RARE X
Phosphate Enabled Rare Earths

XX RE Rear Earths

15 P Phosphorus

ASX Release
13 April 2023

Cummins Range Rare Earths-Phosphate Project – Development and Strategy Update

Updated Resource and significant change in project scale provides catalyst for staged development approach commencing with initial DSO phosphate fertiliser phase.

Highlights

- **Recent Mineral Resource update confirms scale and significance of the Cummins Range Rare Earths-Phosphate Project.**
- **New development concept highlights potential for a fast-tracked DSO phosphate fertiliser stage (Stage 1), as a catalyst for the rare earth stage.**
- **Stage 1 would be followed by phosphate, and subsequently rare earth, beneficiation (Stages 2 & 3).**
- **Stage 1 studies are being fast tracked whilst Stages 2 & 3 are following a more traditional PFS>DFS approach.**
- **RareX will continue to assess the development of a large and strategic, domestic, rare earth value chain as part of Stage 3.**
- **RareX's leadership team restructured to progress this simplified development plan.**
- **Updated global Mineral Resource due in late April 2023, to be followed shortly by a revised Scoping Study encompassing the new 3-Stage, DSO-catalysed development approach.**

RareX limited (ASX: REE, **RareX** or **the Company**) is pleased to provide an update on the development strategy for its 100%-owned **Cummins Range Phosphate-Rare Earths Project** (**Cummins Range**, **the Project**), located just south of Halls Creek in the Kimberley region of Western Australia following the recent Mineral Resource update and key director and management changes.

The recent Mineral Resource update, to be followed by a further significant Resource update due by late April 2023, underpins a re-framing of the Project as a highly significant phosphate-hosted rare earths deposit commencing from surface.

For more information, please contact:

Investors: James Durrant, CEO
Media: Nicholas Read, Read Corporate

P +61 (0) 8 6383 6593
P +61 (0) 8 9388 1474

The concept emerging as a result of the new understanding of the resource, coupled with important recent metallurgical testwork results (see later sections of this release), suggests the option for an initial fast-tracked DSO (direct shipping ore) phosphate fertiliser phase (Stage 1), followed by phosphate beneficiation (Stage 2) and subsequently rare earth beneficiation and value chain development (Stage 3).

This staged approach is expected to lower the risk associated with building the full rare earth value chain out-right at the beginning, by delivering a simpler and lower-cost DSO phosphate operation using existing infrastructure, whilst maintaining development towards a large scale, strategic, rare earth and phosphate critical minerals project.

Given the new understanding of the deposit and the emerging development possibilities, the Company has restructured its senior leadership team to strengthen the strategic, sales and marketing, and operational aspects of the business in the fields of bulk commodities, fertilisers and rare earths to capitalise on the short-term opportunities the project potentially presents, while continuing to de-risk the longer term pathway to develop the full resource and participate in the full rare earth value chain.

This re-framing and simplification of the Project marks a key step in RareX's transition from explorer to developer.

Project Summary

The Cummins Range Project is an igneous carbonatite intrusive complex, visible from surface and located in a remote but accessible area of the Great Sandy Desert, 135km south-west of Halls Creek and 50km off the Tanami Road. Exploration drilling has been underway since RareX acquired the Project in 2019.

Exploration conducted by RareX has resulted in a recent Mineral Resource upgrade that indicates the presence of a significant quantity of high phosphate grade regolith overburden material with material quantities and grades of rare earths, overlaying a fresh rock rare earth-phosphate deposit of global significance.

Mineral Resource Update

Phase 1 of the new Mineral Resource Estimate (**MRE**) (for the Rare Dyke) was released on 30 March 2023[1], which provided a description of the geology and estimation approach. Phase 2 of the MRE update covering the Phos Dyke portion of the deposit is due later this month.

