

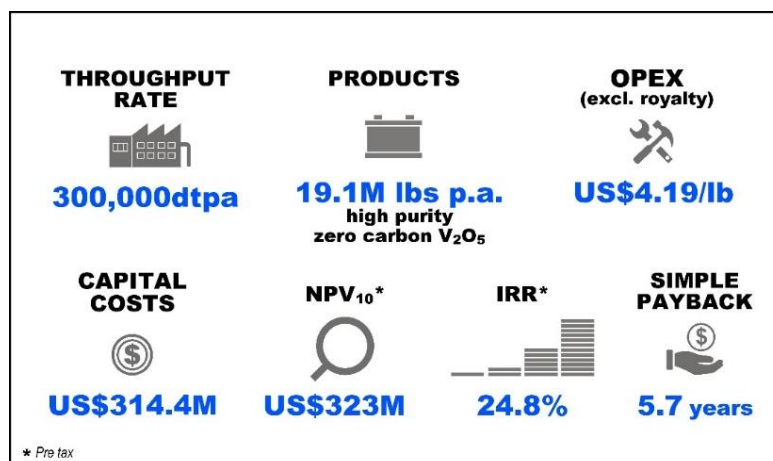
## VANADIUM RECOVERY PROJECT DELIVERS STRONG FEASIBILITY RESULTS

### Highlights

- Feasibility Study confirms improved Net Present Value (“NPV”) compared to Preliminary Feasibility Study (“PFS”)<sup>1</sup> to recover vanadium pentoxide (“V<sub>2</sub>O<sub>5</sub>”) from vanadium-bearing steelmaking by-products in Finland;
- Strategically important average annual production (excluding ramp up) of 19.1 million pounds per annum (~8,655tpa) of potentially carbon negative high-purity V<sub>2</sub>O<sub>5</sub> secured by 10-year supply agreement with Scandinavian steelmaker SSAB;
- Lowest quartile cash cost (US\$4.19/pound), excl. royalty, with potential to lower with by-product/carbon credits;
- 40% increase in pre-tax NPV<sub>10</sub>, to US\$323 million compared to PFS<sup>1</sup> and pre-tax IRR of 24.8% on 100% ownership basis; and
- Final Investment Decision on schedule for June 2023, subject to finance.

Emerging sustainable battery materials producer, Neometals Ltd (ASX: NMT) (“**Neometals**” or the “**Company**”), is pleased to announce the successful completion of an Association for the Advancement of Cost Engineering (“**AACE**”) Class 3 Feasibility Study (“**FS**”) on the recovery of high-purity vanadium pentoxide (“**V<sub>2</sub>O<sub>5</sub>**”) from high-grade vanadium-bearing steel by-product (“**Slag**”). The FS was completed with assistance from leading Nordic engineering group Sweco Finland Oy (“**Sweco**”).

Figure 1 below shows the key project metrics from the FS.



**Figure 1: Key Highlights of the FS (all figures expressed on a 100% ownership basis and are pre-tax)**

<sup>1</sup> For full details refer to Neometals ASX announcement 'Vanadium Recovery Project - PFS Indicates Robust Potential Economics' released on 4<sup>th</sup> May 2021

Neometals is a 50% shareholder in an incorporated joint venture company, Recycling Industries Scandinavia AB ("**RISAB**") (see *Neometals ASX announcement dated 2<sup>nd</sup> March 2023 titled "Neometals Now Controlling Shareholder in Vanadium Recovery Project SPV"*). RISAB is evaluating the feasibility of constructing a facility to process and recover high-grade  $V_2O_5$  from vanadium-bearing steel making by-product generated by SSAB EMEA AB and SSAB Europe Oy (collectively "**SSAB**") in Scandinavia. ("**Vanadium Recovery Project**" or "**VRP1**").

Neometals Managing Director Chris Reed said:

*"Neometals is encouraged by the outcomes of the FS. Importantly, increased evaluation detail and cost accuracy has not seen a significant departure from prior cost studies. VRP1 remains in the first quartile of the operating cost curve and since the historical PFS, the sector tailwinds behind this project have increased markedly. With our newly expanded 300ktpa feed rate and some updated data since the last cost study, the FS highlights the significant opportunity that exists. Specifically, that opportunity is to deliver some of the highest-grade, lowest-cost vanadium chemicals globally with a carbon-negative footprint. Security of supply is a key issue globally, particularly so in the EU where battery material resilience is the topic du jour".*

## Background

Under the binding feedstock supply contract with SSAB ("**Amended LD-Slag Supply Agreement**"), a steel producer that operates steel mills in Scandinavia, SSAB will supply 2 million tonnes of Slag with RISAB having the first right to purchase additional tonnes on an as available basis.

The FS which assumes a 300,000tpa feed rate and incorporates updated data from the previously announced Class 3 Engineering Cost Study ("**ECS**") (see *Neometals' ASX release dated 8 July 2022 titled "Vanadium Recovery Study Confirms Lowest Quartile Cost Potential"*). VRP1 aims to produce high purity carbon-negative  $V_2O_5$  without the need to build a mine and a concentrator like existing primary producers.

Neometals' wholly owned subsidiary Avanti Materials Ltd ("**Avanti**") has developed a proprietary processing method to recover high purity  $V_2O_5$  from steel Slag ("**VRP Technology**"). This hydrometallurgical process utilises conventional equipment and operates at atmospheric pressure and mild temperatures. Pilot Plant testing of the selected flowsheet was completed in Perth and resulted in product purities of greater than 99.5%  $V_2O_5$  with maximum vanadium recoveries exceeding 75% (for full details refer to *Neometals ASX announcement entitled "Successful Completion of Vanadium Recovery Pilot Plant Trials" released on 11<sup>th</sup> August 2021*). The information from the operation of the Pilot Plant was utilised to inform the FS (-15% +15%) for a 300,000 dtpa hydrometallurgical processing circuit.

The FS was based on establishing an operation at Tahkoluoto Port, Pori in Finland. This location has excellent infrastructure, including a deep-water port, as shown in Figure 2, and was chosen after the completion of an extensive location study (for full details refer to *Neometals ASX announcement entitled "Pori, Finland selected for Vanadium Recovery Project" released on 11<sup>th</sup> December 2020*).



**Figure 2:** Aerial schematic showing location for the proposed VRP1 processing plant at Tahkoluoto port, Pori, Finland

The VRP1 offers a compelling business case which is underpinned by:

- Access to very high-grade vanadium feedstocks without upstream mining costs/risk;
- Potentially robust economics;
- Processing flowsheet utilises conventional equipment at atmospheric pressure mild temperatures and non-exotic materials of construction;
- Negative greenhouse gas footprint given the absence of mining and a processing route requiring the use and potential capture CO<sub>2</sub>; and
- Potentially saleable carbonate by-product which minerally sequesters CO<sub>2</sub>;

