and secure debt financing. In parallel, the Company is finalising its equity strategy.

Following FID, the selection of Engineering, Procurement and Construction Management (EPCM) and Engineering, Procurement and Construction (EPC) contractors will be undertaken and the front end engineering design (FEED) will commence within 3 months. Schedule critical long lead equipment including the grate kiln and the SAG mill will be prioritised. This will include engaging with key vendors to perform early works and deliver at the earliest equipment data required for detailed engineering design. Several opportunities to improve capital costs and operating expenses have been identified in the latter stages of the BFS. Optimisation work will be undertaken to finalise these residual options studies prior to FEED.

Construction is expected to commence in the fourth quarter of 2023, dependent on approvals and financing.

BANKABLE FEASIBILITY STUDY OUTCOMES

Contents

1. Introduction and Project Summary

Australian Vanadium Limited (ASX: AVL, “the Company” or “AVL”) is pleased to announce the results of a Bankable Feasibility Study (BFS) for the Australian Vanadium Project (“the Project”), near Meekatharra in Western Australia.

As per ASX Listing Rule 5.9 and the 2012 JORC reporting guidelines, a summary of the material information used to estimate the Ore Reserve is presented below, (for further detail please refer to Appendix 2, Appendix 3 and Appendix 5; JORC Table 1; Section 4). This announcement also provides a summary of the full BFS report collated by members of the AVL technical team, Wood and other consultants to the Company.

The Australian Vanadium Project consists of 15 tenements covering 200 sq km and is held 100% by Australian Vanadium Limited, an Australian company listed on the Australian Securities Exchange (ASX: AVL). Mining Lease M51/878 has been granted for a period of 21 years and covers 87% of the Mineral Resource, with the balance of the Inferred Mineral Resource located on E51/843, overlain by Mining Lease Application MLA51/897, both owned 100% by AVL (see Figure 3).

The Project is based on a proposed open cut mine of the Vanadium Titanium Magnetite (VTM) Orebody and a crushing, milling and beneficiation plant (CMB) and a vanadium processing plant. Concentrate produced at the CMB will be transported to a vanadium processing plant located near Geraldton for final conversion to high quality vanadium pentoxide, for sale or further conversion and use in steel and energy storage, catalyst, chemical and defence applications.

The coastal processing plant location is a key strategic differentiator to all current global primary vanadium producers, utilising the unique gas, road and port infrastructure of the world class mining region of mid-western Western Australia. The three primary vanadium mines currently in production globally (one in Brazil and two in South Africa), mine and process their VTM ore to final vanadium product at inland locations. AVL has signed an option over land between Mullewa and the port city of Geraldton for the development of the processing facility (see Figure 1).

The BFS comprises 17 sections plus appendices. It is based on 3 years of detailed pilot scale test work and is completed to a level of ±15% accuracy, comprising over 8,000 line items of capital cost detail. It contains intellectual property owned by AVL and sensitive information. The full BFS report will be shared under confidentiality agreements with prospective lenders and investors. The BFS has been purposely developed to the high standard required for rigorous external scrutiny by Project investors and financiers. This announcement provides the market with a summary of the BFS outcomes.

2. Geology and Resource Estimate

The planned minesite at the Project lies within the Gabanintha and Porlell Archaean greenstone sequence orientated approximately northwest-southeast, adjacent to the Meekatharra greenstone belt in the Murchison Province.

The geology of the Gabanintha formation is a layered greenstone sequence of ultramafics, gabbros and dolerites/amphibolites, felsic tuffs, basalts and banded iron and cherts. The sequence above is from stratigraphic low to high. Regional granitoid batholith intrusions surround the greenstone rocks.

The deposit is comparable to the Windimurra vanadium deposit and the Barrambie vanadium titanium deposit located 140 km south and 80 km southeast of Gabanintha respectively. The mineral deposit consists of a basal massive high-grade vanadium bearing magnetite zone (10 to 15 m in true thickness), overlain by up to five low-grade magnetite banded gabbro units between 5 and 30 m thick separated by thin (<0.3% V_2O_5) waste gabbro zones. The sequence is overlain in places by a lateritic domain, a transported domain (occasionally mineralised) and a thin barren surface cover domain.

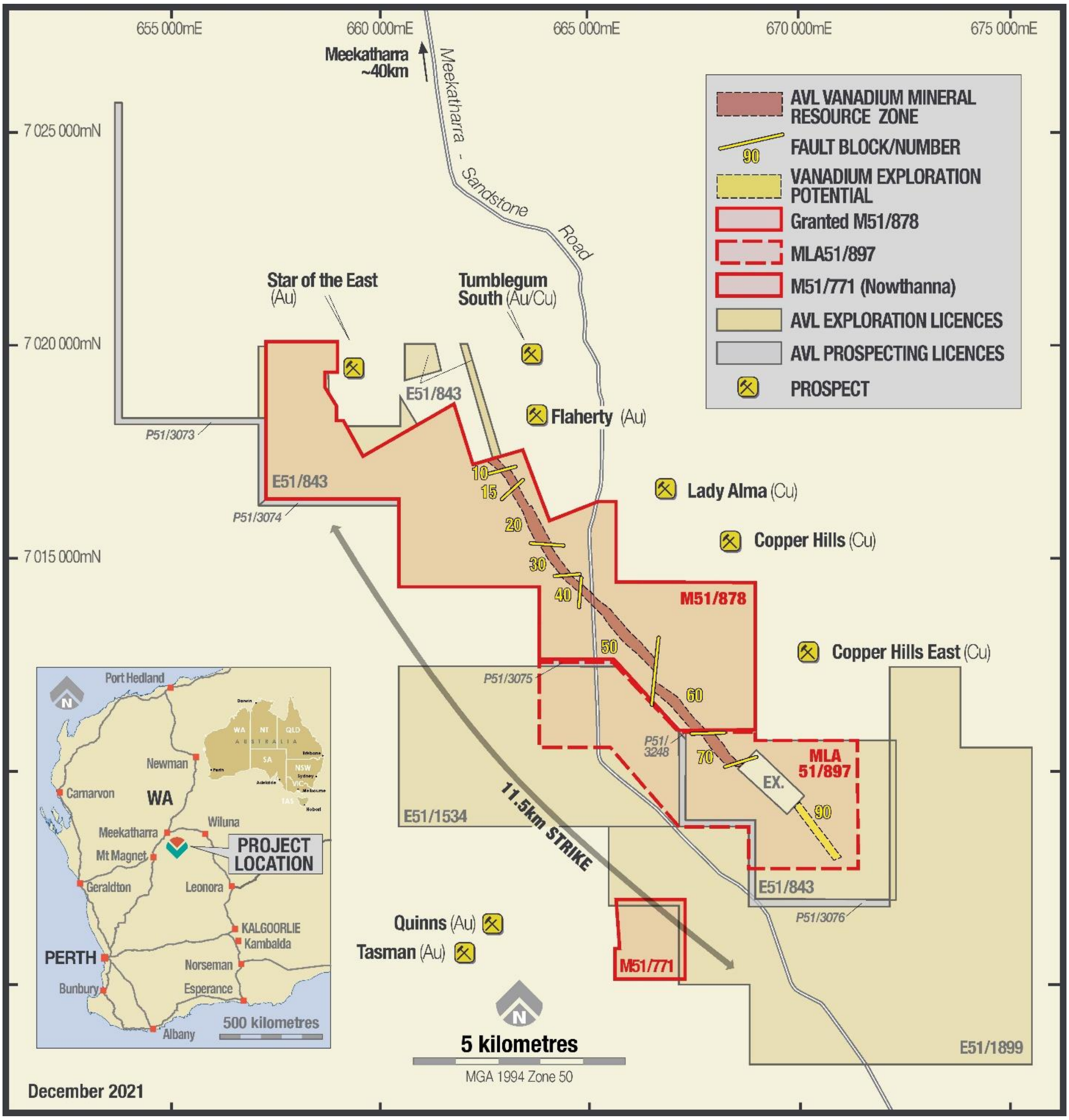

Figure 3 Location and Tenure of The Australian Vanadium Project

The north-northwest striking deposit is affected by a number of regional scale faults which offset the entire deposit, breaking the deposit into a series of kilometre scale blocks. The larger blocks show relatively little signs of internal deformation, with strong consistency in the layering being visible in drilling and over long distances between drillholes.

The high-grade massive magnetite/martite mineralisation extends for almost 11 km in the Company held lease area. Detailed mapping and mineralogical studies have been completed by Company personnel and contracted specialists between 2000 and 2020, as well as eight separate drilling programs to test the mineralisation and continuity of the mineralised zones. These datasets and the relatively closely spaced drilling have led to a clear understanding of the host layered mafic intrusion and associated mineralisation controls.

The mineralisation is hosted within altered gabbros and is easy to visually identify by the magnetite/martite content. The main massive magnetite high-grade unit shows consistent thickness and grade along strike and down dip and has a clearly defined sharp boundary. The lower grade disseminated magnetite bands also show good continuity, but the boundaries are occasionally less easy to identify visually as they are more diffuse over a metre or so.

The mineralised zones are modelled using a combination of geological, geochemical and grade parameters, focused on continuity of zones between drill holes on section and between sections.

This model also utilises near-surface alluvial/palaeochannel boundaries interpreted from geophysical modelling, diamond core logging and drill hole geochemistry, particularly potassium and silica, for delineation of shallow transported alluvial material that is sheetwash from granitic rocks to the east. Fault locations are interpreted from mapping data and detailed geophysical survey data, to define the fault blocks within which the mineralised horizons were modelled. In areas of sufficient drilling (i.e. junction of fault blocks 15 and 20; 20 and 30; 40 and 50) drill information refines the location and orientation of the modelled regional faults.

Figure 4 shows total magnetics imagery including all drilling locations at the Project, fault interpretation plus the fault block numbering. The image shows the location of local grid cross-section T-T'. This section is shown in Figure 5 and represents a typical deposit type section. It should be noted that the 113 400 Northing referenced in the figure is the local resource grid, not the MGA94 Zone 50 grid of the Project area.

A cut-off of 0.7% V_2O_5 was used to define the high-grade basal massive magnetite zone (domain 10) that is a massive magnetite cumulate rock with minor interstitial or included chlorite-talc aggregates that are likely to be metamorphic alteration products of primary olivine crystals. The massive magnetite high-grade zone has corresponding Fe and Ti highs and Si and Al lows relative to the rest of the gabbro. There is an increase of Na and K below the base of the high-grade domain where the rock is footwall gabbro, and a Ti low above the unit, signifying the start of the W 21 domain.

The low-grade domains are sub-parallel to the high-grade domain and vary in mineralisation style from sub-metre massive magnetite bands intercalated with gabbro bands, to disseminated magnetite mineralisation that is pervasive throughout the rock. Overlying the bedrock geology are a sequence of sub-horizontal waste and low-grade alluvial/laterite domains. The top of bedrock surface is defined using lithological boundaries in logging.

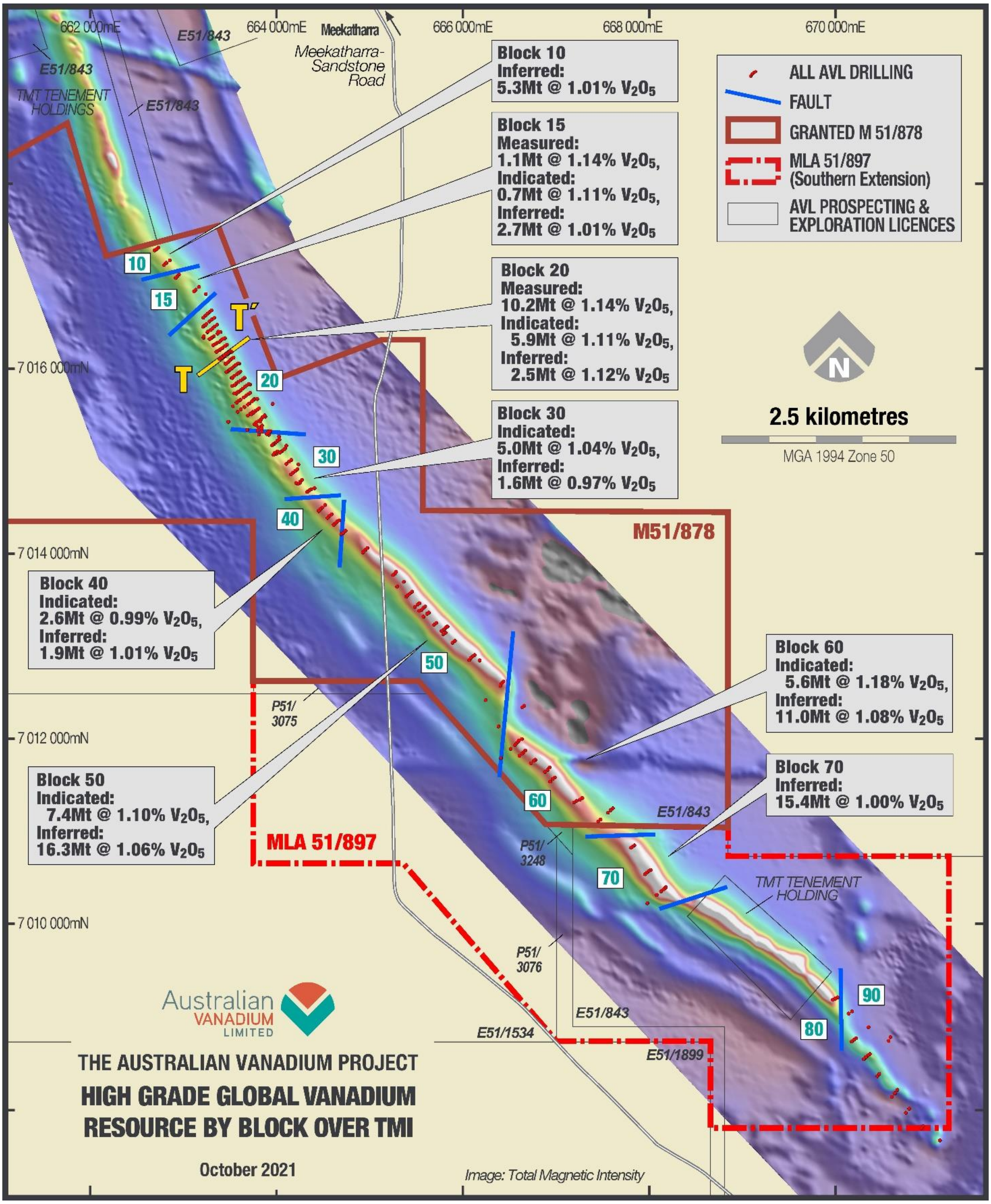

Figure 4 The Australian Vanadium Project Drilling, Fault Blocks and Section Locations on Total Magnetics Imagery

The designs for processing of the high-grade domain include a crushing, milling and beneficiation (CMB) circuit that uses magnetic separation followed by regrind and reverse flotation to reject silica. As the rock is de-magnetised under extreme weathering conditions (complete oxidation of magnetite to hematite) the magnetic properties of the high-grade domain have implications for beneficiation using magnetic separation. Magnetic susceptibility of the rock (that has a strong relationship to SATMAGAN™ readings, which determine the amount of magnetite in the rock) was included in the updated March 2020 Mineral Resource as an additional measure of rock oxidation in the high-grade domain. Magnetic susceptibility is also estimated in the November 2021 Mineral Resource that is the basis of the Ore Reserve underpinning this BFS.

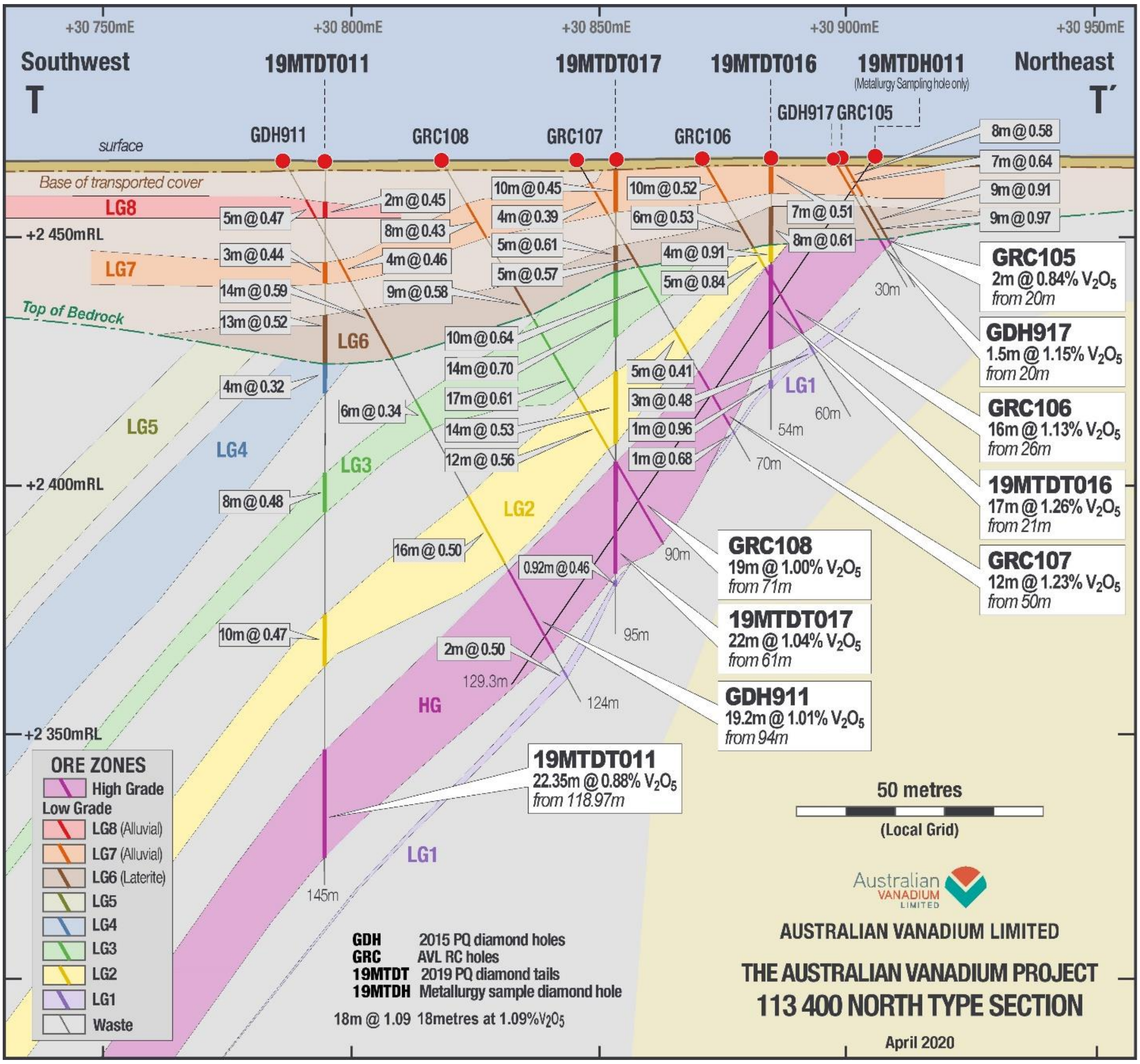

Figure 5 Cross-section T-T` with Domains (refer to Figure 6)

The November 2021 Mineral Resources Estimate[6], completed and reported in accordance with the JORC Code 2012, for the Project incorporated 76% of the existing drilling data. The drilling database totals 280 RC and 58 diamond core holes for approximately 31,615 m over 11 km strike length. Of these approximately 26,661 m from 305 drill holes were used in the grade estimate.

The estimation was classified as Measured, Indicated and Inferred Mineral Resources. All mineralised domains were constructed using geological information and considering a nominal cut-off 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 (see Table 4) for a total Resource of:

Globally, 239.0 million tonnes at 0.73% V_2O_5 containing 1,741,800 tonnes of V_2O_5 within which is;

[6] See ASX announcement dated 1st November 2021 *'Mineral Resource Update at the Australian Vanadium Project'*

- A discrete massive magnetite high-grade (HG) zone of 95.6 million tonnes at 1.07% V_2O_5 containing 1,018,000 tonnes of V_2O_5;
- Discrete disseminated magnetite low-grade (LG) zones of 128.5 million tonnes at 0.49% V_2O_5 containing 625,500 tonnes of V_2O_5;
- Transported detrital zones of 14.9 million tonnes at 0.66% V_2O_5 containing 98,600 tonnes of V_2O_5;
- Combined massive magnetite HG zone in Measured and Indicated Mineral Resources of 38.7 million tonnes at 1.11 % V_2O_5 containing 428,900t V_2O_5, suitable to underpin a long life, low cost, HG feed, open-cut mining operation; and
- Combined Measured and Indicated Mineral Resources of 93.7Mt at 0.75% V_2O_5 in disseminated LG and massive HG domains containing 704,800t V_2O_5.

Further exploration drilling will focus on higher grade zones with shallow oxidation profiles as potential initial stage mining zones and to look to expand the Mineral Resource, primarily down-dip, but with some strike potential.

Table 4 Mineral Resource estimate by domain and resource classification[7]

Zone	Category	Mt	V_2O_5 %	Fe %	TiO_2 %	SiO_2 %	Al_2O_3 %	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
	Subtotal	**95.6**	**1.07**	**44.7**	**12.2**	**9.1**	**6.8**	**3.2**
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
	Subtotal	**128.5**	**0.49**	**24.9**	**6.6**	**28.2**	**16.1**	**7.2**
Transported	Inferred	14.9	0.66	29.0	7.8	24.5	15.1	7.8
	Subtotal	**14.9**	**0.66**	**29.0**	**7.8**	**24.5**	**15.1**	**7.8**
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
	Subtotal	**239.0**	**0.73**	**33.1**	**8.9**	**20.4**	**12.3**	**5.6**

3. Mining

Mining at the Project will be from a series of open pits that extends for 7,250m along strike, consisting of a large pit in the north with a length of approximately 3,000m, and then two smaller pits to the south of approximately 1,300m in length. There are two mining areas that have been defined by Inferred material and therefore do not form part of the Ore Reserve but are included at the end of the mine plan. This comprises a pushback to the southern Reserve pit and a small standalone pit between the central and southern Reserve pits (see Figure 10). A small amount of Indicated material (<200kt) within the "Inferred" pits has been classified as Inferred material for the purposes of reporting. The mining sequence is primarily driven by the requirement to maintain a consistent blend of weathered and fresh ore types to the processing plant. Mining commences in the southern pits due to fresh ore being closer to surface, which allows the required blend to be attained sooner. Each southern pit is divided into a low strip starter stage and a subsequent internal and/or pushback stages to further expedite the early access to high recovery fresh ore. The northern pit is divided in a total of five stages, to balance strip ratio and access ore quickly. A relationship between magnetic

[7] Using a nominal 0.4% V_2O_5 wireframed cut-off for LG and nominal 0.7% V_2O_5 wireframed cut-off for HG. Total numbers may not add up due to rounding.

susceptibility and iron grade has been established to control the delivery of acceptable material to the CMB plant (i.e., recovery and deleterious contaminants) to ensure consistent plant performance.

Ore will be hauled from the pits either directly to the run-of-mine (ROM) pad, or to long-term stockpiles to facilitate the required blend to the CMB plant over the course of the mine life. The long-term stockpiles are predominantly low recovery and/or low mass yield ore and Inferred Resources. Mine waste rock will be hauled to three main storage facilities to the northwest, east and southeast of the open pit area. The sub-grade ore, including the banded and disseminated ore zones, are classified as waste for the purposes of the BFS. However, it is also assumed this material will be placed in demarcated areas of the waste rock storage facilities so that it can be identified and recovered in the future should it become economic to do so. Figure 6 and Figure 11 shows the minesite infrastructure design.

Approximately 4.9Mt of material is mined in the two quarters before plant production commences. This pre-production mining is required to provide:

- material and time for the construction of the ROM Pad
- material and time for the construction of mine haul roads
- material and time for the construction of the first lift of the Tailings Storage Facility (TSF)
- sufficient ore on stockpile to allow for the targeted blend to be met from start-up

The rate of mining averages approximately 12.6 million tonnes per annum (Mtpa) for the first 5 years of the Project. Through Year 6 to Year 9 it increases to an average of approximately 20.3 Mtpa, before reducing to 16.0 Mtpa in Year 10 and then steadily reducing through to the end of the mine life in Year 24. This is followed by approximately 2 years of processing from stockpiled material. Material movements are shown in Figure 7.

Two excavators working on double shift will be utilised for the duration of the mine life, to ensure sufficient material blending can be maintained from the working faces. It is assumed that all material to be mined will require blasting to some degree, with reduced powder factors used for the weathered zones. Ore and surrounding waste are assumed to be blasted on 5 metre bench heights and mined in 2.5 metre high flitches. Bulk waste will be blasted at 10m bench heights.

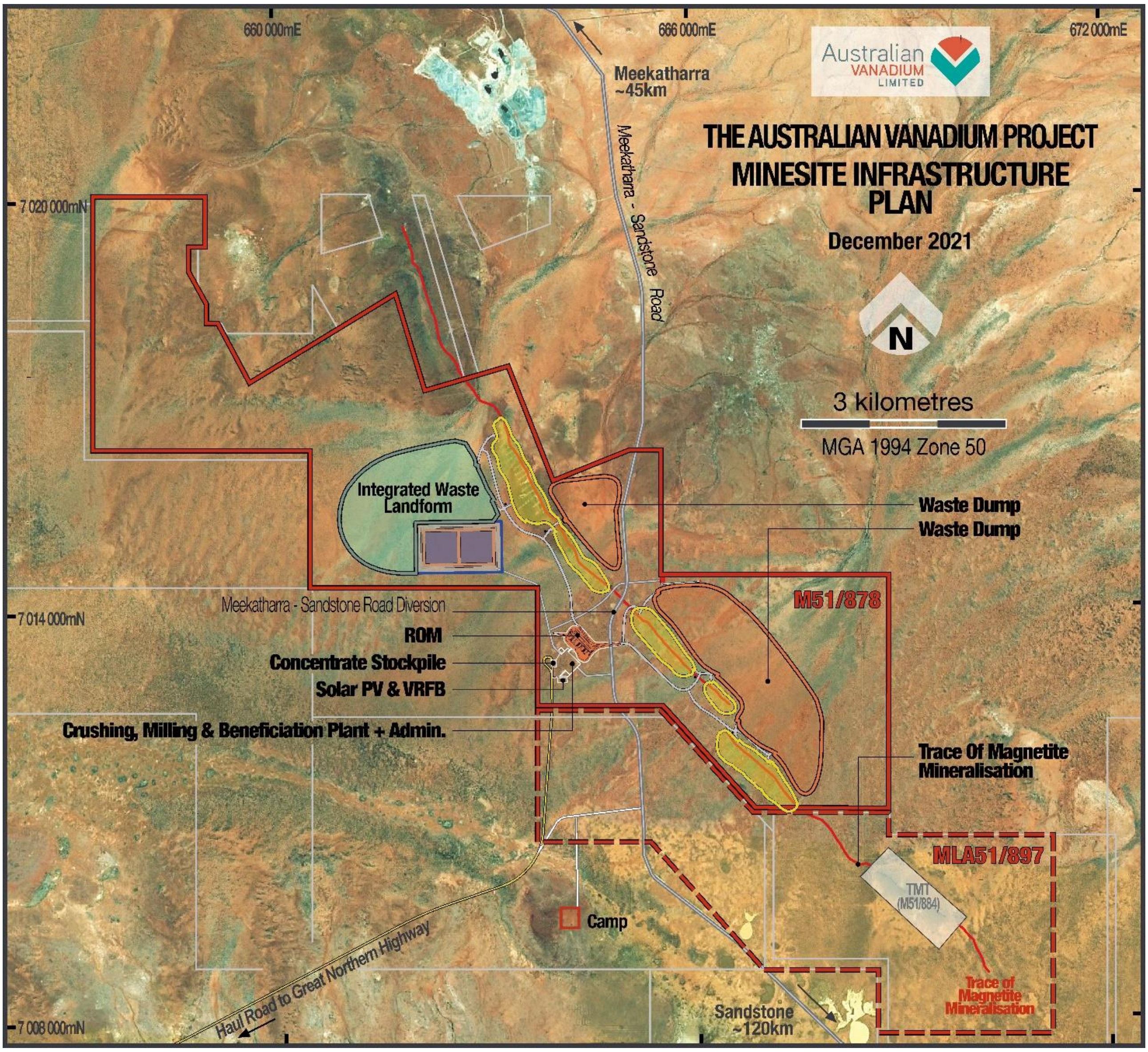

Figure 6 Minesite Infrastructure Location

A Life of Mine (LOM) production schedule was created for the Project. It is in monthly periods for the pre-production period and the first two years of production. Quarters were then used from Year 3 to Year 5 and then annual periods to the end of LOM. Mining occurs over 24 years with Years 25 and 26 feeding from long-term stockpiles.

Ore is classified as:

- V_2O_5 ≥ 0.7% – this value is higher than the economic breakeven cut-off for the deposit and was utilised in consideration of the metallurgical uncertainty around mass recovery and concentrate quality for vanadium grades less than this value.
- Mineralised Domain 10 and 2 – on the basis that the majority of the metallurgical test work has been carried out in these zones.

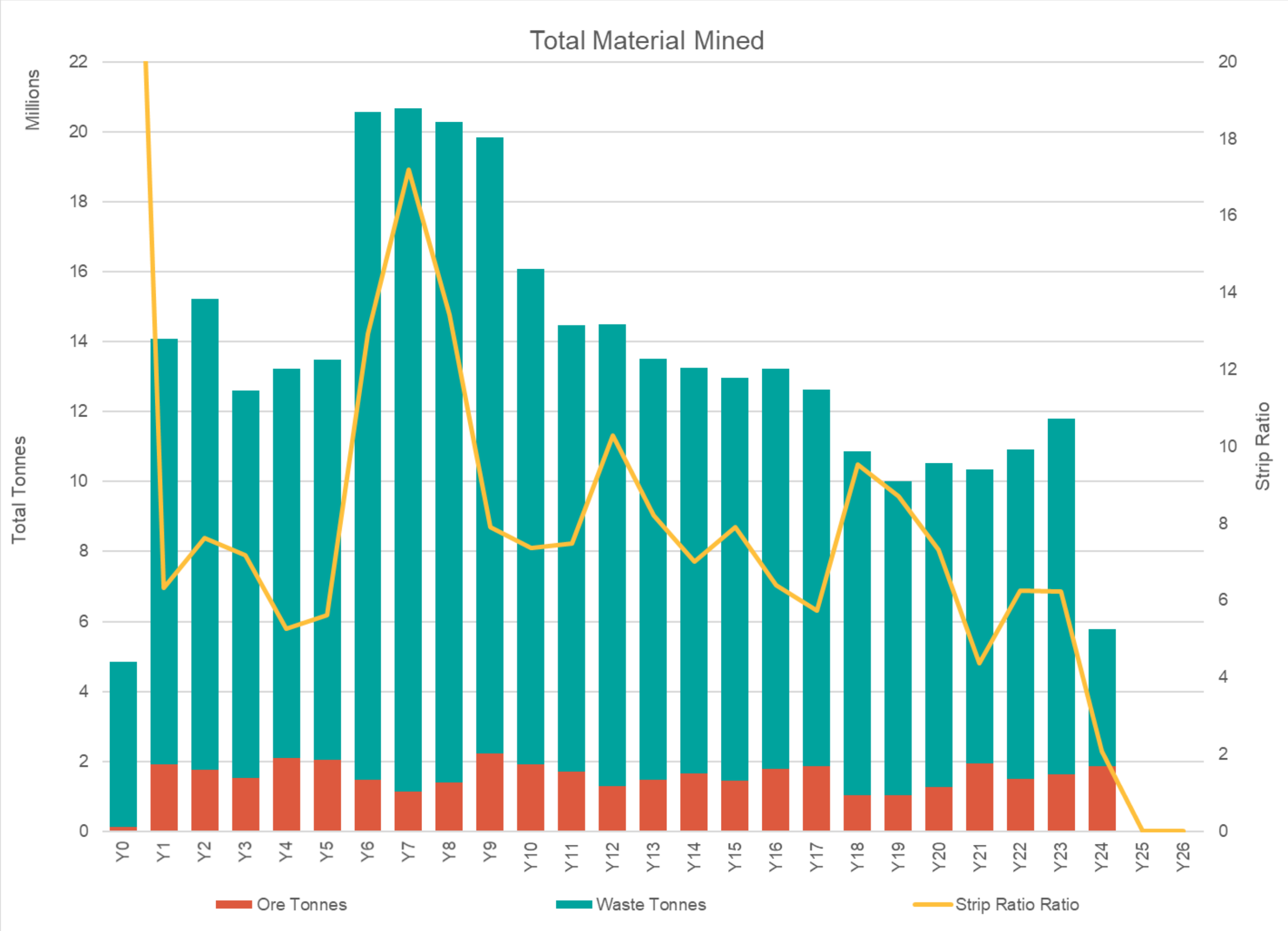

Figure 7 Total Material Mined

As with the PFS Update in 2020, the BFS mine plan utilises the lower strip ratio southern pits to reduce total mining requirements in the early years to maximise the economics. However, the requirement to blend feed to the process plant to maintain a relatively consistent concentrate production rate requires that multiple mining areas are open. Hence the strip ratio increases through Year 6 to Year 8 as the high strip ratio pits come on line.

