

02 May 2019

Scoping Study highlights strong outlook for Phase 1 of SPD Vanadium Project

Key Points

- **Scoping Study demonstrates the potential for Phase 1 of the SPD Vanadium Project to be technically and financially robust**
- **Phase 1 is based on mining and beneficiation of the high-grade SPD Mineral Resource**
- **Phase 1 is forecast to enjoy low capital and operating costs due to the high grade nature of the vanadium mineralisation at SPD**
- **The Mineral Resource for the high grade surface component of the SPD deposit stands at 169Mt at 1.07% V₂O₅ (Indicated and Inferred categories)**
- **Plant scale metallurgical tests show a high quality +2% V₂O₅ concentrate can be produced using simple beneficiation**
- **Phase 1 would generate high margins over the initial 25-year project life due to low production costs (< US\$12 / t processed)**

Tando Resources (ASX: TNO, **Tando** or **the Company**) is pleased to present the outcomes of a scoping study based on recently updated Mineral Resources at its SPD Vanadium Project in South Africa.

Managing Director Bill Oliver said the Company was highly encouraged by the results of the study which showed SPD could quickly generate strong cashflow for a small capital cost.

"The Scoping Study confirms the potential for Phase 1 to be an early, low-cost starter operation generating strong margins of US\$17 million per annum (on average) with a short payback period of less than 2 years due to the high grade nature of the mineralisation and the low CAPEX requirement of \$18 million," Mr Oliver said.

Presented in compliance with ASX Listing Rules for Release of Scoping Study outcomes:

The Scoping Study referred to in this announcement is a preliminary technical and economic investigation of the potential viability of the developing SPD Vanadium Project by constructing an open pit mine and beneficiation plant to produce a vanadium bearing magnetite concentrate (also referred to as the Phase 1 Production).



It is based on lower level technical and preliminary economic assessments (\pm 35% accuracy) and is insufficient to support estimation of Ore Reserves, to provide assurance of an economic development case at this stage or to provide certainty that the conclusions of the Study will be realised. The Scoping Study is based on the material assumptions outlined in this report.

Of the Life-of-Mine (LOM) Production Target 75% is in the Indicated Mineral Resource category and 25% is in the Inferred Mineral Resource category. The Company has concluded it has reasonable grounds for disclosing a Production Target which includes 25% Inferred Mineral Resources, given that in the first five years of production 87% of the material mined & processed is classified in the Indicated Resource category. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of additional Indicated Mineral Resources or that the Production Target itself will be realised. The level of accuracy estimate above includes the uncertainty associated with incorporating Inferred Resources.

The Scoping Study is based on material assumptions outlined elsewhere in this announcement. These include assumptions about the availability of funding. While the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the potential mine development outcomes indicated in the Scoping Study, funding of at least US\$17 million will likely be required. Investors should note that there is no certainty that the Company will be able to raise funding when needed, however the Company has concluded it has a reasonable basis for providing the forward-looking statements included in this announcement and believes that it has a "reasonable basis" to expect it will be able to fund the development of the Project. It is also possible that such funding may only be available on terms that may be dilutive to, or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other strategies to provide alternative funding options. However, the Scoping Study is a project level study and consequently the sources, forms and costs of the capital required to develop the mine have not been accounted for in calculating the financial returns demonstrated by the Scoping Study.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.



Scoping Study Financial Outcomes

The Scoping Study has demonstrated the potential for strong financial metrics for Phase 1 at the SPD Vanadium Project (Table 1). Phase 1 is based on a proposed 2.2Mtpa standalone mining and beneficiation operation to generate a +2% V₂O₅ concentrate for sale at mine gate.

Table 1. Base Case Key Metrics.

Study Outcomes	
EBITDA LoM (US\$, pre-tax)	US\$ 234 – 431M
EBITDA per annum (US\$, pre-tax)	US\$ 9.4 – 17M
NPV (US\$, pre-tax)	US\$ 68 – 138M
Internal Rate of Return (pre-tax)	48 - 86%
Payback Period	1.9 – 2.8 years
Life of Mine (Phase 1)	25 years
Pre-production CAPEX (US\$)	US\$ 18.8 – 20.0M
Average Phase 1 cash operating costs (US\$/t) ¹	US\$11.7 /t processed
Annual Concentrate Production (average)	0.79Mt

¹ Cash operating costs include all mining, processing, government royalties, site administration and overhead costs

Scoping Study Parameters and Assumptions

The Scoping Study was completed to an overall +/- 35% accuracy using the key parameters and assumptions set out in Table 2 and as further outlined in Appendix 1. Figure 1 gives an indication of the sensitivities of the project economics to various factors. The Scoping Study has been compiled by the Company with the assistance of a highly experienced and reputable group of independent consultants, including:

- GEMECS (Pty) Ltd – Geology, Drilling and Sampling
- Mining Plus Pty Ltd – Mineral Resources
- Mining Plus Pty Ltd – Optimisation and Mining
- Sound Mining (Pty) Ltd – Mining, OPEX
- ENC Minerals (Pty) Ltd – Process Testwork
- METS South Africa (Pty) Ltd – Process Design, CAPEX, OPEX
- Red Kite Consulting (Pty) Ltd – Environmental
- Noboprox (Pty) Ltd – Social
- Sandra Anderson (CPA) – Financial Modelling



Table 2. Key Parameters and Assumptions.

Parameter	
General / Economic	
Discount Rate	10%
Concentrate Price (US\$)	\$45 - 55
Exchange Rate (US\$:ZAR)	14
Mining / Production	
Average LoM strip ratio	0.38
Processing Rate	2.2 Mtpa
LoM Production Target	53.6 Mt
Average V2O5 grade mined (resource)	0.82%
Average V2O5 grade mined (diluted)	0.74%
Recovery into concentrate (mass, average LoM after dilution))	37%
Recovery into concentrate (V2O5)	>90%
Concentrate grade (V2O5)	>1.8%
Cost Assumptions	
LoM average open pit mining costs (\$/t ore mined)	\$3.31
LoM average beneficiation costs (\$/t ore processed)	\$6.42
General and admin incl environmental and social (\$/t ore mined)	\$1.94
Royalty	Max 7%
Tax rate	28%

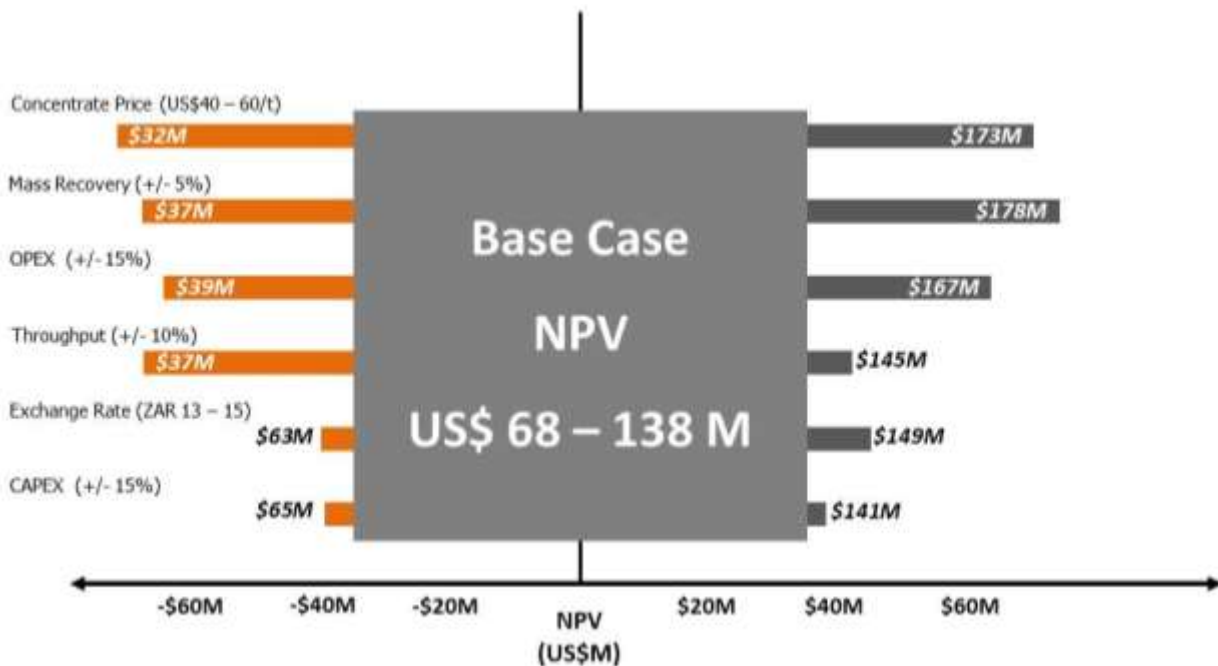


Figure 1. NPV Sensitivity Analysis.



The Scoping Study follows the completion of the updated Mineral Resource Estimate for the SPD Vanadium Project reported on 16 April 2019 (refer Appendix 1), comprising Indicated and Inferred Resources totalling 612Mt at 0.78% V₂O₅. Pit optimisation studies have been completed on the Mineral Resource within 100m of surface which comprises 419Mt at a grade of 0.78% with 199Mt classified as Indicated and 219Mt classified as Inferred (Appendix 1). The open pit selected to form the basis of the Scoping Study extracts 53.4Mt of mineralisation from the Mineral Resource of which only 25% is classified as Inferred.

The recovery and grade assumptions for the vanadium concentrate are based on the results of the Company's testwork programme detailed in the ASX announcement dated 18 March 2019.

Revenue and costs are based on mine gate sales using an anticipated sale price for concentrate of US\$45 - 55 per tonne and a ZAR/USD exchange rate of 14:1. The estimated production cost is US\$32/t concentrate.

Next Steps

The Company is currently engaged in securing binding offtake agreements with a number of interested parties. The sale price of concentrate has a significant effect on potential cash flow from the project as shown in Figure 2. Following completion of offtake negotiations it will seek and evaluate potential options for financing for the pre-production capital expenditure. Both of these agreements will be required to be in place before the commencement of construction.

From commencement of construction it has been assumed, based on current equipment availability, that the initial concentrate can be produced from the Project via dry magnetic separation after 5 months. Production of the refined concentrate product would take a further 4 - 5 months to commence.

