

21 May 2018

## EXPLORATION ON HIGH GRADE PIPES COMMENCES AT SPD VANADIUM PROJECT

- **Ground magnetic survey to commence following identification of further magnetite “pipes” at the SPD Vanadium Project.**
- **Previous high grade results > 2% V<sub>2</sub>O<sub>5</sub> from magnetite pipes on the Project (importantly these results are whole rock assays, not concentrate grades).**
- **These pipes occur separately from the mapped and drilled vanadiferous titanomagnetite layers (which average 0.78% V<sub>2</sub>O<sub>5</sub>)**
- **Pipes are also outside the historic resource of > 500Mt at the SPD Vanadium Project, indicating significant potential upside for the Project.**
- **Current exploration aims to better delineate these pipes to enable their sub surface extent to be determined by the forthcoming drilling programme.**

Tando Resources (“**Tando**” or “**the Company**”) is pleased to the commencement of exploration aimed at identifying and sampling further outcropping magnetite “pipes” at the SPD Vanadium Project, a large, high grade vanadium deposit located in the established vanadium production hub in the Bushveld Complex of South Africa. Tando has signed a Heads of Agreement (“**HoA**”) to acquire 74% of the SPD Vanadium Project as announced on 22 March 2018.

Samples from two magnetite pipes at the SPD Vanadium Project returned high grade results of **2.08% V<sub>2</sub>O<sub>5</sub>** and **2.02% V<sub>2</sub>O<sub>5</sub>** (refer ASX Announcement 7 May 2018). It should be emphasised that these are **whole rock (or in situ) results, not concentrate** grades, and compare favourably to the average in situ grade of the SPD Vanadium Project (estimated to be 0.78% V<sub>2</sub>O<sub>5</sub> based on drilling and sampling, refer ASX Announcement 22 March 2018 and below).

Since these results were received the Company has been investigating the potential for further pipes to be present within the SPD Vanadium Project from a number of different sources.

Review of historical reports and mapping indicate the presence of three further pipes in the eastern part of the Project (Figure 1). The report describes these as being “up to 200m in length” with their width not able to be determined. These dimensions are comparable with the pipes sampled which measured 200m by 150m and 350m x 150m respectively (ASX Announcement 7 May 2018).

As detailed in the announcement of 7 May 2018 studies have demonstrated that the first magnetite layers formed were the most enriched in vanadium with successive layers containing progressively lower V<sub>2</sub>O<sub>5</sub> contents. Theoretically any pipes occurring to the east of the magnetite layers previously drilled, such as the ones identified from historical mapping, should contain higher V<sub>2</sub>O<sub>5</sub> grades relative to the pipes sampled and the layers drilled (Figure 1).



LANDSAT imagery was acquired and has been successful at delineating additional areas for immediate field inspection (Figure 1). The satellite imagery acquired includes images which capture wavelengths which detect iron (iron oxides) at surface or provide contrasts between such materials and non ferruginous surface material such as clays.

Open file aeromagnetic data was acquired and reprocessed however did not yield sufficiently detailed imagery due to the coarse line spacing (1km). The Company is mobilising a crew to site to commence a ground magnetic survey to both better delineate the newly identified pipes and also identify pipes hidden under recent cover. Delineation of further magnetic pipes at this time is important to enable their sub surface extent to be tested in the forthcoming drill programme at the SPD Vanadium Project.