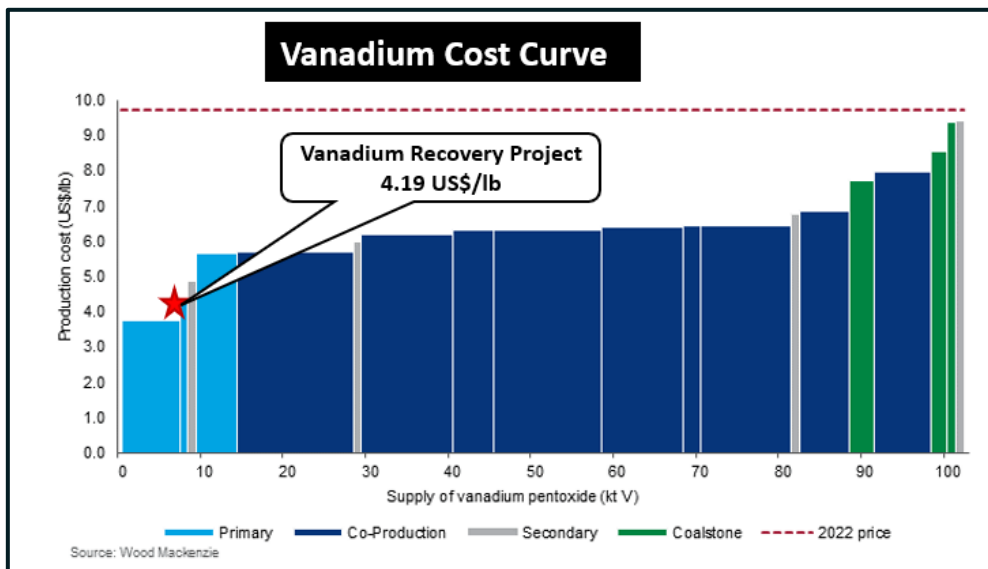
## Financial Summary

Key highlights from the FS are summarised below. Financial analysis and estimates are denominated in US dollars using an exchange rate of 1 Euro:1.059 US\$, the spot exchange rate as of 28/02/2023. The FS assumes an average selling price of US\$9.82/lb V<sub>2</sub>O<sub>5</sub> plus a purity 'premium'. The selling price assumes base price forecasts from internationally renowned and independent CRU Group ("CRU"). CRU was commissioned by RISAB to provide independent vanadium market information to support the VRP1 project debt and equity process. The CRU Vanadium Market Study showed prices for 98% purity V<sub>2</sub>O<sub>5</sub> EU EXW, (US \$9.82/lb V<sub>2</sub>O<sub>5</sub> average) plus a US\$1.84/lb premium for 99.5% purity on product from 2027 (year 2 of operations inclusive) onwards (based on Asian Metal data 18/8/20 until 22/2/23). The planned production level in 2027 will represent approximately 3% of global production. Notwithstanding that the product purity alone supports the abovementioned premium, it also needs to be considered that V<sub>2</sub>O<sub>5</sub> production at VRP1 could potentially generate valuable carbon credits for RISAB as well as significant benefits to buyers associated with the EU carbon border adjustment mechanism ("CBAM"). Carbon negative V<sub>2</sub>O<sub>5</sub> could impart savings to 'mid-stream' purchasers who wish to sell final products back into the EU where total embedded emissions dictate tariffs due. For further information on vanadium markets and pricing please see Appendix 1.

**Table 1:** 300 ktpa FS Highlights (all figures expressed on a 100% ownership basis and pre-tax)

| FS Highlights   |  |
|---|--|
| Annual Production (Steady State)  | 19.1 m lbs V <sub>2</sub> O <sub>5</sub> |
| Plant Run Years   | 9.75 years                               |
| Life of Plant Revenue   | US\$2,050 million                        |
| Pre-tax Operating Cashflow (not discounted)   | US\$1,257million                         |
| Pre-tax NPV (10% discount rate)   | US\$323 million                          |
| Pre-tax IRR %   | 24.8%                                    |
| Average Net Operating Cost of recovered V <sub>2</sub> O <sub>5</sub> (excl. royalty) | US\$4.19/lb                              |
| Total initial plant capital costs   | US\$291.6 million                        |
| Total initial slag purchase and logistics costs                                       | US\$22.8 million                         |
| Pre-tax simple payback of capital costs   | 5.7 years                                |

Figure 3 below highlights the competitive operating cost of the VRP1, with a first quartile position on the industry operating cost curve (excluding royalties, taxes, depreciation, and amortisation)

**Figure 3:** 2022 Vanadium Operating Cost Curve

### Capital Cost Estimate

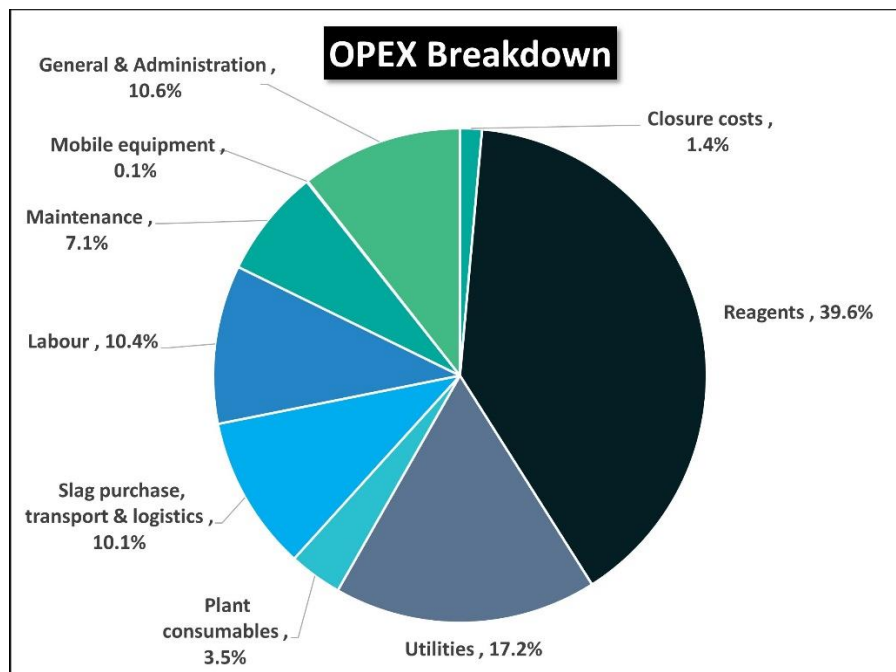
The capital cost estimate for the Finnish process plant and relevant infrastructure was developed to a FS-level accuracy of -15% / +15% based on budget price estimates obtained from equipment suppliers and appropriate agreed factors. Table 2 below presents the summary of the project capital costs.

**Table 2:** Capital Cost Estimate (all figures expressed on a 100% ownership basis)

| Capital                              | US\$M        |
|--------------------------------------|--------------|
| Direct – Buildings and Process Plant | 211.5        |
| Indirect – EPCM etc                  | 42.1         |
| Contingency (15%)                    | 38.0         |
| Capital slag purchase and transport  | 22.8         |
| <b>Total</b>                         | <b>314.4</b> |

### Operating Cost Estimate

The VRP1 operating cost was estimated by major cost type and is considered an AACE Class 3 level estimate with a nominal accuracy level of -15% / +15%. The estimated operating cost excluding royalties is on average US\$4.19/lb. V<sub>2</sub>O<sub>5</sub>. The operating cost breakdown is shown in Figure 4 below:



**Figure 4:** Operational cost breakdown by key areas (excl. royalty)

## Economic Analysis

Neometals prepared a comprehensive discounted cash flow analysis to provide an indication of the economic potential of the VRP1. The analysis makes the following assumptions:

- No allowance was made for tax
- No allowance was made for inflation
- NPV is calculated against the full capital cost of process plant and does not allow for debt or any other type of funding of the project

Additional important economic and technical assumption inputs are summarised below:

- Overall metallurgical recovery of  $V_2O_5$ , based on results from the Pilot Plant, is 73.8%
- Pricing of  $V_2O_5$  based on CRU Vanadium Market Study for 98% purity  $V_2O_5$  EU EXW, (US \$9.82/lb  $V_2O_5$  average) plus a US\$1.84/lb premium for 99.5% purity on product from 2027 (year 2 of operations inclusive) onwards (based on Asian Metal data 18/8/20 until 22/2/23)

## Scheduling of Development and Production

For the purposes of the FS, the following assumptions have been made with respect to development and production:

|                                    |                   |
|------------------------------------|-------------------|
| <b>Final Investment Decision</b>   | <b>30/06/2023</b> |
| <b>Date of NPV calculation</b>     | <b>1/07/2023</b>  |
| <b>Commence Construction</b>       | <b>1/07/2023</b>  |
| <b>Commence Operations Ramp Up</b> | <b>1/01/2026</b>  |

*Note: The Final Investment Decision is subject to finance. RISAB has leading Nordic investment banks managing equity and project financing processes.*

Ramp up of operations assumptions are based on 25% of throughput first quarter, 50% second and third quarter, 75% fourth quarter, 300,000tpa feed rate from fifth quarter, and total of 2,765,455 dry tonnes of feed processed over life of operation. The Company has assumed that sufficient tonnage of feed will be available to RISAB under the Amended LD-Slag Supply Agreement.