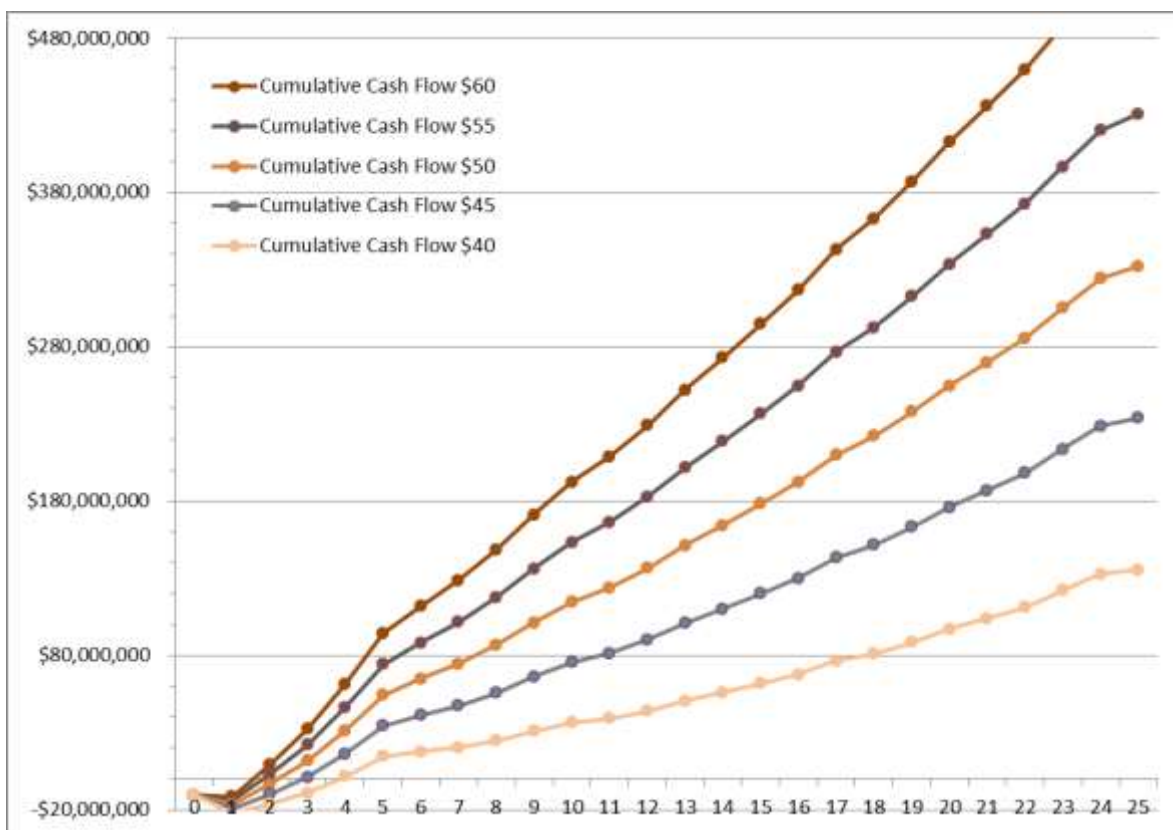


Figure 2. Conceptual Pre-Tax Cashflows for SPD Project Phase 1 at various sale prices:



Background on the SPD Vanadium Project

Currently approximately 85% of the world's vanadium is produced in China, Russia and South Africa. The SPD Vanadium Project is located in one of these producing regions and has the potential to be globally significant based on its tonnage and grade in concentrate (Figure 3).

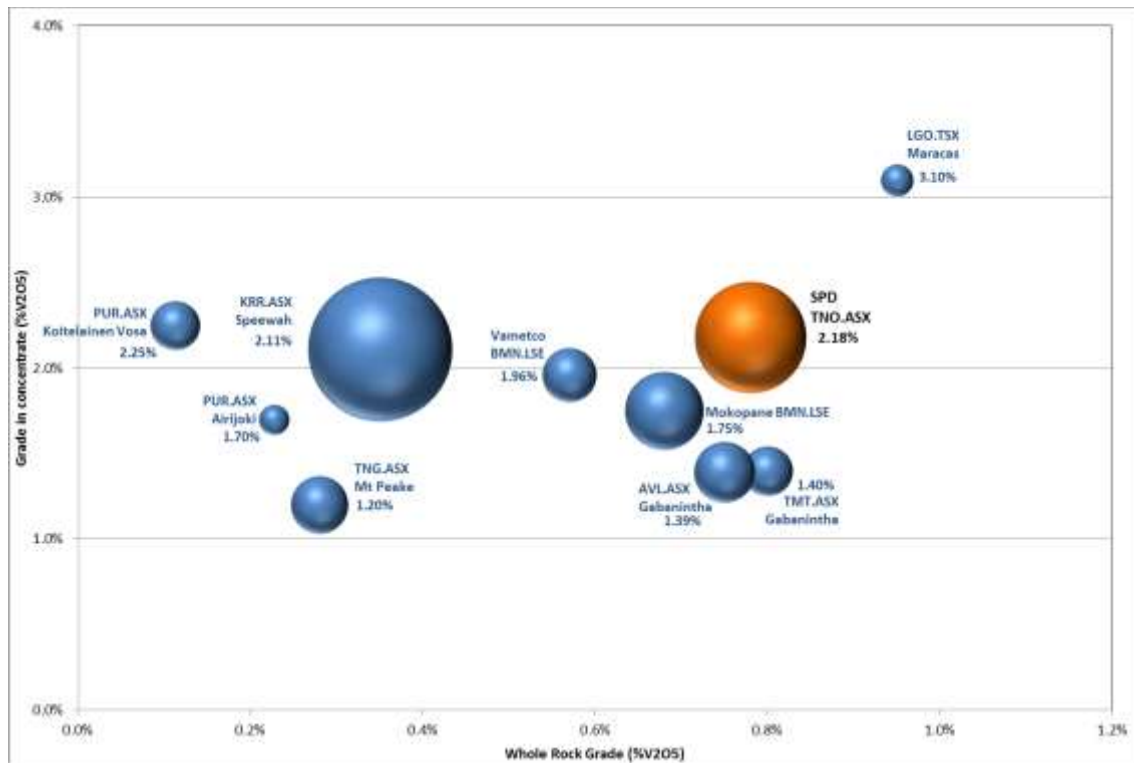


Figure 3. Global vanadium projects categorised by resource grade and grade in concentrate. Label states concentrate grade based on reported testwork. Bubble size denotes tonnage. Tonnes and grade based on reported total resources, under different reporting regimes due to different host exchanges (JORC, 43-101 or SAMREC). Refer Appendix 2 for details and sources of information.

The SPD Vanadium Project is located in a similar geological setting to the mining operations of Rhovan (Glencore), Vametco (Bushveld Minerals) and Mapochs in the Gauteng and Limpopo provinces of South Africa (Figure 3). Both the Rhovan and Vametco processing plants include refining to generate products used in the global steel making industry and aim to develop downstream processing to produce materials used in the battery market.

The region around the SPD Vanadium Project contains critical infrastructure which reduces the pre production capital expenditure needed for the project such as:

- High voltage power lines and sub stations operated by the state provider Eskom,
- Water resources including the De Hoop Dam 15km south of the project,
- Rail links,
- Sealed roads around the project area,
- Mining service companies and support business in the immediate area,
- Available skilled workforce within the local community and the region.

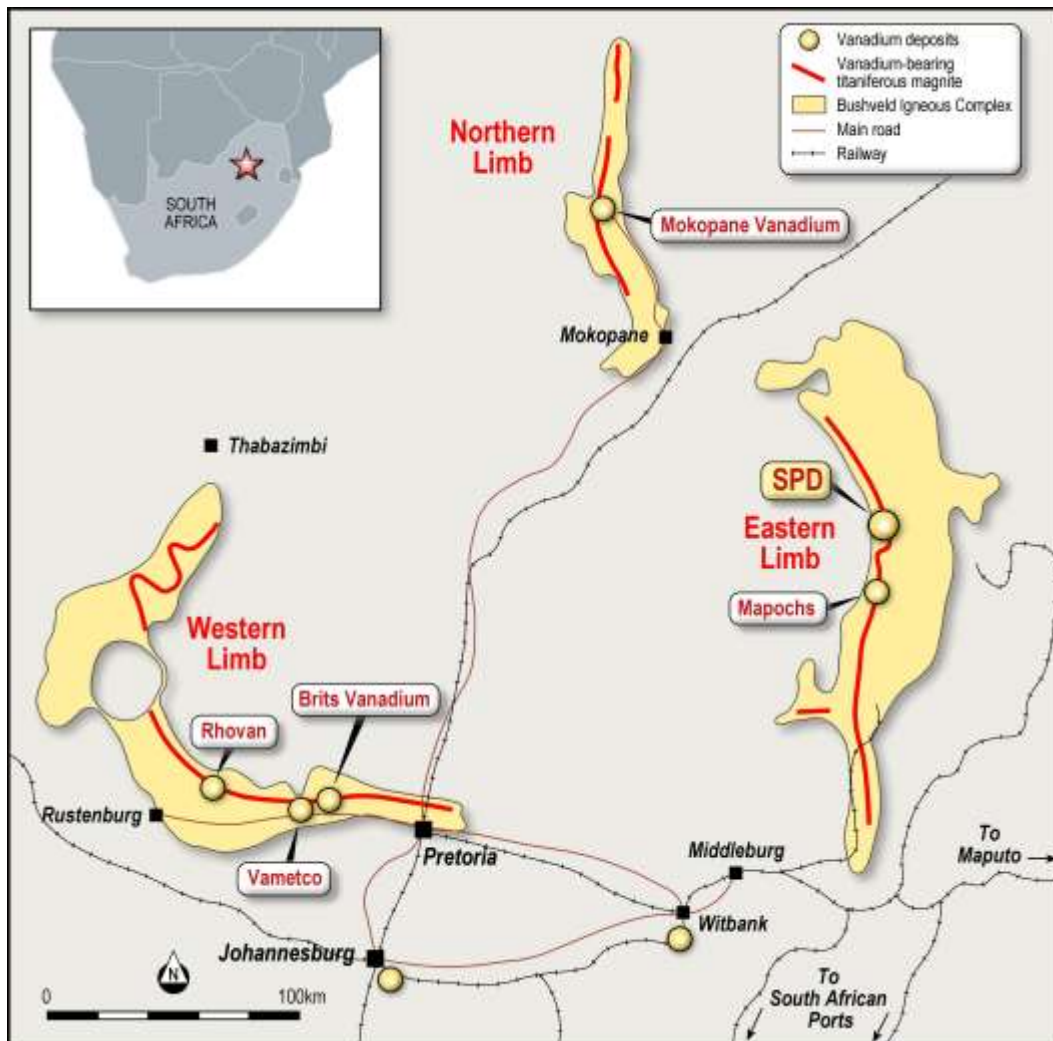


Figure 3. Location of the SPD Vanadium Project and other vanadium deposits in the Bushveld Igneous Complex.