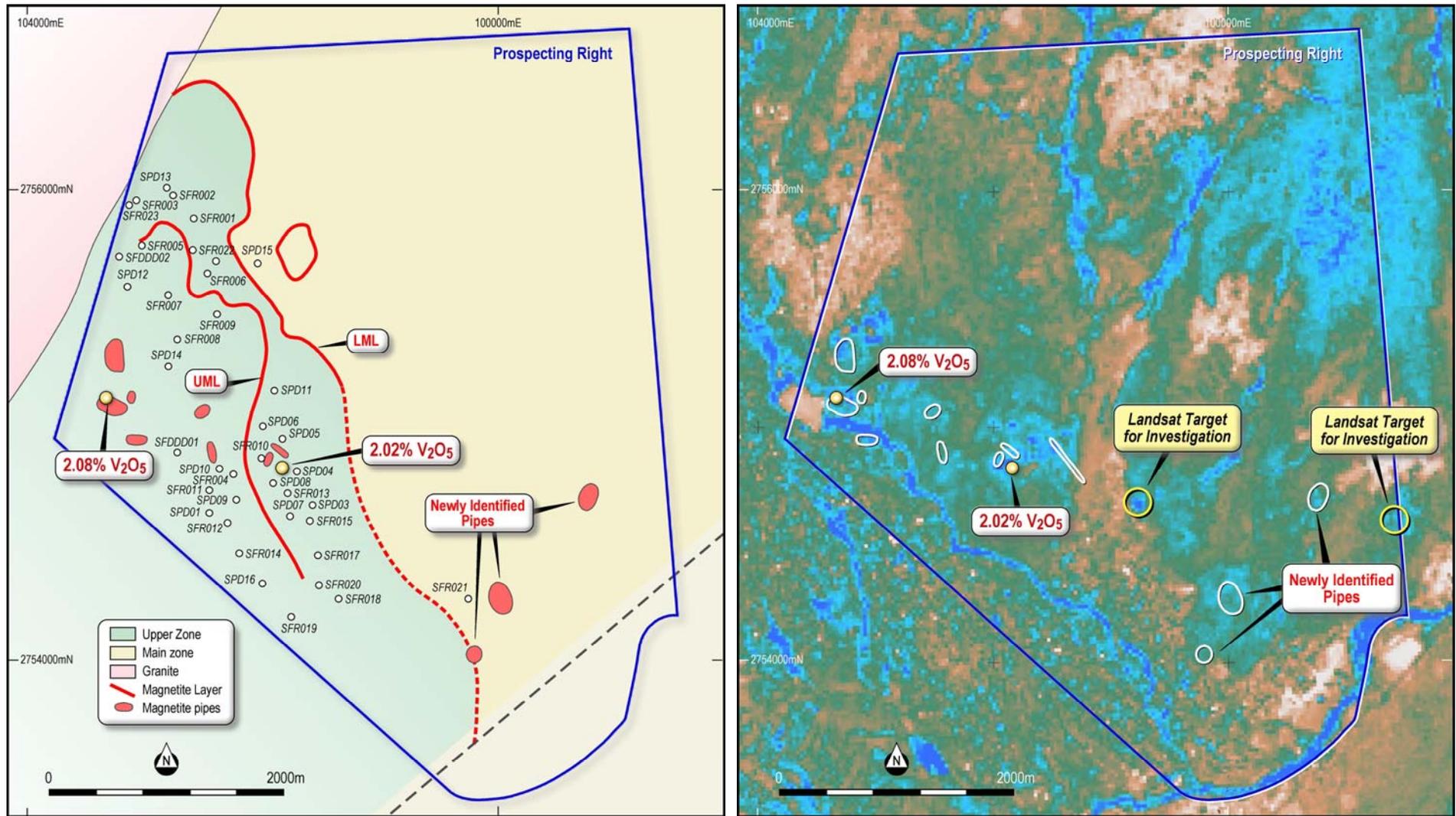
Once the sub surface extents of these pipes is determined via drilling the Company will be able to determine the potential contribution of the pipe material to future Mineral Resource Estimations and Scoping Studies. Due to the high grade nature of the pipes they potentially represent a "direct shipping" type material that may be able to be sold to an end user as feedstock for a downstream processing plant or processed using a different method.

A similar pipe, also referred to as an "Iron Rich Ultramafic Pegmatite" (IRUP) was historically mined by Xstrata at the Kennedy's Vale Mine, along strike to the north from the SPD Project. This pipe is reported to have measured 350m by 55m at surface and been mined to a depth of 180m (Scoon et. al., 2017). The mine originally produced both pig iron and vanadium, but towards the end of its life produced only vanadium, extracted from the magnetite by means of chemical leaching.

