

Rubidium Extraction Patent Application Filed

Highlights

- EMC has filed a provisional patent application for Direct Rubidium Extraction (DRE) at its Mt Edon Critical Mineral Project, securing intellectual property rights
- The patent is a result of research undertaken by Edith Cowan University's, Mineral Recovery Research Centre (MRRRC)
- This patent application underpins EMC's strategy to develop Mt Edon utilising new technology that increases recoveries compared to existing processes and offers an environmentally friendly processing route through DRE
- Advanced work continues on the Engineering Scoping Study (ESS), and ongoing improvement of the purification process to enhance cost-effectiveness
- Patent application validates the extraction process and supports initiation and ongoing discussions with potential offtake partners
- Grant funding options to support the next phase of pilot plant construction to be submitted over the next quarter

Everest Metals Corporation Ltd (ASX: EMC) ("**Everest**" or "**the Company**") is pleased to announce the successful filing of a provisional patent application with the government body, IP Australia, for its proprietary rubidium extraction process utilising ore from its Mt Edon Critical Minerals Project in WA. This step secures intellectual property rights for EMC's rubidium recovery process method.

To ensure thorough evaluation, EMC engaged the patent attorney firm Integrated IP ("**IIP**") to review the new process, including conducting a subject matter search. Following this review, IIP confirmed the lodgement of the application with IP Australia.

The new process represents a significant improvement over existing rubidium recovery methods, providing additional advantages to EMC and its Mt Edon Critical Minerals Project. Test work has demonstrated high recoveries of both rubidium and lithium. The patent application also lays the groundwork for future international filings, further bolstering EMC's intellectual property protection.

Executive Chairman and CEO Mark Caruso commented:

"Submitting the patent for the processing flowsheet marks an important milestone for EMC and the development of the Mt Edon Critical Minerals Project. This achievement of a viable process flowsheet to extract rubidium paves the way for progressing commercial and operating engineering studies as

well as continuing discussions with potential offtake partners. The board extends its gratitude to the EMC geological team and ECU's Mineral Research and Recovery team, for their tremendous effort in reaching this pivotal stage."

BACKGROUND

In February 2024, Edith Cowan University ("ECU") and Everest Metals Corporation Ltd formalised a partnership by executing a Research Agreement ("**Agreement**") to advance studies on the extraction of rubidium from Mt Edon ore¹. The research was conducted at ECU's Mineral Recovery Research Centre ("**MRRC**") over a 12-month period.

The initial phase of the collaboration involved a small-scale laboratory demonstration of the complete process for rubidium recover. The Direct Rubidium Extraction ("**DRE**") test work and studies used cutting-edge methods, including ion exchange, to explore the potential to commercialising Mt Edon's ore. The focus was on leveraging DRE technology to efficiently recover rubidium.

This partnership addresses the growing demand for sustainable and environmentally friendly extraction methods. The research aimed to develop a state-of-the-art process that maximises rubidium and lithium recovery. By optimising operating conditions and selecting appropriate cations (positively charged ions), the project was designed to achieve maximum rubidium extraction in a cost effective and environmentally friendly method.

This approach leveraged cutting-edge technologies, innovative methodologies, and industry best practices to ensure a sustainable and profitable extraction process. The process encompasses purification and refining, ultimately leading to the conversion into a final product, such as rubidium salts and metal.

Various test work was conducted by ECU's MRRC with results demonstrating acceptable levels of both rubidium and lithium in the leach liquor. The initial results reported by Everest in July 2024 demonstrated a technically viable rubidium recovery rate of up to 85% recovery using the DRE method².

To extract rubidium and lithium, two process methods were used – non-destructive and destructive. Through the destructive process method, the muscovite structure was deteriorated to gain the maximum extraction of rubidium. Several tests were conducted during this stage, and the results verified to ensure the same consistent and reliable outcomes. The maximum rubidium extraction achieved in this stage demonstrated the desired repeatability within a range of 75±10%³.

During phase 2, two critical processes were examined: refinement and conversion. The refinement

¹ EMC ASX Announcement: [EMC To Advance Mt Edon Critical Mineral Project Through Rubidium And Industrial Mica Product Development](#), dated 27 February 2024

² EMC ASX announcement; [Successful Recovery of Rubidium from Mt Edon Critical Mineral Project](#), dated 24 July 2024

³ EMC ASX announcement; [Successful Recovery of Rubidium from Mt Edon Critical Mineral Project](#), dated 24 July 2024

process utilised a specific chemical as an adsorbent for the DRE method, while another chemical was employed as a precipitation inducing agent.

