ASX ANNOUNCEMENT

22ND DECEMBER 2020

TECHNICAL AND FINANCIAL PFS UPDATE

The updated PFS for the Australian Vanadium Project reflects robust economics, revised layout and location, updated process design and a new extended Ore Reserve for the Project.

HIGHLIGHTS

Pre-tax NPV_8 A$909 million

IRR 17.5%

Average Annual EBITDA A$144 million

ORE RESERVE 32.1 Mt ↑ 77%

MINE LIFE 25 years ↑ 47%

OPEX US$3.66/lb V_2O_5 ↓ 12%

V_2O_5 PRODUCTION 24.3 Mlbs pa ↑ 8%

- Project pre-tax **NPV_8 of A$909M** increased from A$320M (↑ 184%).
- Project **IRR rises to 17.5%** (↑ 41%).
- Project payback of 6.6 years (↓ 17.5%).
- C1 operating cost of **US$3.66/lb V_2O_5** competitive with world primary vanadium producers, includes iron titanium (FeTi) coproduct credit (↓ US$0.49/ lb V_2O_5).
- Project annual EBITDA average for 25 years of A$144M (↑ 31%).
- Plant and associated infrastructure capital cost of **US$253M**.
- Total Project capital cost of US$399M (↑ 13%) includes area and regional infrastructure, indirects, EPCM, growth and owner's costs.
- **Ore Reserve increased to 32.1Mt at 1.05% V_2O_5** (↑ 76%) comprised of a **Proved Reserve of 9.8Mt at 1.08% V_2O_5** and a **Probable Reserve of 22.4Mt at 1.04% V_2O_5** (rounding is applied).
- Increased anticipated **mine life from 17 to 25 years**, supporting a long-life, consistent ore feed operation on AVL's granted mining lease.
- **Increased nominal vanadium production** to 24.3 Mlbs V_2O_5 annually (↑ 8%).
- Forecast vanadium **ore recovery to concentrate of 74.8%** life of mine, supported by pilot testing.
- New innovative flowsheet for processing plant recovers **88% V_2O_5** utilising tried-and-tested grate kiln technology.
- Separation of processing plant from minesite provides access to cheaper competitive natural gas near Geraldton, local workforce and FeTi coproduct sales opportunities for **900,000 dry tonnes per annum** over the mine life.
- Positive economic results give grounds for completion of Bankable Feasibility Study (BFS) mid-2021, finalising offtake, obtaining final approvals and securing project finance.

All material assumptions relating to production and financial forecasts are detailed within this report.

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ASX Chapter 5 Compliance and PFS Cautionary Statement

The production targets referred to in this announcement are based on 25% Measured Resources, 56% Indicated Resources and 19% Inferred Resources for the 25 year life of mine. The Mine plan comprises 97% of current global Measured Resources and 32% 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 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, 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.

The Project is at the PFS phase and although reasonable care has been taken to ensure that the facts are accurate and/or that the opinions expressed are fair and reasonable, no reliance can be placed for any purpose whatsoever on the information contained in this document or on its completeness. Actual results and development of projects may differ materially from those expressed or implied by these forward-looking statements, depending on a variety of factors. A key conclusion of the Updated PFS, which is based on forward looking statements, is that the Project is considered to have positive economic potential. The Company believes it has a reasonable basis to expect to be able to fund and further develop the Project. However, there is no certainty that the Company can raise funds when required.

A Proved and Probable Ore Reserve classified under JORC 2012 guidelines was used for the PFS and all relevant details are set out in this announcement. The Ore Reserve statement in Appendix 2 is based on the Measured and Indicated Mineral Resources included within the final pit design and after taking into account all modifying factors as detailed below or elsewhere in this study report. This Ore Reserve is based on the March 2020 Resource model.

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 updated PFS 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.

PRE-FEASIBILITY STUDY OUTCOMES

Australian Vanadium Limited (ASX: AVL, "the Company" or "AVL") is pleased to announce an updated Pre-Feasibility Study (PFS) for the Australian Vanadium Project at Gabanintha ("the Project"), near Meekatharra in Western Australia.

Figure 1 Location of the Australian Vanadium Project

The Project is based on a proposed open cut mine and a crushing, milling and beneficiation plant (CMB) at Gabanintha. Concentrate will be transported to a vanadium processing plant 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.

Since the release of AVL's PFS in December 2018[1], the Company has undertaken key work to improve the Project's economics and minimise risk. Pilot scale testwork performed on samples designed to be indicative of average early years and life of mine process feed, has verified AVL's process flowsheets and their capability to deliver high quality vanadium products and an improvement in vanadium recovery at industry competitive low operating cost. These key developments, coupled with AVL's strategy to de-risk the Project by locating the processing plant closer to a port, human resources and existing gas infrastructure in WA's Mid West, have driven the decision to update the project economics of the PFS.

To enable the Company to discuss the updated metrics with greater confidence to a wider investment audience, the results of the past two years of work have now been incorporated into this new PFS level study. The Company considers the outcome positive, supported by a highly attractive future for the vanadium market and it plans to complete a BFS which will be released in mid-2021.

Managing Director Vincent Algar commented, "*The phenomenal work by the AVL team and its consultants has outlined a robust processing environment for this exceptional vanadium orebody, able to generate significant cash flows. We have achieved our objective of outlining a low-cost, globally competitive operation, able to operate over a long life under all market conditions. We have*

[1] See ASX announcement dated 19th December 2018 *'Gabanintha Pre-Feasibility Study and Maiden Ore Reserve'*

many opportunities to outperform our objectives, as we drive towards funding and project construction. The changes we have made are substantial, but considered, aiming at maximising the value of vanadium in its role as both a critical steel material and a battery metal."

Capital and operating costs reported have been developed to a level of accuracy of ±25% and include mine and processing circuit designs, a detailed financial model and supporting bodies of work.

The Company has identified synergies with the growing energy storage market and hydrogen industry capability in Australia. Opportunities include consumption of hydrogen in processing[2] and haulage and use of renewable energy and vanadium redox flow battery (VRFB) based energy storage at its planned operations. AVL is driving vanadium market growth through its VRFB-focused subsidiary VSUN Energy, with downstream processing opportunities available through vanadium pentoxide and vanadium electrolyte production. Increased vanadium consumption in the steel market and vanadium's use in long duration energy storage are major global levers in energy efficiency and the achievement of emission reduction targets.

AVL has in-house international expertise of vanadium process technology and processing plant operation, which brings significant capability to ensure process and plant design is "best practice" and utilises "lessons learned" from other operations.

Figure 2 The Australian Vanadium Project location at Gabanintha, near Meekatharra, Western Australia

[2] See ASX announcement dated 25th November 2020 *'Green hydrogen offtake MOU with ATCO'*

Comparative Summary of Updated PFS (December 2020) vs Original PFS (December 2018)

Category	Updated PFS (Dec 2020)	Original PFS (Dec 2018)	Change
Mine Life	25 years	17 years	↑ 8 years
Mineral Resource	208.2Mt	183.6Mt	↑ 24.6Mt
Ore Reserve	32.1Mt @ 1.05% V_2O_5	18.24Mt @1.04% V_2O_5	↑ 13.86Mt
Magnetic concentrate produced pa	900,000 t	900,000 t	None
V_2O_5 production pa	24.3M lbs	22.5M lbs	↑ 1.8M lbs
FeTi coproduct sales pa	900,000 t	-	↑ 900,000 t
Pre-tax NPV_8 @ US$8.67/lb V_2O_5	A$909M	A$320M	↑ 184%
Post-tax NPV_8 @ US$8.67/lb V_2O_5	A$542M	A$174M	↑ 211%
IRR	17.5%	12.4%	↑ 41.1%
EBITDA annual average	A$144M	A$110M	↑ A$34M
EBITDA (project)	A$3.55 Billion	A$1.8 Billion	↑ A$1.75 Billion
Net Profit After Taxes (project)	A$2.09 Billion	A$0.85 Billion	↑ A$1.24 Billion
Payback	6.6 years	8 years	↓ 17.5%
Total Capex	US$399M[3]	US$354M	↑ 13%
Average annual C1[4] cost	US$3.66/lb V_2O_5	US$4.15/lb V_2O_5	↓ US$0.49/lb V_2O_5
Average annual C3[5] cost	US$5.04/lb V_2O_5	US$6.05/lb V_2O_5	↓ US$1.01/lb V_2O_5

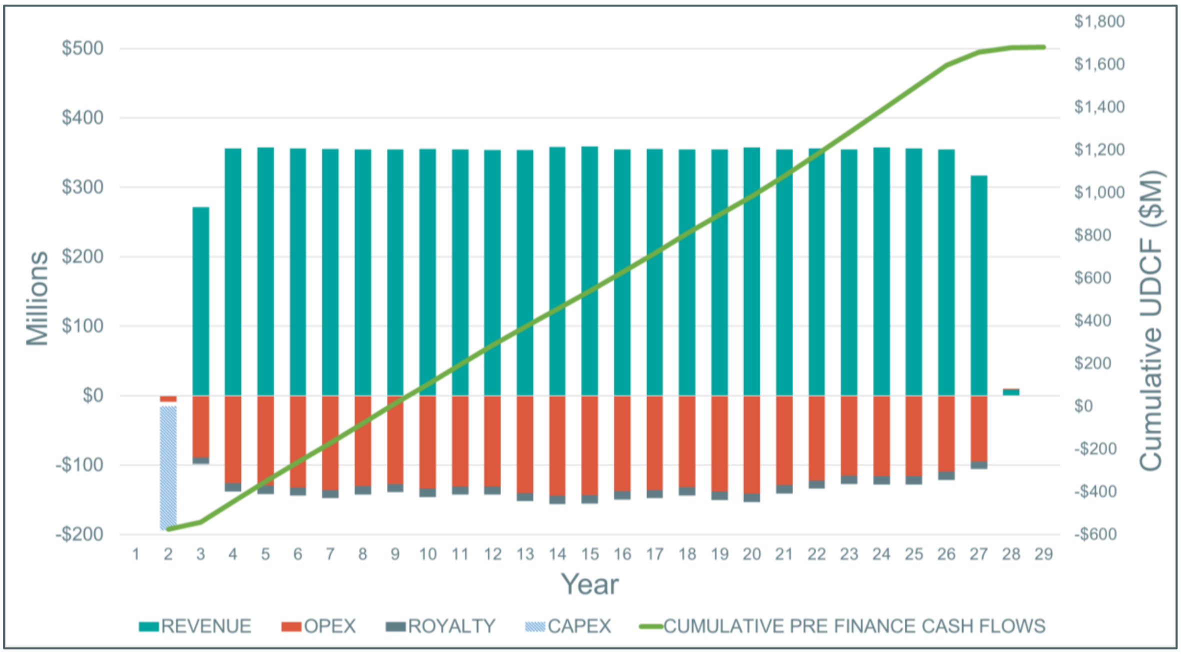


Figure 3 AVL PFS 2020 annual free cash flows and costs (A$ million) on pre-tax, pre-finance basis

[3] Total capital cost is at an accuracy of ±25%. Figure includes provision for estimated indirect costs, EPCM costs, owner cost and capital growth of A$101M. (For more details see Table 5).

[4] 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.

[5] 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.

Material Assumptions and PFS Economic Outcomes

All material assumptions used are included in Table 1. This information includes preliminary pit shells, 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 preliminary quotations and database costs and are considered to be at a ±25% 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 1 Updated PFS Material Assumptions

Criteria	Commentary
Mineral Resource Estimate	The most recent Mineral Resource estimate was declared on 4th March 2020 and has been used in the updated PFS. Refer to the ASX release dated 4th March 2020 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 estimated to be 5%, at zero grade and ore recovery of 95% has been allowed for. The basis of mining and downstream processing production is nominal 24.3 million pounds of refined V_2O_5 per annum (6,150 MTV), and 900,000 tonnes (dry weight equivalent) of iron-titanium concentrate per annum. Mining is for 23 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 >98.5% 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 AVL in 2019 and 2020.
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 74.8% 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 88%. 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%. 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 a lack of metallurgical testing on material grading 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 will require additional technical studies and design details. These include further hydrogeology work and associated site water balance, further waste characterisation, soil characterisation, engineering design for surface water management, tailings storage facility design and controls to prevent discharge of environmentally hazardous materials. At the processing plant location, site-specific studies are needed to determine environmental context including groundwater resources, agricultural productivity, and biodiversity values of nearby nature reserves. The primary and secondary approvals identified for the processing plant location are 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, and technical studies and design details needed as inputs for approvals will be completed during the BFS.
Tenements and approvals	The Project consists of 11 tenements covering 760 sq km and is 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 51/890, owned 100% 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	At the time of this report no current Native Title claim exists over granted M51/878. AVL continues to abide by its obligations under the NATIVE TITLE ACT 1993 and the ABORIGINAL HERITAGE ACT in all activities on M51/878 and surrounding tenure.
Infrastructure	The Sandstone-Meekatharra road passes through the mine lease area. An access road will be constructed from the operational area to give access to the sealed Great Northern Highway, which is approximately 55 km away to the west. The road corridor will contain a water pipeline returning process water from the Reedy's gold mining pits for use in the Crushing Milling and Beneficiation circuit in the operational area. 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 is the long-term average vanadium price over 15 years of trading data. Project financial modelling has been carried out at AVL's view of the long-term average price of US$8.67/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$67.2/t for FeTi sales. For mining optimisation and design, the exchange rate used was A$:US$ 0.74. The exchange rate used in financial modelling was A$:US$ 0.72. The exchange rate used for Capex and Opex derivation was set on 26 October 2020 at A$:US$ 0.72, A$:EUR 0.60, A$:ZAR 11.6, A$:CNY 4.78, and A$:CAD 0.94
Other	The current Project development timeline estimates construction to begin in Q2 2022 and production to start in late 2023. A number of factors can significantly delay project commencement, including funding constraints, environmental permitting, and construction delays.

Outputs from the updated PFS include:

- Improved Project metrics including an overall Project pre-tax NPV_8 of A$909M, and a post-tax NPV_8 of A$542M.
- A substantial increase in IRR to 17.5% from 12.4%, driven by lower overall costs, higher recoveries through the processing plant, and a longer mine life.
- Operating expenses (C1 costs) have significantly improved to US$3.66/lb V_2O_5 equivalent[6] (±25%), placing AVL firmly in the bottom quartile of current vanadium producers. This significantly reduces project risk, achieving AVL's goal for low-cost operation that will be healthy throughout the vanadium market price cycles.
- Fully realised cost of production (C3 costs) of US$5.04 on a zero-debt basis.
- Forecast average vanadium recovery to concentrate of 74.8% for life of mine, as confirmed in the CMB pilot testwork. This is exceptionally high versus other current operating vanadium operations, allowing for a compact and effective crushing and milling operation.
- Operationally robust flowsheets have been developed and tested, providing assurance that the CMB and vanadium processing plant can perform treating a managed blend of feed.

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

The current Project scenario utilises 25% Measured Resources, 56% Indicated Resources and 19% Inferred Resources. See Figure 4 and Table 2.

Table 2 Ore Reserve Statement as at December 2020, at a cut-off grade of 0.7% V_2O_5

Ore Reserve	Mt	V_2O_5%	Fe_2O3%	TiO_2%	SiO_2%	LOI%	V_2O_5 production kt
Proved	9.8	1.08	59.9	12.4	8.7	3.5	63.2
Probable	22.4	1.04	61.7	11.8	8.3	2.8	158.9
Total Ore	**32.1**	**1.05**	**61.2**	**12.0**	**8.4**	**3.0**	**222.1**

Ore Reserve	Mt
Waste	244.5
Total Material	276.7
Strip Ratio	7.6

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

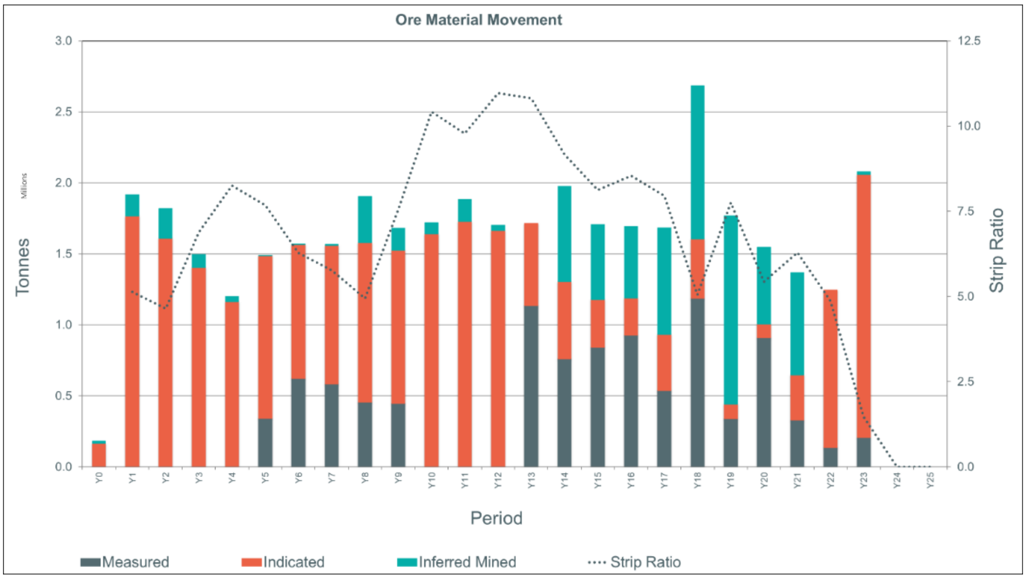


Figure 4 Annualised Ore Movement by JORC Category

[6] V_2O_5 equivalent pricing is determined by subtracting average by-product credits from average operating expenses through the life of mine.

The southern pits that were drilled to the level of Indicated Resources in early 2020 provided opportunities to improve the overall mining schedule. The shallower occurrence of more magnetic ore ensures recoveries are higher in the early years and the strip ratio is as low as possible to maximise the economics. Table 3 below indicates the quantities of Proved and Probable Reserves and Inferred Resources mined over the course of the 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 12.

