RAREX Sustainable Rare Earths

60 Nd Neodymium | 59 Pr Praseodymium | 15 P Phosphorus

ASX Release
March 23, 2023

Phosphate testwork confirms potential to produce direct-application fertilisers from DSO and concentrate at Cummins Range

Results indicate exceptionally high phosphate bioavailability, highlighting the opportunity to produce organic fertilisers for agricultural applications

Australian sustainable rare earths company RareX Limited (ASX: REE – RareX or the Company) is pleased to advise that recent testwork on samples from the Cummins Range Rare Earths & Phosphate Project in WA has confirmed the potential to produce phosphate Direct Shipping Ore (DSO) and phosphate mineral concentrate, with both products showing strong potential as direct-application agricultural fertiliser.

Results from initial phosphorous bioavailability tests on DSO and phosphate mineral concentrate – both of which are anticipated co-products with rare earths from Cummins Range – show the material possesses very high bioavailability, that is two-to-five times better than what has been classified as high-bioavailable rock phosphate by industry standard.

This unlocks a variety of development scenarios for the Cummins Range Project, including:

- A DSO product could be produced initially, meaning very low levels of processing and capital would be required to develop a readily saleable and marketable phosphate product line that is in demand in the fertiliser trade.

- A premium-grade phosphate concentrate product could also be produced from the Cummins Range deposit for direct-application fertiliser. Previous testwork has already demonstrated a simple beneficiation flowsheet and low reagent consumptions[1], suggesting low capital and operating costs. In addition, the beneficiation circuit for phosphate concentrate production could be integrated as part of the rare earth beneficiation process in the longer-term, supporting enhanced project development.

Direct-application fertilisers are classified as organic as they do not require chemical reaction with sulphuric acid to make the phosphate derivative products. In addition, they often have favourable properties for plants' uptake. Direct-application phosphates, where the natural mineral form remains unadulterated, can be produced at a discount while also trading at a premium to processed phosphates.

[1] ASX release 04 October 2023; Met Testwork Delivers Premium Phosphate Concentrate

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The testwork undertaken to assess the phosphorous bioavailability of the Cummins Range mineralisation was a 2% citric acid test, which is an industry standard bioavailability assessment. The tests simulated the soil conditions and were performed on four resource samples – two DSO samples and two phosphate float concentrate samples.

The results of the tests are shown in Figure 1 with comparison to industry standard. As illustrated, the phosphorous dissolutions of all samples are shown to be multiples of what is typically considered high by industry standards (>9.4% P_2O_5 dissolution in 2% citric acid).

This is an outstanding result which suggests the Cummins Range material will be ideal for use as direct-application fertiliser.