This dual approach allowed for effective separation of rubidium from the Mt Edon Ore. The DRE process yielded Rubidium Chloride (RbCl) as the primary product, eliminating the need for additional conversion steps. Parallel investigations of acid leaching were conducted, exploring temperature influences, and the effects of different acid types and concentrations.

Throughout these experiments, samples were systematically collected for comprehensive analysis. The analytical phase employed multiple characterisation techniques to evaluate process effectiveness.

The purification phase employed two approaches: ion exchange-based extraction and precipitation-based selective precipitation. The results demonstrated exceptional efficiency with 91% overall recovery of rubidium for synthesised brine. Of note, 92 g/t lithium was produced as the by-product⁴.

A comprehensive process for rubidium extraction and recovery has been developed, providing a systematic outline of each processing stage and material flow. This process showcases an advanced method for selective ion separation and recovery, integrating both primary rubidium extraction and secondary lithium recovery pathways.

FUTURE ACTIVITIES

EMC is planning the following steps to advance its work for Mt Edon:

➤ Engineering Scoping Study (ESS)

A high level initial techno-economic analysis initiated for destruction process, focusing on both capital expenditure (CAPEX) and operational expenditure (OPEX).

➤ Purification processes

Plan to transition tests from a batch mode approach to a bench scale setup. This change will assist to optimise critical process parameters. Ultimately, these optimisations will contribute to the development of a comprehensive and effective purification process for future applications.

MT EDON PROJECT

Mt Edon Critical Mineral Project is located 5km southwest of Paynes Find, in the Mid-West region of Western Australia, approximately 420km northeast of Perth (Figure 1).

Mt Edon has an initial Inferred Mineral Resource (MRE) of 3.6 million tonnes grading 0.22% Rb₂O, and

⁴ EMC ASX announcement; [Everest Metals Achieves Up To 91% Rubidium Recovery from Mt Edon](#), dated 18 December 2024

0.07% Li₂O (at 0.10% Rb₂O cut-off), contains more than 7,900 tonnes of Rb₂O (Table 1)⁵. The maiden Inferred MRE includes a high-grade subset of 1.3Mt at 0.33% Rb₂O and 0.07% Li₂O (at 0.25% Rb₂O cut-off) which is nearly 56% of the total contained Rb₂O tonnes.

This verifies the tier-1 scale and grade of the Mt Edon deposit. The MRE is limited to a strike length of only ~400m within a 1.2km lithium-caesium-tantalum (LCT) pegmatite corridor and a vertical depth of ~140m below surface.

Table 1: Mt Edon Maiden Mineral Resource Estimate (JORC Code 2012)

Category	Tonnes (Mt)	Rb ₂ O (%)	Contained Rb ₂ O (t)	Li ₂ O (%)	Contained Li ₂ O (t)
Inferred	3.6	0.22	7,900	0.07	2,500
Total	3.6	0.22	7,900	0.07	2,500

- Mineral Resources are classified and reported in accordance with JORC Code (2012).
- Mineral Resource estimated at a 0.10% Rb₂O cut-off.
- Mineral Resource is contained within mining licence M59/714.
- All tabulated data have been rounded.

Multiple geological and geophysical targets exist across the project, which along with the resource modelling that underpins the MRE, form the basis for further exploration and anticipated resource growth.