Table 3 Detailed Mining Schedule by Reserve and Resource Categories

Reserves and Inferred Resources		Totals	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
Proved	kT	9,792	0	0	0	0	0	344	623	586	456	451	0	0
Probable	kT	22,352	167	1,767	1,611	1,406	1,165	1,144	945	974	1,124	1,076	1,641	1,729
Inferred	kT	7,487	17	150	209	93	37	1	3	11	325	157	80	157
Total	kT	39,631	185	1,917	1,820	1,499	1,203	1,488	1,571	1,570	1,905	1,684	1,721	1,886
Proved	%	25%	0%	0%	0%	0%	0%	23%	40%	37%	24%	27%	0%	0%
Probable	%	56%	91%	92%	89%	94%	97%	77%	60%	62%	59%	64%	95%	92%
Inferred	%	19%	9%	8%	11%	6%	3%	0%	0%	1%	17%	9%	5%	8%

Reserves and Inferred Resources		Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	Y21	Y22	Y23	Y24
Proved	kT	0	1,135	761	844	928	541	1,188	342	912	332	141	209	
Probable	kT	1,663	579	543	337	261	394	418	45	90	313	1,106	1,851	
Inferred	kT	40	0	672	527	506	750	1,078	1,383	548	725	0	19	
Total	kT	1,703	1,714	1,977	1,708	1,695	1,685	2,684	1,770	1,550	1,370	1,247	2,079	
Proved	%	0%	66%	39%	49%	55%	32%	44%	19%	59%	24%	11%	10%	
Probable	%	98%	34%	27%	20%	15%	23%	16%	3%	6%	23%	89%	89%	
Inferred	%	2%	0%	34%	31%	30%	45%	40%	78%	35%	53%	0%	1%	

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

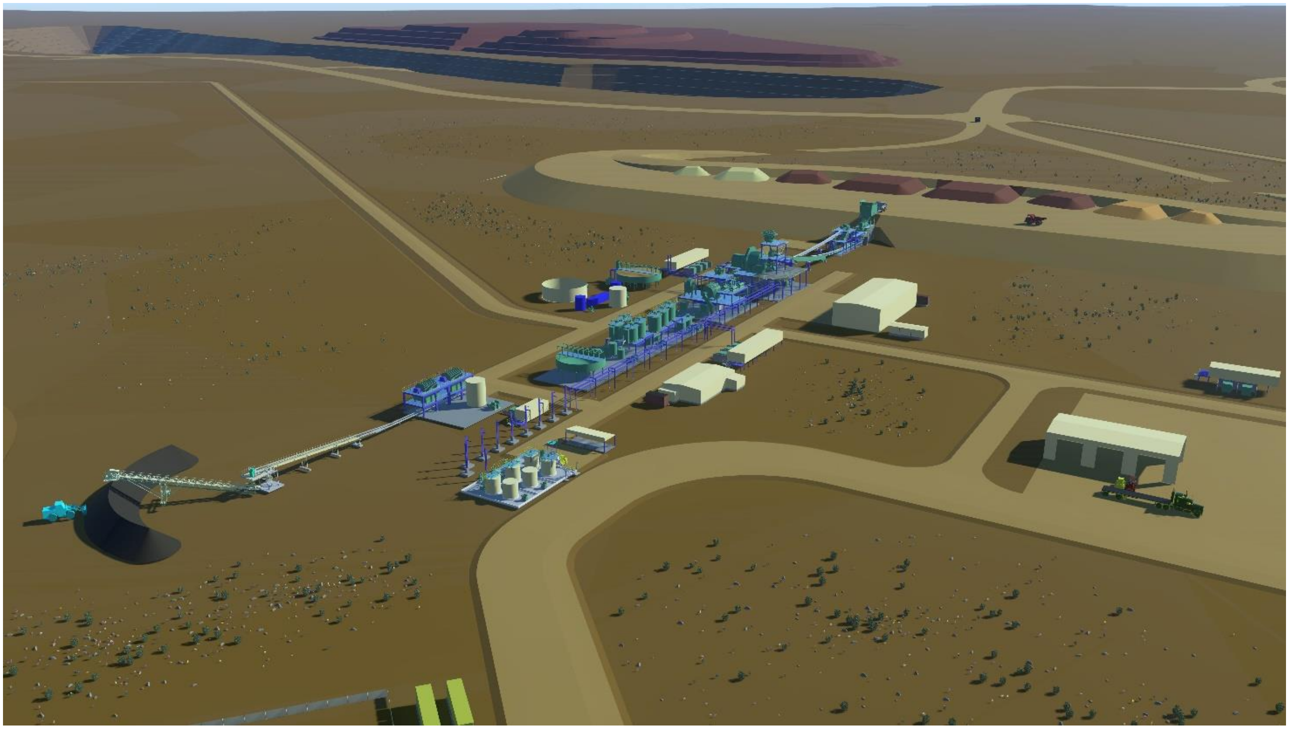


Figure 5 CMB Plant Layout (view to the North)

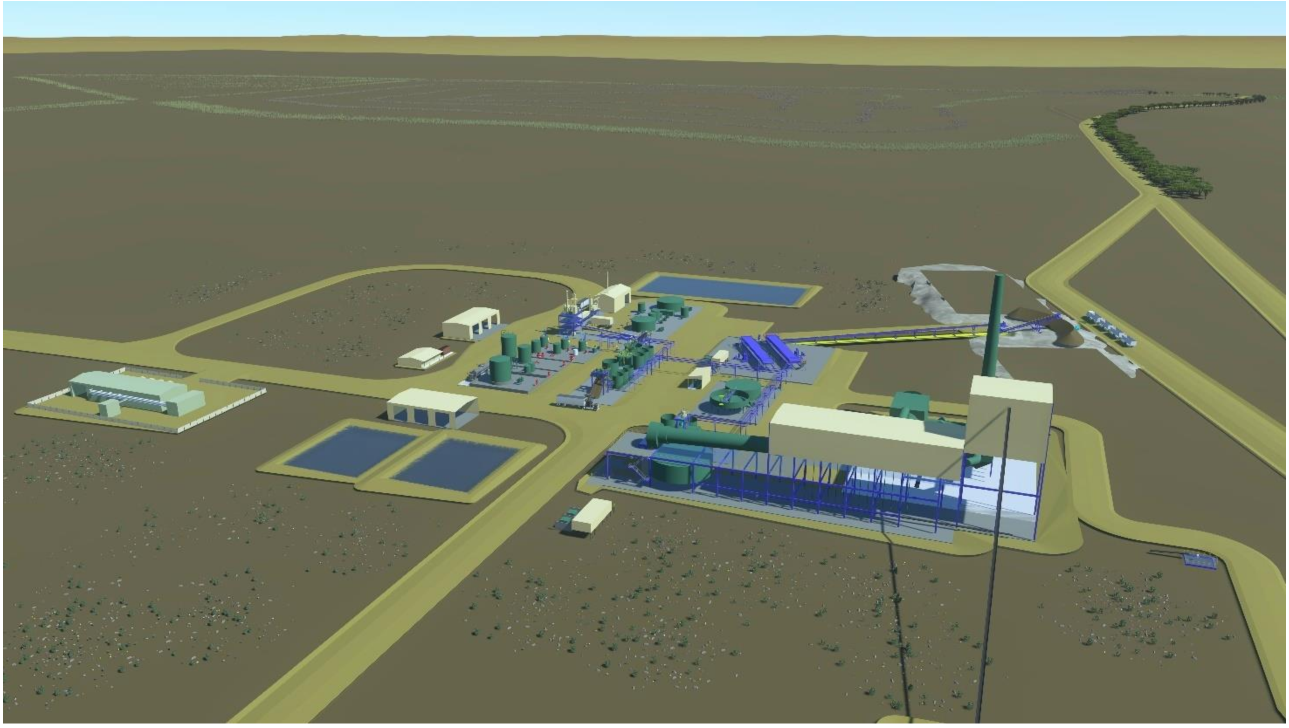


Figure 6 Vanadium Processing Plant Layout (view to the north)

Financial Modelling

Table 4 below reflects the economic metrics of the Project at various market pricing scenarios for the sale of V_2O_5. The price of US$7.96/ lb V_2O_5 is the 15 year weighted average based on published FastMarkets vanadium pricing. Prior to COVID-19, this 15 year price was US$8.67/lb V_2O_5. Refer to the vanadium market section below for more details regarding the AVL pricing outlook.

Table 4 Project Vanadium Pricing Sensitivity (A$)

		V_2O_5 Pricing Scenarios			
Year 1-5	(US$)	**$7.96/lb V_2O_5**	**$8.67/lb V_2O_5**	**$13/lb V_2O_5**	**$13/lb V_2O_5**
Year 6-25	(US$)	**$7.96/lb V_2O_5**	**$8.67/lb V_2O_5**	**$8.67/lb V_2O_5**	**$13/lb V_2O_5**
pre-tax $NPV_{8\%}$	(A$)	$669M	$909M	$1,342M	$2,370M
post-tax $NPV_{8\%}$	(A$)	$375M	$542M	$844M	$1,562M
IRR	%	14.8%	17.5%	27.0%	33.1%
Payback period	years	7.6	6.6	4.1	4.1

Results show that at a sub US$8/lb pricing, the Project fundamentals assure acceptable rates of return on investment, with a potential for exceptional performance in scenarios where the price achieves US$13/lb.

Financial modelling also demonstrates that at a base case of US$8.67/lb V_2O_5 and a debt loan-to value ratio of 60%, assuming low cost, long-term debt financing of 4%, equity returns are significantly enhanced. An equity NPV_8 of A$562M is returned from a A$231M equity investment, with an equity IRR of 41.0% and a payback of 3.5 years. In this scenario, C3 costs increase to US$5.35/lb V_2O_5 to service the debt financing.

Project Sensitivities

The spider diagrams in Figure 7 demonstrate the Project sensitivities to the US$8.67/lb V_2O_5 base case for six key variables: Opex, V_2O_5 price (short-term and long-term), FeTi coproduct pricing, A$:US$ exchange rate, and Capex. NPV is sensitive to V_2O_5 price and exchange rate, while being relatively insensitive to Capex, Opex and FeTi coproduct pricing. Project IRR is relatively insensitive to fluctuations of all variables.

A 30% increase in V_2O_5 price results in an increase to NPV of A$181M for Years 1-5 and A$431M if the long-term average price (years 6-25) increased by a similar percentage. Similarly, a 30% improvement (lowering) in the US$ exchange rate results in nearly an A$475M improvement in NPV. A 30% decrease in operating costs and capital costs have an A$214M and A$145M positive impact respectively.

Exchange rate and Capex have the largest impact on the internal rate of return, increasing IRR by 7.3% and 6.7% respectively. The Project’s IRR is relatively insensitive to operating costs and FeTi coproduct sales pricing.

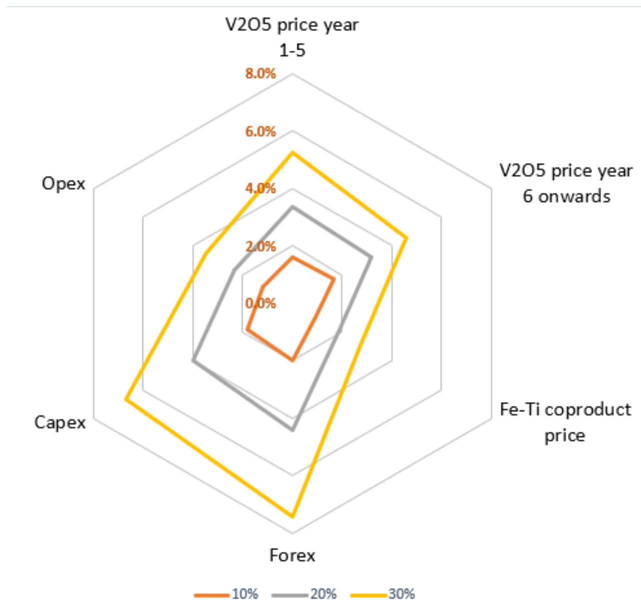
NPV (US$ Million)	IRR (%)
	

Figure 7 NPV (US$) and IRR (%) Sensitivities Relative to the Basecase

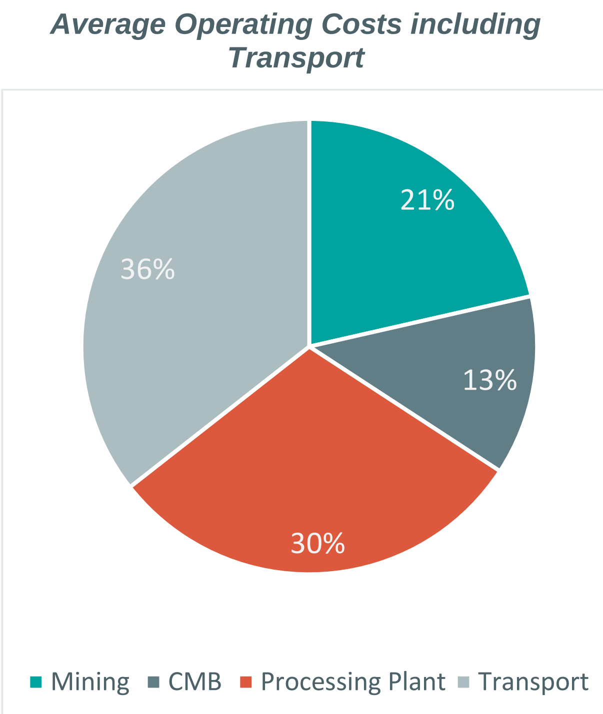
Operating Costs

Life of mine C1 costs average US$3.66/lb V_2O_5. Included in the C1 cost is a FeTi coproduct credit, which is based on market quotations for transport, port fees, and other shipping charges, along with market research on FeTi coproduct. This is outlined in the marketing section below.

The average fully allocated cost (C3) for life of mine is equivalent to US$5.04/lb V_2O_5. This includes production costs (C2), taxes, royalties, and estimates for overhead staffing and general administrative (G&A).

AVL's projected costs are similar to existing global vanadium producers. With demand projected at 118,000 metric tonnes of vanadium (MTV) in 2021 (see Figure 24), high cost producers such as Chinese stone coal operations have substantial swing capacity to satisfy market demand, albeit at high costs. AVL's planned production of 6,150 MTV can displace these swing producers, while maintaining its ability to operate in an extended low priced market.

Average operating costs for the life of mine are heavily weighted by transportation costs, which comprises 36% of total operating expenditures, shown in Figure 8 below. Removing transport costs, the processing plant comprises 47% of operating expenses, with mining at 33% and the CMB at 20%.



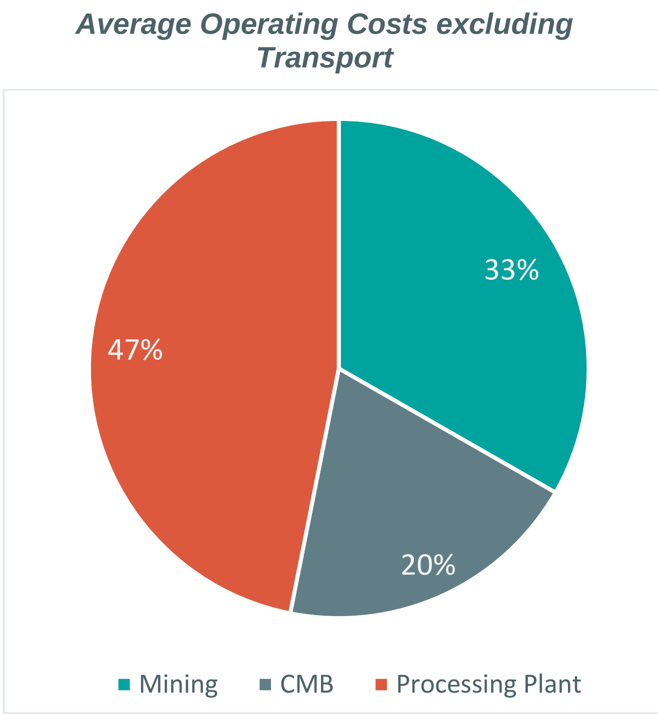


Figure 8 Direct Operating Expenses by Area

Overall operating costs are consistent throughout the life of mine, with overall spending varying a maximum of 10% in non-startup years as shown in Figure 9. However, mining costs taper off to 30% of average cost of mining in the last 3 years due to mine scheduling.

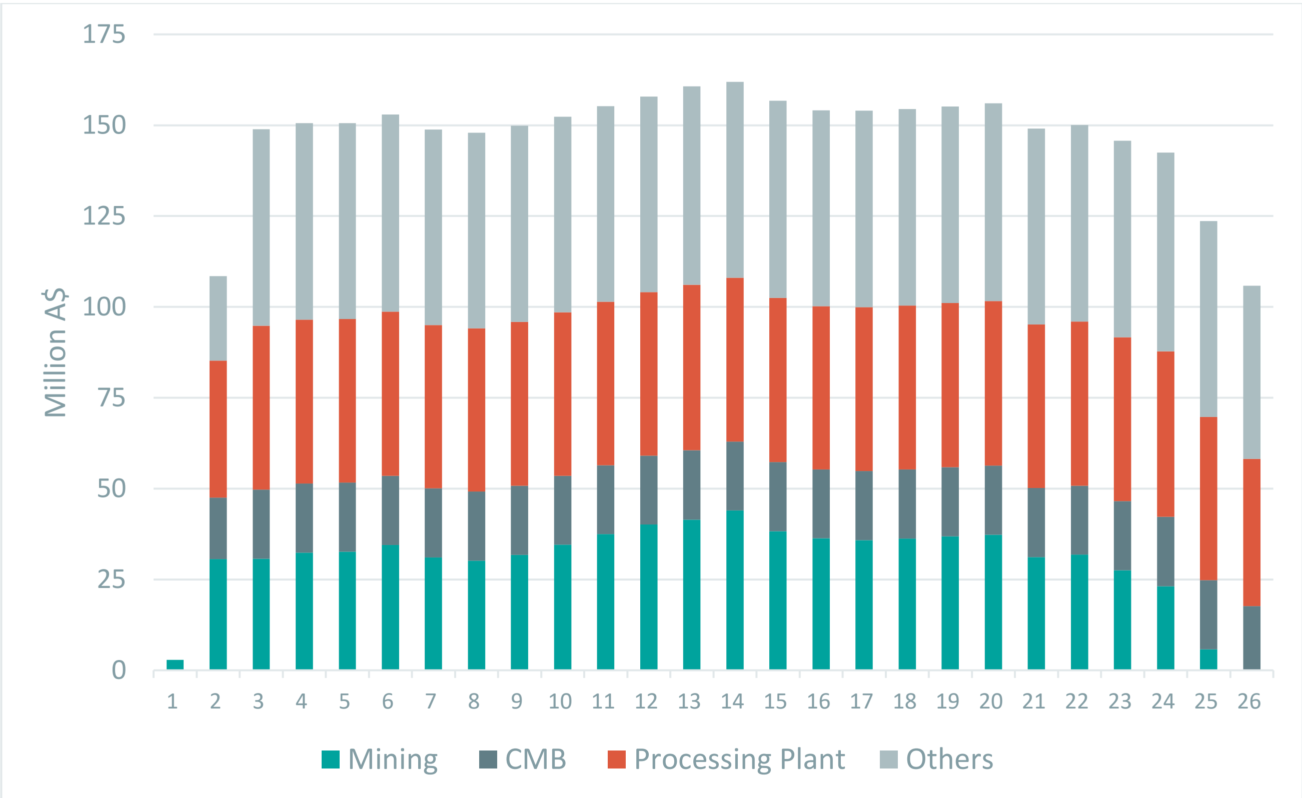


Figure 9 Operating Costs by Year

Capital Costs

A summary of capital costs is given in Table 5 below. Capital is broken down by the two primary locations for the Project. All costs are estimated in Australian dollars (A$) to ±25% as of 15 December 2020 and are converted to US dollars (US$) for the purposes of this report.

Table 5 Capital Cost Estimate (by Area)

Gabanintha Location (Mine and CMB)	**(US$ M)**
Mining	*21*
CMB Plant	*51*
CMB Infrastructure	*18*
Area Infrastructure	*19*
Regional Infrastructure	*23*
Miscellaneous	*5*
Sub-Total	***137***
Tenindewa Location (Processing Plant)	
Processing Plant	*128*
Processing Plant Infrastructure	*20*
Area Infrastructure	*3*
Regional Infrastructure	
Miscellaneous	*10*
Sub-Total	***161***
Project Direct Capital Costs	***298***
Other Project Capital	
Indirects and EPCM	*42*
Growth	*40*
Owner's Cost	*19*
Sub-Total	***101***
Project Total	***399***

Gabanintha Site

The Gabanintha site capital totals **US$137M**, exclusive of indirects, growth and owner's costs. Mining costs primarily include pre-strip, mining facilities, haul roads, and all related infrastructure. The CMB plant and infrastructure totals **US$69M**, inclusive of 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 tailings construction, all associated tails pumping, and decant return.