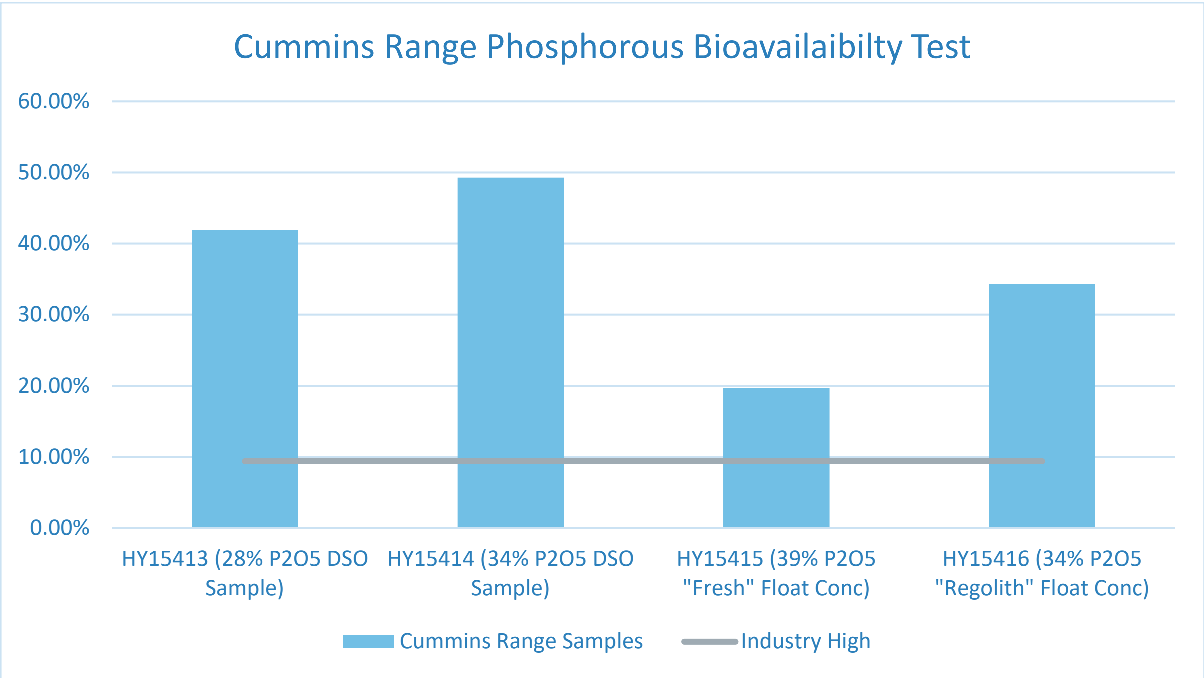

Figure 1: Phosphorous Bioavailability Results vs. Industry Standard

It should also be noted that all potentially deleterious elements (fluorine, cadmium, uranium and chlorine) have come back within normal specifications, and no further deleterious elements are present.

RareX Managing Director, Jeremy Robinson, said: *"This is a standout result for the Cummins Range Rare Earths & Phosphate Project as it delivers outstanding flexibility for the Project's development – with the potential to commence with an ultra-low capital, high-margin starter project producing organic direct-application phosphate fertiliser, before moving into a longer-term rare earths and phosphate concentrate* *project. The best comparison for the starter project would be to a DSO iron ore operation – it would literally be dig-and-ship. Direct fertiliser deposits are globally scarce, making Cummins Range a rare development."*

Tests on the phosphate co-product are being undertaken in parallel with rare earth metallurgical testwork programs, which are also delivering promising results. An update on the rare earth metallurgy will be made in due course.

Currently, phosphate mineral concentrates are being sourced from the Rare Dyke and the Phos Dyke areas at Cummins Range, with the rare earth deportment also being studied. Phosphate-optimised beneficiation is a strong alternative to rare earth-optimised flotation and may deliver greater value realisation from the Cummins Range Resource.

RareX has signed a collaboration MOU with OrdCo[2] to develop a phosphate product roadmap to support the Kununurra agricultural sector with a portion of Cummins Range's phosphate product mix. These latest testwork results clearly support this component of the work being completed under the MOU.

Phosphate prices are currently very high which is conducive for a fast-tracked DSO operation which can generate cash flows in the near term. Such cashflows can be used to fund the longer-term project which will include recovery of both rare earth and phosphate products.

These results will be integrated with pit optimisation studies being prepared for the new block model for Cummins Range, which is expected to be announced in April following the completion of an updated Mineral Resource Estimate (MRE). The new MRE is anticipated to be considerably larger than the current estimate[3] and will bring in the requisite focus on the phosphate content of the resource as well as the important and highly favourable rare earth content.

The Cummins Range Project is located approximately 535km by road from the port of Wyndham, making transport logistics feasible for bulk products such as phosphate fertiliser. The port of Wyndham has been used for the commercial transport of bulk iron ore.

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

[2] ASX release 07 November 2022; RareX Signs MOU for Supply of Phosphate Products Locally
[3] ASX release 19 July 2021; RareX Delivers Major Resource Upgrade at Cummins Range

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Competent Person's Statements

The information in this release that relates to metallurgical testwork is based on information compiled and / or reviewed by Mr Gavin Beer who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM) and a Chartered Professional. Mr Beer is a consulting metallurgist with sufficient experience relevant to the activity which he is undertaking to be recognised as competent to compile and report such information. Mr Beer consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. Mr Beer does not hold securities in RareX.

The mineral resource estimate in this announcement was reported by the Company in accordance with Listing Rule 5.8 on 19 July 2021. The Company confirms it is not aware of any new information or data that materially affects the information included in the previous announcement and that all material assumptions and technical parameters underpinning the estimates in the previous announcement continue to apply and have not materially changed.