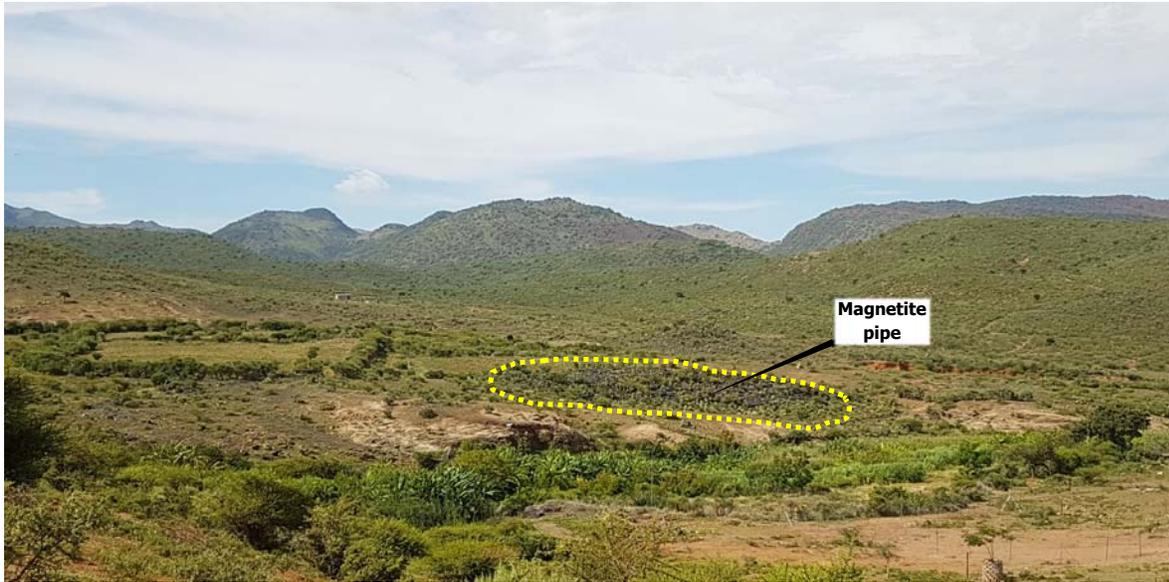
The SPD Vanadium Project was discovered in the 1990's during a regional exploration campaign to find new supply for active vanadium operations including the Kennedy's Vale Mine. Vanadium mineralisation at the SPD Project is hosted in two vandiferous titanomagnetite layers, the Upper Magnetite Layer and Lower Magnetite Layer, which dip shallowly (10-12deg) to the west (Figure 1). Initial exploration by Vantech in 1997 comprised 16 diamond core drill holes for 1051.6m (refer Figure 1 and ASX Announcement 22 March 2018) as well as detailed geological mapping. This mapping has been used to identify the new magnetite pipes presented in this announcement.

VanRes held a prospecting right over the SPD Project from 2009 until 2015 when an application for a Mining Right was lodged. Exploration by VanRes comprised 23 RC drillholes for 1,073m and 2 diamond core drillholes for 278m drilled in 2010 (refer Figure 1 and ASX Announcement 22 March 2018) leading to estimation of an inferred resource of 513Mt under the SAMREC Code (refer below for further detail). Drill samples were passed through a Davis Tube to obtain a magnetic concentrate. Vanadium and titanium content in the concentrate is consistent, **averaging 2% V<sub>2</sub>O<sub>5</sub> and 13% TiO<sub>2</sub>** (ASX Announcement 22 March 2018). Best whole-rock drilling results included:

- 9m at 1.34% V<sub>2</sub>O<sub>5</sub> + 10.5% TiO<sub>2</sub> from 9m (SFR019)
- 13m at 1.13% V<sub>2</sub>O<sub>5</sub> + 7.43% TiO<sub>2</sub> from 10m (SFR017)
- 14m at 1.08% V<sub>2</sub>O<sub>5</sub> + 7.07% TiO<sub>2</sub> from 9m (SFR013)
- 20m at 0.96% V<sub>2</sub>O<sub>5</sub> + 8.35% TiO<sub>2</sub> from 11m (SFR011)
- 15m at 0.92% V<sub>2</sub>O<sub>5</sub> + 6.44% TiO<sub>2</sub> from 8m (SFR018)



**Figure 1.** Plan showing location of surface samples and magnetite pipes at the SPD Vanadium Project based on historical reports and mapping.