Background on Vanadium

Current day demand for vanadium arises from its established use in strengthening steel via various alloys. Consumption is currently increasing with the recent implementation of stricter standards on the strength of steel to be used in construction (specifically rebar). The use of vanadium in steel making accounts for over 90% of current vanadium demand in today's market (with the balance supplying chemical usages).

With strong demand forecast to continue, along with supply and substitution constraints, the outlook for vanadium remains positive. Additional longer term demand for vanadium arises from its usage in vanadium redox flow batteries (**VRFB**) which provide solutions for large scale energy storage.

The global move towards renewable energy generation will require a vast increase in energy storage installations with VRFBs forecast to make up a significant proportion. According to research conducted by Lazard (NYSE.LAZ) VRFB's already have a levelised cost of storage that is less than Li-ion battery storage by 26% to 32% on a comparative basis (full report available at <https://www.lazard.com/perspective/>).



VRFB technology was developed in Australia and has the following advantages:

- a substantially longer lifespan than most current batteries (up to 20 years),
- being able to hold charge for a substantial time (up to 12 months),
- the ability to discharge 100% of its charge without damage,
- scalability to enable larger scale storage facilities to be constructed, and
- greater chemical stability as only a single element is present in the electrolyte.

These features make VRFBs attractive for industrial facilities or community sized energy storage requirements.

For and on behalf of the board:

Mauro Piccini

Company Secretary

Media

For further information, please contact:

Paul Armstrong

Read Corporate

+61 8 9388 1474



Competent Persons Statements

The information in this announcement that relates to Exploration Results and other technical information relating to drilling and sampling at the SPD Vanadium complies with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) and has been compiled and assessed under the supervision of Mr Nico Denner, the principal of GEMECS (Pty) Ltd, consultants to the Company. Mr NJ Denner is a Fellow of the Geological Society of South Africa (GSSA) and a member of good standing of the South African Council for Natural Scientific Professions (SACNASP), both Recognised Professional Organisations under the JORC Code.. Mr NJ Denner is a geologist with 24 years' experience in the South African Mining Industry 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 Denner consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to Mineral Resources, including the Mineral Resources contained within the Production Target, complies with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) and that has been compiled, assessed and created by Mr Kerry Griffin BSc.(Geology), Dip Eng Geol., a Member of the Australian Institute of Geoscientists and a Principal Consultant at Mining Plus Pty Ltd, consultants to the Company. Mr Griffin 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 Griffin is the competent person for the resource estimation and has relied on provided information and data from the Company, including but not limited to the geological model and database. Mr Griffin consents to the inclusion in this announcement of matters based on his information in the form and context in which it appears.

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 Tando 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 Tando's control.

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APPENDIX 1: Scoping Study Technical Summary

Location and Tenure

The SPD Vanadium Project is located near the town of Steelpoort, in the Limpopo Province of South Africa. Access to the Project is via sealed roads from Johannesburg (Figure A1).

Tenure over the Project comprises a single, granted Mining Right over the farm Steelpoortdrift KT365 which expires on 4th September 2048. The Company has the right to acquire 73.95% of the Project via acquisition of interest in Vanadium Resources (Pty) Ltd, the holder of the Mining Right (refer ASX Announcements 22 March 2018 and 18 July 2018). The Company will move to a 33.45% ownership of Vanadium Resources (Pty) Ltd by virtue of completion of the Scoping Study.

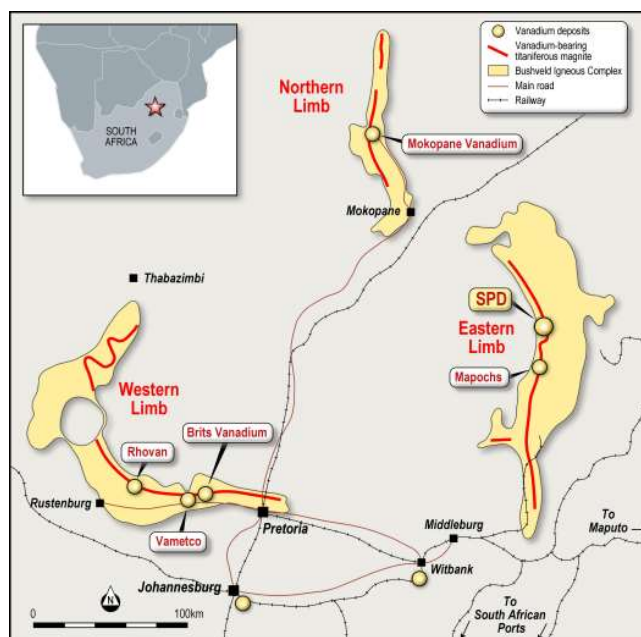


Figure A1. Location of the SPD Vanadium Project.

Mineral Resources & Geology

Geologically the SPD Project is located on the Eastern Limb of the Bushveld Igneous Complex (BIC), a Proterozoic aged layered igneous intrusion which is one of the largest intrusive masses remaining in the earth's crust. Vanadium mineralisation is hosted in a series of magnetite bearing layers near the contact between the Upper and Main Zone of the BIC. The Company's consultant geologists have defined a local stratigraphy for the project in which these layers have been grouped into Upper, Intermediate and Lower Zones with average thicknesses of 19, 14 and 12m respectively. At the base of the Lower Layer there is a marker horizon of massive magnetite which is 1 – 2m thick.

On 16 April 2019 the Company released an updated JORC (2012) Mineral Resource for the Project which comprised 612Mt at 0.78% V₂O₅ in the Indicated and Inferred categories. The Resource include 169Mt at 1.07 per cent V₂O₅ when a cut-off grade of 0.9% V₂O₅ is used. Tables A1 – A4 relate to the Mineral Resource and should be read in conjunction with the information included in the ASX Announcement of 16 April 2019.



Table A1. *SPD Vanadium Project Global Mineral Resource by Resource Category.*

Category	V ₂ O ₅ Cutoff	SG	Tonnes (Mt)	Whole Rock V ₂ O ₅ %
Indicated	0.45%	3.39	231	0.78
Inferred	0.45%	3.40	380	0.77
Total			612	0.78

Table A2. *SPD Vanadium Project Mineral Resource by Zone (Indicated & Inferred).*

Layer	V ₂ O ₅ Cutoff	SG	Tonnes (Mt)	Whole Rock V ₂ O ₅ %
Upper Zone	0.45%	3.39	289	0.75
Intermediate Zone	0.45%	3.40	123	0.56
Lower Zone	0.45%	200	200	0.94
Total			612	0.78

Table A3. *SPD Vanadium Project Mineral Resource by Grade*

V ₂ O ₅ Range	Category	SG	Tonnes (Mt)	Whole Rock V ₂ O ₅ %
> 0.90%	Indicated	3.55	68	1.05
> 0.90%	Inferred	3.56	102	1.09
Sub Total	> 0.90%		169	1.07
0.45% - 0.90%	Indicated	3.33	164	0.68
0.45% - 0.90%	Inferred	3.35	279	0.65
Sub Total	0.45% - 0.90%		442	0.66
Total			612	0.78

Table A4. *SPD Vanadium Project Mineral Resource within 100m of surface by Grade*

V ₂ O ₅ Range	Category	SG	Tonnes (Mt)	Whole Rock V ₂ O ₅ %
> 0.90%	Indicated	3.55	53	1.05
> 0.90%	Inferred	3.57	43	1.09
Sub Total	> 0.90%		97	1.05
0.45% - 0.90%	Indicated	3.33	146	0.68
0.45% - 0.90%	Inferred	3.35	176	0.66
Sub Total	0.45% - 0.90%		322	0.67
Total			419	0.78



Notes to Tables A1 - A4:

The Mineral Resource Estimate was completed using the following parameters:

- The SPD Vanadium Resource extends over a strike length of 4000m and has been drilled up to 150m vertically below surface (1100m down-dip);
- Mineralisation is hosted in a series of magnetite bearing layers near the contact between the Upper and Main Zone of the Bushveld Igneous Complex. These layers have been denoted the Upper, Intermediate and Lower Zones with average thicknesses of 19, 14 and 12m respectively. At the base of the Lower Layer there is a marker horizon of massive magnetite which is 1 – 2m thick.
- 97 drillholes (56 RC and 41 diamond core holes) were used in the resource estimate representing a total of 7608.1m of drilling. 36 RC holes and 27 diamond core holes drilled by Tando were included along with 20 RC holes and 1 diamond core hole drilled previously by Vanadium Resources (Pty) Ltd (**Vanres**) and 13 DD holes drilled by Vanadium Technology (Pty) Ltd, a subsidiary of Xstrata (**Vantech**). Drilling was carried out on sections spaced between 150m – 200m apart, with mineralisation intersected at approximately 150m intervals on section.
- RC drilling by Tando and Vanres was sampled via face sampling hammer, collected by a rig mounted cyclone and split using a riffle. Diamond core drilling by Tando sampled NQ core by splitting the core in half. Historical drilling also sampled diamond core, predominantly BQ size, by sawing in half.
- Samples were analysed at commercial laboratories (SGS, ALS) using pressed disc XRF.
- Quality control protocols for all drilling included the use of certified reference materials (CRMs), blanks and duplicates. For Tando drilling control samples were inserted every 20 samples for RC drilling and every 10 samples for DD drilling.
- All drillholes were surveyed in both South Africa LO29 grid (WGS84 projection) and UTM Zone 35S.
- All except 2 holes were vertical. Downhole surveys have been carried out on selected holes to confirm no excessive deviation.
- Geological domains were constructed using a 0.20% cut-off grade.
- 3 wireframe surfaces were constructed based on the geological interpretation. Samples within the wireframe were composited to 1m intervals.
- Block grades were estimated using interpolation of the 1m composite data by the Ordinary Kriging method. Search ellipses were set based on geostatistics with search distances ranging from 180 to 1,000m along strike. The following table details the estimate search data:

Estimate Pass	Zones	Search Distance	Minimum Samples	Maximum Samples
1	UMZ	180	8	32
2	UMZ	400	8	32
3	UMZ	800	6	32
4	UMZ	1000	4	32
1	IMZ and LMZ	180	8	32
2	IMZ and LMZ	250	8	32
3	IMZ and LMZ	500	6	32
4	IMZ and LMZ	750	4	32



- A Surpac block model was used for the estimate with a block size of 40m X by 40m Y by 5m Z, with sub-blocking to 10mX by 10m Y by 1.25m Z.
- Bulk density values used for mineralisation are detailed in the tables above. These were sourced from SG data measurements on core.
- The numbers tabulated in Appendix 1 may not sum correctly as a result of rounding
- The deposit has been classified as Indicated and Inferred Mineral Resource based on data quality, sample spacing, geological understanding and geostatistical analysis as discussed in Appendix 3.
- Modelling of Fe and Ti has also been completed within this MRE
- Modelling of other elements (including Si, Al, P amongst others) is recommend so that their impact on the economics of the project can be determined.
- Further infill drilling will increase geological and grade data quality and possibly upgrade resource categories and supply data required for higher level mining studies.

