



22nd January 2021

COMMENCEMENT OF PRE-FEASIBILITY STUDY (PFS)

Vanadium Resources Limited (ASX: VR8) ('VR8' or 'the Company')

The Board of Vanadium Resources Limited (ASX: VR8) (VR8 or the Company) wishes to advise that the Company has assembled a team of experts and experienced contributors to commence with and complete a pre-feasibility study towards the production of high-purity V₂O₅, utilising conventional salt roast technology from concentrate produced at the Steelpoortdrift Vanadium Project in South Africa. The team includes:

- Mr Eugene Nel (CEO of VR8 and Metallurgist)
- Mr Les Ford (Lead consultant and Metallurgist)
- Mr John Ciganek (Non-Executive Director of VR8 and experienced resource/finance professional)
- Mr James Wilson (Consultant and experienced geologist)

Mr Nel, who was recently appointed as CEO, is experienced as a metallurgical and process engineer in the operations, management, design and optimisation of mineral beneficiation plants globally. **Mr Ford** has over 40 years of experience in the construction, development and production phases of vanadium projects globally and is regarded as one of the world's foremost experts in vanadium. The Company also has access to the skills and experience of **Mr Ciganek**, who has an in-depth understanding of project finance of mining operations, and the technical knowledge of **Mr Wilson**, who was intimately involved with the completion of successful feasibility studies of mining and complex processing operations.

Messrs Nel, Ford and Wilson were part of the team that completed the scoping study recently finalised by the Company, which confirmed globally competitive opex and capex metrics at the project, including that salt roast-leach processing is technically and financially viable from concentrate produced at Steelpoortdrift. **The scoping study results released on 23 September 2020 established that the Steelpoortdrift project at the then current vanadium prices exhibit significant potential for the following: a NPV_{8%} value of up to US\$401M, robust returns (pre-tax EBITDA of up to US\$1 900M), a resilience to low price environments (average cash operating costs as low as \$3.07/lb V₂O₅), competitive**

capex (up to US\$187M) and an attractive payback and IRR (between 2-3 years payback and IRR of up to 45% assuming a 50:50 debt/equity).

The Company recently procured sufficient cash reserves to commence with the pre-feasibility study, which is likely to be attained at an estimated cost of A\$300,000 and is expected to be completed in Q2 2021 (i.e. April-June quarter).

Refer to Company ASX Announcements released on 23rd September 2020 and 30th December 2020 for further details.

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

For and on behalf of the board:

Kyla Garic

Company Secretary

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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.

The most commonly traded vanadium product is 98% V₂O₅ flake, as it can be used directly in steel making or converted to ferrovanadium for additional uses in steel making. Higher purity vanadium products are either produced by a modern plant (such as being planned by VR8) or are further processed from 98% V₂O₅ flake for speciality uses in chemical industries, energy storage and high performance alloying technologies.

Such speciality uses are expected to provide additional longer term demand for vanadium. Vanadium redox flow battery (VRFB) technology was developed in Australia and has a number of advantages in industrial and small town sized energy storage requirements. The global move towards renewable energy solutions will require a vast increase in energy storage installations, which in turn is forecast to result in an increase in the amount of VRFBs being manufactured and installed around the world.

Another emerging use of vanadium is in high-performance light weight alloys. Supply of such alloys is increasing in the aerospace industry, with aeroplanes such as the Boeing Dreamliner 787 and the Airbus A350 now incorporating up to 100 tons of vanadium per aircraft.

This month 98% V₂O₅ flake product continues to trade around \$7.00/lb (US\$15,420/tonne; Fastmarkets Metal Bulletin). Trade remains quiet globally with supply of product largely restored and buyers having re stocked in recent weeks, with any excess material being sold on Chinese markets due to higher prices versus European buyers.

BACKGROUND ON THE STEELPOORTDRIFT VANADIUM PROJECT

The Steelpoortdrift titaniferous magnetite deposit is located in the prolific Bushveld Geological Complex surrounded by known mineral and vanadium production facilities within reach of proven processing plants, railway and road options and ports.

The Steelpoortdrift Vanadium project is licensed with a mining right and the Company is in the process of conducting work towards becoming fully permitted (such as acquiring a water use license) for production and towards studies to verify a pathway of options to produce high purity V_2O_5 flake and other niche products from the suite of elements present in the Titano-magnetite (V, Ti and Fe). The current Scoping Study aims to demonstrate the viability of producing high purity V_2O_5 flake from the Project.

The Steelpoortdrift Vanadium Project compares highly favourably to other vanadium deposits globally (Figure 1), as **the largest published global undeveloped Mineral Resource** (662 million tonnes at an in situ grade of 0.77% V_2O_5 , defined above an in-situ grade of 0.45% V_2O_5), as well as **the largest published high grade undeveloped resource** (188 million tonnes at an in situ grade of 1.23% V_2O_5 , defined above an in situ resource grade of 1% V_2O_5) (refer ASX Announcement 29 April 2020). A sizeable portion of this high grade resource (68Mt at 1.37% V_2O_5) is hosted in a discrete, massive magnetite unit which outcrops along 4km of strike within the project area. The Company confirms that all material assumptions and parameters underpinning the Mineral Resource Estimate reported in the ASX announcement dated 29 April 2020 continue to apply and have not materially changed, and that it is not aware of any new information or data that materially affects the information that has been included in this announcement.