Table 5 below details the Ore Reserve for the Project. The Ore Reserve statement is shown in Appendix 3.

Table 5 Ore Reserve Statement as at April 2022, at a cut-off grade of 0.7% V_2O_5

Ore Reserve	Mt	V_2O_5%	Fe_2O_3%	TiO_2%	SiO_2%	LOI%	V_2O_5 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
Total Ore	**30.9**	**1.09**	**62.8**	**12.4**	**9.3**	**3.2**	**223.8**	Strip Ratio	7.7

Note: Tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.

Table 6 and Figure 8 below indicate the quantities of Proved and Probable Reserves and Inferred Resources mined over the course of the Project LOM schedule. It should be noted that Inferred Resource category material is mined from start-up, but is stockpiled and not fed to the plant until Year 19.

Table 6 Detailed Mining Schedule by Reserve and Resource Categories

Class	Unit	TOTAL	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
Proved Reserve	kt	10,539.7	0.0	0.0	58.8	287.5	449.0	634.6	324.5	0.0	463.3	1,161.1	1,255.7	1,205.4
Probable Reserve	kt	20,385.8	126.7	1,767.3	1,347.8	1,180.3	1,589.1	1,330.4	973.0	1,044.7	851.1	995.8	642.2	484.9
Inferred Resource	kt	8,231.0	0.0	153.2	357.2	71.9	72.1	73.3	178.8	91.3	91.1	69.2	23.8	15.2
TOTAL	kt	39,156.5	126.7	1,920.5	1,763.8	1,539.7	2,110.2	2,038.3	1,476.3	1,136.0	1,405.5	2,226.1	1,921.7	1,705.5
Proved	%	27%	0%	0%	3%	19%	21%	31%	22%	0%	33%	52%	65%	71%
Probable	%	53%	100%	92%	76%	77%	75%	65%	66%	92%	61%	45%	33%	28%
Inferred	%	21%	0%	8%	20%	5%	3%	4%	12%	8%	6%	3%	1%	1%
TOTAL	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Waste	kt	296,523.8	4,720.6	12,166.7	13,456.7	11,061.0	11,118.6	11,434.1	19,097.0	19,530.6	18,867.3	17,599.9	14,164.5	12,766.8
Total	kt	335,680.3	4,847.3	14,087.2	15,220.5	12,600.7	13,228.9	13,472.4	20,573.3	20,666.6	20,272.9	19,826.0	16,086.2	14,472.3
Strip Ratio		7.6	37.3	6.3	7.6	7.2	5.3	5.6	12.9	17.2	13.4	7.9	7.4	7.5

Class	Unit	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Y21	Y22	Y23	Y24
Proved Reserve	kt	713.0	652.0	879.7	920.8	647.9	321.3	122.2	112.1	144.0	186.1	0.5	0.0	0.0
Probable Reserve	kt	558.5	809.0	733.1	527.6	1,130.0	1,543.7	865.4	569.6	231.8	680.0	404.0	0.0	0.0
Inferred Resource	kt	14.1	6.6	41.7	7.6	7.8	11.8	42.7	349.1	890.3	1,065.1	1,101.0	1,628.8	1,867.3
TOTAL	kt	1,285.6	1,467.7	1,654.5	1,456.0	1,785.7	1,876.8	1,030.3	1,030.7	1,266.1	1,931.2	1,505.6	1,628.8	1,867.3
Proved	%	55%	44%	53%	63%	36%	17%	12%	11%	11%	10%	0%	0%	0%
Probable	%	43%	55%	44%	36%	63%	82%	84%	55%	18%	35%	27%	0%	0%
Inferred	%	1%	0%	3%	1%	0%	1%	4%	34%	70%	55%	73%	100%	100%
TOTAL	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Waste	kt	13,220.4	12,040.8	11,584.5	11,518.6	11,436.7	10,751.4	9,832.5	8,966.1	9,264.6	8,425.9	9,418.8	10,168.3	3,911.1
Total	kt	14,506.0	13,508.5	13,239.0	12,974.6	13,222.4	12,628.2	10,862.8	9,996.7	10,530.7	10,357.1	10,924.4	11,797.1	5,778.4
Strip Ratio		10.3	8.2	7.0	7.9	6.4	5.7	9.5	8.7	7.3	4.4	6.3	6.2	2.1

Note: Tonnage and percentages used in this table have been rounded to reflect the accuracy of the schedule. Numbers might not add up due to rounding.

Figure 8 Annualised Ore Movement by JORC Category

Low recovery and/or low mass yield ore and Inferred material is stockpiled adjacent to the ROM pad and rehandled to the plant as required. Inferred material is mined over the entire mine life, but is only fed to the plant from Year 19. The average proportion of Inferred material fed to the plant is shown in 5 yearly intervals below in Table 7.

Table 7 Proportion Inferred Resource processed over Mine Life in 5 year periods

Year From	Y1	Y6	Y11	Y16	Y21
Year To	Y5	Y10	Y15	Y20	Y26
Proportion Inferred	0%	0%	0%	17%	79%

Mine waste is dumped to Waste Storage Facilities (WSF) to the east and north-west of the pits. The north-west WSF is adjacent to the tailings storage facility (TSF). As such, waste trucked here will provide construction material for the TSF and will become an integrated landform with this facility at mine closure.

As detailed above, the definition of ore has been highly constrained to reduce any risk to metallurgical performance. However, there is material that constitutes potential plant feed outside of the ore definition. This material has been classified as:

- Sub-grade – between 0.4% – 0.7% V_2O_5 within Zones 10 and 2 or;
- Mineralised Waste – above 0.4% V_2O_5 in all other mineralised zones

The sub-grade and mineralised waste resources are currently treated as waste material and stored within the WSF. It is assumed that operationally this material will be identified and stockpiled within discrete parts of the WSF.

The maximum design capacity of the CMB circuit is 1.6 Mtpa but the actual feed rate will be variable as it depends on the overall mass yield of the feed blend. The output is targeted to a maximum of 900,000 tonnes (dry basis) of concentrate. Input of ore is greater when lower and medium recovery ore is processed and mined, and less when higher recovery material is processed. Figure 9 shows the CMB Plant ore feed by Proved/Probable Reserves and Inferred Resources and whether it is direct ore feed or reclaim from long term stockpiles. As the ramp-up potential in the CMB circuit is greater than the ramp-up in the down-stream processing plant, there is surplus CMB capacity over the first two years of production. Therefore, lower mass yield material can be fed during this period if required with the processing plant feed ramp-up requirement still being met. The scheduling process targeted a consistent mass yield through the CMB and achieved an average of 57.3% mass yield with year-on-year variation of less than 5% through to Year 21. Year 21 has a high mass yield at 64.3% (hence low CMB feed rate), with the final year (Year 26) having a low of 44.7% mass yield as the final stockpiles are drawn down.

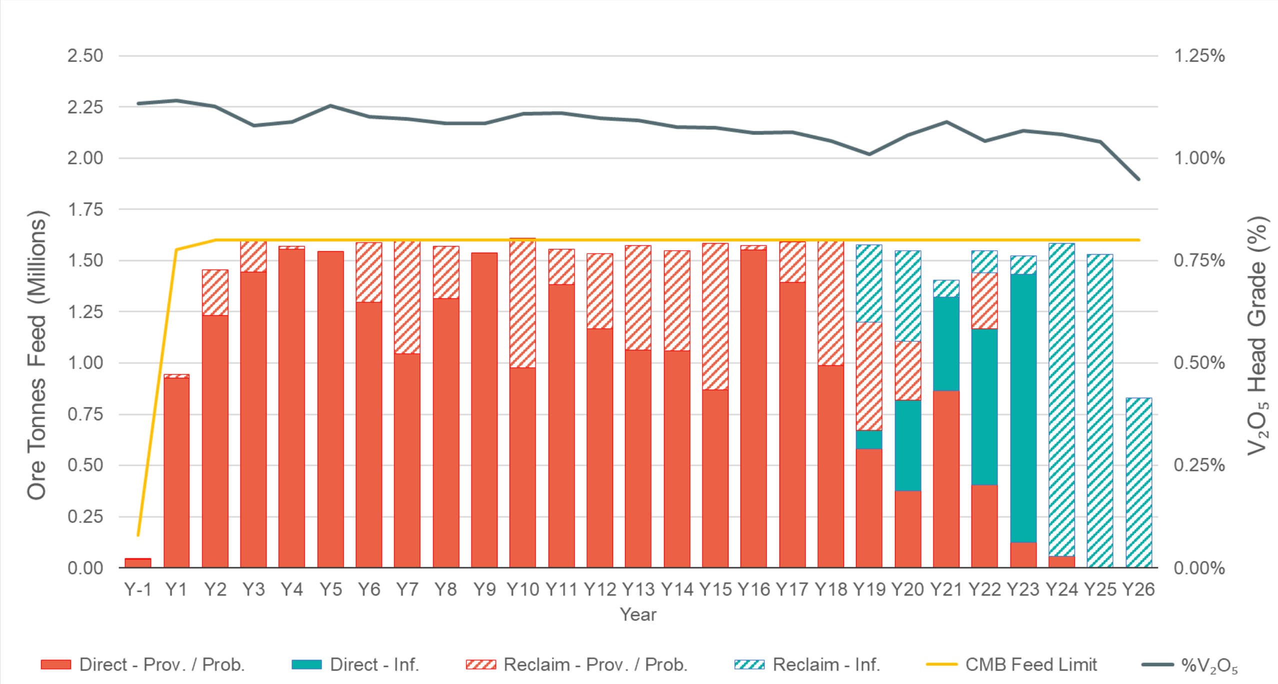

Figure 9 Annualised CMB Feed by Classification

Figure 10 shows the layout of the mining stages. The green shells are the Ore Reserve pits generated by Measured and Indicated Resources only and is the basis for the Ore Reserve. The red stages are the pits designed to access low strip ratio Inferred Resources late in the mine life.

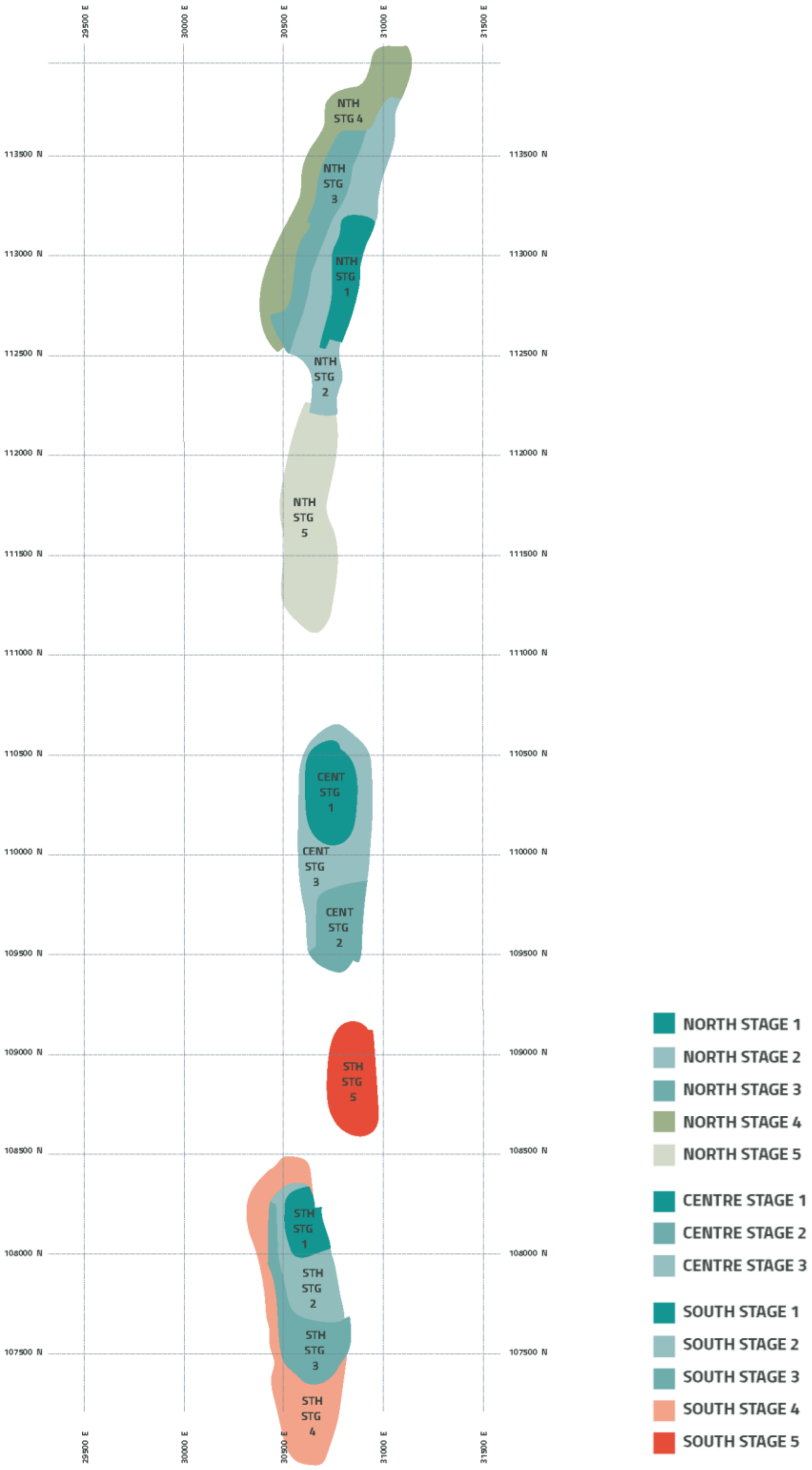

Figure 10 Optimisation Results – Plan of Ore Reserve Shell 31 (green) and Inferred Pushback Shell 29 (red)

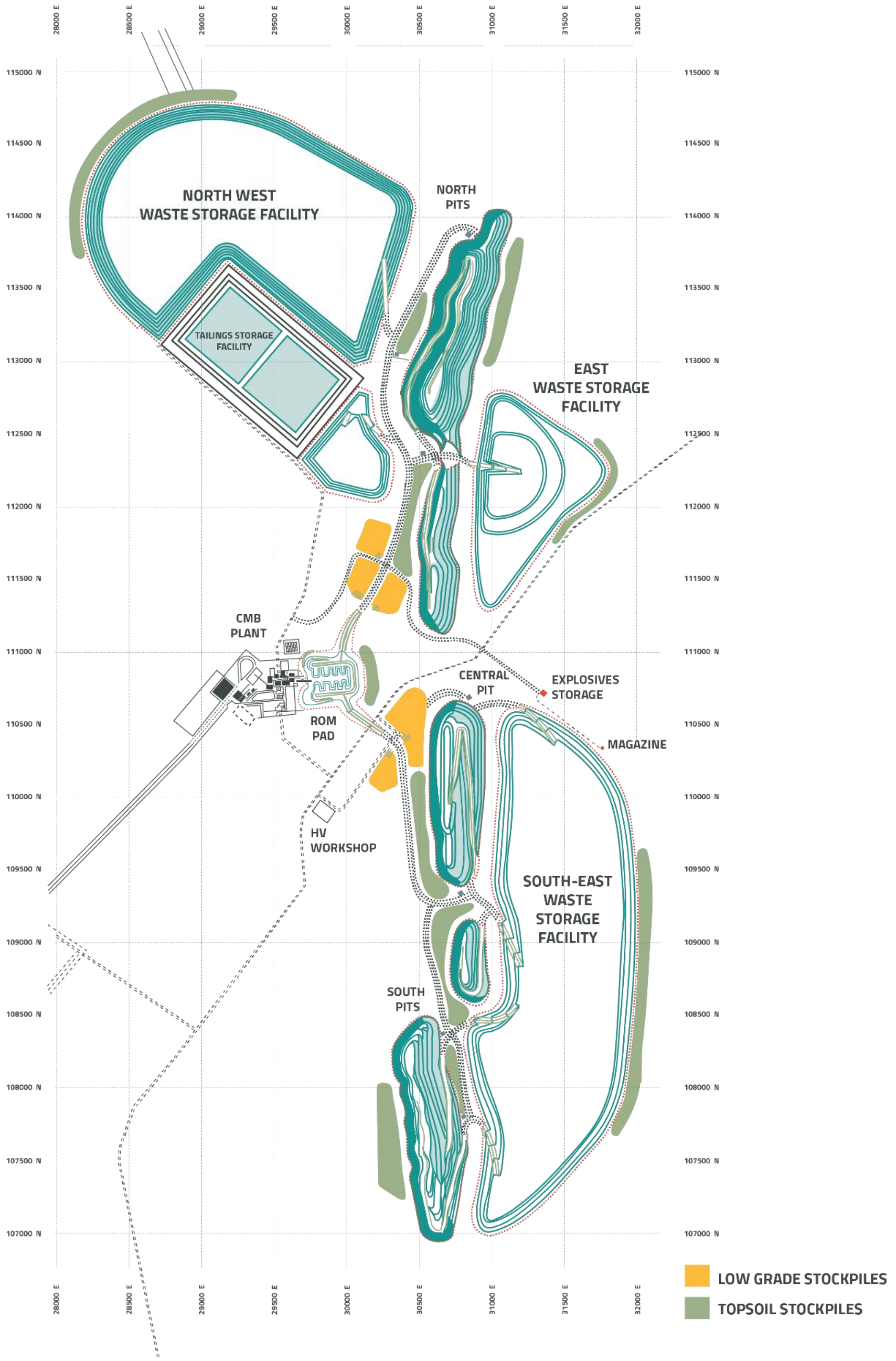

Figure 11 Site General Arrangement – Plan view including ultimate pits, Waste Storage Facilities, haul roads, ROM pad, long term stockpiles, CMB plant, Tailings Storage Facility, topsoil stockpile locations and public road with proposed diversion

4. Metallurgical Interpretation

The metallurgical testwork program for the BFS followed on from the PFS conducted from 2017 to 2018 and historical testwork dating from 2004. This earlier work focussed on comminution and beneficiation. It concluded that ores from the Project are relatively soft and amenable to conventional Autogenous Grinding (AG) or Semi-Autogenous Grinding (SAG) and that beneficiation through magnetic separation was effective, achieving concentrate grades of about 1.4% V_2O_5. Preliminary roast-leach work for fresh concentrate demonstrated vanadium extractions up to 86%.

These conclusions justified the funding of the Bankable Feasibility Study, which included:

- A pilot scale study of the crushing, milling and beneficiation (CMB) circuit
- Benchscale roast-leach optimisation testwork
- A pyrometallurgy pilot scale study
- A leaching pilot plant and precipitation work
- Evaluation of an FeTi coproduct potential.

The results of the CMB pilot, benchscale roast-leach optimisation work, and partial results of the pyrometallurgy pilot were released as a PFS Update in December 2020[8]. Remaining testwork for the BFS concluded in November 2021[9].

Samples for the BFS pilot-scale testwork were obtained in January 2019 through a diamond (PQ) drilling program that provided 28 t of core. Core from 13 holes was delivered to ALS Metallurgy in Balcatta, Western Australia. Fresh, oxide and transitional zones within the core were identified and selected sections were blended into two samples in ratios expected for the first five years of mining and for the life of mine. Representative footwall and hanging wall dilution samples were included in the pilot plant feed. Selected core intervals from each weathering zone and domain underwent small-scale variability and comminution testwork.

The CMB pilot comprised a sequence of SAG milling, medium intensity magnetic separation (MIMS), wet high intensity magnetic separation (WHIMS), and reverse silica flotation. This novel arrangement of well-established processes was designed to recover oxide and transitional components of the ore that are normally rejected in conventional plants. This process, which is being patented by AVL, demonstrated an overall vanadium recovery of 76% for the LOM blend at a grade of 1.37 % V_2O_5 and 1.68% SiO_2. The vanadium recovery for the Y0-5 blend was 69% at a grade of 1.39% V_2O_5 and 1.83% SiO_2. The lower recovery for the Y0-5 sample is likely due to the higher proportion of weakly-magnetic oxide material in the early years of mining. Images of the MIMS and WHIMS units are shown in Figure 12.

[8] See ASX announcement dated 22 December 2020 *'Technical and Financial PFS Update'*
[9] See ASX announcement dated 13th December 2021 'High Purity 99.5% V_2O_5 Produced in Final Phase of Metallurgical Work for BFS'

Figure 12 MIMS unit (left) and WHIMS unit (right)

Concentrates generated in the CMB pilot were subjected to the pilot scale salt-roast process at Metso's Danville facility in the USA. A key finding was that pelletising the concentrate significantly improved the extraction of vanadium to soluble vanadate in the roasted product. Extractions of up to 94% for the Y0-5 concentrate were achieved[10], compared to 86% reported in the 2018 PFS. Extractions of 92-93% were achieved for the LOM concentrate. Pelletisation establishes an intimate contact between the reagents and concentrate, enabling a more complete conversion to a soluble vanadate during the roasting process. An optimisation program showed that vanadium conversion was maximised with a roast temperature in the range of 1250°C to 1325°C. The conversion was not dependent on kiln residence times at the points tested, or the ramp-up times used. Images from the pilot run are shown in Figure 13.

[10] See ASX announcement dated 10th March 2021 *"Final Pyrometallurgy Results Confirm World Leading Vanadium Extraction.*

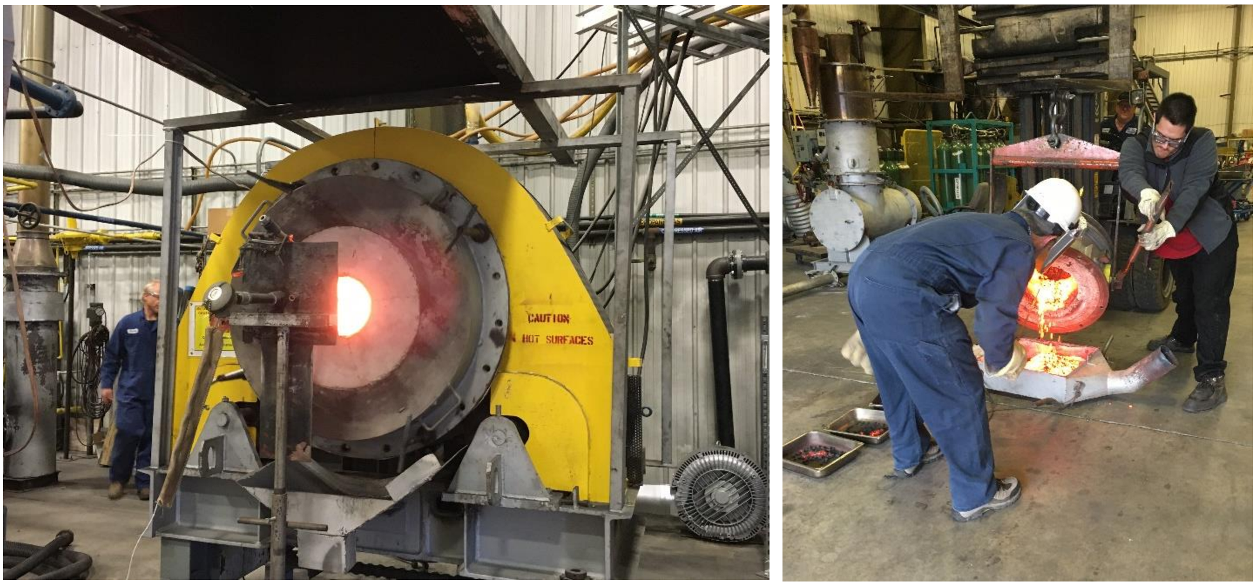

Figure 13 Pyrometallurgy pilot plant

The roasted pellets were run through the hydrometallurgy pilot plant at ALS in Perth. The leach was conducted in a rotating drum, fed by a vibrating feeder and hopper as shown in Figure 13. Surveys showed a vanadium extraction of 88% for Y0-5 and 85% for LOM. A re-pulp wash of samples from the residues increased the recovery for both the Y0-5 and the LOM, leading to the design of a counter-current wash step to maximise vanadium recovery and provide a saleable FeTi coproduct.

Figure 14 Hydrometallurgy pilot testwork and column wash set-up

The counter-current wash was conducted in a series of columns, designed to simulate a full-scale heap-wash process. The vanadium extraction from these columns was 23% to 31%, meaning the combined drum leach and wash extraction was 91-92%.

Upon completion of the wash program, a sample of the barren residue was subjected to an agitated hot water wash at 90°C, as a diagnostic leach for soluble vanadium in the residue. The residual vanadium after the hot water wash was 0.062%, comparable to a range of 0.066%-0.078% for the residue in the columns. It was concluded that 98-99% of soluble vanadium was extracted in the drum leach/column wash process. The majority of the residual vanadium is likely locked up as insoluble phases such as vanadium silicates.

Vanadium was recovered from leach solutions via the ammonium metavanadate (AMV) precipitation process. The AMV process is applicable to the highly concentrated vanadium solutions generated in AVL's leach process. It is conducted at ambient temperature, near-neutral pH and has simple process control requirements. The final product averaged 99.5% V_2O_5 over three runs, a complete suite of assays for the V_2O_5 product is shown in Table 8.

Table 8 Assays from three V_2O_5 production runs.

	V_2O_5	Fe	Cu	Zn	Pb	Cr	Si	Mg	Al	K	Na
Sample 1	99.25	0.000	0.001	0.001	0.002	0.033	0.001	0.000	0.207	0.002	0.070
Sample 2	99.60	0.020	0.003	0.001	0.004	0.036	0.000	0.000	0.133	0.000	0.020
Sample 3	99.60	0.000	0.004	-0.001	0.002	0.039	0.000	0.000	0.157	0.000	0.020

FeTi Coproduct

The iron titanium coproduct generated by the Project will be exported through the Port of Geraldton, without further beneficiation or treatment. The coproduct is a low-cost titanium source that can be used as an additive to blast furnace operations. Titanium is added to sintering blends to improve furnace refractory protection and to minimise maintenance costs associated with furnace relines. AVL's FeTi coproduct will enter the market as a stable alternative to existing sources of similar material. Importantly the FeTi coproduct contains low grades of other contaminants such as sulphur (0.038%) and phosphorous (0.002%).

The FeTi coproduct has an average iron grade of 54-55% and has high TiO_2 levels at 15%. The expected output is 0.9 million tonnes per year. Beneficiation at a lab-scale has been demonstrated through reduction roasting, with iron grades of up 67%. Work will continue post-BFS on a larger scale through the Cooperative Research Centre-Projects and other avenues, using hydrogen as a reductant and further exploring the separation potential of iron and titanium.

AVL has signed two Letters of Intent for the intended sale of the FeTi coproduct, the first with Shenglong Metallurgy International[11]. Shenglong Metallurgy International is the Hong Kong based commercial arm of Guangxi Shenglong Metallurgy Co. Ltd, a 12 Mtpa steel producer located in southern China's Fangchenggang port. The second is with Wingsing International Limited (Wingsing)[12], the commercial arm of Tianzhu Steel which is a 5 Mtpa steel producer, currently under relocation and an expansion project to increase the steel capacity to approximately 7 Mtpa. The LOI with Wingsing relates to 100,000 tpa of the FeTi coproduct.

The Company's consultant in China continues to build relationships with steel producers to secure further interest in the product.

Ongoing Testwork

Testwork is ongoing in areas outside the BFS to identify and improve opportunities for The Project. A key opportunity is the production of vanadium electrolyte for redox flow batteries (VRFBs). A grant of $3.69M has been awarded through the federal government's Modern Manufacturing Initiative[13] to

[11] See ASX announcement dated 9th November 2021 *'First Letter of Intent for Iron Titanium Coproduct Offtake Sales'*
[12] See ASX announcement dated 17th March 2022 *'Letter of Intent for Iron Titanium Coproduct Offtake Sales'*
[13] See ASX announcement dated 21st July 2021 *'AVL Awarded $3.69M Federal Government Manufacturing Grant'*

go towards piloting and construction of an electrolyte plant. A Memorandum of Understanding (MOU) has been signed with US Vanadium to secure technology for electrolyte production and Western Australian engineering group Primero has been appointed to undertake Early Contractor Involvement[14]. This work is currently underway.

5. Process Description

The process flowsheet is divided into two sections with mining and concentrating at the Project site near Meekatharra and the refining to V_2O_5 at the process plant at Tenindewa near Geraldton. These sites are referred to as the Crushing, Milling and Beneficiation plant (CMB) and the Processing Plant respectively.

Crushing, Milling and Beneficiation (CMB)

The CMB process flowsheet is presented in Figure 15 and an illustration of the CMB layout is shown in Figure 16. Ore is stockpiled on the ROM pad as oxide, transitional and fresh material classified from in-pit grade control activities. This allows management of the process feed in terms of oxidation state and vanadium grade. The ore blend is crushed and ground through a conventional jaw crusher and single stage SAG milling circuit. The SAG mill cyclone overflow is fed to the medium intensity magnetic separation (MIMS) circuit, from which the non-magnetic stream is fed to the Wet High Intensity Magnetic Separation (WHIMS) unit. Concentrates from MIMS and WHIMS are combined and reground in a ball milling circuit. Reground concentrate reports to the silica reverse flotation circuit where further silica is removed. The final concentrate of nominally 1.39% V_2O_5 is stockpiled as filter cake prior to being transported via road to the processing plant for vanadium extraction.

[14] See ASX announcement dated 11th August 2021 *'AVL Secures Vanadium Electrolyte Manufacturing Technology'* and ASX announcement dated 27th September 2021 *'Vanadium Electrolyte Manufacturing Plant Build Awarded to Primero'*

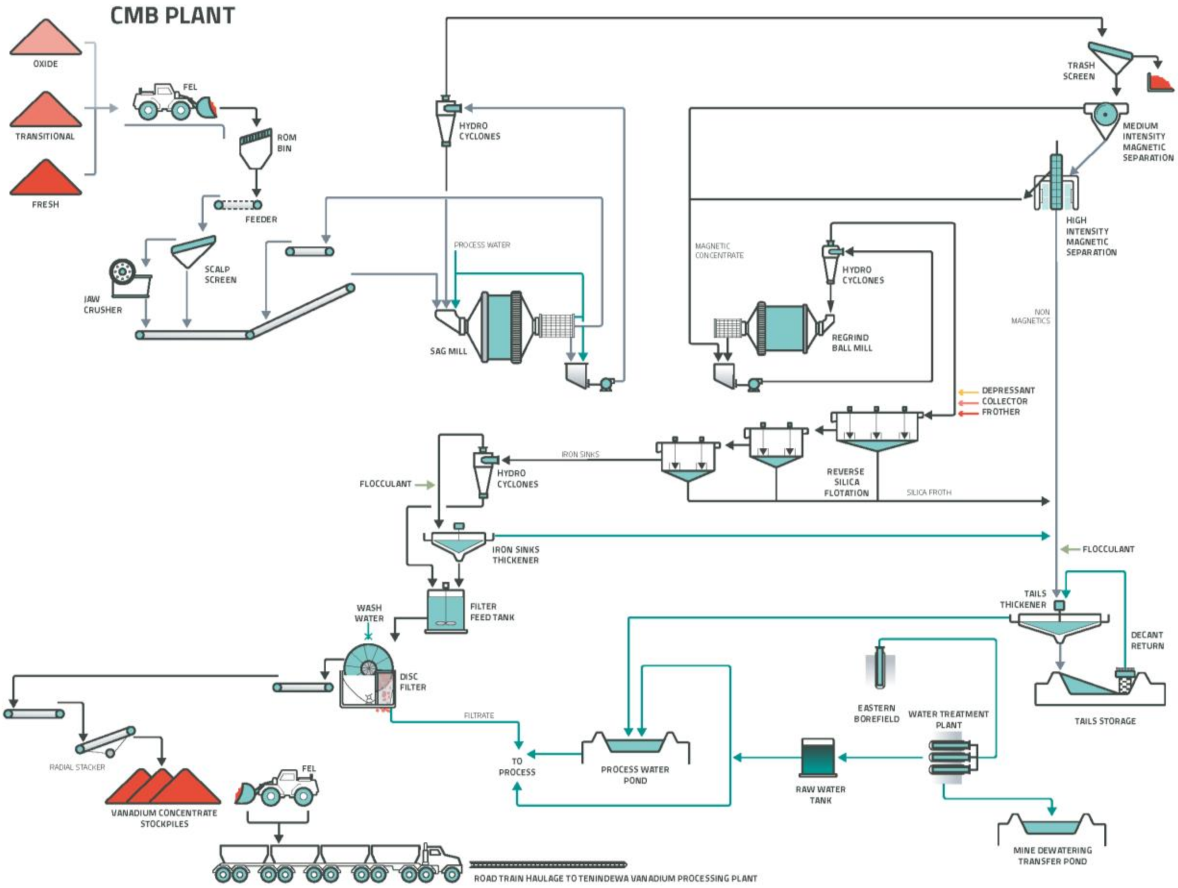

Figure 15 CMB Flowsheet

Figure 16 CMB layout

Processing Plant

The processing plant flowsheet is shown in Figure 17. Concentrate is transported to the process plant from the CMB plant by road train where it is fed directly to feed bins or stockpiled. The concentrate is mixed with a binder and soda ash before being homogenised and pelletised. The pellets are fed to the grate kiln, where they undergo a sequence of drying stages and pre-heating followed by roasting in a rotary kiln. The roasted pellets are cooled and quenched, with off-gasses directed back to the preheating sections of the kiln. The pellets are partially broken in the quench mill, which aids subsequent water leaching in a rotating drum.