Mining and Production

Mining Plus Pty Ltd (Mining Plus) carried out an open pit optimisation and mining schedule study on the Mineral Resource using mining cost parameters collated by Sound Mining (Pty) Ltd from its own database. Non-mining costs were sourced from the expert consultants working on the study with each consultant putting forward costs relating to their own specialist discipline.

The optimisation returned a number of conceptual pit shells as detailed in Table A5. While all pits were economically viable it was decided to select the most economically robust pit for further pit design and mining scheduling studies, being Conceptual Shell Number 14 in Table A5 below which has the lowest ratio of waste to ore (strip ratio). The mining studies assumed mining dilution of 10% due to waste or sub grade material being excavated along with mineralised material during mining.

Table A5. *Detail of selected shells returned in open pit optimisation studies*

Conceptual Shell No	Tonnes Mineralisation (Mt)	Tonnes Waste (Mt)	Strip Ratio	LoM at 2.2Mtpa (years)	Tonnes Product (Mt)
14	62	24	0.37	28	26
26	84	40	0.46	38	35
44	113	112	0.61	51	46
56	156	124	0.78	71	63
91	280	286	1.01	127	109

Slope Design Criteria

Overall slope design parameters were based on a preliminary review of geological structure and rock mass and pit design parameters are in keeping with established mining practice. These will be refined in future feasibility studies



Open Pit Mine Design

A conceptual pit design for Phase 1 is shown as Figure A2 and a conceptual site layout as Figure A3. The open pit design for Phase 1 contains a total of 53.6Mt of mineralisation and 20.2Mt of waste material resulting in a strip ratio of 0.377 : 1 (waste : ore). Note that the material proposed to be extracted is less than the values reported in the optimisation process, which is common when creating a mine design from a conceptual pit shell.

Of the 53.6Mt of potential mill feed 40.0Mt is obtained from resource material classified as Indicated, with the remaining 13.6Mt being sourced from material classified as Inferred. It should be noted that there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of additional Indicated Mineral Resources or that the Production Target itself will be realised. When determining the expected level of accuracy for this Study the proportion of Inferred to Indicated Resources has been taken into consideration. The Company has concluded it has reasonable grounds for disclosing a Production Target which includes 25% Inferred Mineral Resources, given the continuity observed in the Mineral Resource and that in the first five years of production only 12% of the material mined & processed is classified as Inferred.

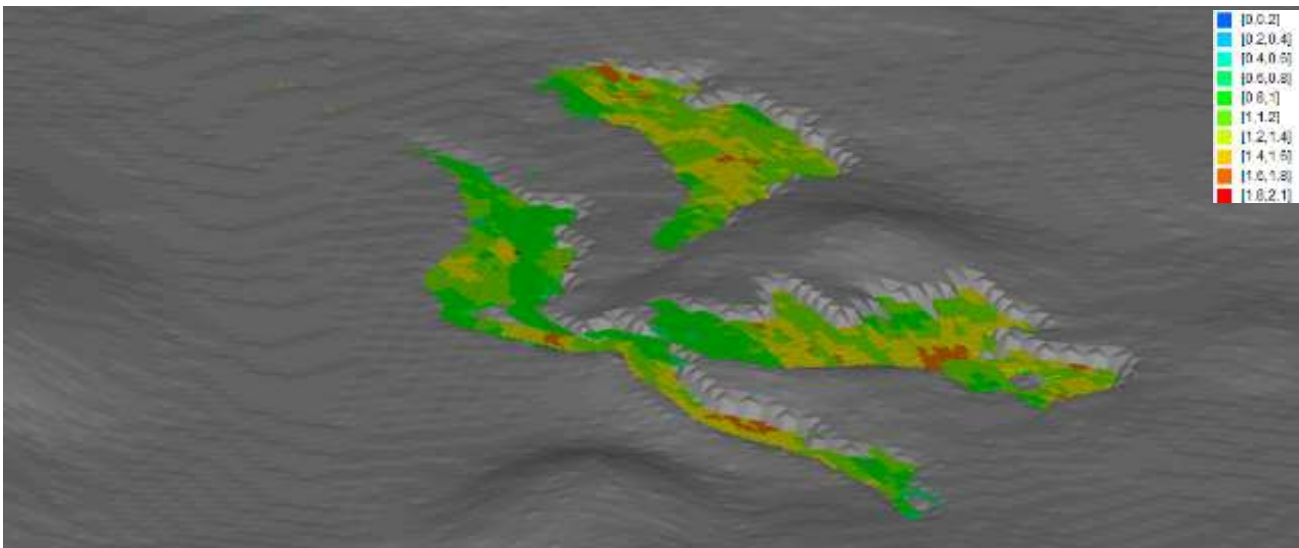


Figure A2. *Conceptual Pit Design (orthogonal view looking S, blocks coloured by grade).*

Mine Production Schedule

The conceptual mine schedule for Phase 1 is shown below in Figure A4. It is assumed that the open pit mining will be completed by a mining contractor, with on-site supervision by an owners team.

Geotechnical

No geotechnical work has been completed to date; however, based on inspection of the drill core the consultants anticipate the ground is expected to be competent and no allowance has been made to cover the risk of poor ground conditions.

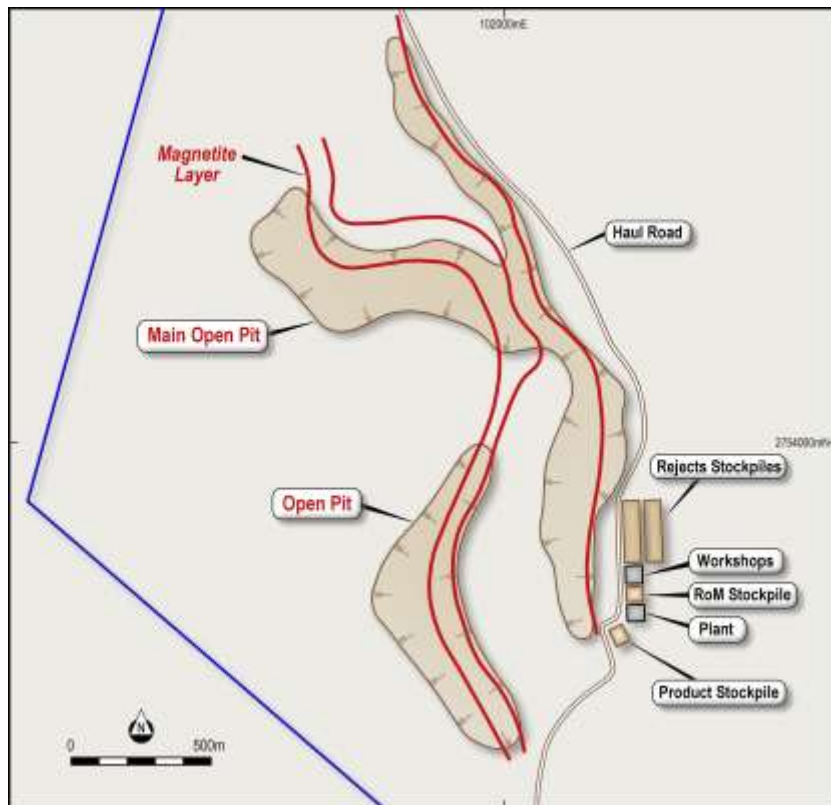


Figure A3. Conceptual Site Layout.

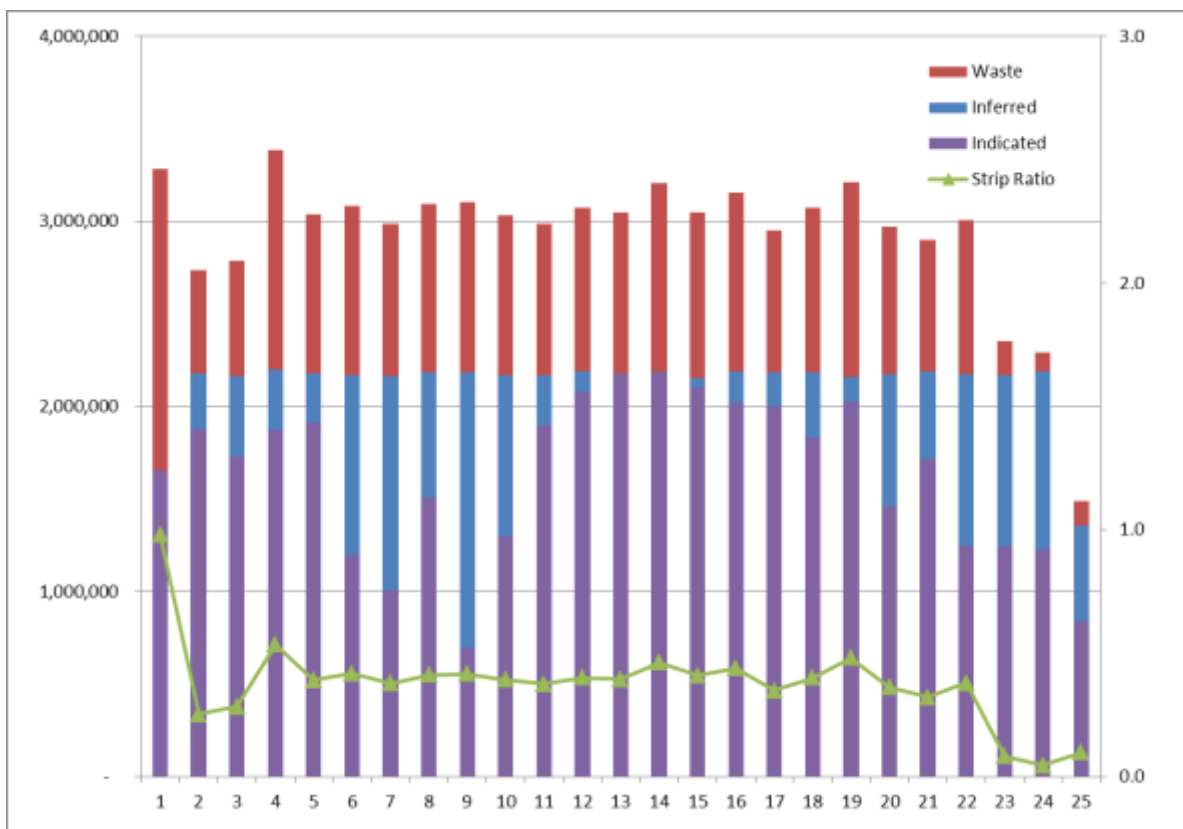


Figure A4. Conceptual Mining Schedule and Strip Ratio for the SPD Project Phase 1.



