

22 July 2021



VR8 MAIDEN ORE RESERVE ADDITIONAL INFORMATION

Following the ASX release of 20 July 2021 (“VR8 declares maiden Ore Reserve for SPD Project”) the Vanadium Resources (**ASX: VR8, The Company**) releases additional information.

As this is a “first time” release of Ore Reserves for the SPD Project, VR8 is required to satisfy the ASX Listing Rule 5.9.1 and supply more detailed additional information to the original 20 July 2021 announcement. The additional information is shown in the revised announcement attached.

Additionally, in accordance with ASX Listing Rule 5.9.2, Section 1, Section 2 and Section 3 of Table 1 of Appendix 5A (JORC Code) are included in Appendix 1 of the revised announcement, attached.

This update only contains supplementary information to the Ore Reserve statement released and does not materially affect or change the outcomes of the Ore Reserve statement released. The supplementary information will ensure complete transparency and compliance with the requirements of Listing Rules which includes all tables and requirements that are in the best interest of shareholders.

This announcement has been authorised for release by the directors of Vanadium Resources Limited.

VR8 DECLARES MAIDEN ORE RESERVE FOR SPD PROJECT – ADDITIONAL INFORMATION

HIGHLIGHTS

- ◆ Vanadium Resources (ASX:VR8) has completed the maiden Ore Reserve for the Steelpoortdrift project with key elements being:
 - Total project Ore Reserve of 73.85Mt at an average grade of 0.75% V₂O₅ giving total contained V₂O₅ of 560kt,
 - Of the total Ore Reserve 31.17Mt is in the Proven category with balance in the Probable category,
 - The High-Grade portion of the Ore Reserve totals 40.25Mt at an average grade of 0.96% V₂O₅
- ◆ DFS study to commence H2 2021 will aim to improve on maiden Ore Reserve statement with an updated statement to be released on completion of DFS.

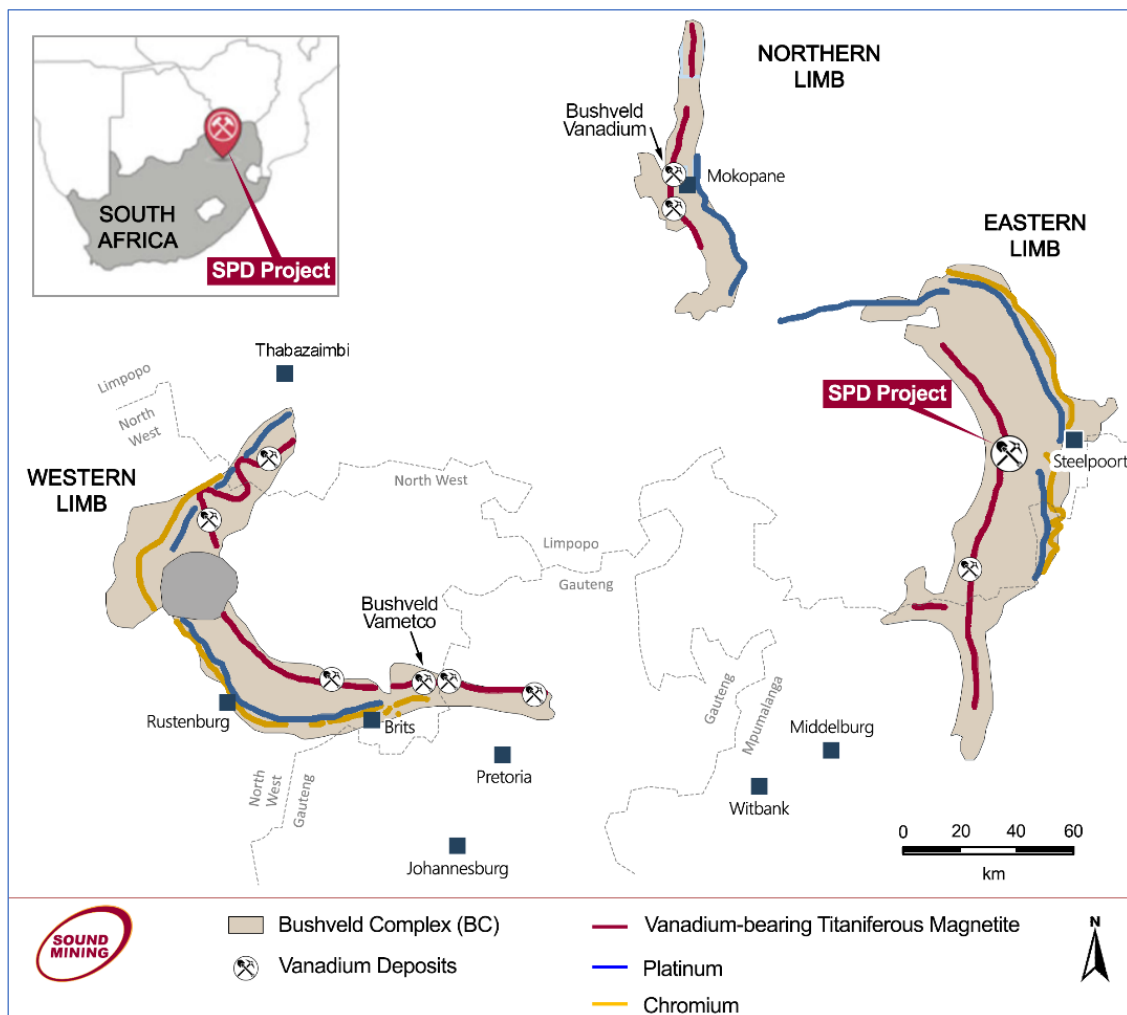
Eugene Nel, Chief Executive Officer of VR8 said: “A Mineral Ore Reserve is probably the most important asset for any mining company and this is no different for Vanadium Resources. The Ore Reserve elevates the project status to that of an economically extractable deposit which carries significant value for the company. Another pleasing aspect is that the total production over the 25-year Life of Mine has been included in the Ore Reserve, which means that the DFS can be based on the present Proven and Probable Ore Reserves without the need to upscale any resources into a reserve.

With total contained V₂O₅ in the Ore Reserve of more than 1.2 billion pounds (560kt), of which 55% is in the High-grade portion, the Steelpoortdrift project is well poised to be progressed into production.”

PROJECT BACKGROUND

Based on the completed Pre-Feasibility Study (Refer ASX announcement of 22 June 2021), Vanadium Resources (**ASX:VR8**) commissioned Sound Mining to complete an Ore Reserve statement for the Steelpoortdrift project (SPD Project). The Ore Reserve was prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code), 2012 Edition guidelines.

Figure 1: Project location



Source: Sound Mining, 2021

The SPD Project is being developed as a fully integrated mineral beneficiation project in which Run-of-Mine (RoM) production from designated surface mining areas will supply a site located Concentrator Plant producing a vanadium pentoxide (V_2O_5) concentrate. This concentrate will be road hauled to an off-site Salt Roast Leach (SRL) Plant to produce a final dry flake product at $>98\% V_2O_5$.

The SPD Project is located on the farm Steelpoort 365KT which is approximately 30km south-west of the town of Steelpoort, Limpopo Province (Figure 1). The SPD Project area is situated within the Sekhukhune District Municipality in the Greater Tubatse Local Municipality, which is one of the five local municipalities falling under the Sekhukhune District Municipality (SDM).

PROJECT GEOLOGY

Located within the Bushveld Igneous Complex, rocks from both the Main Zone and Upper Zone occur on the project site. Vanadium mineralisation occurs within four vanadium-bearing titaniferous magnetite-rich layers which are located at the base of the Upper Zone, above a distinct anorthosite layer near the contact with the Main Zone. These layers are the MML Mineralised Zone, the Upper Mineralised Zone, the Intermediate Mineralised Zone and the Lower Mineralised Zone, with average thicknesses of 5m, 19m, 14m and 12m respectively. The lithology is seen to strike southwest-northeast and dip at approximately 20° to the northwest.

MINERAL RESOURCES

The geological block model and mineral resource estimate is based on data retrieved from an exploration drilling program. A total of 7,261 samples were collected from 146 exploration boreholes (9,714m) for analytical analysis and a drone survey provided a suitable topographical surface. Modelling was constrained by constructing wireframe solids bounding the four mineralised zones.

These were subdivided into lower- and higher-grade zones to prevent the smearing of high grades during interpolation by means of Ordinary Kriging.

A Mineral Resource was reported by Mining Plus (Proprietary) Limited (**Mining Plus**) during 2020 (refer to ASX announcement of 28 April 2020: *Mineral Resource update confirms Steelpoortdrifts global vanadium standing*). This Mineral Resource estimate, as at 31 July 2020, is at a cut-off grade of 0.45% V₂O₅ (Table 1). This cut-off grade was also used in the PFS, which underpins the maiden Ore Reserve estimate. It was not adjusted to cater for the prevailing higher market prices. This will be done for the definitive feasibility study (DFS) and subsequent updated Mineral Resource and Ore Reserve Statement to be reported.

The Mineral Resource classification approach applied weights to key parts of the estimate including confidence in drillhole/wireframe location, number of contributing samples, the estimate pass, the number of contributing drillholes, Kriging Variance, Kriging Efficiency (KE), and the regression slope of the estimate.

Good results in each received a weighting of 1, poor results received a 3, with average results receiving a 2. These weights were then used to assign a weighted resource categorisation score. The numbers adopted are seen in Table 2.

Table 1: Mineral Resource Estimate (as at 31 July 2020)

Category	V ₂ O ₅ Range (%)	Volume (M m ³)	Quantity (Mt)	V ₂ O ₅ (%)	Fe ₂ O ₃ (%)
Measured	0.45* to 0.90	20.3	66.0	0.59	19.98
	>0.90	7.2	26.3	1.22	34.20
	Sub-total	27.5	92.3	0.77	24.03
Indicated	0.45* to 0.90	61.8	201.2	0.59	20.21
	>0.90	22.7	83.2	1.24	35.06
	Sub-total	84.5	284.4	0.78	24.55
Inferred	0.45* to 0.90	63.2	206.9	0.60	20.96
	>0.90	21.3	78.4	1.22	35.18
	Sub-total	84.5	285.3	0.77	24.87
Total (0.45 to 0.90)		145.3	474.1	0.59	20.51
Total (>0.90)		51.2	187.9	1.23	34.99
Total		196.5	662.0	0.77	24.62

Source: Mining Plus, Steelpoortdrift Vanadium Project Mineral Resource Estimate Report, July 2020
Note: *0.45% V₂O₅ being the Mineral Resource cut-off grade as declared by the Mining Plus Competent Person

Table 2: Mineral Resource Categorisation Parameters

Item	1	2	3
Boreholes	Vanadium Resources	Historical (with Survey)	Historical (with GPS)
Pass	1/3 variance range	2/3 variance range	3/3 variance range
Number of Sample	24 to 32	16 to 23	1 to 15
Contributing Boreholes	7	4	1
Kriging Variance	<0.2	0.2 to 0.4	>0.4
Kriging Efficiency	>=0.7	0.3 to 0.5	<=0.3
Regression Slope	>=0.7	0.2 to 0.6	<=0.2
Weighted Resource Category Score	1 to 1.2	1.2 to 2.0	2.0 to 3.0
Resource Category	Measured	Indicated	Inferred

Source: Mining Plus, Steelpoortdrift Vanadium Project Mineral Resource Estimate Report, July 2020

PRE-FEASIBILITY STUDY

The Ore Reserve estimate is underpinned by a pit optimisation, mine designs and a production schedule for the overall SPD Project PFS plan, which are deemed to be technically achievable. This work formed part of a Preliminary Feasibility Study (PFS) which was prepared to an accuracy of +/-20%. The selected mining method is conventional open pit mining. It is appropriate to the geological setting of the outcropping, and relatively shallow dipping, orebodies.