The slurry is filtered, with the pregnant leach solution (PLS) directed to the precipitation circuit and the solids to the heap-wash pads. The precipitation circuit includes a desilication section, where dissolved silica is removed, followed by the precipitation section, where vanadium is recovered from the PLS as ammonium metavanadate. The final stages are de-ammoniation and fusion, where the ammonium metavanadate is converted into vanadium pentoxide flakes for packaging and transport to market.

The semi-leached FeTi coproduct is then stacked and washed on lined pads to extract remaining soluble vanadium. This leachate is returned to the leach circuit and the clean FeTi coproduct is loaded onto road trains for transport to port.

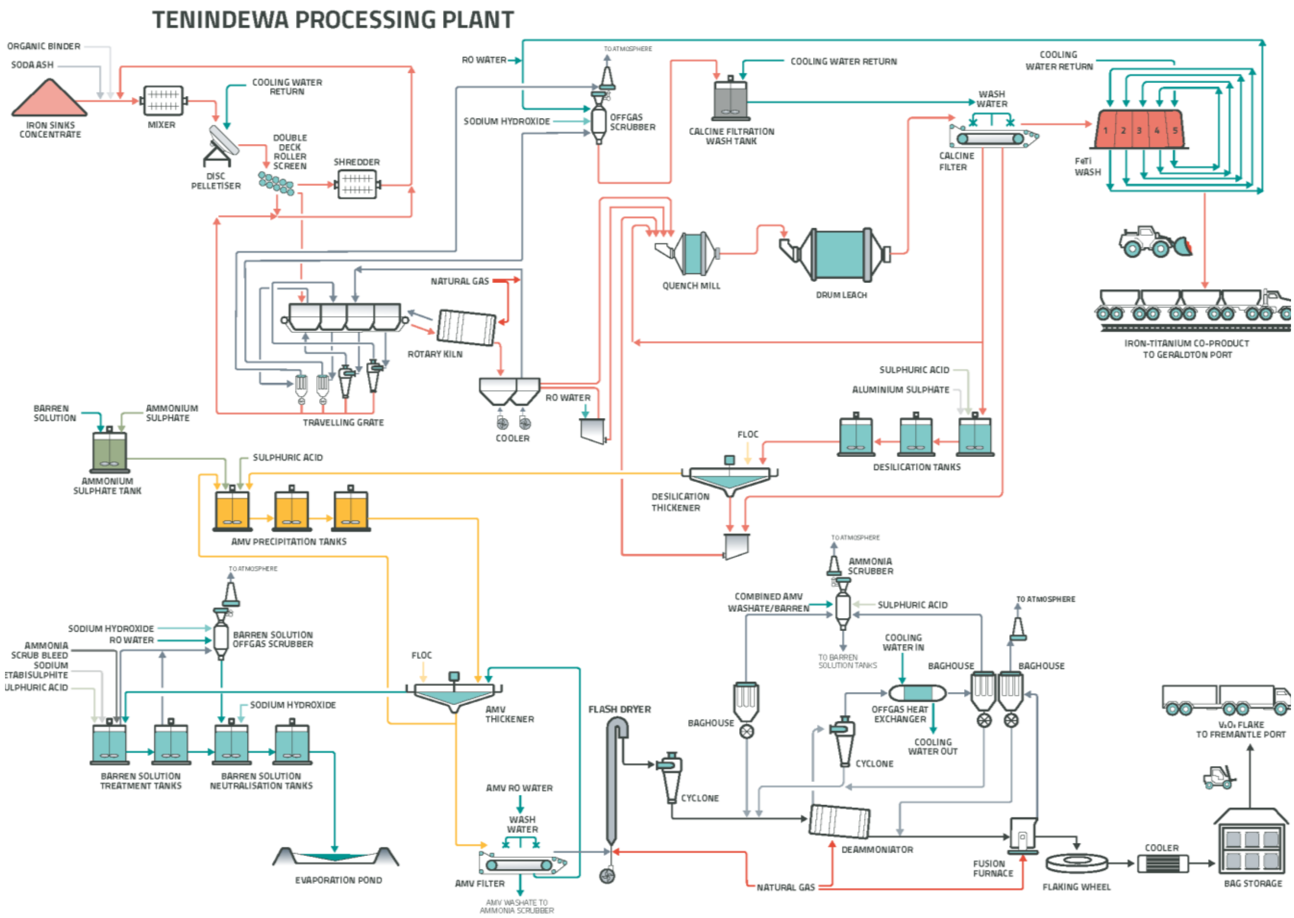

Figure 17 Processing Plant Flowsheet

An illustration of the processing plant layout is shown in Figure 18 below.

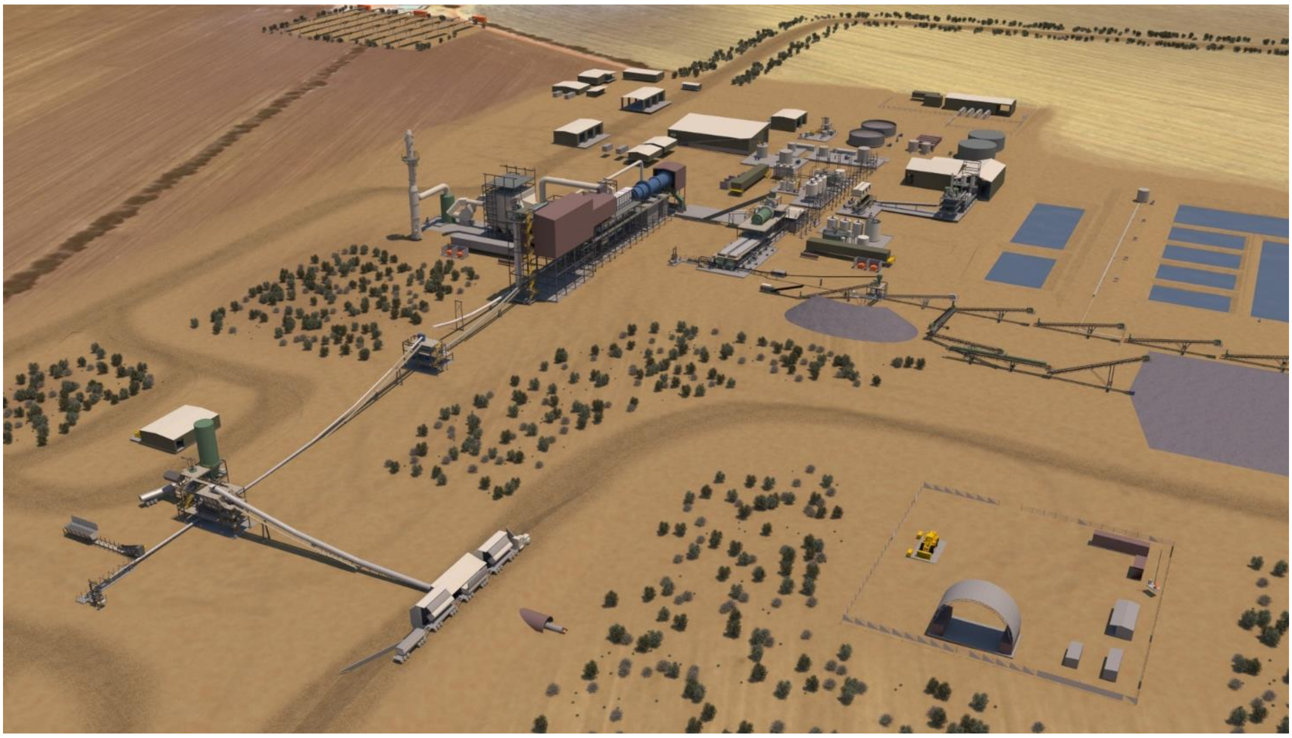

Figure 18 Processing plant layout (looking south)

6. Infrastructure

The remote and greenfield nature of the Project requires significant infrastructure to be constructed. This includes regional roads, bulk earthworks, power supply and distribution, water supply, accommodation, mine infrastructure, communications and natural gas supply (processing plant only).

Gabanintha Area Infrastructure

Regional Roads

Primary access (haul road) to the mine and CMB will be from the Great Northern Highway using the existing gravel Cullculli Road (30km), from which a new section of road will be built to connect to the mine and CMB (31km). Sections of the existing Cullculli road will require upgrading. The road will comply with Main Roads Restricted Vehicle Access (RAV) 5.3 and 10 requirements and be able to accommodate 60m Ultra Quad PBS (150 tonnes) road trains. Hydrologic modelling was used to inform catchment and flood characteristics along the entire length of this road as part of the design (see Figure 19).

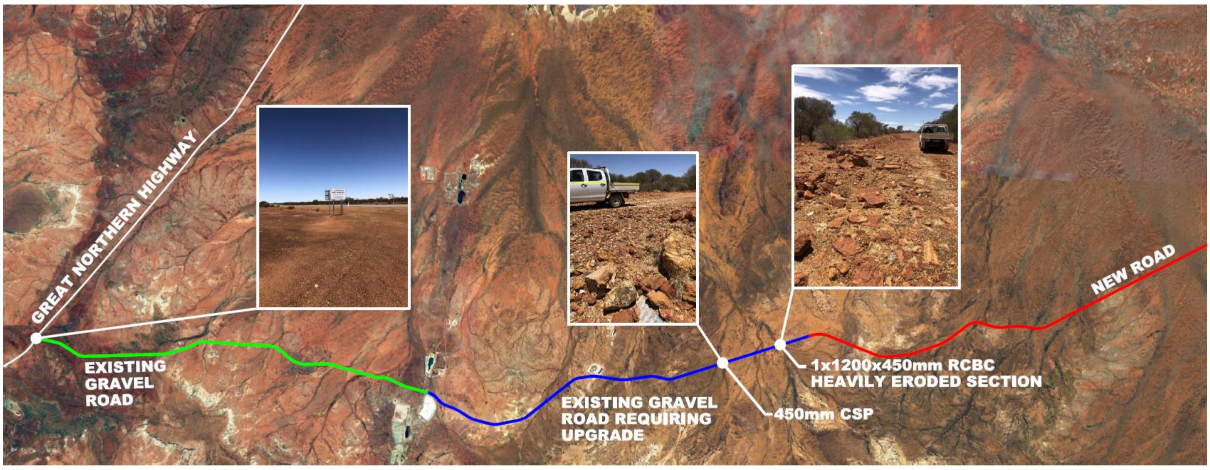

Figure 19 Haulage road layout

Other area roadworks include diversion of the existing Sandstone-Meekatharra Road, which currently passes directly over the proposed layout of Pit 2. Included in the proposed diversion is a design for an ore haul road overpass, which connects mining activities east of the road with the ROM. See Figure 20 below.

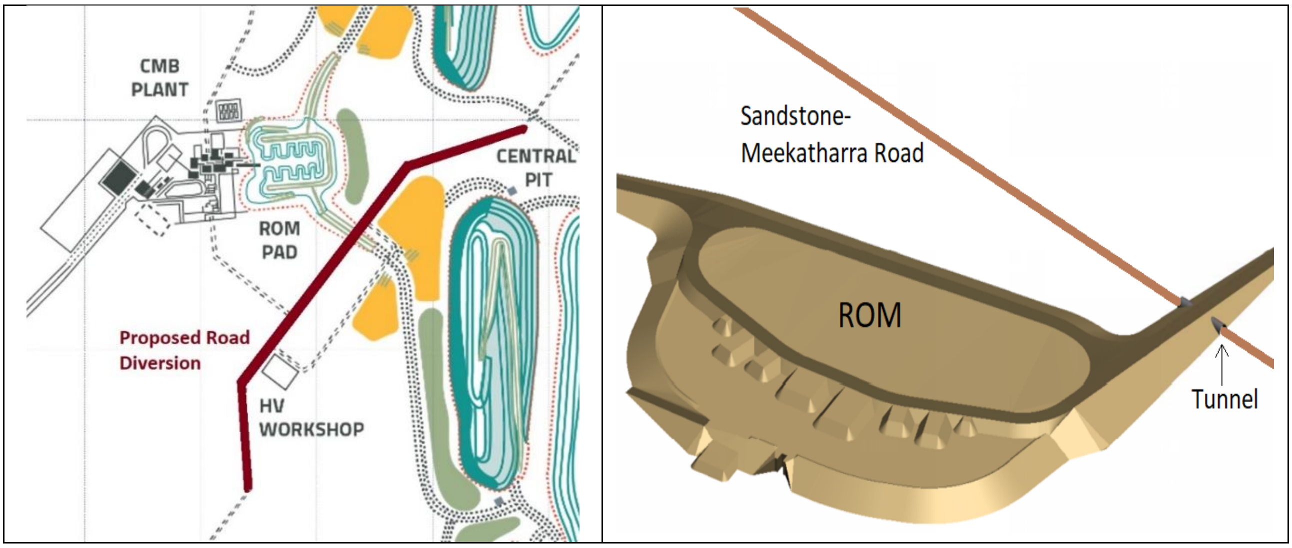

Figure 20 Proposed Sandstone-Meekatharra Road diversion and overpass

Bulk Earthworks

Bulk earthworks in and around the CMB will follow the natural topography slope towards the south-western side of the plant, which has an average gradient of approximately 0.25%, into a perimeter drain which discharges into the proposed run-off water storage pond. Site grading and shaping has been raised relative to the surrounding elevations to ensure the proposed plant site is protected from floods. Local cut to fill will be utilised from the site run off ponds, with additional imported fill required where necessary, including a capping layer allowance for hardstands. Detailed earthworks have been formed so that the runoff will be drained away from the buildings into planned open drainage swales.

Electrical Supply and Distribution

Power supply for the CMB, mine and camp will be supplied from a Build Own Operate (BOO) power generation station. The fuel source will be Liquefied Natural Gas (LNG), with a significant portion of renewable energy generation, in combination with a VRFB, in line with AVL's commitment to minimise greenhouse gas emissions.

Electrical distribution design to support the BFS has been developed in accordance with Wood's electrical design criteria. Electrical load lists and single line diagrams, based on items referenced in mechanical equipment lists, have been developed. These have led to sizing of transformers, switchgears, motor control centres, variable speed drives and switch rooms. Layouts and designs of switch rooms have been completed.

Water Supply

The water volume requirements for the various operations are as follows:

- Mining: Road maintenance and de-dusting – 0.22 Gl/annum
- CMB Plant – 1.3 Gl/annum (maximum)
- Vanadium Processing Plant – 0.87 Gl/annum (maximum)

Reedy Mine Operations:

The proposed use of existing pit water from Westgold's Reedy Mine Operations (RMO) was explored further by conducting a water balance over the RMO pits. This was based on historical 2019 to 2021 water storage observation data for the pit lakes, a site visit in July 2021, storage versus pit lake elevation curves and pit capture zones, based on the surface areas of the pit crests.

These were then used to estimate groundwater inflows from recharge, and hence sustainable yields from the pits. Six pits were modelled, with 2.4 Gl of current water storage and an estimated 0.63 Gl of average annual sustainable yield.[15]

Mine Dewatering Production Bores and Sump Pumping:

A groundwater exploration drilling program was performed during 2021 consisting of three pumping and four monitoring bores. These, together with existing bores from a prior campaign in 2018 were pump tested and sampled to determine the groundwater Total Dissolved Solids (TDS) concentrations and Electrical Conductivity (EC). The pumping tests delivered short-term TDS concentrations of 8,300, 8,800, and 7,600 mg/L respectively, with expectations of increased TDS over time.

Data from existing groundwater exploration bores and pastoral bores within the adjacent Hope Palaeodrainage system was also utilised in the water hydrogeological modelling completed by the consultants. Results of the modelling were used to determine water availability and projected water quality for the life of mine water supply and dewatering strategy. By increasing the supply quality threshold to a TDS of 20,000 mg/l and introducing a reverse osmosis treatment plant to lower the TDS concentrations for process water supply, the project was able to confirm quality and quantity of water from both these sources, notwithstanding an element of risk as quality decreases with mining depth (PSM January 2022, Australian Vanadium Project – EIA Hydrogeological Study).

Eastern Bore Fields:

A detailed investigation of tributaries of the Hope Palaeodrainage and more specifically the tributary 15 to 20 kilometres to the north-east of the Project, referred as the Camel Well Tributary, was also completed. It was shown to have the potential to be a reasonable and sustainable source of

[15] PSM4215-023R Rev 1 EIA Water Supply for the Australian Vanadium Project

comparatively lower TDS concentration groundwater, providing the quantity required for the CMB processing plant and reducing the risk associated with the other sources. As a result, this option was adopted for the Project Capital and Operating cost estimates (PSM January 2022, Australian Vanadium Project – BFS Hydrogeological Study).

Accommodation

The permanent camp/village will be required to accommodate 224 personnel including casuals. In addition, a temporary camp expansion will be required to cater for the construction workforce that peaks at 424 personnel. Costing is based on hire/return for temporary facilities and AVL installation of the permanent facilities.

Mine Infrastructure

Mining infrastructure will be provided primarily by the mining contractor. AVL will provide power and related infrastructure, along with some minor concrete, foundations, and earthworks. Mine roads, ramps, workshops, offices, and all other infrastructure is costed and provided for as part of the mining contract.

Tenindewa Area Infrastructure

Area Roads

Regional road usage will primarily be along the Geraldton - Mt Magnet road, rated at RAV 10 for use by 53.5m or 60m Quad Road Trains and which fall under the responsibility of Main Roads WA. Road train and specific reagent delivery access to site will be directly from the Geraldton – Mt Magnet road (see Figure 21). The northern end of the Erangy Springs gravel road will be used for all other site access and falls under the City of Greater Geraldton.

The two main area roads within the Tenindewa site are the haulage road and the main entrance road. The entry and exit two-way haulage road will total about 4.5km in length and access for the road trains delivering concentrate to the processing plant will be east of the existing eastern railway crossing, from the Geraldton-Mount Magnet Road.

The two-way haulage road will be built as a 10m wide road consisting of 150 mm basecourse and 150 mm subbase layers, following the existing ground level at approximately 2% grade. Roadside drainage channel is provided for surface water runoff, with allowance for culvert crossings as necessary for rain events. The main entrance road will be a 8m wide road consisting of 150mm basecourse and 150mm subbase layers.

Figure 21 Haulage Road and Erangy Springs Road Intersection with Mt Magnet – Geraldton Road

Internal Plant roads will be elevated above bulk earthworks level to allow for pavement depth, with side drainage channels. Surface drainage will be designed to flow over a low water crossing/drift crossing across the road, where the road section is lowered to allow the drainage over it, and/or a culvert crossing.

Bulk Earthworks

The processing plant layout is set to locate the concentrate unloading point at a high point of the site to reduce backfill around the unloading retaining wall for side tipping. The evaporation ponds will be located at the lowest elevation within the central portion of the tenement.

The surface water management strategy is to be designed to separate/divert “clean” stormwater from process water runoff. Any runoff that has potential contact to process is contained within bunded areas, collected into lined ponds, and is pumped back into the process. Process ponds are utilised to store any process water, and they are designed to contain all rainfall events using a 1% annual exceedance probability (AEP) basis. This is a 1% probability that a given rainfall total accumulated will be exceeded in any one year.

Clean water runoff is generated outside of process bunded areas, including roads, and will be collected into a Stormwater Runoff Pond prior to discharging larger rainfall events to the external drainage system. This proposed runoff pond is currently located in the lowest point of the site to the west of the processing plant.

Electrical Supply and Distribution

Power supply for the processing plant be supplied by a Build Owner Operate (BOO) contractor. Quotes have been received from multiple recognised Independent Power Providers (IPP’s). The main source of fuel to drive each of the Gensets will be piped natural gas, supplied from either of the Dampier to Bunbury natural gas pipeline (DBNGP) or the Mid West pipeline (MWP). The BOO contract provides power ‘across the fence’ with the Project supplying a hardstand area approximately 97 m x 62 m for the gas fired power station. Renewable energy makes up a significant portion of power generation in line with AVL’s commitment to minimise greenhouse gas emissions. The Company is working with subsidiary VSUN Energy to size the solar photovoltaic and VRFB.

Wood has developed an electrical load list (ELL) and associated single line diagrams (SLD) based on items referenced in the mechanical equipment list (MEL). The sizing of transformers, switchgear, motor control centres (MCC) and variable speed drives (VSD) has been checked against the electrical equipment list (EEL). The major electrical equipment sizing has then been used as the basis for selecting appropriately sized transportable switch rooms.

Water Supply

The processing plant will require a low salinity water resource for processing the concentrate from the CMB. It is estimated that 1.2 Gl/year (i.e., 38.0 l/s) of brackish groundwater will be required to produce 0.8 Gl of low salinity water via a reverse osmosis plant.

Hydrogeological and environmental consultants Rockwater were commissioned to oversee the completion of a monitoring bore installation on the Tenindewa site in late 2021. A hydrogeological assessment was completed, confirming water quality and establishing reverse osmosis plant sizing requirements. The resultant assessment and bore completion report has also been used to support AVL’s application for a Section 5C Licence to take water for a proposed allocation of 1.2 Gl/year from the identified Irwin River-High Cliff Aquifer, in accordance with the Department of Water (DoW) Operational Policy No. 5.12 – Hydrogeological reporting associated with a groundwater licence (DoW, 2009).

Gas Supply

The proposed processing plant is strategically located approximately 15 to 17 km east of the Dampier to Bunbury natural gas pipeline (DBNGP) and a similar distance south of the Mid West pipeline (MWP) lateral, 50% owned and operated by the APA Group, the other 50% is owned by Horizon Power.

The Project consumes a significant quantity of heat energy in the roasting of vanadium with sodium salts. This critical metallurgical process takes place in a grate kiln which is fired with natural gas, being the cheapest and cleanest source of heating fuel. The estimated processing plant average operating natural gas consumption is in the order of 5.33 TJ/day including demand in drying, de-ammoniation, V_2O_5 fusion and a BOO power plant generating electricity for the operation.

The DBNGP and MWP both have spare capacity in the order of 1000 TJ/day and 15 TJ/day respectively. Pipeline and total natural gas costs are based on market quotations at the time of the study and include an estimate of all costs for the required direct pipeline connection to the facility.

7. Tailings Management (Minesite Location only)

CMB tailings storage for the Project has been progressed in design by Golder Associates Pty Ltd (Golder), commensurate with a BFS level of study. The Project will ramp up in processing capacity, reaching a maximum of 1.60 million tonnes per annum and a mine life average of approximately 1.46 million tonnes per annum (Mt/a) of ore, generating between 550,000 t/a and 794,000 t/a of tailings solids (mine life average of 662,000 t/a).

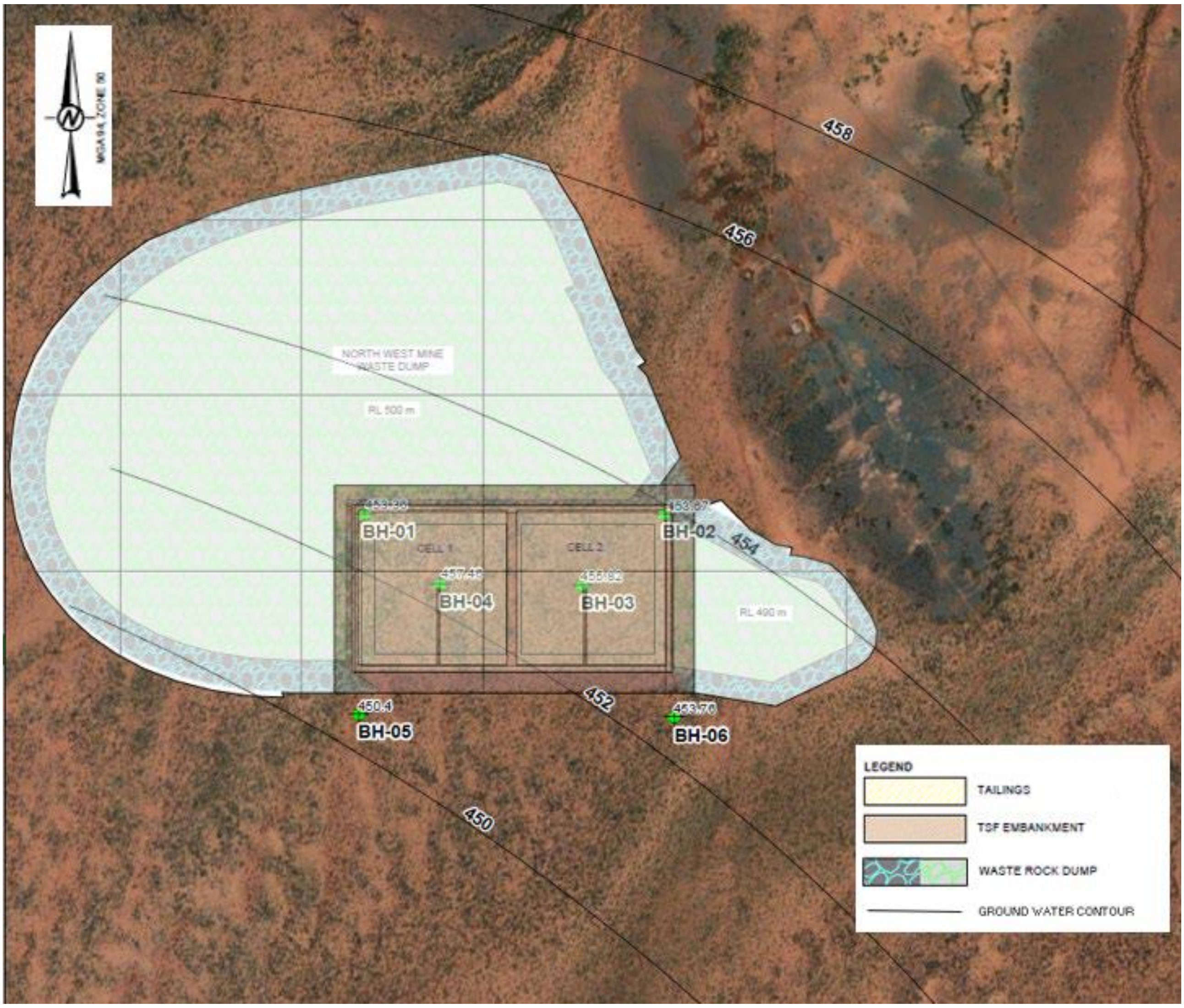

Figure 22 General Arrangement of IWL Incorporating Tailings Cells 1 and 2

The design of the chosen concept entails the deposition of conventionally thickened tailings within two cells, sitting within the north-west waste rock dump and forming an integrated waste landform (IWL) – as per Figure 22. A schedule of quantities for the initial and staged construction of the IWL over the LOM was thus determined.

Cell 1 and Cell 2 combined are designed to accommodate up to 16.3 Mt of tailings over a period of 25 years. The cells will be operated alternatively for one year between incremental wall raises to allow the tailings to consolidate. The embankments for Cell 1 and Cell 2 are expected to be increased by 2 m in height, for the majority of the raises, with a final raise of 3 m in height. A raise for each cell will thus occur every alternate year of operation.

The design of the IWL is supported by on-site geotechnical investigation, laboratory testing of selected soil, waste rock and pilot plant tailings samples, to establish their material characteristics, mineralogical composition and the potential for Acid and Metalliferous Drainage (AMD) associated with leachate mobility. The development of a conceptual exposure model (CEM) to assess the toxicology of residual reagents expected to be present in the tailings was also completed.

A qualitative dam break zone of influence assessment, an ANCOLD dam failure and environmental spill consequence category assessment, a DMIRS hazard rating and risk classification, and GISTM Consequence category assessment were all completed to achieve design compliance.

Establishment of the closure objectives and closure design concept for the IWL was completed and recommendations for decommissioning, rehabilitation, and post closure performance monitoring was provided.

8. Capital Cost

A summary of capital costs is provided in Table 9 and Table 10 below. Capital is categorised as pre and post first V_2O_5 production and project location. All costs are estimated in Australian dollars ($) at an accuracy of ±15% as of 24 March 2022 and in accordance with the American Association of Cost Engineers' guidelines for a Class 3 Estimate and are converted to US dollars (US$) for the purposes of this report.

Where possible, capital has been deferred to later years as part of a two staged approach to capex spending. Deferred spending includes non-critical infrastructure, plant equipment required in later periods of commissioning and ramp up, and capital spending that can be substituted for operational expense in the short term.

Wood has developed capital cost estimates for all process and non-mining related infrastructure for the Project. Certain elements to complete the project's overall initial capital estimate have been provided by outside sources such as AVL for owner's costs and contingency and Golder Associates Pty Ltd (Golder) for the tailing storage facilities (TSF).

Pre V_2O_5 production Capital

Initial capital cost for the project to first vanadium production totals **US$435M**, excluding contingency. This includes direct capital costs of **US$351M**, with Indirect costs, EPCM, and Owner's Cost totalling **US$83M**. Contingency for the Project is determined to be 6.1%. Including all costs and contingency, total initial capital required is **$US462M.**

Direct capital cost totals **US$116M** for the Gabanintha site which includes initial mining capital for a contract mining operation, process plant and equipment and all associated infrastructure including water supply and dewatering infrastructure. ROM construction is considered part of pre-works and is therefore included in mining costs.

Tenindewa direct capital cost totals **US$235M** which includes all processing and mobile equipment, electrical and water distribution, site preparation, and plant structures within the battery limits of the plant. Other costs in this category include emergency power provisions, fire protection, and barren solution evaporation pond construction. Area and regional infrastructure costs are **US$4M** with well-developed existing infrastructure in the Tenindewa area. Miscellaneous costs total **US$6M** and include process equipment spares, construction mobilisation and de-mobilisation, and ocean freight for specialised equipment including the grate kiln.

Table 9 Pre V_2O_5 Production Capital Cost Summary (excludes contingency)

Pre V_2O_5 Production Capex	(A$ M)	(US$ M)
Gabanintha (Mine and CMB)		
Mining	*4*	*3*
CMB Plant	*82*	*59*
CMB Infrastructure	*45*	*33*
Area Infrastructure	*26*	*19*
Regional Infrastructure	*0*	*0*
Miscellaneous	*4*	*2*
Sub-Total	***162***	***116***
Tenindewa (Processing Plant)		
Processing Plant	*265*	*191*
Processing Plant Infrastructure	*47*	*34*
Area Infrastructure	*6*	*4*
Regional Infrastructure	*0*	*0*
Miscellaneous	*9*	*6*
Sub-Total	***326***	***235***
Project Direct Capital Costs	***488***	***351***
Other Project Capital		
Indirects and EPCM	*103*	*75*
Owner's Cost	*13*	*9*
Sub-Total	***116***	***84***
Total	***604***	***435***

Post V_2O_5 Production Capital

Post-production capital totals **US$92M** ex-contingency and is made up of capital items only needed post first production of vanadium product. Approximately 40% of these (see Table 10) are associated with area road works. This includes the construction of a 61 km road connecting the CMB with the Great Northern Highway and the diversion of the Meekatharra-Sandstone Road.