Metallurgy and Process Design

Metallurgy

Samples were taken from diamond core holes drilled into the SPD Vanadium Project. A programme of testwork was completed focussed on achieving the highest V_2O_5 grade into concentrate using simple beneficiation processes. Key aspects of the testwork included:

- Size by assay
- Comminution including Bond Ball Mill and Work Index
- Low Intensity vs Medium Intensity Magnetic Separation (LIMS, MIMS)
- Dry vs Wet Magnetic Separation

Based on successful results from the metallurgical testing (detailed in the ASX Announcement of 18 March 2019) a flowsheet for the SPD Vanadium Project was developed as shown in Figure A5.

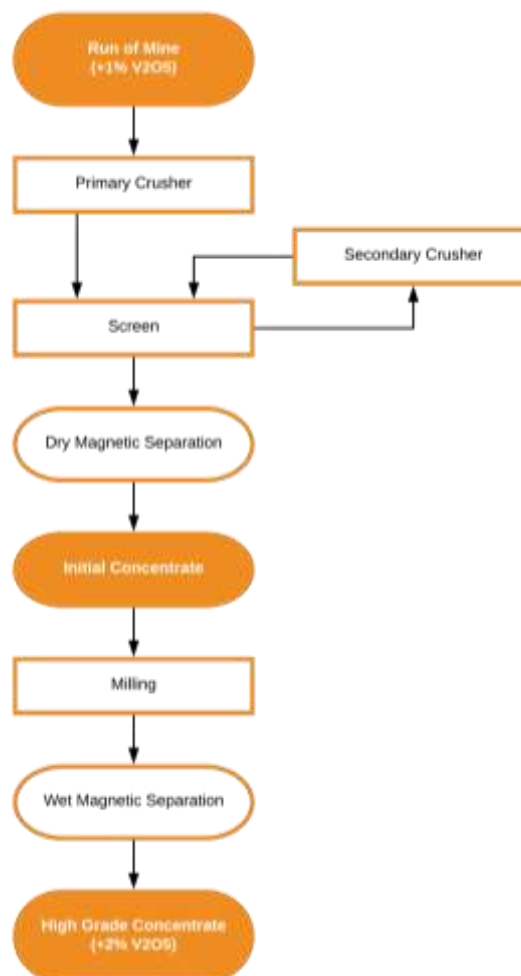


Figure A5. *Schematic process flowsheet for the SPD Project.*



Process Design

The processing facility for Phase 1 of the SPD Vanadium Project consists of a mineral concentrator with associated services and utilities. METS South Africa (Pty) Ltd designed the facility in detail using its experience in design and construction of similar facilities in South Africa resulting in the CAPEX being able to be costed at a robust level.

The facility comprises:

- Three-stage crushing
- Dry magnetic separation to produce an initial concentrate
- Ball milling of this concentrate
- Wet magnetic separation to produce a refined concentrate
- Dewatering facility to remove water from the residues for re-use as process water

Figure A6 shows the processing physicals and resultant concentrate production.

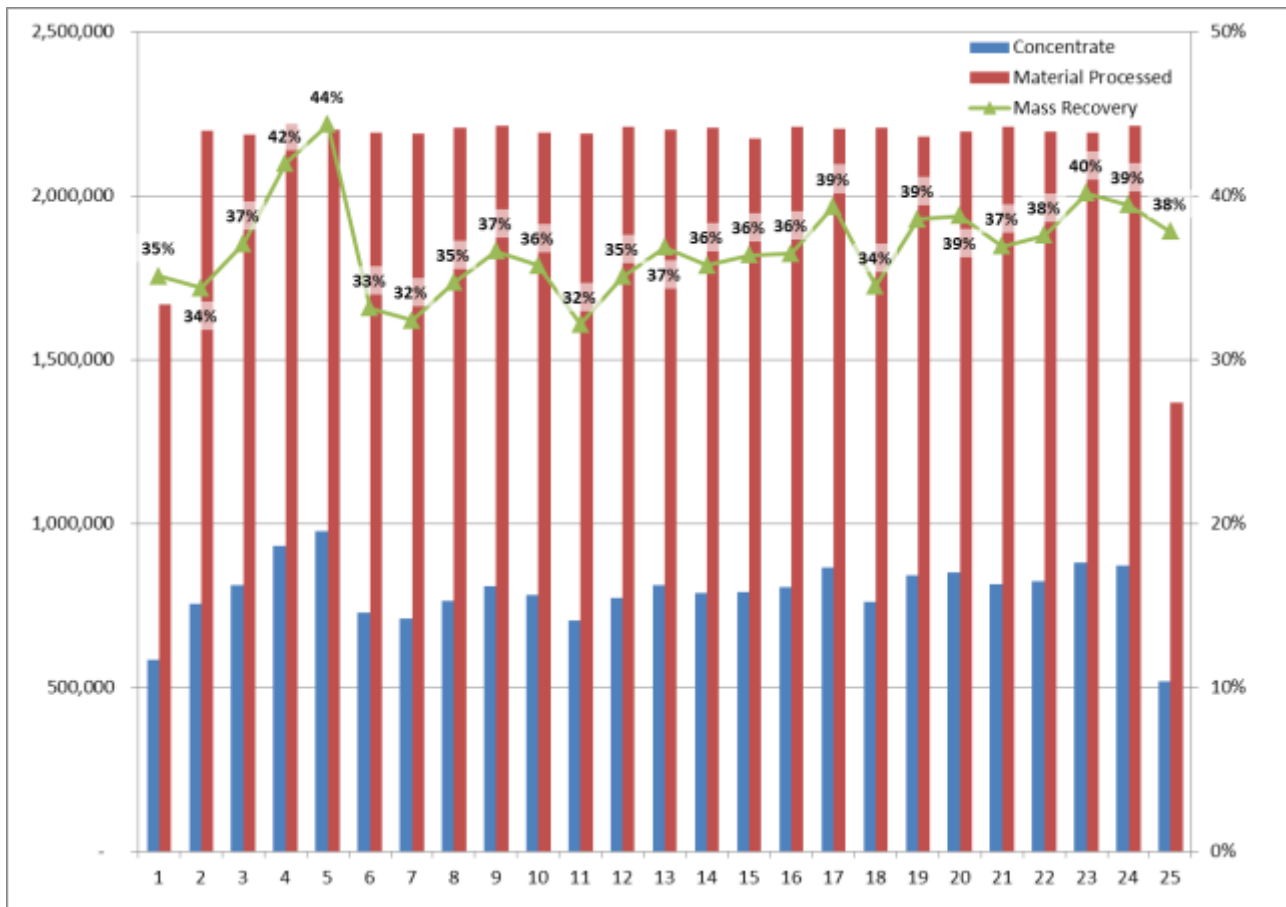


Figure A6. Conceptual Processing Schedule and Concentrate Production for the SPD Project Phase 1.



Infrastructure

Access & Product Transport

The SPD Vanadium Project is well served with national highways providing access to the region and numerous sealed roads in the area of the project. Established unsealed roads provide access into and across the Project area and these roads will be upgraded to provide access from the open pit to the plant site. The Company will construct a road over a distance of 1km to connect the plant site with the closest sealed road to enable haulage of product either to customer, railhead, or port. Rail infrastructure is present near the project area with sidings at Steelpoort and Roosenekal.

Power

Grid power is available in the area of the SPD Vanadium Project provided by the state electricity supplier Eskom. The Scoping Study assumes that the process plant will be run by grid power and includes estimates of the cost to connect the site to the grid (refer to the Capital Expenditure section below). As part of further studies into the Project the Company will investigate other off-grid power options as either standby or primary power sources, including diesel-solar hybrid power plants (which will result in additional pre-production capital costs) or hire of self-powered crushing contractors (which will result in additional operating costs).

Water

The De Hoop dam is located 15km from the project area and raw water pipelines run adjacent to the project. The Company has also applied for a Water Usage License to enable it to abstract water from boreholes in the Project area. The process plant design incorporates a dewatering facility to remove water from residues for re-use as process water. The cost of this facility is detailed in the Capital Expenditure section below, as well as the costs of connecting to available water sources.

Services and Accommodation

It is anticipated the open pit mining will be carried out by a mining contractor. The contractor will require workshops and administration buildings to be constructed on site along with the haul roads. It is anticipated that these buildings will be temporary installations rather than permanent structures and costing has been estimated on that basis. The cost of establishing these structures has been included in the Capital Expenditure section below under Mining based on quotes received to date.

Labour, services and accommodation are all available in the communities adjacent to the SPD Vanadium Project. Support services are also established in Steelpoort, 10km from the project, which provides support services to established chrome and platinum mines in the Steelpoort area.



Tailings and Water Management

Tailing Storage

Due to the simple beneficiation process the residues from the process plant contain solely waste rock and no reagents or harmful materials. The process plant design incorporates a dewatering facility to remove water from residues for re-use as process water. The residues will then be stockpiled in accordance with environmental best practise away from drainage systems. The cost of creating these stockpiles has been included in the operating expenditure for the processing facility as detailed below.

Water Management

The site will be managed in accordance with the existing Environmental Management Plan to ensure that mining activities do not interfere with drainage systems, and no materials, residues or run-off from mine infrastructure is released into the drainage systems. As detailed above the Company will use available resources to supply water as much as possible and minimise new extraction of water. Water will be re-used and recycled at all stages of the processing flowsheets.