About RareX Limited – ASX: REE

RareX Limited (ASX: REE) is a Perth-based rare earths company committed to becoming a near-term producer of neodymium and praseodymium (NdPr). RareX's focus is on developing rare earths deposits in Australia, including the flag-ship Cummins Range Rare Earths – Phosphate Project.

NdPr is a core enabler of decarbonisation of our society and enables low carbon technologies, especially in the electric mobility sector, robotics solutions and renewable energy, e.g. the wind energy sector. NdPr is the key raw material for manufacturing rare earth powered permanent magnet NdFeB electric motors, the heart of the next industrial revolution the Electrification of our Society.

RareX's focus is on developing rare earths deposits in Australia, including the Cummins Range Rare Earths Phosphate Project in the East Kimberley region of Western Australia. RareX is committed to developing a sustainable, ethical, transparent and secure low carbon rare earth supply chain solution for the global electric mobility market and NdFeB permanent motor downstream ecosystem.

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

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APPENDIX A

Table 1: Drill Collar Information

Hole ID	East MGA	North MGA	RLUTM	End Depth	Azimuth	Dip	Type
CDX0015	307374	786670	392	204.6	48	58	Diamond
CDX0004	307342	7866505	391	155.1	50	60	Diamond

Appendix B

JORC Code, 2012 Edition – Table 1

Section 1: Sampling techniques and data - Metallurgy

Criteria	JORC Code explanation	Commentary
Sampling techniques	• Nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.	• All diamond drill cores were sampled for the metallurgical testwork. Samples were selected based on drill assays, drill hole location and intervals, geological and mineralogical data. Samples were riffle split from bulk samples and sent to Auralia Metallurgy in Perth and/or BV Perth and/or ALS Perth for assays and further testwork.
	• Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	• Quarter diamond drill cores were sent to laboratories to conduct crushing, sampling and assaying. All laboratories used in the assaying of the Cummins Range material were checked for sampling and assaying equipment and equipment calibrations / accuracy.
	• Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g., 'reverse circulation drilling was used to obtain 1m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g., submarine nodules) may warrant disclosure of detailed information.	• Sample interval selection for the metallurgical testwork was based on geological controls and mineralisation of the deposit, the samples were considered representative of the mineralisation that were intended to be tested.

Criteria	JORC Code explanation	Commentary
Drilling techniques	• Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	• Drilling techniques used for the Cummins Range samples used for the metallurgical testwork were: ○ Diamond drilling in 2021- 2022 using HQ and PQ sized rods.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed.	• Samples used for the metallurgical testwork were collected by riffle split from crushed diamond cores. Additional laboratory assays were undertaken on the samples submitted for the testwork and showed good alignments to the drill assays.
	• Measures taken to maximise sample recovery and ensure representative nature of the samples.	• Larger and more capable rigs were used for collection of the metallurgical samples which allowed for good recoveries of samples. During each drill program, all drill rigs were checked by professional geologists, and all drill holes were logged and monitored for recoveries and accuracy prior to sample splitting and logging.
	• Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• Holes used for the metallurgical testwork had good sample recovery hence minor sample bias. There is no distinctive relationship exist between sample recovery and grade.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	• All samples used for the metallurgical testwork were geologically logged to a detail level that supported the metallurgical studies.
	• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	• The logging is qualitative and quantitative in nature for the metallurgy samples. The recorded details included: lithology, grainsize, weathering, colour, alteration, sulphide quantity and type, structure and veining. Photos were taken for all core samples.
	• The total length and percentage of the relevant intersections logged.	• Logging of all metallurgical samples were carried out on geological intervals.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken.	• Cores were cut in half and quarter, quarter cores from each selected interval were used for this metallurgical testwork.
	• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• N/A
	• For all sample types, the nature, quality and appropriateness of the sample preparation technique.	• Samples used for the metallurgical testwork were diamond drill cores which were split and prepared with appropriate equipment. Where required, the samples were crushed and ground to ensure the samples were properly prepared for the required testwork.
	• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	• All sample preparation and sampling equipment was cleaned with adequate procedures before taking of each sample to ensure there is no cross-contamination between samples.
	• Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.	• Drill assays, mineralogical and geological information were reviewed for selection testwork samples. Additional assays on the samples showed high repeatability of drill assays suggesting good representivity of the in-situ material hence no further sampling was required.
	• Whether sample sizes are appropriate to the grain size of the material being sampled.	• The metallurgical sample sizes were appropriate to the grain size of the material being sampled. Where necessary, material was crushed and/or pulverised before riffle / rotary split to ensure good consistency of sampling representivity.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	• The assay analyses of all samples were conducted by registered laboratories (i.e., ALS, BV and Nagrom etc.) with suitable equipment and well-known quality assurance accreditation to ensure the accuracy of the assay results. Samples were assayed by X-ray fluorescence (XRF) and Inductively Coupled Plasma (ICP).
	• For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	• There was no reliance upon geophysical tools, spectrometers, or any other techniques for the required metallurgical testwork. All assays were undertaken with appropriate XRF and ICP equipment at registered laboratories.