PIT OPTIMISATION

A pit optimisation was carried out using the Lerchs and Grossman (L&G) algorithm and appropriate mine design criteria. Suitable software (i.e. NPV Scheduler) was used with the geological block model to generate a series of potentially viable open pit shells. The results were governed by preliminary cost inputs for mining and processing, mining and metallurgical recoveries, and the sales price of a vanadium flake product (>98% V₂O₅). Breakeven cut-off grades were determined for each individual block model cell by the software, which also classifies the insitu material as ore when revenue exceeds the cost of mining and processing. The minimum mining width matched the resource block size at 5m. Geotechnical investigations informed a pit slope design which considers 40° in weathered rock between 55° and 58° in fresh rock. The recommended geometries for a stable open pit slope are presented in Table 4.

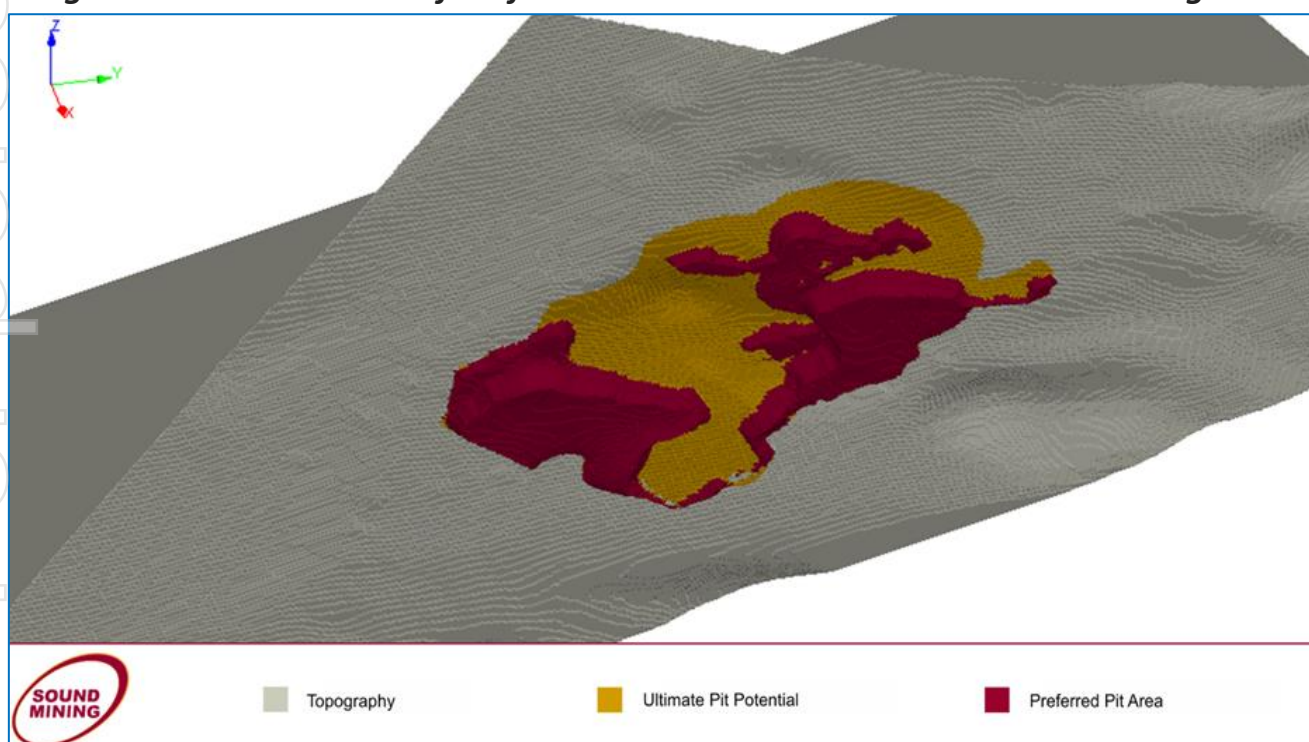
Table 4: Stable Slope Geometry

Description	Unit	Fresh Rock	Weathered Rock
Face Angle	°	85	60
Bench Height	m	5	5
Spill Berm Width	m	2	4
Number of Benches in Stack	No.	3	4
Catch Berm Width	m	6	8
Overall Slope Angle	°	54 to 58	~40

Source: Sound Mining, 2021

A mining dilution of 10% was applied with no content assumed. Mining losses of 5% and geological losses of 5% were modelled, resulting in an overall mining recovery of 90.25%. A Preferred Pit Shell (Figure 2) was then selected on the basis of profitability and acceptable risk.

Figure 2: Isometric View of Preferred Pit Shell and Ultimate Pit Shell looking West



Source: Sound Mining, 2021

MINE DESIGN

The preferred pit shell was used for a preliminary mine design and production schedule for the overall PFS planning, which provided for the use of an open pit mining contractor. A conventional open pit drill and blast mining methodology was designed with 5m high benches. Industry standard mining equipment will be deployed, namely trucks and excavators with supporting drilling rigs for drilling and blasting operations. Provision was included in the PFS for sufficient 70t excavators to match a fleet of 40t Articulated Dump Trucks (ADTs).

An estimate for the mining contractor's labour planning has indicated a steady state complement of approximately 94 employees. Further adjustments to the labour complement forecast may arise as detailed roster schedules are determined.

The contractor will require workshops and administration buildings to be constructed on site along with haul roads. It is anticipated that these buildings will be temporary installations rather than permanent structures.

The overlying waste will be initially stored on waste dumps with the topsoil stored separately for future use during rehabilitation. Overburden is planned to be used as backfill in the mined-out portions of the open pit once the operation is at steady state. Any material below a cut-off grade of 0.45% V_2O_5 was also considered to be waste.

Different mineralised material types, namely High Grade (HG), Medium Grade (MG) and Low Grade (LG) were categorised and treated as follows in the mining design:

- HG material will be hauled directly to a dedicated RoM pad located near the Concentrator Plant area;
- MG mineralised material will be hauled to demarcated MG stockpiles for storage and eventual blending and treatment; and
- LG mineralised material will be treated as waste.

Table 5 shows the grade ranges for LG, MG and HG for the three different mineralised rock types. It is noted that 0.45% V_2O_5 being the Mineral Resource cut-off grade as declared by the Mining Plus Competent Person.

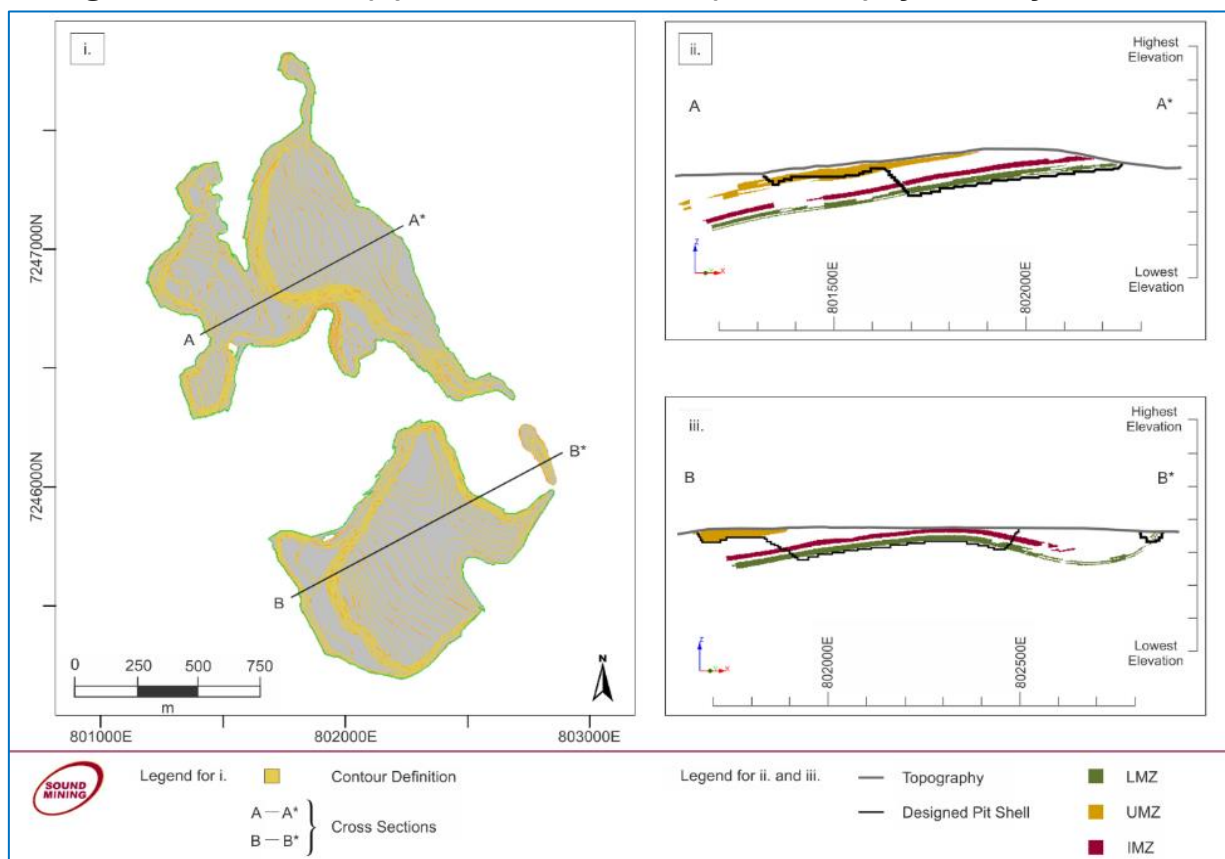
Table 5: Mineralised Material Category Definition

Mineralised Rock Type	V ₂ O ₅ In Situ Grade (%)		
	LG	MG	HG
IMZ	V ₂ O ₅ < 0.45	0.45 ≤ V ₂ O ₅ < 0.62	0.62 ≤ V₂O₅
UMZ	V ₂ O ₅ < 0.45	0.45 ≤ V ₂ O ₅ < 0.63	0.63 ≤ V₂O₅
LMZ	V ₂ O ₅ < 0.45	0.45 ≤ V ₂ O ₅ < 0.61	0.61 ≤ V₂O₅

Source: Sound Mining, 2021

Figure 3 shows a plan view and cross-sections of the Designed Pit.

