

ASX Release
12 October 2023

Cummins Range Project – Product Strategy Update

Unique, strategic product offering from Cummins Range presents offtake opportunities for both EV magnet and LFP battery applications.

HIGHLIGHTS

- Primary Phosphate-Rare Earth (Phos-RE) mineral concentrate product from Cummins Range shows strong potential to produce **high-purity phosphoric acid suitable for lithium-ferro-phosphate (LFP) battery application**.
- **Simple dilute phosphoric acid process** proposed for treating the Cummins Range Phos-RE product, delivering strong apatite (phosphate) extraction while **maintaining the RE values within the leach residue**.
- The low-impurity apatite at Cummins Range is expected to require **fewer purification steps** to process the acid leach liquor into high-purity phosphoric acid.
- Dilute acid leach step proposed to be undertaken at offtaker(s) facility, with **product sample generation underway** to support offtake discussions.
- **RE beneficiation tests underway** at Baotou Mengrong Fine Materials (BTMR) to inform the RE residue purification performance with results imminent.

RareX Limited (ASX: REE – **RareX** or **the Company**) is pleased to provide a product strategy update for its 100%-owned Cummins Range Rare Earths and Phosphate Project (**the Project, Cummins Range**), located in the Kimberley region of Western Australia, which supports the production of rare earths for magnet motors and generators and high-purity phosphoric acid suitable for use in lithium-iron-phosphate (**LFP**) battery applications.

RareX CEO, James Durrant, said: *“Our main product from Cummins Range is a unique dual-mineral concentrate that contains both LFP-suitable phosphate and EV magnet-suitable rare earths. The phosphate within apatite and the rare earths within monazite means we can maximise the extraction of both of these highly strategic elements. We believe this is a unique product offering, with the opportunity to supply 12ktpa of rare earth oxides and 169ktpa of battery-grade phosphate to an automotive manufacturer for at least 15 years as described in our scoping study¹. With 25kg of P₂O₅ and 1kg of NdPr oxide required for each LFP-powered electric vehicle, Cummins Range has the potential to supply over 2.5 million EVs every year over its initial 15-year mine life.”*

RareX Phos-RE Concentrate Product Strategy

Following the positive dilute phosphoric acid leaching testwork results² that showed high apatite dissolution and low impurity dissolutions, RareX has conducted further assessments on the suitability of processing the high-

¹ ASX announcement 22 August 2023: Enhanced Scoping Study for Cummins Range

² ASX announcement 11 July 2023: Phosphoric Acid Leach Test Supports RareX Stage-3 Operations

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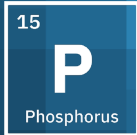
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purity leach liquor from Cummins Range into high-purity phosphoric acid and potential methods to further upgrade the leach residue into more valuable RE concentrate.

Based on the assessments and market feedback, the dilute leach liquor from Cummins Range is considered “pure” given its low gangue element concentrations when compared with leach liquor generated from sedimentary rocks. This is due to the following characteristics of the Cummins Range deposit:

- ✓ Igneous deposit which is naturally lower in deleterious elements and heavy metals when compared with sedimentary deposits.
- ✓ Mineral concentrate produced is rich in premium-quality apatite, which is highly available and low in deleterious elements.
- ✓ Minimal RE is contained within the apatite, allowing easy separation of monazite and apatite and minimal RE loss to solution using dilute phosphoric acid leach.

Phosphoric acid is mostly produced via the wet process, which uses concentrated sulphuric acid to react with finely-ground rock phosphate to maximise apatite dissolution. The rock phosphate feedstock must contain low impurities in order for the process to be technically and economically viable for processing into merchant-grade (MGA) or technical-grade phosphoric acid. Typically, a significant amount of further purification is required on this production method.

Unlike the conventional wet process, RareX is proposing a simple dilute phosphoric acid leach and flotation process for the Cummins Range Phos-RE concentrate (as shown in the figure). This process is expected to require significantly less purification to reach LFP grade, whilst also liberating the rare earths for further upgrading into a high-grade RE concentrate.