The Steelpoortdrift Vanadium Project produces a high-quality concentrate containing approximately 2.2% V_2O_5 , 12% TiO_2 and 58% Fe (ASX Announcements 18 March 2019 and 24 June 2020). Studies into downstream processing of this concentrate are in progress to confirm its ability to create high value products suitable for the steel, renewable energy (VRFB battery) and industrial minerals markets. Initial roasting testwork return outstanding recoveries of almost 90% vanadium using the established salt roasting – leaching process (ASX Announcement 24 July 2020).

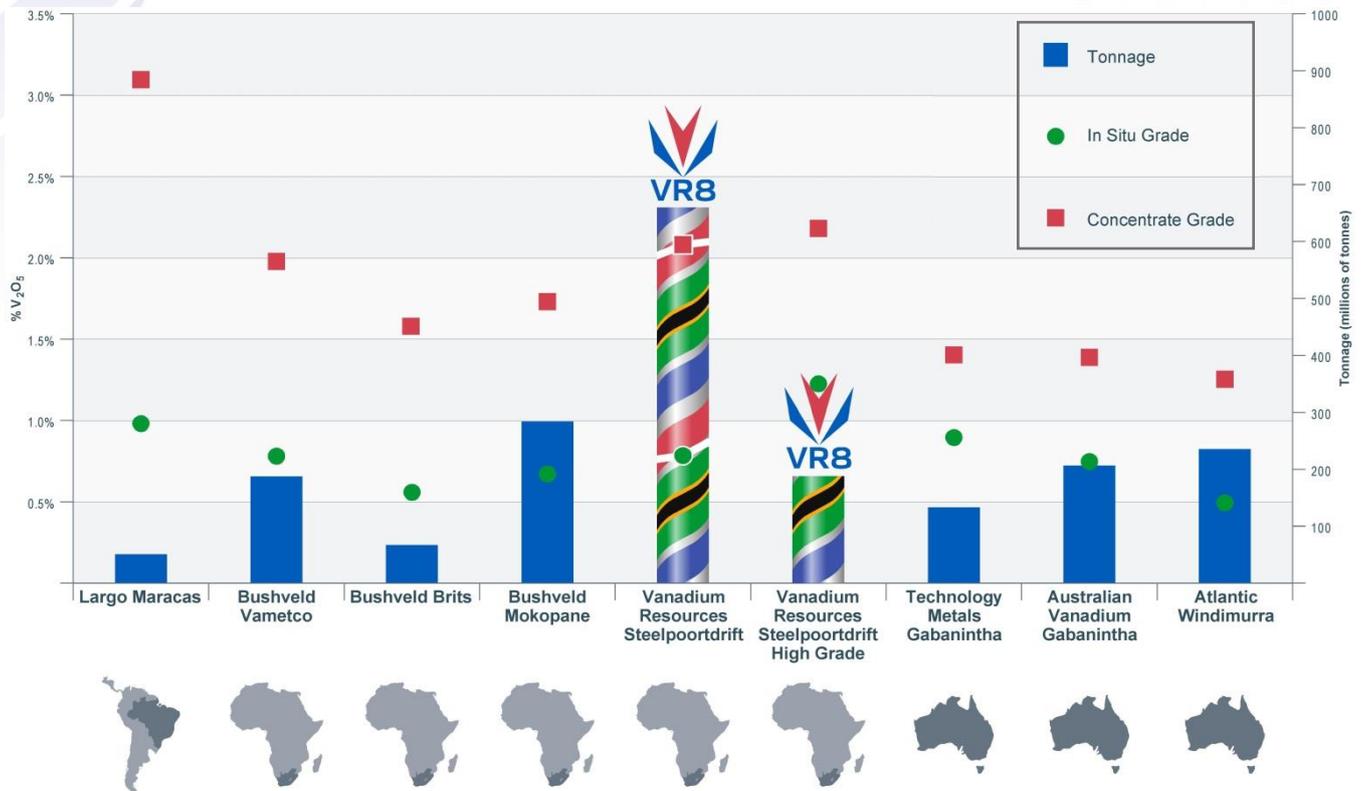


Figure 1. Global vanadium projects categorised by resource grade and grade in concentrate. Chart compares resources reported under different codes and companies at different stages of development as detailed in Appendix 1. Only resources with a quoted in situ grade > 0.45% V₂O₅ are shown in figure.

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	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	186	0.78	1.98	Competent Persons' Report on the Vametco Vanadium Mine Jan 2020 https://www.bushveldminerals.com/technical-reports/
	Brits	Development	Indicated & Inferred	66.8	0.56	1.58	Competent Persons' Report on the Brits Vanadium Project Jan 2020 https://www.bushveldminerals.com/technical-reports/
	Mokopane	Development	Indicated & Inferred	285	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 01/04/2019 06/11/2019
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	Gabaintha	Development	Measured, Indicated & Inferred	208.2	0.74	1.39	ASX Announcement 04/03/2020, 17/03/2020
Technology Metals TMT.ASX	Gabainth	Development	Indicated & Inferred	131	0.90	1.36	ASX Announcement 29/03/2019