CMB area infrastructure costs (**US$19M**) include remote accommodation, a 200 person permanent camp, along with an additional 200 person temporary camp for construction. Other costs include water distribution and area roads around the CMB, mine and facilities. Regional infrastructure (**US$23M**) includes a proposed road from the CMB to the Great Northern Highway, which includes 45km of new roads and an upgrade to an existing 16km stretch to accommodate concentrate trucking. Water distribution from the Westgold area to the Project is also included, which provides water requirements for operations. First fills, freight, and spares are captured in miscellaneous costs (**US$5M**).

Tenindewa Site

The Tenindewa site capital totals **US$161M**, exclusive of indirects, growth and owner's costs. The processing plant and infrastructure totals **US$148M**, 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.

Processing plant area and regional infrastructure costs are minimal due to access to well developed infrastructure in the Tenindewa area, accounting for only **US$3M**. Miscellaneous costs (**US$10M**) include process equipment spares, construction mobilisation and de-mobilisation, and ocean freight for specialised equipment including the grate kiln.

Indirects, Growth, and Owner's Cost

Total Project indirect capital, estimates for growth, and owner's costs at **US$101M**. As the Project is further defined in the BFS, growth allowance and contingencies are expected to fall. Included in this estimate as indirects are EPCM, PCM for turnkey packages, construction facilities, and various owner's capital requirements including owner's team provisions, startup capital requirements, and owner's contingency.

Alternately, capital cost can be broken down by type. Table 6 shows costs as they relate to plant and equipment, bare costs, indirects, growth and owner's cost. This view highlights that plant and equipment is **US$253M**, area and regional capital for infrastructure is **US$45M**, and indirects, growth, and owner's costs account for the remaining **US$101M**.

Table 6 Capital Cost Estimate (by Type)

Capital Costs	(US$ M)
Mining Infrastructure and Pre-Strip	21
Gabanintha Plant and Infrastructure	69
Tenindewa Plant and Infrastructure	148
Miscellaneous	15
Sub-Total	**253**
Area and Regional Infrastructure	45
Bare Costs - Sub-Total	**298**
Indirects and EPCM	42
Growth	40
Owner's Cost	19
Sub-Total	**101**
Total	**399**

Project Funding

The Company has funding in place for work on the BFS. This includes cash at bank of A$7.5 million at time of reporting.

Funding for the initial stages of the BFS is expected to be provided by existing working capital. Full budget estimates for the completion of the BFS phase are not yet completed.

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

a) AVL's Board has a capital raising and financing track record and experience in developing projects. Cliff Lawrenson, Non-Executive Chair, has overseen transactions such as the acquisition of Atlas Iron by Hancock Prospecting in 2017. He is a Non-Executive Chair of Paladin Energy Ltd (ASX: PDN) and Caspin Resources (ASX:CPN) and Non-Executive Chair of 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 most recently oversaw the closure and sale process of the Windimurra vanadium mine (subsidiary of Atlantic Limited), served as an interim Managing Director of Atlas Iron Limited and is Non-Executive Director of QEM Ltd. 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.

b) AVL is confident that it can continue to increase the quantity and quality of the Mineral Resources at the Project, extending the project resource base beyond what is contemplated in the updated PFS. 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 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.

c) 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.

d) The vanadium price is cyclical in nature, with market imbalances driving prices above US$30/lb V_2O_5 twice over a 15 year timeframe, most recently reaching a price of US$28/lb V_2O_5 (V_2O_5 spot price source: Fastmarkets) in 2018. Long-term pricing of US$7.97/lb V_2O_5 is the approximate 15-year average of the traded vanadium pentoxide price, based on London Metals Bulletin/Fastmarkets' historical data. Pricing is bimodal and in times of higher demand than supply, averages US$14.50 /lb V_2O_5. The strong price increase in 2018 was 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), Chinese demand has surged. With Western steel demand lagging in late 2020, any growth in the non-Chinese sector will see the market return to a shortfall by mid-2021, putting upward pressure on pricing. The improvements to the market conditions and an encouraging future 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.

e) 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 2020 totalling A$26.3M to advance the asset. A total of 7 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.

f) The strong production and economic outcomes delivered by the updated PFS are considered by the Board to be sufficiently robust to provide confidence in the Company’s ability to fund pre-production capital through conventional debt and equity financing. The Company has been active in seeking out partners in key markets around the world. In June 2018 AVL announced that it had signed a Non-Binding Memorandum of Understanding (MOU) with the Win-Win Development Group (Win-Win), a private steel and alloy producer based in Chengdu, China. In August 2018 AVL and its 100% owned subsidiary VSUN Energy Pty Ltd, announced that they had signed Letters of Intent with German vanadium redox flow battery manufacturer SCHMID, to explore potential supply of vanadium pentoxide and/or electrolyte and to supply SCHMID’s vanadium redox flow batteries to potential clients.

   In 2020 MOUs for offtake have been signed with specialty chemical producer U.S. Vanadium LLC, Singaporean VRFB manufacturer V-Flow 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.

g) The Board of AVL is considering other suitable long-term investors to enable:
   i. access to institutional investors globally;
   ii. access to debt funding relationships;
   iii. the provision of additional human resources to maximise the value of the Company;
   iv. the definition and extension of vanadium and cobalt resources at Gabanintha, and
   v. development of long-term business relationships.

Updated PFS Summary

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 more detail please refer to Appendix 2 and Appendix 3; JORC Table 1; Section 4). This announcement also provides a summary of the full updated PFS report collated by members of the AVL technical team, Wood Mining and Metals (Wood) and other consultants to the Company.

The updated PFS itself comprises 17 sections, each with an appendix. It contains intellectual property owned by AVL and sensitive information. The full updated PFS report will be shared under confidentiality agreements. The updated PFS has been purposely developed to the high standard required for rigorous external scrutiny by future Project investors and financiers. This announcement provides the market with a summary of the full updated PFS.

The Australian Vanadium Project consists of 11 tenements covering 760 sq km and is held 100% by Australian Vanadium Limited, an Australian listed company. 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 MLA51/890, owned 100% by AVL (see Figure 10).

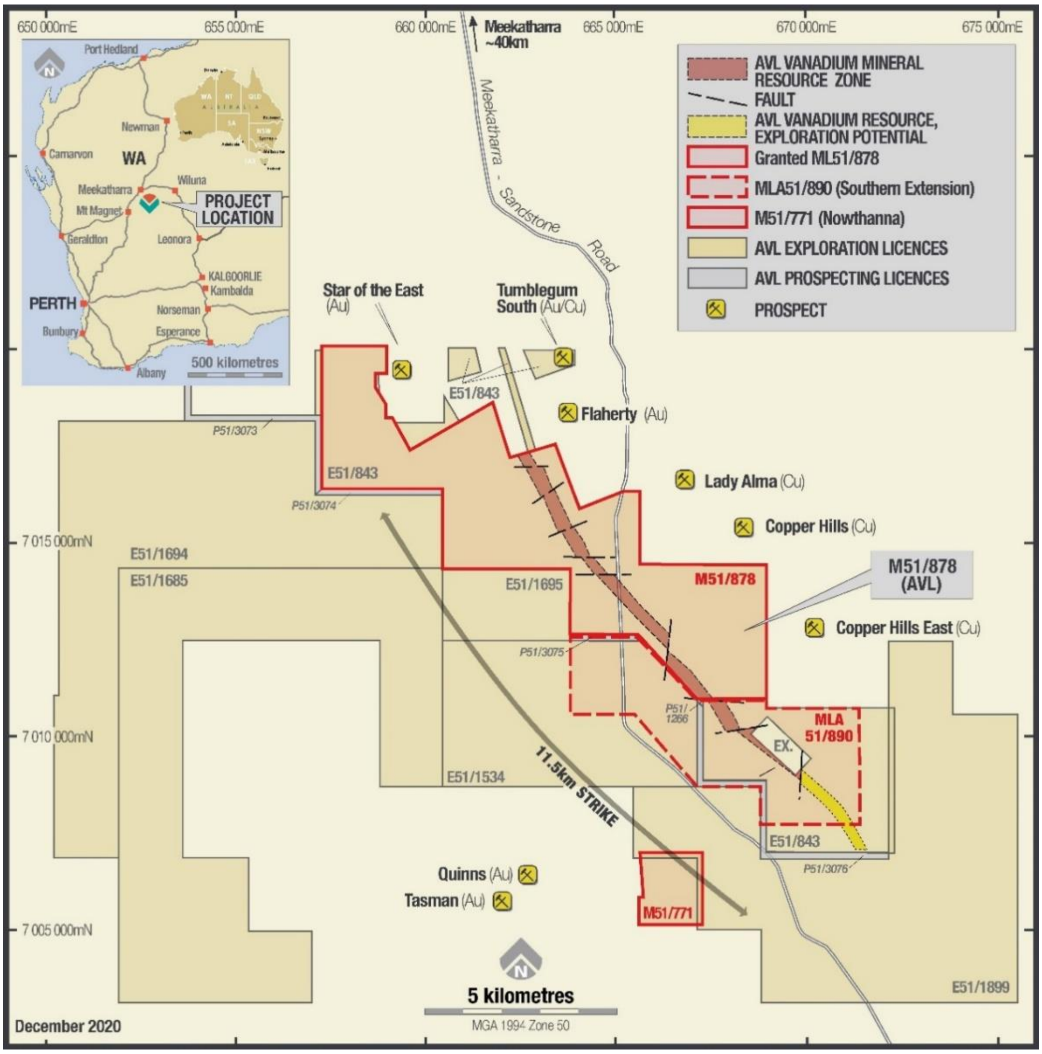


Figure 10 Location and Tenure of The Australian Vanadium Project at Gabanintha

A crushing, milling and beneficiation (CMB) plant will be located at the minesite. The Project will be unique among all global primary vanadium producers in having a coastal location for its final vanadium processing plant. The three primary vanadium mines currently in production globally (one in Brazil and two in South Africa), mine and process their ore to final vanadium product at one inland location. AVL has signed an option over land between Mullewa and the port city of Geraldton for the development of the processing facility.

Geology and Resources

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

The overall 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 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 drilled thickness), overlain by up to five magnetite banded gabbro units between 5 and 30 m thick separated by thin low-grade mineralisation (<0.3% V_2O_5) waste zones. The sequence is overlain in places by a lateritic domain, a transported domain (occasionally mineralised) and a thin barren surface cover domain.

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 surface expression of the high-grade massive magnetite/martite mineralisation at the Project's vanadium deposit outcrops for almost 14 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 11 shows total magnetics imagery showing drilling at the Project plus the fault block numbering. Note that the fault block numbering has changed from previous versions, updating it to a more logical numbering sequence from low in the north to high in the south. The image shows the location of local grid cross-sections, referenced back to the MGA94 Zone 50 grid, and highlights the additional drilling completed in 2019 by type and campaign that is included in the Mineral Resource Estimate.

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.

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. 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) is included in the updated March 2020 Mineral Resource as an additional measure of rock oxidation in the high-grade domain.

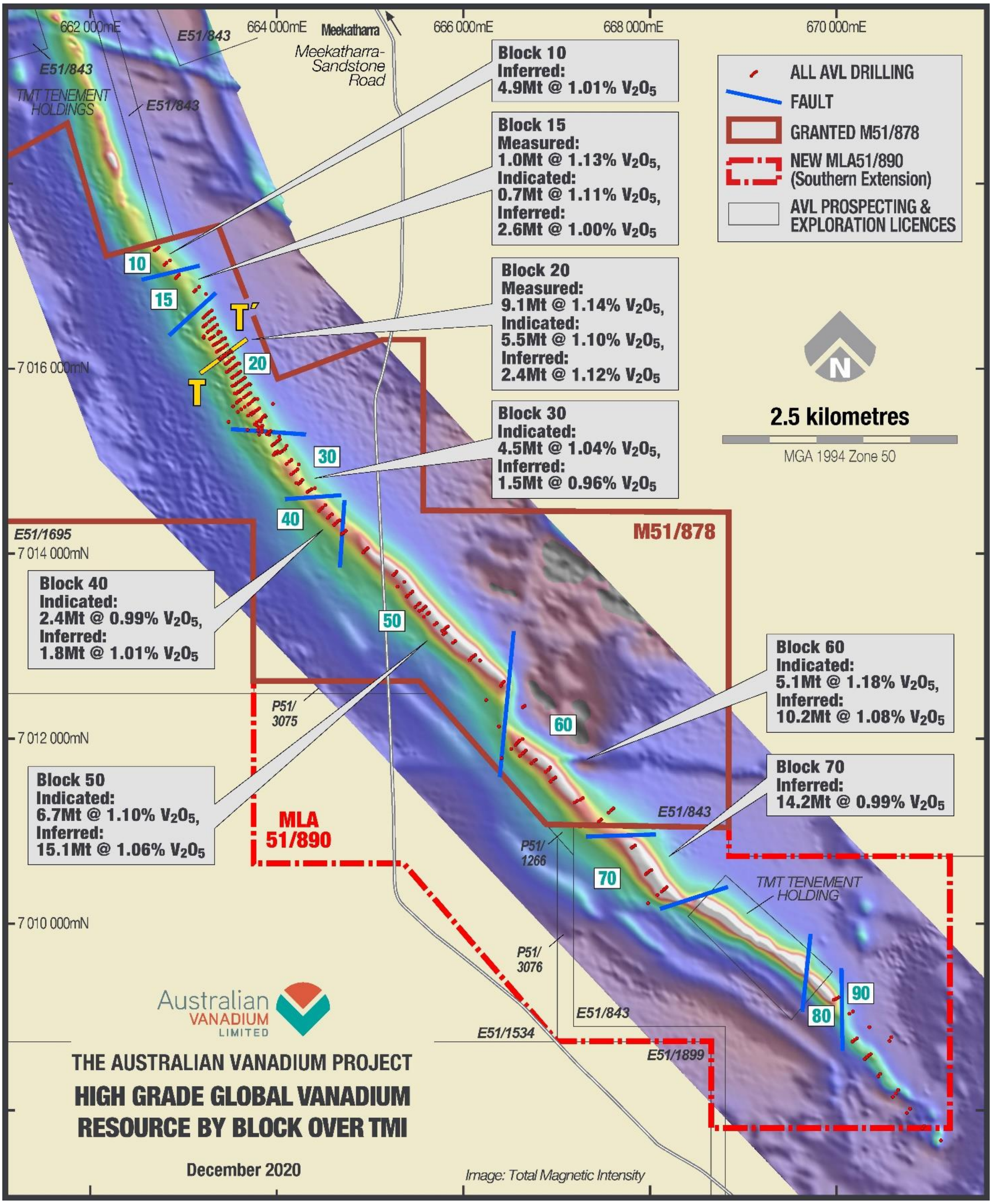


Figure 11 The Australian Vanadium Project Drilling, Fault Blocks and Section Locations on Total Magnetics Imagery

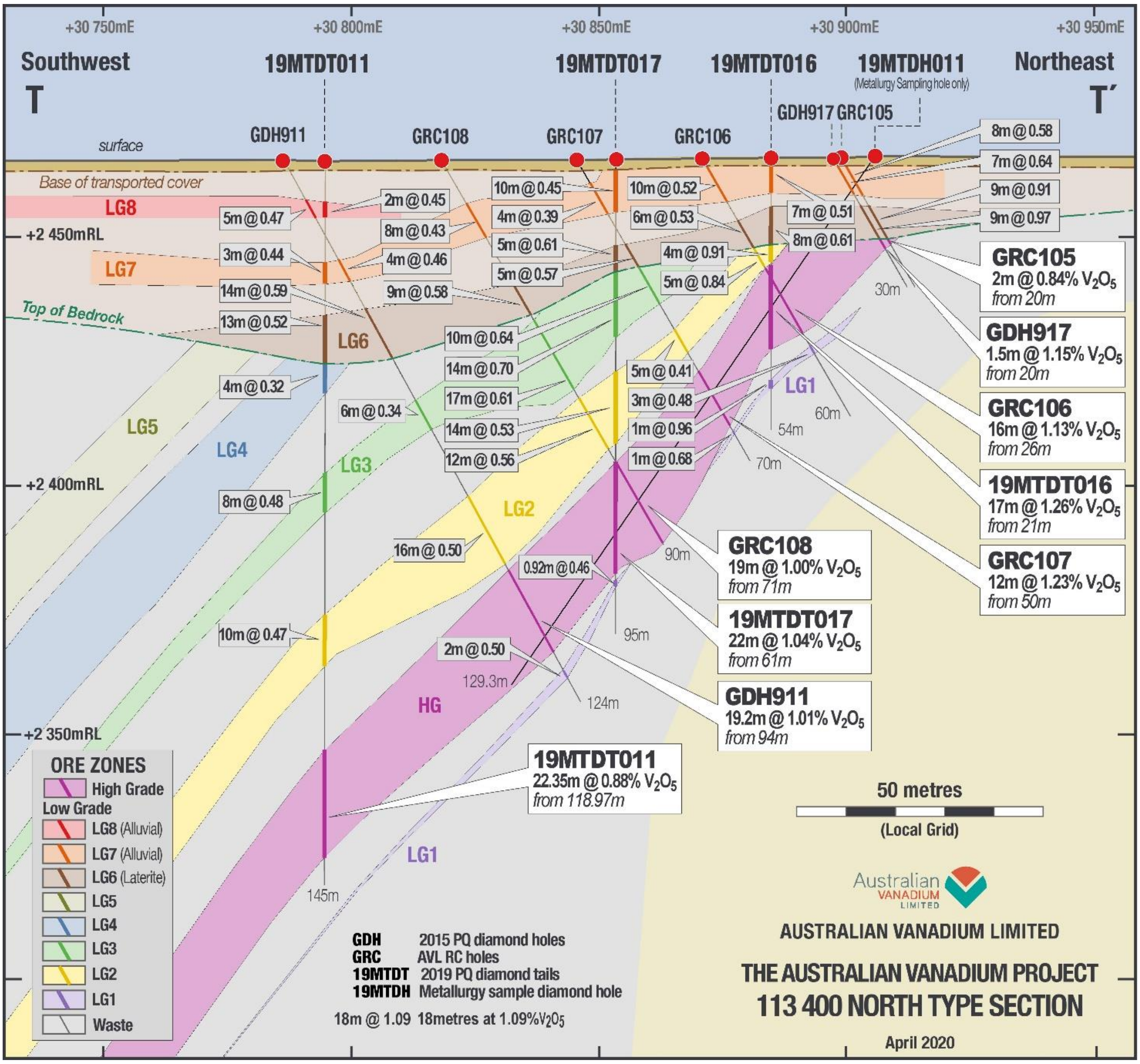


Figure 12 Type Cross-section – Fault Block 20 – 113,400 metres North (Local Grid)

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 7) for a total Resource of:

- 208.2 million tonnes at 0.74 % V_2O_5 containing 1,551,200 tonnes of V_2O_5.
- A discrete massive magnetite-hematite high-grade zone of 87.9 million tonnes at 1.06% V_2O_5 containing 935,400 t of V_2O_5.
- Discrete disseminated magnetite-hematite low-grade zones of 104.8 million tonnes at 0.49% V_2O_5 containing 514,300 t of V_2O_5.
- Combined massive magnetite-hematite high-grade zone in Measured and Indicated Mineral Resources of 35.2 million tonnes at 1.11 % V_2O_5 containing 389,300 t V_2O_5, suitable to underpin a long life, low cost, high-grade feed, open-cut mining operation.
- Combined Measured and Indicated Mineral Resources of 79.7Mt at 0.77% V_2O_5 in disseminated low-grade and massive high-grade domains containing 614,700t V_2O_5.