Although these costs have been included in the overall capital for the Project for the economic calculations, there is opportunity to further improve project economics and capital expense via alternate capital strategies, partnerships with interested parties, or low tenor financing arrangements for public infrastructure.

Table 10 Post V_2O_5 Production Capital Cost summary (excludes contingency)

Post V_2O_5 Production Capex (Yrs 1-4)	(A$ M)	(US$ M)
Gabanintha (Mine and CMB)		
Mining	*7*	*5*
CMB Plant	*9*	*7*
CMB Infrastructure	*2*	*2*
Area Infrastructure	*32*	*23*
Regional Infrastructure	*6*	*4*
Miscellaneous	*5*	*3*
Sub-Total	***61***	***44***
Tenindewa (Processing Plant)		
Processing Plant	*19*	*14*
Processing Plant Infrastructure	*9*	*7*
Area Infrastructure	*3*	*2*
Regional Infrastructure	*0*	*0*
Miscellaneous	*8*	*6*
Sub-Total	***39***	***28***
Project Direct Capital Costs	***100***	***72***
Other Project Capital		
Indirects and EPCM	*29*	*20*
Owner's Cost	*0*	*0*
Sub-Total	***29***	***20***
Total	***129***	***92***

9. Operating Cost

Life of mine C1 costs average US$4.43/lb V_2O_5. Included in the C1 cost is a FeTi coproduct credit, which is based on market quotations for transport cost, port fees and other shipping charges, along with a sales value based on market research and targeted customer input. This is outlined in the marketing section below.

The average fully allocated cost (C3) for life of mine is equivalent to US$6.11/lb V_2O_5. This includes production costs (C2), taxes, royalties, and estimates for overhead staffing and general administrative (G&A). C3 costs are the fully allocated costs for the project. It is the sum of the (C1) costs, depreciation, depletion, and amortisation, indirect costs and net interest charges. A breakdown of Project operating unit cost is provided in Figure 25.

Average operating costs for the life of mine are heavily weighted by transportation costs, which comprises 34% of total operating expenditures, shown in Figure 23 below. Independent of transport costs, processing plant expenses comprise 45% of operating expenses, with mining at 31% and the CMB expenses at 21%.

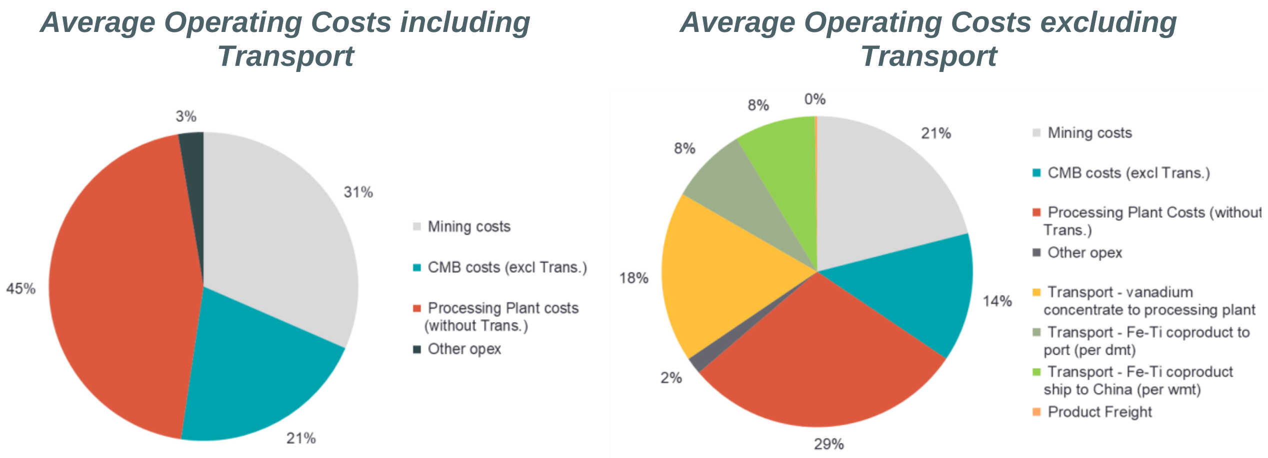

Figure 23 Direct Operating Expenses by Area

Overall operating costs excluding transport are shown in Figure 24 below. Expenses ramp up over the first 2 years of the Project as commissioning is completed and nameplate capacity is achieved. Mining cost varies based on the optimised mine schedule, with cutbacks anticipated between years 2029 and 2031. Mining costs taper off after year 2047 and stockpiles are consumed prior to end of mine life in 2050. Significant pre-strip operations are estimated in the first year of operations, beginning in late 2031.

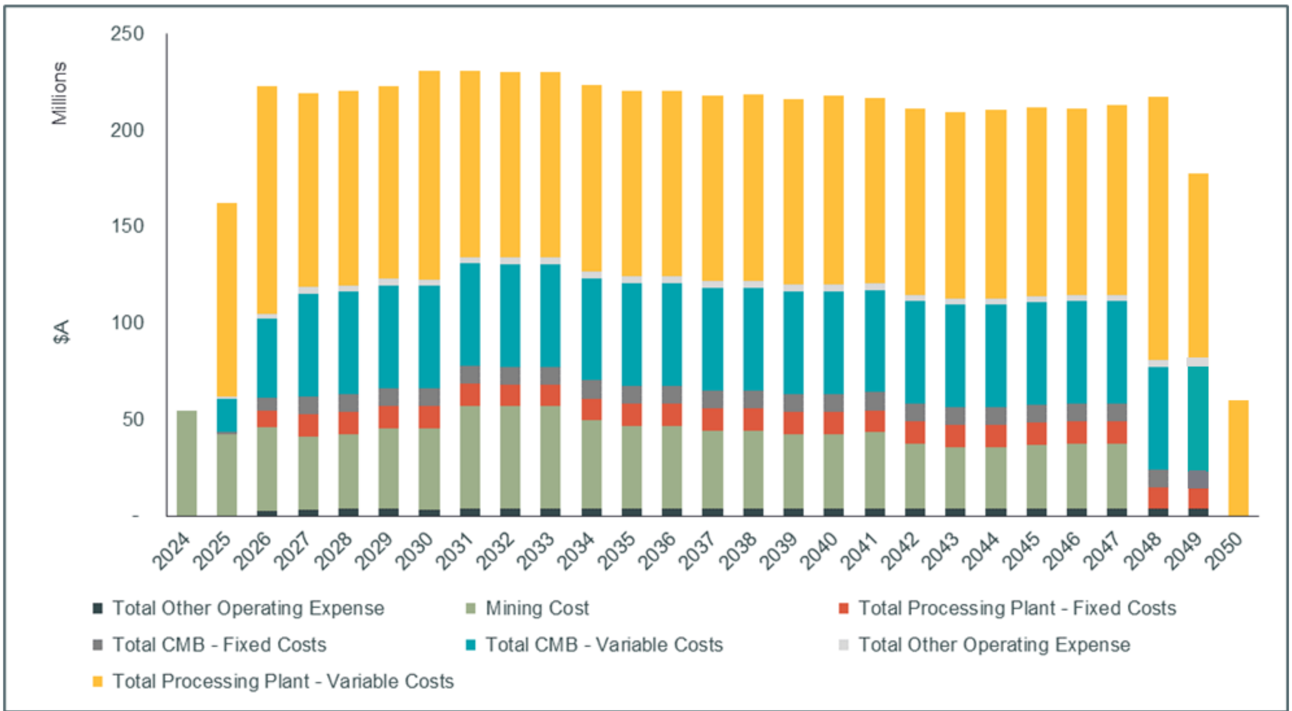

Figure 24 Operating Costs by Year

Figure 25 below displays the overall structure of C1, C2, and C3 costs. This is based on the entire life of mine and is calculated by totalling each element and dividing by total vanadium production.

Figure 25 Opex Cost Components

10. Marketing

The principal product to be produced from the Project after mining, concentration, roasting, leaching, precipitation and purification is vanadium pentoxide (V_2O_5). An iron titanium coproduct (FeTi coproduct) is also generated.

Vanadium Market

Vanadium's end-use in steel currently dominates vanadium demand globally which is estimated to be 118,000 metric tonne units of vanadium (MTV), (see Figure 26). Other well developed industrial applications include specialty chemicals and specialty alloys, the latter in the defence and aerospace sector which contribute to vanadium's critical mineral status.

Applications for vanadium in technologies such as the VRFB can have a large impact in green renewable energy management and as such, has the potential to significantly impact vanadium markets in the medium to long-term. AVL has taken an active approach in building market awareness and increasing the penetration of VRFB technology, specifically through its 100% owned subsidiary VSUN Energy.

The planned processing circuit layout includes the future capability to produce high purity vanadium oxide. AVL has been awarded a CRC-P research grant to evaluate the potential methods of production of high purity vanadium products. A quantity of high purity production will allow AVL the option to supply to critical mineral markets in areas such as specialty chemicals, catalyst and specialty alloy markets, in addition to the energy storage market.

Vanadium is recognised as a critical mineral in a number of industrialised countries including Australia, the USA, the European Union, Great Britain and Japan[16], due to its importance in vital aerospace alloys, steelmaking and chemical catalyst processes.

[16] https://www.industry.gov.au/sites/default/files/2019-03/australias-critical-minerals-strategy-2019.pdf

AVL's Project is featured in the Australian Government's Australian Trade and Investment Commission's 'Australian Critical Mineral Prospectus 2021' which is designed to support critical minerals projects into development.

Vanadium imparts a variety of beneficial effects to steels, including increased hardness and tensile strength, and resistance to heat and wear. High strength low alloy (HSLA) steels may contain as much as 5% vanadium in specialised steel products, while micro alloyed steels typically have 0.15% or less. Structural steels and reinforcing bar benefit from greatly improved strength to weight ratios when micro alloyed with vanadium. The addition of 0.2% vanadium increases steel strength up to 100% and corresponds to a weight reduction of 30% of the steel use.

The carbon offset benefits of vanadium in steel are significant[17]. Steel reinforced concrete is extensively used in construction throughout the world, with building accounting for 30 to 40% of global energy consumption. The selection of high quality, low CO_2 impact vanadium steel can have a significant positive effect on global emissions and improve the energy efficiency of construction overall. Use of higher grade vanadium micro-alloyed rebar in construction, compared to non-alloyed or low grade alloy rebar, translates into substantial material savings and a reduction in the total global carbon footprint. These factors are highly supportive of increased consumption of vanadium in higher grades of vanadium micro-alloyed rebar in developing and industrialised countries which have CO_2 reduction targets. The increased focus on net zero carbon emission targets by 2050 or earlier, accelerates the importance of increased vanadium consumption in micro-alloy steels in construction and other high volume steel product markets.

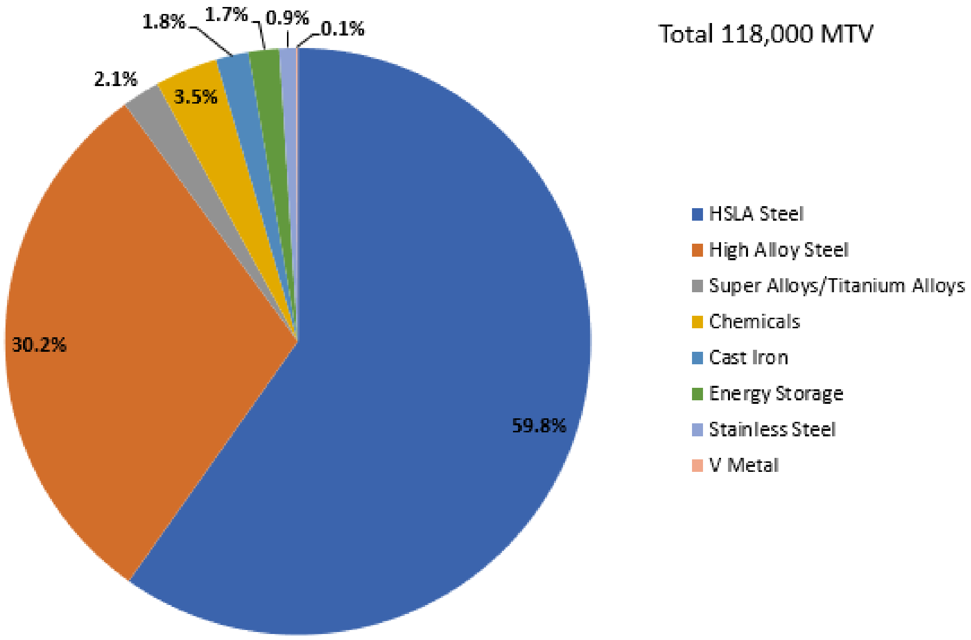

Figure 26 Vanadium Consumption by Application in 2021 (source TTP Squared, Inc)

Approximately 90% of all vanadium produced in the world is consumed in steelmaking. For this reason, vanadium demand is closely tied to world steel production. Another critical driver of vanadium demand is the overall ratio of vanadium used per tonne of steel. Developed regions of the world such as the USA, Western Europe and Australia use a substantially higher amount of vanadium in steels than in the developing world. However, as countries begin to improve steelmaking

[17] Punching Above its Weight: Life Cycle Energy Accounting and Environmental Assessment of Vanadium Microalloying in Reinforcement Bar Steel by Pranav Pradeep Kumar, David A Santos, Erick J Braham, Diane G Sellers, Sarbajit Banerjee and Manish K Dixit

and building practices, vanadium specific consumption is expected to increase to match the developed world (see Figure 27).

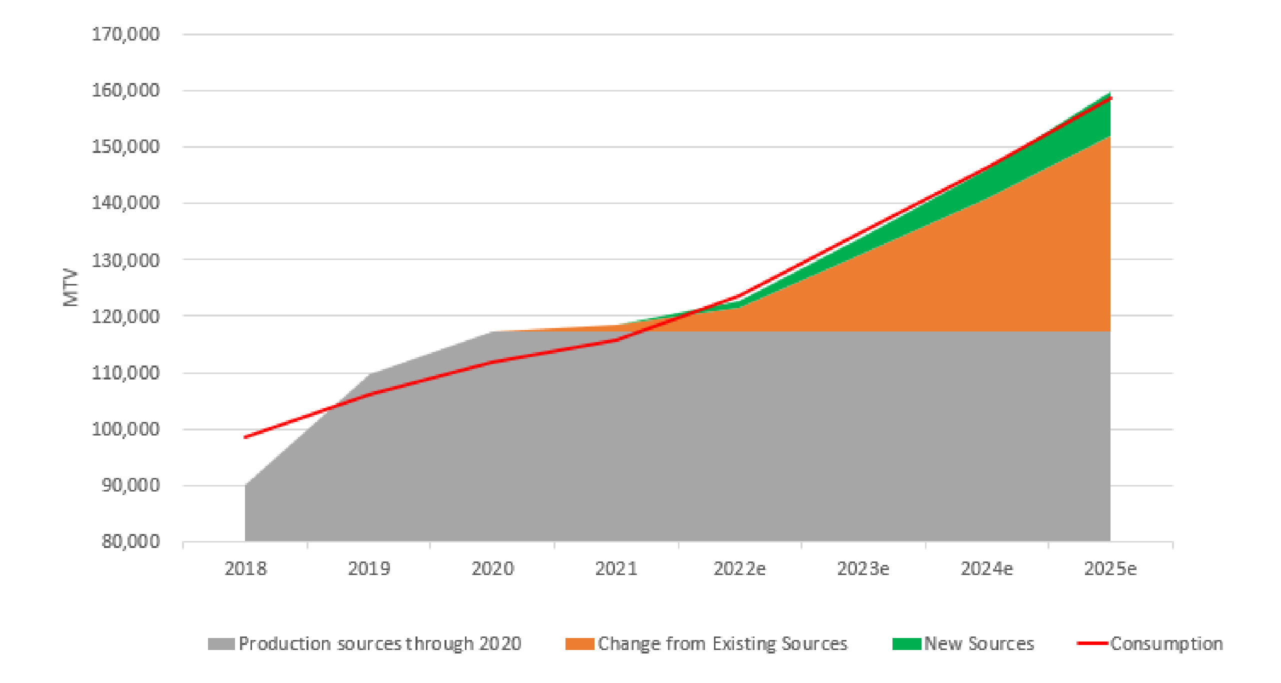

Figure 27 Global Vanadium Consumption and Production (source TTP Squared, Inc)

Although the vanadium market is primarily steel focused, VRFB implementations are gaining momentum, driven by the global push for storage technologies that can capture renewable energy generation and assisting the global transition to net zero emissions.

In 2021 the largest reported VRFB sales and planned installations were:

1. 16MW/128MWh Green Valley Energy Storage Project, Salinas, California, USA
2. 100MW/500MWh VRB Energy project in Hubei Province, China
3. 10MW/80MWh Bodega Energy Storage Project, Gonazales, California, USA
4. 6MW/18MWh Raya Mesa, Unincorporated Monterey County, California, USA

Globally during the past year there has been approximately 1.26GWh of VRFBs either installed or announced. This total is based on publicly available information compiled by the Company over the past 12 months. This is equivalent to a requirement of over 12,000[18] tonnes of V_2O_5, with AVL's planned annual production at 11,000 tonnes of V_2O_5. Growth in vanadium consumption directly attributed to use in energy storage is expected to grow significantly as shown in Figure 28.

At the time of writing there are at least 19 active VRFB manufacturers globally.

[18] Using a calculation of 9.89 tonnes of V_2O_5 per MWh

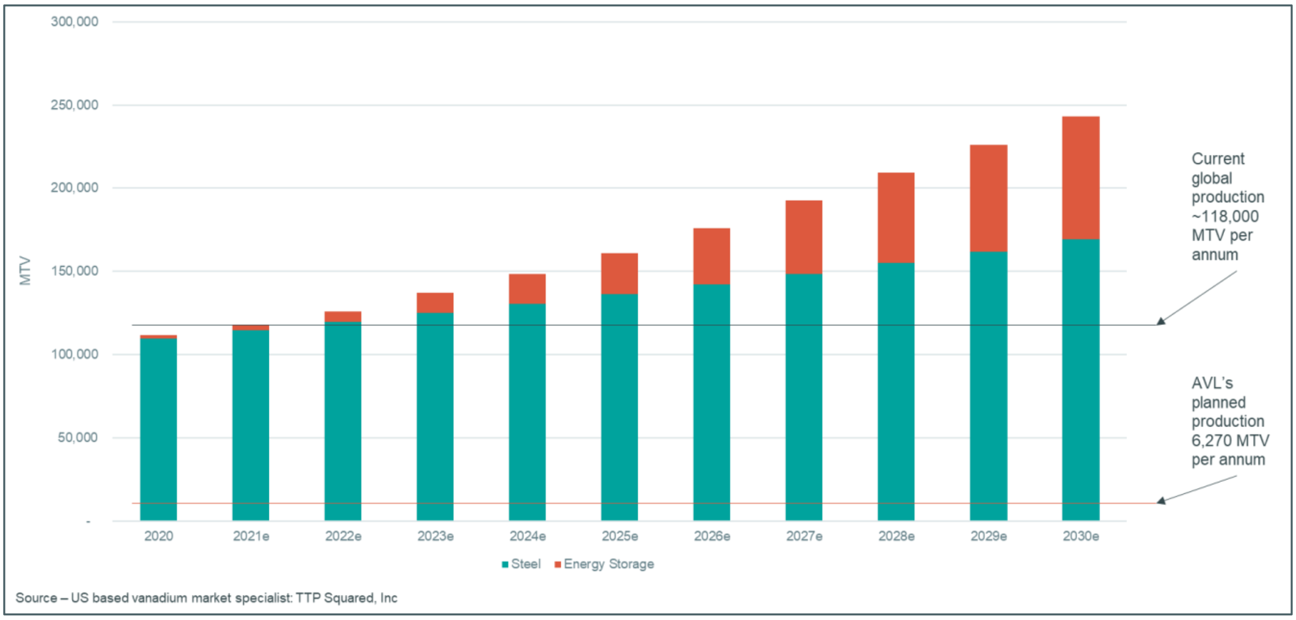

Figure 28 Projected vanadium demand from steel and battery markets (source TTP Squared, Inc)

AVL has recognised the importance of new vanadium applications, with energy storage being the highest priority of those applications. Being part of the development of the new energy storage market has been included in AVL's vanadium strategy since 2014, with active steps taken in 2016 to support these views.

VSUN Energy was established by AVL as a 100% owned subsidiary in 2016, with a remit to advance the knowledge and uptake of VRFB in Australia. The impact of reduction in global carbon emissions through the uptake of renewable energy, assisted by VRFBs, is another key driver for the Company as it seeks to make its Project and products as sustainable as possible.

Historical Vanadium Pricing

The vanadium price is cyclical in nature, driven by changes of supply and demand, with market imbalances driving prices above US$30/lb V_2O_5 twice over a 15-year timeframe (V_2O_5 spot price source: Fastmarkets, see Figure 29).

The average price since the 2004 period sits at US$9/lb in mid-2020 adjusted pricing (TTP Squared pers. comm.). The distribution of monthly prices in Figure 29 indicates two overlapping normal price distributions. The lower has a mean price of between US$6 -7/lb and is indicative of stable market conditions. These prices range from lows of US$4/lb to US$9/lb and are applicable in 75% of prices since 2004. A second higher price distribution is indicative of vanadium market conditions where demand is outstripping supply, and has a mean price of between US$15-16/lb ranging from lows of US$10 to highs over US$30/lb.

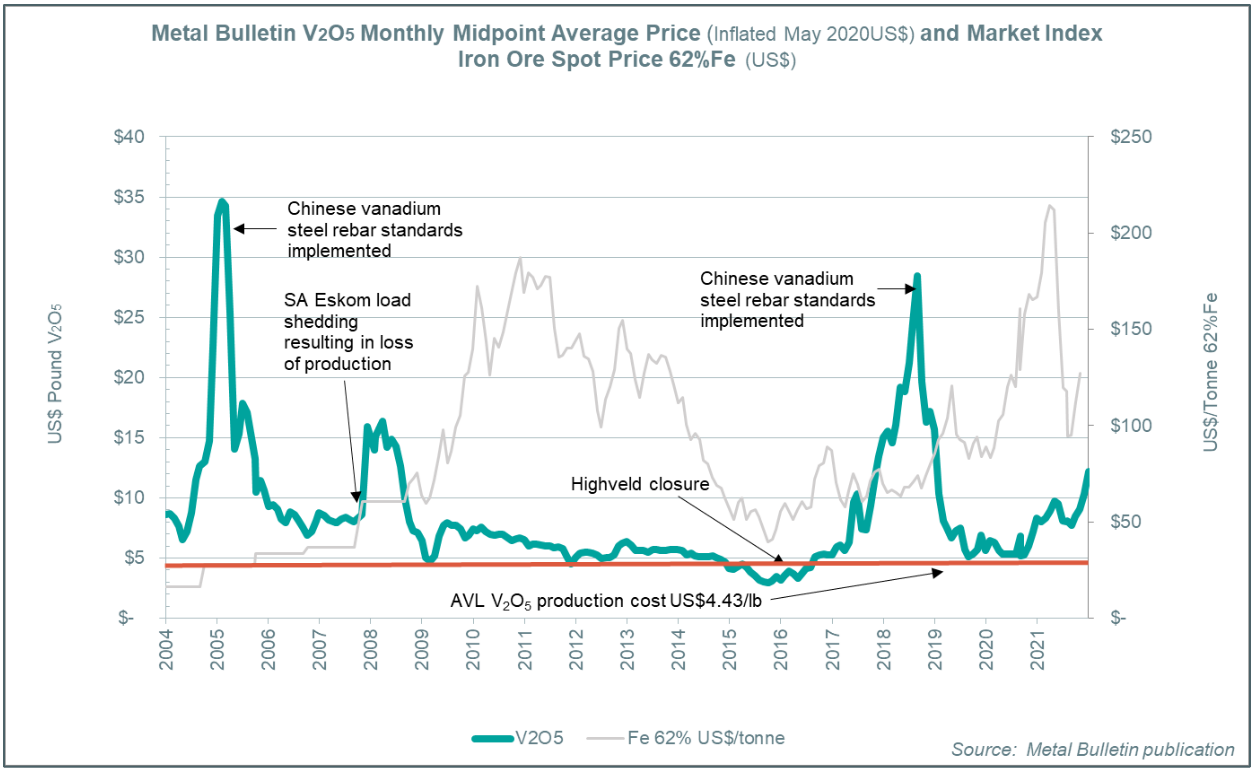

Figure 29 Historical V_2O_5 Monthly Midpoint Average Price and Market Index Iron Ore Spot Price 62%Fe

Pricing at the time of writing has shifted to over US$12/lb, having increased from US$6/lb at the start of 2021 and indicating a move to the high demand, low supply pricing distribution. Increased global geopolitical volatility and ongoing Chinese regulatory changes specifying the increased use of microalloy steel are impacting price and this trend looks to continue into 2022 and beyond.

AVL favours a long-term average price of US$10.50/lb in line with ongoing market growth and limited capacity increases globally. Increased vanadium use in energy storage is likely to impact long term pricing with a premium being received for limited volumes of high purity (99.6% V_2O_5) needed for use in batteries. AVL has presented sensitivities based on a range of vanadium prices for the Project in Section 11.

FeTi coproduct produced after vanadium extraction

Locating the vanadium processing plant near Geraldton provides a strategic and globally unique opportunity for a vanadium producer to extract further economic value from the VTM ore, by enabling the export of a FeTi coproduct through the port. The average FeTi coproduct has an iron grade of 54% and has TiO_2 levels at 15% (see Table 11). AVL plans to produce 900,000 tonnes (dry weight basis) annually over the life of the mine, which is currently 25 years. The opportunities for sale of the FeTi coproduct are “as is” as a blast furnace refractory protection blend, sinter feed blend, or blend for pelletising feed. The quality and expected sizing parameters are outlined in Table 11.

Table 11 Average First Five Years Composition of FeTi coproduct

Solid Analysis, %										
Fe	TiO_2	Al	Si	Na	Cr	S	Mg	Mn	V	Ca
54.0	14.8	1.57	1.01	0.87	0.53	0.002	0.37	0.14	0.074	0.07

- Referenced from analysis of the Y0-5 pilot blend – Run 11 leach residue (ALS Test Number HY9003, 26/03/2020) Note, Phosphorus (P) was not included in the analysis suite but is recommended for future testing. P is a potential penalty element for steel producers but is expected to be relatively low in the AVL FeTi coproduct.
- Sizing is P_{80} 3.3 mm

Based on internal and external reports, the anticipated pricing benchmark of Platts 62% Fines (see Figure 29 and Figure 30) should be applied to the AVL FeTi coproduct, with a discount applied of between 20% and 50%, with a bias towards 30%. Based on analysis and current market pricing and forecasting, AVL believes there is justification for the use of a 30% discount to a 62% Platts index average of US$96.47/tonne, the equivalent of US$67.43/tonne.

During 2020 and 2021 through its agent based in Beijing, China, AVL has significantly progressed market awareness and understanding of the potential AVL product with specific coastal steel mills in China. Two letters of intent (LOI) have been concluded with steel mills in southern China[11,12], with further LOIs being finalised.

Figure 30 62% Fe Fines CFR Futures (source Investing.com, 2022)

11. Production and Financial Model

Table 12 and Table 13 reflect the economic metrics of the Project produced from the Project Financial Model. This includes a snapshot at the base case pricing of US$10.50/lb V_2O_5. Table 13 shows metrics for the Project at various pricing scenarios for the sale price of V_2O_5. Refer to the vanadium market section for more details regarding historical pricing and the AVL pricing outlook.

Commissioning and ramp-up is based on actual performance of similar mining and processing projects, industry standard McNulty curves and in particular experience in vanadium operations. A defensible ramp-up schedule was developed which was governed by the vanadium processing facility and incorporated into the mining schedule and economic model. A gradual ramp-up is modelled that achieves 71% of design capacity in 4 quarters and nameplate capacity over eight quarters. Significant opportunities exist to improve start-up and commissioning, which will be pursued in the FEED.

Table 12 Project Summary BFS figures summary chart

Production Metrics		
Category	**Value**	
Mine Life	25 years	
Mineral Resource	239.0Mt at 0.73% V_2O_5	
Ore Reserve	30.9Mt at 1.09% V_2O_5	
Concentrate produced pa	894,718 t (dry basis)	
V_2O_5 production pa	24.7M lbs	
FeTi coproduct sales pa	915,505 t (dry basis)	
Financial Summary		
Project Economics	**A$**	**US$**
Equity IRR	20.6%	
Payback from first production	7.3 years	
Pre-tax $NPV_{7.5}$ @ US$10.50/lb V_2O_5	833M	600M
Post-tax $NPV_{7.5}$ @ US$10.50/lb V_2O_5	507M	365M
EBITDA (project)	4.4B	3.18B
EBITDA pa	175M	126M
Net Income After Taxes (project)	2.2B	1.6B
Initial Capex	604M	435M
Average annual C1[19] cost	6.15/lb V_2O_5	4.43/lb V_2O_5
Average annual C3[20] cost	8.49/lb V_2O_5	6.11/lb V_2O_5

Table 13 Project Vanadium Pricing Sensitivity (A$)

		V_2O_5 Pricing Scenarios			
Year 1-5	(US$)	$9.50/lb V_2O_5	$10.50/lb V_2O_5	**$10.50lb V_2O_5**	$12/lb V_2O_5
Year 6-25	(US$)	$9.50/lb V_2O_5	$9.50/lb V_2O_5	**$10.50/lb V_2O_5**	$12/lb V_2O_5
pre-tax $NPV_{7.5\%}$	(A$)	531M	623M	**833M**	1,287M
post-tax $NPV_{7.5\%}$	(A$)	295M	361M	**507M**	823M
Equity IRR	%	16.1%	18.4%	**20.6%**	26.9%
Payback period	years	8.6	7.8	**7.3**	6.2

Results show that even at a low US$8lb V_2O_5 pricing, the Project fundamentals are still positive, with a potential for exceptional performance in scenarios where the price achieves US$12/lb.

Upside case offers pre-tax $NPV_{7.5}$ of $1,287M assuming US$12/lb V_2O_5 price. This increases to $1,450M with additional improvements in operating expense of 10%.

Assuming an average V_2O_5 sales price of US$12/lb for the life of the Project, the non-geared payback is 7.3 years, with a post-tax NPV of $823M and an equity IRR of 26.9% at a 7% debt financing interest rate and 65% debt gearing.

[19] C1 costs are direct costs, including costs incurred in mining and processing (labour, power, reagents, and materials) plus local G&A, freight and realisation and selling costs. Any by-product revenue is credited against costs at this stage.

[20] C3 costs are the fully allocated costs for the project. It is the sum of the (C1) costs, depreciation, depletion, and amortisation, indirect costs and net interest charges.

Project Sensitivities

The spider diagrams in Figure 31 demonstrate the Project sensitivities to the US$10.50/lb V_2O_5 base case for six key variables: Opex, V_2O_5 price (short-term and long-term), FeTi coproduct pricing, A$:US$ exchange rate, and Capex. NPV is most sensitive to foreign exchange rate fluctuations, with a 10% decrease adding 32% to overall project NPV, raising it from $507M to $670M.

Both opex and long term V_2O_5 price have an impact of $470M and $460M to NPV with a 30% change respectively. The Project is moderately less sensitive to Capex, FeTi coproduct price, and the short term V_2O_5 pricing. All three variables influence the NPV similarly, with an average of $59M impact for every 10% in variation.

IRR is most impacted by foreign exchange and operations expenses. A 30% reduction in foreign exchange improves the base case IRR from 13.67% to 20%. A similar 30% reduction in operating expenses improves IRR to 18.8%. The project IRR is slightly less sensitive to Capex changes, with an average improvement of 1.5% in for every 10% change. Short term and long term V_2O_5 pricing show similar impacts on the IRR, with improvements of 3.4% and 3.56% assuming a 30% change in each. IRR is relatively insensitive to FeTi coproduct pricing at only a 1.7% increase for a 30% increase in pricing.

Sensitivities for both NPV and Project IRR are found in Figure 31 below.

NPV ($ Million)	Project IRR (%)

Figure 31 NPV and IRR Sensitivities Relative to the Base Case

12. Project Implementation Plan

The Project has been costed utilising an EPCM model for design and construction. However, other models, particularly for the construction of the CMB are being considered for execution. A build, own, operate scenario for supply of concentrate to the processing plant may offer additional benefits to the Project, including minimisation and further reduction of capital costs for project start-up. The CMB is well suited for a BOO or EPC implementation and further work is underway to finalise these options.