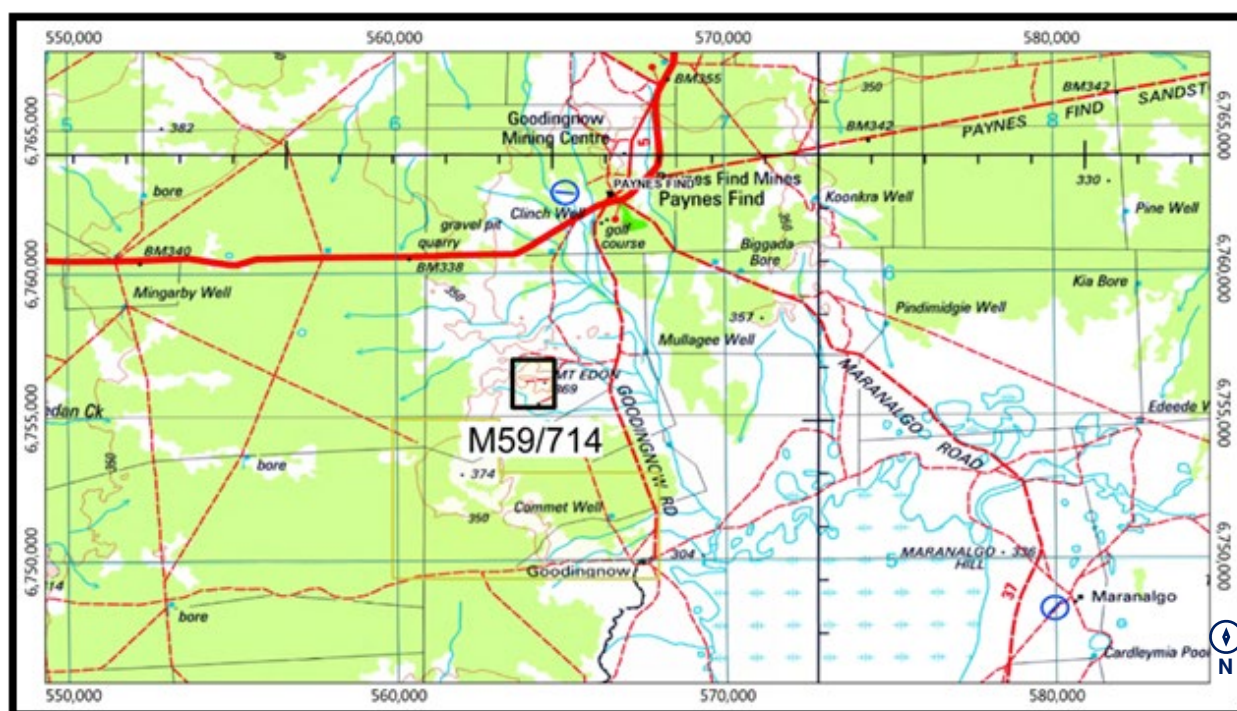


Figure 1: Mt Edon mining lease location map, southwest of Paynes Find, Western Australia

Modelling has shown the mineralisation remains open along strike to the northeast and southwest, providing immediate potential to significantly increase the MRE with follow-up drilling. The Mt Edon

⁵ ASX: EMC announcement; EMC Delivers World-Class Rubidium Resource At Mt Edon Project, WA, dated 21 August 2024

resource has outcrop or occurs close to surface and will be amenable to open cut mining, with the information suggesting a low stripping ratio.

RUBIDIUM OVERVIEW

Applications and Importance

Rubidium (Rb) is a critical raw material for various high-tech applications, including the development of new energy conversion technologies and new communication technologies. Key applications include:

- **Defence and Military:** Night vision imaging, special glass, radiation detectors, photoelectric tubes, radio electronic tubes and military infrared signal lights.
- **Aerospace:** Ion propulsion engines and atomic clocks.
- **Communications:** Ion cloud communications and fibre optic communications.
- **Emerging Energy Power Generation:** Materials for magnetohydrodynamic power generation and thermionic power conversion.
- **Medical:** Sedatives, tranquilisers and medications for treating epilepsy and synthetic alkaline solvents.
- **Special Glass:** Enhancing glass conductivity, increasing lifespan and stability.
- **Industrial Catalysts:** Widely used in ammonia synthesis, sulfuric acid synthesis, hydrogenation, oxidation and polymerisation reactions.
- **Electronic Devices:** Important materials for photovoltaic cells, photoemission tubes, TV camera tubes and photomultiplier tubes.

Researchers have also recently proposed the use of rubidium for chemical storage within hydrogen batteries, expanding the potential market for this critical mineral⁶.

Production and Market Trends

Despite the breadth of applications and demand for rubidium and caesium and their hydrides, global production of caesium and rubidium is significantly lower than that of other alkali metals, and the cost per kilogramme is substantially higher than lithium, sodium or potassium.

Due to the gradual depletion of caesium resources, but the continued demand of these industries, a replacement is required, with Rubidium being a suitable candidate. The downstream application fields of Rubidium salts are rapidly growing, enhancing the Company's market advantage in this sector. As a result, rubidium has been listed as one of the 35 critical minerals by several countries around the globe including USA and Japan.

According to the U.S. Geological Survey (2024)⁷, global rubidium resources are relatively scarce, with

⁶ S. Matalucci, May 2024, Researchers propose use of caesium, rubidium for hydrogen batteries, pv-magazine.

⁷ U.S. Geological Survey, January 2024, Mineral Commodity Summaries 2024

most resources containing limited Rubidium content. The Rubidium Industry is expected to grow from US\$4.46 Billion in 2023 to US\$7.2 Billion by 2032. The rubidium Market CAGR (growth rate) is expected to be around 5.48% during the forecast period (2024 - 2032)⁸.

Several market factors support growth in demand for rubidium and underpin the current price of ~US\$1,200/kg⁹. Among these, there is significant global demand for newer and faster electronic products due to the rapid pace of innovation, technology advancement and R&D activities in the electronics industry. This increasing demand for rubidium, coupled with the fact that Rubidium is difficult to source due to extremely limited global production, underpins the extremely high price of rubidium products.