Table 7 The Australian Vanadium Project – Mineral Resource estimate by domain and resource classification using a nominal 0.4% V_2O_5 wireframed cut-off for low-grade and nominal 0.7% V_2O_5 wireframed cut-off for high-grade (total numbers may not add up due to rounding).

Zone	Category	Mt	V_2O_5 %	Fe %	TiO_2 %	SiO_2 %	Al_2O_3 %	LOI %
HG	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	25.1	1.10	45.4	12.5	8.5	6.5	2.9
	Inferred	52.7	1.04	44.6	11.9	9.4	6.9	3.3
	Subtotal	**87.9**	**1.06**	**44.7**	**12.2**	**9.2**	**6.8**	**3.2**
LG 2-5	Indicated	44.5	0.51	25.0	6.8	27.4	17.0	7.9
	Inferred	60.3	0.48	25.2	6.5	28.5	15.3	6.7
	Subtotal	**104.8**	**0.49**	**25.1**	**6.6**	**28.0**	**16.1**	**7.2**
Trans 6-8	Inferred	15.6	0.65	28.4	7.7	24.9	15.4	7.9
	Subtotal	**15.6**	**0.65**	**28.4**	**7.7**	**24.9**	**15.4**	**7.9**
Total	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	69.6	0.72	32.4	8.9	20.6	13.2	6.1
	Inferred	128.5	0.73	33.5	8.8	20.2	11.9	5.4
	Subtotal	**208.2**	**0.74**	**33.6**	**9.0**	**19.8**	**12.1**	**5.6**

Mining

Mining at the Project will be from an open pit that extends for 7,150 m along strike, consisting of a large pit in the north with a length of approximately 3,000 m, and then two smaller pits to the south of approximately 1,300 m in length. The mining sequence is primarily driven by the requirement to maintain a consistent blend of weathered and fresh ore types to the processing plant. As a consequence, 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 second pushback stage to further expedite the early access to fresh ore. The northern pit is divided in a total of six stages, to balance strip ratio and access ore quickly. An inhouse calculated weathering ratio based on magnetic properties has been established to control the schedule, delivering the designed blend of low recovery, medium recovery and high recovery ore to the processing plant.

Ore will be primarily hauled to the run-of-mine (ROM) pad, with a proportion of plant feed being placed on long-term stockpiles for feed to the plant later in the mine life. The long-term stockpiles are predominantly weathered (i.e. low recovery) ore and Inferred Resources. Mine waste rock will be hauled to several storage facilities to the northwest 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 this PFS. 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 13 shows the minesite infrastructure design.

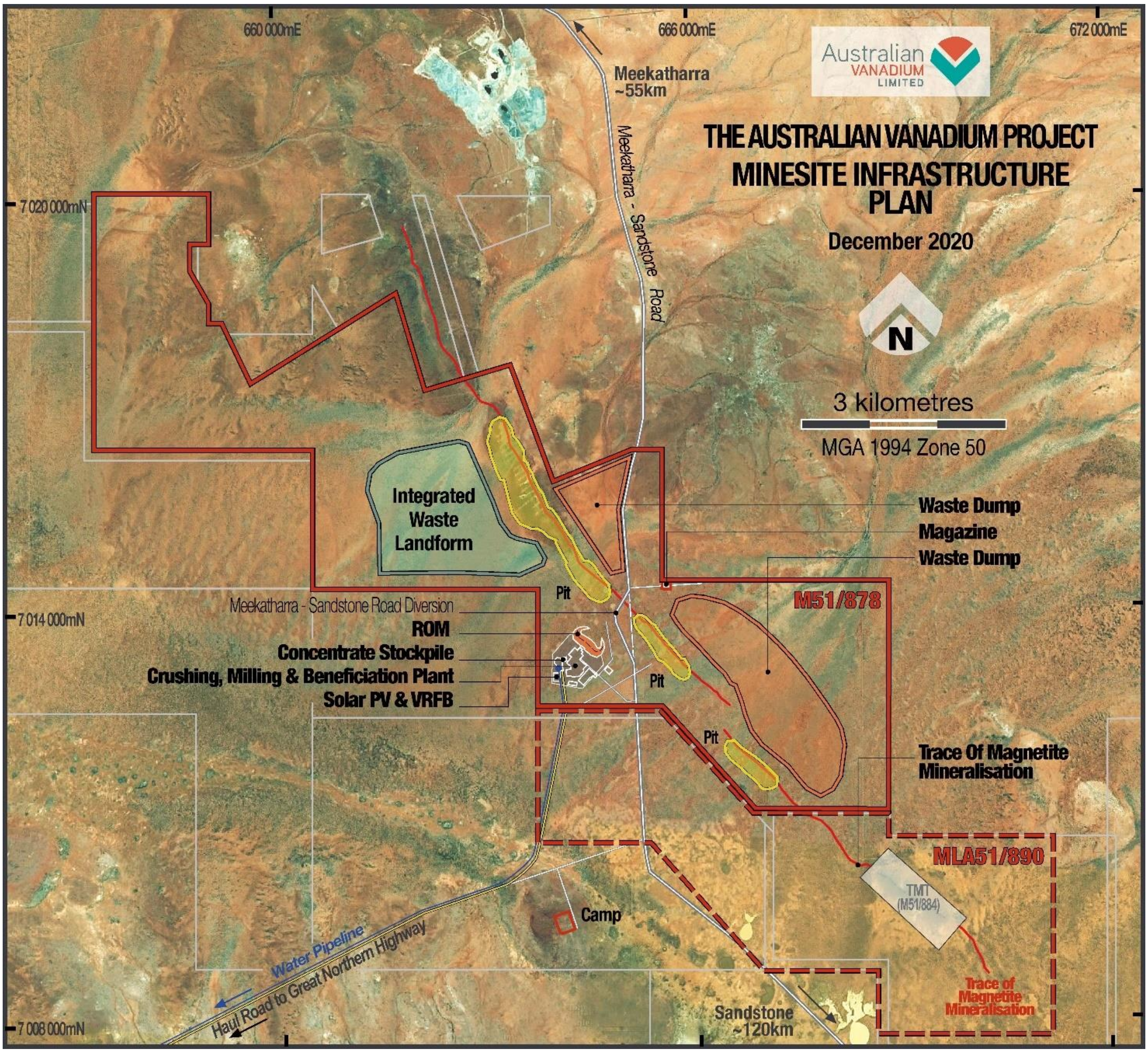


Figure 13 Minesite Infrastructure Location

Approximately 2.6Mt of material is mined in the quarter before plant production commences, primarily to provide construction material for the ROM Pad, haul roads and the first lift of the Tailings Storage Facility (TSF). The rate of mining averages approximately 11.5Mtpa for the first 8 years of the Project. Through Year 9 to Year 14 it increases to a peak of approximately 20.2Mtpa, before reducing to an average of 15.7Mtpa through to Year 19. From this point it steadily reduces to the final year of mining (Year 23). This is followed by approximately 2 years of processing from stockpiled material. 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.

Most of the material to be mined will require blasting for the life of the mine. A small amount of the oxide material (20%) is assumed to not require blasting.

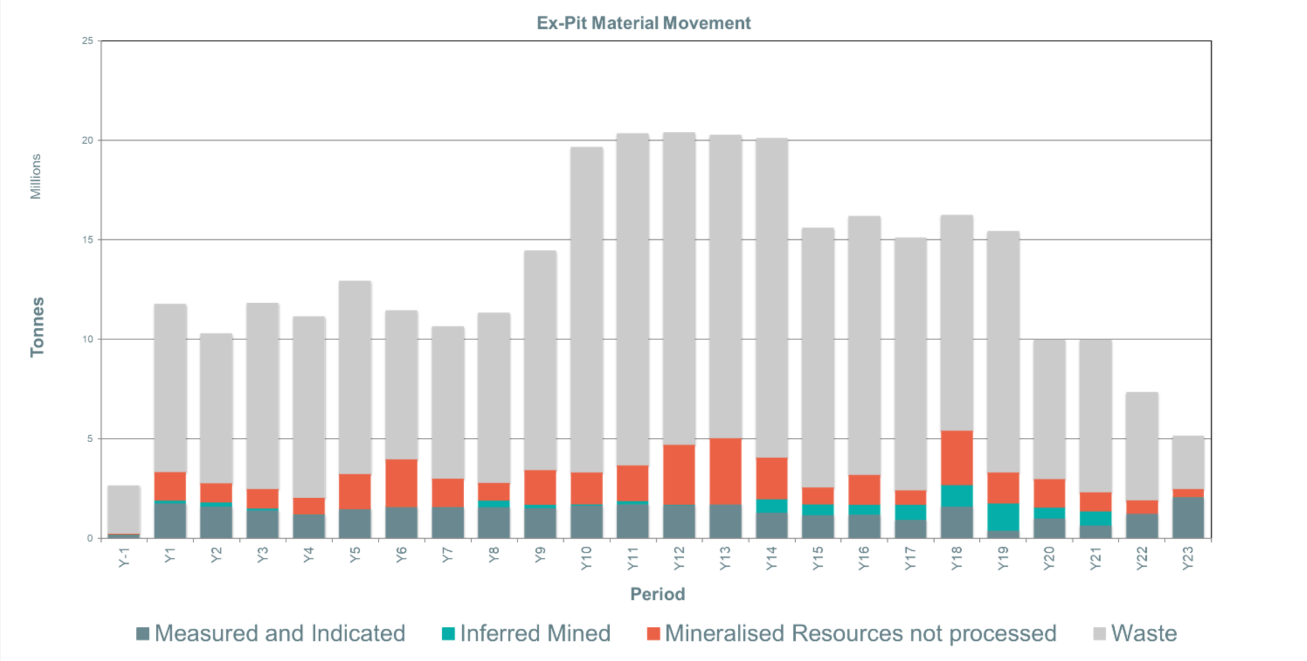


Figure 14 Annualised Pit Movement

The Life of Mine (LOM) production schedule was created in quarterly periods to year 5 and annually to the end of LOM. Mining occurs over 23 years with years 24 and 25 feeding long-term stockpiles (SP). Material movement increases from year 10 as the mining focus shifts towards the higher strip ratio northern pits.

Low recovery 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 12. The average proportion of Inferred material fed to the plant is shown in 5 yearly intervals below.

From	Y1	Y6	Y11	Y16	Y21
To	Y5	Y10	Y15	Y20	Y25
Proportion Inferred	0%	0%	14.4%	44.3%	33.5%

Low grade resources are currently accounted as stockpiled material and will be preserved within discrete parts of the waste stockpiles. This comprises material in the disseminated and transported zones of the orebody within the designed pits that are either:

- between 0.4% – 0.7% V_2O_5 within Zones 10 and 2 or:
- above 0.4% V_2O_5 in all other mineralised zones

Mine waste is dumped to waste rock dumps (WRD) to the east and north-west of the pits. The north-west WRD 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.

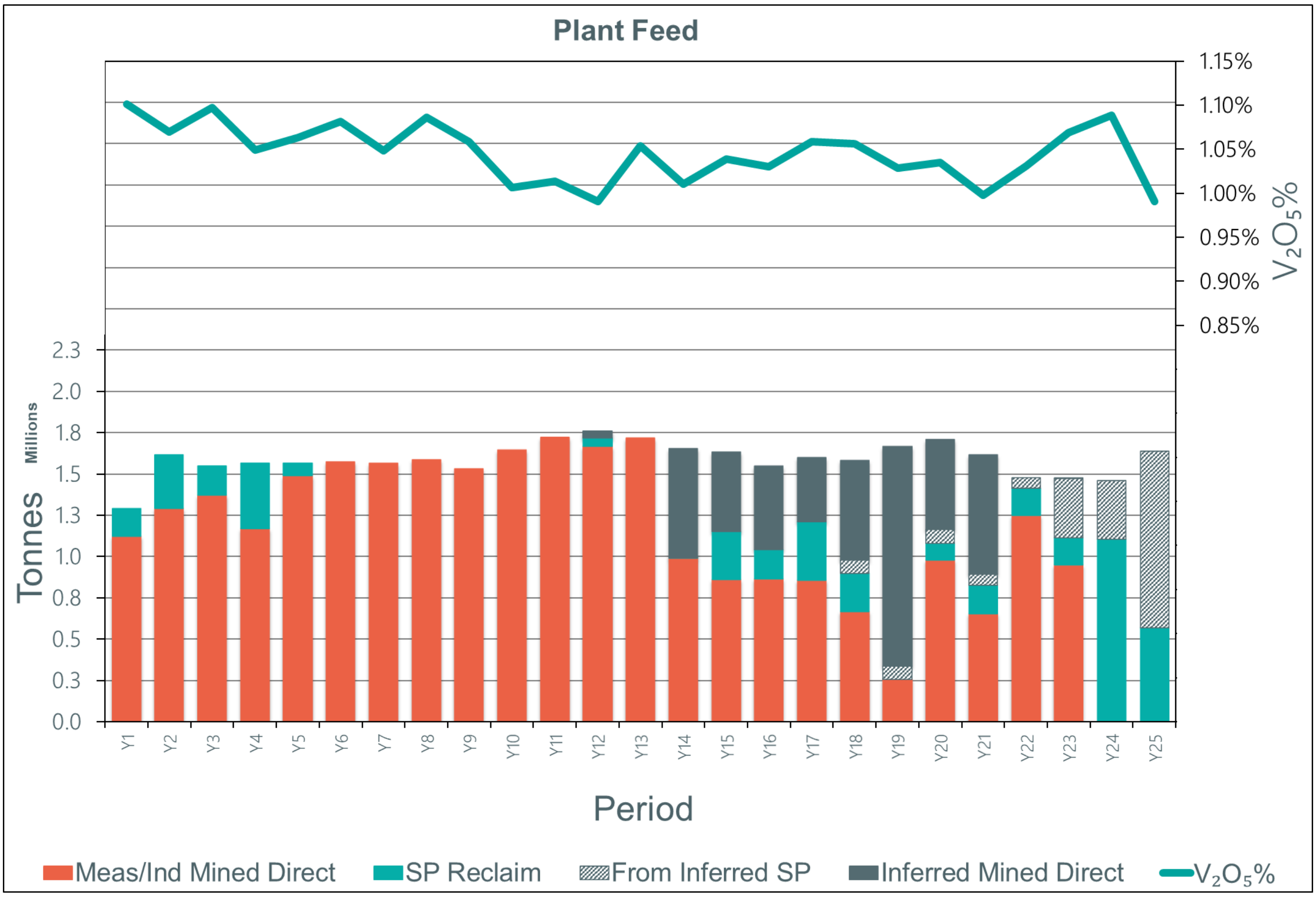


Figure 15 Annualised CMB Feed by Source

The feed rate to the mill is variable as it depends on the overall mass yield of the blend. The output is constrained to 900,000 tonnes of concentrate. Input of ore is greater when lower and medium recovery ore is mined, and less when higher recovery material is mined. As part of the scheduling process, mass yield changes were limited to ± 5%, with this target being met over the mine life, except for year 22 and 25.

Figure 16 shows the layout of the optimisation shells. The green shell was generated by Measured and Indicated Resources only and was the basis for the subsequent pit designs and associated Ore Reserve. The red shells were discrete pushbacks to access low strip ratio Inferred Resources later in the mine life. As these zones cannot be classified as Ore Reserves, pit designs were not developed for these areas and the schedule included them on the basis of the optimal shells.

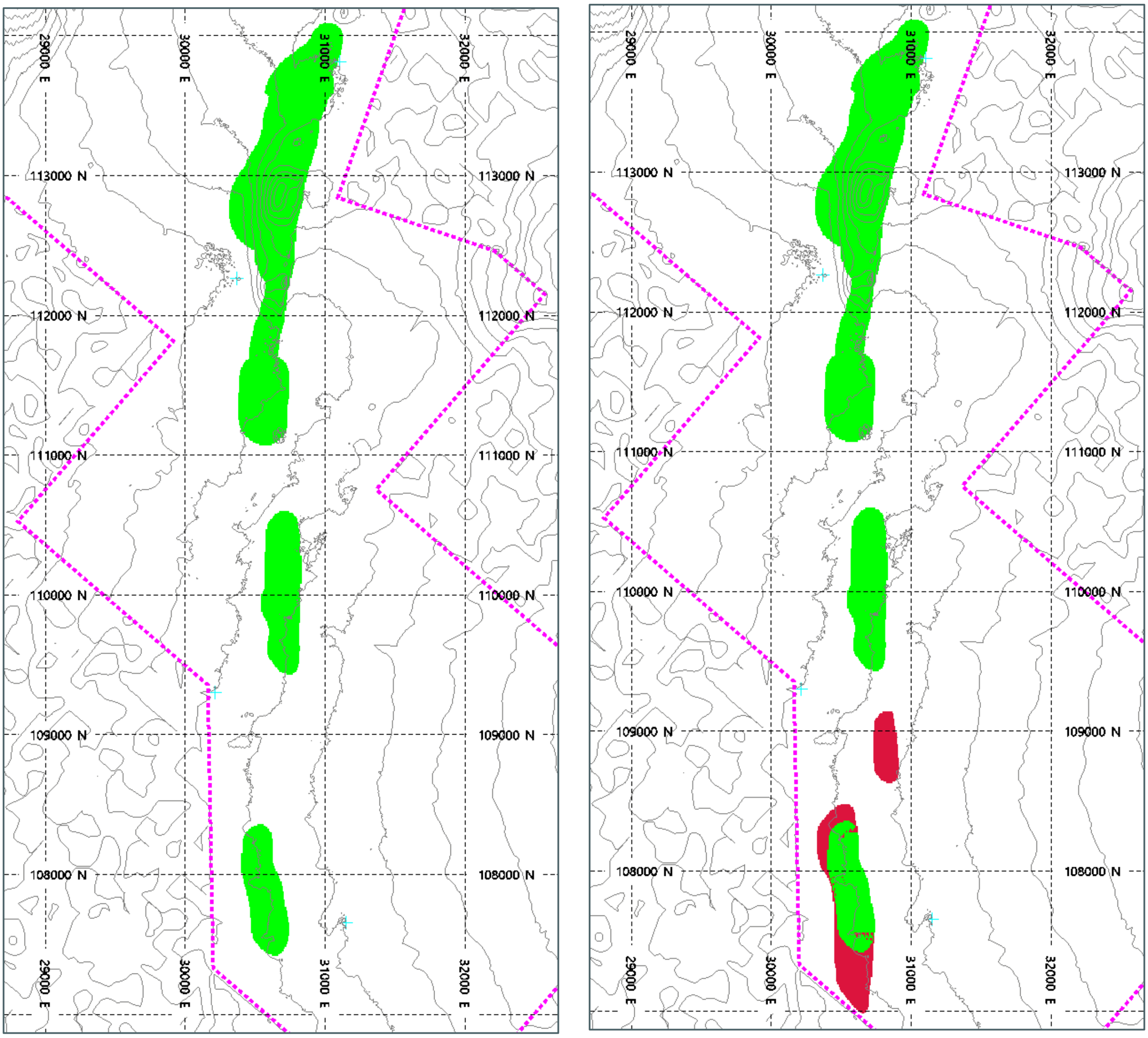


Figure 16 Optimisation Results – Plan of Ore Reserve Shell 35 (green) and included Inferred Resources Shell 27 (Red)

