

ASX RELEASE

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Test-work proves Vanadium is a potentially viable by-product for Toro's Wiluna Uranium Project

Highlights

- Leach optimisation test-work followed by ion exchange test-work has proven that Vanadium could be a viable by-product from processing Uranium ore at Toro Energy's Wiluna Uranium Project.
- Research and development of leach conditions has resulted in high extractions of both Uranium and Vanadium from Lake Maitland ore.
- Ion exchange (IX) test-work on pregnant leach solution has demonstrated that ion exchange is a viable process for selectively recovering and separating both Uranium and Vanadium into high concentration clean product streams.
- Although not yet tested, Vanadium pentoxide product (V_2O_5) is expected to be easily precipitated from the clean Vanadium recovery stream.
- Due to simplification of the downstream refining process and a reduction in reagent cost resulting from using ion exchange instead of the previously proposed method (see below), it is not expected that producing V_2O_5 as a by-product will result in any significant increase in costs to the Project.
- Toro will now proceed to estimating the Vanadium resource within the Project.

Toro Energy Limited (ASX: **TOE**) (**Toro** or the **Company**) is pleased to announce that recently completed processing test-work has proven that Vanadium (V) could be a viable by-product of processing uranium ore at the Company's 100% owned Wiluna Uranium Project (the **Project**) in Western Australia (refer to **Figure 1**). Given the expected long-term growth in the price of V_2O_5 (see below) and the potential future demand, including from Vanadium Redox Batteries (VRBs), Toro believes producing Vanadium as a by-product will result in a significant improvement to the feasibility and value of the Project.

Since announcing that the Company would evaluate the potential for the dual processing of both Uranium and Vanadium earlier this year¹, Toro has been conducting research and test-work on leach optimisation and ion exchange for the clean separation and recovery of both metals.

¹ Refer to the Company's ASX announcement of 18 March 2019.

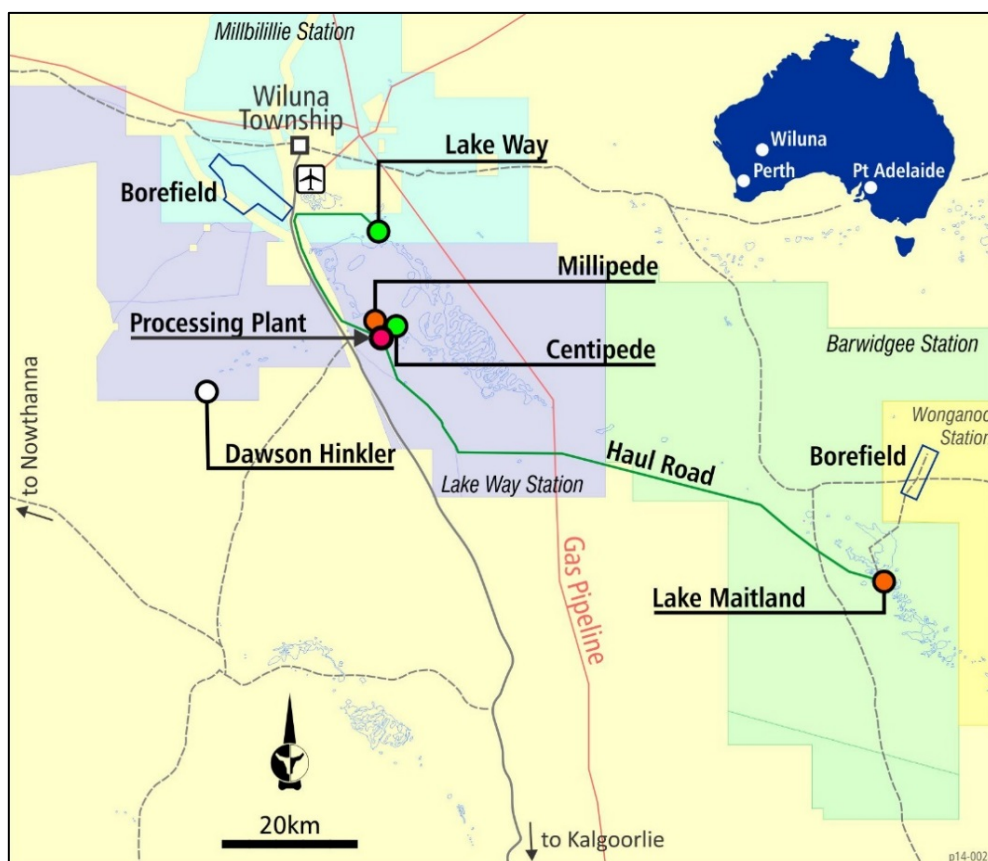


Figure 1: Location of the Wiluna Uranium Project

Leach optimisation test-work centred around increasing the oxidising conditions within the leach to change the Vanadium into a more soluble form. During the test-work, the introduction of potassium permanganate (KMnO_4) at a concentration of 0.01mol/L to the leach as an oxidant increased stage-wise extraction of Vanadium to up to 87.5% without any discernible decrease in the extraction of Uranium (using residues from previous leaching test-work).

