

17 June 2019

Tando to convert Phase 1 Scoping Study to PFS and commence development of Phase 2

Two-pronged development strategy to unlock value of high grade mineralisation at Steelpoortdrift (SPD) Vanadium Project

Key Points

- **Following successful completion of Scoping Study, Tando is on track with the rapid development of both Phase 1 and Phase 2 at the SPD Vanadium Project in South Africa**
- **SPD outlook extremely favourable due to its high-grade (2.19% V₂O₅) low cost (open-cast) nature with falling global vanadium inventories and recent upward trajectory in vanadium prices**
- **Phase 1 is based on production of a high quality concentrate (+2% vanadium) for both direct sale to end users and also as feed for Phase 2 operations**
- **The extensive work completed for the Scoping Study on Phase 1 confirmed the global significance of SPD and will now lead to a PFS, which is expected to take only four months at a relatively low cost of c.\$250,000, to conclude. The increasing confidence levels achieved in Phase 1 is anticipated to be attractive to offtakers and financiers**
- **Offtake discussions progressing, with agreements likely to be concluded successfully, provided recent movements towards a stable vanadium pricing environment continue**
- **In addition, development of Phase 2 is to commence seeking to optimally extract the full suite of economic elements associated with vanadium mineralisation at SPD**
- **Phase 2 studies will assess all available technologies and processes that make the production of a suite of products possible, including established methods and newer techniques aimed at generating battery grade vanadium pentoxide**
- **The size, grade and scope of the shallow high-grade resource of 169Mt at 1.07% (in situ) V₂O₅ is foreseen to enable the development of long-life operations for both phases 1 and 2**

Tando Resources (ASX: TNO, **Tando** or **the Company**) is pleased to announce that following the recent successful Scoping Study and capital raising (refer ASX Announcement 2 May 2019), the Company plans to implement parallel development strategies, rapidly advancing both Phase 1 and Phase 2 of the world class Steelpoortdrift (SPD) Vanadium Project.



Tando Managing Director Bill Oliver commented that the outstanding results of the recently completed Scoping Study put Tando in an undeniably competitive position:

"The confirmed superior resource base of Steelpoortdrift allows for both the production of a high grade Vanadiferous Titano-Magnetite concentrate for sale and as a feedstock for a modern plant planned to produce specialist vanadium products used by the steel and renewable energy industries." Mr Oliver said.

"The Project now has real momentum which will gain pace as we undertake the PFS, complete Reserve drilling, finalise offtake contracts and move to secure project funding. With the excellent geological and financial metrics that flowed from the Scoping Study, the project is now poised to gain momentum and to take its rightful place as a globally significant Vanadium deposit and one of the next producing projects of the world."

The updated strategy is being driven by the addition of the Company's South African joint venture partners and original vendors of the Steelpoortdrift (SPD) Vanadium Project (**Original Vendors**) to the management team as consultants. The Original Vendors include respected industry professionals Nico van der Hoven (current Chairman of JSE listed chrome producer Bauba Platinum with substantial experience developing and marketing commodities worldwide) and Jurie Wessels (who has significant experience in project identification and managing AIM and JSE listed resources companies). Mr van der Hoven and Mr Wessels will be joining the Board of Tando following the shareholder's meeting scheduled to be held in July to approve the accelerated acquisition of the Steelpoortdrift Vanadium project.

The parallel strategy seeks to take advantage of the shallow, high grade mineralisation at the SPD Project as well as the high quality +2% vanadium concentrate that is produced by mining and simple beneficiation.

The Phase 1 Scoping Study focussed on the direct sale (offtake) of this concentrate to end users in order to generate early cash flow. Negotiations around an offtake continue to advance, supported by the recent positive upswing in the vanadium pentoxide pricing environment and low global inventories for both ferrovandium and 98% V₂O₅. The Company believes the vanadium market has returned to a sustainable upward trajectory and that a continued stable pricing environment makes Phase 1 more likely to be concluded successfully.