Figure 3: Plan View (i.) and Cross-sections (ii. and iii.) of the Preferred Pit



Source: Sound Mining, 2021

Short-term to medium-term planning will facilitate the series of ramp arrangements needed to access the various mining areas.

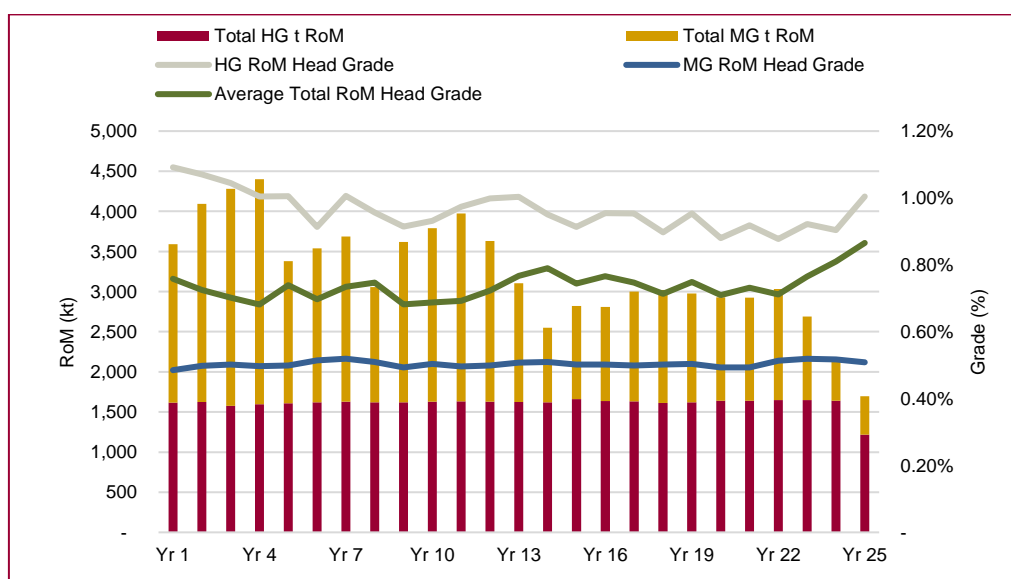
The mine design took cognisance of the river, drainage features and other local or community related restrictions.

The option of extending mine planning into underground sections through surface portals will be investigated as part of the DFS.

PRODUCTION SCHEDULING

Suitable sequencing for the planned mining operation facilitated a production schedule for financial modelling purposes. The process sought to maximise HG material for the initial four years of the Life-of-Mine (LoM). During this period the MG material will be stockpiled for later processing when additional Plant Concentrator capacity is brought on stream. Graph 1 shows the forecast LoM production schedules for the SPD Project.

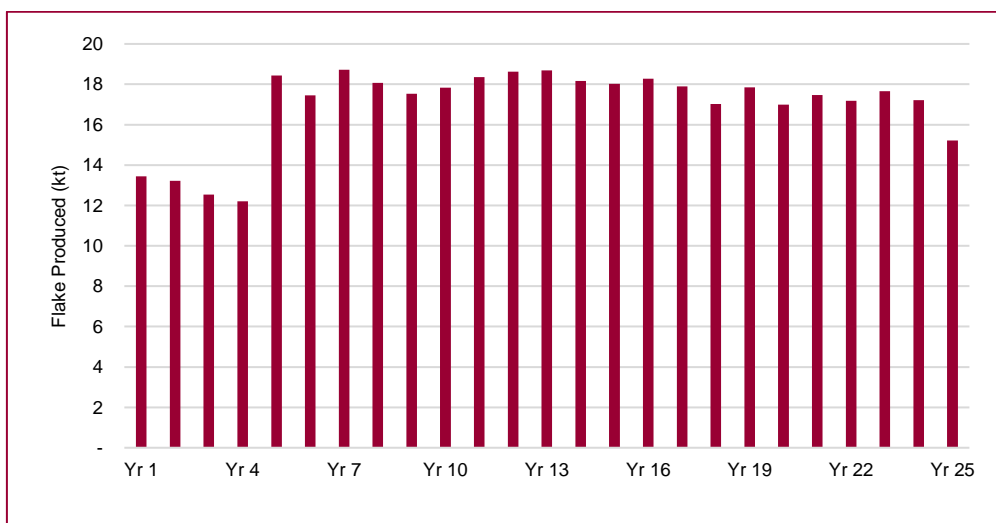
Graph 1: LoM Production Schedule



Source: Sound Mining, 2021

Graph 2 shows the forecast flake production from processing both HG RoM and MG RoM after processing capacity expansion in year 6 of operations.

Graph 2: Forecast Flake Production



Source: Sound Mining, 2021

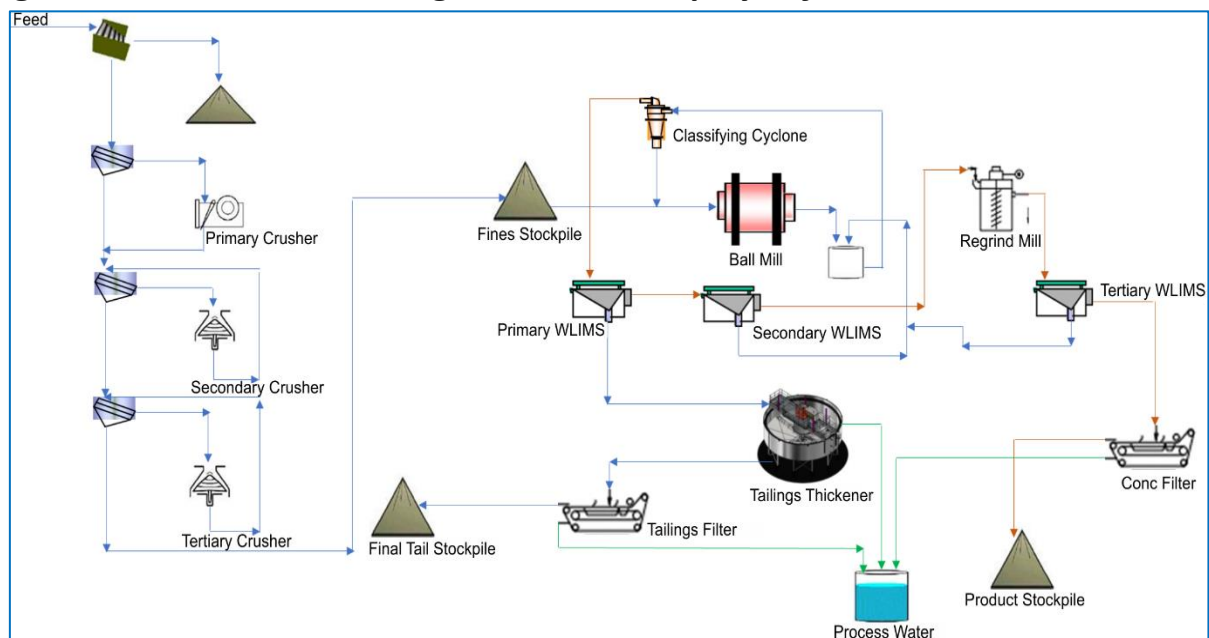
Mine planning of the open pits demonstrates a total HG RoM quantity of 40.3Mt and a total MG RoM quantity of 40.5Mt with an average grade of 0.96% and 0.50% V_2O_5 respectively. The Strip Ratio is 0.96t/t when MG is considered as mineralised material and 2.9t/t when MG RoM is classified as waste.

Any ore material currently classified as LG mineralised material or as an Inferred Mineral Resource, was treated as waste and excluded from the Ore Reserve estimate. It is noted that the material classified as Inferred makes up 43% of the Mineral Resource.

PROCESSING

Concentrator Plant: The Concentrator Plant will process RoM ore from the open pit mining operation to produce a V_2O_5 concentrate which will be further beneficiated at a separate SRL Plant for a final V_2O_5 Flake product. The plant will be located on site and will initially treat 1.6Mtpa of HG Ore only, at a typical plant feed grade range of 0.9% V_2O_5 to 1.1% V_2O_5 to produce a typical concentrate grade of 2.0% V_2O_5 . A second processing stream (duplication of initial design) is planned for Year 5 of the operation to process MG material from stockpiles at a head grade of approximately 0.5% V_2O_5 . This will increase overall Concentrator Plant capacity to 3.2Mtpa. The required power and water will be available on site, which will be serviced by a railway and national road routes. The capital cost estimate will be for a newly designed vanadium beneficiation plant that includes crushing, milling, wet magnetic separation, dewatering as well as re-grind magnetic separation sections (Figure 4). A recovery rate of 92% is anticipated for the Concentration Plant.

Figure 4: Schematic indicating the Process Employed for the Concentrator Circuit



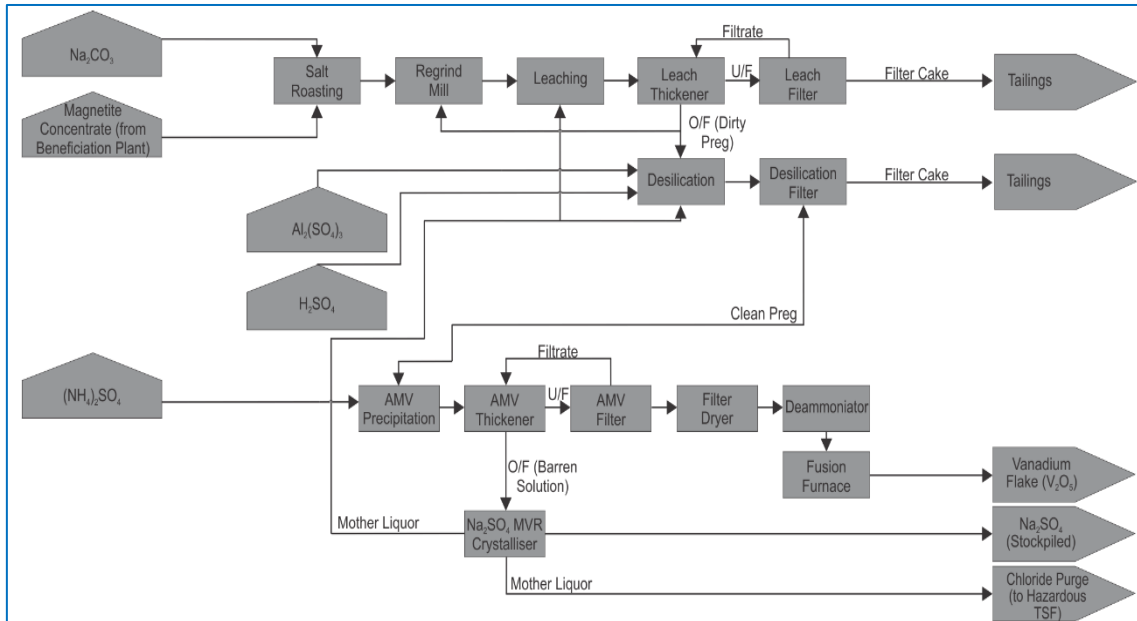
Source: Sound Mining, 2021

Four potential concentrator plant locations were identified on the site. A preferred site was identified following an evaluation of the distances between the four sites and various mining activities, infrastructure and community settlements. Final plant location will be dependent on the outcomes of future geotechnical and hydrological evaluations of each location during future studies. The PFS also identified the following concentrator processing optimisation opportunities, which will be further investigated during the DFS:

- dry magnetic separation as an upfront beneficiation step to reject coarse waste material. This beneficiation step can be applied to the MG material; and
- introducing scavenger circuits on the primary Wet Low Intensity Magnetic Separation (WLIMS) tails.