## Development Scenario

The development scenario for this FS is characterised by:

- Greenfields development starting with a cleared industrial site at Tahkoluoto Port, Pori in Finland
- Plant with a throughput capacity of 300,000dtpa
- Feedstock comprising steel by-product Slag with a grade of 3.93%  $V_2O_5$  (being the reference grade for pricing under the Amended LD-Slag Supply Agreement)



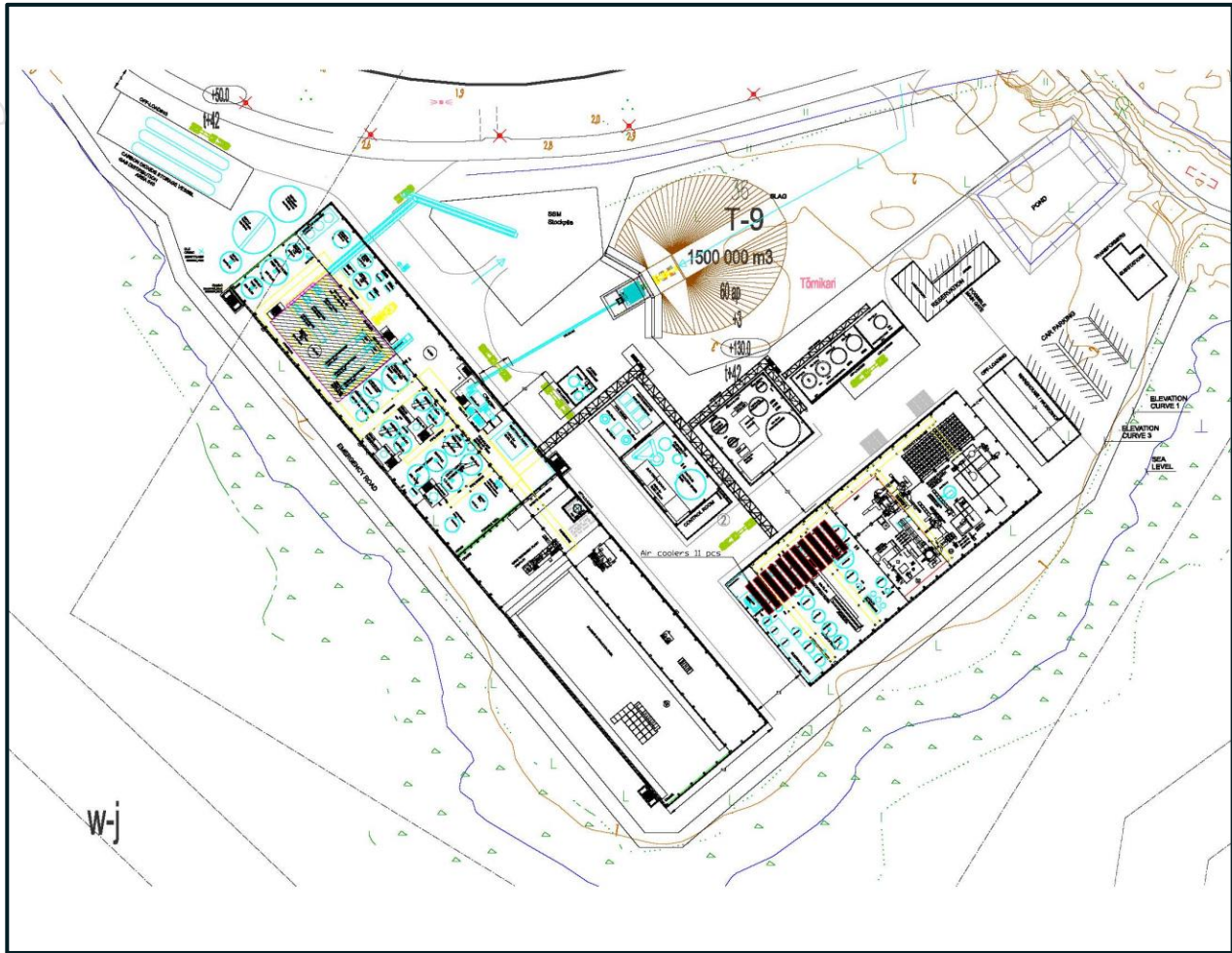


Figure 5: Overview of site layout (local grid)

## Feed Preparation

Slag (predominantly less than 10mm in size) is received and screened prior to being placed through a comminution circuit.

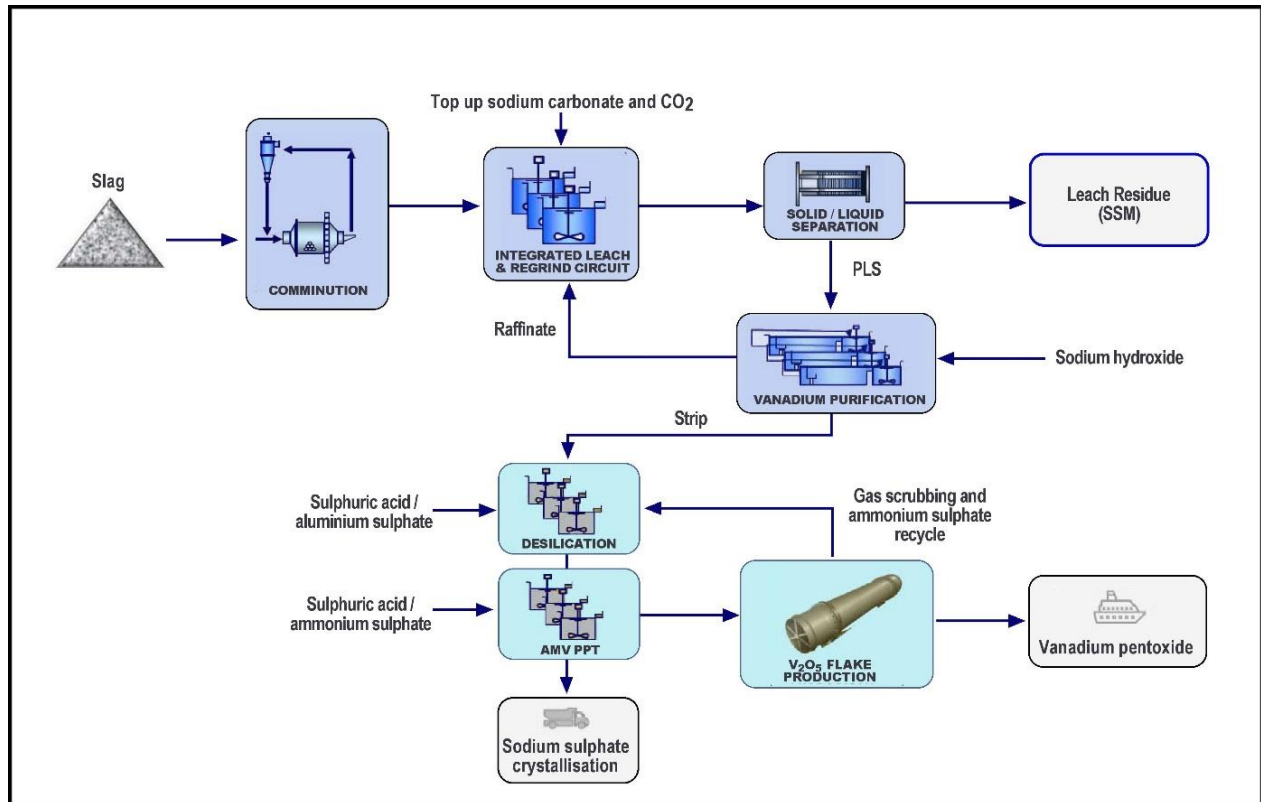


Figure 6: Overview of VRP1 Total Process Flowsheet

## Processing Flowsheet

The proprietary VRP Technology was developed by Avanti, with assistance from an independent metallurgical laboratory. The patent pending VRP Technology is based on conventional equipment and configuration, employing novel chemistry, operated at atmospheric pressure and mild temperatures. The feed, referred to as Slag in Figure 6 above, is processed in the leach circuit to facilitate dissolution of the vanadium. The pregnant leach solution (“PLS”) is then separated from the solid leach residue. Further extraction and purification of PLS results in the recovery of vanadium which is further processed through into  $V_2O_5$ .

The VRP1 process plant flowsheet involves Slag receipt, grinding and classification followed by a leaching facility with interstage grinding to facilitate vanadium extraction into solution. The leach solution is separated from the leach residue by filtration and the leach residue is extensively washed using a repulp circuit to enable maximum recovery of vanadium and retention of sodium in the circuit. The well washed leach residue – Stabilised Slag Material (“SSM”) is the primary by-product of the process, which will be offloaded from site to the customers.  $CO_2$  used as a reagent in the process is minerally sequestered into the SSM.

The leach solution containing dissolved vanadium will be purified and concentrated in a vanadium selective solvent extraction circuit. The product vanadium containing strip solution is then passed through established



desilication and ammonium metavanadate (“AMV”) precipitation stages before the AMV is filtered and washed. The AMV is subsequently dried and calcined to convert it to  $V_2O_5$  and then either melted and cast on a flaking wheel to produce final product flake or packaged as a powder. This functionality allows greater flexibility of the operation to suit a range of off-takers.  $V_2O_5$  (powder or flake) is the primary product of the plant.

Ammonia containing off-gas is scrubbed and recovered ammonium sulphate formed in the scrubber is recycled to the AMV precipitation stage.

Sodium sulphate is recovered from the AMV barren liquor and represents the second and minor by-product of the process.