While offtake discussions are ongoing, the Company will continue to advance development of Phase 1 with the Pre-feasibility Study (PFS) and Reserve drilling program set to start this month.

Due to the extensive work undertaken as part of the completed Scoping Study, the PFS is expected to be completed in a relatively short timeframe of around four months and cost just \$250,000.

In parallel with the PFS, Tando will complete initial Reserve drilling at SPD, providing further certainty around the orebody and the project's economic outlook. This drilling program is estimated to cost \$120,000.

Completion of the PFS, Reserve drilling and offtake contracts will pave the way for Tando to secure project funding and commence construction. The Company believes a continued stable pricing environment will assist to fast track the development of Phase 1, which requires pre-production CAPEX of less than US\$20M



(refer ASX Announcement 2 May 2019). Project funding could also include a JV at the project level to further de-risk the development for Tando.

Concurrent with the work for Phase 1, Tando will continue to advance the further commercialisation of Steelpoortdrift through studies into Phase 2 of the SPD Project. Phase 2 is envisaged to utilise the high quality concentrate generated in Phase 1 for downstream processing to produce value added specialist products suitable for the steel, renewable energy and industrial minerals markets. The concentrate contains approximately 2.2% V₂O₅, 12% TiO₂ and 55% Fe (Table 1), all commodities consumed by these markets.

Table 1. Concentrate Analysis Results (refer ASX Announcement 18 Mar 2019)

Sample	V ₂ O ₅ %	TiO ₂ %	SiO ₂ %	Al ₂ O ₃ %	Fe%
3357: magnetic concentrate	2.19	12.0	3.25	4.82	54.6
3358: magnetic concentrate	2.18	12.1	3.51	4.91	54.2

Phase 2 studies will initially assess which technologies and processing options are most appropriate for the vanadiferous titanomagnetite concentrate produced from SPD with the purpose of determining the optimum method, or combination of methods of downstream processing, that deliver the highest value for the Company. Phase 2 studies is planned to unlock significantly higher value and transform Tando into a producer of high value specialist products suitable for the steel, renewable energy and industrial minerals markets.

These studies, and subsequent studies, will compare conventional downstream processing methods such as the salt roasting method already used in South Africa at Bushveld's Vametco Operations and Glencore's Rhovan Operations with established pyro- and hydrometallurgical processes to the SPD vanadium concentrate, along with possibly other, more innovative, methods.

Samples have already been dispatched for testing at various laboratories and process development facilities worldwide.

Similar to its approach to Phase 1, the Company will focus on low CAPEX options for Phase 2. The development of Phase 1 will assist in this goal, as the crushing and beneficiation circuits will be established under Phase 1.

The intention is to leverage the high grade and large tonnage Mineral Resource at SPD to enable Tando to produce 98% V₂O₅ flake for the steel industry, along with ferrovandium and higher purity vanadium pentoxide products suitable for use in vanadium redox flow batteries.

Phase 2 will also aim at generating, if possible, specialist iron and titanium products from the suite of economic elements contained within the SPD mineralisation which will, if so, substantially distinguish Tando from existing competitors.

It is anticipated the size, grade and scope of the existing Mineral Resource at SPD, particularly the shallow high-grade resource of 169Mt at 1.07% (*in situ*) V₂O₅ (refer ASX Announcement 19 April 2019), will enable the development of a long-life operation for both phases 1 and 2.



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 1).