Environmental Access and Community

As part of the Mining Right application Vanadium Resources (Pty) Ltd submitted an Environmental Management Plan and Social & Labour Plan to ensure local communities and other stakeholders benefitted from the project as well as protecting sites of environmental and cultural significance. As part of the grant of the Mining Right these plans were approved by the Department of Mineral Resources. Tando Resources is working under both of these Plans and will continue to do in the construction and operation of the Phase 1 Project. Tando will also regularly review and update these plans in line with current best practise.

Financial Information

A financial evaluation for Phase 1 was completed using the Production Target of 53.6Mt of potential mill feed at a strip ratio of 0.377 : 1 (waste : ore) over a life of mine period of 25 years.

Life of Mine Financials

The Phase 1 financials are summarised in Table A6 and detailed in subsequent sections.



Table A6. Key financial results – Phase 1

	US\$M
Revenues	US\$ 885 – 1,080M
Operating Costs	US\$ 626M
CAPEX : pre-production : sustaining	US\$ 18.8 – 20.0M US\$ 0.3M / year
LoM Project Cash Flow (Pre-Tax)	US\$ 234 – 431M
Royalties (<i>max.</i>)	US\$ 18 – 31M
Company Tax (<i>est.</i>)	US\$ 65 – 120M
LoM Project Free Cash Flow	US\$ 151 – 279M

Capital Expenditure

The pre-production capital expenditure for Phase 1 is detailed in Table A7.

The capital cost estimate for the beneficiation plant was completed by METS South Africa (Pty) Ltd as discussed reflecting the assumptions and parameters outlined in the Scoping Study and inclusive of costs associated with the residue stockpiles and access to power and water. The estimate for the capital cost relating to the mining operation was based on quotes received to date by the Company. The Company has added a 10% contingency to cover unforeseen overruns in the capital expenditures.

Sustaining capital is estimated at US\$0.3M per annum with maintenance of plant facilities being included in the Operating Cost Estimate.

Table A7. Pre Production Capital Expenditure Estimate – Phase 1

Area	Total	Proportion
Mining	US\$ 0.4 – 0.5M	3%
Crushing / Dry Magnetic Separation	US\$ 8.5 – 9.0M	44%
Milling / Wet Magnetic Separation	US\$ 4.7 – 5.0M	24%
Residue dewatering / handling	US\$ 2.8 – 3.0M	15%
Utilities	US\$ 0.6 – 0.7M	4%
Sub-Total	US\$ 17.0 – 18.2M	
Contingency	US\$ 1.8M	10%
Total	US\$18.8 – 20.0M	

Operating Cost Estimate

The Project has an estimated C1 cash cost based on mine gate sales of US\$11.7 per tonne processed as detailed in Table A8 and in subsequent sections. This results in an average break-even cost of production of US\$31.7 per tonne of concentrate for Phase 1 of the SPD Vanadium Project.



Table A8. Operation Cost Estimate – Phase 1

Area	US\$ / t processed	US\$ / t concentrate (Average, LOM)	Proportion
Mining (variable)	US\$ 2.70	US\$ 7.32	23%
Mining (fixed)	US\$ 0.61	US\$ 1.65	5%
Processing (variable)	US\$ 5.62	US\$15.25	48%
Processing (fixed)	US\$ 0.80	US\$ 2.18	7%
Environmental / Social	US\$ 1.24	US\$ 3.35	11%
General & Admin	US\$ 0.70	US\$ 1.90	6%
Total	US\$ 11.66	US\$ 31.65	

- *Mining Estimate*

Mining costs were based on contractor mining at prevailing rates in South Africa as provided by Sound Mining (Pty) Ltd (in ZAR). Prices were separated into fixed (cost per annum) and variable (cost per tonne material mined). The resultant average mining cost per tonne processed is US\$3.31 with a ratio of 82% to 18% variable to fixed costs.

- *Processing Cost Estimate*

Process plant operating costs were provided in ZAR by ENC Minerals (Pty) Ltd and Mets SA (Pty) Ltd based on the specifications of the beneficiation plant designed by Mets SA (Pty) Ltd and costs sourced from other, similar projects in South Africa. The costs are based on a designed throughput rate of 2.2Mtpa with the plant operation being 16 hours per day, 360 days per year. The process plant operation costs include costs for the dewatering and stockpiling of residues as detailed in the Tailings Management section above. The resultant average processing cost per tonnes is US\$6.42 with a ratio of 88% to 12% variable to fixed costs.

- *Environmental, Social, General and Admin Estimate*

For the Environmental and Social areas costs include programmes contemplated in the Social & Labour Plan along with monitoring and management costs for the Environmental Management and Social & Labour plans as detailed in the Environmental Access & Community sections. Overheads were estimated for each discipline by the reporting consultant with an allowance added for corporate overheads to arrive at a total admin cost per month.

- *Other Costs*

The operating cost estimate above is on a "mine gate" basis. Other costs such as marketing, haulage, freight and insurances are not included in the cost estimate. The Company is anticipating that either these costs will be charged to the Company at cost, or that the product will be sold on a "at mine gate" basis.

Exchange Rates

All capital and operating costs are presented here in US dollars. The majority of costs associated with the project will be levied in South African Rand. A long term exchange rate of ZAR14 to US\$1 has been assumed based on long term forecasts in recent public domain analyst reports including Investec's "Rand Note" paper dated 8 April 2019, Nedbank's "Monthly Insights" paper dated April 2019, and Standard Bank's "Economy 2019" ebook.



Commodity Pricing

Independent concentrate pricing forecasts have not been obtained for this scoping level study. A forecast price range of US\$45 - 55 per tonne (sold at mine gate) of > 1.8% V₂O₅ concentrate has been assumed for the life of the mine in the Scoping Study. Pricing has been obtained based on market research by the Company and indicative pricing received from potential purchasers. These parties have indicated that a concentrate containing > 1.5% V₂O₅ with low silica and alumina constitutes a saleable product.

Tando has not established any contracts or committed any of its production pursuant to off-take agreements at this time.

Life of Mine Cashflows

Pre- and post- tax cashflows are shown in Figures A7 and A8.

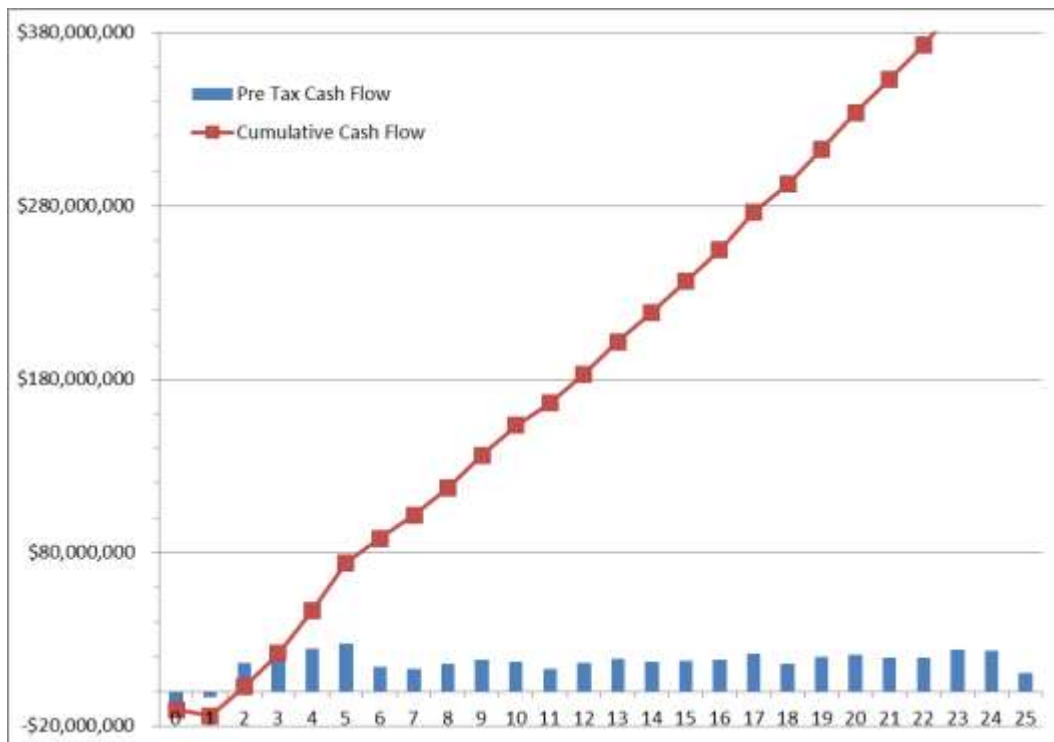


Figure A7. Forecast Pre-Tax Cashflows for SPD Project Phase 1 (based on sale price US\$55/t):

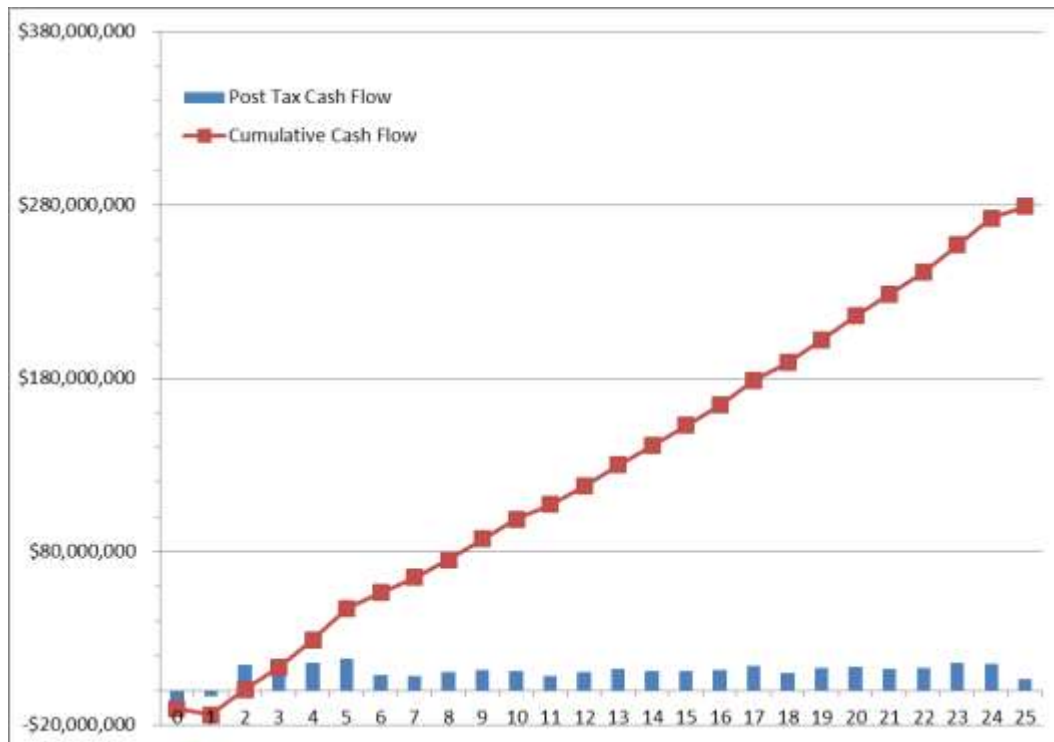


Figure A8. Forecast Post-Tax Cashflows for SPD Project Phase 1 (based on sale price US\$55/t):

Project Funding

Based on the Scoping Study results, there are reasonable grounds to believe that the SPD Vanadium Project can be financed in future. It is most likely that any financing would be undertaken via a combination of debt and equity.