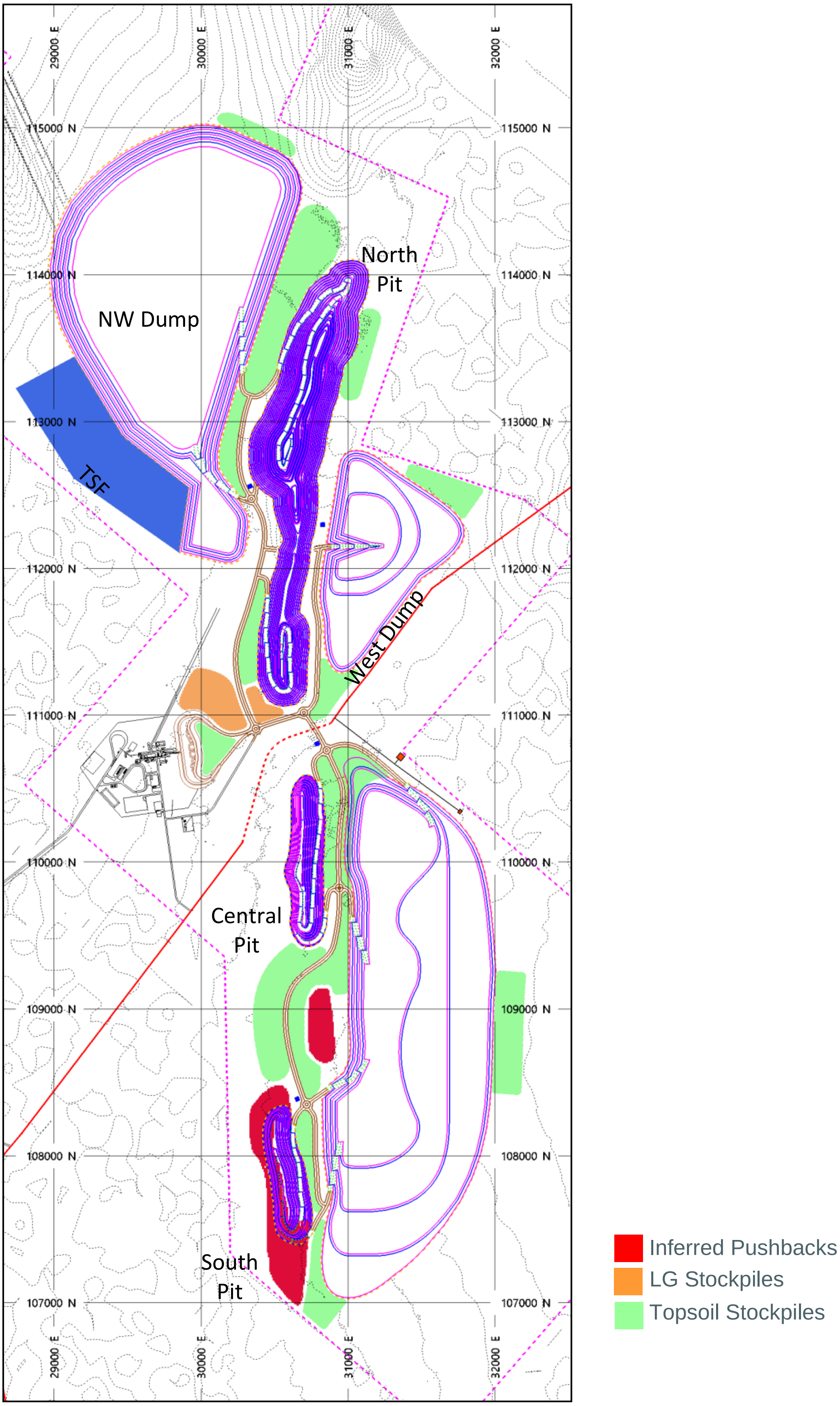


Figure 17 Site General Arrangement – Plan View

Metallurgical Interpretation

Historical metallurgical work for the Project was performed in three major phases of testing – in 2004, 2015 and during the PFS from 2017 to 2018.

The original PFS flowsheet was based on standard industry proven processes and included a crushing, milling and beneficiation (CMB) flowsheet to produce a magnetic concentrate and an alkaline roast leach and ammonium metavanadate (AMV) extraction processing plant flowsheet. The 2018 PFS demonstrated:

- Comminution behaviour favourable to SAG milling with low rate of media consumption and liner wear
- Magnetic separation with concentrate grades of 1.4% V_2O_5
- Roast leach testwork demonstrated vanadium extractions of 79-86%

Following the PFS in 2018, further metallurgical work focussed on pilot scale studies of the CMB circuit and the roast leach process.

In January 2019, diamond (PQ) drilling commenced to provide 30 tonnes of core for a pilot program of the CMB circuit. The program provided oxide, transitional and fresh core to simulate and refine the processing circuit. The concentrate products were used for further testing of the salt-roast leach process. The drill program was also used to generate geotechnical data through downhole and XRF core scanning technologies. Drilling was completed in April 2019.

Pre-pilot benchscale roast-leach testwork

In May 2019, a testwork program incorporating benchscale roast-leach processing and vanadium precipitation was conducted at ALS Laboratories in Perth to optimise the processing plant flowsheet for the Project. Results showed improvements to the PFS design, with higher vanadium recoveries and lower reagent usage. The concentrates tested were generated from bench scale testing of diamond core samples, considered indicative of oxide, transitional and fresh material types.

For the roast-leach stage, the key finding was the beneficial effect of pelletised roasting. Vanadium extraction of up to 94% was achieved under optimal reagent conditions at 1,150°C, compared to an extraction of 88% without pelletising.

Other factors that were tested in this project were:

- The requirement for binders to maintain pellet strength through the roasting process - a binder was found to be necessary to maintain green strength and assure minimum dust generation and recycle in the roasting circuit.

- Sodium flux type - soda ash was superior to sodium sulphate, with a best extraction of 96% compared to 91% for sodium sulphate, or blends of sulphate with soda ash.

- Roast temperature - a higher roast temperature of 1250°C resulted in a vanadium extraction of 96% on the pelletised feed compared to 88% achieved in the base case pilot plant run at 1150 °C.

- Quench temperature - the calcine quench temperature had no significant effect on vanadium extraction. This result suggested that the kiln and leach circuit could be simplified for the final design, resulting in capital and operating benefits.

- The effect of soda ash was investigated, with vanadium recoveries ranging from 94% with a 3% soda ash addition, to 97% with 6% soda ash addition.

To precipitate vanadium from the leachate, the ammonium polyvanadate (APV) process was trialled as an alternative to the AMV process that was selected for the PFS. A product at 99.4% V_2O_5 was generated, which was achieved with a lower reagent consumption and showed potential for eliminating the desilication step that was considered in the PFS. This exceeds the industry standard of 98% and is comparable to other vanadium producers with grades of 98.5% to 99.6%.[7] The APV process was selected for evaluation in the processing plant pilot test work program.

Crushing, Milling and Beneficiation (CMB) Pilot Study

For the first pilot run of the CMB circuit, 6 tonnes of oxide and transitional material was used. The use of a relatively small mass was chosen to identify parameters that need optimising for subsequent runs with higher masses of 10 tonnes. Results were positive, with a final concentrate grade of 1.44% V_2O_5 achieved with silica levels at 1.37%.

A rigorous pilot scale test work program validated an optimised CMB flowsheet. Two likely ore feed blends of 9 tonnes each were trialled, one was representative of the average life-of-mine and the other the first five years of forecast process feed. The concentrate that was generated from the life-of-mine average feed blend achieved 76% vanadium recovery, at a grade of 1.37% V_2O_5 and 1.68% SiO_2. The feed blend for the year 0-5 blend achieved 69% vanadium recovery to concentrate at 1.39% V_2O_5 and 1.83% SiO_2.

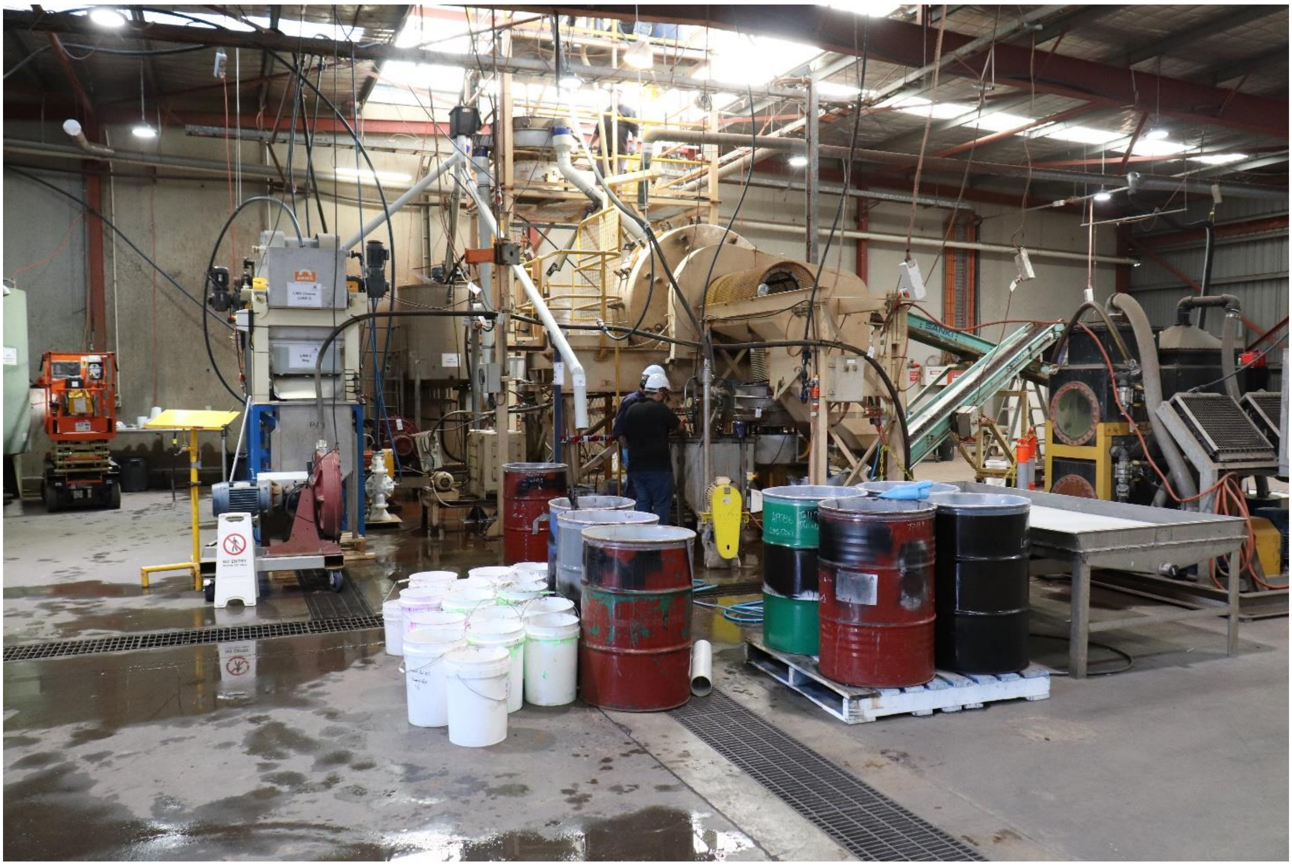


Figure 18 CMB Pilot Plant at ALS Laboratory, Perth

Significant improvements in the flowsheet were made as the testing progressed, including the addition of wet high-intensity magnetic separation (WHIMS) and reverse silica flotation. The WHIMS unit can enhance the recovery of weakly magnetic materials such as hematite, the reverse silica

[7] See ASX announcement dated 2nd November 2020 *'The Australian Vanadium Project to Produce High Purity Vanadium Pentoxide'*

flotation is critical for maintaining a low silica concentrate. A schematic of the optimised CMB flowsheet is shown in Figure 19.

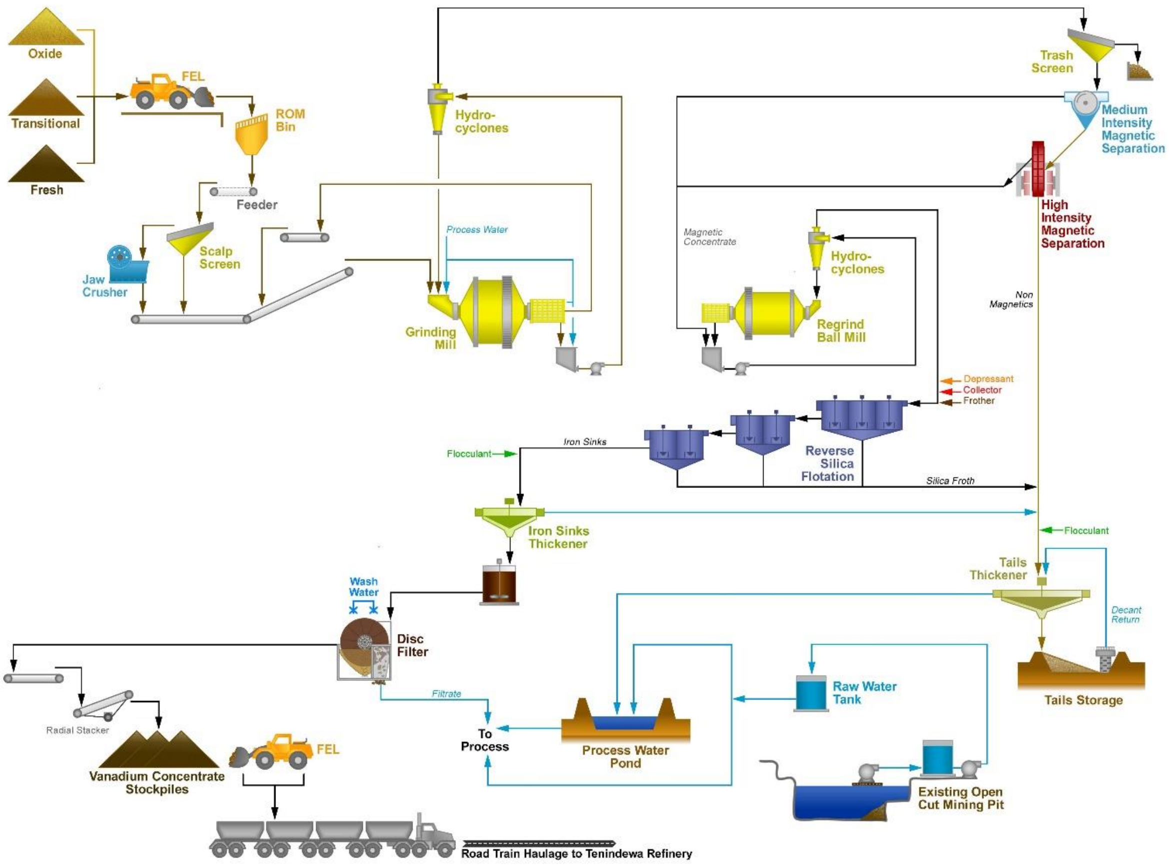


Figure 19 CMB Flowsheet Schematic

Pyrometallurgy Pilot Study

The grate kiln process combines a travelling grate furnace for the drying and heating of pellets before roasting in the rotary kiln. The process results in enhanced performance efficiencies compared to traditional vanadium processing whereby a granular salt and concentrate feed mix is dried, heated and roasted in a single rotary kiln. Increased vanadium extraction rates are also believed to be due to intimate mixing of the soda ash, providing for better mass transfer of vanadium in the roasting process. Heat energy from the kiln exhaust gases and the cooling step can be recouped in a grate kiln, thus reducing the fuel demand.

The grate kiln process is a proven technology, traditionally used to treat fine iron concentrate prior to feeding to a blast furnace, but has also been adopted for other processes such as titanium and phosphate reduction. Collectively this system enables higher vanadium recovery, lower energy costs, a reduced carbon footprint and reduces some key process risks.

Figure 20 Roasting pellets of vanadium concentrate at Metso's pilot facility, Pennsylvania, USA

Pilot roasting was performed at Metso's pyrometallurgical testing facilities in 2020. The roast and leach testing confirmed the exceptional vanadium extraction achieved during bench scale testing, with an average vanadium extraction of 93.3%. This is estimated to be an 8% relative improvement to the 2018 PFS, when allowance is made for scale up. These test outcomes relate to the processing of concentrate designed to represent the average of the first five years of forecast production. A schematic of the vanadium processing flowsheet applied for the PFS Update is illustrated in Figure 21.

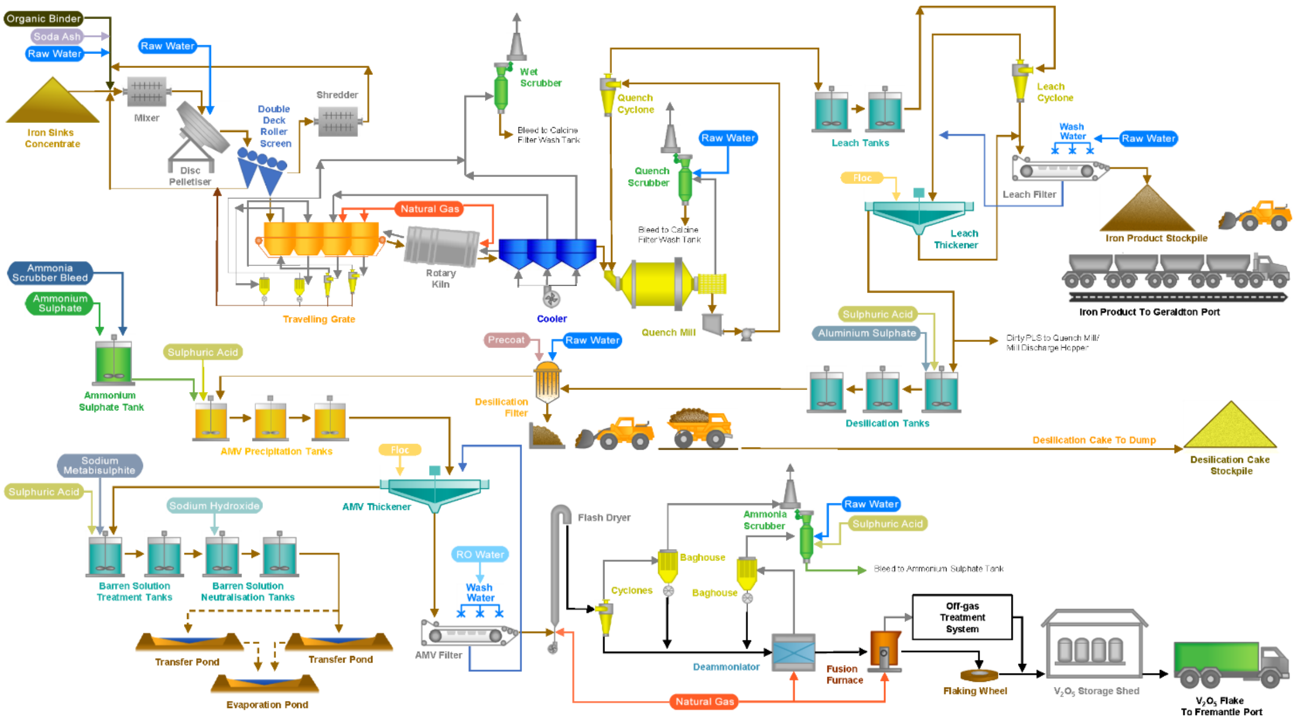


Figure 21 Processing Plant Flowsheet Schematic

Tailings Management

Tailings storage for the Project has been designed by Golder Associates Pty Ltd (Golder). The Project will process an average of approximately 1.55 Million tonnes per annum (Mt/a) of ore, generating between 550 000 t/a and 794,000 t/a of tailings solids (average 662 000 t/a). The Project has an expected mine life of 25 years.