### Metallurgical Testwork

During 2021 three pilot plant campaigns were undertaken, one each focussed on processing Slag from SSAB's Lulea, Raahe and Oxelösund stockpiles. Almost 16 tonnes of dry Slag was processed over a total of 26 days feeding at ~ 25 kg or Slag per hour. The Pilot Plant included the following processing sections:

- Primary mill, primary leach, primary regrind, secondary leach, secondary regrind, leach discharge filtration
- Leach residue repulp, wash and filtration to produce by-product SSM
- Repulp wash waters were processed through IX for vanadium recovery and stripped vanadium returned to the main leach circuit
- Leach solution conditioning and polishing filtration
- Vanadium solvent extraction including vanadium extraction and raffinate recycle back to the primary mill, organic scrubbing and vanadium stripping into caustic solution
- Strip solution desilication and AMV precipitation, filtration and washing
- Sub samples of each batch of AMV were converted to  $V_2O_5$  for assay and product purity evaluation. Barren AMV solution was retained for sodium sulphate crystallisation work.

### Process Plant Design

The objective of the VRP1 is to design, build and operate a vanadium recovery facility capable of processing 300,000 dtpa of metallurgical (LD) slag, producing high purity  $V_2O_5$  for the EU market, at a much lower carbon footprint as compared to the established producers and with production costs in the lowest quartile of operation. The process plant is designed to recover of up to 9,255 tonnes of  $V_2O_5$  per year. The plant configuration allows  $V_2O_5$  production as flake or powder depending on the end customer's needs. The process plant equipment is predominantly housed in two separate buildings. The placement of individual equipment and tanks in the process buildings was guided by the process flow and their maintenance needs. The locations of the buildings and structures of the production area are situated within the plant layout to minimise the noise impact on the surrounding areas and the environment.

The main process building is the largest building of the plant and includes grinding / classification, primary, secondary and tertiary leaching, filtration, repulp, leach liquor conditioning, solvent extraction and off-gas scrubber. Desilication, AMV precipitation, vanadium pentoxide recovery and packaging as well as sodium sulphate recovery are located in the process building no. 2. Other process areas include liquid chemical

storage area, sodium carbonate area, service area and evaporation area are located in the dedicated areas separate from the two plant buildings as illustrated in Figure 7 below.

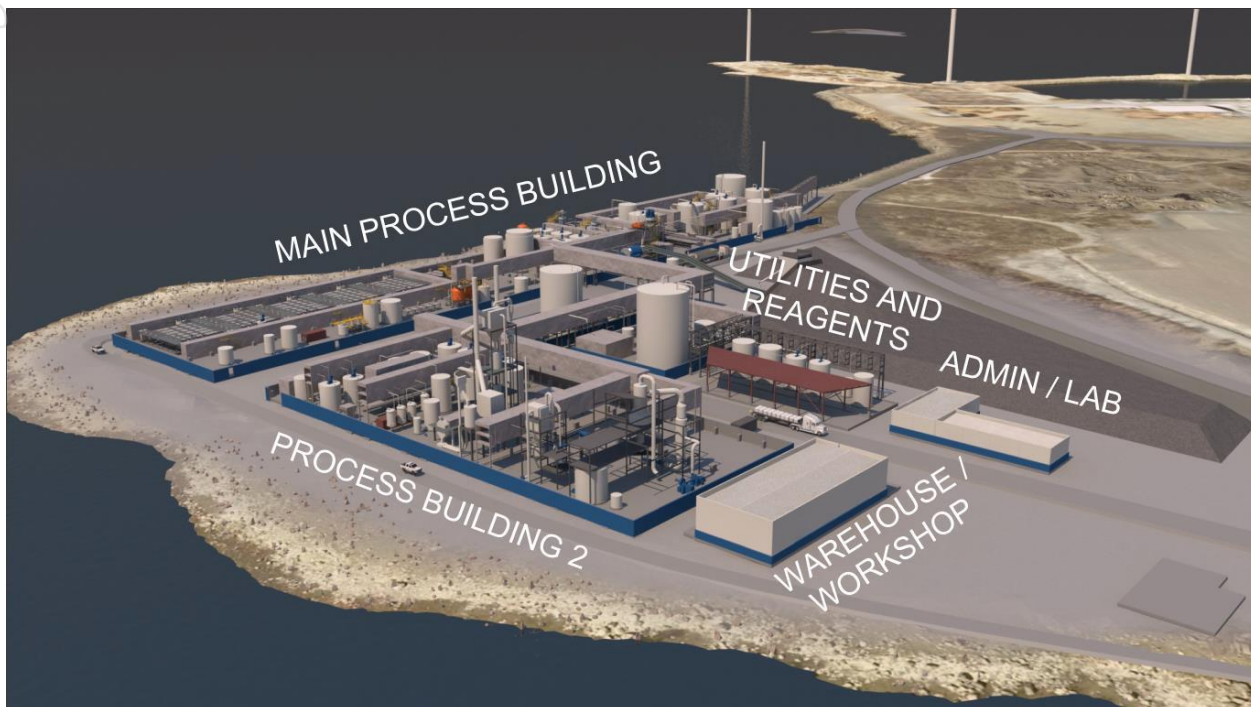


Figure 7: Rendered VRP1 Design

The natural soil in the Törnrikari region of the Tahkolouto Port is sandy moraine, therefore, building foundations and slabs can be placed on the natural foundation bed. Preliminary soil investigations in 2021 confirmed this approach. Additional comprehensive soil investigation shall be performed to ensure soil conditions. Levelling of the area will require approximately 30 000 m<sup>3</sup> of filling.

The plant layout takes into account reagent supply traffic through the production area. Reagent storage areas are equipped with unloading stations. Carbon dioxide storage and unloading are placed next to the public road to minimise internal truck traffic of the production area.

The control and supervision of the plant will be based on a modern, high-level plant-wide process control system ("**PCS**"). All monitoring and controlling for the plant will be handled using operator workstations from the central control room located proximal to the evaporation area. Motor control will be designed using intelligent motor controllers connected to the PCS with Profinet. Information and communications technology design is based on best practices, regulations, and standards used in Finland.

The plant will be operated 365 days per year 24 hours per day in three eight-hour shifts, nominally 8,000 hours per year, allowing approximately 91.3% availability. The key production figures of the VRP1 are summarised in Table 3.

Table 3: Key production figures

| Item Description  | Annual feed / output, t/a | Composition / Purity <sup>1</sup> |
|---|---------------------------|-----------------------------------|
| <b>Feed (Slag)</b>  | 300 000 (dry)             | 3.93 % vanadium                   |
| <b>Products</b>   |                           |                                   |
| Vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ) – average when at 100% production (tV <sub>2</sub> O <sub>5</sub> ) | 8,655                     | >99.6 %                           |
| Sodium sulphate (Na <sub>2</sub> SO <sub>4</sub> )  | 14,361                    | >99 %                             |
| Stabilised slag material (SSM)  | 553 335 (33.8 % moisture) | Approx. 46 % CaCO <sub>3</sub>    |

### Project Location

The plant is to be located in the Tahkoluoto area, approximately 30 km north-west of the city of Pori in Finland. Critical Metals and the Port of Pori have executed a 20-hectare land lease agreement for the location of the VRP1 at the Tahkoluoto Port. Tahkoluoto is primarily occupied by industrial facilities and the harbour.

The VRP1 process plant, and process infrastructure are located at the Törnrikari part of Tahkoluoto while the main stockpile areas to the north of Törnrikari. The Törnrikari site with an area of approximately 74 200 m<sup>2</sup> is defined by a public road (in the north) and the coastline. The main stockpile area occupies approximately 102 100 m<sup>2</sup> and is separated from the production area by the public road and the railway. The project has access to the Tahkoluoto Chemical Harbour area where an additional Slag storage stockpile will be located.

### Infrastructure and Services

Plant infrastructure comprises water and power supply and distribution, Slag and SSM stockpiles, stormwater ponds, new roads and paved areas, as well as plant and administration facilities.

The existing connection to the water network of local utility company Porin Vesi will be utilised to allow for a connecting underground pipe to Törnrikari to be built for water supply. There is no sewage pipeline network in the Tahkoluoto area, therefore, sewage septic tank infrastructure is proposed. Fire water tanks and a pumping station will be used to accumulate and provide necessary supply of fire water to fire hydrants and automatic extinguishing systems.

The VRP1 will be connected to the electric power grid of the local grid company Pori Energia Sähköverkot Oy with an underground cable. The underground cable route runs next to the road leading to the plant area. The supply cable will be connected to the 20 kV switchgear in the substation of the plant. Electricity will be distributed to the buildings of the plant at the 20 kV level. The electrical facilities in the buildings will be equipped with necessary transformers to convert the voltage to the level suitable for the equipment (400 V or 690 V).

The key principle of stormwater handling is to collect all stormwater including feed stockpile and stockpile run-off water, plant area stormwater and roof water to stormwater ponds. The drainage system and ponds are designed to ensure that any recovered water gets used in the plant and will not be discharged into the sea. The new roads in the Törnrikari area were designed to be 7m wide. The design of the road ensures capacity for the estimated amount of traffic related to the transportation of slag and reagents.