Under the Acquisition Agreements (refer ASX Announcements 22 March 2018 and 18 July 2018) funding provided by Tando during exploration, development and capital expenditure will be repaid from production revenues. Once this funding has been fully repaid cashflows from the project will either be reinvested into studies (e.g. studies into Phase 2 downstream processing) or distributed according to the then current holdings in Vanadium Resources (Pty) Ltd.

Under current conditions, debt may be secured from several sources including Australian banks, international banks, the high yield bond market and resource credit funds. It is difficult to finance metals that cannot be easily hedged with banks and for this reason, along with the size and volatility of the vanadium market, any debt funding is more likely to be sourced from resource credit funds. On this basis, it is likely that the SPD Vanadium Project will require the support of a resource credit fund or other major investor.

There are several factors that will influence the ability of Tando to secure funding including (but not limited to) a requirement to have "bankable" offtake agreements and favourable prevailing market conditions (being both the vanadium market and the wider equity and debt market). It may also be necessary and/or desirable to have an offtake partner invest in the Company or the Project.



It is possible that funding may be dilutive to, or otherwise affect the value of the Company's existing shares.

It is also possible that the Company could pursue other strategies to provide alternative funding options including undertaking a corporate transaction, seeking a joint venture partner or asset sales.

The Scoping Study is a project level study and consequently the sources, forms and costs of the capital required to develop the mine have not been accounted for in calculating the financial returns demonstrated by the Scoping Study.

As stated above Tando will move to 33.45% ownership of the project by virtue of completing the Scoping Study and has the right to move to 73.95% (with the balance being held by BBEE entities as required under South African law).

Implementation and Schedule

The Company is currently engaged in securing binding offtake agreements with a number of interested parties. In concert with securing offtake it will seek and evaluate potential options for financing for the pre-production capital expenditure. In parallel it will engage an independent third party to carry out a Gap Analysis on the Scoping Study to determine any areas requiring further work to de-risk them prior to the commencement of construction on the project.

While the Company believes that financing and offtake negotiations will be completed within the next 3 months it cautions that these negotiations are by their nature unpredictable and their duration may be longer than expected especially if there are adverse changes to the vanadium price and equity markets or other unforeseen circumstances.

Once construction commences it is anticipated that the initial concentrate can be produced from the Project via dry magnetic separation after 5 months, following purchase and installation of the crushing circuit and dry magnetic separation circuits. Production of the refined concentrate product would take a further 4 - 5 months to commence following purchase and installation of the milling and wet magnetic separation circuits. The above timeframes are based on current equipment availability.



APPENDIX 2: Data and sources for Peer Comparison (Figure 3)

Company	Project	Stage	Resource Category	Resource Tonnes	Resource Grade	Concentrate Grade	Information Source
Largo LGO.TSX	Maracas (Campbell & Satellite Deposits)	Production	Measured, Indicated & Inferred (43-101)	49.25	0.99	3.10	43-101 Technical Report dated 26/10/2017 http://www.largoresources.com/operations/maracas-menchen-mine
Bushveld BMN.LSE	Vametco	Production	Indicated & Inferred	142	0.57	1.96	https://www.bushveldminerals.com/bushveld-vametco/ ; https://www.bushveldminerals.com/presentations/
	Mokopane	Development	Indicated & Inferred	298	0.68	1.75	Mokopane PFS Study Report Jan 2016 https://www.bushveldminerals.com/technical-reports/
TNG TNG.ASX	Mt Peake	Development	Measured, Indicated & Inferred	160	0.28	1.20	ASX Announcement 26/03/2013
King River KRR.ASX	Speewah	Development	Measured, Indicated & Inferred	4,712	0.30	2.11	ASX Announcement 02/11/2018 21/03/2018
Pursuit Minerals PUR.ASX	Koitelainen Vosa	Development	Inferred	116.4	0.11	2.25	ASX Announcement 06/02/2019
	Airijoki	Development	Inferred	44.3	0.23	1.70	ASX Announcement 08/03/2019
Australian Vanadium AVL.ASX	Gabanintha	Development	Measured, Indicated & Inferred	176	0.77	1.40	ASX Announcement 26/09/2018, 19/12/2018
Technology Metals TMT.ASX	Gabaninth	Development	Indicated & Inferred	120	0.8	1.39 – 1.49	ASX Announcement 21/06/2018



APPENDIX 3.

The following Table sourced and modified from the JORC Code (2012) is provided as advised in the ASX Scoping Study Interim Guidelines.

Section 4 Estimation and Reporting of Ore Reserves modified for a Scoping Study which includes an approximate Production Target and/or Forecast Financial Information. No JORC Code (2012) Ore Reserves are being reported.

(Criteria listed in the preceding sections, contained in the ASX Announcement of 16 April 2019, also apply to this section)

Criteria	JORC Code explanation	Commentary
<i>Mineral Resource estimate for conversion to Ore Reserves</i>	<ul style="list-style-type: none"> <i>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</i> <i>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</i> 	<ul style="list-style-type: none"> No JORC (2012) Ore Reserve estimate has been classified or reported. The preliminary production target is based on the Mineral Resource for the SPD Vanadium Project of 612Mt at 0.78% V₂O₅, classified in the Indicated and Inferred categories and reported in the ASX Announcement of 18 March 2019. The Competent Person for the Mineral Resources is Mr Kerry Griffin of Mining Plus Pty Ltd.
<i>Site visits</i>	<ul style="list-style-type: none"> <i>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</i> <i>If no site visits have been undertaken indicate why this is the case.</i> 	<ul style="list-style-type: none"> No JORC (2012) Ore Reserve estimate has been classified or reported. The following persons have contributed to the Scoping Study: <ul style="list-style-type: none"> Mr Bill Oliver (Tando Resources) – Mr Oliver has visited site and understand details associated with the site setting and location. Mr Nico Denner (GEMECS) – Mr Denner is responsible for the drilling, sampling, has visited site and understand details associated with the site setting and location. Mr Kerry Griffin (Mining Plus) – Mr Griffin is the Principal Resource Consultant responsible for the estimation and classification of Mineral Resources. Mr Griffin has visited site and understand details associated with the site setting and location. Mr John Battista (Mining Plus) – Mr Griffin is the Principal Mining Consultant who has coordinated the mining and resource optimisation work associated with the Scoping Study. Mr Battista has not visited site and has completed work based on information provided by Tando and other consultants. Mr Eugene Nel (ENC Minerals) – Mr Nel is the Metallurgical Consultant who has supervised the metallurgical study testwork and process flow design completed as part of this Scoping Study. Mr Nel has visited site and understand details associated with the site setting and location. Mr Erik Bruggink (METS South Africa (Pty) Ltd) – Mr Bruggink is the Study Manager



		<p>who has coordinated the capital and operating cost estimates for the processing facility deemed to be required as part of this Scoping Study. Mr Bruggink has visited site and understand details associated with the site setting and location.</p> <ul style="list-style-type: none"> Ms Sandy Anderson – Ms Anderson is a CPA who formerly worked in Corporate Finance at Ernst and Young. Ms Anderson has built the financial model for the Scoping Study based on inputs supplied by the Consultants listed above. Ms Anderson has not visited site and has completed work based on information provided by Tando and other consultants.
<i>Study Status</i>	<ul style="list-style-type: none"> <i>The type and level of study to enable Mineral Resources to be converted to Ore Reserves.</i> 	<ul style="list-style-type: none"> The study presented is a Scoping Study and accordingly an Ore Reserve is not being reported. A gap analysis on the Scoping Study will be undertaken by an independent third party expert to ascertain the areas requiring further studies. The Scoping Study has been prepared to an accuracy of +/- 35% using indicated and Inferred Mineral Resources, appropriate mine planning and modifying factors have been applied commensurate to a Scoping Study level of accuracy and are deemed to have reasonable prospects of being technically achievable and economically viable. Section 4 of the JORC Code (2012)'s Table 1 is being completed to enable material modifying factors and assumptions underpinning the conceptual Production Target and their link to the forecast financial information to be disclosed in an appropriate manner for investors.
<i>Cut-off parameters</i>	<ul style="list-style-type: none"> <i>The basis of the cut-off grade or quality parameters applied/</i> 	<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.
<i>Mining factors or assumptions</i>	<ul style="list-style-type: none"> <i>The method and assumptions used as reported in the Study (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</i> <i>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.</i> <i>The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.</i> <i>The major assumptions made, and Mineral Resource model used for pit and stope optimisation (if appropriate).</i> <i>The mining dilution factors used.</i> <i>The mining recovery factors used.</i> 	<ul style="list-style-type: none"> No JORC (2012) Ore Reserve estimate has been classified or reported. The SPD Vanadium Project outcrops at surface therefore open pit mining was chosen as the mining method for Phase 1. 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 and recovery and sale price of concentrate. Inter ramp wall angles were set at 40° in oxide and 55° in fresh. Dilution of 10% was assumed along with an estimated mining recovery of 90% based on 5% geological losses and 5% mining extraction factor. The above factors result in an 96% conversion of Mineral Resource tonnes to tonnes used in the