**Figure 2.** Magnetite "pipe" (circled in yellow) at the SPD Vanadium Project.



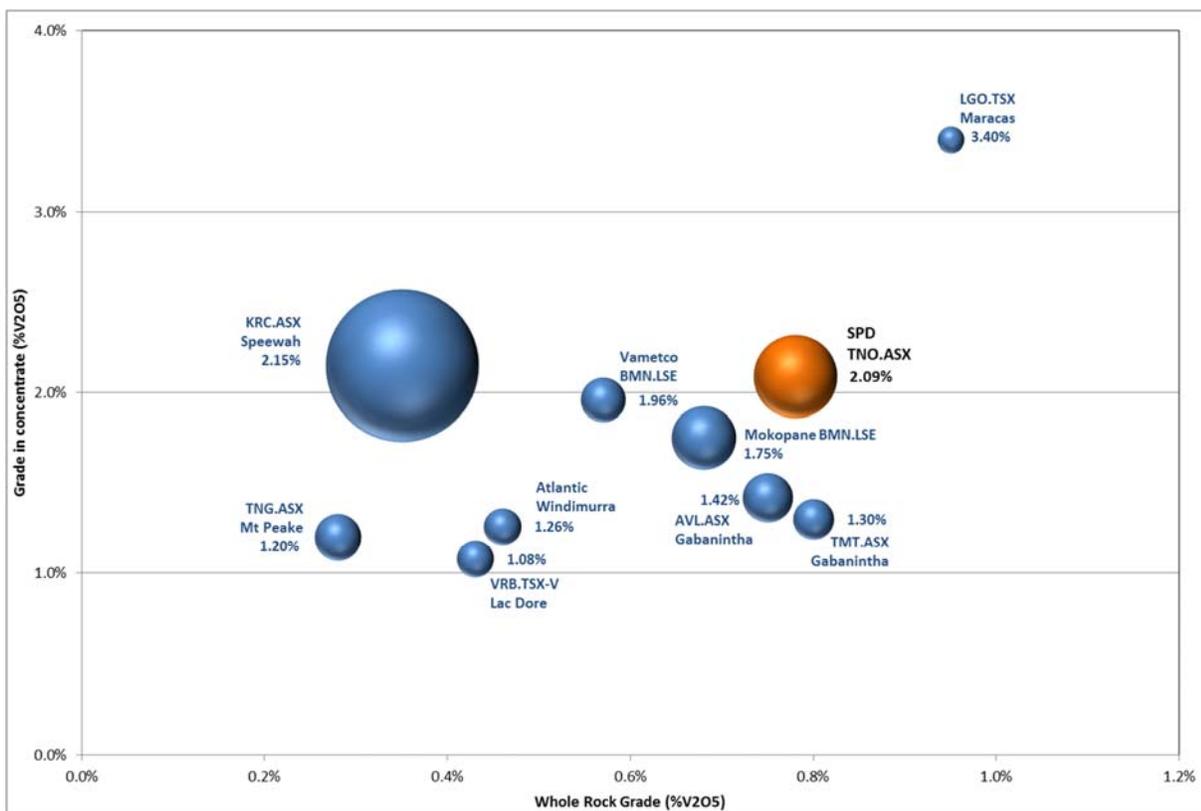
**Figure 3.** Hand specimen of vanadiferous titanomagnetite from the SPD Vanadium Project.



## Background on the SPD Vanadium Project

Global vanadium projects are summarised in Figure 10. 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 4).