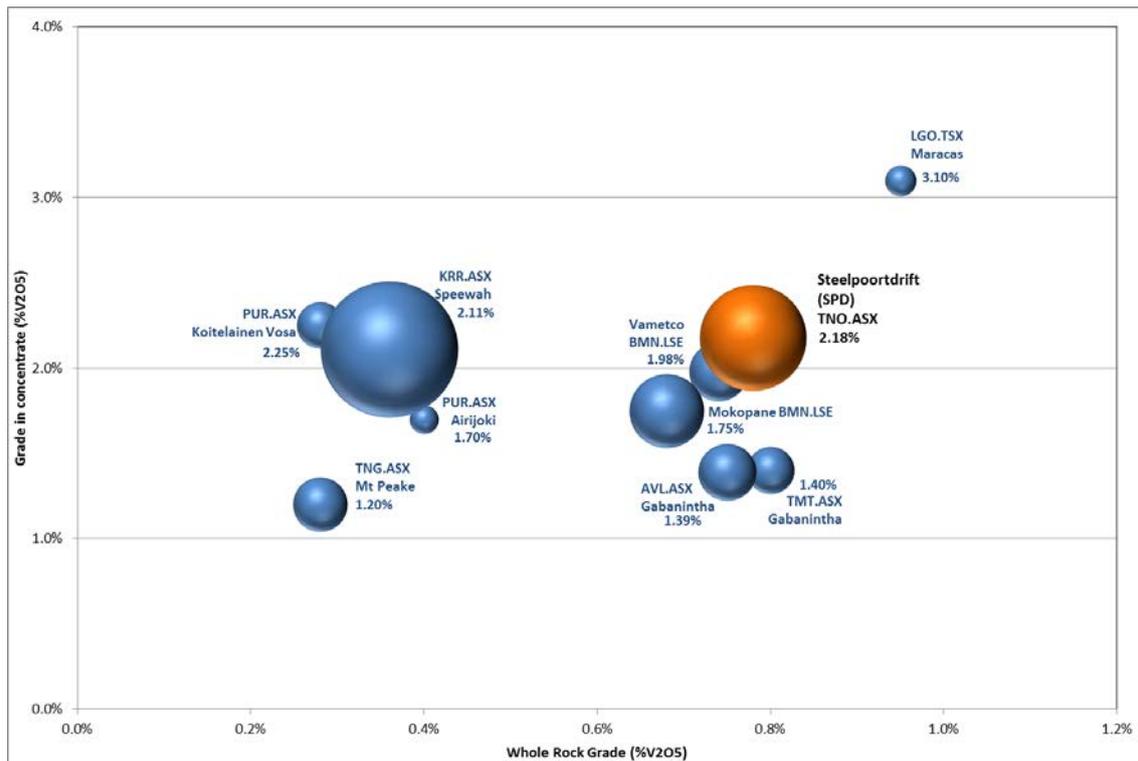


Figure 1. Global vanadium projects categorised by resource grade and grade in concentrate. Label states concentrate grade based on reported testwork. Bubble size denotes tonnage. Refer Appendix 1 for details and sources of information.

The Steelpoortdrift (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 2). 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 Steelpoort 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.