HCF, in partnership with Grant Thornton, is working on behalf of AVL in a debt advisory capacity. Financial discussions are underway with interested parties and FID timing will be dependent on completion of due diligence from both lenders and equity partners. AVL anticipates making a financial decision by the fourth quarter of 2022.

AVL is pursuing regulatory approvals in parallel with ongoing engineering and financing efforts. Key approvals are on the critical path for project delivery. AVL is working with its environmental consultants to achieve approvals within the timeframes defined in the implementation plan.

Early award of an EPCM contract is necessary to progress the engineering and tender long lead time equipment. Upon award, FEED will commence. The supply of the Grate Kiln package, the lateral LNG pipeline and both power plants are among those identified for early vendor involvement and award.

The Project will be implemented with a general strategy of multiple horizontal discipline-oriented contract packages (for earthworks, concrete, structural erection/mechanical/piping, tank erection, field piping, electrical/instrumentation works, high voltage electrical works, process control etc.) with the inter discipline construction interfaces managed by an EPCM contractor.

In circumstances where engineering and vendor information is limited and there are time schedule constraints due to long delivery times, it may not be appropriate to enter into lump sum contracts. In such instances fabrication or construction contracts are better based on unit rates with provisional bills of quantities extracted from the project control estimate. There is contracting capability in Western Australia to execute works of this magnitude, and local contractors and capabilities will be utilised where practical.

The use of local labour and resources will benefit the local community, provide employment and training and provide a skills base for ongoing plant operations and maintenance activities. However, the number of qualified large contractors available at Project execution may be limited due to market factors. Under this scenario, smaller contractors can be engaged as a risk mitigation or contingency measure.

Initial construction is scheduled to begin in the fourth quarter of 2023 at the Gabanintha site, including construction of a camp, prestrip and earthworks including construction of the ROM and tailings facility. Construction at the Tenindewa site is anticipated to begin slightly later, in the first quarter of 2024. Commissioning will begin in Q4 of 2024 for production of vanadium concentrate at the Gabanintha site. This timing will allow build-up of concentrate stockpiles to facilitate the processing plant start-up, which will begin commissioning in Q1 2025. See Figure 32 below.

The Company will identify and pursue any and all opportunities to bring the timeline to production forward, understanding that the critical path is currently approvals and long lead time equipment. Opportunities exist to improve delivery of long lead time items and improve construction timelines through early vendor and contractor engagement. Portions of the detailed design will be advanced in the schedule where feasible, leading to potential improvement in delivery schedules. Equipment deliveries used for the implementation schedule were estimated by vendors during a period of supply chain uncertainty.

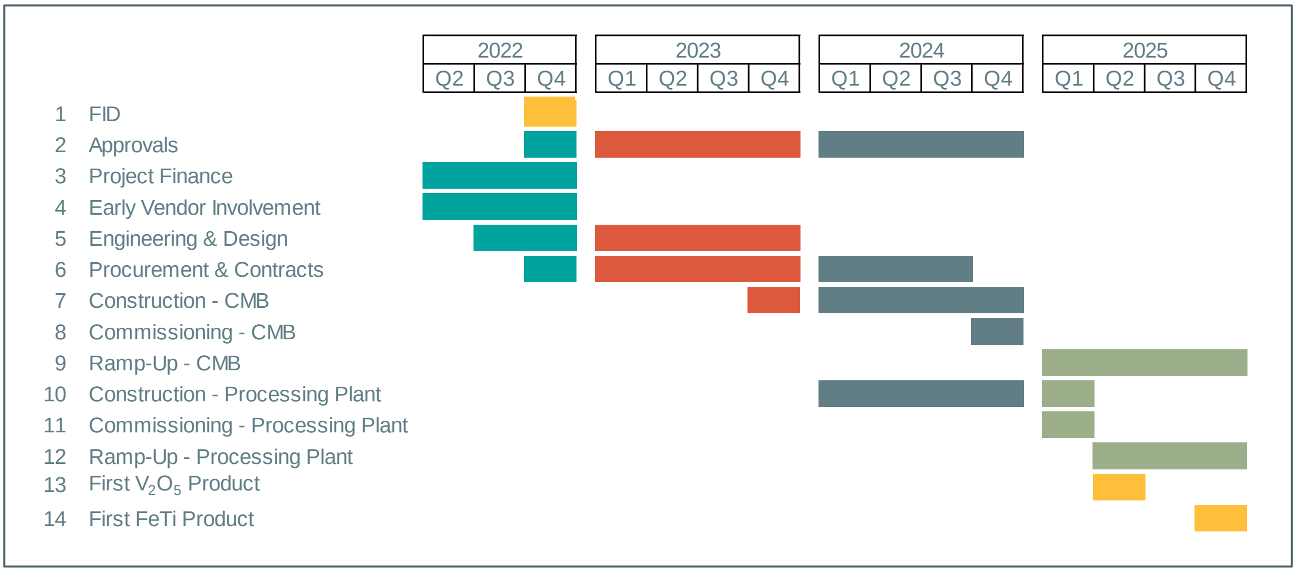

Figure 32 Timeline for the Project

13. Legal, Ownership and Statutory Approvals

Mining tenement M51/878 covers most of the mine site project area including the current Mineral Reserve and was granted in August 2020 for a period of 21 years. At that time, the Yugunga-Nya native title claim was not accepted for registration by the Federal Court and the licence was granted by DMIRS. Subsequent to the grant of M51/878 , WCD2021/008 became the native title claim covering the proposed mine site, being the NTT registration for the Yugunga-Nya peoples.

The mining and beneficiation project was referred under Part IV of the Environmental Protection Act 1986 (EP Act) to the Department of Water and Environmental Regulation's (DWER) Environmental Protection Authority (EPA) board on 15 March 2021. The EPA determined that the project could potentially impact the following key environmental factors:

- Flora and vegetation from the clearing of native vegetation
- Inland waters from watercourse diversions and drawdown
- Subterranean fauna from dewatering and loss of habitat.

The EPA decided that the proposal would be assessed based on referral information with additional information required, and a two-week public review period.

The additional information has been compiled as part of the BFS and has been submitted to the EPA as an Environmental Review Document.

Secondary environmental approvals for the minesite will be required for the mining proposal, mine closure plan, works approval, licence to operate, licence 26D to construct wells and licence 5C to take groundwater.

Other licenses and approvals for the construction and operation of the minesite cover drinking water and sewerage and a permit for the accommodation village.

A Development Application has been submitted to the State Development and Assessment Unit for the Tenindewa processing facility under a temporary streamlined planning approvals process (Part 17 of the Planning and Development Act 2005). Environmental impacts are expected to be managed via a works approval and native vegetation clearing permit. However, a precautionary approach has been adopted and the processing facility will also be referred to the EPA in Q2 2022 to determine whether assessment is required.

Other licenses and approvals for the processing plant include licence 26D to construct wells, licence 5C to take groundwater, sewage and additional infrastructure such as road entry and exit points.

14. Social and Environmental Sustainability, Community, Heritage and External Relations

AVL undertakes on-going consultation with a range of stakeholders and interested parties. AVL strives to keep stakeholders informed of developments in the Project planning and will continue to proactively consult stakeholders as the Project progresses.

There is general acceptance and understanding of the Project in the Meekatharra community. Meekatharra residents are familiar with mining operations, as there are several existing and historic mine sites in the region. Opportunities for employment have already commenced in the region and expenditure to local businesses has been over A$775,000 per year over the past three financial years.

AVL has been awarded Major Project Status by the Australian Federal Government and Lead Agency Status by the Western Australian Government.

Mine Site

The closest non-mining sensitive receptor (Polelle Station Homestead) is located to the northwest, which is not in the line of any prevailing wind direction. The other two neighbouring pastoral homesteads are located almost 20 km from the mine site. Therefore, the potential impact from air (including dust) and noise emissions is not likely to be significant.

The mine site will not have a significant impact on the area's visual or recreational amenity, as it is located on pastoral leases and the closest non-mining sensitive receptor is at least 9km from the proposed mine site. The mine site is also unlikely to have any impacts on the Polelle Station Shearing Shed, due to its distance from the mine site.

The mine site in general has a low likelihood of significant impacts to the social surroundings, as proposed operations are consistent with the community context and existing land use in the region.

Aboriginal heritage surveys of the mine location have been undertaken with the inclusion of representatives from the local Yugunga-Nya People. A search of the Aboriginal Heritage Inquiry System was conducted on 11 September 2020 for all live AVL tenements at the mine location. No Registered Sites or Other Heritage Sites were identified within the mine site.

Several artefact scatters have been identified which have been avoided by exploration activities. The Yugunga-Nya People's representatives have stated the importance of maintaining a 3 km buffer from Mt Yagahong and two small hills to the east. The AVL mine site is more than 6 km south of Mt Yagahong. The Yugunga-Nya People representatives also highlighted the importance of creeks in providing water for animals in the region and stated that no work should be conducted within 50 m of the creeks.

Subsequent surveys will be required of the entire mine location to identify any further archaeological and ethnographic sites. Surveying the entire mine location will also provide broader context for any artefacts and sites throughout the area to determine their significance.

Flora and fauna studies have been undertaken and the results informed the application to the EPA which was submitted in 2021. The mine site layout has been designed to avoid direct impacts to conservation significant flora and terrestrial fauna.

Southern parts of the mine site overlap a priority ecological community for protection of subterranean fauna, and some species of stygofauna that were found in the project studies may be restricted to the region around the mine. Dewatering of the open pit will reduce the available habitat for stygofauna, which rely on groundwater. Suitable stygofauna habitat units were identified beyond the groundwater drawdown impact zone. The open pit dewatering is not expected to have a significant impact on stygofauna.

The proposed Eastern Borefields also occur within a priority ecological community for protection of subterranean fauna. Further field investigations are required to characterise this community and undertake an environmental impact assessment.

A comprehensive environmental impact assessment report is under preparation to support assessment by the EPA in the most efficient timeframe.

Mine Closure

A Mine Closure Plan is being prepared in accordance with DMIRS' guidelines and the Western Australian Biodiversity Science Institute (WABSI) framework for completion criteria to ensure that the document meets DMIRS' requirements.

Opportunities for progressive rehabilitation will be maximised where feasible, as this approach enables trialling and improvement of rehabilitation, is typically more cost-effective, and results in better environmental outcomes.

Processing Facility

The vanadium extraction process is located near Tenindewa, a small rural locality of agricultural properties with no nearby mining activity.

The Tenindewa locality is approximately 370 km north of Perth and 27 km west of Mullewa on the Geraldton-Mount Magnet Road. It is in the City of Greater Geraldton and consists of a railway siding, stockyards, and agricultural properties. AVL has signed an option for the purchase of 440 hectares of land located directly on the Geraldton – Mt Magnet road, with nearby access to existing road, rail and natural gas via the Dampier to Bunbury Natural Gas Pipeline (DPNGP) or alternately the APA Group Mid West lateral.

Consultations have been held with all local stakeholders in the vicinity of the Tenindewa site and the Project enjoys support from the local and regional government, along with residents of the area.

AVL will continue to engage stakeholders at each stage of Project development.

The processing location is within cleared agricultural land. However, some small amounts of native vegetation clearing will be required to establish entry and exit roads. A flora survey will be undertaken to check whether any protected flora occurs in the remnant native vegetation. The road layout will avoid any protected flora if possible, and appropriate environmental approvals will be sought.

The processing plant will be designed to comply with guidelines for protection of air quality and noise emissions.

15. Energy and Carbon Emissions

Scope 1 greenhouse gas emissions from the mine site facility were calculated as a maximum of 64,000 tonnes of CO_2-e per annum. Mitigation of greenhouse gas emissions is predicted to reduce Scope 1 emissions from the mine site facility to net zero by 2050 on a linear trajectory.

Diesel and LNG combined with renewable energy generation and VRFBs, which are currently being sized by VSUN Energy, will be used for power at the mine site, including the CMB processing operation. Diesel emissions relating to mobile plant (on site) and road haulage (off site) could be significant, but alternatives such as green hydrogen-fuelled or electric haulage trucks are actively being investigated.

Scope 1 greenhouse gas emissions from the processing facility were calculated as a maximum of 90,000 tonnes of CO_2-e per annum. Mitigation at the processing facility will include use of renewable energy generation (solar) and future VRFBs, and introduction of green hydrogen as a fuel. AVL is working with both ATCO and BP to support their Mid West region green hydrogen generation.

In 2016 AVL launched a 100% owned subsidiary called VSUN Energy to drive the uptake of VRFBs in Australia for energy storage. Supporting and developing the renewable energy sector in relation to vanadium's uses is a key sustainability goal for AVL. The VRFB has a dual sustainable benefit, with its main purpose to store and redeploy renewable energy and additional benefit of its constituent vanadium electrolyte being able to be reused in either energy storage or steel applications after the VRFB's 20+ year mechanical life.

One year of production from the Project can supply 1GWh of VRFB energy storage.

AVL is building a vanadium electrolyte manufacturing plant in WA to further grow opportunities for the Company in the battery market.

Vanadium's role in the steel sector plays an important role in producing low carbon sustainable products. The addition of vanadium to steel greatly improves strength, thereby reducing global total steel consumption, particularly in the construction sector. See Section 10 – Marketing for more detail on vanadium markets.

Analysis of the full emissions from the Project, undertaken by AVL's environmental consultant Umwelt and verified by Texas A&M in the US, shows that 'The Project is estimated to result in a **net reduction** in GHG emissions of approximately 30 million t CO_2-e pa, considering direct and indirect GHG emissions.'

16. Co-operative Research Centre – Project (CRC-P) research outcomes

In February 2020, AVL was awarded a CRC-P grant of $1.25 million by the Australian Federal Government through a competitive award process. This formed part of a $4.9 million project to complement feasibility work focusing on the development of the Project. AVL's CRC-P is organised into six sub-projects, or milestones. Four critical milestones are aligned with the BFS, two other milestones are for work not related to the BFS, such as investigations into vanadium electrolyte production and recovery from low grade stockpile material.

The key outcomes from the CRC-P are the pilot scale demonstrations of the Grate Kiln salt roast and the hydrometallurgy processes as described in the metallurgical interpretation. Other work outside of the BFS but still covered by the CRC-P is ongoing. An important milestone is electrolyte characterisation work – this project will develop a robust analysis process for electrolyte in support of the vanadium electrolyte plant that is currently in the design phase. Other studies are ongoing including beneficiation of low grade material, adding value to the FeTi coproduct and advanced geometallurgical characterisation.

17. Project Risks and Opportunities

The Project risk and opportunities register is updated bi-monthly and those listed during the PFS Update were revisited in the BFS. The most important opportunities having the greatest impact on NPV and/or the lowest level of technical difficulty or capital outlay are as follows:

- Haulage of concentrate and washed coproduct is the single largest operational cost to the project. BFS contractor pricing has increased since the PFS Update due to COVID-19 impacts and inflationary pressure. Opportunity exists for significant reductions by bringing the haulage in-house or partnering with existing trucking suppliers for life of mine contracts or joint ventures. AVL ownership could also help to minimise logistics risks associated with short term haulage contracting.

- A reduction in handling costs for the transport and shipping of the FeTi coproduct could further reduce operating costs through the Port of Geraldton. A Cooperation Agreement has been executed between AVL and the Mid West Port Authority (MWPA) to explore mutually beneficial options. The MWPA is currently developing a 5 year Port Maximisation Plan, which includes a new multi-user facility covering Berths 1, 2, 4 and 5.
- A further opportunity exists to explore using the railway to transport the FeTi coproduct from Tenindewa to Geraldton Port. This will be carried forward as a potential value improvement opportunity.
- New mining technologies are evolving quickly, providing opportunities for further automation of the mining fleet as well as fleet electrification. Technologies considered cost prohibitive for small to mid-sized mining operations are now becoming economic options. This will be pursued further during the FEED and contracting phases of the Project.
- Collaboration with Bryah Resources Limited (ASX: BYH) is supported by the Australian Government Modern Manufacturing Collaboration stream grant for the potential to extract nickel, copper and cobalt from the tailings stream at the CMB plant.

Of the remaining opportunities identified in the PFS Update, the following were completed during the BFS:

- Improved iron concentrate product quality and quantity by the installation of an additional WHIMS scavenger unit
- Further optimisation of the mining schedule; decreasing strip ratios and maximising the use of oxide and transitional material without affecting vanadium recoveries
- Improved leaching performance and ultimate vanadium recovery by the introduction of a drum leach and heap leaching (coproduct washing) circuit
- Further precipitation test work confirming the AMV precipitation route to achieve an overall 90% V_2O_5 recovery from concentrate
- Continuing to advance Federal and State funding opportunities such as NAIF funding for infrastructure

Work was performed on Items identified as high residual risk in the PFS Update in order to mitigate or significantly reduce overall project risk. This work included:

- Submission of a development application via the State Development Assessment Unit (SDAU) to begin the process of re-zoning at the Tenindewa site. This was identified as a potentially high risk for the project schedule.
- The identification of an alternate good quantity and quality water source from the Eastern Borefields for use by the CMB, including design and costing of a reverse osmosis plant for process water supply.
- Drilling at Tenindewa and subsequent pumping tests proving availability of process water needed for the processing plant.
- Development of a BFS level water model. This was used to define the overall water balance and design of the water management systems throughout the CMB and Mining processes. The use of dewatering bores and pit sump dewatering together with re-injection has been evaluated and costed.
- HAZID workshops were completed for both sites with final layouts and plant designs addressing most of the identified health, safety and environmental (HSE) issues.

The highest risks to the Project are still availability of funding, low vanadium price at Project start-up and extended periods of low vanadium pricing during the project life. These risks will be mitigated through:

- Maintaining and improving on the objective of being a low-cost producer during the FEED and detailed engineering and design stage.

- Working with potential equity, debt and joint venture partners to provide the detailed information required to secure funding.
- Hedging the vanadium price through long term supply contracts.
- The addition of a downstream processing facility to allow for domestic production of vanadium electrolyte.
- Securing long term contracts for the sale of FeTi coproduct.
- Continue with the development of vertical integration opportunities such as the VRFB market through 100% owned subsidiary VSUN Energy.

Additional risks identified during the BFS that remain in the residual risk register are:

- Increasing costs of capital items due to inflationary pressures and supply chain issues along with associated delays in delivery schedule
- Limited labour availability in Western Australia due to COVID-19 and the current strength in the mining industry, potentially impacting both construction and operations
- Dependency on a BOO contractor for power supply at both sites
- Increasing operations expenses because of continued supply chain problems, inflation, logistics problems

18. Pathway to financing

The Company has funding in place for completion of optimisation work after the BFS. This includes cash at bank of A$4 million at the time of reporting. Funding in the form of debt and equity will be required to fully finance the Project.

Funding for the initial stages of the post BFS optimisation is expected to be provided by existing working capital available to the Company. The BFS report includes an implementation timeline (see Figure 32).

Projects of this scale and nature are most often funded by a mixture of debt financing and new equity or quasi-equity financing. The external financial model contemplates a debt funding case of 65% debt for capital requirements, (see Section 11 Production and Financial Model). The grounds for this level of debt is further supported by the Company's debt advisers, HCF International and Grant Thornton Australia.

AVL has been awarded a $49 million grant from the Australian Government towards bring the Project into production. The grant will have the effect of reducing the equity component required and providing comfort to both debt and equity investors.

Over the past few years, numerous Australian projects of a similar capital cost and complexity in metals such as lithium, mineral sands, sulphate of potash and rare earths have been successfully financed by combinations of debt and equity financings.

Vanadium is a critical mineral for Australia and its major trade partners except China, which has supply chain dominance. New vanadium for supply of growing steel use markets, titanium aluminium alloy and energy storage markets outside of China is extremely limited.

The Australian Vanadium Project's location in a tier one international mining location increases the attractiveness of developing a robustly engineered project with a high-grade long life ore supply.

The Board believes that there are "reasonable grounds" to assume that future funding will be available post BFS and pre-production capital as envisaged in this announcement, on the following basis:

- AVL's Board has a capital raising and financing track record and experience in developing projects. Cliff Lawrenson, Non-Executive Chair, is deeply experienced in capital and debt markets globally and has overseen numerous development and corporate activities during his career. He is a Non-Executive Chair of Paladin Energy Ltd (ASX: PDN), Caspin Resources (ASX: CPN) and Canyon Resources (ASX: CAY) and privately owned Pacific Energy Limited and Onsite Rental Group. Daniel Harris, Technical Director of the Company has over 40 years of corporate and operational experience in vanadium companies and operations. Mr Harris 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 QEM Ltd and Executive Director of US Vanadium LLC. Directors Vincent Algar and Leslie Ingraham have both been active in capital markets for over 10 years and have raised well over A$50M each while managing junior resource companies.
- Having confirmed the Mineral Reserve for the project able to support the initial 25 year mine life, AVL is confident that it can continue to further increase the quantity and quality of the mineral resources at the Project, extending the project resource base beyond what is contemplated in the BFS. The Company holds a total of 11.5km of known vanadium bearing titano-magnetite (VTM) mineralisation (identified through drilling) and of this, 9.5km is located on the 21 year granted mining licence M51/878. The Australian Vanadium Project VTM 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 location. Australia is home to significant sources of equity and debt capital and has very active resource focused capital markets.
- The vanadium price is cyclical in nature, with market imbalances driving prices above US$30/lb V_2O_5 twice during a 15 year timeframe, most recently reaching a price of US$28/lb V_2O_5 in 2018 (V_2O_5 spot price source: Fastmarkets).
    - The average price since the 2004 period sits at US$9/lb in mid-2020 adjusted pricing (TTP Squared pers. comm.). The distribution of monthly prices in Figure 29 indicates two overlapping normal price distributions. The lower has a mean price of between US$6 -7/lb and is indicative of stable market conditions. These prices range from lows of US$4/lb to US$9/lb and are applicable in 75% of prices since 2004. A second higher price distribution is indicative of vanadium market conditions where demand is outstripping supply, and has a mean price of between US$15-16/lb ranging from lows of US$10 to highs over US$30/lb.
    - Pricing at the time of writing has shifted to around US$13/lb, having increased from US$6/lb at the start of 2021 and indicating a move to the high demand, low supply pricing distribution. Increased global geopolitical volatility and ongoing Chinese regulatory changes specifying the increased use of microalloy steel are impacting price and this trend looks to continue throughout 2022 and beyond.
    - AVL favours a long-term average price of US$10.50/lb in line with ongoing market growth and limited capacity increases globally. Increased vanadium use in energy storage is likely to impact long-term pricing, with a premium being received for limited volumes of high purity (99.6% V_2O_5) needed for use in batteries.
    - Strong price increases in 2018 were a result of growth in Chinese steel production and enforced increases to specific vanadium consumption per tonne of steel

produced. Following a slowdown of demand (including COVID-19 in China in early 2020), Chinese demand surged. Western steel demand lagged into 2021 and growth in the non-Chinese sector saw the demand market return by mid-2021, resulting in increased pricing that persisted through into 2022.

   - The improvements to the market conditions and an encouraging outlook for demand for vanadium products in new sectors such as energy storage, 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.

- AVL has been listed continuously since 2007. During that time, the Company has held the Australian Vanadium Project asset, but the Project has not always been the primary focus of the Company's activities. The Company has successfully raised A$13.5 million from listing until 2014. Since early 2014 and developments in the energy storage market for vanadium, AVL has renewed its focus on the Australian Vanadium Project and has raised additional capital between 2014 and 2021 totalling A$35M to advance the asset. A total of 8 capital raisings on the Australian Vanadium Project have been successfully executed. 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's requirements.

- The strong production and economic outcomes delivered by the BFS 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. In 2021 AVL appointed structured finance specialist HCF International from the UK to assist with debt finance arrangement for the Company. Since 2003, HCF has helped arrange over US$12 billion in project financing. HCF will work with its onshore Australian partners Grant Thornton, offering significant execution capability across international and Australian financial markets.

- The Company has been active in seeking offtake partners in key markets around the world.

   - In June 2018 AVL announced that it had signed a Non-Binding MOU with the Win-Win Development Group (Win-Win), a private steel and alloy producer based in Chengdu, China for discussions around project finance and vanadium product offtakes. In August 2018 AVL and its 100% owned subsidiary VSUN Energy Pty Ltd, announced that they had signed Letters of Intent with German VRFB manufacturer SCHMID, to explore potential supply of vanadium pentoxide and/or electrolyte and to supply SCHMID's VRFBs to potential clients.
   - In 2020 MOUs for offtake were signed with specialty chemical producer U.S. Vanadium LLC, Singaporean VRFB manufacturer VFlow Tech Pte Ltd, Chinese VRFB manufacturer CEC VRFB Co. Ltd and Enerox GmbH, Austrian manufacturer of the CellCube VRFB brand. AVL also signed a Letter of Intent with Hebei Yanshan Vanadium and Titanium Industry Technology Research Co Ltd, a subsidiary of HBIS Group Chengsteel for offtake, investment and technical services.
   - In 2021 AVL signed a letter of intent for offtake of its FeTi coproduct with Guangxi Shenglong Metallurgy Co. Ltd from China. Sale of the FeTi coproduct is part of the AVL strategy to reduce overall Project risk. AVL also signed an MOU for offtake of vanadium pentoxide, vanadium electrolyte and battery sales with Spanish VRFB manufacturer E22.

   - In 2022 AVL has signed a letter of intent for offtake of its FeTi coproduct with Wingsing International Limited, the commercial arm of Tianzhu Steel, with further letters of intent under consideration.

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

- access to institutional investors locally and globally;
- access to debt funding relationships;
- the provision of additional human resources, experience and expertise, to maximise the value of the Company;
- advancing the contracting and partnering strategy for components of the Project, specifically the CMB, non-process infrastructure, road transportation and the processing plant
- the definition and extension of vanadium and cobalt resources at Gabanintha, and
- development of long-term business relationships.

For further information, please contact:
Vincent Algar, Managing Director
+61 8 9321 5594

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

APPENDIX 1 – Competent Persons' Statements

COMPETENT PERSON STATEMENT – EXPLORATION RESULTS AND TARGETS

The information in this announcement that relates to Exploration Results and Exploration Targets is based on and fairly represents information and supporting documentation prepared by Mr Brian Davis (Consultant with Geologica Pty Ltd) and Ms Gemma Lee who is employed by Australian Vanadium Ltd as Principal Geologist. Mr Davis is a member of the Australasian Institute of Mining and Metallurgy and Ms Lee is a member of the Australian Institute of Geoscientists. Both Mr Davis and Ms Lee 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 Davis and Ms Lee consent to the inclusion in this announcement of the matters based on their information in the form and context in which they appear.

COMPETENT PERSON STATEMENT — MINERAL RESOURCE ESTIMATION

The information in this announcement 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 Barnes and Mr Davis are both members of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG). 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 announcement 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 announcement 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 AusIMM. He is employed by Wood Australia Pty Ltd. 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 JORC 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr McNab consents to the inclusion in the announcement of the matters based on the information made available to him, in the form and context in which it appears.

COMPETENT PERSON STATEMENT — ORE RESERVES

The technical information in this announcement that relates to the Ore Reserve estimate for the Project is based on information compiled by Mr Ross Cheyne, an independent consultant to AVL. Mr Cheyne is a Fellow of the Australasian Institute of Mining and Metallurgy. He is an employee and Principal Consultant of Orelogy Consulting Pty Ltd. Mr Cheyne has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being 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 Cheyne consents to the inclusion in the announcement of the matters related to the Ore Reserve estimate in the form and context in which it appears.

FORWARD LOOKING STATEMENTS

Some of the statements contained in this announcement 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, 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 BFS 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.

APPENDIX 2 - Material Assumptions and Economic Outcomes

All material assumptions used are included in Table 14. This information includes detailed pit designs, estimated mining and production schedules and metallurgical testing relevant to vanadium processing and recovery. The process design and layout has been developed by technical experts within the study team and reviewed by external consultants with significant experience in vanadium processing. Capital and operating costs are based on detailed quotations and database costs and are considered to be at a ±15% 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.

Table 14 Material Assumptions

Criteria	Commentary
Mineral Resource Estimate	The most recent Mineral Resource estimate was declared on 1st November 2021 and has been used in the BFS. Refer to the ASX release dated 1st November 2021 for material assumptions and further information.
Mining Assumptions and Factors	The mining method will be open pit, selective mining of ore on nominal 5m bench height and two 2.5m flitches using a backhoe excavator. Waste will be mined in 10m benches. Mining dilution was calculated by a positional skin method where grade was considered marginal to the mining and mixed with the orebody to create a diluted bock model. The diluted model considered geometry (true and apparent widths), grades and specific gravity differences of the waste. Diluted grades outside the Resource were calculated in the Resource block model. The basis of mining and downstream processing production is nominal 24.7 million pounds of refined V_2O_5 per annum (6,270 MTV), and 895,000 tonnes (dry weight equivalent) of iron-titanium concentrate per annum. Mining is for 24.5 years at this rate, followed by another 2 years processing stockpiles.
Process Design Criteria	A fully piloted crushing, milling, and beneficiation (CMB) process has been proposed to produce vanadium concentrate. This concentrate is then further processed to produce >99.5% vanadium pentoxide and a 54-55% iron coproduct. The concentrate processing flowsheet includes a pelletised roast and hydrous leach followed by leach liquor purification, ammonium metavanadate precipitation and conversion to V_2O_5. The majority of the processing plant flowsheet and its design criteria are based on pilot scale testwork performed by reputable metallurgical laboratories from 2019 to 2022.

Criteria	Commentary
Processing Recoveries	Predictions of metallurgical recovery from the CMB circuit have been determined from pilot scale and bench scale testwork. Relationships were developed between the ratio of magnetic susceptibility and iron grade in process feed and vanadium recovery to concentrate. These relationships are underpinned by the performance of the pilot plant and serve as the basis for vanadium and iron recovery in the block model. Average vanadium recovery from process feed to concentrate is forecast at 74.2% for life of mine and varies based on the magnetic susceptibility to iron grade ratio. Average vanadium recovery through the vanadium processing plant is forecast at 90%. This is based on demonstrated pilot plant performance through a pelletised alkaline roast and leach circuit and either benchscale testwork results or experience in similar operations for the downstream unit processes. Overall LOM average vanadium recovery from the CMB process feed to final V_2O_5 flake product is estimated at 66.8%. Relative to the current metallurgical understanding, deleterious elements such as silica, alumina and chromium, and their effect on operating cost, recoveries and product quality, have been considered.
Cut-off Grades	A cut-off grade of 0.7% V_2O_5 for all materials has been selected based on mine to process optimisation studies and in cognizance of the limited number of samples tested below 0.7% V_2O_5. Ore was selected from zone 10 only for the open pit optimisation process. However subsequent metallurgical assessment indicated zone 2 was also suitable for processing and this zone was included in the LOM schedule and the associated Ore Reserve.
Environmental	At the mine location, studies have been completed for flora, fauna, subterranean fauna, surface water, groundwater and waste characterisation. The Project is not likely to have highly significant environmental impacts that are of public interest. It is anticipated that primary environmental assessment by the Environmental Protection Authority (EPA) can proceed without requiring further long-lead time studies. Preparation of secondary environmental approval applications are also not likely to require long-lead time studies. Further work will be required to fully define water resources and verify drawdown to local aquifers, although completed hydrogeology work and the associated site water balance indicate a low likelihood of significant environmental impact. Hydrological work and drilling has been completed and provides high confidence for water supply and any associated environmental impacts for the Tenindewa site. Some site-specific studies are needed to determine environmental context, agricultural productivity, and biodiversity values of nearby nature reserves. The primary and secondary approvals identified for the processing plant location are

Criteria	Commentary
	indicative and subject to change based on proposed activities and regulator expectations. The approvals' schedule assumes that key stakeholders and regulators are broadly supportive of the planned processing plant location, Scope 1 greenhouse gas emissions will be below 100,000 tonnes CO_2-equivalent per year.
Tenements and approvals	The Project consists of 15 tenements covering 200 sq km and granted tenements are held 100% by AVL. Mining Lease M51/878 has been granted for 21 years from September 2020 and covers 87% of the Mineral Resource, with the balance of the Inferred Mineral Resource located on MLA 51/897, under application by AVL. Mining Approvals and Mine closure plans have not been approved at the date of this report and applications are still in progress.
Social	There is no Native Title over granted M51/878. AVL abides by its obligations under the NATIVE TITLE ACT 1993 and the ABORIGINAL HERITAGE ACT in all activities on M51/878 and surrounding tenure.
Infrastructure	An approximately 1km section of the Sandstone-Meekatharra Road passes through the mine lease area. As a result, a proposed road diversion and overpass has been designed and costed. An access road will be constructed from the operational area to give access to the sealed Great Northern Highway, which is approximately 61km away to the west. This corridor will be utilised to transport concentrate from the mine site to the processing plant location. Other required infrastructure will be constructed for the Project at the operational site and at the processing plant location, west of Mullewa.
Revenue Assumptions	The pit optimisations were carried out using US$8/lb V_2O_5. This was based on PFS conditions of the long-term average vanadium price trading data over 15 years prior to 2018. This figure is considered to be conservative. Project financial modelling has been carried out at AVL's view of the long-term average price of US$10.50/lb V_2O_5. Vanadium prices vary with supply and demand. Sensitivities to the Project related to the selected price are included in this report. FeTi coproduct is produced after extraction of vanadium. This FeTi coproduct has been determined to have a market value of 70% of the 62% Fe Fines reference price, CIF Northern China. The financial model uses US$67.43/t for FeTi sales. For mining optimisation and design, the exchange rate used was A$:US$ 0.74. The exchange rate used in financial modelling was A$:US$ 0.72. The exchange rate used for Capex and Opex derivation

Criteria	Commentary
	was set on 26 October 2020 at A$:US$ 0.72, A$:EUR 0.60, A$:ZAR 11.1, A$:CNY 4.76, and A$:CAD 0.93
Other	The current conservative Project development timeline estimates construction to begin in Q4 2023 and vanadium pentoxide production to start in Q2 2025. A number of factors can affect project commencement, including funding, permitting and available resources.