The SPD Vanadium Project is located in a similar geological setting to the mining operations of Rhovan (Glencore), Vametco (Bushveld Minerals) and Mapochs (International Resources Ltd) in the Gauteng and Limpopo provinces of South Africa (Figure 5). 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 SPD Vanadium Project is located only 30km from the currently dormant Mapochs mine which has a processing plant and railway infrastructure.



**Figure 4.** Global vanadium projects categorised by resource grade and grade in concentrate.

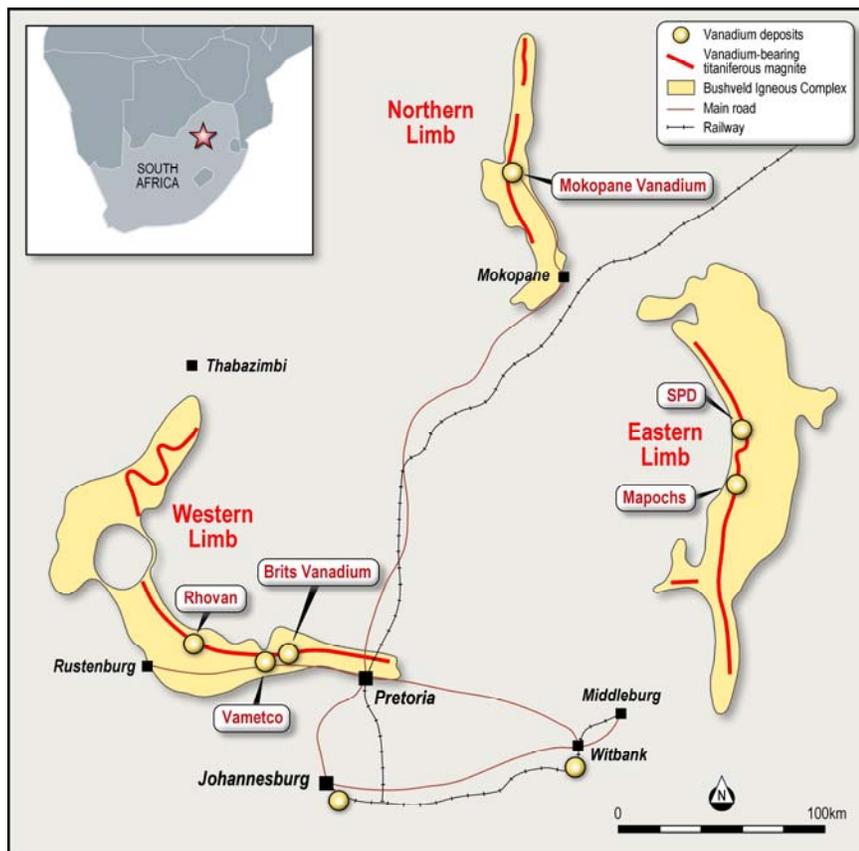
Label states concentrate grade based on reported testwork. Bubble size denotes tonnage. Tonnes and grade based on reported total resources, due to different host exchanges these are reported under differing reporting regimes (JORC, 43-101 or SAMREC).

Source: Company websites, ASX / TSX / LSE announcements.



The region around the SPD Vanadium Project contains critical infrastructure 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,
- Skilled workforce within the local community and the region.



**Figure 5.** Location of the SPD Vanadium Project and other vanadium deposits in the Bushveld Igneous Complex.

The resource for the SPD Vanadium Project as shown in Table 1 was estimated by GEMECS Pty Ltd based on all available drilling data in accordance with the SAMREC Code (2007) and is therefore a “qualifying foreign resource estimate” as defined in the ASX Listing Rules (further detail below and in the ASX Announcement of 22 March 2018). The resource was classed as inferred under the SAMREC Code. Bill Oliver, Managing Director of Tando, is acting as the Competent Person and has reviewed reports and data compiled and used in the resource estimation. The authors of the report on the 2010 exploration activities and resource estimate have confirmed that there are no material changes to the resource or underlying data since the date of the report (June 2010), and that the information presented here is consistent with the data it reported.