The DMIRS Code of Practice (DMP 2013) requires that a tailings storage facility site and tailings technology be selected to "eliminate hazards or minimise the potential impact of the facility on people, infrastructure and the environment". It is also important to select a tailings management site and technology that will provide an economical storage solution in consideration of the life-of-mine, closure and post-closure costs.

These requirements have been addressed through a site and options assessment undertaken by Golder, with input from AVL and its consultants. The assessment considered available storage locations and tailings processing technologies that would accommodate the tailings produced during the expected life of the Project and followed a weighted sum multi-criteria decision analysis (MCDA) format.

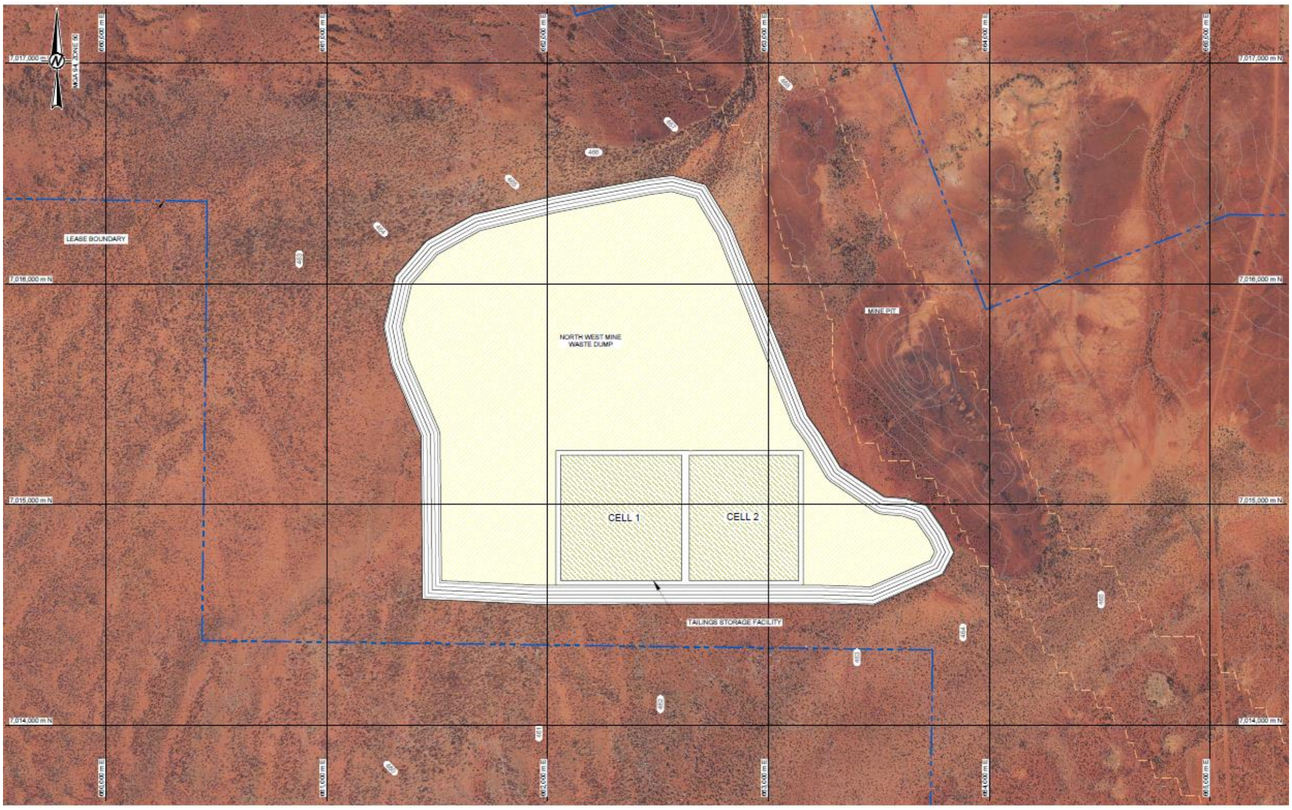


Figure 22 General Arrangement of IWL

The site and options assessment indicated that the deposition of conventionally thickened tailings within two cells created within the north-west waste rock dump, forming an integrated waste landform (IWL), is the preferred option for storage of tailings at the Project. This option performed well on each of the four assessment criteria categories defined for assessment, namely, health safety and environment, economic, technical, and social and regulatory. The IWL concept has been adopted for the updated PFS increased mine life.

Market Review

Vanadium Market

Vanadium's end-use in steel currently dominates vanadium demand globally (see Figure 23). 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 new 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 includes the 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[8], due to its importance in vital aerospace alloys, steelmaking and chemical catalyst processes.

In 2018 AVL signed a non-binding MOU with the Win-Win Development Group, a private steel and alloy producer based in Chengdu, China. AVL and its 100% owned subsidiary VSUN Energy Pty Ltd, also 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.

During 2020 non-binding MOUs for offtake have been signed with specialty chemical producer U.S. Vanadium LLC[9], Singaporean VRFB manufacturer V-Flow Tech Pte Ltd[10], Chinese VRFB manufacturer CEC VRFB Co. Ltd[11] and Enerox GmbH, Austrian manufacturer of the CellCube VRFB brand[12]. AVL 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.[13]

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 benefits 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%.

The carbon offset benefits of vanadium in steel are significant[14]. Steel reinforced concrete is extensively used in construction throughout the world, with building accounting for 30 to 40% of

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

[9] See ASX announcement dated 2nd December 2020 *'AVL Signs Strategic Offtake MOU with U.S. Vanadium LLC'*

[10] See ASX announcement dated 1st December 2020 *'Vanadium Offtake, Electrolyte Supply and Battery Sales MOU'*

[11] See ASX announcement dated 16th September 2020 *'Residential Vanadium Redox Flow Battery Development and Vanadium Offtake MOU'*

[12] See ASX announcement dated 9th September 2020 *'MOU for Vanadium Offtake, Electrolyte Supply and Battery Sales Agency'*

[13] See ASX announcement dated 15th January 2020 '*Letter of Intent signed with Hebei Vanadium Titanium Industrial Technology Research Institute*'

[14] 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

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.

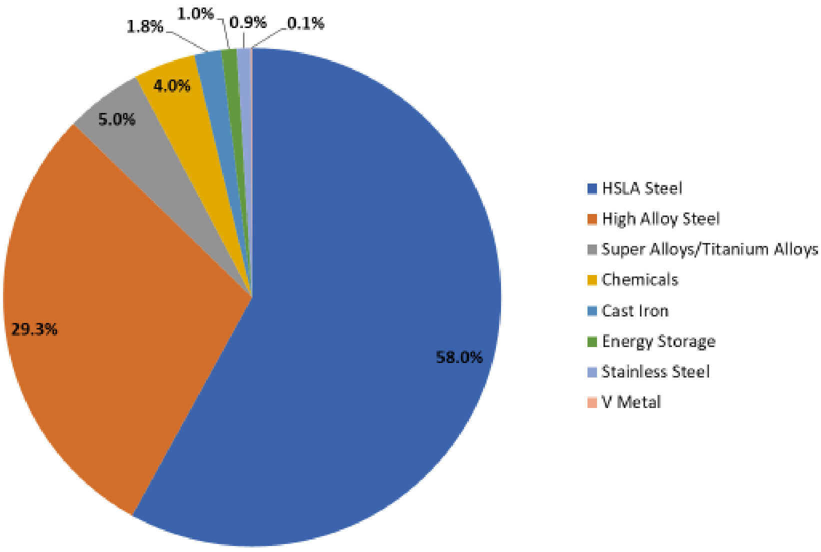

Figure 23 Vanadium Consumption by Application in 2019 (Source TTP Squared)

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 and building practices, vanadium specific consumption is expected to increase to match the developed world.

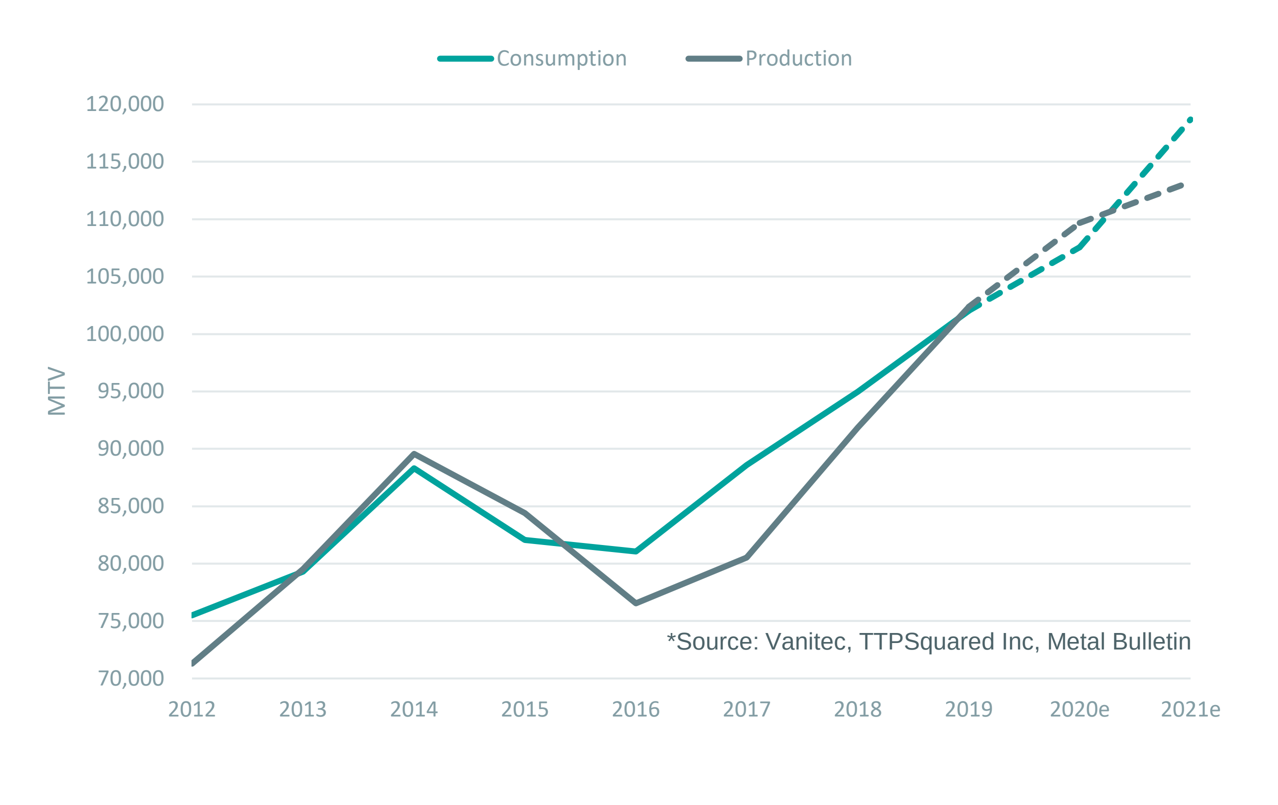

Figure 24 Vanadium Supply and Demand

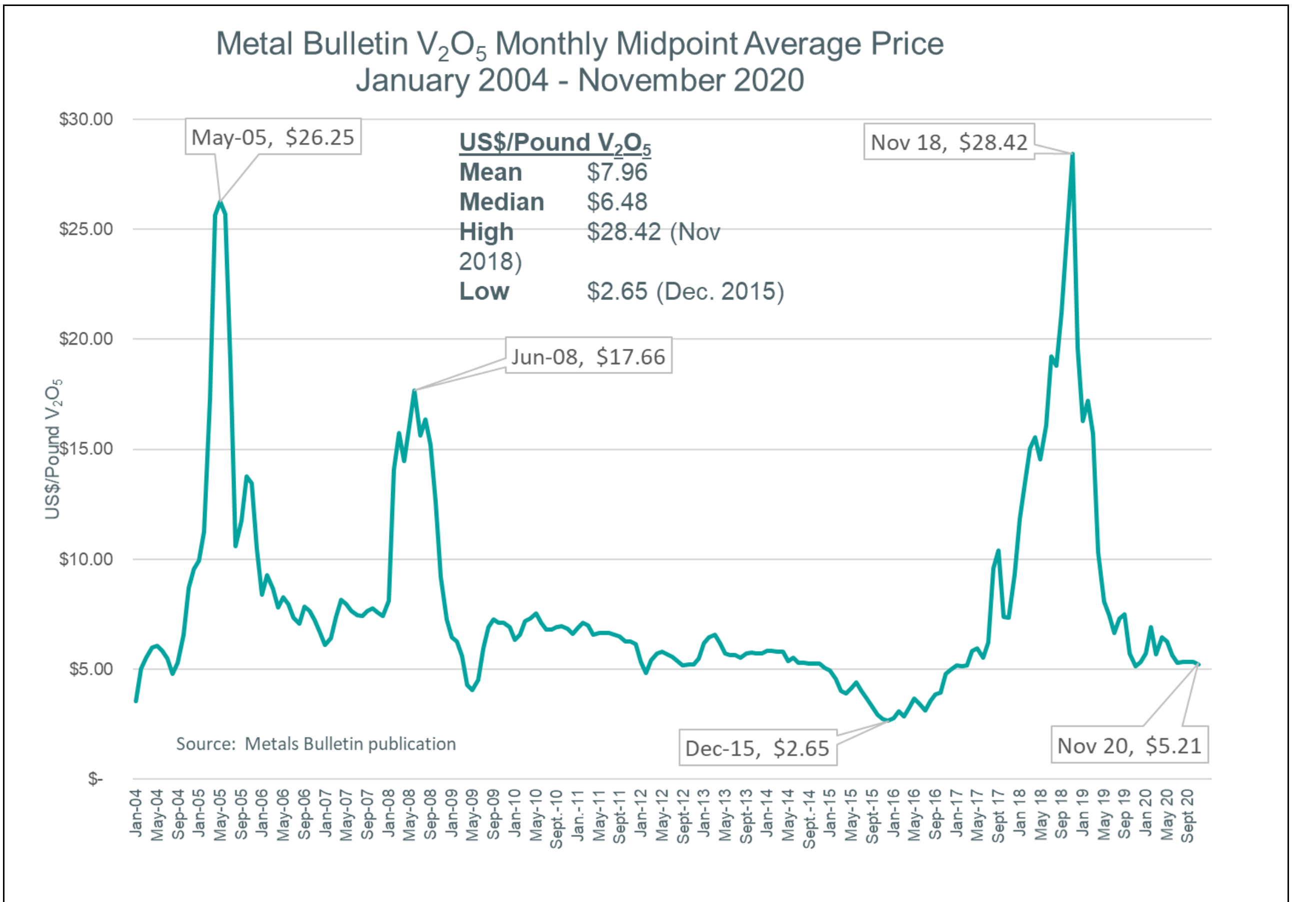

Figure 25 Historical V_2O_5 Monthly Midpoint Average Price

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. Battery technologies are always improving, but the current generation of VRFBs being produced and installed throughout the world are proven to be safe, reliable and a viable energy storage solution.

In 2020 the largest reported VRFB sales and planned installations were:

- 100MW/400MWh Shanghai Electric, Yancheng, China
- 50MW/200MWh CellCube, South Australia, Australia
- 17MW/51MWh Sumitomo, Hokkaido, Japan
- 2MW/8MWh Invinity Energy Systems, South Australia
- 2MW/8MWh Largo Clean Energy, Ontario, Canada.

Globally there has been 703 MWh of VRFBs either installed or announced in 2020. This is equivalent to a requirement of almost 7,000[15] tonnes of V_2O_5, with AVL's planned annual production at 11,000 tonnes of V_2O_5. In addition to the VRFB installations, there have been manufacturing announcements such as SCHMID Group's 3 GWh factory in Saudi Arabia and Shanghai Electric's 200MW/1GWh factory in Anhui Province, China.

At the time of writing there are at least 17 active VRFB manufacturers globally.

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, with market imbalances driving prices above US$26/lb V_2O_5 twice over a 15-year timeframe, most recently reaching a price of US$28.42/lb V_2O_5 (V_2O_5 spot price source: Fastmarkets) in 2018 (see Figure 25). Long-term pricing of US$7.96/lb V_2O_5 is the approximate 15-year average of the traded vanadium pentoxide price, based on London Metals Bulletin/Fastmarkets' historical data. Pricing is bimodal and in times of higher demand than supply, averages US$14.50 /lb V_2O_5. The strong price increase in 2018 was 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), Chinese demand has surged. With Western steel demand lagging in late 2020, any growth in the non-Chinese sector will see the market return to a shortfall by mid-2021 (see Figure 24), putting upward pressure on pricing.

Effect of COVID-19 on Vanadium Markets and Pricing

The impact of the COVID-19 global pandemic in 2020 has had a significant disruptive effect on the demand and consequently pricing of vanadium products. Tightly tied to steel production, a primary indicator of economic activity, vanadium consumption was significantly disrupted in mainland China, which is its largest production and consumption market, from February to April 2020. From April onwards, the Peoples Republic of China gained control over the virus and was able to rapidly resume full scale production of steel, accelerating past previous peak steel production projections for the

[15] Using a calculation of 9.89 tonnes per MWh

remainder of 2020. Consequently, vanadium consumption increased and was further supported by higher specific consumption as mandated by new rebar and building standards for steels.

In June 2020, China became a net importer of vanadium feedstocks, reflecting the high internal vanadium demand. The vanadium price however has not responded and this can be ascribed to the inactivity in non-Chinese countries, particularly Western steel markets, due to COVID-19 lockdowns and disruptions to economic activity. Non-Chinese primary and secondary production of vanadium feedstocks has largely been re-directed to China during this period. Supply and demand imbalances have led to the price remaining static or falling slightly through the year.

Going forward to 2021 and beyond, the recovery of Western markets in post COVID-19 growth and economic stimulus and continuing high demand in China, is likely to support a rising vanadium price and increasing demand in-line with and exceeding pre-COVID-19 projections. New markets such as VRFBs, which have been gaining traction in the 2018 to 2020 period of lower vanadium prices, are now likely to contribute to a significantly higher level of overall new demand, supportive of the production targets for AVL from the Project. TTP Squared Inc projections (see Figure 24) support a recovery of the vanadium price and continued higher demand in 2021 and beyond. Specifically, vanadium demand is expected to outstrip global production by more than 5,000MTV by end of 2021, resulting in upward price pressure on vanadium with anticipated pricing around US$15/lb V_2O_5 in that timeframe.

FeTi coproduct produced after vanadium extraction

Locating the vanadium processing plant near Geraldton provides a 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 54.5% and has TiO_2 levels at 14.02% (see Table 8). The updated PFS contemplates the production of 900,000 tonnes (dry weight basis) annually over the life of the mine. Potential products include:

- An "as-is" sinter iron blend feed - this would achieve the lowest return but could be sold as a blending feedstock to an iron ore producer for silica control.
- An "as is" sinter iron-titanium feed for blast furnace refractory protection.
- Physical or pyrometallurgical upgrade and separation of iron and titanium - preliminary bench scale physical upgrade test work has demonstrated that the grade can be increased from 54.5% to an average of 66% from multiple tests. Further work is underway to determine if titanium separation can be commercially achieved.
- A range of other uses for the FeTi coproduct have been considered but all fall into the low potential value category.