There will be four connection points to the existing roads in the production area. The production area will have one main road for regular traffic and an emergency road. The production area will have parking areas and a lay-down area for snow.

Plant site and administration facilities will include control room, power substation, warehouse and workshop, admin facility, laboratory, emergency shelter and canteen.

Whilst biogas and natural gas are available in the Tahkoluoto area, the plant has been designed to rely on electrical supply only. A biomass fired boiler has been considered for steam generation as an alternative to an electric boiler. Biomass fuel is readily available and is cost effective in Finland.

### Logistics

The Slag will be delivered to Tahkoluoto from the ports of Luleå, Oxelösund and Raahe as agreed with the Slag supplier SSAB. The delivery will be effected via 15 kiloton and 25 kiloton sea vessels. The vessels will be unloaded in the Tahkoluoto port and will be transferred to site stockpiles. The shipping volumes are shown in Table 4

**Table 4:** Slag delivery schedule

| Year              | Slag delivery kt/a, dry |
|-------------------|-------------------------|
| 2023 (0-1)        | 30                      |
| 2024 (1-2)        | 300                     |
| 2025 (2-3)        | 300                     |
| 2026 (3+) onwards | 300                     |
| <b>Total</b>      | <b>2,765</b>            |

Early design for the Slag stockpile and affiliated pond infrastructure will commence prior to the Final Investment Decision. Construction works will be undertaken subject to a positive Final Investment Decision to prepare the Slag stockpile and affiliated pond infrastructure by mid-November 2023 for handling of the initial 30 kt of Slag.

Chemicals will be delivered to the site with trucks with frequencies varying from multiple trucks a day to only few trucks a month. Liquefied carbon dioxide is of the most significant reagents as its consumption requires delivery of nine 25-tonne trucks daily. Carbon dioxide will be unloaded to pressurized storage vessels. Sodium hydroxide, sulphuric acid, sodium carbonate and organic diluent will be delivered as bulk chemicals and unloaded to the designated storage vessels at the corresponding unloading stations. Other chemicals packed in IBCs (liquid) or big bags (solid) will be delivered and stored in a designated reagents storage area.

## Life Cycle Assessment – Updated VRP Results

The VRP1 FS evaluation includes considerations around life cycle assessment (“**LCA**”) to quantify environmental impact and to compare against conventional  $V_2O_5$  production from mined sources. An independent ISO-compliant cradle-to-gate LCA was commissioned by Minviro Ltd (“**Minviro**”). The LCA confirmed the potential for VRP1 to be carbon negative, and substantially lower than incumbent production pathways in terms of global warming potential (“**GWP**”).

Minviro ([www.minviro.com](http://www.minviro.com)) was appointed to conduct a cradle-to-gate life cycle assessment on VRP1 to quantify environmental impact and to compare against conventional  $V_2O_5$  production from vanadium-bearing magnetite ore in South Africa. The functional unit of the LCA was 1 kg of  $V_2O_5$  and the study was conducted according to the requirements of the ISO-14040:2006 and ISO-14044:2006 standards. Scope 1,2 and 3 emissions were included in the LCA which was subject to a third-party ISO-compliant critical panel review.

Traditionally,  $V_2O_5$  production has been dominated by processing of mined raw materials. The LCA comparison on an operating steel and vanadium production plant in South Africa indicated that VRP1 will have significantly lower GWP (-4.4kg CO<sub>2</sub>-e per kg  $V_2O_5$ ) compared to the equivalent product produced via raw material extraction (12.0 kg CO<sub>2</sub>-e per kg  $V_2O_5$ ). This is primarily due to the assumption that VRP1 electricity being sourced from renewable energy and consumption of CO<sub>2</sub> produced from waste flue gas.

### Key Study Highlights

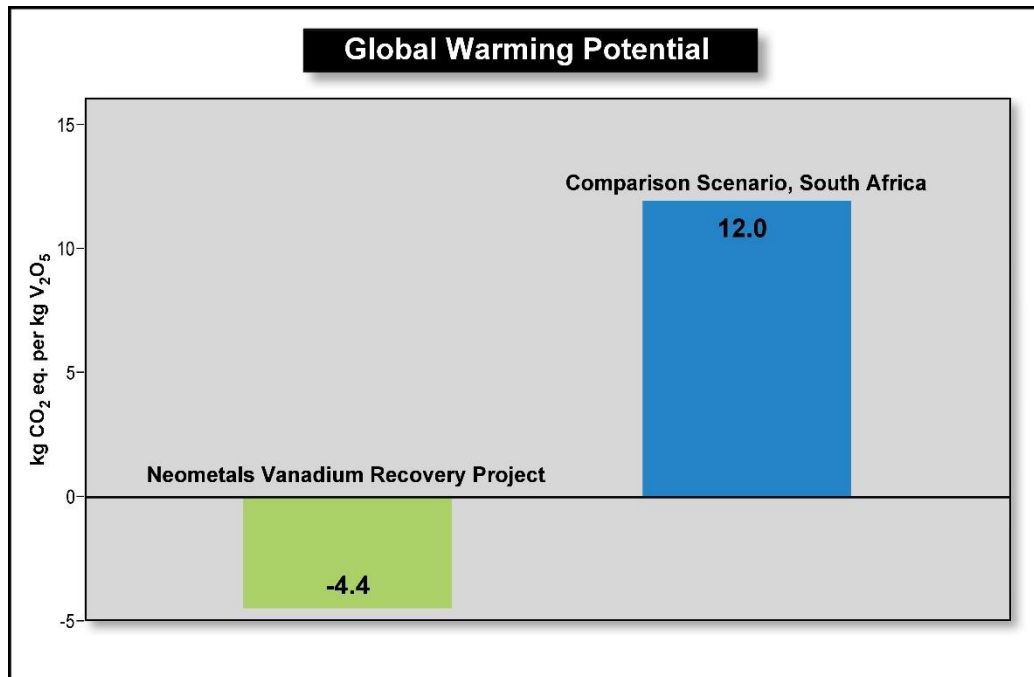
- **LCA confirms potential for carbon negative vanadium production in Europe;**
- **Independent ISO-compliant cradle-to-gate LCA relied on detailed engineering data; and**
- **Negative total ‘Global Warming Potential’ (-4.4 kg CO<sub>2</sub>-e per kg  $V_2O_5$ ) significantly lower than comparisons with primary mined vanadium sources.**

Table 5 shows the five impact categories which were evaluated using Environmental Footprint 3.0 methodology.

**Table 5:** The five impact categories which were evaluated using Environmental Footprint 3.0 methodology.

| Impact Category                        | Vanadium Pentoxide Value | Units (per kg $V_2O_5$ )      |
|--|--------------------------|-------------------------------|
| Global Warming Potential               | -4.4                     | kg CO <sub>2</sub> eq.        |
| Water Scarcity Footprint               | 23.2                     | m <sup>3</sup> world eq.      |
| Acidification Potential                | 3.7E-2                   | mol H <sup>+</sup> eq. per kg |
| Particulate Matter Formation           | 1.2E-3                   | disease incidences eq. per kg |
| Eutrophication potential - Freshwater  | 2.1E-3                   | kg P eq. per kg               |
| Eutrophication potential - Terrestrial | 7.7E-2                   | mol N eq. per kg              |
| Eutrophication Potential - Marine      | 8.9E-3                   | kg N eq. per kg               |





**Figure 8:** Comparison of GWP impact for producing vanadium pentoxide for VRP1 at Pori, Finland compared to South Africa via mining extraction.

## Environmental Approvals

In October 2022 the Regional State Administrative Agency for Southern Finland granted an environmental permit for operation of a vanadium recovery plant and associated infrastructure. The permit authorises, subject to a number of conditions, the production of approximately 9,000tpa of V<sub>2</sub>O<sub>5</sub> (see Table 6 for the key production and storage parameters afforded by the permit). This is the headline environmental approval for the project.

**Table 6:** Annual production and maximum storage quantities pursuant to the environmental permit

| Product                          | Production (t)               | Maximum storage (t)              |
|----------------------------------|------------------------------|----------------------------------|
| Vanadium pentoxide               | 9,000                        | 4,500                            |
| Stabilised Slag Material ("SSM") | 415,000 dry<br>(545,400 wet) | 1,245,000 dry<br>(1,635,000 wet) |
| Sodium sulphate (by-product)     | 30,000                       | 7,500                            |

Other approvals such as a chemical permit and building permit for the project are being advanced.