SRL Plants: The initial SRL Plant will treat the concentrate from the Concentrator Plant at a feed rate of 720ktpa RoM. In Year 5 of operations, construction of a second SRL Plant, with a feed capacity of 520ktpa RoM, is planned. This capacity increase will occur concurrently to the concentrator capacity expansion and will result in a total concentrator feed to the SRL Plants of 1,340ktpa. The location for the SRL Plants with its salt roasting and associated leach, desilication, ammonium metavanadate (AMV) precipitation, drying, deammoniation, fusion and flaking has yet to be finalised with various options currently under consideration. However, for the purpose of the Ore Reserve determination, it was assumed that both SRL Plants will be located in Steelpoort, approximately 26km from the Concentrator Plants. A SRL Plant recovery rate of 88% was used for the pit optimisation and mine design in the PFS. This was later reduced to 82.7% for the economic assessments as a consequence of subsequent metallurgical review. The PFS work revealed an opportunity to improve the SRL Plant recovery by an additional 2% by optimising the hydro-metallurgical design. This opportunity will be investigated during the DFS. Figure 5 is a block flow diagram of the SRL Plant.

Figure 5: SRL Plant Block Flow Diagram



Source: Sound Mining, 2021

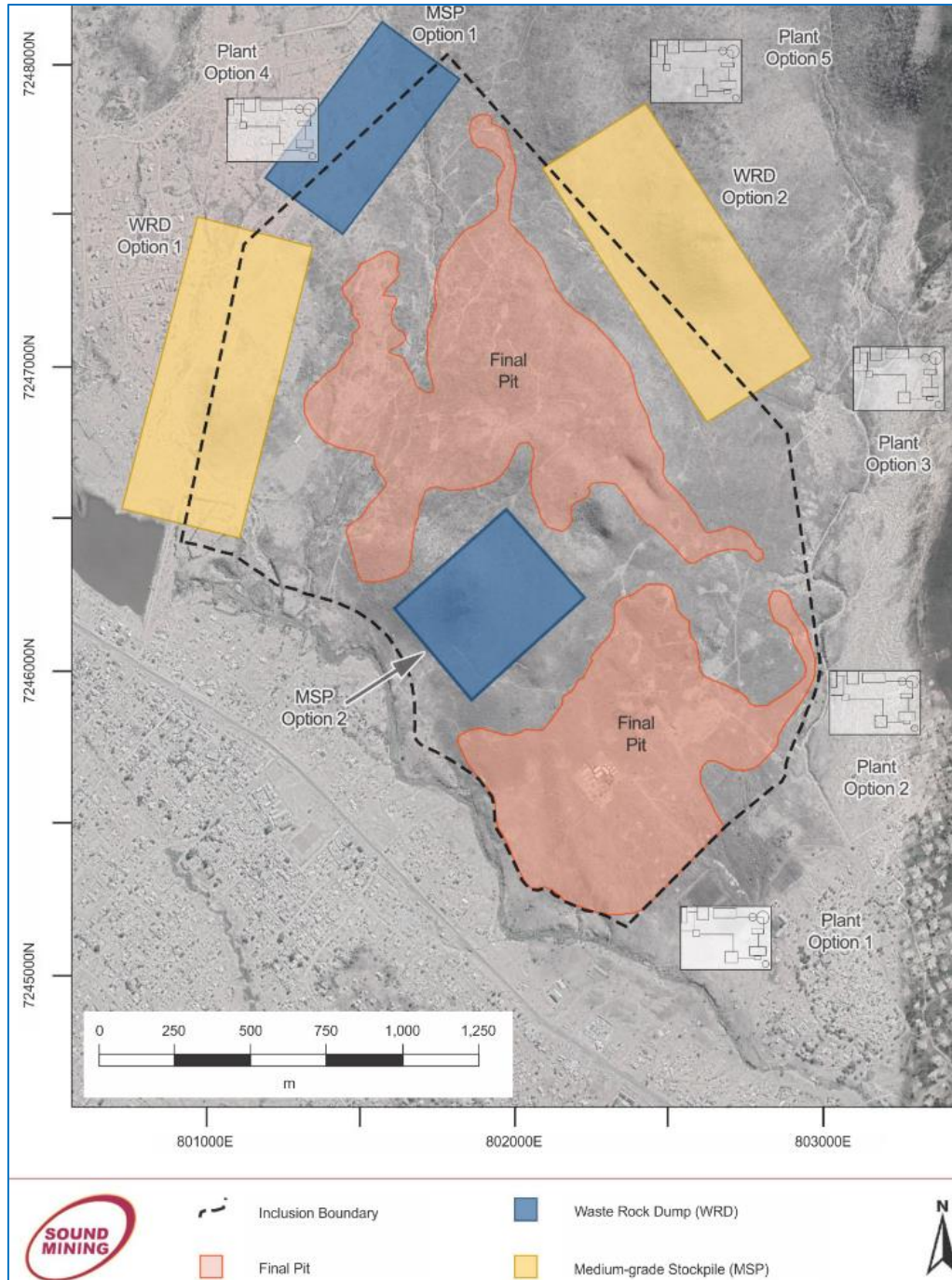
INFRASTRUCTURE

Figure 6 is a general arrangement of the overall site layout where mining, operational support, processing and administrative activities will be carried out.

Access Roads: The mining area can be accessed regionally through a bitumen highway (R555), either via Middelburg or Steelpoort. A short access road will be prepared linking the plant and stockpile areas to the adjacent public road. This access road will be prepared to facilitate heavy vehicle access (including a range of transport loads typically between 40t to 70t). Cognisance will be taken of any sensitivities arising from locating the mine's access road near established community settlements. The finalisation of the road route and any associated issues will be determined by the Vanadium Resources team during future detailed studies.

RoM Pads: The position of the HG RoM pads will be located within the final plant position footprint area.

Figure 6: General Site Arrangement



Source: Sound Mining, 2021

Haul Roads: Haul roads will be utilised to facilitate the movement of mineralised material, waste and topsoil between the mining areas and the different stockpile and waste dump locations. The haul roads will accommodate the current fleet of 40t ADTs. The opportunity to design haul roads to accommodate larger haul trucks specifically for waste haulage routes will be investigated during future detailed studies.

MG Stockpile: MG mineralised material will be stored on a planned 20ha stockpile with two possible locations. The capacity of the MG stockpile has been restricted to 20ha on the assumption that material will be recovered from this stockpile from Year 5.

Waste Rock Dumps (WRD): A single WRD will be required and two potential WRD sites have been identified. The WRD has been planned at a surface footprint area of 40ha.

Contractor Camp and Workshop: The estimate for the contractor camp and workshops was included in the contractor Schedule of Rates (SoR) estimate. This estimate includes: the construction, fitting out, cleaning and maintenance of workshops, equipment service facilities, maintenance facilities, fuel storage and distribution facilities, offices, ablutions facilities, wash pads and hardstand areas at the nominated areas provided by Vanadium Resources.

Diesel Fuel Bay: The diesel fuel bay infrastructure will be operated and managed by the mining contractor and its cost and operation was included in the 'wet' mining contractor rates and fixed cost estimated by the contractor for the purposes of the PFS mining study.

Explosives Storage: It is intended that a 'down the hole' explosives delivery service will be deployed as part of the operational planning and as such the permanent storage of explosive and blasting accessories on the SPD Project area will be eliminated wherever possible.

Bulk Services: The mining contractor's workshops and other facilities will be supplied by the mine's power reticulation circuit. All field power requirements including pumps and field lighting will be diesel powered where necessary.

The bulk water requirements will be supplied through a central water supply and reticulation system. Wherever possible, water requirements for haul road and operational dust suppression will be sourced from the ongoing pit dewatering activities.

Security: Security of the mining areas will be established through manned security control points and the deployment of a rolling fencing strategy which will ensure that unauthorised persons and livestock are prevented from accessing the mining areas, while ensuring that common land can be actively used by the community for their cultural, social and livestock grazing requirements.

The final plant location within the mining site area has not yet been finalised and therefore the haul routes between the pit and the RoM stockpiles will only be finalised when the final plant co-ordinates are secured. Fortunately, due to the relatively small size of the mining site, any future RoM haul route changes are not expected to materially impact on the overall project operating costs.

ENVIRONMENTAL AND SOCIAL GOVERNANCE

Vanadium Resources holds a Mining Right (MR) (LP 30/5/5/5/1/10095MR) and approved EMP) over portion 1 to portion 6 and remaining extent of the farm Steelpoortdrift 365KT.

S&EIA: Scoping and Environmental Impact Assessment (S&EIA) was undertaken during the MR application in 2014. The EMP was approved in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), and therefore is deemed approved in terms of National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA) and National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA). However due to the proposed changes in layout and activities put forward in the PFS Study in comparison with the layout and activities described in the approved EMP, it was advised to apply for an Integrated Environmental Authorisation (IEA), in terms of the NEMA and NEM:WA, for the proposed mining operation.

WULA: No Water Use Licence was applied for at the time the Mining Right Application was undertaken. During 2019 a Water Use Licence Application (WULA) in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) was initiated for the Project. Various specialist studies, engineering designs and technical reports, in support of the WULA, were compiled and submitted to the Department of Water and Sanitation (DWS). However, Vanadium Resources decided not to continue with the application at the time. As a result a new Integrated Water Use License Application (IWULA) will need to be compiled and submitted.