Critically, a phosphate cut-off grade is being used for this rare earth deposit because it is clearly both a rare earth and a phosphate deposit which should be considered as a large-scale polymetallic deposit. A holistic development approach is therefore being adopted based on the extraction of all valuable minerals to maximise shareholder value. Within the large phosphate resource remain significant tonnes of high-grade rare earths mineralisation as demonstrated in 2021[2].

[1] ASX Announcement: Substantial increase in Cummins Range "Rare Dyke" Mineral Resource to 397Mt at 0.33% TREO, 4.2% P_2O_5. 30 March 2023. *RareX confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimate in the relevant market announcement continue to apply and have not materially changed.*
[2] ASX Announcement: RareX Delivers Major Resource Upgrade at Cummins Range Rare Earths Project, WA. 19 July 2021.

The recently released MRE positions Cummins Range as the second largest undeveloped rare earth deposit, and one of the largest and best located igneous phosphate deposits (with proximity to port) in Australia.

Importantly for phosphates, igneous deposits contain significantly lower deleterious elements including heavy metals and radioactive isotopes – which improves product chemistry and attractiveness, supports product pricing and affords the lower grade material greater refining flexibility.

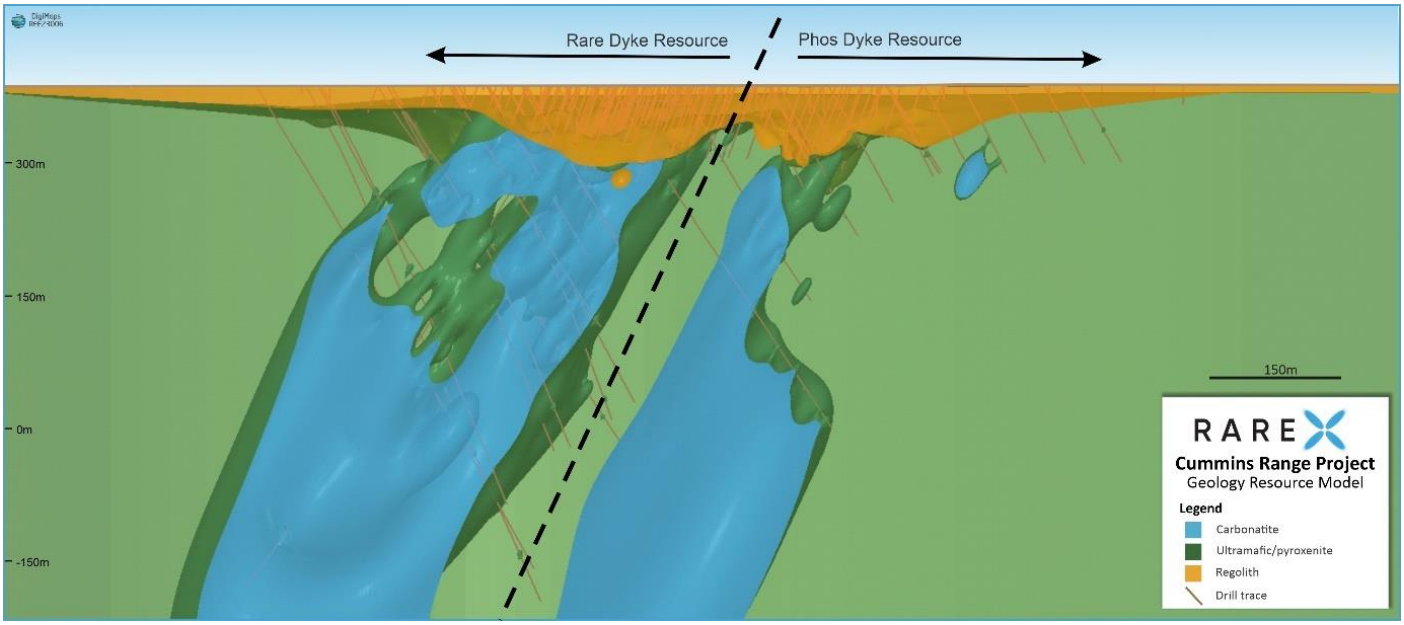

Figure 1 - Cross section of the Cummins Range deposit

Since the deposit is now globally significant in scale, drilling in the upcoming 2023 field season will focus on multi-function holes covering deposit definition in the areas proposed to be mined within the first few years, metallurgy, geotechnical and hydrogeology.