Following the successful leach optimisation tests, the pregnant leach solution (PLS) was then used in ion exchange (IX) tests to ascertain if IX resins could be utilised to separate the Vanadium and Uranium into two separate and clean streams from which final product can be recovered. These recently completed tests also proved to be successful, with both Uranium and Vanadium being loaded onto IX resin and subsequently stripped into two separate streams.

The successful leaching and IX processes developed by Toro over the last six months should allow for the recovery of Vanadium into a vanadium pentoxide (V_2O_5) product for sale without any significant loss to the recovery of Uranium.

It has therefore now been proven that Vanadium could be a viable by-product of the mining and processing of Uranium ore at Toro's Wiluna Uranium Project.

Importantly, as previously stated², the utilisation of IX also presents a meaningful improvement on the previous process flowsheet engineered for the proposed mine that relied on the recovery of Uranium from the leach liquor into an impure intermediate product, via a sodium di-uranate (yellow oxide of uranium or SDU) precipitation process. This intermediate SDU product was then subjected to further

² Refer to the Company's ASX announcement of 19 September 2018.

complex refining processes to produce a high purity Uranium product. The sodium hydroxide (caustic soda) used in the SDU precipitation process represents the most significant reagent cost in the previously proposed processing circuit as a whole.

In contrast, no sodium hydroxide is used in IX.

It is important to highlight that not only does the utilisation of IX allow for the potential economic recovery of Vanadium (whereas the SDU precipitation process did not) but it reduces complexity in the processing circuit via negating the complex refining process needed after SDU precipitation. It also potentially allows for significant reductions in reagent costs for the Project.

Given the success of the recent research into the extraction and recovery of Vanadium separately from Uranium and the significant improvement this may have for the Project, Toro will now complete an estimation of the Vanadium resource within the Project.

The Price and Demand for Vanadium

The price of Vanadium has levelled out over the last month to US\$7.05/lb for V_2O_5 flake (as at 30th August using Europe Price – as quoted from Vanadiumprice.com). This price has come down from a recent spike of US\$28.80/lb in early December 2018, however it remains over double the price it was prior to the start of the large upward trend from mid-2016 (using Europe Price – as quoted from Vanadiumprice.com).

The biggest demand for Vanadium metal by far comes from the steel industry where it is used in the production of Vanadium steel alloys. However it is also used in specialised aeronautical alloys, chemicals and batteries. The use of Vanadium in steel is expected to continue over the long term, especially considering the new national standards imposed on Chinese manufacturers by the Chinese government in September 2018, which will require significant increases in the amount of Vanadium going into Vanadium steel alloys in China (Mining.com, January 2019).

However, the possibility of market disruption also exists for the future demand for Vanadium due to the take-up of Vanadium Redox Batteries (**VRBs**). The VRB is an efficient storage and re-supply solution for renewable energy, being scalable and suitable for large scale applications. China in particular is investing heavily in large scale VRBs.

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FURTHER INFORMATION:

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Toro's flagship asset is the 100% owned Wiluna Uranium Project, located 30 kilometres southwest of Wiluna in Central Western Australia. The Wiluna Uranium Project has received environmental approval from the state and federal governments providing the Project with the opportunity to become Western Australia's first uranium mine. Toro will maximise shareholder returns through responsible mine development and asset growth including evaluating the prospectivity of its asset portfolio for minerals other than uranium and increasing their value.

www.toroenergy.com.au

FORWARD LOOKING AND CAUTIONARY STATEMENTS

Forward Looking Statements

This announcement may contain certain “forward-looking statements” which may not have been based solely on historical facts, but rather may be based on the Company’s current expectations about future events and results. Where the Company expresses or implies an expectation of belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forward looking statements are subject to risks, uncertainties, assumptions and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include, but are not limited to Resource risk, metals price volatility, currency fluctuations, increased production costs and variances in ore grade or recovery rates from those assumed in mining plans, as well as political and operational risks in the Countries and States in which we operate or sell product to, and governmental regulation and judicial outcomes. For a more detailed discussion of such risks and other factors, see the Company’s Annual Reports, as well as the Company’s other filings. Readers should not place undue reliance on forward looking information. The Company does not undertake any obligation to release publically any revisions to any “forward looking statement” to reflect events or circumstances after the date of this announcement, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

Cautionary Statement

The Studies are based on lower-level technical and economic assessments and are insufficient to provide certainty that the conclusions of the Studies will be realised. Further, the Company cautions that there is no certainty that the forecast financial information contained in the Studies will be realised. All material assumptions underpinning the forecast financial information are set out in this announcement. This forecasted financial information is deduced from an underlying mining production rate deemed possible due to the size of the Mineral Resources at Lake Maitland. Refer ASX announcement dated 1 February 2015 that shows Lake Maitland deposit has sufficient Mineral Resources to support a 2Mt/a mining operation. The estimated mineral resources underpinning the Studies have been prepared by competent persons in accordance with the current JORC Code 2012 Edition and the current ASX Listing Rules. Toro has concluded it has a reasonable basis for providing the forward looking statement included in this announcement. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.