	<ul style="list-style-type: none"> • Any minimum mining widths used. • The way Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion. • The infrastructure requirements of the selected mining methods. 	<p>production schedule, a conversion of a Mineral Resource grade of 0.82% to an estimated mined grade of 0.74% and conversion of a forecast mass recovery of 45% to a diluted recovery of 37%.</p> <ul style="list-style-type: none"> • The minimum mining width matched the resource block size at 5m. • Resource material classified as Inferred makes up 25% of the entire Phase 1 LoM Production Target, with the first five years containing only 12% Inferred material. • 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. 																																																																		
<p><i>Metallurgical factors or assumptions</i></p>	<ul style="list-style-type: none"> • 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? 	<ul style="list-style-type: none"> • The metallurgical process is illustrated in the the body of the ASX release. Conventional crushing, grinding and magnetic separation techniques will be used to produce a mineral concentrate. These methods are appropriate for the mineralisation at the SPD Vanadium Project. • The processing techniques are all well tested techniques currently in use in similar operations in South Africa and globally. • Metallurgical testwork results were reported in an ASX Announcement dated 18 March 2019. These represented bulk sample / plant simulation trials utilising full core samples from wide diameter core drilling. • Sighter testwork was previously carried out on full core samples from drilling at the project. Drill core was selected to ensure representative samples of weathered vs fresh, also samples from the different geological zones (UMZ, IMZ, LMZ) were tested. Extensive Davis Tube testwork has been completed on samples from drillholes across the deposit. • Recovery into concentrate was estimated using the matrix below derived from testwork results: <table border="1" data-bbox="874 1529 1428 1731"> <thead> <tr> <th colspan="2"></th> <th colspan="6">Concentrate grade</th> </tr> <tr> <th colspan="2"></th> <th>1.0%</th> <th>1.2%</th> <th>1.4%</th> <th>1.6%</th> <th>1.8%</th> <th>2.0%</th> </tr> </thead> <tbody> <tr> <th rowspan="7">HDM Feed grade</th> <th>0.4%</th> <td>36%</td> <td>30%</td> <td>26%</td> <td>23%</td> <td>20%</td> <td>18%</td> </tr> <tr> <th>0.5%</th> <td>45%</td> <td>38%</td> <td>32%</td> <td>28%</td> <td>25%</td> <td>23%</td> </tr> <tr> <th>0.6%</th> <td>54%</td> <td>45%</td> <td>39%</td> <td>34%</td> <td>30%</td> <td>27%</td> </tr> <tr> <th>0.7%</th> <td>63%</td> <td>53%</td> <td>45%</td> <td>39%</td> <td>35%</td> <td>32%</td> </tr> <tr> <th>0.8%</th> <td>76%</td> <td>60%</td> <td>51%</td> <td>45%</td> <td>40%</td> <td>36%</td> </tr> <tr> <th>0.9%</th> <td>86%</td> <td>71%</td> <td>58%</td> <td>51%</td> <td>45%</td> <td>41%</td> </tr> <tr> <th>1.0%</th> <td>100%</td> <td>79%</td> <td>68%</td> <td>56%</td> <td>50%</td> <td>45%</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • The specification for the saleable product is based on the V content of magnetite at the project. The metallurgical testwork and the Scoping Study is based around recovery of magnetite ie has the appropriate mineralogy to meet the specifications. 			Concentrate grade								1.0%	1.2%	1.4%	1.6%	1.8%	2.0%	HDM Feed grade	0.4%	36%	30%	26%	23%	20%	18%	0.5%	45%	38%	32%	28%	25%	23%	0.6%	54%	45%	39%	34%	30%	27%	0.7%	63%	53%	45%	39%	35%	32%	0.8%	76%	60%	51%	45%	40%	36%	0.9%	86%	71%	58%	51%	45%	41%	1.0%	100%	79%	68%	56%	50%	45%
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<p><i>Environmental</i></p>	<ul style="list-style-type: none"> • The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the 	<ul style="list-style-type: none"> • The Mining Right which forms the SPD Vanadium Project has an approved Environmental Management Plan which the Company will 																																																																		



	<p><i>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.</i></p>	<p>monitor its activities to ensure compliance with.</p> <ul style="list-style-type: none"> The Company has applied for a Water Usage License to abstract ground water if needed for mining and processing operations.
<p><i>Infrastructure</i></p>	<ul style="list-style-type: none"> <i>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.</i> 	<ul style="list-style-type: none"> Infrastructure is discussed in the body of the ASX release. There is a substantial amount of regional infrastructure which can be accessed to assist the commencement of operations at the SPD Vanadium Project. The Company is designing its operations to have minimal impact on the surrounding communities and its activities. No houses or other 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.
<p><i>Costs</i></p>	<ul style="list-style-type: none"> <i>The derivation of, or assumptions made, regarding projected capital costs in the study.</i> <i>The methodology used to estimate operating costs.</i> <i>Allowances made for the content of deleterious elements. The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co-products.</i> <i>The source of exchange rates used in the study.</i> <i>Derivation of transport charges.</i> <i>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</i> <i>The allowances made for royalties payable, both Government and private.</i> 	<ul style="list-style-type: none"> <u>Conceptual CAPEX Assumptions:</u> Reported as a range by Mets (SA) to the Company based on a costed Mechanical Equipment List. Mining CAPEX based on establishment quotes received from open pit mining contractors. Life of Mine for Phase 1 of 25 years. Targeted accuracy of +/- 35% inclusive of appropriate contingency. <u>Conceptual OPEX Assumptions:</u> OPEX costs for the scenario 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. Base currency is South African Rand (ZAR) with an exchange rate of 14 : 1 Commodity price assumptions are discussed in "Revenue Factors" below This study assumes sale at mine gate, or that freight, handling and insurance are charged to the company at cost. Royalties are based on the formula for "unrefined minerals" as defined in the South African Royalties Act (2010) linked to the Minerals & Petroleum Resources Development Act (2002). Under this formula the maximum royalty is 7% which has been assumed for the life of the project. All estimates presented here are for the total project and do not take into account the Company's current and future ownership under the acquisition agreements entered into..
<p><i>Revenue Factors</i></p>	<ul style="list-style-type: none"> <i>The derivation of or assumptions made regarding revenue factors including head grade,</i> 	<ul style="list-style-type: none"> The sale price has been based on indicative, non binding price estimates received from potential



	<p><i>metal or commodity price(s), exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.</i></p> <ul style="list-style-type: none"> • <i>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.</i> 	<p>purchasers.</p> <ul style="list-style-type: none"> • The Company has not established any contracts or committed any of its production pursuant to off-take agreements at this time. • The sale price is a function of current vanadium pentoxide prices (most commonly published as 98% V₂O₅) but is also affected by prevailing iron ore prices. • Prices are in US\$, therefore the ZAR : USD exchange rate assumption of 14 : 1 detailed above is also applicable to this section. • This study assumes sale at mine gate, or that freight, handling and insurance are charged to the company at cost.
<i>Market Assessment</i>	<ul style="list-style-type: none"> • <i>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</i> • <i>A customer and competitor analysis along with the identification of likely market windows for the product.</i> • <i>Price and volume forecasts and the basis for these forecasts.</i> • <i>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract</i> 	<ul style="list-style-type: none"> • Publically available analyst 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. • Samples have been provided to potential customers for testing and confirmation that specifications are acceptable. • These parties have indicated that a concentrate containing > 1.5% V₂O₅ with low silica and alumina constitutes a saleable product.
<i>Economic</i>	<ul style="list-style-type: none"> • <i>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.</i> • <i>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</i> 	<ul style="list-style-type: none"> • The inputs to the NPV estimations are tabulated in the body of the ASX release. • The NPV has been determined using the Discounted Cash Flow method of valuation. For the Scoping Study a discount rate of 10% was applied. • The financial model is in real terms. • The model was based on yearly increments • No escalation was applied. • The 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 unrefined minerals • South Africa corporate tax rate was applied (28%) • NPV ranges and sensitivity analysis is presented in the body of the announcement
<i>Social</i>	<ul style="list-style-type: none"> • <i>The status of agreements with key stakeholders and matters leading to social licence to operate.</i> 	<ul style="list-style-type: none"> • The Company has a social license to operate based on its Social and Labour Plan which was approved as part of the grant of the Mining Right. 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.



<p><i>Other</i></p>	<ul style="list-style-type: none"> • <i>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserve</i> • <i>Any identified material naturally occurring risks.</i> • <i>The status of material legal agreements and marketing agreements.</i> • <i>The status of governmental agreements and approval 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 of 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.</i> 	<ul style="list-style-type: none"> • No natural occurring risks have been identified • All material legal agreements are current and active, including the Acquisitions Agreements (refer ASX Announcements 22 March 2018 and 18 July 2018) under which Tando has a right to own 73.95% of the Project. Tando will own 33.45% of the Project by virtue of completing the Scoping Study. • No marketing agreements are in place at this stage. • The Mining Right is current and valid. Applications for water usage license and rezoning are in progress and not expected to affect the timelines outlined in the release.
<p><i>Classification</i></p>	<ul style="list-style-type: none"> • <i>The basis for the classification of the Ore Reserves into varying confidence categories.</i> • <i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i> • <i>The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</i> 	<ul style="list-style-type: none"> • Ore Reserves have not been classified and reported. • Section 4 of Table 1 contained in the JORC Code (2012) is being completed as part of the Scoping Study requirements to disclose a conceptual Production Target estimate linked to forecast financial information.
<p><i>Audits or reviews</i></p>	<ul style="list-style-type: none"> • <i>The results of any audits or reviews.</i> 	<ul style="list-style-type: none"> • No audits or reviews have been conducted.
<p><i>Discussion of relative accuracy/ confidence</i></p>	<ul style="list-style-type: none"> • <i>Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve 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 reserve 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.</i> • <i>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.</i> • <i>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have material impact on viability, or for which there are remaining areas of uncertainty at the current study stage.</i> • <i>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i> 	<ul style="list-style-type: none"> • Ore Reserves have not been classified and reported. • The level of accuracy for the Scoping Study is + / - 35% • The level of confidence for the estimates used in the conceptual production schedule is below that required for reporting Ore Reserves under the JORC Code (2012). • The Life-of-Mine (LOM) Production Target used in the Scoping Study comprises 75% in the Indicated Mineral Resource category and 25% in the Inferred Mineral Resource category. The Company believes it is appropriate to use the Inferred Mineral Resource as part of the Production Target given the consistency and continuity of the mineralisation. The level of accuracy above has considered the presence of Inferred material in the Study. • More advanced mining studies are planned following a gap analysis of the Scoping Study.