North America holds a significant share of the rubidium market in terms of both market share and revenue. However, like most critical minerals, China maintains control of the market. Commodity analysts believe if more rubidium was produced, the market could grow rapidly and therefore its very small market size can be partially attributed to supply constraints, rather than a lack of demand.

ENDS

This Announcement has been authorised for market release by the Board of Everest Metals Corporation Ltd.

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⁸ www.marketresearchfuture.com/reports/rubidium-market-27298

⁹ www.metal.com/Other-Minor-Metals/202012250004

Competent Person Statement

This announcement includes information related to Exploration Results prepared and disclosed under the JORC Code (2012) and extracted from the Company's announcements. These announcements are available to view on www.everestmetals.au. Everest Metals Corporation confirms that a) it is not aware of any new information or data that materially affects the information included in the announcement; b) all material assumptions included in the announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons' findings are presented in this report have not been materially changed from the announcement.

The information in this announcement that related to the interpretation of process testwork data has been compiled and assessed under the supervision of Dr. Amir Razmjou, Associate Professor of Edith Cowan University. Dr. Razmjou is a member of the Australasian Institute of Mining and Metallurgy (AusIMM). Dr. Razmjou is engaged as a consultant by Everest Metals Corporation Ltd. He has sufficient experience that is relevant to the information under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Dr. Razmjou consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The information in this report related to Mineral Resource is based on information compiled and approved for release by Mr Bahman Rashidi, who is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG). Mr Rashidi is chief geologist and a full-time employee of the Company and has over 25 years of exploration and mining experience in a variety of mineral deposits and styles. He is also a shareholder of Everest Metals Corporation. He has sufficient experience which is relevant to the style of mineralisation and types of deposit under consideration and to the activity, he is undertaking to qualify as a Competent Person in accordance with the JORC Code (2012). The information from Mr Rashidi was prepared under the JORC Code (2012). Mr Rashidi consents to the inclusion in this ASX release in the form and context in which it appears.

Forward Looking and Cautionary Statement

This report may contain forward-looking statements. Any forward-looking statements reflect management's current beliefs based on information currently available to management and are based on what management believes to be reasonable assumptions. It should be noted that a number of factors could cause actual results, or expectations to differ materially from the results expressed or implied in the forward-looking statements.

The interpretations and conclusions reached in this report are based on current geological theory and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for complete certainty. Any economic decisions that might be taken based on interpretations or conclusions contained in this report will therefore carry an element of risk. This report contains forward-looking statements that involve several risks and uncertainties. These risks include but are not limited to, economic conditions, stock market fluctuations, commodity demand and price movements, access to infrastructure, timing of approvals, regulatory risks, operational risks, reliance on key personnel, Ore Reserve and Mineral Resource estimates, native title, foreign currency fluctuations, exploration risks, mining development, construction, and commissioning risk. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information.

Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this report. No obligation

is assumed to update forward-looking statements if these beliefs, opinions, and estimates should change or to reflect other future developments.

The Company can provide no assurances as to the breadth of protection afforded by the patent, the likelihood of the patent being granted or the ability of the Company to enforce its patent rights until such time the patent is actually granted.

ASX Listing Rule 5.23.2

Everest Metals Corporation Limited confirms that it is not aware of any new information or data that materially affects the information included in this market announcement and that all material assumptions and technical parameters underpinning the estimates in this market announcement continue to apply and have not materially changed.

ABOUT EVEREST METALS

Everest Metals Corporation Ltd (EMC) is an ASX listed Western Australian resource company focused on discoveries of Gold, Silver, Base Metals and Critical Minerals in Tier-1 jurisdictions. The Company has high quality Precious Metal, Battery Metal, Critical Mineral Projects in Australia and the experienced management team with strong track record of success are dedicated to the mineral discoveries and advancement of these company's highly rated projects.

EMC's key projects include:

REVERE GOLD AND BASE METAL PROJECT: located in a proven prolific gold producing region of Western Australia along an inferred extension of the Andy Well Greenstone Shear System with known gold occurrences and strong Copper/Gold potential at depth.

MT EDON CRITICAL MINERAL PROJECT: located in the Southern portion of the Paynes Find Greenstone Belt – area known to host swarms of Pegmatites and highly prospective for Critical Metals. The project sits on granted Mining Lease.

MT DIMER TAIPAN GOLD PROJECT: located around 125km north-east of Southern Cross, the Mt Dimer Gold & Silver Project comprises a mining lease, with historic production and known mineralisation, and adjacent exploration license.

For more information about the EMC's projects, please visit the Company website at:

www.everestmetals.au