APPENDIX 3 - Ore Reserve Statement

The Ore Reserve for the Australian Vanadium Project 2021 Bankable Feasibility Study was developed by Orelogy Consulting Pty Ltd. The economic evaluation of the Project presented in this announcement is underpinned by Reserves and Inferred Resources comprising:

- the Ore Reserve including both Proved and Probable classified material.
- additional Inferred Mineral Resources comprising approximately 20.5% of the proposed process plant feed material.

AVL has a view that a mine life of between 20 and 25 years is appropriate as this:

- delivered an acceptable NPV, IRR and payback period
- reduced risk by limiting pit depth and associated strip ratio

A 25-year mine life equates to Reserves and Inferred Resources of approximately 40Mt and the inclusion of up to 20% Inferred Resources, at a 90% conversion rate, was considered acceptable for a long term mine plan at BFS level. This would allow AVL to benefit from the near surface Inferred mineralisation in the southern extension to the Resource.

The approach undertaken to develop the Reserves and Inferred Resources was in two stages:

1. An open pit optimisation on Measured and Indicated material only was completed, in line with the JORC 2012 guidelines defining the basis of an Ore Reserve. A shell was selected from this optimisation with approximately 31Mt. This shell formed the basis for subsequent design work and the generation of an associated Ore Reserve. This “Ore Reserve” shell was of a relatively low revenue factor (approximately 0.88) and was therefore considered a low-risk approach.
2. The optimisation model was then depleted with the “Ore Reserve” shell and a second pass optimisation completed that included Inferred Resources. A shell from this run was then selected that contained approximately 8Mt (20% of a combined plant feed with the 31Mt reserve shell). This optimisation was constrained to the southern portion of the orebody as this contained the high-value near-surface Inferred Resources. This would also ensure the additional 8Mt was developed inside shells that were completely stand-alone pushback stages of the Ore Reserve shell.

The basis for the key inputs on which the Ore Reserve was developed include, but are not limited to:

- A vanadium price of US$8.00/lb supplied by AVL, based on a conservative 15-year average V_2O_5 price.
- 2.5% State Government royalty for the flake vanadium pentoxide product.
- A detailed application of edge dilution within the mining model to accurately reflect orebody geometry and mining methodology.

- CMB plant and processing plant throughput rates advised by Wood based on testwork and a plant design that targets the average ore blend.
- Metallurgical recovery based on testwork results to date. Only Resource Domain 10 and 2 were considered for conversion to an Ore Reserve at the optimisation phase, at a minimum of 0.7% V_2O_5 cut-off grade.
- Mining costs carried over from the 2020 PFS Update and subsequently validated with submissions from mining contractors to a Request for Quotation.
- Processing costs derived by Wood based on their plant design.
- General and administration costs either supplied by Wood or carried over from the 2020 PFS Update.
- An updated geotechnical evaluation of all domains carried out by independent geotechnical consultants Pells Sullivan Meynink (PSM) as part of this BFS.

Pit designs were then completed on the basis of the "Ore Reserve" shell for the purposes of developing a JORC 2012 Ore Reserve, and separately for the Inferred Pushback shell.

The updated Ore Reserve for the Australian Vanadium Project 2022 Bankable Feasibility Study is detailed in Table 15 below.

Table 15 Ore Reserve - 2022 BFS

Ore Reserve	Mt	V_2O_5%	Fe_2O_3%	TiO_2%	SiO_2%	LOI%	V_2O_5 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
Total Ore	**30.9**	**1.09**	**62.8**	**12.4**	**9.3**	**3.2**	**223.8**	Strip Ratio	7.7

Note: Tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers might not add due to rounding.

The Ore Reserves and Inferred Resources utilised for the life of mine (LOM) schedule for the Australian Vanadium Project 2022 Bankable Feasibility Study, inclusive of the Ore Reserve above, is detailed in Table 16 below.

Table 16 Ore Reserves and Inferred Resources used in LOM Schedule - 2022 BFS

Ore Reserve	Mt	V_2O_5%	Fe_2O_3%	TiO_2%	SiO_2%	LOI%	V_2O_5 production kt	Ore Reserve	Mt
Proved	10.5	1.11	61.6	12.8	9.5	3.7	70.9	Waste	296.5
Probable	20.4	1.07	63.4	12.2	9.2	3.0	152.9	Total Material	335.7
Inferred Resources	8.2	1.04	63.4	12.0	9.2	3.1	57.6	Strip Ratio	7.6
Total Ore	**39.2**	**1.08**	**62.9**	**12.3**	**9.3**	**3.2**	**281.4**		

Note: Tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers might not add due to rounding.

APPENDIX 4 – List of consultants and partners

wood.	Wood Australia Pty Ltd	Engineering Consultant – plant design and costings and overall compilation of the BFS
umwelt	Umwelt	Environmental Consultant – environmental and heritage approvals
ORELOGY MINE CONSULTING	Orelogy	Mine Consultant – pit design, optimisation and mine scheduling
ALS	ALS Metallurgy	Metallurgical testwork (concentrator and processing plant, excluding roasting)
Metso:Outotec	Metso:Outotec	Pyrometallurgical testwork (pellet roasting)
GOLDER	Golder	Tailings location and tailings storage facility (TSF) design
BUREAU VERITAS 1828	Bureau Veritas	Assaying, mineralogy and metallurgical testing
TREPANIER	Trepanier Pty Ltd	Geology and Resources
GEOLOGICA PTY LTD	Geologica Pty Ltd	Geology and Resources
PSM	PSM Pells Sullivan Meynink	Geotechnical Consultant and hydrogeology
HCF INTERNATIONAL ADVISERS	HCF International	Debt Advisers
Grant Thornton	Grant Thornton	Debt Advisers

ATCO	ATCO	Green hydrogen supply
Australian Government Department of Industry, Science, Energy and Resources / Business Cooperative Research Centres Program	Cooperative Research Centres Program	CRC-P overview
Australian Government / ANSTO	ANSTO	Partners in CRC-P
Curtin University	Curtin University	Partners in CRC-P
US VANADIUM	U.S. Vanadium LLC	Offtake of vanadium pentoxide, supply of vanadium pentoxide, supply of vanadium electrolyte manufacturing technology
FUTURE BATTERY INDUSTRIES CRC	Future Battery Industries CRC	AVL membership of CRC for growth of battery industry
GOVERNMENT OF WESTERN AUSTRALIA	Government of Western Australia	Lead Agency through Department of Mines, Industry Regulation and Safety Future Battery Industry Taskforce member
Australian Government	Australian Government	Major Project Status Critical Mineral Facilitation Office support
cellcube Energy Storage Systems Inc.	CellCube	Offtake of vanadium pentoxide and vanadium electrolyte. Sales of CellCube VRFBs through VSUN Energy
E22	E22	Offtake of vanadium pentoxide and vanadium electrolyte. Sales of CellCube VRFBs through VSUN Energy
FLOW TECH	V-Flow Tech	Offtake of vanadium pentoxide and vanadium electrolyte. Sales of CellCube VRFBs through VSUN Energy

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APPENDIX 5 - JORC, 2012 Edition Table 1, Sections 1 to 4

Section 1 - Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
Sampling Techniques	Nature and quality of sampling (eg. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.	The Australian Vanadium Project deposit was sampled using diamond core and reverse circulation (RC) percussion drilling from surface. Eight diamond holes in PQ and HQ size were drilled in blocks 50 and 60 for geotechnical studies during 2020 for 895.6 metres. Four of the eight holes were drilled towards the northeast and intersected the HG10 domain; four were drilled towards the southwest and intersected hanging wall units only. Logging and magnetic susceptibility measurements demonstrate the HG10 domain was intersected at the expected depths and thicknesses. During 2019 43 RC holes were drilled; 30 RC holes were drilled for 2,236m in the December 2019 drilling on blocks 50 and 60, and 13 RC holes for 1,224m drilled in blocks 20, 25 and 30 during October 2019. A further 30 PQ diamond drill holes were completed by March 2019, to collect samples for bench scale and pilot scale metallurgical testwork, 12 holes were drilled down-dip into the high-grade zone. These were complemented by an additional 18 PQ diamond drill tails on RC pre-collars, drilling vertically. The down dip holes were measured by hand-held XRF at 50 cm intervals to inform metallurgical characterisation but the data has not formed part of any resource estimation update as there was no certified laboratory analysis completed on the intervals of whole core used directly for metallurgical testwork. 14 of the 18 diamond tails were cut and a ¼ of the PQ sized core was sent for analysis. At the time of the latest Mineral Resource estimation (November 2021), a total of 280 RC holes and 50 diamond holes (24 of which are diamond tails) were drilled into the AVL portion of the deposit. 20 of the 330 holes were either too far north or east of the main mineralisation trend. One section in the southern part of the deposit (holes GRC0156, GRC0074, GRC0037 and GRC0038) was blocked out and excluded from the resource due to what appeared to be an intrusion which affected the mineralised zones in this area. Of the remaining 310 drill holes, one had geological logging, but no assays and one was excluded due to poor sample return causing poor representation of the mineralised zones. Two diamond holes drilled during 2018 were not part of the resource estimate, as they were drilled into the western wall for geotechnical purposes. The total metres of drilling available for use in the interpretation and grade estimation was 30,720.79m of drilling with 25,230.5 metres of RC and 5,490.29m of DDH over 330 holes at the date of the most recent resource estimate. 18 down-dip metallurgical drillholes and 4 metallurgical diamond tails contribute magnetic susceptibility and geological logging to the Mineral Resource estimation, but not assay data, being drilled to provide metallurgical sample. The initial 17 RC drill holes were drilled by Intermin Resources NL (IRC) in 1998. These holes were not used in the 2015, 2017, 2018 and 2020 estimates due to very long unequal sample lengths and a different grade profile from subsequent drilling. 31 RC drill holes were drilled by Greater Pacific NL in 2000 and the remaining holes for the project were drilled by Australian Vanadium Ltd (Previously Yellow Rock Resources Ltd) between 2007 and 2019. This drilling includes 50 diamond holes (24 of which are diamond tails) and 170 RC holes, for a total of 27,655.75m drilled. All of the drilling sampled both high and low-grade material and were sampled for assaying of a typical iron ore suite, including vanadium and titanium plus base metals and sulphur. Loss on Ignition was also assayed.

Criteria	JORC Code Explanation	Commentary
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	PQ core from 2019 diamond tails was ¼ cored and sent for assay. The remaining core went to make up the pilot plant metallurgical sample. The down dip 2019 PQ core has not been sampled, though handheld XRF datapoints were captured, as well as magnetic susceptibility data. Handheld XRF machines being used to take ½ metre measurements on the core have been calibrated using pulps from previous drilling by the Company, for which there are known head assays. 2018 HQ diamond core was half-core sampled at regular intervals (usually one metre) with smaller sample intervals at geological boundaries. 2015 diamond core was quarter-core sampled at regular intervals (usually one metre) and constrained to geological boundaries where appropriate. 2009 HQ diamond core was half-core sampled at regular intervals (one metre) or to geological boundaries. Most of the RC drilling was sampled at one metre intervals, apart from the very earliest programme in 1998. RC samples have been split from the rig for all programmes with a cone splitter to obtain 2.5 – 3.5 kg of sample from each metre. Field duplicates were collected for every 40th drill metre to check sample grade representation from the drill rig splitter. During the October 2019 RC programme, field duplicates were collected from the rig splitter for every 30th drill metre. During the December 2019 RC programme, field duplicates were collected from the rig splitter for every 20th drill metre.
	Aspects of the determination of mineralisation that are Material to the Public Report.	RC drilling samples were collected at one metre intervals and passed through a cone splitter to obtain a nominal 2 – 5 kg sample at an approximate 10% split ratio. These split samples were collected in pre-numbered calico sample bags. The sample was dried, crushed and pulverised to produce a sub sample (~200g) for laboratory analysis using XRF and total LOI by thermo-gravimetric analysis. Diamond core was drilled predominantly at HQ size for the earlier drilling (2009) and entirely HQ for the 2018 programme with the 2015 and 2019 drilling at PQ3 size. 2020 diamond core was drilled at HQ and PQ size for geotechnical studies, with sampling and assay pending. Field duplicates, standards and blanks have been inserted into the sampling stream at a rate of nominally 1:20 for blanks, 1:20 for standards (including internal laboratory), 1:40 for field duplicates, 1:20 for laboratory checks and 1:74 for umpire assays. For the RC programme completed in December 2019, the field duplicates were incorporated at a rate of 1:20, while standards 1:50 and blanks also 1:50.
Drilling Techniques	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	Diamond drill holes account for 16% of the drill metres used in the Resource Estimate and comprises HQ and PQ3 sized core. RC drilling (generally 135 mm to 140 mm face-sampling hammer) accounts for the remaining 84% of the drilled metres. 24 of the diamond holes have RC pre-collars (GDH911, GDH913 & GDH916, 18GEDH001, 002 and 003, 19MTDT001 – 018), otherwise all holes are drilled from surface. No core orientation data has been recorded in the database. 17 RC holes were drilled during the 2018 programme and three HQ diamond tails were drilled on RC pre-collars for resource and geotechnical purposes. The core was not orientated but all diamond holes were logged by OTV and ATV televiewer. Six RC holes from the 2018 campaign are not used in the resource estimate due to results pending at the time of the latest update, and two diamond holes drilled during 2018 were not used as they are for geotechnical purposes and do not intersect the mineralised zones. During 2019 a further 12 PQ diamond holes were drilled down-dip on the high-grade zone but have not been sampled for assay analysis as they provided feed for pilot scale metallurgical testwork. As such they do not form part of any resource estimation. An additional 18 PQ diamond tails on RC pre-collars have been drilled vertically, of which 14 contribute to the resource. Two diamond tails were used for metallurgical testwork, one was not sampled due to core loss and core from a further core hole was cut but not submitted for assay. A further 43 RC holes using a 140 mm face hammer on a Schramm drill rig were completed during October and December 2019.

Criteria	JORC Code Explanation	Commentary
		Eight HQ and PQ diameter diamond core holes were drilled from surface during 2020, in fault blocks 50 and 60. The holes were drilled for geotechnical information. Four of the holes were drilled towards the northeast and intercept the high grade domain. At the time of this release, the holes are cut and sampled, with assays pending. The high grade domain was intersected at the depth and thicknesses expected in the four holes drilled towards the northeast.
Drill Sample Recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	Diamond core recovery is measured when the core is recovered from the drill string. The length of core in the tray is compared with the expected drilled length and is recorded in the database. For the 2019, 2018 and 2015 drilling, RC chip sample recovery was judged by how much of the sample was returned from the cone splitter. This was recorded as good, fair, poor or no sample. The older drilling programmes used a different splitter, but still compared and recorded how much sample was returned for the drilled intervals. All of the RC sample bags (non-split portion) from the 2018 programme were weighed as an additional check on recovery. An experienced AVL geologist was present during drilling and any issues noticed were immediately rectified. No significant sample recovery issues were encountered in the RC or PQ drilling in 2015. No significant sample recovery issues were encountered in the RC or PQ drilling in 2019 except where core loss occurred in three holes intersecting high grade ore. This involved holes 19MTDT012 between 142.9m and 143.3m; 19MTDT013 from 149m to 149.6m, 151m to 151.4m and 159.5m to 160m; as well as 19MTDT016 between 29.5m and 30.7m down hole. In each case the interval lost was included as zero grade for all elements for the estimation of the total mineralised intercept.
	Measures taken to maximize sample recovery and ensure representative nature of the samples.	Core depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks. 2019 diamond core samples had a coarse split created at the laboratory that was also analysed to evaluate laboratory splitting of the sample. RC chip samples were actively monitored by the geologist whilst drilling. Field duplicates have been taken at a frequency between every 20th and every 50th metre in every RC drill campaign. All drill holes are collared with PVC pipe for the first metres, to ensure the hole stays open and clean from debris.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No relationship between sample recovery and grade has been demonstrated. Two shallow diamond drill holes drilled to twin RC holes have been completed to assess sample bias due to preferential loss/gain of fine/coarse material. AVL is satisfied that the RC holes have taken a sufficiently representative sample of the mineralisation and minimal loss of fines has occurred in the RC drilling resulting in minimal sample bias.

Criteria	JORC Code Explanation	Commentary
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	All diamond core and RC chips from holes included in the latest resource estimate were geologically logged. Diamond core was geologically logged using predefined lithological, mineralogical and physical characteristics (such as colour, weathering, fabric, texture) logging codes and the logged intervals were based on lithological intervals. RQD and recoveries were also recorded. Structural measurements were recorded (bedding to core angle measurements) and have been saved to the database. The logging was completed on site by the responsible geologist. All of the drilling was logged onto paper then transferred to a SQL Server drill hole database using DataShed™ database management software. The database is managed by Mitchell River Group (MRG). The data was checked for accuracy when transferred to ensure that correct information was recorded. Any discrepancies were referred back to field personnel for checking and editing. All core trays were photographed wet and dry. RC chips were logged generally on metre intervals, with the abundance/proportions of specific minerals, material types, lithologies, weathering and colour recorded. Physical hardness for RC holes is estimated by chip recovery and properties (friability, angularity) and in diamond holes by scratch testing. From 2015, drilling also had magnetic susceptibility recorded, with the first nine diamond holes (GDH901-GDH909) having readings taken on the core approximately every 30 cm downhole. Holes GDH910 to GDH917 had readings every 50 cm and RC holes GRC0159 to GRC0221 had readings for each one metre green sample bag. 2018 RC drill holes also have magnetic susceptibility data for each one metre of drilling. Pulps from historical drill holes have been measured for magnetic susceptibility, with calibration on results applied from control sample measurement of pulps from drill programmes from 2015 onwards where measurements of the RC bags already exist. All resource (vs geotechnical) diamond core and RC samples have been logged to a level of detail to support Mineral Resource estimations at JORC 2012 standard to the relevant Measured Mineral Resource Category where drill density and geological continuity also supports that category classification. Geotechnical logging and Optical Televiewer (OTV) / Acoustic Televiewer (ATV) data was collected on three diamond drill holes from the 2018 campaign, by consultant company Dempers and Seymour, adding to an existing dataset of geotechnical logging on 8 of the 2015 diamond drill holes and televiewer data for four of the same drill holes. In addition, during 2018 televiewer data was collected on a further 15 RC drill holes from various drill campaigns at the project. PQ diamond drill holes completed during 2019 were geologically and geotechnically logged in detail by the site geologists. PQ and HQ diamond drill holes completed during 2020 were geologically logged in detail by the site geologists, and geotechnically logged by consultants PSM. Five of the eight geotechnical holes drilled during 2020 were down hole ATV surveyed.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Logging was both qualitative and quantitative in nature, with general lithology information recorded as qualitative and most mineralisation records and geotechnical records being quantitative. Core photos were collected for all diamond drilling.

Criteria	JORC Code Explanation	Commentary
	The total length and percentage of the relevant intersections logged.	All recovered intervals were geologically logged.
Sub-Sampling Techniques and Sample Preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	The 2018 and 2009 HQ diamond core were cut in half and the half core samples were sent to the laboratories for assaying. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features. No core was selected for duplicate analysis. The 2015 PQ diamond core was cut in half and then the right-hand side of the core (facing downhole) was halved again using a powered core saw. Quarter core samples were sent to the laboratories for assaying. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features. No core was selected for duplicate analysis. 14 of the 18 total vertical diamond PQ diamond drill holes from 2019 have been quarter core sampled and assayed. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features.
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	RC drilling was sampled by use of an automatic cone splitter for the 2019, 2018 and 2015 drilling programmes; drilling was generally dry with a few damp samples and occasional wet samples. Older drilling programmes employed riffle splitters to produce the required sample splits for assaying. One in 40 to 50 RC samples was resampled as field duplicates for QAQC assaying, with this frequency increasing to one in 30 for the October 2019 RC drilling, and one in 20 for the December 2019 RC drilling.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the diamond core samples follow standard industry best practice. All samples were crushed by jaw and Boyd crushers and split if required to produce a standardised ~3kg sample for pulverising. The 2015 programme RC chips were split to produce the same sized sample. All samples were pulverised to a nominal 90% passing 75 micron sizing and sub sampled for assaying and LOI determination tests. The remaining pulps are stored at an AVL facility. The sample preparation techniques are of industry standard and are appropriate for the sample types and proposed assaying methods.
	Quality control procedures adopted for all sub-sampling stages to maximize representivity of samples.	Field duplicates, standards and blanks have been inserted into the sampling stream at a rate of nominally 1:20 for blanks, 1:20 for standards (including internal laboratory), 1:40 for field duplicates, 1:20 for laboratory checks and 1:74 for umpire assays. Also, for the recent sampling at Bureau Veritas (BV), 1 in 20 samples were tested to check for pulp grind size. For 2019 diamond core samples, duplicates were created and assayed from the coarse crush product at a frequency of 1 in 20 samples at the laboratory.
	Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance	140mm diameter RC hammer was used to collect one metre samples and either HQ or PQ3 sized core was taken from the diamond holes. Given that the mineralisation at the Australian Vanadium Project is either massive or disseminated magnetite/martite hosted

Criteria	JORC Code Explanation	Commentary
	results for field duplicate/second-half sampling.	vanadium, which shows good consistency in interpretation between sections and occurs as percentage values in the samples, the sample sizes are representative. Core is not split for duplicates, but RC samples are split at the collection stage to get representative (2.5-3kg) duplicate samples. The entire core sample and all the RC chips are crushed and /or mixed before splitting to smaller sub-samples for assaying.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	As all of the variables being tested occur as moderate to high percentage values and generally have very low variances (apart from Cr_2O_3), the chosen sample sizes are deemed appropriate.
	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	All samples for the Australian Vanadium Project were assayed for the full iron ore suite by XRF (24 elements) and for total LOI by thermo-gravimetric technique. The method used is designed to measure the total amount of each element in the sample. Some 2015 and 2018 RC samples in the oxide profile were also selected for SATMAGAN analysis, a measure of the amount of magnetite (or other magnetic iron spinel phases, such as maghemite or kenomagnetite). SATMAGAN analysis was conducted at the BV laboratory during 2018. Although the laboratories changed over time for different drilling programmes, the laboratory procedures all appear to be in line with industry standards and appropriate for iron ore deposits, and the commercial laboratories have been industry recognized and certified. Samples are dried at 105˚C in gas fired ovens for 18-24 hours before RC samples being split 50:50. One portion is retained for future testing, while the other is then crushed and pulverised. Sub-samples are collected to produce a 66g sample that is used to produce a fused bead for XRF based analysing and reporting. Certified and non-certified Reference Material standards, field duplicates and umpire laboratory analysis are used for quality control. The standards inserted by AVL during the 2015 drill campaign were designed to test the V_2O_5 grades around 1.94%, 0.95% and 0.47%. The internal laboratory standards used have varied grade ranges but do cover these three grades as well. During 2018 and 2019, three Certified Reference Materials (CRMs) were used by AVL as field standards. These covered the V_2O_5 grade ranges around 0.327%, 0.790% and 1.233%. These CRMs are also certified for other relevant major element and oxide values, including Fe, TiO_2, Al_2O_3, SiO_2, Co, Ni and Cu (amongst others). Most of the laboratory CRM standards used show an apparent underestimation of V_2O_5, with results below the expected value of the CRM. Overall, the results generally fall within ±5-10% ranges of the expected values. The other elements show no obvious material bias. CRMs used by AVL during 2015 generally showed good precision, falling within 3-5% of the mean value in any batch. The standards were not certified but compared with the internal laboratory standards (certified) they appear to show good accuracy as well. Field duplicate results from the 2015 drilling generally are within 10% of their original values, with only six percent of duplicate samples being more than 10 percent different.

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		The BV laboratory XRF machine calibrations are checked once per shift using calibration beads made using exact weights and they performed repeat analyses of sample pulps at a rate of 1:20 (5% of all samples). The lab repeats compare very closely with the original analysis for all elements. 2019 PQ diamond core has been assayed. No duplicate split samples were taken from the core, however, a coarse crush split at a frequency of 1:20 samples was created by the laboratory and assayed. The nature, quality and appropriateness of the assaying and laboratory procedures is at acceptable industry standards.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	The geophysical readings taken for the Australian Vanadium Project core and RC samples and recorded in the database were magnetic susceptibility. For the 2009 diamond and 2015 RC and diamond drill campaigns this was undertaken using an RT1 hand magnetic susceptibility meter (CorMaGeo/Fugro) with a sensitivity of 1 x 10^{-5} (dimensionless units). The first nine diamond holes (GDH901 – GDH909) were sampled at approximately 0.3m intervals, the last eight (GDH910 – GDH917) at 0.5m intervals and the RC chip bags for every green bagged sample (one metre). During 2018 and 2019 RC and diamond core has been measured using a KT-10 magnetic susceptibility metre, at 1 x 10^{-3} ssi unit. During 2019, where archive material was available, historical drilling was re-measured with a KT-10 magnetic susceptibility metre, and comparison studies were completed with most of the Fugro and RT1 data replaced by KT-10 data, in addition to infilling gaps in the dataset. In addition to the handheld magnetic susceptibility described above the 2019 diamond drilling included downhole magnetic susceptibility. This was taken using a Century Geophysical 9622 Magnetic Susceptibility tool. The 9622 downhole tool sensitivity is 20 x 10^{-5} with a resolution of 10cm. 2019 diamond core was analysed using an Olympus Vanta pXRF with a 20 second read time. The unit is calibrated using pulp samples with known head assays from previous drill campaigns by the Company. Standard deviations for each element analysed are being recorded and retained. Elements being analysed are: Mg, Al, Si, P, S, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Rb, Sr, Y, Zr, Nb, Mo, Ag, Cd, Sn, Sb, W, Hg, Pb, Bi, Th, and U. Four completed diamond drill holes were down hole surveyed by acoustic televiewer (GDH911, 912, 914 and 915) as a prequel to geotechnical logging during the 2015 drill campaign. A further six holes from the 2018 campaign have been down hole surveyed using acoustic televiewer and optical televiewer (18GEDH001, 002 and 003 and partial surveys of 18GERC005, 008 and 011) for 627 metres of data. Televiewer data was also collected during 2018 on some of the holes drilled in 2015 and prior. The holes surveyed were GRC0019, 0024, 0168, 0169, 0173, 0178, 0180, 0183, 0200 and Na253, Na258 and Na376 for a further 286.75 m of data. All 12 of the 2019 down dip PQ holes have been televiewer surveyed. Five of the eight PQ and HQ geotechnical drill holes completed in 2020 have been ATV surveyed.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	QAQC results from both the primary and secondary assay laboratories show no material issues with the main variables of interest for the recent assaying programmes.

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Verification of Sampling and Assaying	The verification of significant intersections by either independent or alternative company personnel.	Diamond drill core photographs have been reviewed for the recorded sample intervals. Geologica Pty Ltd Consultant, Brian Davis, visited the Australian Vanadium Project site on multiple occasions and the BV core shed and assay laboratories in 2015 and 2018. Whilst on site, the drill hole collars and remaining RC chip samples were inspected. All of the core was inspected in the BV facilities in Perth and selected sections of drill holes were examined in detail in conjunction with the geological logging and assaying. Gemma Lee, Principal Geologist for AVL, has reviewed many of the diamond core drill holes from the project, and arranged check assaying for drill pulps, verifying the validity of the sample analysis. Resource consultants from Trepanier Pty Ltd have visited site during 2019 and the company core storage facility in Bayswater and reviewed the core trays for select diamond holes during 2018.
	The use of twinned holes.	Two diamond drill holes (GDH915 and GDH917) were drilled to twin the RC drill holes GRC0105 and GRC0162 respectively. The results show excellent reproducibility in both geology and assayed grade for each pair.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All primary geological data has been collected using paper logs and transferred into Excel spreadsheets and ultimately a SQL Server Database. The data were checked on import. Assay results were returned from the laboratories as electronic data which were imported directly into the SQL Server database. Survey and collar location data were received as electronic data and imported directly to the SQL database. All of the primary data have been collated and imported into a Microsoft SQL Server relational database, keyed on borehole identifiers and assay sample numbers. The database is managed using DataShed™ database management software. The data was verified as it was entered and checked by the database administrator (MRG) and AVL personnel
	Discuss any adjustment to assay data.	No adjustments or calibrations were made to any assay data, apart from resetting below detection limit values to half positive detection values.
Location of Data Points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	For the 2019 and 2018 drilling, all collars were set out using a handheld GPS or DGPS. After drilling they were surveyed using a Trimble RTK GPS system. The base station accuracy on site was improved during the 2015 survey campaign and a global accuracy improvement was applied to all drill holes in the Company database. For the 2015 drilling, all of the collars were set out using a Trimble RTK GPS system. After completion of drilling all new collars were re-surveyed using the same tool. Historical drill holes were surveyed with RTK GPS and DGPS from 2008 to 2015, using the remaining visible collar location positions. Only five of the early drill holes, drilled prior to 2000 by Intermin, had no obvious collar position when surveyed and a best estimate of their position was used based on planned position data. Downhole surveys were completed for all diamond holes, using gyro surveying equipment, as well as the RC holes drilled in 2015 (from GRC0159). Some RC drill holes from the 2018 campaign do not have gyro survey as the hole closed before the survey could be done. These holes have single shot camera surveys, from which the dip readings were used with an interpreted azimuth (nominal hole setup azimuth). The holes with interpreted azimuth are all less than 120m depth. All other RC holes were given a nominal -60° dip measurement. These older RC holes were almost all 120m or less in depth.