A Heritage Assessment was undertaken on the Project area in 2019. Various Heritage Resources were identified on the project footprint during this assessment, including graves and initiation sites of cultural significance. Vanadium Resources is engaging the community on the ongoing management of these heritage resources.

SLP: As part of the 2014 Mining Right application a Social and Labour Plan (SLP) was developed for the Project and subsequently approved as part of the granting of the Mining Right. However, considering the proposed changes to the Mining Work Programme, it will most likely be necessary to update or amend the existing SLP.

TSFs: The Project will require two Concentrator Plant TSFs and two SRL Plant TSFs. They will all be operated as dry stacking facilities with tailings from Concentrator Plant and SRL Plant being filtered to <15% moisture content prior to deposition. The TSFs for the Concentrator Plant will accommodate the material produced from the beneficiation of RoM and will be located on site. The TSF for the material produced from the SRL Plant will be located remote from the SDP Project area.

The production rates for the Concentrator Plant tailings for the LoM was determined from the LoM production schedule. Tailings produced by the Concentrator Plant in the first two years will be stockpiled, where after, the material will be used to backfill the mining pits.

Tailings from the Concentrator TSFs will be used to backfill the surface mining areas once mining is complete, and so no capping system should be required. The SRL Plant TSFs will be used to dispose of the SRL generated tailings and will require a lining and capping system.

Since the beneficiation process of the Concentrator Plants will involve tailings which will contain solely waste rock and no reagents or harmful materials, a Class D liner for the Concentrator TSF has been considered adequate. At the time of this study no waste classification was completed for the tailings produced by the SRL Plant. It is however highly likely that the tailings will require a Class C liner and such a design was used for the purpose of the PFS, however this should be confirmed in further detailed studies.

MODIFYING FACTORS AND ECONOMIC ASSESSMENT

Suitable modifying factors were used for the open pit optimisation, mine design, production scheduling and economic assessment performed as part of the PFS to convert a portion of the Mineral Resources to Ore Reserves. The modifying factors considered during the PFS and for Ore Reserve estimation process are as presented in Table 3.

Table 3: Modifying Factors

Modifying Factors and Recoveries	Pit Optimisation	Mine Design	PFS Economic Assessment	CP's Economic Assessment
Dilution	10.00%	10.00%	10.00%	10.00%
Geological Losses	5.00%	5.00%	5.00%	5.00%
Mining Loss	5.00%	5.00%	5.00%	5.00%
Concentrator Plant Recovery	92.00%	92.00%	92.00%	92.00%
SRL Plant Recovery	88.00%	88.00%	82.70%	82.70%
Vanadium Flake Price	USD 6.95/lb	USD 6.95/lb	USD 9.03/lb	USD 6.00/lb
ZAR/USD Exchange Rate	15.50	15.50	15.50	15.50

Source: Sound Mining, 2021

The CP independently reviewed the technical merits of the work done for the PFS and tested the economic viability of the Mineral Resources depleted by the mining plan. The discounted cashflow modelling was restricted to a production forecast of 25 years and as a consequence the Mineral Resource was not fully depleted. Table 6 summarises the portion of the Mineral Resource depleted through mine planning and scheduling.

Table 6: Depleted Portion of the Mineral Resource by Mine Planning

Material Type	Depleted Measured Category			Depleted Indicated Category			Total Depleted Material		
	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)
HG RoM Material	15.57	1.01%	0.16	24.68	0.93%	0.23	40.25	0.96%	0.39
MG RoM Material	15.60	0.51%	0.08	24.91	0.50%	0.12	40.51	0.50%	0.20
Total Mineral Depleted	31.17	0.76%	0.24	49.59	0.71%	0.35	80.76	0.73%	0.59

Source: Sound Mining, 2021

Cognisance was taken of the associated input costs (Table 7 and Table 8), adjusted metallurgical recoveries and a long-term Vanadium flake sales price of US\$6.00/lb, after due allowances for royalties.

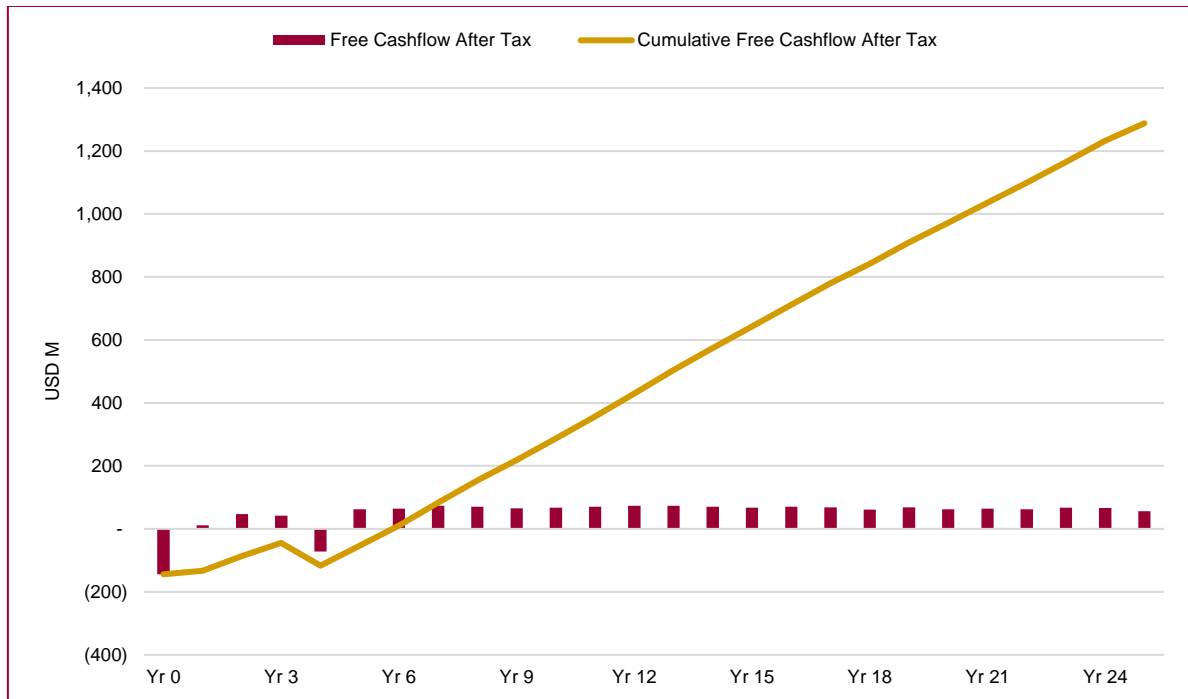
Table 7: Total Capital Expenditure and Unit Operating Unit Costs

Capital Expenditure over LoM	USD M
Total Site Infrastructure	30
Mining Operation	1
Concentrator Plants	57
Concentrator Tailings	4
Salt Roast Leach Plants and Critical Spares	197
Salt Roast Leach Tailings	56
Provision for Rehabilitation Closure Liability	12
Stay in Business (3 % of Operating Costs)	91
Operating Unit Costs	USD /RoM t
Mining Operation	8.90
Concentrator Plant	3.59
Salt Roast Leach Plant	13.59
Social and Ongoing Rehabilitation Cost	0.14
P&G and G&A	3.22

Source: Sound Mining, 2021

Graph 3 illustrates the annual and cumulative free cashflows to be expected for the SPD Project at the Vanadium flake sales price of US\$6.00/lb. This price is more aligned with the price assumptions used for the PFS work and it is conservative when compared to the prevailing market prices.

Graph 3: Free Cashflow



Source: Sound Mining, 2021

The economic assessment reveals that the initial investment will be recouped after six years and that positive margins (29%) will accrue during steady state operations, which confirms the viability of the Ore Reserves as stated (Table 7). The CP is aware that there are areas of uncertainty associated with the cashflow forecasts but considers the impact of these to be immaterial with regard to the overall economics.

ORE RESERVE

The Ore Reserve Statement as at 30 June 2021 (Table 7), which amounts to 73.85Mt with a grade of 0.73% V₂O₅, is in accordance with the JORC Code (2012 edition). It should be read in conjunction with the respective explanatory Mineral Resources and Ore Reserves information included in Appendix 1, which form the basis of the economic assessment and SPD Project Ore Reserve statement.

Table 7: SPD Project Ore Reserve as at 30 June 2021

Ore Reserves as at 30 June 2021									
Material Type	Proved			Probable			Total		
	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)	Quantity (Mt)	Grade (%)	Vanadium Content (Mt)
HG RoM Material	15.57	1.01%	0.16	24.68	0.93%	0.23	40.25	0.96%	0.39
MG RoM Material	15.60	0.51%	0.08	18.00	0.50%	0.09	33.60	0.50%	0.17
Total Mineral Reserve	31.17	0.76%	0.24	42.68	0.75%	0.32	73.85	0.73%	0.56

Source: Sound Mining, 2021

Notes: Ore Reserve Statement is stated at a price of USD6.00/lb as at 30 June 2021.
Quantity and grade measurements are reported at the delivery to plant in metric units (Mt) and head grade, both of which are rounded to two decimal places.
Approximately 6.91Mt of MG RoM at an average grade of 0.50% V₂O₅ remains untreated within the stockpile over the LoM. The CP has excluded this material from the Ore Reserve Statement.
Apparent computational errors are due to rounding and are not considered significant.
Losses that could occur as a result of transporation of content or flake are considered to be negligible for the purpose of the maiden Ore Reserve Statement.
Vanadium Resources currently has an ownership of 50% of the Project (will be increased to 73.95% ownership pending final S11 governmental approval, with no further consideration payable by VR8 for the additional 23.95%).
No account of concentrate or flake loss during transportation was taken into consideration. However, this was deemed to be immaterial in the context of the viability of the Ore Reserve as stated.
Inferred Mineral Resource material has not been included in the Ore Reserve Estimate.

This announcement has been authorised for release by the directors of Vanadium Resources Limited.

FOR FURTHER INFORMATION PLEASE CONTACT:

EUGENE NEL

Chief Executive Officer

VANADIUM RESOURCES LIMITED

contact@VR8.global

DISCLAIMER

Some of the statements appearing in this announcement may be in the nature of forward-looking statements. You should be aware that such statements are only predictions and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industries in which the Company operates and proposes to operate as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets, among other things. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside the Company's control.

The Company does not undertake any obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this announcement. To the maximum extent permitted by law, none of the Company, its Directors, employees, advisors or agents, nor any other person, accepts any liability for any loss arising from the use of the information contained in this announcement. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement.

This announcement is not an offer, invitation or recommendation to subscribe for, or purchase securities by the Company. Nor does this announcement constitute investment or financial product advice (nor tax, accounting or legal advice) and is not intended to be used for the basis of making an investment decision. Investors should obtain their own advice before making any investment decision.