## Market and Marketing

World vanadium supply is dominated by China, Russia, and South Africa. With the inherent advantages that come with Slag as a feedstock (low cost and no mining risk) and the competitive operating cost position driven by Neometals' development of a patent pending hydrometallurgical process, Neometals believes the VRP1 is extremely well positioned to service European and North American markets with negative carbon vanadium and will represent circa 3% of world production in 2027.

See Appendix 1 for an overview of the global vanadium market.

## Next Steps:

- Complete Lenders Technical Advisor and independent market studies for debt providers to allow progression of debt discussions
- Progress discussions with potential offtake partners, which have to date included electrolyte producers, chemicals manufacturers, battery companies, non-ferrous alloys customers and traders
- Work with equipment vendors and engineering firms to continue advancing project engineering



\* Pre-payment to be paid within 72 hours after the Buyer's Positive Investment Decision

\*\* Subject to FID, approvals and finance

Figure 9: Indicative Timeline for the Vanadium Recovery Project

## Forward-looking Statements

This release contains "forward-looking information" that is based on the Company's expectations, estimates and projections as of the date on which the statements were made. This forward-looking information includes, among other things, statements with respect to studies, the Company's business strategy, plan, development, objectives, performance, outlook, growth, cash flow, projections, targets and expectations. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as 'outlook', 'anticipate', 'project', 'target', 'likely', 'believe', 'estimate', 'expect', 'intend', 'may', 'would', 'could',

*'should', 'scheduled', 'will', 'plan', 'forecast', 'evolve' and similar expressions. Persons reading this news release are cautioned that such statements are only predictions, and that the Company's actual future results or performance may be materially different. Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the Company's actual results, level of activity, performance or achievements to be materially different from those expressed or implied by such forward-looking information.*

*Forward-looking information is developed based on assumptions about such risks, uncertainties and other factors set out herein, including but not limited to general business, economic, competitive, political and social uncertainties; the actual results of current development activities; conclusions of economic evaluations; changes in project parameters as plans continue to be refined; future prices of metals; failure of plant, equipment or processes to operate as anticipated; accident, labour disputes and other risks of the chemical industry; and delays in obtaining governmental approvals or financing or in the completion of development or construction activities. This list is not exhaustive of the factors that may affect our forward-looking information. These and other factors should be considered carefully, and readers should not place undue reliance on such forward-looking information.*

*Neither the Company, nor any other person, gives any representation, warranty, assurance or guarantee that the occurrence of the events expressed or implied in any forward-looking statement will actually occur. Except as required by law, and only to the extent so required, none of the Company, its subsidiaries or its or their directors, officers, employees, advisors or agents or any other person shall in any way be liable to any person or body for any loss, claim, demand, damages, costs or expenses of whatever nature arising in any way out of, or in connection with, the information contained in this document. The Company disclaims any intent or obligations to or revise any forward-looking statements whether as a result of new information, estimates, or options, future events or results or otherwise, unless required to do so by law.*

#### **Advice**

*Nothing in this document constitutes investment, legal or other advice. Investors should make their own independent investigation and assessment of the Company and obtain any professional advice required before making any investment decision based on your investment objectives and financial circumstances.*

Authorised on behalf of Neometals by Christopher Reed, Managing Director.

**ENDS**

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## About Neometals Ltd

Neometals is an emerging, sustainable battery materials producer. The Company has developed a suite of green battery materials processing technologies that reduce reliance on traditional mining and processing and support circular economic principles.

Neometals' three core battery materials businesses, listed below, are commercialising these proprietary, low-cost, low-carbon process technologies:

- **Lithium-ion Battery ("LIB") Recycling (50% equity)** – to produce nickel, cobalt and lithium from production scrap and end-of-life LIBs in an incorporated JV with leading global plant builder SMS group. The Primobius JV is operating a commercial disposal service at its 10tpd Shredding 'Spoke' in Germany and is the recycling technology partner to Mercedes Benz. Primobius' first 50tpd operation, in partnership with Stelco in Canada is expected to reach investment decision in Q3 2023;
- **Vanadium Recovery (50% equity)** – to produce high-purity vanadium pentoxide via processing of steelmaking by-product ("Slag"). Targeting a 300,000tpa operation in Pori, Finland, underpinned by a 10-year Slag supply agreement with leading Scandinavian steelmaker SSAB. Finnish project investment decision with JV partner, Critical Metals, expected June 2023. MOU with H2Green Steel for up to 4Mt of Slag underpins a potential second operation in Boden, Sweden; and
- **Lithium Chemicals (earning 35% equity)** – to produce battery quality lithium hydroxide from brine and/or hard-rock feedstocks using patented ELi® electrolysis process owned by RAM (70% NMT, 30% Mineral Resources Ltd). Co-funding pilot plant and evaluation studies on a 25,000tpa operation in Estarreja with Portugal's largest chemical producer, Bondalti Chemicals S.A.

## APPENDIX 1

### Vanadium Market

The schematic below provides an overview of the vanadium industry and identifies the main vanadium raw materials and intermediate products in the supply chain as well as the main consumer industries, with “others” representing a plethora of non-steel applications.

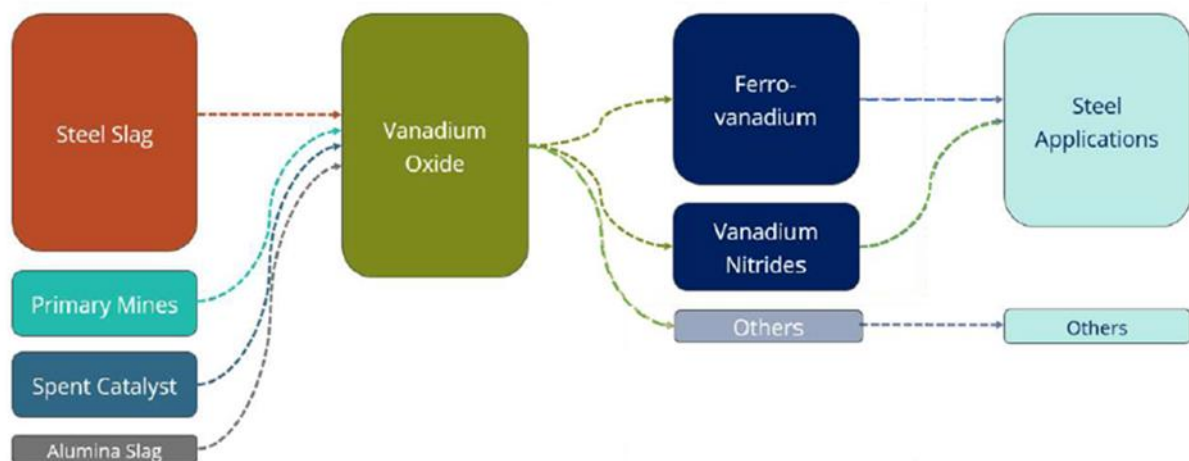


Figure 10: Vanadium Industry Supply Chain

### Supply

Global vanadium supply reached 113,728 Metric Tonnes of Vanadium (“MTV”) 1 MTV = 1.785 T  $V_2O_5$  in 2021, according to TTP Squared. As shown in Figure 10 the primary source of supply is vanadium slag generated as a coproduct during the production of steel from vanadium-bearing iron ores. This source accounted for approximately 70% of total supply. The other sources are primary ores and secondary materials. Primary producers, that typically employ a salt roast leaching and purification process to yield vanadium pentoxide powder or flakes, contributed 16% of supply. Secondary supply primarily from spent catalysts and oil residues accounted for 14% of supply.