Criteria	JORC Code Explanation	Commentary
	Specification of the grid system used.	The grid projection used for the Australian Vanadium Project is MGA_GDA94, Zone 50. A local grid has also been developed for the project and used for the latest Mineral Resource update (March 2020). The grid is a 40 degree rotation in the clockwise direction from MGA north.
	Quality and adequacy of topographic control.	High resolution Digital Elevation Data was captured by Arvista for the Company in June 2018 over the M51/878 tenement area using fixed wing aircraft, with survey captured at 12 cm GSD using an UltraCam camera system operated by Aerometrex. The data has been used to create a high-resolution Digital Elevation Model on a grid spacing of 5m x 5m, which is within 20 cm of all surveyed drill collar heights, once the database collar positions were corrected for the improved ground control survey, that was also used in this topography survey. The vertical accuracy that could be achieved with the 12 cm GSD is +/- 0.10 m and the horizontal accuracy is +/- 0.24m. 0.5m contour data has also been generated over the mining lease application. High quality orthophotography was also acquired during the survey at 12cm per pixel for the full lease area, and the imagery shows excellent alignment with the drill collar positions. Outside M51/878, high resolution Digital Elevation Data was supplied by Landgate. The northern two thirds of the elevation data is derived from ADS80 imagery flown September 2014. The data has a spacing of 5M and is the most accurate available. The southern third is film camera derived 2005 10M grid, resampled to match it with the 2014 DEM. Filtering was applied and height changes are generally within 0.5M. Some height errors in the 2005 data may be +/- 1.5M when measured against AHD but within the whole area of interest any relative errors will mostly be no more than +/- 1M. In 2015 a DGPS survey of hole collars and additional points was taken at conclusion of the drill programme. Trepanier Pty Ltd compared the elevations the drill holes with the supplied DEM surface and found them to be within 1m accuracy. An improved ground control point has been established at the Australian Vanadium Project by professional surveyors. This accurate ground control point was used during the acquisition of high quality elevation data. As such, a correction to align previous surveys with the improved ground control was applied to all drill collars from pre-2018 in the Company drill database. Collars that were picked up during 2018 and subsequently are already calibrated against the new ground control.
Data Spacing and Distribution	Data spacing for reporting of Exploration Results.	2019 RC drilling in Fault Block 50 and 60 has drilled out portions of the fault block to 140 m spaced lines with 30 m drill centres on lines. Some sections are closer together where new drilling bracketed existing drill lines to maintain a minimum 140 m spacing between lines. 2019 diamond tail drilling has intersected the high grade domain at about 60 m downdip from the last existing drill hole on select sections that are at 80 m spacing. The 2018 RC drilling in Fault Block 30 and 40 has infilled areas of 260 m spaced drill lines to about 130m spaced drill lines, with holes on 30 m centres on each line. The closer spaced drilled areas of the deposit now have approximately 80m to 100m spacing by northing and 25m to 30m spacing by easting. Occasionally these spacings are closer for some pairs of drill holes. Outside of the main area of relatively close spaced drilling (approximately 7015400mN to 7016600mN), the drill hole spacing increases to between 140m and 400m in the northing direction but maintains roughly the same easting separation as the closer spaced drilled area.

Criteria	JORC Code Explanation	Commentary
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The degree of geological and grade continuity demonstrated by the data density is sufficient to support the definition of Mineral Resources and the associated classifications applied to the Mineral Resource estimate as defined under the 2012 JORC Code. Variography studies have shown very little variance in the data for most of the estimated variables and primary ranges in the order of several hundred metres.
	Whether sample compositing has been applied.	All assay results have been composited to one metre lengths before being used in the Mineral Resource estimate. This was by far the most common sample interval for the diamond drill hole and RC drill hole data.
Orientation of Data in Relation to Geological Structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	The grid rotation is approximately 45º to 50º magnetic to the west, with the holes dipping approximately 60º to the east. The drill fences are arranged along the average strike of the high-grade mineralised horizon, which strikes approximately 310º to 315º magnetic south of a line at 7015000mN and approximately 330º magnetic north of that line. The mineralisation is interpreted to be moderate to steeply dipping, approximately tabular, with stratiform bedding striking approximately north-south and dipping to the west. The drilling is nearly all conducted perpendicular to the strike of the main mineralisation trend and dipping 60° to the east, producing approximate true thickness sample intervals through the mineralisation. The exception is 18 RC pre-collar, diamond tail holes drilled vertically to intersect the deposit at depth, and 12 down-dip diamond holes drilled from surface down-dip in the high grade domain to gain metallurgical sample. These holes do not contribute assay data to the estimation.
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	The orientation of drilling with respect to mineralisation is not expected to introduce any sampling bias. Drill holes intersect the mineralisation at an angle of approximately 90 degrees. The 2019 PQ diamond holes are deliberately drilled down dip to maximise the amount of metallurgy sample collected for the pilot study, with all material used for metallurgy purposes (hence not being available for assay). They are not intended to add material to the resource estimation, or to define geological boundaries, though where further control on geological contacts is intercepted, this will be used to add more resolution to the geological model.
Sample Security	The measures taken to ensure sample security.	Samples were collected onsite under supervision of a responsible geologist. The samples were then stored in lidded core trays and closed with straps before being transported by road to the BV core shed in Perth (or other laboratories for the historical data). RC chip samples were transported in bulk bags to the assay laboratory and the remaining green bags are either still at site or stored in Perth. RC and core samples were transported using only registered public transport companies. Sample dispatch sheets were compared against received samples and any discrepancies reported and corrected.
Audits or Reviews	The results of any audits or reviews of sampling techniques and data.	A review of the sampling techniques and data was completed by Mining Assets Pty Ltd (MASS) and Schwann Consulting Pty Ltd (Schwann) in 2008 and by CSA in 2011. Neither found any material error. AMC also reviewed the data in the course of preparing a Mineral Resource estimate in 2015. The database has been audited and rebuilt by AVL and MRG in 2015. In 2017 geological data was revised after missing lithological data was sourced. Geologica Pty Ltd concludes the data integrity and consistency of the drill hole database shows sufficient quality to support resource estimation.

Section 2 - Reporting of Exploration Results

Criteria	JORC Code Explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	Following a decision by the Federal Court the Yugunga-Nya native title claim (WC1999/46) was not accepted for registration. Subsequent to the grant of M51/878, native title claim WCD2021/008 has become the NTT registration for the Yugunga Nya peoples covering the proposed mine site,. A Heritage survey was undertaken prior to commencing each drilling campaign which only located isolated artefacts but no archaeological sites *per se.* The Company have been completing heritage survey clearance work with the same group throughout the life of the project. Mining Lease M51/878 covering most of E 51/843 and P51/2567, and all of P51/2566 and E51/1396 was granted by DMIRS during 2020, covering 70% of the Vanadium Project. The remainder of the deposit resource area is covered by Mining Lease Application MLA51/897 that overlies a portion of E51/843, P51/3076 and E51/1534 that are held by AVL. Miscellaneous licence applications have been submitted for a haul and access road plus water pipeline corridor connecting the project through to the Great Northern Highway (Application L 51/116) to the west, and for borefields (Application L 51/119). AVL has no joint venture, environmental, national park or other ownership agreements on the lease area. A Mineral Rights Agreement has been signed with Bryah Resources Ltd for base metals and gold exploration on the AVL Gabanintha tenements. Bryah Resources Limited (ASX: BYH) holds the Mineral Rights for all minerals except V/U/Co/Cr/Ti/Li/Ta/Mn & iron ore which are retained 100% by AVL. AVL owns shares in BYH and holds a 0.75% Net Smelter Return royalty upon commencement of production by BYH.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	At the time of reporting, there are no known impediments to obtaining a licence to operate in the area and the tenements are in good standing.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	The Australian Vanadium deposit was identified in the 1960s by Mangore P/L and investigated with shallow drilling, surface sampling and mapping. In 1998, Drilling by Intermin Resources confirmed the down dip extent and strike continuation under cover between outcrops of the vanadium bearing horizons. Additional RC and initial diamond drilling was conducted by Greater Pacific NL and then AVL up until 2019. Previous Mineral Resource estimates have been completed for the deposit in 2001 (Mineral Engineering Technical Services Pty Ltd (METS) and Bryan Smith Geosciences Pty Ltd (BSG)), 2007 (Schwann), 2008 (MASS & Schwann), 2011 (CSA), 2015 (AMC), 2017, 2018 and 2020 updates (Trepanier Pty Ltd).
Geology	Deposit type, geological setting and style of mineralisation.	The Australian Vanadium Project at Gabanintha is located approximately 40kms south of Meekatharra in Western Australia and approximately 100kms along strike (north) of the Windimurra Vanadium Mine. The mineralisation is hosted in the same geological unit as Windimurra, which is part of the northern Murchison granite greenstone terrane in the north west Yilgarn Craton. The project lies within the Gabanintha and Porlell Archaean greenstone sequence oriented approximately NW-SE and is adjacent to the Meekatharra greenstone belt.

Criteria	JORC Code Explanation	Commentary
		Locally the mineralisation is massive or bands of disseminated vanadiferous titano-magnetite hosted within the gabbro. The mineralised package dips moderately to steeply to the west and is capped by Archaean acid volcanics and metasediments. The footwall is a talc carbonate altered ultramafic unit. The host sequence is disrupted by late-stage dolerite and granite dykes and occasional east and northeast to southwest trending faults with apparent minor offsets. The mineralisation ranges in thickness from several metres to up to 20 to 30m in thickness. The oxidized and partially oxidised weathering surface extends 40 to 80m below surface and the magnetite in the oxide zone is usually altered to Martite.
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length.	All drill results relevant to the mineral resource updates were disclosed at the time of each resource publication. For further information in addition to this release, see AVL announcements dated 4th March 2020, 28th November 2018 and 1 November 2021 for the previous Mineral Resource updates.
Data aggregation methods	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	Length weighed averages used for exploration results are reported in spatial context when exploration results are reported. Cutting of high grades was not applied in the reporting of intercepts.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	There were negligible residual composite lengths, and where present these were excluded from the estimate.

Criteria	JORC Code Explanation	Commentary
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values have been used.
Relationship between mineralisation widths and intercept lengths	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	Drill holes intersect the mineralisation at an angle of approximately 90 degrees, perpendicular to the mineralisation dip. Diamond PQ holes in the 2019 program were drilled vertically (-90 degrees). This decreases the angle of intersection with the mineralisation.
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	See Figures in the AVL ASX releases of 1st October 2021, 4th March 2020 and 18th November 2018, which list drilling intercepts, maps and sections for the previous three Mineral Resource updates.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	Comprehensive reporting of drilling details has been provided in the body of the announcement of 1st October 2021.
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	All meaningful & material exploration data has been reported
Further work	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).	Extensional resource infill drilling is under consideration for the remaining 5 km of mineralisation that is currently drilled at broad spacing.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future	Additional infill could be completed at the Project to increase the Mineral Resource category from Inferred to Indicated, and Indicated to Measured. There is also potential for additional Mineral Resource in block 90 in the southern-most portion of the project area, where an additional 500 – 1500 metres of strong magnetic signature implies continuation of the high grade vanadium domain. Figure 4 in this report

Criteria	JORC Code Explanation	Commentary
	drilling areas, provided this information is not commercially sensitive.	shows total magnetics imagery over the strike extent of the Project, with existing drill collars. The entire strongly magnetic trend is considered prospective for massive magnetite V-Ti mineralisation.

Section 3 - Estimation and Reporting of Mineral Resources

Criteria	JORC Code Explanation	Commentary
Database Integrity	Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.	All the drilling was logged into Microsoft Excel, or logged onto paper and then transferred to a digital form and loaded into a Microsoft SQL Server relational drill hole database using DataShed^{TM} management software. Logging information was reviewed by the responsible geologist and database administrator prior to final load into the database. All assay results were received as digital files, as well as the collar and survey data. These data were transferred directly from the received files into the database. All other data collected for the Australian Vanadium Project were recorded as Excel spreadsheets prior to loading into SQL Server. The data have been periodically checked by AVL personnel, the database administrator as well as the personnel involved in all previous Mineral Resource estimates for the project.
	Data validation procedures used.	The data validation was initially completed by the responsible geologist logging the core and marking up the drill hole for assaying. The paper geological logs were transferred to Excel spreadsheets and compared with the originals for error. Assay dispatch sheets were compared with the record of samples received by the assay laboratories. Normal data validation checks were completed on import to the SQL database. Data has also been checked back against hard copy results and previous mines department reports to verify assays and logging intervals. Both internal (AVL) and external (Schwann, MASS, CSA and AMC) validations are/were completed when data was loaded into spatial software for geological interpretation and resource estimation. All data have been checked for overlapping intervals, missing samples, FROM values greater than TO values, missing stratigraphy or rock type codes, downhole survey deviations of ±10° in azimuth and ±5° in dip, assay values greater than or less than expected values and several other possible error types. Furthermore, each assay record was examined and mineral resource intervals were picked by the Competent Person. QAQC data and reports have been checked by the database administrator, MRG. MASS & Schwann and CSA both reported on the available QAQC data for the Australian Vanadium Project.
Site Visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	The drill location was inspected by John Tyrrell of AMC in 2015 for the initial 2012 JORC resource estimation. Consulting Geologist Brian Davis of Geologica Pty Ltd has visited all the Australian Vanadium Project drilling sites since 2015 and has been familiar with the Australian Vanadium Project iron-titanium-vanadium orebody since 2006. AVL Principal Geologist, Gemma Lee, has visited site numerous times since early 2019, completing outcrop mapping and drilling supervision. Consulting Geologist Lauritz Barnes of Trepanier Pty Ltd visited the Australian Vanadium Project drilling sites in March 2019. The geology, sampling, sample preparation and transport, data collection and storage procedures were all discussed and reviewed with the responsible geologist for the 2015, 2017, 2018 and 2019 drilling. Visits to the BV laboratory and core shed in Perth were used to add knowledge to aid in the preparation of this Mineral Resource Estimate.
	If no site visits have been undertaken indicate why this is the case.	N/A

Criteria	JORC Code Explanation	Commentary
Geological Interpretation	Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.	The Australian Vanadium Project's vanadium mineralisation lies within the Gabanintha and Porlell Archaean greenstone sequence orientated approximately northwest-southeast, adjacent to the Meekatharra greenstone belt in the Murchison Province. The deposit is comparable to the Windimurra vanadium deposit and the Barrambie vanadium titanium deposit located 140 km south and 80 km southeast of Gabanintha respectively. The geology of the Gabanintha formation is a layered sequence of granitoids, ultramafics, gabbros and dolerites/amphibolites, felsic tuffs, basalts and banded iron and cherts. The sequence above is from stratigraphic low to high (east to west respectively). The oxidised portion of the high-grade massive magnetite/martite mineralisation outcrops for almost 14km in the company held lease area. Detailed mapping and mineralogical studies have been completed by company personnel and contracted specialists between 2000 and 2019, as well as multiple infill drilling programmes to test the mineralisation and continuity of the structures. These data and the relatively closely-spaced drilling has led to a good understanding of the mineralisation controls. The mineralisation is hosted within altered gabbro and is easy to visually identify by the magnetite/martite content. The main high grade unit shows consistent thickness and grade along strike and down dip and has a clearly defined sharp boundary. The lower grade disseminated bands also show good continuity, but their boundaries are occasionally less easy to identify visually as they are more diffuse over a metre or so.
	Nature of the data used and of any assumptions made.	No assumptions are made regarding the input data.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Alternative interpretations were considered in the current estimation and close comparison with the 2015 and 2018 resource models was made to see the effect of the new density data and revised geology model. Continuity of the low grade units, more closely defined from lithology logs, is now better understood and the resulting interpretation is more effective as a potential mining model. The near-surface alluvial and transported material has again been modelled in this estimation. The impact of the current interpretation as compared to the previous interpretation is a greater confidence in areas of infill drilling.
	The use of geology in guiding and controlling Mineral Resource estimation.	Geological observation has underpinned the resource estimation and geological model. The high grade mineralisation domain has a clear and sharp boundary and has been tightly constrained by the interpreted wireframe shapes. The low grade mineralisation is also constrained within wireframes, which are defined and guided by visual (from core) and grade boundaries from assay results. The low grade mineralisation has been defined as four sub-domains, which strike sub-parallel to the high grade domain. In addition there is a sub parallel laterite zone and two transported zones above the top of bedrock surface. The resource estimate is constrained by these wireframes. Domains were also coded for oxide, transition and fresh, as well as above and below the alluvial and bedrock surfaces. The extents of the geological model were constrained by fault block boundaries. Geological boundaries were extrapolated to the edges of these fault blocks, as indicated by geological continuity in the logging and the magnetic geophysical data.

Criteria	JORC Code Explanation	Commentary
	The factors affecting continuity both of grade and geology.	Key factors that are likely to affect the continuity of grade are: • The thickness and presence of the high grade massive magnetite/martite unit, which to date has been very consistent in both structural continuity and grade continuity. • The thickness and presence of the low grade banded and disseminated mineralisation along strike and down dip. The low grade sub-domains are less consistent in their thickness along strike and down dip with more pinching and swelling than for the high grade domain. • SW-NE oriented faulting occurs at a deposit scale and offsets the main orientation of the mineralisation. These regional faults divide the deposit along strike into kilometre scale blocks. Internally the mineralised blocks show very few signs of structural disturbance at the level of drilling.
Dimensions	The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	The massive magnetite/martite unit strikes approximately 14 km, is stratiform and ranges in thickness from less than 10m to over 20m true thickness. The low grade mineralised units are sub-parallel to the high grade zone, and also vary in thickness from less than 10m to over 20m. All of the units dip moderately to steeply towards the west, with the exception of two predominantly alluvial units (domains 7 and 8) and a laterite unit (domain 6) which are flat lying. All units outcrop at surface, but the low grade units are difficult to locate as they are more weathered and have a less prominent surface expression than the high grade unit. The high and low grade units are currently interpreted to have a depth extent of at least approximately 250m below surface. Mineralisation is currently open along strike and at depth.
Estimation and Modelling Techniques	The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.	Grade estimation was completed using Ordinary Kriging (OK) for the Mineral Resource estimate. Surpac™ software was used to estimate grades for V_2O_5, TiO_2, Fe_2O_3, SiO_2, Al_2O_3, Cr_2O_3, Co, Cu, Ni, S, magnetic susceptibility and loss on ignition (LOI) using parameters derived from statistical and variography studies. The majority of the variables estimated have coefficients of variation of significantly less than 1.0, with Cr_2O_3 being the exception. Drill hole spacing varies from approximately 80 m to 100 m along strike by 25 m to 30 m down dip, to 500 m along by 50 m to 60 m down dip. Drill hole sample data was flagged with numeric domain codes unique to each mineralisation domain. Sample data was composited to 1 m downhole length and composites were terminated by a change in domain or oxidation state coding. No grade top cuts were applied to any of the estimated variables as statistical studies showed that there were no extreme outliers present within any of the domain groupings. Grade was estimated into separate mineralisation domains including a high grade bedrock domain, four low grade bedrock domains and low grade alluvial and laterite domains. Each domain was further subdivided into a fault block, and each fault block was assigned its own orientation ellipse for grade interpolation. Downhole variography and directional variography were performed for all estimated variables for the high grade domain and the grouped low grade domains. Grade continuity varied from hundreds of metres in the along strike directions to sub-two hundred metres in the down-dip direction although the down-dip limitation is likely related to the extent of drilling to date.

Criteria	JORC Code Explanation	Commentary
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	Prior to 2017, there had been five Mineral Resource estimates for the Australian Vanadium Project deposit. The first, in 2001 was a polygonal sectional estimate completed by METS & BSG. The subsequent models by Schwann (2007), MASS & Schwann (2008) and CSA (2011) are kriged estimates. AMC (2015) reviewed the geological interpretation of the most recent previous model (CSA 2011), but used a new interpretation based on additional new drilling for the 2015 estimate. In 2017 a complete review of the geological data, weathering profiles, magnetic intensity and topographic data as well as incorporation of additional density data and more accurate modelling techniques resulted in a re-interpreted mineral resource. This was revised in July and December 2018. A Mineral Resource update (adding magnetic susceptibility and new drill data) was completed in March 2020. No mining has occurred to date at the Australian Vanadium Project, so there are no production records. Additional infill drilling and extensional diamond core holes have resulted in further adjustments to the interpretation.
	The assumptions made regarding recovery of by-products.	Test work conducted by the company in 2015 identified the presence of sulphide hosted cobalt, nickel and copper, specifically partitioned into the silicate phases of the massive titaniferous vanadiferous iron oxides which make up the vanadium mineralisation at the Australian Vanadium Project. Subsequent test work has shown the ability to recover a sulphide flotation concentrate containing between 3.8 % and 6.3% of combined base metals treating the non-magnetic tailings produced as a result of the magnetic separation of a vanadium iron concentrate from fresh massive magnetite. See ASX Announcements dated 22 May 2018 and 5 July 2018. Leached calcine of 53.3% Fe, 8.89% Ti, 0.93% Si and 1.55% Al has been generated from the pilot scale testwork and is considered an iron-titanium coproduct when generated from AVL's relocated processing plant site at Tenindewa. Further characterisation testwork and exploration of avenues to improve the calcine product quality are under review.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterization).	Estimates were undertaken for Fe_2O_3, SiO_2, TiO_2, Al_2O_3, and LOI, which are non-commodity variables, but are useful for determining recoveries and metallurgical performance of the treated material. Estimated Fe_2O_3% grades were converted to Fe% grades for reporting (Fe% = Fe_2O_3/1.4297). Estimates were also undertaken for Cr_2O_3 which is a potential deleterious element. The estimated Cr_2O_3% grades were converted to Cr ppm grades (Cr ppm = (Cr_2O_3%*10000)/1.4615).
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. Any assumptions behind modelling of selective mining units.	The Australian Vanadium Project block model uses a parent cell size of 40 m in northing, 8 m in easting and 10 m in RL. This corresponds to approximately half the distance between drill holes in the northing and easting directions and matches an assumed bench height in the RL direction. Accurate volume representation of the interpretation was achieved. Grade was estimated into parent cells, with all sub-cells receiving the same grade as their relevant parent cell. Search ellipse dimensions and directions were adjusted for each fault block. Three search passes were used for each estimate in each domain. The first search was 120m and allowed a minimum of 8 composites and a maximum of 24 composites. For the second pass, the first pass search ranges were expanded by 2 times. The third pass search ellipse dimensions were extended to a large distance to allow remaining unfilled blocks to be estimated. A limit of 5 composites from a single drill hole was permitted on each pass. In domains of limited data, these parameters were adjusted appropriately.

Criteria	JORC Code Explanation	Commentary
		No selective mining units were considered in this estimate apart from an assumed five metre bench height for open pit mining. Model block sizes were determined primarily by drill hole spacing and statistical analysis of the effect of changing block sizes on the final estimates.
	Any assumptions about correlation between variables.	All elements within a domain used the same sample selection routine for block grade estimation. No co-kriging was performed at the Australian Vanadium Project.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation is used to define the mineralisation, oxidation/transition/fresh and alluvial domains. All of the domains are used as hard boundaries to select sample populations for variography and grade estimation.
	Discussion of basis for using or not using grade cutting or capping.	Analysis showed that none of the domains had statistical outlier values that required top-cut values to be applied.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the block model consisted of: • Volumetric comparison of the mineralisation wireframes to the block model volumes. • Visual comparison of estimated grades against composite grades. • Comparison of block model grades to the input data using swathe plots. As no mining has taken place at the Australian Vanadium Project to date, there is no reconciliation data available.
Moisture	Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	All mineralisation tonnages are estimated on a dry basis. The moisture content in mineralisation is considered very low.
Cut-Off Parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	A nominal 0.4% V_2O_5 wireframed cut off for low grade and a nominal 0.7% V_2O_5 wireframed cut off for high grade has been used to report the Mineral Resource at the Australian Vanadium Project. Consideration of previous estimates, as well as the current mining, metallurgical and pricing assumptions, while not rigorous, suggest that the currently interpreted mineralised material has a reasonable prospect for eventual economic extraction at these cut off grades.

Criteria	JORC Code Explanation	Commentary
Mining Factors or Assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	AVL completed a mining Scoping Study in October 2016 for the Australian Vanadium Project. The primary mining scenario considered was conventional open pit mining. In September 2018, AVL released a base case PFS which included key assumptions supporting a planned open pit vanadium mining operation at the Australian Vanadium Project. The March 2020 Mineral Resource was the basis for new optimisation studies during 2020 for an open pit mine plan incorporating the additional Indicated resources, upon which a PFS Update released in December 2020 was based.
Metallurgical Factors or Assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	The metallurgical work conducted has been significant, with final programs in 2020 and 2021 designed to support the BFS flowsheets. Laboratory work supporting the BFS is complete and final reports have been received. The work included bench scale variability testwork and pilot scale testwork on indicative process feed blends to validate an optimised CMB flowsheet and the sodium salt roast/leach section of the processing plant flowsheet. Bench scale hydrometallurgical processing of leach liquors from the pilot test program has generated product that meets typical >98.5% V_2O_5 flake chemical specification. Other metallurgical programs are continuing to assess high purity vanadium products and routes to upgrade the iron rich coproduct that will be generated by the vanadium extraction process. Metallurgical studies supporting the PFS (Q4 2018) focused on bench scale comminution and magnetic separation test work on 24 contiguous drill core intervals from the high-grade vanadium domain. These samples included 10 off from the "fresh" rock zone, 9 off from the zone defined as "transitional" and 5 off from the near surface oxidised horizon, "oxide". Some preliminary bench scale roast and leach testing was carried out and used to support process design criteria applied in the PFS. Metallurgical studies supporting the PFS Update (Q4 2020) included bench scale variability tests on both diamond core and RC material and pilot testing of bulk samples made up from diamond drill core to represent average early years (0-5) and life of mine (LOM) process feed. The pilot testing of the optimised beneficiation circuit generated two controlled batches (total 2.2 tonnes) of concentrate that were used to develop and optimise a grate kiln process, similar to a pelletisation process for iron ore. Significantly higher vanadium leach extraction has been achieved relative to conventional processing of fine concentrate in a rotary kiln, as applied in the PFS flowsheet. The following table provides a summary of the metallurgical testing supporting the BFS. Metallurgical testwork was completed in October 2021. <table><tr><th>Flowsheet Area</th><th>Type of test</th><th>Number of tests</th></tr><tr><td>Concentration</td><td>Comminution</td><td></td></tr><tr><td></td><td>• Bond ball mill work index • Bond rod mill work index</td><td>31 tests 16 tests</td></tr></table>

Criteria	JORC Code Explanation	Commentary		
			• Bond abrasion index	30 tests
			• UCS	12 tests
			• SMC	30 tests
			• JKDWi	3 tests
			Bench scale silica reverse flotation	34 tests
			Tails and concentrate thickening	20 tests
			Concentrate filtration	12 tests
			Pilot scale beneficiation	3 tests (optimised conditions)
			Concentrate characterisation	2 size by assay tests
				2 XRD tests
			Variability test program	47 small scale WHIMS tests
				38 DTR or DTW tests
				26 REM Stick tests
				6 Steinert Lab Magnet Assembly tests
				4 LIMS/WHIMS test
				12 silica reverse flotation test
				16 Qemscan analyses
		Vanadium Extraction	Bench scale roast and leach	41 muffle furnace roast tests
				6 pot roast tests
				5 agitated tank leach tests
				3 bottle roll leach tests
				5 counter current pellet leach tests
			Pilot scale roasting	31 small batch pelletising tests
				44 large batch pelletising tests
				55 Grate Kiln roast tests and 47 batch water leach tests

Criteria	JORC Code Explanation	Commentary			
			Bond ball mill work index	1 calcine regrind test
			Large scale batch leach	5 bulk static tank leach tests
				1 bulk agitated tank leach test
				2 column leach tests
				3 spiral leach tests
			Pilot scale leach	2 x drum leach tests
				15 x 1 m column leach tests
				2 x 5.5 m column leach tests
		Vanadium Purification	Evaporation	14 tests
			Bench scale desilication	12 tests
			Bench scale AMV precipitation	23 tests
			Bench scale APV precipitation/APV washing	73 tests
			Bench scale deammoniation	12 tests
		Calcine Upgrading	Calcine characterisation	3 XRD tests
				3 TGA tests
				2 TCLP tests
			Calcine upgrading	27 roast tests
				3 WHIMS tests
				8 Muffle furnace roast tests
				12 DTR tests
				4 Carpco magnetic fractionation tests

Criteria	JORC Code Explanation	Commentary
		Through the pilot scale testing and additional variability testwork undertaken in 2019,2020, and 2021, the metallurgical understanding and confidence in the process design has improved considerably. The following metallurgical summary supports the Resource Statement and grounds for justifying reasonable prospects of eventual economic extraction. • The oxide, transitional and fresh materials are similar in comminution behaviour and exhibit a moderate rock competency and ball milling energy demand. The abrasiveness of the massive iron mineralisation (vanadium enriched zone) is on average low, indicating grinding media and wear liner unit consumption rates will be low when processed. • Most of the vanadium exists within massive iron mineralisation which can effectively be recovered to a magnetic concentrate at a grind size P_{80} ranging 106 to 160 µm. A positive and consistent response to magnetic separation has been shown from Davis Tube recovery (DTR) testing of fresh un-oxidised material within the high-grade domain. The degree of weathering impacts the magnetic susceptibility of the mineralisation and therefore the response to magnetic separation. Testwork has confirmed wet high intensity magnetic separation (WHIMS) to be an effective scavenger for upper profile transitional and well oxidised material. • Lower vanadium grade assay intervals (0.4 to 0.7% V_2O_5) are common at the boundary of the high-grade massive iron zone but are observed to be more related to inclusion of mafic rock (gangue), often intercalated. Lower vanadium grade material representing the expected mine dilution was included in the pilot testwork feed blends and when individually tested has recovered a magnetic concentrate. There are reasonable grounds to propose that eventual economic extraction of low-grade material (0.4 to 0.7% V_2O_5) could be viable at least at the end of the project via a preconcentration step not yet within the beneficiation flowsheet. • The processing of blends of fresh and variably oxidised material can achieve a low silica (1.8% SiO_2) and alumina grade (2.8% Al_2O_3) concentrate when the magnetic concentrate is reground to P_{80} 75 µm and cleaned in a silica reverse flotation circuit. • The beneficiation flowsheet has been validated by pilot scale testwork which involved processing two blends of diamond core material designed to be indicative of average scheduled process feed. The optimised flowsheet includes medium intensity magnetic separation (MIMS), a scavenger WHIMS circuit, combined magnetic concentrate regrinding and final cleaning via a silica reverse flotation circuit. Concentrates from the pilot plant of 1.4% V_2O_5 were achieved at 69 and 76% vanadium recovery for the years 0-5 and LoM blends respectively. The higher vanadium recovery sample contained a component of fresh material (45% by mass). • Optimised pilot scale testing of a grate kiln process with mixes of concentrate, sodium salt and a binder in the form of green pellets, has achieved a conversion to sodium vanadate of 92 to 93%. • Pilot scale leaching with a rotating drum and columns has achieved a total vanadium extraction from the roasted concentrate of 91%. • Bench scale testing of desilication and ammonium meta vanadate (AMV) precipitation has proven vanadium in leach liquor generated by the pilot testing can be purified to generate a 99.5% product. The product chemistry is considered acceptable as a high-purity critical mineral product for defence steel alloys and the battery market. This traditional vanadium hydrometallurgical purification path has been adopted for the flowsheet and is similar to leach liquor purification flowsheets applied at Largo Resources Maracas vanadium project in Bahia, Brazil and in Xstrata's Windimurra refinery flowsheet in Western Australia. • Leached calcine of 54% Fe, 9% Ti, 1.1% Si and 1.5% Al has been generated from the pilot scale testwork and is considered an iron-titanium coproduct when generated from AVL's processing plant site at Tenindewa. Further characterisation testwork and exploration of avenues to improve the calcine product quality are under review.

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td>Environmental Factors or Assumptions</td><td>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfield project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</td><td>Environmental studies and impact assessment are currently being undertaken for Feasibility and approvals work. For the BFS a commensurate level of study and design was completed for a Tailings Storage Facility (TSF) that will form part of an Integrated Waste Landform (IWL), the other portion of the IWL being waste rock from the mined pits. This work was undertaken by Golder and confirmed that the tails stream from the concentrator can be effectively stored and rehabilitated. Tailings seepage characterisation at Gabanintha has been completed, with controls required to prevent adverse impacts from tailings seepage into subterranean fauna habitat well considered. Waste streams from the processing plant at Tenindewa, including calcine residue and a sodium sulphate rich bleed solution are assumed to be managed within a lined storage facility.</td></tr>
<tr><td>Bulk Density</td><td>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</td><td>Multiple campaigns of Archimedes SG determinations have been completed, on diamond core ranging from HQ to PQ size, and either whole, half or quarter core. The majority of Archimedes measurements (SG = Weight in Air/(Weight in Air – Weight in Water)) were completed on plastic wrapped core to account for porosity. The measurements are assumed to be dry mass basis. Samples were selected from all bedrock rock types at the deposit. Samples were selected from all oxidation states within the bedrock geology.

Additional data sets collected were pycnometry (problematic due to no account for porosity); Down hole Compensated Density logs (gamma method with two collimated detectors short and long distances from with source, with an eccentric arm to hold the tool against the wall of the hole, with measurements that account for hole rugosity, fluids in hole and porosity); and ‘XSG’ data that is a regression developed from Compton values to measured Archimedes SG determinations, applied to portions of diamond holes where continual XRF scanning was applied. All methods are determinations, rather than assumptions, with varying precision and accuracy.

