

## **VITAL DEMONSTRATES ABILITY TO LEACH RARE EARTHS FROM HIGH GRADE RARE EARTH CONCENTRATE**

---

### **Highlights**

- High leach recoveries achieved by acid leaching of North T bastnaesite ore (>40% REO):
  - 97% recoveries into solution via sulphuric acid
  - 93% recoveries into solution via hydrochloric acid
- Metallurgical testwork verified by two independent laboratories SGS Lakefield and Saskatchewan Research Council
- Testwork continues to leverage off the ability to produce a high grade REO concentrate via simple conventional ore sorting and gravity processing (ASX announcement 5 December 2019)
- Leach optimisation and rare earth recovery from the leach liquors testwork is now being undertaken to fully develop the process flowsheet and develop rare earth precipitate specifications for offtake discussions
- Results confirm Nechalacho REO Project has the potential to become a low cost near term producer

### **Investigative Leaching Testwork**

Vital Metals Limited (ASX: **VML**) (“**Vital**” or the “**Company**”) is pleased to advise it’s subsidiary Cheetah Resources Pty Ltd has successfully completed leaching testwork on high grade concentrate from the North T deposit at its Nechalacho Rare Earth project near Yellowknife, Northwest Territories, Canada. The purpose of this testwork was to confirm the amenability of leaching rare earths contained within concentrate produced by ore sorting via recognised process flowsheets for the treatment of bastnaesite.

#### **Commenting on the leaching testwork, Vital Metals Managing Director Geoff Atkins said:**

*“The results achieved leaching rare earths into solution, using recognised techniques, together with the ability to produce high grade concentrate via ore sorting confirms the potential for a low cost, near-term operation to be established at the North T-Zone deposit at Nechalacho. With these results Vital will now accelerate efforts to define a proposed operation.”*

#### **Leach Feed Mineralogy and Assays**

High grade bastnaesite samples (~50% REO) were selected from the North T-Zone (shown in Figure 1) of the Nechalacho Rare Earth project, near Yellowknife, Northwest Territories, Canada. The North T zone is the same zone from which samples were used to undertake ore sorting and gravity beneficiation testwork at SRC and as announced on 5<sup>th</sup> December 2019.

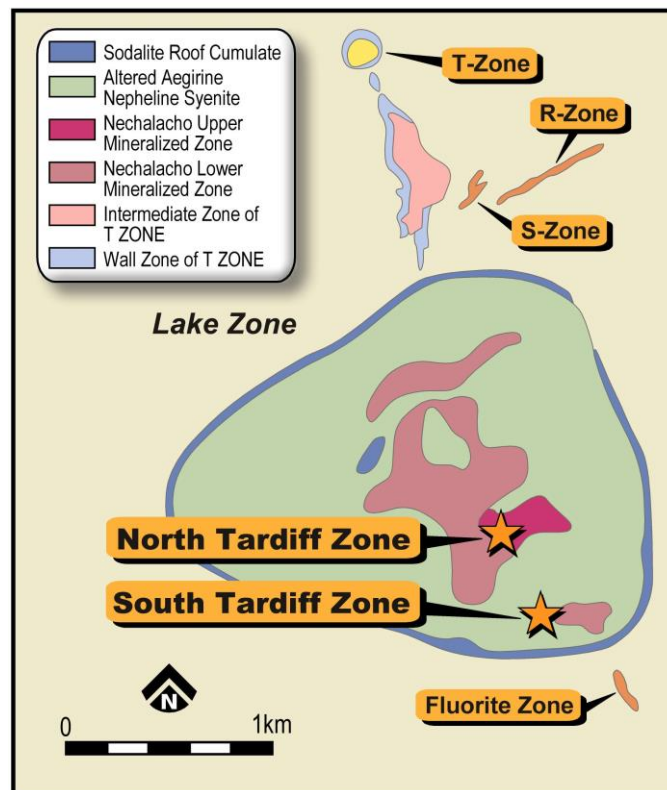


Figure 1: Location of North T Zone

Testwork was conducted on a 90% 'Bastnaesite':10% Quartz to simulate a leach feed anticipated by the product from the ore sorter. Leach feed was thus approximately 45% REO, 20% SiO<sub>2</sub> and 10% CaO.

Leaching processes using Hydrochloric acid and Sulphuric acid have both been tested to find the most suitable and optimal process route. High neodymium leach recoveries (where neodymium is indicative of overall rare earth) up to 97% in sulphuric acid media and up to 93% in hydrochloric acid media were achieved. Of particular interest is the potential to selectively extract cerium depending on customer requirements.

Leach optimisation and rare earth recovery from the leach liquors testwork is now being undertaken to fully develop the process flowsheet and develop rare earth precipitate specifications.

## Conclusions and Next Steps

Testwork conducted by both SGS Lakefield and SRC demonstrates that North T-Zone concentrate, similar to that produced during beneficiation testwork, is amenable to leaching via either hydrochloric acid or sulfuric acid with REO recoveries of up to 97%.

These results provide Vital the confidence to proceed with a target of establishing a near-term demonstration scale operation, focussing on the North T deposit at the Nechalacho rare earth project in Canada.

Optimisation and rare earth recovery work including purification testwork is currently underway to confirm a product specification and samples for supply to prospective customers.

Vital will also focus on developing capital and operating cost estimates, along with development timelines.

Approved by the Board of Vital Metals Limited.

**Contact:**

Mr Geoff Atkins  
Managing Director

Vital Metals Ltd  
Phone: +61 2 8823 3100  
Email: [vital@vitalmetals.com.au](mailto:vital@vitalmetals.com.au)

**ABOUT VITAL METALS**

Vital Metals Limited (ASX:VML) is an explorer and developer focussing on rare earths, technology metals and gold projects. Our projects are located across a range of jurisdictions in Canada, Africa and Germany.

**Nechalacho Rare Earth Project**

The Nechalacho project is a high grade, light rare earth (bastnaesite) project located at Nechalacho in the Northwest Territories of Canada and has potential for a start-up operation exploiting high-grade, easily accessible near surface mineralisation.

**Wigu Hill Project**

The Company has signed a project development and option agreement with Montero Mining & Exploration Ltd, to acquire and develop the Wigu Hill Project located near Kisasi in Tanzania.

The Wigu Hill project is a light rare earth element deposit and consists of a large carbonite complex with bastnaesite mineralisation.

**Nahouri Gold Project – Burkina Faso**

The Nahouri Gold Project (100% Vital) is located in southern Burkina Faso. The Project is made up of three contiguous permits; the Nahouri, Kampala and Zeko exploration permits. The Project is located in highly prospective Birimian Greenstone terrain with 400 sq km of contiguous tenements lying on the trend of the Markoye Fault Corridor.

**Aue Project – Germany**

The Aue Project (100% Vital) is located in the western Erzgebirge area of the German state of Saxony. The permit, comprising an area of 78 sq km is located in the heart of one of Europe's most famous mining regions surrounded by several world class mineral fields. Historical mining and intensive exploration work carried out between from the 1940s and 1980s showed high prospectivity of the Aue permit area for cobalt, tungsten, tin, uranium and silver mineralisation.