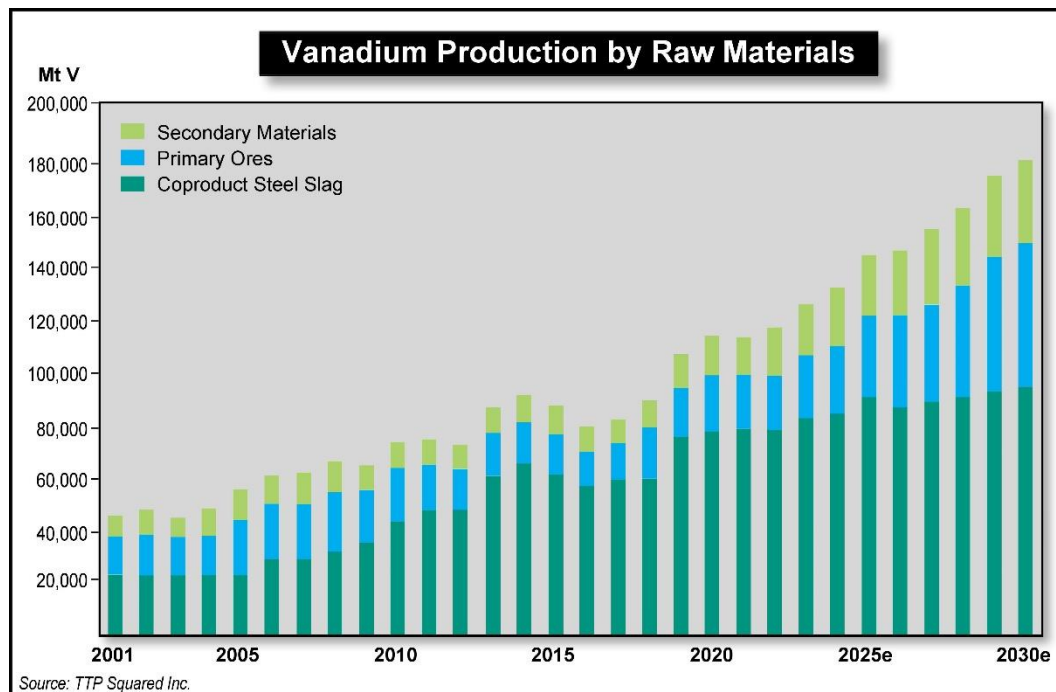


Figure 11: Vanadium Production by Raw Material

## Demand

According to TTP Squared, global vanadium consumption in 2022 was 121,060 MTV. China accounted for some 60,000 MTV whilst other major markets include Europe, North America and Japan.

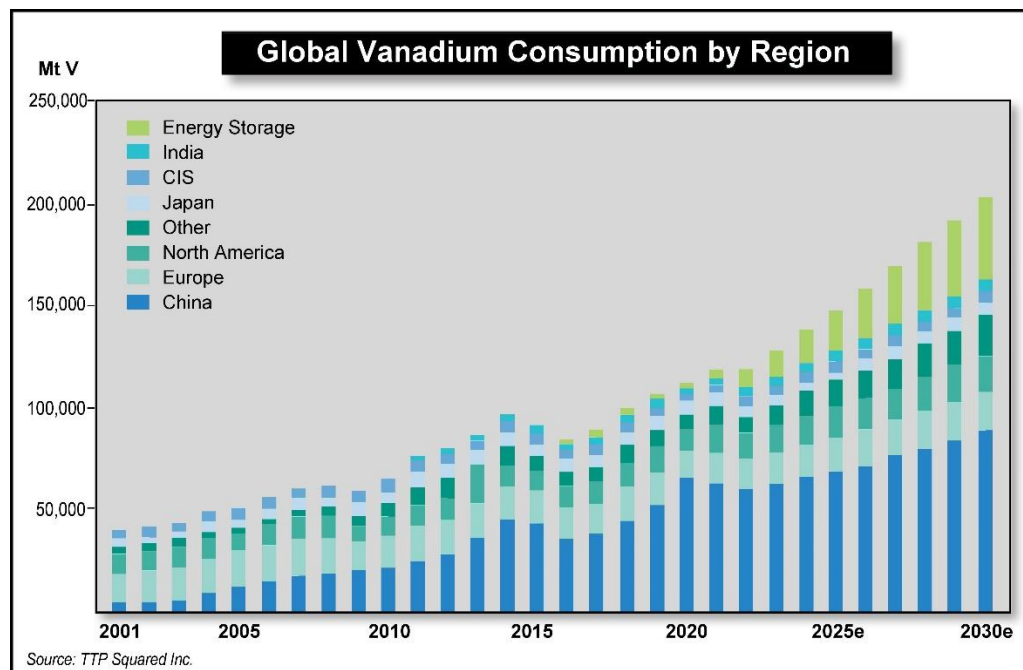


Figure 12: Vanadium Consumption by Country + Energy Storage, 2001-2030

More than 90% of vanadium is consumed in the production of high strength steel, predominantly in the form of high strength low alloy (HSLA) steel. The remainder is consumed in the production of super alloys, titanium alloys and vanadium chemicals, including those used for energy storage. Regardless of the forecast used, vanadium Redox Flow Batteries are forecast to be the most rapidly growing sector in coming years and is projected by TTP Squared to require 20,000 MTV in 2025, rising to 40,000 MTV in 2030, resulting in a growing deficit unless there are responses on the supply side.

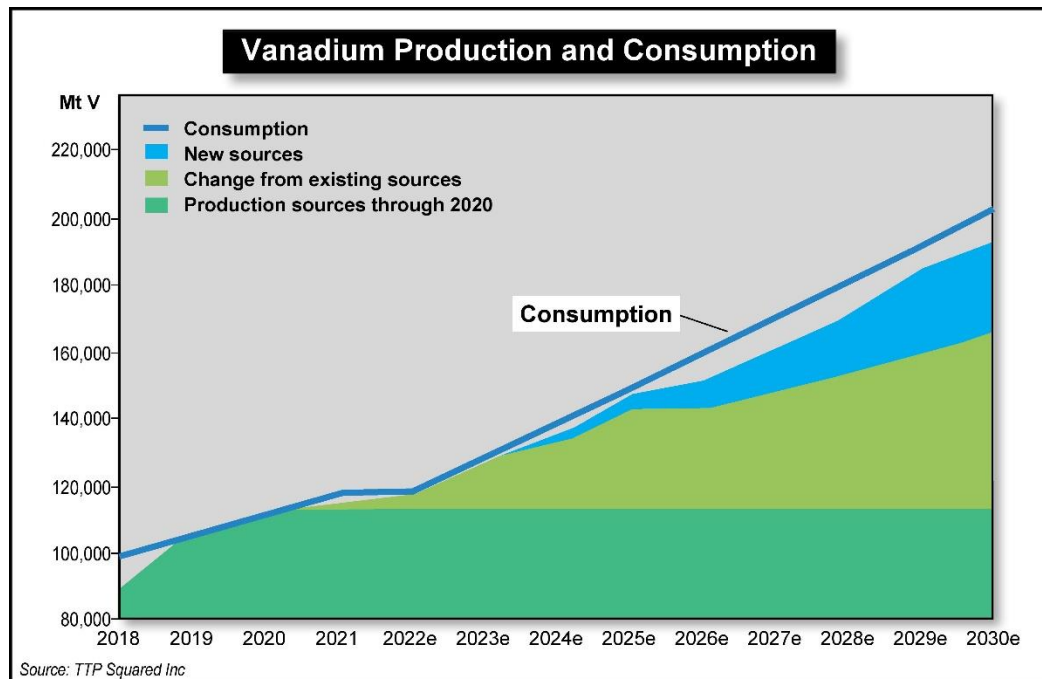


Figure 13: Vanadium Supply/Demand 2018-2030e

With supply of 117,000 MTV versus demand of 121,060MTV, 2022 recorded a deficit of over 4,000 MTV according to TTP Squared. Though both supply demand are expected to have grown in 2022, uncertainty remains due to extended lockdowns in China and the Russia-Ukraine conflict. The latter is of specific interest to the European market as the vast majority of vanadium produced in Europe relies on Russian feedstock, with future availability far from certain amidst constantly changing sanctions. By 2025 total global demand is forecast by TTP Squared to reach approximately 147,850 MTV, rising to 203,410 MTV in 2030, again highlighting the need for new supply in the coming years.

### Vanadium Redox Flow Battery (VRFB) Market Projections

A study from Guidehouse Insights commissioned by Vanadium Industry Association Vanitec suggests very significant growth in vanadium demand from VRFBs. Over and above the TTP Squared Inc forecast for consumption in 2025 and 2030 mentioned above, by 2031, this report suggests VRFBs will account for 32.8GWh in annual installations, a Global average CAGR of 41% over 2022. Estimates for vanadium consumption range from 3.89 MTV/MWh to 5.3 MTV/MWh, thus depending on the vanadium consumption factor used, this equates to 127,500-173,800 MTV of new vanadium demand, larger than current overall demand and considerably more than current annual vanadium production of 117,000 MTV.