The following table lists all density determinations applied at the project:
<table>
<tr><th>Year</th><th>Data Type</th><th>Sample Count</th><th>Company</th><th>Description/ Comments</th></tr>
<tr><td>2010</td><td>Archimedes Method - HQ Core</td><td>97</td><td>Spectro Laboratory</td><td>Assumed unwrapped</td></tr>
<tr><td>2015</td><td>Archimedes Method - PQ Core</td><td>26</td><td>Bureau Veritas</td><td>Wrapped</td></tr>
<tr><td>2015</td><td>Pycnometry - RC Samples</td><td>200</td><td>Bureau Veritas</td><td>No porosity factor</td></tr>
<tr><td>2016</td><td>Archimedes Method – Half PQ Core</td><td>200</td><td>Bureau Veritas</td><td>Wrapped</td></tr>
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<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>

2016	Pycnometry – PQ or HQ Half Core	100	Bureau Veritas	To determine porosity factor – samples measured with wrapped Archimedes Method prior to crushing and pycnometry
2018	Archimedes Method - HQ half core	13	Bureau Veritas	Wrapped
2019	Archimedes Method - PQ whole core or quarter core	486	AVL - SG Station	Wrapped, with check measurements unwrapped on 193 of the samples
2020	Down-hole Compensated Density Log Survey	16,766	Surtech Systems	10 cm readings over 1,674.8 metres on 18 holes
2021	XSG data from Minalyze XRF Scanning	467	Minalyze	1m composite SG measurements collected from portions of 15 core holes

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<tr><td></td><td>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.</td><td>The Archimedes method (SG = Weight in Air/(Weight in Air – Weight in Water)) was used for direct core measurements; all 725 of the latest measurements have been done using sealed core, the previous 97 measurements were not wrapped.

Downhole Compensated Density Logs (gamma-gamma survey) are calibrated (compensated) to account for rock porosity (voids) and fluids down hole.

XSG data, being calibrated to wrapped Archimedes SG determinations, also account for voids.

Sample selection for all of the bulk density determinations covered all bedrock units and all oxidation states.</td></tr>
<tr><td></td><td>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</td><td>The average regression-derived bulk density values by domain for all classified Mineral Resource at the Australian Vanadium Project are:

Domain	Ox. State	Bulk Density
10 (High Grade)	Low Magnetics (Oxide)	3.51
10 (High Grade)	Moderate Magnetics (Transition)	3.70
10 (High Grade)	High Magnetics (Fresh)	4.02

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Criteria	JORC Code Explanation	Commentary

2 - 5; 9 (Low Grade Bedrock)	Oxide	2.41
2 - 5; 9 (Low Grade Bedrock)	Transition	2.72
2 - 5; 9 (Low Grade Bedrock)	Fresh	3.16
20 - 25 (Gabbro Waste)	Oxide	2.31
20 - 25 (Gabbro Waste)	Transition	2.45
20 - 25 (Gabbro Waste)	Fresh	2.68
6 - 8 (Transported Low Grade)	Oxide	2.53
27 (Transported Waste)	Oxide	2.16

All values are in t/m^3.

Regressions used to determine bulk density (BD) based on iron content are as follows:

SG Lith Type	Block Model Domains	Oxidation State	2021 Regression Formula
HG10	10	Low Magnetics (Oxide)	BD = 0.0459 x Fe_2O_3 + 0.7228
		Moderate Magnetics (Trans)	BD = 0.0439 x Fe_2O_3 + 0.9306
		High Magnetics (Fresh)	BD = 0.0358 x Fe_2O_3 + 1.6157
Low Grade And Gabbro Waste	1 - 5, 9 and 20 - 25	Oxide	BD = 0.0079 x Fe_2O_3 + 2.1326
		Transition	BD = 0.0136 x Fe_2O_3 + 2.2381
		Fresh	BD = 0.0156 x Fe_2O_3 + 2.5945
Barren Transp. Cover	27	Oxide	Assign BD value: 2.16
Transp. Low Grade	6 - 8	Oxide	BD = 0.0122 x Fe_2O_3 + 2.0255

The final bulk density used for reporting of the Australian Vanadium Project Mineral Resource is based on the regression as it provides a more reliable local estimated bulk density.

Criteria	JORC Code Explanation	Commentary
Classification	The basis for the classification of the Mineral Resources into varying confidence categories.	Classification for the Australian Vanadium Project Mineral Resource estimate is based upon continuity of geology, mineralisation and grade, consideration of drill hole and density data spacing and quality, variography and estimation statistics (number of samples used and estimation pass, with first pass being smallest search radius with higher confidence estimate resulting, and third pass being broadest to ensure all blocks are estimated).

Criteria	JORC Code Explanation	Commentary
		The current classification is considered valid for the global resource and applicable for the nominated grade cut-offs.
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	At the Australian Vanadium Project, the central portion of the deposit is well drilled for a vanadium deposit, having a drill hole spacing from a nominal 80 m to 100 m x 25 m to 30 m in northing and easting in the zone of closest drilling, to 140 m x 25 m to 30 m in northing and easting throughout the rest of the Indicated Resource area. The lower confidence areas of the deposit have drill hole spacings ranging up to 500 m x 25 m to 30 m in northing and easting directions. The estimate has partially been classified as Measured Mineral Resource in an area restricted to the oxide, transition and fresh portion of the high-grade domain where the drill hole spacings are less than 80 to 100m in northing, and 25 to 30m in the easting (Fault Blocks 15 and 20). Indicated Mineral Resource material is generally restricted to the oxide, transition and fresh of the high grade and low grade in the areas of drilling that are spaced at 100 to 150m in the northing, and 25 to 30m in the easting (portions of fault blocks 20, 30, 40, 50 and 60). Inferred Mineral Resource has been restricted to any other material within the interpreted mineralisation wireframe volumes and limited by constraining wireframes down-dip (all fault blocks, 10 to 70). The background waste domain estimate has not been classified, due to very low possibility of economic extraction and limited data.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	Geologica Pty Ltd and Trepanier Pty Ltd believe that the classification appropriately reflects their confidence in the grade estimates and robustness of the interpretations.
Audits or Reviews	The results of any audits or reviews of Mineral Resource estimates.	The current Mineral Resource estimate has not been audited.
Discussion of Relative Accuracy/ Confidence	Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.	The resource classification represents the relative confidence in the resource estimate as determined by the Competent Persons. Issues contributing to or detracting from that confidence are discussed above. No quantitative approach has been conducted to determine the relative accuracy of the resource estimate. The Ordinary Kriged estimate is considered to be a global estimate with no further adjustments for Selective Mining Unit (SMU) dimensions. Accurate mining scenarios are yet to be determined by mining studies. No production data is available for comparison to the estimate. The local accuracy of the resource is adequate for the expected use of the model in the mining studies. Infill drilling will be required to further raise the level of resource classification in areas not yet in the Measured category.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.

Criteria	JORC Code Explanation	Commentary
	should include assumptions made and the procedures used.	
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	There has been no production from the Australian Vanadium Project deposit to date.

Section 4 - Estimation and Reporting of Ore Reserves

Criteria	JORC Code Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	The most recent Mineral Resource estimate was declared on 1st November 2021 and has been used in the BFS. Refer to the ASX release of 1st November 2021 for material assumptions and further information. The Measured and Indicated Resources from Section 3 have been used as the basis for conversion to the Ore Reserve. The Mineral Resources are inclusive of the Ore Reserve.
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case.	A site visit was undertaken by the Competent Person, Mr. Ross Cheyne, from 27th to 28th January 2021. All pertinent locations across the site were walked including the open pit and waste dump locations, the CMB location, the flood plain to the north of northern pit and the location of several diamond drill holes and water bores. The following observations were made: • The site was easily accessible from Meekatharra. • The site is flat with no significant topographical relief. There is light "mulga" type scrub and very minimal soil cover. • There are some small drainage channels observed, with a larger drainage system north of the main pit. • Some small outcropping of the orebody was observed. No items of concern were observed.
Study status	The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	A 2022 Bankable Feasibility Study that supersedes the previous 2020 PFS Update has been prepared. The 2022 BFS report was compiled by AVL with input from: • Trepanier Pty Ltd/Geologica Pty Ltd (Geology and Resources) • Orelogy Mine Consulting (Mine planning) • Majesso (Mining contract RFQ and cost estimation) • Wood Australia Pty Ltd (Wood) (Metallurgical testwork, Process design and Process/non-process infrastructure) • Pells Sullivan Meynink (Geotechnical, Hydrology and Hydrogeology) • Umwelt (Environmental) • Golder (Tailings storage) • AVL/EY (financial analysis) Orelogy undertook the mining component of this BFS, and in the course of the study, produced optimisations, designs and production schedules. Modifying factors considered in the open pit mine planning process included mining dilution and ore loss, slope design criteria, mining and processing cost estimates and other practical mining considerations.

Criteria	JORC Code Explanation	Commentary
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	The economic break-even cut-off calculation is detailed: $$Cut\ off\ grade = \frac{(process + overhead\ cost) \times (1 + Mining\ Dilution(\%))}{Payable\ Vanadium\ Price \times Process\ Recovery\ (\%)}$$ As the process recovery varies across the resource model on the basis of magnetic susceptibility and Fe grade, the breakeven cut-off grade also varies locationally. However, a cut-off grade of 0.7% V_2O_5 was utilised to define "ore" for the purposes of reporting an Ore Reserve. This approach was taken to reduce processing performance risk as metallurgical testing indicated inconsistent mass recoveries using magnetic separation where vanadium grades were less than this value. This can be considered a relatively conservative approach as 0.7% V_2O_5 is higher than the calculated breakeven cut-off grade.
Mining factors or assumptions	The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).	The Mineral Resources have been optimised using Whittle software based on Measured and Indicated material only and utilising appropriate modifying factors and allowances for mining ore loss and dilution. A relatively conservative optimisation shell, based on a Revenue Factor of 0.88, was selected as the basis for subsequent detailed pit designs. The Ore Reserve is the Measured and Indicated Resources within those detailed final pit designs.
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	The mining method selected is a conventional open pit truck and shovel approach. It is assumed that all material to be mined will require blasting to some degree, with reduced powder factors used for the weathered zones. Ore and surrounding waste are assumed to be blasted on 5 metre bench heights and mined in 2.5 metre high flitches using a backhoe excavator. Bulk waste will be blasted at 10m heights. Pit ramps are designed at a 10% gradient and 31 m wide, except for lower pit levels where the ramp reduces to 16 m wide. This will be adequate for haul trucks of up to a 150 tonne payload to be utilised. A pre-strip period of half a year is planned which will allow sufficient time and material movement to: • construct a starting ROM Pad. • construct mine haul roads. • construct the first lift of the Tailings Storage Facility (TSF). • ensure sufficient ore on stockpile for the targeted blend to be met from start-up

Criteria	JORC Code Explanation	Commentary
	The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling. The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).	A Feasibility Study level geotechnical study has been completed by independent geotechnical consultants Pells Sullivan Meynink Pty Ltd for the Australian Vanadium Project. The pit design parameters from this study have been used as the basis for the pit optimisations and subsequent pit designs for the study. Grade control will be based on additional RC drilling, pit mapping and sampling from production drilling where necessary. An RC drilling pattern has been allowed for based on the following pattern: • Weathered material – 20 m along strike by 10 m on cross-section • Fresh material – 40 m along strike by 20 m on cross-section
	The mining dilution factors used.	An "edge based" dilution approach was applied in the mining block model, equating to a mixing zone of approximately 1.4m thickness across the orebody boundary. This had the benefit of correctly accounting for: • The grade carried by the mineralised diluent material in the hanging wall • The much lower density of the barren diluent material in the footwall. While this results in the dilution varying block by block across model, the result generated a global dilution of approximately 3%
	The mining recovery factors used.	The edge dilution approach described above resulted in a global ore loss of approximately 8%. However due to the highly mineralised nature of the hanging wall diluent material, the diluent material added metal back into the ore parcels, resulting in a much lower loss in contained metal of approximately 3%.
	Any minimum mining widths used.	A minimum mining width of 50m for push-backs was utilised for pinch-points along the wall. At the base of pits a final width of 30m was generally applied. However, a minimum mining width of 15-20 m was utilised for some final drop cuts in the base of the pit.
	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	Inferred Resources within the pit design make up 4% of the total contained Mineral Resources and have not been considered as part of the Ore Reserve estimate. Conversely Measured and Indicated material that lie within the Inferred pushbacks used for the LOM schedule have also not been included in the Ore Reserve estimate.
	The infrastructure requirements of the selected mining methods.	Infrastructure required for the open pit mining operation includes, but is not limited to: • mining contractor workshop, offices, mess room and ablutions • equipment lay down area • heavy equipment washpad • water storage turkeys nest dams • ROM pad • fuel and explosives storage • AVL mining team office

Metallurgical factors or assumptions	The metallurgical process proposed and the appropriateness of that process to the style of mineralisation. Whether the metallurgical process is well-tested technology or novel in nature. The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied. Any assumptions or allowances made for deleterious elements. The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?	The metallurgical processes applied for the BFS include: • **Beneficiation circuit** - crushing, grinding, magnetic separation and reverse flotation to generate a 1.39% V_2O_5 concentrate • **Refining circuit** - pelletisation, roasting, grinding, water leaching, desilication, ammonium metavanadate (AMV) precipitation, deammoniation and flaking to produce a >98.5% V_2O_5 vanadium product and a 54-55% iron co product (leached calcine). The metallurgical processes proposed are well-tested technologies and considered appropriate for the styles of mineralisation. The approach of pelletising the concentrate prior to roasting is not typical but has precedent in the vanadium hard rock industry. The grate kiln technology proposed is common in the iron ore pellet industry and has been validated at pilot scale. Extensive bench and pilot scale metallurgical testwork has been carried out under the direction of Wood and includes: • Comminution • Magnetic separation • Silica reverse flotation • Thickening and filtration • Pelletisation • Grate kiln roasting • Leaching • Desilication • AMV precipitation • Deammoniation Three composites, made up of prescribed blends of diamond core material designed to be indicative average forecast process feed, have been tested at pilot scale through the beneficiation flowsheet and for the Y0-5 concentrate, the major cost areas of the vanadium refining flowsheet. Process design for the BFS is based on these pilot test results, bench scale testwork and industry experience for some of the lower cost unit process at the tail end of the refining flowsheet. Metallurgical domains within the vanadium bearing massive iron mineralisation are based on the degree of oxidation as determined by the proxy "Ln (Volume susceptibility (SI) x 1000/%Fe)". Using this scale, the definition of fresh rock is >2, transitional >-1 and <2, and oxide <-1. Vanadium recovery forecasts for the concentrator have been determined from testwork outcomes and are underpinned by the two pilot scale test outcomes (69 and 76% vanadium recovery). The following vanadium recovery functions have been applied for mine block modelling and predicting process performance based on achieving a 1.39% V_2O_5 concentrate grade. <table><tr><td>Weathering Category</td><td>Predicted CMB Vanadium Recovery (%)</td></tr><tr><td>x < 1.765</td><td>= -0.362805x² + 6.115625x + 66.342253</td></tr><tr><td>1.765 ≤ x < 2.000</td><td>= 75.485315x² - 57.13614</td></tr><tr><td>x ≥ 2.000</td><td>= 93.834</td></tr><tr><td>Where x = ln (Volume susceptibility (SI)/Fe%</td><td></td></tr></table> Vanadium recovery, as with confidence in predicting concentrate grade from the beneficiation circuit, depreciates as weathering/oxidation increases. Furthermore, there is evidence of some variation in metallurgical behaviour (mineralogy/concentrate vanadium, iron and titanium grade) along strike and due to weathering effects (e.g., leaching and depletion). The proposed mining and processing strategy at this stage is therefore to blend control process feed to maintain an average target vanadium grade and an average oxidation range greater than 0.38 on the Ln (Volume susceptibility (SI)/%Fe) scale. As reference, the two primary pilot feed blends were measured at 0.48 and 1.76 on this scale. The basis of the 2022 BFS is a 90% vanadium recovery estimate for the full-scale vanadium processing flowsheet. Vanadium recovery forecasts have been based on:

Criteria	JORC Code Explanation	Commentary
		• Optimised pilot scale roasting and leaching test results which have demonstrated 91% vanadium leach extraction • Bench scale tests results or industry experience for downstream hydrometallurgical circuits (desilication, AMV, deammoniation, flaking and packaging). The basis of the iron coproduct mass recovery and 54 to 55% Fe grade has been determined from pilot scale testwork. One dry tonne of concentrate equates to 1.0 dry tonne equivalent of iron co product. Based on the metallurgical testwork completed thus far, deleterious elements are assumed to be manageable by the process flowsheets considered. Recoveries of vanadium and iron co product for the Ore Reserves were applied according to the recovery equations or values as stated.
Environmental	The status of studies of potential environmental impacts of the mining and processing operation.	At the mine location, studies have been completed for flora, fauna, subterranean fauna, surface water, groundwater, greenhouse gas emissions and waste characterisation. An environmental impact assessment has been undertaken, including review of cumulative and holistic impacts. The project is currently under assessment by the WA EPA. The proposed mining project is expected to meet EPA objectives for protection of environmental values. At the processing location, studies have been completed for groundwater abstraction and greenhouse gas emissions. Additional planned studies include flora, surface water and waste characterisation. A preliminary environmental impact assessment has been completed. The potential environmental impacts can be effectively managed through engineering and administrative controls and monitoring. The processing plant is not expected to have a significant impact on the environment.
	Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	Stage 1 geochemical characterisation was undertaken in 2020 and identified that the risk of acid mine drainage at the Project is very low. Kinetic or leachate testing is required to determine the risk of enriched metals leaching into soil and groundwater from waste rock stockpiles or concentrate stockpiles. Management of surface runoff and seepage from the waste dumps and pit walls during operation will need to be managed and final waste dumps capped with suitable materials to minimise water infiltration. Geochemical characterisation of tailings and liquids has been completed to determine the likely seepage quality. Chemicals that will be introduced during the primary processing are environmentally hazardous to aquatic invertebrates and these chemicals are expected to report to the tailings storage. A Conceptual Exposure Model was developed by Golder and, together with a risk assessment, concluded that a geomembrane was not necessary and the risk to aquatic life was low.

Criteria	JORC Code Explanation	Commentary
Infrastructure	The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	The Sandstone to Meekatharra Road passes close to the mine lease area, however an access road will be constructed from the Great Northern Highway to the west to the operational area. This sealed road will give access to Great Northern Highway for haulage of concentrate to the Tenindewa site for final processing. It will also provide a link road to the Meekatharra – Sandstone Road for all road users, as well as access for trucks bringing site supplies. Meekatharra is about 55 km to the north and can be accessed by the existing Meekatharra – Sandstone Road. Power will be generated on site at Gabanintha using an LNG fuelled power station, supplemented by a solar photo voltaic farm. AVL is working with VSUN Energy to size VRFB energy storage for the site. At Tenindewa, a spur line will be installed from the existing nearby gas pipeline with power for the processing plant and administration buildings provided by a natural gas-fed power plant. At Gabanintha, construction water will be sourced from onsite pit dewatering and the CMB plant in operation will use water piped from the Eastern Borefield. At Tenindewa, onsite water bore will supply raw water for the processing plant. Raw water conditioning by reverse osmosis will be applied at each site to meet process water quality criteria. The mining lease is sufficiently extensive to accommodate all the required infrastructure. A communications tower and related equipment will be installed on site at both Gabanintha and Tenindewa for phone and data communications. An accommodation camp will be constructed approximately 4 kilometres to the south of the CMB plant at Gabanintha. Daily commute to the Tenindewa Processing Plant will be possible from the local communities nearby (eg, Geraldton and Mullewa)

Criteria	JORC Code Explanation	Commentary
Costs	The derivation of, or assumptions made, regarding projected capital costs in the study.	Wood has developed capital cost estimates for all process and non-mining related infrastructure for the Project. All costs are delivered in Australian dollars ($AU) as at the 24th of March 2022 and are judged to have an accuracy of ±15% as defined in the American Association of Cost Engineers (AACE) guidelines for a Class 3 estimate. Certain elements to complete the project overall initial capital estimate have been provided by outside sources such as AVL for owner's costs and contingency and Golder Associates Pty Ltd (Golder) for the tailing storage facilities (TSF). The Capital Cost Estimate prepared by Wood includes, but is not limited to, the direct and indirect costs associated with the following: • CMB plant located at Gabanintha • Vanadium Processing Plant located at Tenindewa • Water Borefields, Treatment, Storage and Distribution • Earthworks and Drainage • Power Station foundations and Substations • Plant Buildings • Maintenance Workshops • Fire Protection and Detection • Sewage Disposal and Treatment • Bulk Fuel Storage and Distribution • Security Infrastructure • Communications • Permanent Accommodation & Temporary Accommodation • Area and Regional Roads including a haul truck overpass • Construction Facilities The mining contract Request for Quotation received three acceptable and conforming submissions. The preferred submission was utilised to provide capital estimates for provision of the following mining infrastructure: • Contractor's Offices • Contractor's HV & Truck Workshop incl/ Parts Store/Warehouse • Contractor's Ablutions / Toilets • Contractor's Meal / Crib Facilities • Goline Facility • Fuel Storage and Dispensing Facilities • Lubricant Storage and Dispensing Facilities • Equipment Washdown Facility • Explosives Facility • Tyre Handling, Fitting and Storage Facilities • Water, lighting, power and reticulation • Sewerage and waste water processing facilities • Planning, engineering, mobilisation and construction services

Criteria	JORC Code Explanation	Commentary
	The methodology used to estimate operating costs.	Wood has developed operating and sustaining cost estimates for all non-mining related activities for the Project to ±15%. This includes, but is not limited to, the following: • Labour (based on assigned roles and rosters and recent market rates) • BOO Electrical Power Contracts (based on detailed electrical load lists and vendor quotations) • Reagents (based on testwork supported process mass balances and vendor quotations) • Maintenance (factored against direct capital guided by Wood's standard methods) • Fuels including Diesel, Natural Gas and LNG (based on quotations) • Consumables (based on calculated or predicted consumption rates, Wood's database and quotations) • Road Train Haulage Contracts (based on quotations) • Mobile Equipment (based on Wood's database and quotations) • Tails Storage Facility Lifts (based on quantities by Golder and rates based on quotation or Wood's database) • Evaporation Pond Extensions (based on calculated quantities and rates based on quotation or Wood's database) • Grate Kiln Refractory Relines (based on quotations for materials and installation) • Process Miscellaneous (based on AVL and Wood's experience or database) • General and Administration (based on AVL and Wood's experience or database) Mining operating costs have been developed based on the preferred submission to the mining contractor Request for Quotation. The RFQ utilised a first-pass schedule based on the Ore Reserve inventory only, and early assumptions on processing ramp-up and blend requirements. Any difference in basis from the final BFS LOM schedule are considered immaterial to cost estimation and the RFQ submission costs are considered valid. Mining costs were generated from the RFQ submission for the following activities: • Mobilisation and site establishment • Monthly Management Fees • Production Drill & Blast • Pre-Split Drill & Blast • Miscellaneous Drilling • Grade Control (R C) Drilling • Excavate, Load, Haul & Dump – Ore / Low Grade / Waste • Primary Crusher Feed • Rehandle LG Stockpile to ROM Pad • Clearing And Grubbing • Topsoil Management • Road Construction • Pit Dewatering • Waste Dump Rehabilitation • Demobilisation and site dis-establishment A diesel fuel price of $0.79/l (net after diesel rebates) was applied for the study based on analysis of multiple quotations. The experience of Majesso/Orelogy is that RFQ estimates are generally conservative and subsequent contract negotiations can tighten up the estimate, therefore a "Tender Negotiation Discount" of 2% was applied to the overall contract cost. Orelogy developed an estimate for the AVL owners mining team costs including vehicles, consulting costs, IT and software and general consumables. The resulting mining contract LOM cost of A$3.77/dry tonne mined and AVL team cost of A$0.22/dry tonne mined results in a total mining cost of A$3.99/dry tonne mined. This is considered in line with the A$3.90/tonne generated by the pit optimisation process (i.e. within 2.5%).

Criteria	JORC Code Explanation	Commentary
	Allowances made for the content of deleterious elements.	Not applicable
	The source of exchange rates used in the study.	For mining optimisation and design, the US$ exchange rate used was 0.74 US$=1.00 A$. The US$ exchange rate used in financial modelling of the Project and for capital and operating cost estimation was 0.72 US$ = 1.00 A$. Other less significant exchange rates used for Capex and Opex derivation were set on 3rd July 2021 as sourced from publicly available data produced by banks.
	Derivation of transportation charges.	The transport cost related to haulage of the V_2O_5 product from Tenindewa to the port of Fremantle has been estimated by Wood based on receipt of quotations. The transport cost of both concentrate transfer from Gabanintha to Tenindewa and the FeTi coproduct from Tenindewa to and within the Port of Geraldton has been estimated by AVL based on the receipt of quotations. Shipping costs for the FeTi coproduct from Geraldton Port to China are based on the monthly average cost records between 2017 to 2020, (rates includes sea freight, ship charge, agency fee, marine navigation levy, oil pollution levy, towage, quarantine, launch hire, admin and inspection fee).
	The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.	Processing and refining costs have been derived by Wood based on their design of the processing plant to produce V_2O_5 flake. The V_2O_5 flake market is well established globally and typically quoted as >98.5% V_2O_5 grade. The Australian Vanadium product is targeting a product grade of 99.5% V_2O_5 and this has been achieved by purifying pregnant leach liquor generated from pilot scale testwork. Any off-specification product which is possible during commissioning and ramp up will be reprocessed or blended to meet minimum product specifications.
	The allowances made for royalties payable, both Government and private.	The royalty paid to the West Australian government will be 2.5% of revenue.

Criteria	JORC Code Explanation	Commentary
Revenue factors	The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	Head grade has been calculated in the Mining Reserve using modelled dilution based on dilution with adjacent material. Revenue for pit optimisation assumes a V_2O_5 sale price of US$8/lb. This is based on an FOB Fremantle Port price for the V_2O_5 flake product. The sales price used for base case financial analysis was US$10.508.67/lb V_2O_5. The vanadium pentoxide price trend is highly cyclical in nature. Imbalances in supply have driven prices up above US$30/lb twice in the last 20 years and there was a prolonged period where prices were consistently around US$5/lb from 2012 to 2017. FeTi coproduct is produced after extraction of vanadium. The FeTi coproduct has been determined to have a market value of 70% of the 62% Fe Fines Reference price. The financial model uses US$67.2/t for FeTi sales from a long-term average 62% Fe Fines price of $US96/t. For mining optimisation and design, the US$ exchange rate used was 0.74 US$ = 1.00 A$. The US$ exchange rate used in financial modelling of the project and for capital and operating cost estimation was 0.72 US$ = 1.00 A$. Sensitivity analysis demonstrated the project internal rate of return is most impacted by the Exchange Rate and Capex.
Market assessment	The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.	The market for vanadium pentoxide is substantially based on its use in steel alloys and now also a growing demand for use in VRFBs. In the last few years the vanadium price has been volatile, reaching over US$30/lb in November 2018, falling to around US$5/lb in 2020 due to COVID-19 related production cuts in the non-Chinese consuming countries and then trending up to US$13/lb at the time of releasing the BFS. Demand for vanadium outstripped supply between mid-2015 and 2019, corresponding to Evraz Group's Highveld Steel and Vanadium's (South Africa) closure. In late 2015, Chinese stone coal producers began to shut down due to Chinese environmental regulations, further reducing supply. Supply and demand were not in balance. In 2019, prices began to fall on substitution with Niobium in rebar and did not recover into 2020 due to COVID-19 related drops in demand. Since April 2020, Chinese demand has grown rapidly, supporting new plants the size of AVL's proposed Gabanintha project to meet future needs. Current and Future demand are considered in the body of the report under the Marketing section.
	A customer and competitor analysis along with the identification of likely market windows for the product.	VRFB technology uptake could have a large impact on medium to long-term vanadium demand. If VRFBs capture even a small piece of the renewable energy storage demand, it could require thousands of tonnes of vanadium that are not currently available.

Criteria	JORC Code Explanation	Commentary
	Price and volume forecasts and the basis for these forecasts.	A market assessment analysis has been completed internally with information supplied by Daniel Harris (Technical Director AVL). AVL has performed market research to determine the overall market for FeTi coproduct in Asia. This material is high in titanium and therefore is utilized in smaller quantities that standard iron ore. A full market report has been developed by AVL employees in China. Several LOI's have been signed with potential customers, and significant testing has been performed to verify FeTi coproduct characteristics as a blended feed for steel making customers. AVL estimates an overall market between 6 and 9M tonnes pa in China and has derived a price basis for the material based on this work.
	For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	Vanadium products include various oxides of vanadium, that are converted to Ferro Vanadium or Vanadium Carbo-Nitride products for use in steelmaking. Refined vanadium pentoxide, V_2O_5 produced as a powder is supplied as a chemical and can be used in the production of vanadium electrolyte solutions for VRFBs. Typical grade for the steel industry is 98.5% V_2O_5, while specialty chemical, VRFBs and the aerospace industry are more stringent, but vary according to application, industry and individual customer. Final vanadium products are assayed via standardised laboratory analysis for sale. FeTi coproduct produced from piloting work has been tested as a blended feed for sintering operations through interested parties. Final FeTi coproduct is assayed via standardized laboratory analysis for sale.
Economic	The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. NPV ranges and sensitivity to variations in the significant assumptions and inputs.	Critical inputs to the economic model are: • 0.72 US$ = 1.00 A$ • pricing for vanadium pentoxide sale of US$10.50/lb V_2O_5 • FeTi coproduct pricing at 30% discount to 62% Platts Iron Ore Fines average price, CIF North China • NPV is calculated using an 7.5% discount rate Estimates for Equity IRR are based on: • $49M Grant funding • 65% debt gearing • 7% agency fee • 2% upfront fee • 5.75% term loan benchmark rate NPV ranges from A$507M ± A$629M based on 30% change in any one variable. These included V_2O_5 price (long and short-term), FeTi coproduct price, capex, opex, and A$:US$ exchange. IRR ranges from 13.6% ± 6.6%. The post-tax NPV 7.5% of the Project using a schedule based on the Ore Reserve only and utilising the long-term historical inflated pricing of US$9.00/lb V_2O_5 estimated to be A$229M clearly indicating: 1. The Ore Reserve is valid in and of itself and generates a significant cashflow 2. The Project is not reliant on the use of Inferred Resources in the LOM schedule to be economically viable. Detailed sensitivity analysis at the optimisation stage was not carried out for the purposes of the BFS. Sensitivity analysis was undertaken as part of the Project financial analysis.

Criteria	JORC Code Explanation	Commentary
Social	The status of agreements with key stakeholders and matters leading to social licence to operate.	Following a decision by the Federal Court that the Yugunga-Nya native title claim (WC1999/46) was not accepted for registration. WCD2021/008 is the current native title claim covering the proposed mine site, being the NTT registration for the Yugunga Nya People. A standard Heritage agreement is in place with the Yugunga-Nya Native Title Claim Group. No land use agreements are in place with other local landowners at Gabanintha, but good relations are maintained. An Option to Purchase for 440 Ha of land at the Tenindewa proposed processing plant location was signed during 2019 and extended in 2020 and 2021.
Other	To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:	
	Any identified material naturally occurring risks.	No material naturally occurring risks have been identified.
	The status of material legal agreements and marketing arrangements.	No material legal or marketing agreements have been entered into.
	The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	Mining tenement M51/878 has been granted with standard mining tenement conditions that restrict surface mining within a road or road reserve. Amendments to the mining tenement conditions and realignment of the Meekatharra-Sandstone Rd is required to facilitate surface mining within roads and road reserves. Preparation of the primary environmental impact assessment for referral to the Environmental Protection Authority (EPA) is well-progressed. Following submission, the timeframe for assessment by the EPA may vary depending on their approach for assessment, what additional information they request, and how quickly this can be provided. Preparation of secondary environmental approval applications will require additional technical studies and design details. Application for the mining environmental approval has not started but there are no impediments expected to this process.
Classification	The basis for the classification of the Ore Reserves into varying confidence categories.	Measured Resources have been converted to Proved Reserves. Indicated Resources have been converted to Probable Reserves.

Criteria	JORC Code Explanation	Commentary
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The estimated Ore Reserves are, in the opinion of the Competent Person, appropriate for these deposits. The 2022 BFS Ore Reserve is marginally reduced from the 2020 PFS Update Ore Reserve (32.1Mt vs. 30.9Mt = -4%). However, grade has increased from 1.05% V_2O_5 to 1.09% (+4%), resulting in no change to overall contained metal. Strip ratio has increase marginally from 7.6 to 7.7, primarily as a result of the updated geotechnical parameters.
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	No audits have been undertaken.