**Table 1.** SPD Vanadium Project resource (classed as inferred under the SAMREC Code).

Reef	Avg Thickness (m)	Tonnes (Mt)	Whole Rock V <sub>2</sub> O <sub>5</sub> %	Mt%	Magnetite Tonnes	V <sub>2</sub> O <sub>5</sub> % in Magnetite
Upper Layer	24	184.2	0.73	42.4	78.1	1.99
Lower Layer	22	329.1	0.81	41.6	136.0	2.20
<b>Averages &amp; Totals</b>	<b>23</b>	<b>513.3</b>	<b>0.78</b>	<b>41.9</b>	<b>215.0</b>	<b>2.09</b>

**Table 1 Notes:** While this foreign resource is not reported in compliance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**), it is the Company's opinion (and the opinion of the Competent Person for this document), 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. All tabulated data has been rounded to one decimal place for tonnage and two decimal places for grades. %V<sub>2</sub>O<sub>5</sub> is derived from XRF analysis by multiplying %V by 1.785.

The Competent Person has not yet completed sufficient review on the qualifying foreign resource estimate to classify it in accordance with the JORC Code at this time and consequently it is uncertain that, following evaluation and/or further exploration work that the qualifying foreign resource estimate will be able to be reported as a Mineral Resource in accordance with the JORC Code. The Company plans to carry out further assessment and due diligence on the Mineral Resource, and then to implement a drilling programme to verify the Mineral Resource and, provided results are consistent with previous drilling, aim to increase the confidence in the Mineral Resource.

## Background on Vanadium

The Company has targeted vanadium as a commodity of interest due to its usage in energy storage, specifically vanadium flow redox batteries (VRFB). It is anticipated that forecast increase in battery usage for large scale energy storage will lead to a significant increase in the demand for vanadium. 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 household or small town sized energy storage requirements. According to research conducted by Lazard (NYSE:LAZ) VRFB's already have a levelised cost of storage that exceeds Li-ion battery storage by 26 to 32% on a comparative basis (full report available at <https://www.lazard.com/perspective/>). Current VRFB facilities in usage or in development are located in China and Japan with development of further facilities constrained by an absence of supply of "battery grade" V<sub>2</sub>O<sub>5</sub>.



The price for >98% Vanadium Pentoxide ( $V_2O_5$ ), a more commonly traded intermediate product, has increased from US\$3.50/lb at the start of 2017 to current prices around US\$15.60/lb (source: Metal Bulletin 13 April 2018) and a substantial premium is currently ascribed for higher purity vanadium electrolyte.

Current day demand for vanadium arises from its use in steel making. Vanadium is principally used to add strength via various alloys as well as other speciality uses. This usage accounts for over 90% of current vanadium demand in today's market (with the balance supplying chemical usages including as a catalyst for sulphuric acid production). Demand from steel makers is forecast to increase with stricter standards on the strength of steel to be used in construction (specifically rebar).

**For and on behalf of the board:**

Mauro Piccini

Company Secretary

**Competent Persons Statement**

The information in this announcement that relates to Exploration Results 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 Bill Oliver, the Managing Director of Tando Resources Ltd. Mr Oliver is a Member of the Australasian Institute of Mining and Metallurgy and the Australasian Institute of Geoscientists. He 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 Oliver consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears. The Exploration Results are based on standard industry practises for drilling, logging, sampling, assay methods including quality assurance and quality control measures as detailed in Appendix 1.

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## APPENDIX 1.

The following Tables are provided to aid compliance with the JORC Code (2012 Edition) requirements for the reporting of Exploration Results at the SPD Project.