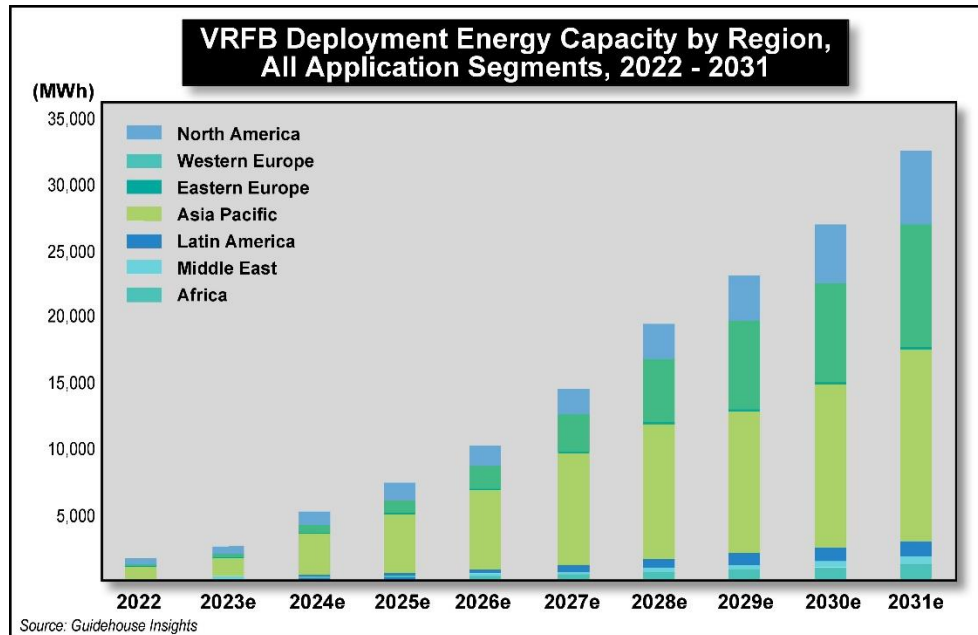


Figure 14: Annual Installed VRFB Deployment Energy Capacity by Region, All Application Segments, 2022-2031

Furthermore, CRU separately projects that from 1% of total demand in 2022, demand from VRFBs will rise to 32% of the total in 2030 and 74% in 2040, displacing the steel sector as the primary source and driver of demand. This is shown in figure 13 below which also shows steel sector demand declining from 93% in 2022 to 62% in 2030 and finally to 24% in 2040. Figure 15 below shows VRP1 annual production of  $V_2O_5$  versus the projected  $V_2O_5$  battery demand from CRU'S Vanadium Market Study for the base case scenario:

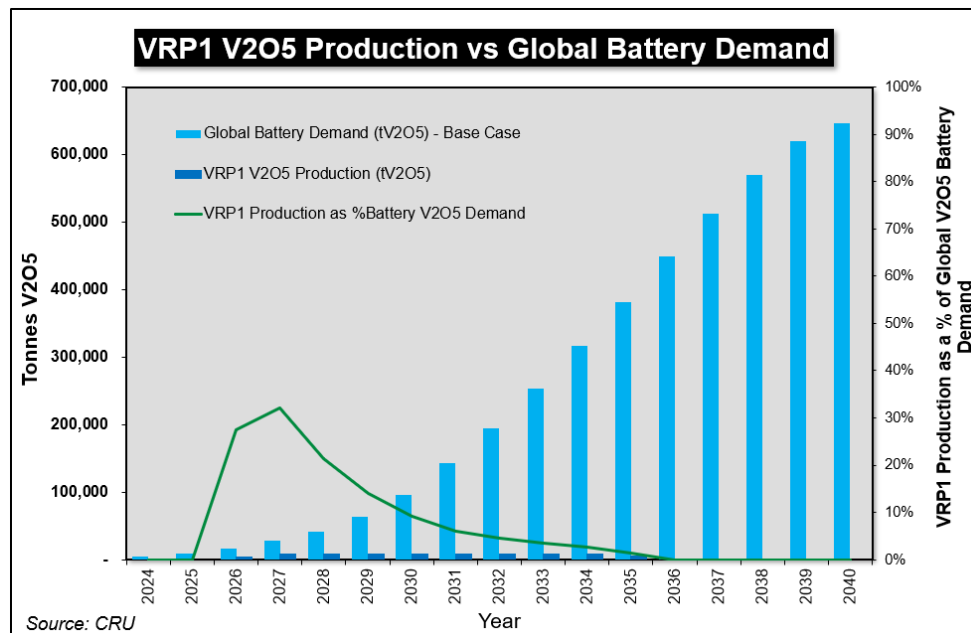


Figure 15: VRP1 V<sub>2</sub>O<sub>5</sub> Production vs Global Battery Demand

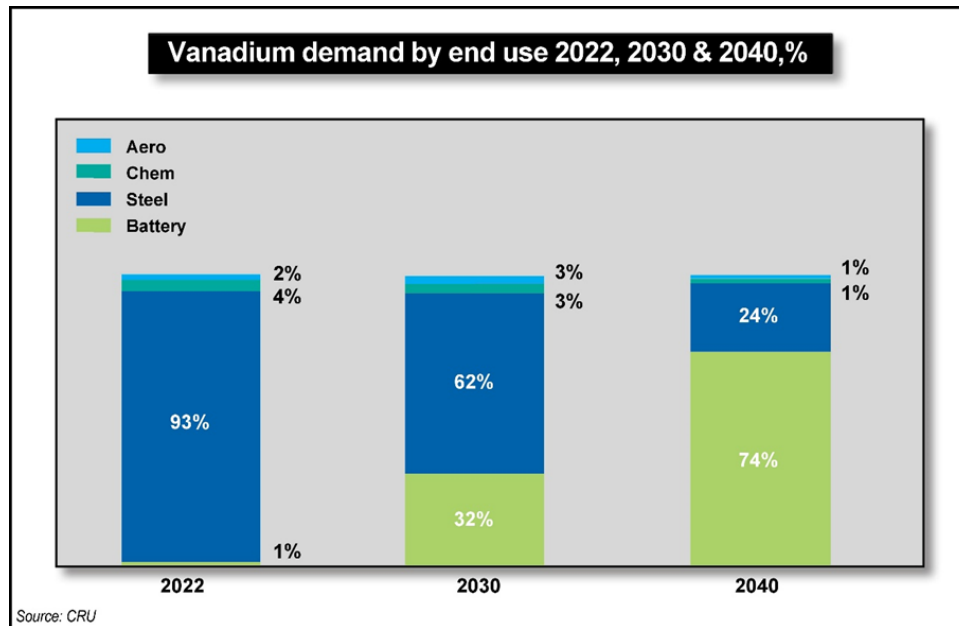


Figure 16: Vanadium Demand by End Use

### Market Price

Vanadium is not traded on any commodity exchanges such as the LME and spot prices are settled in private negotiations between sellers and buyers, which when reported to Fastmarkets/Metal Bulletin, form the basis of the weekly price assessment for  $V_2O_5$ . Long-term sales contracts are then typically priced with reference to the Metal Bulletin price.

As is shown in Figure 17, recent history has seen periods of considerable price volatility for vanadium, partly as a result of the implementation of Chinese reinforcement bar legislation and supply constraints.

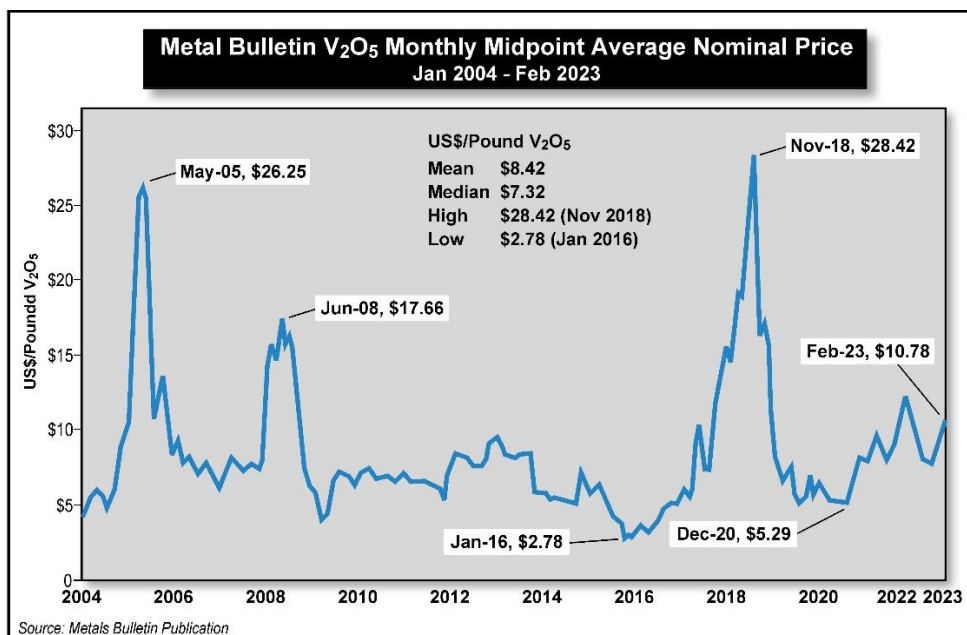


Figure 17: Average monthly mid-point prices (nominal),  $V_2O_5$  98.5% min, Jan 2004 – Feb 2023 (US\$/lb.  $V_2O_5$ )