AVL plans to produce 900,000 tonnes per annum of FeTi coproduct for the life of the mine, which is currently 25 years. The quality and expected sizing parameters are outlined in Table 8.

Table 8 Average First Five Years Composition of FeTi coproduct

Solid Analysis, %										
Fe	**TiO_2**	**Al**	**Si**	**Na**	**Cr**	**S**	**Mg**	**Mn**	**V**	**Ca**
54.5	14.9	1.53	0.96	0.78	0.52	0.049	0.35	0.13	0.09	0.08

1. 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 calcine.
2. Sizing is P80 75um

After years of industrial practices, it is widely accepted by the steel industry that charging of titanium bearing material remains the main way of protecting the refractory, especially in the blast furnace hearth area, where the so called “Elephant Foot” corrosion together with other thermal and metallurgical shock is very detrimental to the stability of the blast furnace hearth, potentially leading to break out and operational disaster.

AVL has established, through extensive market engagement in China, that the sale of AVL’s FeTi coproduct “as is” as a blast furnace refractory protection, sinter feed blend or blend for pelletising feedstock will support a positive sale value. Other products currently serve these markets which are of sufficient size and AVL’s quality and specifications of suitable quality, to compete for market share. The realised price by individual supplier varies, dependent on market dynamics, product quality, ‘value in use’ perception and procurement behaviour/loyalty.

Based on internal and external reports, the anticipated pricing benchmark of Platts 62% Fines 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/tonne, the equivalent of US$67.2/tonne.

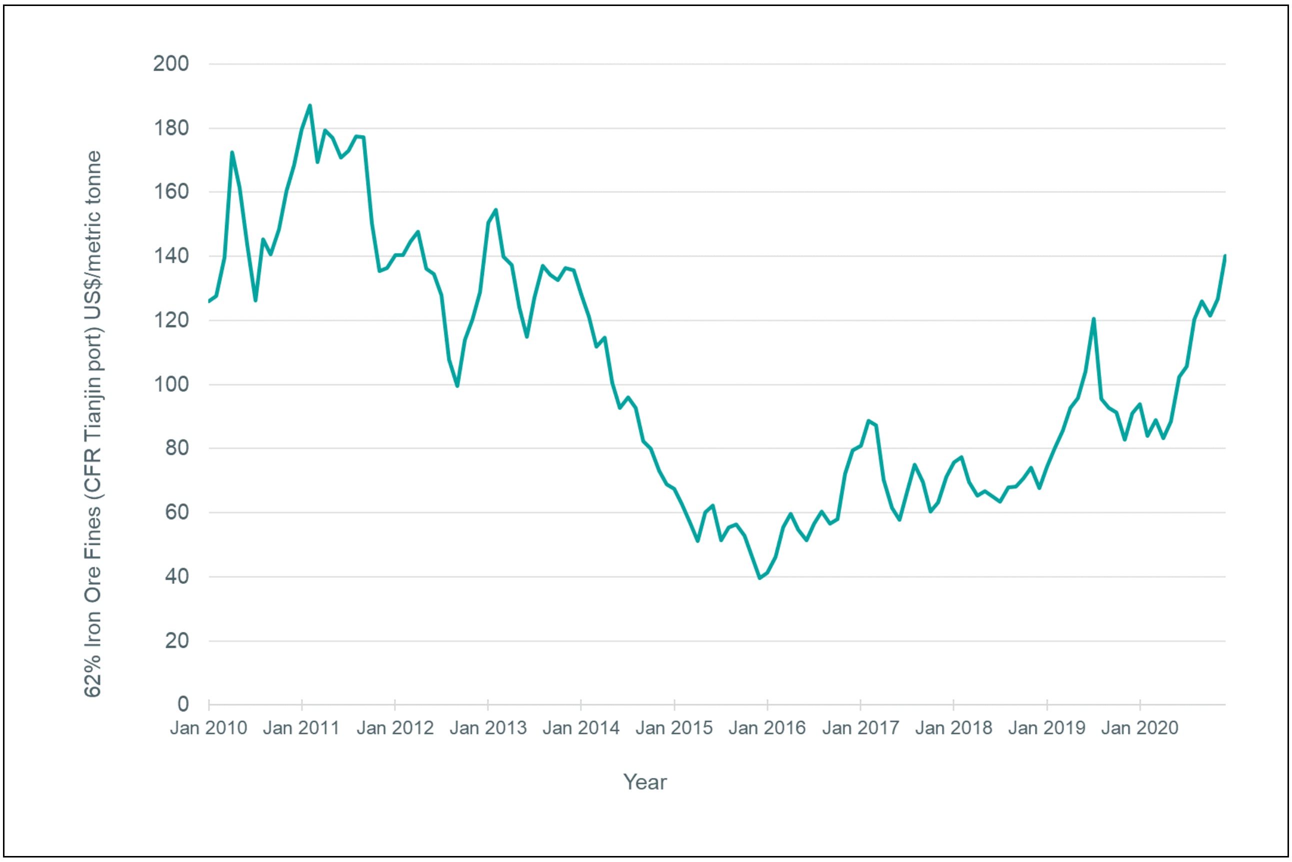

Figure 26 Historical 62% Iron Ore Spot Price

Pricing data source Prepared by: MarketIndex.com.au/iron-ore

Socially and Environmentally Responsible Operation

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 was over A$350,000 in the 2018/19 financial year and A$200,000 in the 2019/20 financial year.

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

Environmental

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 9 km 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 with a buffer identified for drilling 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 will inform the application to the EPA which is being finalised for submission in Q1 2021. Advice from the EPA has recommended a comprehensive report should be provided to facilitate the most efficient review time.

The vanadium extraction process is located 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 highway 123, with nearby access road, rail, and natural gas via the DPNGP or alternately the APA Midwest 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.

Mine Closure

A Mine Closure Plan will be prepared in accordance with DMIRS' guidelines, and the 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.

Energy and Carbon Emissions

Scope 1 greenhouse gas emissions from the Project will be less than 100,000 tonnes per annum, which is below the threshold at which the *Greenhouse Gas Emissions Policy for Major Projects* would apply.

Diesel or gas combined with renewable energy will be used for power at the mine site, including CMB. Diesel emissions relating to mobile plant (on site) and road haulage (off site) could be significant, but alternatives such as hydrogen-fuelled or electric haulage trucks are being investigated.

In 2016 AVL launched a 100% owned subsidiary called VSUN Energy to drive the uptake of VRFBs 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 would supply 1GWh of VRFB energy storage.

Vanadium's role in the steel sector plays an important role in producing low carbon sustainable products, with the addition of vanadium to steel greatly improving strength, thereby reducing global total steel consumption, particularly in the construction sector. See Vanadium Market Review section for more detail.

Trade-off Studies/Further Investigations

In January of 2020, AVL was awarded a A$5 million R&D grant through the Australian Cooperative Research Centres Projects (CRC-P). This grant focuses on innovative work to improve vanadium production technologies, minimise environmental impact, and maximise the value of products and coproducts. AVL has partnered with Australian research organisations Australian Nuclear Science and Technology Organisation (ANSTO) and Curtin University, along with other industry partners AMEC Foster Wheeler Australia Pty Ltd and AMMTEC Laboratories with four areas of focus. These are:

1. Production of ultra-high purity vanadium oxides for vanadium electrolyte and specialty chemical applications.
2. Utilisation of advanced leaching and separations technologies to improve mining and conversion costs.
3. Improvement of standard vanadium unit operations.
4. Recovery and upgrade of by-products and coproducts in vanadium processing.

Process design is well developed for this PFS Update. Flowsheets for the CMB, roasting and leaching circuits were based on pilot scale test results performed on representative blends of diamond drill core. With further optimisation and evaluation testwork underway, there is opportunity to further crystallise design improvements and reduce costs. One such example is the potential to upgrade the FeTi coproduct which is recognised as a significant opportunity to increase Project value.

The PFS Update has highlighted opportunities which will be pursued in the BFS. Trucking and logistics costs have become a large component of the overall cost of operations, now approximately 36% of overall operating expenses. AVL sees opportunities to improve these costs via a transportation study, potential partnerships, and other cost reducing strategies not pursued in the PFS Update.

Mining operations also comprise one third of the costs of operation. The mining schedule for the PFS Update was based on a trade-off between several factors including cost, mine life, capacity, and plant operation. Optimisation work will commence as part of the BFS, with the aim to improve mining costs and identify the most economic path forward. Additional geotechnical drilling is underway as of the date of this study, which will further de-risk mine design.

The high capital costs of regional and area infrastructure relative to the overall Project also highlights an opportunity to improve on project economics through trade-offs between logistics costs, roads and road maintenance, and other alternatives for transport of concentrate. As part of a transportation study, AVL will review potential engineering alternatives to trucking.

Other works to improve reliability of cost estimates and further de-risk the Project include:

- Confirmation of water availability for the Tenindewa site.
- Detailed water modelling of the Gabanintha site to include pit dewatering and potential impacts to flora and fauna.
- Design development and optimisation of grate kiln and associated equipment.

Project Opportunities and Risks

Project opportunities listed in the opportunity register from the PFS have been revisited. Updates to the three opportunities originally highlighted as having the most impact on the NPV and lowest level of technical difficulty or capital outlay are as follows:

- Optimising the feed blend to the plant has been completed, pilot test results show a robust operation that is capable of processing a variety of feed blends.
- Processing surface scree or low-grade material is still considered an opportunity and has been included as part of the Company’s CRC-P work with Curtin University.
- Evaluating new mining technologies is ongoing. This includes automating drilling which is included in the PFS Update. However, there are still opportunities for automation as other technologies mature and become available to smaller, open pit operations.

Of the remaining opportunities identified in the PFS Update, the following are considered the most attractive to pursue during the BFS:

- Improving the iron product quality/value by further processing
- Optimising capacity and mining to assure lowest cost of production
- Further flowsheet optimisation in leach and precipitation to improve the vanadium recovery, decrease capital requirements and minimise reagent usage.
- Optimising the concentrate and iron product transport system.
- Continuing to advance Federal and State funding opportunities such as NAIF funding for infrastructure.

Risks identified in the PFS Update workshop were focused on the following key areas:

- Health, safety and environmental (HSE) including organisational management, human resources and industrial relations
- External to operations including regulatory, approvals and community relations
- Technical including process, technology, scope of work, schedule and estimates
- Execution including engineering, procurement, construction, commissioning, ramp-up and operation

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

- Maintaining and improving on the objective of being a low-cost producer
- Working with potential equity, debt and joint venture partners to provide the detailed information required to secure funding
- Hedging vanadium price with the opportunity to sell a FeTi coproduct
- Continually monitoring market developments in relation to the various vanadium products

Opportunities exist to further minimise Project risk, which are identified in the technical studies and trade-off section. These include upgrading the FeTi coproduct, producing ultra-high purity vanadium products, further work to upgrade mineralised waste, and developing vertical integration opportunities such as the VRFB market through 100% owned subsidiary VSUN Energy.

Pathway to the BFS

The metallurgical testwork programs that will be used to underpin the BFS processing flowsheets are nearing completion. Significant pilot scale testing has been completed to validate an optimised CMB flowsheet and a pelletisation and grate kiln roasting circuit for the initial stages of the processing plant flowsheet. Further leach and vanadium purification testwork is underway to optimise the downstream processing plant flowsheet and is forecast to be completed in February of 2021.

AVL's engineering consultant (Wood Mining and Metals) is in the process of updating the process design for the parts of the flowsheet that have been validated by pilot testwork. This work will enable a progressive commencement of the BFS engineering activities which is targeted for completion in mid-2021.

AVL is currently undertaking BFS work programs. This includes metallurgical testwork, geotech and metallurgical drilling programs and hydrological work at the Tenindewa and Gabanintha sites, to improve confidence in the water resources, drawdown impacts and mine closure requirements.

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

ABOUT AUSTRALIAN VANADIUM LTD

AVL is a resource company focused on vanadium, seeking to offer investors a unique exposure to all aspects of the vanadium value chain – from resource through to steel and energy storage opportunities. AVL is advancing the development of its world-class Australian Vanadium Project. The Australian Vanadium Project is currently one of the highest-grade vanadium projects being advanced globally with 208.2Mt at 0.74% vanadium pentoxide (V_2O_5), containing a high-grade zone of 87.9Mt at 1.06% V_2O_5., reported in compliance with the JORC Code 2012[16].

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

APPENDIX 1

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

2020 Feb	**Category**	**Mt**	**V_2O_5 %**	**Fe %**	**TiO_2 %**	**SiO_2 %**	**Al_2O_3 %**	**LOI %**
HG	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	25.1	1.10	45.4	12.5	8.5	6.5	2.9
	Inferred	52.7	1.04	44.6	11.9	9.4	6.9	3.3
	Subtotal	**87.9**	**1.06**	**44.7**	**12.2**	**9.2**	**6.8**	**3.2**
LG 2-5	Indicated	44.5	0.51	25.0	6.8	27.4	17.0	7.9
	Inferred	60.3	0.48	25.2	6.5	28.5	15.3	6.7
	Subtotal	**104.8**	**0.49**	**25.1**	**6.6**	**28.0**	**16.1**	**7.2**
Trans 6-8	Inferred	15.6	0.65	28.4	7.7	24.9	15.4	7.9
	Subtotal	**15.6**	**0.65**	**28.4**	**7.7**	**24.9**	**15.4**	**7.9**
Total	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	69.6	0.72	32.4	8.9	20.6	13.2	6.1
	Inferred	128.5	0.73	33.5	8.8	20.2	11.9	5.4
	Subtotal	**208.2**	**0.74**	**33.6**	**9.0**	**19.8**	**12.1**	**5.6**

[16] See ASX announcement dated 19 December 2018 *'Gabanintha Pre-Feasibility Study and Maiden Ore Reserve'* and ASX announcement dated 4 March 2020 *'Total Vanadium Resource at the Australian Vanadium Project Rises to 208 Million Tonnes'*

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 Mining and Metals. Mr McNab has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which is undertaken, to qualify as a Competent Person as defined in the 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 Director of Orelogy Mine 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.

APPENDIX 2

Ore Reserve Statement

The Ore Reserve for this PFS Update of the Australian Vanadium Project was developed by Orelogy Mine 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 19% of the Reserves and Inferred Resources.

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

- delivered 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 36Mt and the inclusion of up to 20% Inferred Resources, at a 90% conversion rate, was considered acceptable for a PFS. This would allow AVL to benefit from the near surface Inferred mineralisation in the newly updated 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 30Mt. This formed the basis for subsequent design work and the eventual generation of an Ore Reserve. This “Ore Reserve” shell was of a relatively low revenue factor (approximately 0.85) 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 6Mt (i.e. 20% of 30Mt “Ore 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 ensure the additional 6Mt was developed inside shells that were completely stand-alone pushback stages of the Ore Reserve shell. It should be noted that pit designs were not completed for these pushbacks as they were not going to be included in the Ore Reserve.

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.
- A mining ore recovery of 95% and dilution allowance of 5% carried over from the 2018 PFS.
- CMB plant and processing plant throughput rates advised by Wood based on test work and a plant design that targets the average ore blend.
- Metallurgical recovery based on test work results to date. Only Resource Domain 10 was considered for conversion to an Ore Reserve at the optimisation phase, at a minimum of 0.8% V_2O_5.
- Mining costs carried over from the 2018 PFS at a 2.5% p.a. escalation.
- Processing costs derived by Wood based on their plant design.
- General and administration costs carried over from the 2018 PFS.

- A geotechnical evaluation of the northern mining area carried out by independent geotechnical consultants Dempers & Seymour as part of the 2018 PFS.
- An updated geotechnical evaluation of the southern mining area carried out by independent geotechnical consultants Pells Sullivan Meynink (PSM) as part of this PFS Update. Orelogy determined that, in line with the Dempers & Seymour recommendations for the northern area, the slopes in the southern oxide profile would be flattened by 5 degrees on the steeper hanging wall side.
- Pit designs were then completed on the basis of the "Ore Reserve" shell for the purposes of developing a JORC 2012 Ore Reserve. Subsequent to the completion of the optimisation and pit designs, revaluation of the metallurgical assumptions resulted in:
  - Inclusion of the lower grade Zone 2 mineralisation as an ore type and;
  - Lowering of the V_2O_5 metallurgical cut-off grade to 0.7% V_2O_5.

The resulting Ore Reserve and additional Inferred Resources included allow for these changes, but optimisations and designs were not re-worked as the changes only added value to the designs completed.

The updated Ore Reserve for the Australian Vanadium Project PFS Update 2020 is detailed in Table 9 below.

Table 9 Ore Reserve

Ore Reserve	Mt	V_2O_5%	Fe_2O3%	TiO_2%	SiO_2%	LOI%	V_2O_5 production kt
Proved	9.8	1.08	59.9	12.4	8.7	3.5	63.2
Probable	22.4	1.04	61.7	11.8	8.3	2.8	158.9
Total Ore	**32.1**	**1.05**	**61.2**	**12**	**8.4**	**3**	**222.1**

Ore Reserve	Mt
Waste	244.5
Total Material	276.7
Strip Ratio	7.6

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

The Ore Reserves and Inferred Resources utilised for the life of mine (LOM) schedule for the Australian Vanadium Project PFS Update 2020, inclusive of the Ore Reserve above, is detailed in Table 10 below.

Table 10 Ore Reserves and Inferred Resources used in LOM Schedule

	Mt	V_2O_5%	Fe_2O_3%	TiO_2%	SiO_2%	LOI%	V_2O_5 production kt
Proved	9.8	1.08	59.9	12.4	8.7	3.5	63.2
Probable	22.4	1.04	61.7	11.8	8.3	2.8	158.9
Inferred Resources	7.5	1.05	68.8	13	8.6	3.2	50.3
Total Ore	**39.6**	**1.05**	**62.6**	**12.2**	**8.4**	**3**	**272.4**

Inventory	Mt
Waste	280.4
Total Material	320.1
Strip Ratio	7.1

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

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APPENDIX 3: 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 (e.g. 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. During 2019 43 RC holes were drilled; 30 RC holes were drilled for 2,236m in the December 2019 drilling on blocks 16 and 8, and 13 RC holes for 1,224m drilled during October 2019. A further 30 PQ diamond drill holes were completed by March 2019, to collect metallurgy sample for a plant pilot study. 12 were drilled down-dip into the high-grade zone. These were complimented 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 metallurgy characterisation but will not form part of any resource estimation update as there is no certified laboratory analysis completed on the drill core, with material being used 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 (March 2020), 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 26 660.89m of drilling with 23,650.32 metres being RC and 3,010.57 metres of DDH over 305 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.
	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

Criteria	JORC Code Explanation	Commentary
		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 2.5-3kg 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. 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 this 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. Six of the diamond holes have RC pre-collars (GDH911, GDH913 & GDH916, 18GEDH001, 002 and 003), 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 have been drilled down-dip on the high-grade zone for metallurgical sample but have not been sampled for assay analysis as they have been sampled for a metallurgy pilot study programme. As such they do not form part of any resource estimation. An addition 18 PQ diamond tails on RC pre-collars have been drilled vertically, of which 14 contribute to the resource. two were used for the metallurgy pilot study programme, one was not sampled due to core loss and a further core hole cut but not submitted for assay. A further 43 RC holes using a 140 mm face hammer on a Schramm drill rig have been completed during October and December 2019.
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.