### Section 1: Sampling Techniques and Data

(Criteria in this section applies to all succeeding sections)

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<i>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i>	Landsat imagery used to detect iron rich material at surface.
	<i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i>	Completed by data provider (United States Geological Survey ( <b>USGS</b> )).
	<i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</i>	No mineralisation is being described in this table. Targets detailed have the potential to host mineralisation and will be explored for this reason.
<b>Drilling techniques</b>	<i>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic etc) and details (e.g. core diameter, triple of standard tube, depth of diamond tails, face-sampling bit or other type, whether core is orientated and if so, by what method, etc).</i>	No drilling is being reported.
<b>Drill sample recovery</b>	<i>Method of recording and assessing core and chip sample recoveries and results assessed.</i>	No drilling is being reported.
	<i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i>	No drilling is being reported.
	<i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i>	No drilling is being reported.
<b>Logging</b>	<i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i>	No drilling is being reported.
	<i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i>	No drilling is being reported.
	<i>The total length and percentage of the relevant intersections logged.</i>	No drilling is being reported.
<b>Sub-sampling techniques and sample preparation</b>	<i>If core, whether cut or sawn and whether quarter, half or all core taken.</i>	No core drilling is being reported.
	<i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i>	No non core drilling is being reported.

<b>Criteria</b>	<b>JORC Code explanation</b>	<b>Commentary</b>
	<i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i>	No sampling is being reported.
	<i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i>	No sampling is being reported.
	<i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i>	No sampling is being reported.
	<i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	No sampling is being reported.
<b>Quality of assay data and laboratory tests</b>	<i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i>	No assays are being reported.
	<i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i>	Landsat 8 images have been processed from the full resolution Landsat Level 1 data sourced from USGS. Selection of scenes: priority was given to minimise cloud and vegetation cover over newest date of collection. Image shown uses the ratio of bands 4+6 and band 5.
	<i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i>	Imagery is checked for consistency. Most validation is completed is by the data provider (USGS).
<b>Verification of sampling and assaying</b>	<i>The verification of significant intersections by either independent or alternative company personnel.</i>	No drilling is being reported.
	<i>The use of twinned holes.</i>	No drilling is being reported.
	<i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i>	Primary data is collected by the data provider (USGS).
	<i>Discuss any adjustment to assay data.</i>	No assay data being reported.
<b>Location of data points</b>	<i>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i>	Locations surveyed at a high level of accuracy at data acquisition.
	<i>Specification of the grid system used.</i>	The grid system is a UTM grid (Zone 35, WGS84 projection).
	<i>Quality and adequacy of topographic control.</i>	Adequate.
<b>Data spacing and distribution</b>	<i>Data spacing for reporting of Exploration Results.</i>	Not relevant for data presented (Landsat imagery)
	<i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i>	Not relevant for data presented (Landsat imagery)
	<i>Whether sample compositing has been applied.</i>	No sampling is being reported.
<b>Orientation of data in relation to geological structure</b>	<i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i>	No sampling is being reported.
	<i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to</i>	No drilling is being reported.

Criteria	JORC Code explanation	Commentary
	<i>have introduced a sampling bias, this should be assessed and reported if material.</i>	
<b>Sample security</b>	<i>The measures taken to ensure sample security.</i>	No sampling is being reported.
<b>Audits or reviews</b>	<i>The results of any audits or reviews of sampling techniques and data.</i>	No independent audits have been undertaken.

## Section 2: Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i>	The SPD Project comprises a single prospecting right, covering the farm Steelpoortdrift 365 KT, and an application for a Mining Right.
	<i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i>	The tenement is represented to be in good standing. Title DD will verify this.
<b>Exploration done by other parties</b>	<i>Acknowledgment and appraisal of exploration by other parties.</i>	The Project has previously been explored for magnetite-hosted Fe-V-Ti deposits.
<b>Geology</b>	<i>Deposit type, geological setting and style of mineralisation.</i>	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 (10-12deg) to the west.
<b>Drill hole Information</b>	<p><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</i></p> <ul style="list-style-type: none"> <li>• <i>easting and northing of the drill hole collar</i></li> <li>• <i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li>• <i>dip and azimuth of the hole</i></li> <li>• <i>down hole length and interception depth</i></li> <li>• <i>hole length.</i></li> </ul>	No drilling is being reported.
	<i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i>	Not applicable for this announcement which reports Landsat imagery and interpretation.
<b>Data aggregation methods</b>	<i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i>	No averaging or aggregating has been completed.