COMPETENT PERSONS STATEMENT

The information in this statement that relates to Ore Reserves is based on information that has been reviewed by Mr Vaughn Duke, of Sound Mining International SA (Proprietary) Limited (Sound Mining). Mr Duke takes overall responsibility for the Report as the Competent Person. He is a registered Professional Engineer with the Engineering Council of South Africa and a Fellow of The Southern African Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the activity he is undertaking, to qualify as a Competent Person in terms of the JORC Code. Mr Duke has reviewed this Ore Reserve Statement and given his permission for the publication of this information in the form and context within which it appears. Mr Duke has reviewed the Mineral Resource Statement reported by Mining Plus Limited (Mining Plus) (31 July 2020) from which the Ore Reserve has been derived, along with the modifying factors used for the conversion of the Mineral Resources to Ore Reserves.

Further details on the Mineral Resource can be found detailed in the ASX Announcement of 29 April 2020. The Company confirms that all material assumptions and parameters underpinning the Mineral Resource Estimate reported in the market announcement dated 29 April 2020 continue to apply and have not materially changed and that it is not aware of any new information or data that materially affects the information that has been included in this announcement.

The information in this announcement that relates to metallurgy has been compiled and assessed under the supervision of Mr Eugene Nel, a Professional Engineer of the Engineering Council of South Africa and a Member of the South African Institute of Mining and Metallurgy (both Recognised Professional Organisations as defined in the JORC Code). Mr Nel is the Chief Executive Officer (CEO) of VR8 and 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 JORC Code. Mr Nel consents to the inclusion in this announcement of matters based on his information in the form and context in which it appears.

APPENDIX 1 - JORC CODE, 2012 EDITION – TABLE 1 REPORT

Sound Mining International SA (Proprietary) Limited estimated the Ore Reserve in accordance with the JORC Code (2012 Edition).

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> Diamond drilling. RC drilling using 5 ¼" face sampling hammer. RC drilling sampled at 1m intervals. RC drilling split on site using a riffle splitter. All aspects of the determination of mineralisation are described in this table. RC drilling using these methods are considered appropriate for sampling the vanadiferous titanomagnetite unit which hosts the mineralisation. All of the drill samples have been sent to a commercial laboratory for crushing, pulverising and chemical analysis by industry standard practices.
Drilling techniques	<ul style="list-style-type: none"> RC drilling using a face sampling hammer and 5 ¼" bit sizes.
Drill sample recovery	<ul style="list-style-type: none"> RC drill samples are weighed to give a quantitative basis to estimation of recovery. A consistent drilling technique was used, with cleaning of cyclone after each sample. No relationship observed between recovery and grade. There is no known or reported relationship in historical drilling between sample recovery and grade.
Logging	<ul style="list-style-type: none"> RC drill chips were geologically logged for the total length of the hole. Logging records lithology, mineralogy, alteration, veining, structure, mineralisation and weathering. Logs are coded using the company geological coding legend and entered into Excel worksheets prior to being loaded into the company database. All core is photographed with images to be stored on the company server. Logging is appropriate and sufficiently detailed to support Mineral Resource estimates. Logging of chips is both qualitative (e.g. Colour) and quantitative (e.g. Minerals percentages). 100% of all drilling to date by the Company has been logged.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> Sampling for all diamond core samples are undertaken on split core, halved via a core saw. RC drilling is sampled dry and split using a riffle splitter. The sampling techniques for RC drilling are of consistent quality and considered appropriate. To ensure representativity sampling followed the same methodology at all times, with field duplicates taken and inserted into the sample stream. Certified Reference Materials (CRMs) were selected to be similar in chemistry to the mineralisation being targeted. One field duplicate is collected per 20 samples in addition to laboratory duplicates which were also reported. The material and sample sizes are considered appropriate given the unit being sampled.
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> The samples were sent to ALS Johannesburg, an ISO accredited commercial laboratory, for preparation and whole rock analysis. All samples were analysed by XRF fusion for Al₂O₃, As, Ba, CaO, Cl, Co, Cr₂O₃, Cu, Fe, K₂O, MgO, Mn, Na₂O, Ni, P, Pb, S, SiO₂, Sn, Sr, TiO₂, V, Zn and Zr as well as loss on ignition. Davis Tube analysis was carried out by SGS Laboratories Johannesburg, an ISO accredited commercial laboratory. Davis Tube analysis carried out at magnetic field of 1,000G with magnetic and non-magnetic fractions analysed by XRF fusion for Fe, TiO₂, V₂O₅, P₂O₅, SiO₂, Al₂O₃, CaO, Cr₂O₃, MgO, MnO, Na₂O, K₂O and loss on ignition. QA/QC samples were inserted every 10 samples. These alternate between a CRM and blank, and a field duplicate. CRMs are sourced from an accredited source and are of similar material to the mineralisation being sampled. QA/QC samples are checked following receipt of each assay batch to confirm acceptable accuracy and precision.

Criteria	Commentary
Verification of sampling and assaying	<ul style="list-style-type: none"> Assay results and intersections have been reviewed by independent geological consultants. Twinned holes are planned as part of the future drilling programme. Primary data is collected in the field and entered into Excel worksheets prior to being loaded into a database managed by an independent consultant. Analytical results for V are converted to V_2O_5 by multiplying by 1.785.
Location of data points	<ul style="list-style-type: none"> Location data recorded by handheld GPS ($\pm 5m$ accuracy on easting and northing) and checked by a licensed surveyor. Drillhole deviation for drilling is being measured via in-rod surveys during drilling. The grid system for the SPD Vanadium Project is UTM Zone 35 S (WGS 84 Datum). Topographic control is good and is based on recent UAV and airborne surveys.
Data spacing and distribution	<ul style="list-style-type: none"> Drilling to date over the SPD Vanadium Prospect is on approximately 150m - 300m centres east-west and 300m to 450m centres north-south over the mineralised body. Data spacing is deemed sufficient to establish geological and grade continuity to establish a mineral resource estimate, refer ASX Announcement 16 April 2019. No sample compositing has been applied
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> The majority of the drilling at the SPD Vanadium Project is inclined to the north-east which is considered appropriate given the regional and local geological stratigraphy. To date, orientation of the mineralised domain has been favourable for perpendicular drilling and sample widths are not considered to have added a significant sampling bias.
Sample security	<ul style="list-style-type: none"> Samples are stored at a secure yard. Samples are then delivered to the assay laboratory in Johannesburg by representatives of the Company.
Audits or reviews	<ul style="list-style-type: none"> No independent audits have been undertaken.

SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> The SPD Project comprises a Mining Right covering the farm Steelpoortdrift 365 KT. The tenure is in good standing.
Exploration done by other parties	<ul style="list-style-type: none"> The Project has previously been explored for magnetite-hosted Fe-V-Ti deposits.
Geology	<ul style="list-style-type: none"> Vanadium mineralisation at the SPD Project is located close to the contact between the Upper Zone and Main Zone of the Bushveld Igneous Complex and adjacent to the Steelpoort Fault. Mineralisation is hosted in two layers, the Upper Magnetite Layer (UML) and Lower Magnetite Layer (LML), which dip shallowly to the northwest.
Drill hole Information	<ul style="list-style-type: none"> All drill hole information has previously been released in ASX announcements and no new results used in the Mineral Resource Estimation.
Data aggregation methods	<ul style="list-style-type: none"> All results $> 0.5\% V_2O_5$ have been averaged weighted by downhole length, and inclusive of a maximum of 2m internal waste. Davis Tube results are reported for the same intervals as the whole rock analysis. High grade intervals $> 1\% V_2O_5$ and $1.5\% V_2O_5$ have also been reported. No internal waste was used for the high grade intervals. No metal equivalent values are being used for reporting exploration results.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> Downhole lengths are reported and no true widths are known at this time.

Criteria	Commentary
Diagrams	<ul style="list-style-type: none"> Appropriate diagrams are shown in the text.
Balanced reporting	<ul style="list-style-type: none"> All results are included in exploration reporting.
Other substantive exploration data	<ul style="list-style-type: none"> Exploration data is contained in previous ASX Announcements.
Further work	<ul style="list-style-type: none"> Further work includes bulk sample testing and the logging and analyses from a geotechnical investigation.

SECTION 3: ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	<ul style="list-style-type: none"> The database is managed by an external, independent database consultant. Data imported to the database goes through a series of visual and database routine validations before being accepted. Assay results are also compared to the recorded lithologies. Exports from this database were used for the Mineral Resource estimation. Following importation into the modelling software, data undergoes validation by the software's inbuilt validation tools followed by manual validation and checks by the competent person
Site visits	<ul style="list-style-type: none"> The site was visited by NJ Denner from Gemecs. Gemecs is responsible for the overall geological database and signing off on sampling activities and verification of assay results and database management. The Competent Person for the Mineral Resource completed a site visit in February 2019 prior to initiating the MRE. Personnel who supervised the sampling of the 2010 drilling programme and the estimation of the previous SAMREC Resource were on site during the 2018 drilling campaign and have verified there is no new or material data that would have an adverse effect on the acceptance of the historical drilling, modelling and interpreted geology.
Geological interpretation	<ul style="list-style-type: none"> The confidence in the geological interpretation is considered to be moderate to high. The geological setting is well known and documented in the literature. Local geologists very familiar and experienced in the BIC geology has been performing the logging and sampling activities. A geological model was established based on historical and follow-up surface mapping and drilling results. Results from additional drilling will improve the detail of the sub surface geology.
Dimensions	<ul style="list-style-type: none"> The UMZ and LMZ have been mapped along strike (NW-SE) for approximately 4km and intersected in drilling for approximately 1.7km to the SW (distance from outcrop to furthest drilling) where the UML locates 45m below surface and the LML at 125m below surface. The thickness of the layers is shown by the assay results released by the Company and ranges from 5m to 37m (not true thickness).
Estimation and modelling techniques	<ul style="list-style-type: none"> Interpolation of V_2O_5 grade was undertaken using Gemcom Surpac software. Statistical investigations were completed on the captured estimation data set, composited to 1m intervals. No extreme grades or magnetite contents were observed and therefore no top cuts were required. The magnetite layers were modelled as hard boundaries based on logging, with drill intersections assigned to high and low grade stratigraphic layers within the Upper, Intermediate or Lower Zones. The previous JORC compliant Mineral Resource Estimate was documented in the ASX Announcement of 16 April 2019 and contained material classified as Indicated and Inferred. A previous JORC compliant Mineral Resource Estimate was documented in the ASX Announcement of 18 December 2018 and contained material wholly classified as Inferred, and prior to this a resource was estimated under the SAMREC Code and is documented in the ASX Announcement of 22 March 2018. Block sizes were selected with the assistance of Quantitative Kriging Neighbourhood Analysis and consideration of drillhole spacing and the 1/3 rule to avoid volume variance effect. No assumption of mining selectivity has been incorporated into the estimate, although minimum grade cut-off was used to determine and report the mineral resource, and block size selection in the z direction considered possible minimum bench heights Visual validation was completed and show reasonable correlation between estimated grades and drill sample grades. No cutting or capping was applied after statistical review of the V_2O_5 distribution showed no significant outliers. No reconciliation data is available as no mining has taken place.