Criteria	JORC Code Explanation	Commentary
		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 30th 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.
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. Minimal structural measurements were recorded (bedding to core angle measurements) but have not yet been saved to the database. The logging was completed on site by the responsible geologist. All of the drilling was logged onto paper and was transferred to a SQL Server drill hole database using DataShed™ database management software. The database is managed by Mitchell River Group

Criteria	JORC Code Explanation	Commentary
		(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 every 30 cm or so 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 historic drill hole 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 estimation to and classification to Measured Mineral Resource at best. Geotechnical logging and OTV/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.
	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.
	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.

Criteria	JORC Code Explanation	Commentary
		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 BV, 1 in 20 samples were tested to check for pulp grind size. For 2019 diamond core samples, duplicates were created from the coarse crush at a frequency of 1 in 20 samples at the laboratory and assayed.
	Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.	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 vanadium, which shows good consistency in interpretation between sections and occurs as percentage values in the samples, Geologica Pty Ltd considers the sample sizes to be 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.

Criteria	JORC Code Explanation	Commentary
	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 that is a measure of the amount of total iron that is present as magnetite (or other magnetic iron spinel phases, such as maghemite or kenomagnetite). SATMAGAN analysis was conducted at Bureau Veritas (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 standards used show an apparent underestimation of V_2O_5, with the results plotting below the expected value lines, however the results generally fall within ± 5-10% ranges of the expected values. The other elements show no obvious material bias. Standards 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 all fall within 10% of their original values. 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, and studies on all results for QAQC sample performance is in progress. Geologica considers that 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. In addition to the handheld magnetic susceptibility described above the 2019 diamond drilling

Criteria	JORC Code Explanation	Commentary
		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.
	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.
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. Resource consultants from Trepanier 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.

Criteria	JORC Code Explanation	Commentary
	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 -60º dip measurement. These older RC holes were almost all 120m or less in depth.
	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

Criteria	JORC Code Explanation	Commentary
		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 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 (previously 16 and 8 respectively) 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 HG 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 (previously 17 and 6 respectively) 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.
	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.

Criteria	JORC Code Explanation	Commentary
	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 that 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.	There is no current native title claim on the proposed mine site or processing plant following a decision by the Federal Court that the Yugunga-Nya native title claim (WC1999/46) was not accepted for registration. A Heritage survey was undertaken prior to commencing each drilling campaign which only located isolated artefacts but no archaeological sites *per se.* Mining Lease M51/878 covering most of E 51/843 and P51/2567, and all of P51/2566 and E51/1396 has been granted by DMIRS during 2020, covering 70% of the Vanadium Project. The remainder of the deposit resource area is covered by Mining Lease Application MLA51/890 that overlies a portion of E51/843, P51/3076 and E51/1534 that are held by AVL. 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 (Trepanier) and 2018 (Trepanier).
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. 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.

Criteria	JORC Code Explanation	Commentary
		The host sequence is disrupted by late stage dolerite and granite dykes and occasional east and northeast -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 the resource publication (see Announcement dated 4th March 2020).
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.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values have been used.

Criteria	JORC Code Explanation	Commentary
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. 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 ASX release of 4th March 2020.
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 4th March 2020.
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 drilling areas, provided this information is not commercially sensitive.	The decision as to the necessity for further exploration at the Australian Vanadium Project is pending completion of mining technical studies on this resource update. Figure 11 in this report shows total magnetics imagery over the strike extent of the project. 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™ 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 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 were/are 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. 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 along strike from the Windimurra Vanadium Mine and 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.
	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.

Criteria	JORC Code Explanation	Commentary
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.
	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. The most recent Mineral Resource (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. Addition infill drilling and extensional diamond core holes have resulted in further adjustments to the interpretation.

Criteria	JORC Code Explanation	Commentary
	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 54.5% Fe, 0.96% Si and 1.53% Al has been generated from the pilot scale testwork and is considered a co-product (iron concentrate) 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 Fe2O3% grades were converted to Fe% grades in the final 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. 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.

Criteria	JORC Code Explanation	Commentary
	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.
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 being considered is 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 is the basis for new optimisation studies during 2020 for an open pit mine plan incorporating the additional Indicated resources, upon which this PFS Update is based. Costings to a PFS level of accuracy have been completed and demonstrate economic extraction of the vanadium-titanium-iron ore is achievable.

Criteria	JORC Code Explanation	Commentary
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 since the previous Australian Vanadium Project Mineral Resource Estimate (AVL: ASX announcement 28 November 2018) has been significant with programs designed to support a Bankable Feasibility Study flowsheet, approximately 90% complete. 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 roasting section of the vanadium refining flowsheet. Preliminary 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. An optimisation testwork program is in progress to finalise the vanadium purification stages of the flowsheet and so set the process design for the bankable feasibility study. Other metallurgical programs are underway assessing routes to upgrade the iron rich co product 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 tonne) 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 PFS Update and so the Mineral Resources statement. The cut-off date for testwork supporting the PFS design basis was 30 September 2020.

Criteria	JORC Code Explanation	Commentary

Flowsheet Area	Type of test	Number of tests
Concentration	Comminution	
	• Bond ball mill work index	31 tests
	• Bond rod mill work index	15 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	4 tests (optimised conditions)
	Concentrate characterisation	2 size by assay tests 2 XRD tests
	Variability test program	47 small scale WHIMS tests 32 DTR or DTW tests 26 REMS Stick tests 6 LMA tests 1 LIMS/WHIMS test 1 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
	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
Vanadium Purification	Evaporation	14 tests
	Bench scale desilication	3 tests
	Bench scale AMV precipitation	10 tests
	Bench scale APV precipitation	8 tests
	Bench scale deammoniation	5 tests
Calcine Upgrading	Calcine characterisation	3 XRD tests 3 TGA tests 2 TCLP tests
	Calcine upgrading	8 roast tests 12 DTR tests 4 Carpco magnetic fractionation tests

Criteria	JORC Code Explanation	Commentary
		Albeit a prefeasibility study update, through the pilot scale testing and additional variability testwork undertaken in 2019 and 2020, 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%) and alumina grade (2.8%) concentrate when the magnetic concentrate is reground to P_{80} 75 µm and cleaned in a silica reverse flotation circuit. • The beneficiation flowsheet adopted for the PFS Update has been validated by pilot scale testwork which involved processing two blends of diamond core material designed to be indicative of average PFS schedule 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 vanadium water leach extraction of 92 to 93%. • Preliminary 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 product with acceptable chemistry for the >98.5% V_2O_5 flake market. This traditional vanadium hydrometallurgical purification path has been adopted for the flowsheet supporting the PFS Update. Similar leach liquor purification flowsheets were applied in Xstrata's Windimurra refinery flowsheet in Western Australia and at Largo Resources Maracas vanadium project in Bahia, Brazil. • Leached calcine of 54.5% Fe, 0.96% Si and 1.53% Al has been generated from the pilot scale testwork and is considered a co-product (iron concentrate) 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.

Criteria	JORC Code Explanation	Commentary
Environmental Factors or Assumptions	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.	Environmental studies and impact assessment are currently being undertaken for Feasibility and approvals work. For the PFS it was assumed that the tails stream from the concentrator can be effectively stored and rehabilitated within an integrated mine waste landform. Tailings seepage characterisation at Gabanintha is required to determine controls required to prevent adverse impacts from tailings seepage into subterranean fauna habitat. 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.
Bulk Density	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.	Bulk density determinations (using the Archimedes' method) were made on samples from 15 diamond drill holes. Bulk density data from 313 direct core measurements were used to determine average densities for each of the mineralisation and oxide/transition/fresh domains. Bulk Density was estimated for HG, LG, Alluvial and waste material in Core taken to represent the main lithological units.
	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.	The water immersion method was used for direct core measurements; all 231 of the latest measurements have been done using sealed core, the previous 97 measurements were not wrapped. AMC's observation of the core indicates that observable porosity was not likely to be high for most of the core at the deposit.

Criteria	JORC Code Explanation	Commentary
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The average bulk density values for at the Australian Vanadium Project are: **Domain** / **Oxidation State** / **Bulk Density** 10 (high grade) / Oxide / 3.39 10 (high grade) / Transition / 3.71 10 (high grade) / Fresh / 3.67 2-8 (low grade) / Oxide / 2.13 2-8 (low grade) / Transition / 2.20 2-8 (low grade) / Fresh / 2.62 Alluvial / Oxide / 2.63 (waste) / Oxide / 2.02 (waste) / Fresh / 2.45 All values are in t/m3. Regressions used to determine bulk density based on iron content are as follows: • Oxide: BD = (0.0344 x Fe_2O_3 %) + 0.9707 • Transition: BD = (0.0472 x Fe_2O_3 %) + 0.3701 • Fresh: BD = (0.0325 x Fe_2O_3 %) + 1.4716 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.
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). 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 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 fresh portion of the high-grade domain where the drill hole spacings are less than 80 to 100m in northing (Fault Blocks 20 and 30). Indicated Mineral Resource material is generally restricted to the oxide high grade and oxide and fresh low grade in the same area of relatively closely spaced drilling plus areas of infill drilling in Fault Blocks 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.

Criteria	JORC Code Explanation	Commentary
		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. Further investigation into bulk density determination and infill drilling will be required to further raise the level of resource classification.
	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 should include assumptions made and the procedures used.	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.
	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 – 2020 PFS Update

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 4th March 2020 and has been used in the PFS Update. Refer to the ASX release of 4th March 2020 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.	No site visit was undertaken by the Competent Person for Ore Reserves at the time of this release due to Covid-19 restrictions. A site visit will be undertaken by the Competent Person prior to completion of the final PFS Update report. There are no current facilities at the project site.
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 2020 Pre-Feasibility Study update to the previous 2018 PFS has been prepared.
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 as metallurgical testing suggests unpredictable recoveries below this chosen value. This is a relatively conservative approach as this value is considerably higher than the calculated breakeven cut-off grade values within the model.

Criteria	JORC Code Explanation	Commentary
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 followed by detailed final pit design. The Ore Reserve is the Measured and Indicated Resources within the pit design, after allowing for ore loss and mining dilution. In selecting the optimised pit shell used for pit designs the conservative pit shell with a revenue factor of 0.82 was selected.
	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 open pit, selective mining of ore and waste on nominal 2.5 m benches using a backhoe excavator. Pit ramps are designed at a 10% gradient and 25.5 m wide, except for lower pit levels where the ramp reduces to 13.5 m wide and then 15 m.
	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 Pre-Feasibility Study level geotechnical study had been completed by independent geotechnical consultants Dempers and Seymour for the northern mining areas as part of the previous 2018 PFS. The pit design parameters from this study have been used for the pit optimisations and designs for this area. An updated geotechnical evaluation of the southern mining area carried out by independent geotechnical consultants Pells Sullivan Meynink (PSM) as part of this PFS update. Orelogy determined that the PSM study recommended slopes in the southern oxide profile be flattened by 5 degrees on the steeper hanging wall side to remain consistent with the Dempers & Seymour recommendations for the northern area. Grade control will be based on additional RC drilling, pit mapping and sampling from production drilling where necessary. An RC drilling pattern of 15 m along strike and 15 m across strike pattern has been allowed for.
	The mining dilution factors used.	Mining dilution was estimated to be 5%, at zero grade. This was carried over from the 2018 PFS and was based on consideration of the width, continuity and orientation of the orebody and the planned mining method.
	The mining recovery factors used.	Ore recovery of 95% was carried over from the 2018 PFS and to allow for losses from blasting and grade control.
	Any minimum mining widths used.	A minimum mining width was set at 20 m.

Criteria	JORC Code Explanation	Commentary
	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 for 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, heavy equipment washpad, mining offices, water storage dam, ROM pad, fuel and explosives storage.

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 PFS Update 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 have been carried out under the direction of Wood Mining and Metals and includes: • Comminution • Magnetic separation • Silica reverse flotation • Thickening and filtration • Pelletisation • Grate kiln roasting • Leaching • Desilication • AMV precipitation • Deammoniation Two composites, made up of 9 tonnes each of diamond core intervals designed to be indicative of an average first five year and life of mine blend, 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 PFS Update 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. Ln (Volume susceptibility (SI) x 1000/%Fe) — Concentrator Vanadium Recovery (%) x < 1.76 — $= -0.362805x^2 + 6.115625x + 66.342253$ 1.76 > x < 2.0 — $= 75.485315x - 57.136140$ x > 2.0 — = 93.834 Vanadium recovery, as with confidence in predicting concentrate grade and vanadium recovery of 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) which are under investigation. 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) x 1000/%Fe) scale. As reference, the two pilot feed blends were measured at 0.48 and 1.76 on this scale.

Criteria	JORC Code Explanation	Commentary
		The basis of the PFS Update is an 88% vanadium recovery for the refining flowsheet. Vanadium recovery forecasts for the refining flowsheet have been based on: • Optimised pilot scale roasting test results which have demonstrated 92 to 93% 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 co product 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. Further optimisation testwork is in progress which will set the processing plant flowsheet and recovery basis for use in a bankable level study.
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, and waste characterisation. The Project is not likely to have highly significant environmental impacts that are of public interest. All potential environmental and social impacts associated with the Project have been considered and no issue has been identified that cannot be mitigated or managed to an acceptable degree. Further work is required to quantify the potential impact for some aspects, particularly for subterranean fauna.
	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 solids or liquids has not been undertaken 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. The degradation and concentration of these chemicals in the tailings storage and risk of seepage into soil and groundwater has not been quantified.

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, along the same pathway as a pipeline route for water supply from Reedy's Mine (operated by West Gold Resources). This 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 a diesel power station, supplemented by a solar photo voltaic farm with Vanadium Redox Flow Battery energy storage. 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 gas-fed power plant. At Gabanintha, construction water will be sourced from onsite pit dewatering and the CMB plant will use water piped across from Reedy's mine site. At Tenindewa, preliminary studies suggest water bore fields can be found in the vicinity to supply water for the processing plant. 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. Accommodation will be constructed on site adjacent to the Project at Gabanintha. Daily commute to the Tenindewa Processing Plant will be possible from the local communities nearby (eg, Geraldton and Mullewa)
Costs	The derivation of, or assumptions made, regarding projected capital costs in the study.	Wood Mining and Metals has estimated capital costs for the Project to ± 25% . This includes the direct and indirect cost associated with electrical distribution, site preparation and construction for the following mining infrastructure: • HV & Truck Workshop • Parts Store/Warehouse • HV & LV Washdown Pad Facility • Fuel Storage and Dispensing Facility • MOC Building (Offices. Muster Room/Training Facility, Toilets, Cribroom) • Water Storage and Distribution • Sewage Disposal • Explosive Magazine Compound and Access Track • Tyre Changing Equipment & Tyre Storage

Criteria	JORC Code Explanation	Commentary
	The methodology used to estimate operating costs.	Mining operating costs have been developed from a first-principle basis utilising: • Up-to-date (Q3 2020) equipment costs (capital and operating) from OEMs • Current salary and labour rates based on a combination for 9:5 and 2:1 rosters • Diesel cost of A$0.50/l based on average of two supply quotation • Allowance for equipment financing and insurance Mining costs were calculated for the following activities: • Clearing and grubbing • Topsoil removal and storage • Road building • Drilling and blasting • Loading and hauling (including support equipment) • Contractors personnel • Owner personnel • Cost of capital (including finance) A contractor's margin of 5% was applied, assuming that the contractor would be able to utilise purchasing power to obtain cheaper equipment capital that the book price provided. An allowance for dayworks was also included. The result LOM cost of A$3.49/tonne mined is in line with the A$3.54/tonne moved generated by the pit optimisation process. Processing costs have been estimated based on the plant design and detailed costings derived by Wood Mining and Metals.
	Allowances made for the content of deleterious elements.	Not applicable
	The source of exchange rates used in the study.	For mining optimisation and design, the exchange rate used was A$:US$ 0.74. The exchange rate used in financial modeling was A$:US$ 0.72. The exchange rate used for Capex and Opex derivation was set on 8th November 2018 at A$:US$ 0.728, A$:EUR 0.637 and A$:GBP 0.555. The exchange rates were sourced from publicly available data produced by banks.
	Derivation of transportation charges.	The transport cost related to haulage of the product to the port of Fremantle has been estimated by Wood Mining and Metals. This has been estimated based on a rate A$50t of V_2O_5 product sold FOB Fremantle. Backhaul rates after delivery of consumables to site have been assumed.
	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 Mining and Metals based on their design of the processing plant.

Criteria	JORC Code Explanation	Commentary
	The allowances made for royalties payable, both Government and private.	The royalty paid to the West Australian government will be 2.5% of revenue.
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 a 5% dilution factor at an assumed grade of 0% V_2O_5. Revenue for pit optimisation assumes a V_2O_5 sale price of US$8/lb. This is based on an FOB price for the V_2O_5 flake product. The sales price used for base case financial analysis was US$8.67/lb V_2O_5. The vanadium price is of a highly cyclical nature. Imbalances in supply have driven prices up above US$30/lb twice during this time, and there was a prolonged period where prices hovered around US$5/lb from 2012 to 2017. FeTi coproduct is produced after extraction of vanadium. This FeTi product 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 price of $US96/t. For mining optimisation and design, the exchange rate used was A$:US$0.74. The exchange rate used in financial modeling was A$:US$0.72. The exchange rate used for Capex and Opex derivation was set on 26 October 2020 at A$:US$0.72, A$:EUR 0.60, A$:ZAR 11.6, A$:CNY 4.78, and A$:CAD 0.94. 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 in batteries. In the last few years the vanadium price recovered, reaching over US$30/lb in November 2018 and since then has price slumped to around US$5/lb due to COVID-19 related production cuts in the non-Chinese consuming countries 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 have not recovered 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.
	A customer and competitor analysis along with the identification of likely market windows for the product.	Vanadium Redox Flow Battery (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 MTV that are not currently available.

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	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).
	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 Vanadium Redox Flow Batteries. Typical grade for the steel industry is 98.5% V_2O_5, while specialty chemical, VRFB's, and the aerospace industry are more stringent but vary according to application, industry, and individual costumer. Final vanadium products are assayed via standardised 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.	Crirical inputs to the economic model are A$:US$ 0.72, pricing for vanadium pentoxide sale of $8.67, FeTi coproduct pricing at 30% discount to 62% Platts iron ore average CIF North China. NPV is calculated using an 8% discount rate. NPV ranges from A$909M ± A$400M based on 30% change in all values measured - for all variables measured. These included V_2O_5 price (long and short-term), FeTi coproduct price, capex, opex, and A$:US$ exchange. IRR ranges from 17.5 ± 7.3%. The post-tax NPV 8% of the Project using a schedule based on the Ore Reserve only and utilising the long-term historical pricing was estimated to be A$720M ± A$5M, 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 optimization stage was not carried out for the purposes of the PFS Update. Sensitivity analysis was undertaken as part of the Project financial analysis.
Social	The status of agreements with key stakeholders and matters leading to social licence to operate.	There is no registered native title claim on the proposed mine site or processing plant following a decision by the Federal Court that the Yugunga-Nya native title claim (WC1999/46) was not accepted for registration. A draft mining agreement between AVL and the Yugunga-Nya Native Title Claim Group was prepared in November 2017. 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.

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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.
	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.
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	No audits have been undertaken.