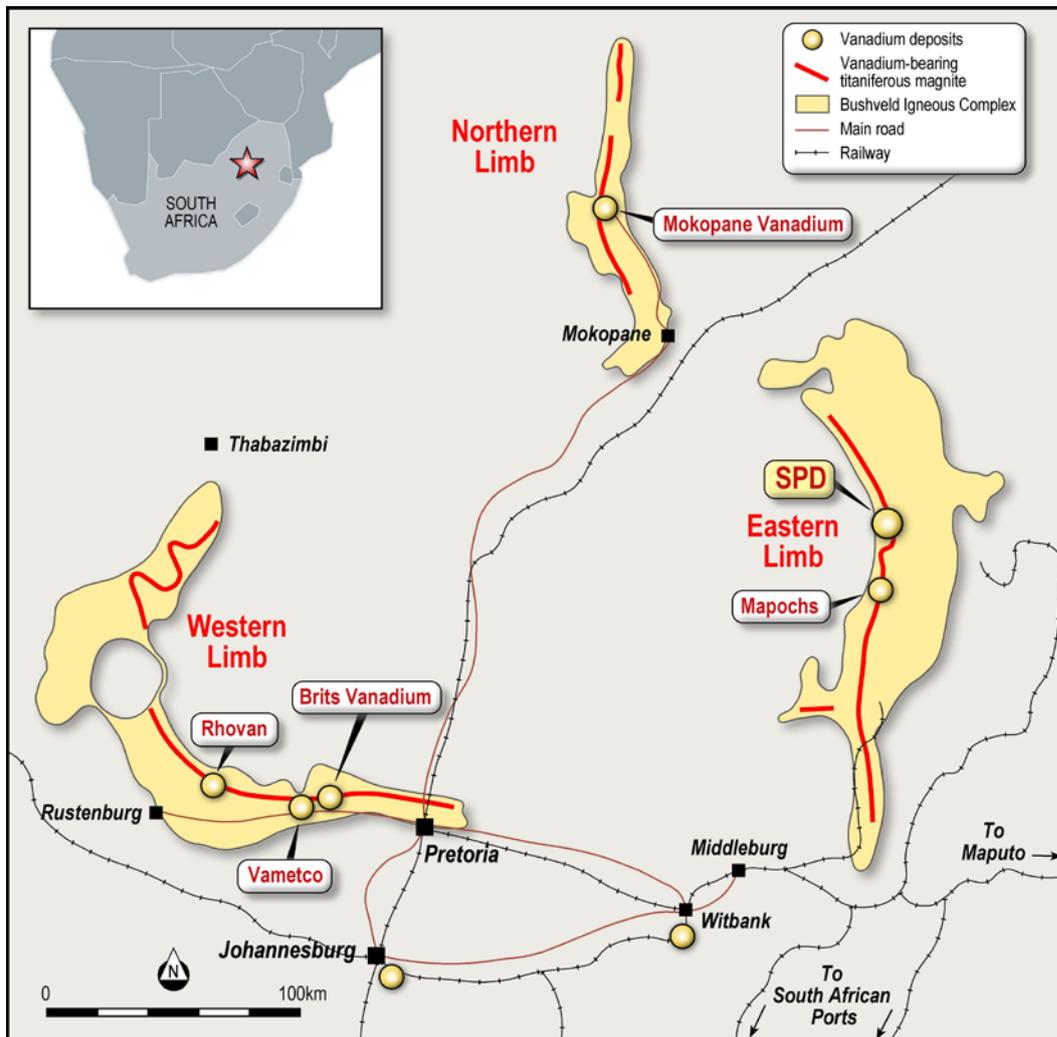


Figure 2. Location of the SPD Vanadium Project and other vanadium deposits in the Bushveld Igneous Complex.

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. Recent price movements have emphasised the current low inventories of most end-users and traders. 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.

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Competent Persons Statements

The information in this announcement that relates to Exploration Results and other technical information relating to drilling and sampling at the Steelpoortdrift 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: Data and sources for Peer Comparison (Figure 1)

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 ¹	Vametco	Production	Indicated & Inferred	187	0.78	1.98	AIM Announcement 22 May 2019 http://www.bushveldminerals.com/regulatory-news-rns/ ; https://www.bushveldminerals.com/bushveld-vametco/
	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 ²	Koitelainen Vosa	Development	Inferred	116.4	0.28	2.25	ASX Announcement 06/02/2019
	Airijoki	Development	Inferred	44.3	0.40	1.70	ASX Announcement 08/03/2019
Australian Vanadium AVL.ASX	Gabaintha	Development	Measured, Indicated & Inferred	176	0.77	1.40	ASX Announcement 26/09/2018, 19/12/2018
Technology Metals TMT.ASX	Gabainth	Development	Indicated & Inferred	120	0.8	1.39 – 1.49	ASX Announcement 21/06/2018

Updates to Peer Comparison Table:

1. Bushveld - Vametco Mineral Resource Update announced May 22, 2019
2. Pursuit Minerals - Mineral Resources updated with provided information