Criteria	Commentary																																
Moisture	<ul style="list-style-type: none">Tonnages have been estimated on a dry in situ basis. No moisture values were reviewed, as moisture is not relevant in the geological setting.																																
Cut-off parameters	<ul style="list-style-type: none">The cut-off grade is based on likely economic concentrations of V₂O₅ based on review of similar projects. Mining studies will be carried out to determine a more precise cut-off grade and marketing studies will be used to refine this based on economic value of other metals (or presence of deleterious elements).																																
Mining factors or assumptions	<ul style="list-style-type: none">The resource model assumes open cut mining is undertaken and a reasonable level of mining selectivity is achieved in mining. It has been assumed that grade control will be applied to ore/waste delineation processes. Mineralised zones occur in strong correlation with lithological layers (Magnetite) that can be easily identified and used for mining selections.																																
Metallurgical factors or assumptions	<ul style="list-style-type: none">Metallurgical test work results were reported in an ASX Announcement dated 18 March 2019.Where required area analogues (e.g. Rhovan, Mapochs, Vametco) were used to determine the prospects of eventual economic extraction.																																
Environmental factors or assumptions	<ul style="list-style-type: none">No assumptions have been made regarding environmental factors. The Company will work to mitigate environmental impact as a result of any future mining or mineral processing.The mining residue stockpiles will be covered in the Integrated Environmental Authorisation and will be stored back in the mined area as to keep the footprint as small as possible.The tailings will be stored in an authorised tailings facility with the correct lining and dirty water dams.																																
Bulk density	<ul style="list-style-type: none">Density measurements were completed on RC chips (using a pycnometer) from the 2018 and historical drilling.Block values for Bulk Density were calculated using the high correlation (r=0.82) of Fe grade and density value, using the equation (0.028*[fe_ok])+2.692. This level of precision is deemed appropriate for a Mineral Resource at a Measured level of confidence.																																
Classification	<ul style="list-style-type: none">The resource for the SPD Project was classified as Measured, Indicated and inferred based on geological understanding, data quality, sample spacing and geostatistical analysis.The Resource classification has been completed by weighting key parts of the estimate including, confidence in drillholes / wireframe location, number of contributing samples, the estimate pass, the number of contributing drillholes, Kriging Variance (KV), Kriging Efficiency (KE), and the Regression Slope (RS), to produce a Weighted Resource Category Score (WRCS). <table><tr><th>Item/ Weight</th><th>1</th><th>2</th><th>3</th></tr><tr><td>Boreholes</td><td>TDO/VR8</td><td>Historical (with survey)</td><td>Historical (with GPS)</td></tr><tr><td>Pass</td><td>1/3 variance range</td><td>2/3 variance range</td><td>3/3 variance range</td></tr><tr><td>Number of Sample</td><td>24 to 32</td><td>16 to 23</td><td>1 to 15</td></tr><tr><td>Contributing Boreholes</td><td>7</td><td>4</td><td>1</td></tr><tr><td>Kriging Variance</td><td><0.2</td><td>0.2 to 0.4</td><td>>0.4</td></tr><tr><td>Kriging Efficiency</td><td>>=0.7</td><td>0.3 to 0.5</td><td><=0.3</td></tr><tr><td>Regression Slope</td><td>>=0.7</td><td>0.2 to 0.6</td><td><=0.2</td></tr></table> <ul style="list-style-type: none">The MRE has been classified as Measured where WRCS is 1.2 or less.The MRE has been classified as Indicated where WRCS is between 1.2 and 2.The Mineral Resource is classified as Inferred where WRCS is greater than 2 and the model estimates fall within 1 variogram range of informing drill holes.The input data is comprehensive in its coverage of the mineralisation and does not favour or misrepresent in-situ mineralisation. The definition of mineralised zones is based on a good geological understanding producing a robust model of mineralised domains. This model has been confirmed by infill and extensional drilling which supported the interpretation.The Mineral Resource estimate appropriately reflects the view of the Competent Person, that the data quality and validation criteria, as well as the resource methodology and check procedures, are reliable and consistent with criteria as defined by the JORC Code.	Item/ Weight	1	2	3	Boreholes	TDO/VR8	Historical (with survey)	Historical (with GPS)	Pass	1/3 variance range	2/3 variance range	3/3 variance range	Number of Sample	24 to 32	16 to 23	1 to 15	Contributing Boreholes	7	4	1	Kriging Variance	<0.2	0.2 to 0.4	>0.4	Kriging Efficiency	>=0.7	0.3 to 0.5	<=0.3	Regression Slope	>=0.7	0.2 to 0.6	<=0.2
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Regression Slope	>=0.7	0.2 to 0.6	<=0.2																														

Criteria	Commentary
Audits or reviews	<ul style="list-style-type: none"> Sound Mining Solution (Pty) Limited has undertaken a review of the Mineral Resource.
Discussion of relative accuracy/confidence	<ul style="list-style-type: none"> The lode geometry and continuity has been adequately interpreted to reflect the level of Measured, Indicated and Inferred Mineral Resources. The data quality is good and all drill holes have detailed logs produced by qualified geologists. A recognized laboratory has been used for all analyses. The Mineral Resource statement relates to global estimates of tonnes and grade. The deposits are not currently being mined, nor has it ever been mined, therefore there is no reconciliation data available.

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	Commentary
Mineral Resource Estimate for Conversion to Ore Reserves	<ul style="list-style-type: none"> The Mineral Resource for the Steelpoortdrift (SPD) Project of 662Mt at 0.77% V_2O_5, classified in the Measured, Indicated and Inferred categories was reported in the ASX Announcement of 29 April 2020. The Competent Person for the Mineral Resources is Mr Kerry Griffin of Mining Plus (Proprietary) Limited. The Ore Reserve reported in this Ore Reserve estimate is a maiden Ore Reserve Statement of the Vanadium Resource's SPD Vanadium Project. The Ore Reserve estimate was reported in 30 June 2021 and signed off by Vaughn Duke of Sound Mining International (Proprietary) Limited. Vaughn Duke is a Fellow of the Southern African Institute of Mining and Metallurgy (SAIMM) and has sufficient and relevant experience to qualify as a Competent Person. This maiden Ore Reserve is wholly inclusive of the Mineral Resource of the SPD Project as reported in April 2020 by the Mineral Resource Competent Person.
Site Visits	<p>The following persons have contributed to the Preliminary Feasibility (PFS) Study on which the maiden Ore Reserve has been based:</p> <ul style="list-style-type: none"> Vaughn Duke (Sound Mining International) is the Competent Person for the maiden ore reserve and was responsible for the overall review of the PFS document. He has not visited site and has based his opinion on information provided by the PFS's specialist consulting team and Vanadium Resources. Keith Raine (Sound Mining) is an environmental specialist who understands the ESG related aspects of the SPD Project. He has visited site. Nicole Upton (Red Kite Environmental Solutions) is an environmental specialist and environmental assessment practitioner who is familiar with all the ESG related aspects of the SPD Project. She has visited site. Mark Turnbull (Sound Mining) is a financial modelling specialist who is responsible for the financial model demonstrating the economic viability of the SPD Project used in the estimation of the Ore Reserve. He has visited site. James Wilson is the financial modelling lead for the PFS. He has not visited site and has completed his work based on information provided by Vanadium Resources and other consultants. Eugene Nel (Vanadium Resources) is the project sponsor and Metallurgical Consultant who has supervised the metallurgical study test work and process flow design as part of the PFS. He has visited site and understands details associated with the site setting and location. Mehdi Nasiri (Sound Mining) is a geotechnical engineer who has undertaken geotechnical test work and slope design work for the SPD pits. He has visited site and understands the geotechnical and pit design aspects of the SPD Project. Zohreh Fakhraei (Sound Mining) is a principal mining engineer responsible for the pit design and schedule. She has not visited site. Francois Spies (UMS Group) is a lead process specialist responsible for the Concentrator design. He has not visited site. Rupert Swanepoel (Consulmet Metals) is a lead Process specialist responsible for the Salt Roast Leach (SRL) Plant. He has not visited site. Kerry Griffin (Mining Plus) is a lead Mineral Resource specialist. He has visited site and understands details associated with the site setting and location. Michael Einkamerer (Nurizon Consulting Engineers) is a lead TSF Specialist responsible for the TSF designs at the site Concentrator Plant and off site SRL Plant. He has not visited site. Graham Stripp (Sound Mining) is a principal mining engineer who has compiled the PFS document. He has visited site and understands details associated with the site setting and location.
Study Status	<ul style="list-style-type: none"> The Ore Reserve estimate is based on the outcomes of a Preliminary Feasibility Study which was completed during June 2021 and represents a maiden Ore Reserve estimate. The Mineral Resources have been converted to Ore Reserves by means of an open pit optimisation. The pit design has been informed from the outcomes of a geotechnical investigation.