RareX envisages that the proposed product treatment process would be undertaken at an offtaker/s existing plant and aims to maximise the phosphate and rare earths values through the following steps:

1. **Apatite Leach** - Taking a bleed of the dilute phosphoric acid that is already being produced in the wet acid plant to treat the Cummins Range Phos-RE concentrate. As demonstrated by the recent positive testwork^{2, 3, 4}, the apatite within the Cummins Range concentrate is pure and highly available.
2. **Acid Production, Concentration and Purification** - The leach liquor can be fed into the existing phosphoric acid generation, concentration and purification circuits to process to LFP requirements with likely fewer purification steps and less reagent demand.
3. **RE Beneficiation** - The rare earths will remain in the leach residue at elevated grade² during the gangue leach process. This residue can be enriched with a simple flotation process to produce a monazite refinery feedstock. This could be undertaken in the same facility, or at a collaborator’s facility where monazite beneficiation is already occurring.

³ ASX announcement 08 June 2023: Bioavailability Tests Confirm Potential of Cummins Range

⁴ ASX announcement 23 March 2023: Phosphate Testwork Confirms Potential to Produce Fertiliser

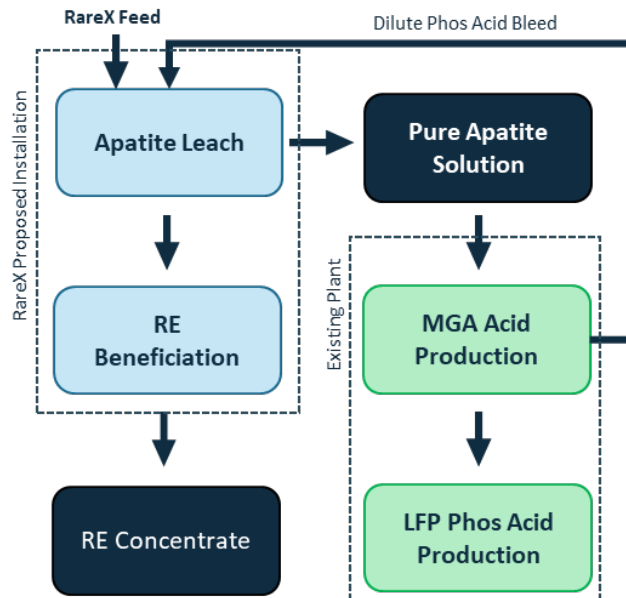
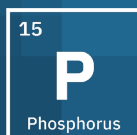


Figure 1. Proposed a simple dilute phosphoric acid leach and flotation process for the Cummins Range Phos-RE concentrate

RareX is working closely with laboratories to generate mineral concentrate samples and product derivatives (leach liquor and RE residue) to allow RareX to advance offtake discussions and refine process design criteria. Product and derivative samples are expected to be available within two months.

In addition, RareX has been testing monazite beneficiation at BTMR laboratory. This testwork is being undertaken on “raw” ore feed (not the leach residue outlined above), however, the results will provide valuable data to support the design of the RE beneficiation process for the leach residue.

This announcement has been authorised for release by the Board of RareX Limited.



About RareX Limited – ASX: REE

RareX Limited (ASX: REE), a Perth based project development and exploration Company, was founded on the fundamental belief of the electronics revolution and the electric vehicle mega-trend. Our focus is rare earths and associated battery and electronic metals.

Cummins Range, in the East Kimberley region of Western Australia, is our flagship project which aims to produce a sustainable, ethical, transparent and secure low carbon rare earth and phosphate supply chain solution for its products which satisfy the two global mega-trends of population growth and electrification.

RareX maintains exploration upside programs in the immediate vicinity of the Cummins Range Project and also more broadly to identify targets and progress projects complementary to the founding beliefs and expertise of the core team.

Rare earths and in particular, NdPr, are core enablers of decarbonisation and electrification of our society. NdPr supports high strength magnets which enables low carbon technologies, especially in the electric mobility sector, robotics solutions and renewable energy, particularly the wind energy sector.

Phosphate is the feedstock for the emerging dominant battery technology; lithium-ferro-phosphate (LFP). The global LFP battery market is projected to grow from \$10 billion in 2021 to \$50 billion by 2028 as more EVs adopt the safer and longer life technology and grid stabilization batteries expand to balance intermittent renewable generation.

RareX maintains material investments in Kincora Copper (ASX:KCC), Cosmos Exploration (ASX:C1X) and Canada Rare Earth Corporation (LL.V).

For further information on the Company and its projects visit www.rarex.com.au

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