Criteria	JORC Code explanation	Commentary
	• Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	• The metallurgical samples were tested against the standards and the good alignments to drill assays confirmed the accuracy of the results.
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel.	• There are no significant intercepts mentioned in this announcement.
	• The use of twinned holes.	• Twin holes were not used for collection of metallurgical samples.
	• Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• An electronic geological database was used for data storage. For metallurgical testwork, all raw data from laboratories, results analysis and summary reports were documented in a metallurgy database.
	• Discuss any adjustment to assay data.	• No adjustment was made to the assay data.
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	• Drill hole collar locations for the metallurgical testwork have been surveyed using a differential GPS with accuracy to 0.1 m.
	• Specification of the grid system used.	• MGA2020 Zone 52
	• Quality and adequacy of topographic control.	• Drillhole collar locations for the metallurgical testwork have been surveyed using a differential GPS with accuracy to 0.1m.
Data spacing and distribution	• Data spacing for reporting of Exploration Results.	• The samples were collected from two diamond drill holes ○ One from the rare dyke ○ One from the phos dyke
	• Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	• The data spacing is considered appropriate for the metallurgical testwork at this study level.

Criteria	JORC Code explanation	Commentary
	• Whether sample compositing has been applied.	• Samples were all composited for the metallurgical testwork. Representative portion of each selected intervals were sent to the designated laboratories to undergo staged crushing and grinding before being composited and homogenised with suitable equipment. Where drill cores were used for the testwork, quarter cores were crushed into suitable sizes before splitting the representative samples used for composition.
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	• The orientation of the metallurgical sampling is not considered to be biased towards any geological characteristics.
	• If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• N/A
Sample security	• The measures taken to ensure sample security.	• All metallurgical samples were secured with appropriate labelling system. Samples were labelled with standard designations and were stored in locked shed. Samples were transported to Perth from site by reputable transport companies. Individual bags are cable tied and the pallets are wrapped in plastic with detailed logging sheet included.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• No audits were undertaken however the Competent Person was involved in all stages of the metallurgical sampling and tests. In-house reviews were also completed on the sampling techniques and testwork results.

Section 2: Exploration Results - Metallurgy

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	• The Cummins Range deposit is located on tenement E80/5092 and is 100% owned by Cummins Range Pty Ltd which is a wholly owned subsidiary of RareX Ltd. Cummins Range Pty Ltd purchased the tenement from Element 25 with a potential capped royalty payment of AU$1m should a positive PFS be completed within 36 months of purchase finalisation.
	• The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• No security or impediments with tenement E80/5092.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• CRA Exploration defined REO mineralisation at Cummins Range in 1978 using predominantly aircore drilling. Navigator Resources progressed this discovery with additional drilling after purchasing the tenement in 2006. Navigator announced a resource estimate in 2008. Kimberly Rare Earths drilled additional holes and upgraded the resource estimate in 2012.
Geology	• Deposit type, geological setting and style of mineralisation.	• The Cummins Range REO deposit occurs within the Cummins Range carbonatite complex which is a 2.0 km diameter near-vertical diatreme pipe that has been deeply weathered but essentially outcropping with only thin aeolian sand cover in places. The diatreme pipe consists of various mafic to ultramafic rocks with later carbonatite intrusions. The primary ultramafic and carbonatite rocks host low to high grade rare earth elements with back ground levels of 1000-2000 ppm TREO and high grade zones up to 17% TREO. The current resource sits primarily within the oxidised/weathered zone which reaches to 120 m below the surface. Metallurgical studies carried out to date show that the rare earth elements are primarily hosted by monazite which is a common and favourable host for rare earth elements.