Criteria	Commentary																																								
	<ul style="list-style-type: none">The modifying factors used in the Ore Reserve estimate are presented below:<table><tr><th>Modifying Factors and Recoveries</th><th>Pit Optimisation</th><th>Mine Design</th><th>PFS Economic Assessment</th><th>CP's Economic Assessment</th></tr><tr><td>Dilution</td><td>10.00%</td><td>10.00%</td><td>10.00%</td><td>10.00%</td></tr><tr><td>Geological Losses</td><td>5.00%</td><td>5.00%</td><td>5.00%</td><td>5.00%</td></tr><tr><td>Mining Loss</td><td>5.00%</td><td>5.00%</td><td>5.00%</td><td>5.00%</td></tr><tr><td>Concentrator Plant Recovery</td><td>92.00%</td><td>92.00%</td><td>92.00%</td><td>92.00%</td></tr><tr><td>SRL Plant Recovery</td><td>88.00%</td><td>88.00%</td><td>82.70%</td><td>82.70%</td></tr><tr><td>Vanadium Flake Price</td><td>USD 6.95/lb</td><td>USD 6.95/lb</td><td>USD 9.03/lb</td><td>USD 6.00/lb</td></tr><tr><td>ZAR/USD Exchange Rate</td><td>15.50</td><td>15.50</td><td>15.50</td><td>15.50</td></tr></table>The Ore Reserves declared in this maiden Ore Reserve estimate for Vanadium Resources' SPD Vanadium Project have been based on a mine plan and mine designs that are deemed to be technically achievable and have been tested for economic viability using input costs, metallurgical recoveries and an expected long term Vanadium price, after due allowances for royalties.The Preliminary Feasibility Study has been prepared to an accuracy of +/- 20% using Measured and Indicated Mineral Resources. Inferred Mineral Resource material has not been included in the Ore Reserve Estimate.	Modifying Factors and Recoveries	Pit Optimisation	Mine Design	PFS Economic Assessment	CP's Economic Assessment	Dilution	10.00%	10.00%	10.00%	10.00%	Geological Losses	5.00%	5.00%	5.00%	5.00%	Mining Loss	5.00%	5.00%	5.00%	5.00%	Concentrator Plant Recovery	92.00%	92.00%	92.00%	92.00%	SRL Plant Recovery	88.00%	88.00%	82.70%	82.70%	Vanadium Flake Price	USD 6.95/lb	USD 6.95/lb	USD 9.03/lb	USD 6.00/lb	ZAR/USD Exchange Rate	15.50	15.50	15.50	15.50
Modifying Factors and Recoveries	Pit Optimisation	Mine Design	PFS Economic Assessment	CP's Economic Assessment																																					
Dilution	10.00%	10.00%	10.00%	10.00%																																					
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Mining Loss	5.00%	5.00%	5.00%	5.00%																																					
Concentrator Plant Recovery	92.00%	92.00%	92.00%	92.00%																																					
SRL Plant Recovery	88.00%	88.00%	82.70%	82.70%																																					
Vanadium Flake Price	USD 6.95/lb	USD 6.95/lb	USD 9.03/lb	USD 6.00/lb																																					
ZAR/USD Exchange Rate	15.50	15.50	15.50	15.50																																					
Cut-off Parameters	<ul style="list-style-type: none">The breakeven cut-off grade was used. This was calculated internally by NPV Scheduler for each individual block model cell. Material is classified as ore if revenue exceeds processing costs. Processing costs in NPV Scheduler are inclusive of all additional ore mining costs.																																								
Mining Factors or Assumptions	<ul style="list-style-type: none">The SPD Vanadium Project outcrops at surface therefore open pit mining was chosen as the mining method.Datamine mining software and NPV Pit Scheduler was used to generate a series of potentially viable open pit shells based on the Mineral Resource, preliminary cost inputs for mining and processing, mining and metallurgical recoveries and the sales price of a vanadium flake product (>98% V₂O₅).Geotechnical investigations informed the pit slope design which was set at 40° in weathered rock and 55° to 58° in fresh rock.A mining dilution of 10% was applied with an assumption of 0% V₂O₅.Mining losses of 5% and geological losses of 5% were modelled, resulting in an overall mining recovery of 90.25%.The minimum mining width matched the resource block size at 5m.Resource material classified as Inferred makes up 43% of the total Mineral Resource. Inferred material was treated as waste and excluded from the Ore Reserve estimate.All LG material (below Mineral Resource cut-off grade of 0.45% V₂O₅) was considered waste.The mining method has assumed the use of an open pit mining contractor. The contractor will require workshops and administration buildings to be constructed on site along with haul roads. It is anticipated that these buildings will be temporary installations rather than permanent structures.The recommended geometries for a stable open pit slope are presented in Table 5.<table><tr><th>Description</th><th>Unit</th><th>Fresh Rock</th><th>Weathered Rock</th></tr><tr><td>Face Angle</td><td>°</td><td>85</td><td>60</td></tr><tr><td>Bench Height</td><td>m</td><td>5</td><td>5</td></tr><tr><td>Spill Berm Width</td><td>m</td><td>2</td><td>4</td></tr><tr><td>Number of Benches in Stack</td><td>No.</td><td>3</td><td>4</td></tr><tr><td>Catch Berm Width</td><td>m</td><td>6</td><td>8</td></tr><tr><td>Overall Slope Angle</td><td>°</td><td>54 to 58</td><td>~40</td></tr></table>	Description	Unit	Fresh Rock	Weathered Rock	Face Angle	°	85	60	Bench Height	m	5	5	Spill Berm Width	m	2	4	Number of Benches in Stack	No.	3	4	Catch Berm Width	m	6	8	Overall Slope Angle	°	54 to 58	~40												
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Criteria	Commentary
Metallurgical Factors or Assumptions	<ul style="list-style-type: none"> The metallurgical process has been reported in detail in the PFS study. RoM will be treated using conventional crushing, grinding and magnetic separation techniques to produce a vanadium concentrate. This concentrate will then be roasted in the presence of salt to form water-soluble sodium metavanadate, from which vanadium pentoxide can be extracted. These methods are appropriate for the mineralisation at the Steelpoortdrift Vanadium Project. The processing techniques are all well tested techniques currently in use in similar operations in South Africa and globally. Metallurgical test work results were reported in ASX Announcements dated 24 June 2020 and 24 July 2020. These represented bulk sample/plant simulation trials utilising full core samples from wide diameter core drilling.
Environmental	<ul style="list-style-type: none"> The Mining Right which forms the Steelpoortdrift Vanadium Project has an approved Environmental Management Plan. However due to the proposed changes in layout and activities put forward in the PFS Study in comparison with the layout and activities described in the approved EMP, Vanadium Resources will be applying for an Integrated Environmental Authorisation (IEA), in terms of the National Environmental Management Act (NEMA) and the National Environmental Management: Waste Act (NEM:WA), for the new proposed mining operation. The Company is in the process of complying with all the environmental requirements including the applying for an Integrated Water Use License (IWUL).
Infrastructure	<ul style="list-style-type: none"> There is a substantial amount of regional infrastructure which can be accessed to assist the commencement of operations at the Steelpoortdrift Vanadium Project, including close proximity to national roads , rail heads, dams and ESKOM national grid. Vanadium concentrate from the Concentrator Plant will be road hauled to the SRL Plant for final processing through to a vanadium Flake concentrate. The Company is designing its operations to have minimal impact on the surrounding communities and its activities. A minimum number of buildings will need to be moved or disturbed as a result of the Company's activities. Rezoning of certain areas is in progress. The Company has entered into a Land Use Agreement with the relevant community authorities and will pay appropriate compensation for land usage.
Costs	<ul style="list-style-type: none"> All costs were determined on a US dollar (USD) basis. <p>Capital Expenditure:</p> <ul style="list-style-type: none"> The capital expenditure for the Concentrator Plant was costed based on a detailed Mechanical Equipment List. The capital expenditure for the SRL Plant was based on quotations received from original equipment manufacturers (OEMs) for supply of key equipment, with costs for installation, electrical, piping, pipework, structural steel and other plant construction items based on costs at similar operations in South Africa. Mining capital expenditure was based on establishment quotes received from open pit mining contractors. Targeted accuracy of +/- 20% inclusive of appropriate contingency. Environmental liability and ongoing rehabilitation costs were based on the PFS which were received from Red Kite Environmental Solutions (Proprietary) Limited Life-of-Mine of 25 years. <p>Operating Cost:</p> <ul style="list-style-type: none"> Operating costs were estimated using a combination of costs built up from first principles, quotations received from contractors and benchmarking against similar activities in mining projects in South Africa. The fixed operating costs were increased by a factor of 50% when the second SRL and Concentrator Plants become operational. Base currency is South African Rand (ZAR) with an exchange rate of ZAR15.50:USD1.00. Commodity price assumptions are discussed in "Revenue Factors" below. Royalties are based on the formula as defined in the South African Royalties Act (2010) linked to the Minerals and Petroleum Resources Development Act (MPRDA 2002). The royalties over the LoM were calculated at an average of 4.8%.

Criteria	Commentary
Revenue Factors	<ul style="list-style-type: none"> RoM grade has been estimated on an annual basis from the Life-of-Mine plan. A vanadium flake ($V_2O_5 > 98\%$) price of USD6.00/lb has been used for evaluation purposes. The Company has not established any contracts or committed any of its production pursuant to off-take agreements at this time. Prices are in USD.
Market Assessment	<ul style="list-style-type: none"> Publicly available commodity reports continue to forecast a supply deficit for vanadium for the short to medium term future. No formal customer or competitor analysis have been completed at this stage. The Company and its consultants are in contact with a number of potential customers. The specification planned to be produced and sold (vanadium flake, $V_2O_5 > 98\%$) is a standard industry specification.
Economic	<ul style="list-style-type: none"> The inputs to the discounted cashflow model are tabulated in the body of the PFS. The economic viability of the SPD Project has been determined using the Discounted Cash Flow method of valuation. For the PFS Study a discount rate of 8% was applied. The financial model is in real terms. The model was based on yearly increments. No escalation was applied. The SPD Project was valued as a single tax entity, being the South African company owning the Mining Right. Royalties were set at the formula applicable for refined minerals. A South African corporate tax rate of 27% was applied.
Social	<ul style="list-style-type: none"> The Company has a social license to operate based on the Social and Labour Plan which was approved as part of the grant of the Mining Right to Vanadium Resources (Proprietary) Limited. The Company has a commitment to adhere to this Plan and also continuously review and improve it to ensure best practises are adhered to and stakeholders are receiving benefits both directly and indirectly from the Project.
Other	<ul style="list-style-type: none"> The PFS risk analysis has not identified any fatal project flaws. All material legal agreements are current and active, under which Vanadium Resources has a right to own 73.95% of the Project. Vanadium Resources is awaiting consent under section 11 of the MPRDA to move from 50% to 73.95%. No marketing agreements are in place at this stage. The Mining Right is current and valid. Applications for water usage license and re-zoning are in progress and not expected to affect the time-lines outlined in the release.
Classification	<ul style="list-style-type: none"> The Ore Reserve categories appropriately reflect the Competent Person's view of the deposit. Probable and Proved Ore Reserves are declared for the SPD Project. Measured and Indicated Resources within the final pit design that have been scheduled for processing have been converted to Ore Reserves after application of the Modifying Factors.
Audits or Reviews	<ul style="list-style-type: none"> No audits or reviews of Ore Reserve estimates have been conducted.

Criteria	Commentary
Discussion of Relative Accuracy/Confidence	<ul style="list-style-type: none"> The Ore Reserve was estimated from the Mineral Resource after consideration of the level of confidence in the Mineral Resource and taking account of material and relevant modifying factors including mining, processing, infrastructure, environmental, legal, social and commercial factors. The Probable Ore Reserve estimate has been based on the amount of Ore Reserve material within the pit design which is associated with the Indicated and Measured Mineral Resource. No Inferred Mineral Resource was included in the Ore Reserve. The Ore Reserve represents the economically mineable part of the Measured and Indicated Mineral Resources. The proposed mine and mineral beneficiation planning through to a final vanadium pentoxide flake product is considered by the Competent Person to be technically achievable. The key factors that are likely to affect the accuracy and confidence in the Ore Reserves are: <ul style="list-style-type: none"> Changes in vanadium pentoxide flake prices. Changes in forecast metallurgical recoveries.