Scoping Study Update

An initial Scoping Study[3] was completed based on the 2021 Mineral Resource Estimate[4] last year which focused primarily on the upper weathered portion of the ore body.

This Scoping Study was based on preliminary metallurgical testwork focusing on the flotation of the rare earth-bearing monazite, followed by hydrometallurgical refining, which presented a classical rare earth configuration not dissimilar to the proposed developments of similar deposits. Although the economics were found to be attractive, further assessment of the approach identified three potential pathways to improve project economics, simplify the proposed on-site infrastructure and provide a lower risk pathway to a commercial operation.

[3] ASX Announcement: Positive Scoping Study for Cummins Range Shows Potential for Sustainable, Long-Life Rare Earths Project. 12 September 2022.
[4] ASX Announcement: RareX Delivers Major Resource Upgrade At Cummins Range Rare Earths Project, WA. 19 July 2021.

Firstly, the rare earth overburden material, particularly above the Phos Dyke, was found to contain significant phosphate grades, with favourable bioavailability, in a low contaminant host rock, allowing for potential monetisation of the pre-strip.

Secondly, phosphate-optimised flotation tests have demonstrated the ability to simply float a combined monazite-apatite mineral combination with high recoveries and upgrade. This simplifies the rare earth beneficiation process flowsheet design from last year's Scoping Study, which split the regolith-sourced phosphate bearing minerals into two streams – both of which underwent further, separate processing before becoming two different products: one, a phosphate acid stream following the subsequent treatment in a hydrometallurgical plant, and the other, a phosphate bulk mineral concentrate from the flotation tails of the beneficiation plant.

Thirdly, an early but growing understanding of fresh rock underlaying the regolith material suggests that the rare earth reports through coarser grained minerals – suggesting that improved rare earth recovery and upgrade performance is achievable with only a slight modification to the regolith focused beneficiation plant.

Given these technical opportunities and in the wake of the updated MRE, a revision of the Scoping Study is underway with a particular focus on the DSO opportunity for potential expedited project delivery while the longer-term project configuration is further designed. This updated Scoping Study is due for completion soon.

It should be noted that Pre-Feasibility Study work streams are already underway for aspects of the Project that are unlikely to be impacted by this re-framing. This includes work on road and port design and on hydrogeological and geotechnical aspects, as well as the important baseline heritage and environmental surveys to support project approvals.

Proposed Project Pathway

The Project is now conceived as a three-phased phosphate-enabled rare earth project with an expedited DSO project as Stage 1. Work is underway to understand the details of the three stages and metallurgical testing has been structured accordingly:

Stage 1. DSO phosphate

This stage is the proposed bulk mining of apatite mineral rock phosphate contained within the overburden, with trucking to Wyndham Port for transhipment to ocean going vessels.

Most of the 500km road between Cummins Range and Wyndham Port is in place and sealed; the Tanami Road is undergoing a Main Roads WA upgrade which commenced in 2022[5] and Shawmac Civil Design Consultants, who have relevant experience in the Project area, are designing the all-weather mine site haulage road linking the mine to the Tanami Road.

This proposed 50km long road traversing flat, semi-arid desert has undergone consultations with the local pastoralists and is entirely on Jaru determined land, the same Traditional Owners as Cummins Range.

[5] https://www.mainroads.wa.gov.au/projects-initiatives/all-projects/regional/tanami-road-upgrade/

RareX has recently signed an MOU with Agrimin (ASX: AMN) for utilising the joint venture (**JV**) haulage company, Newhaul Bulk, established between Agrimin and Newhaul[6], giving a good option alongside Cambridge Gulf Limited (**CGL**) for bulk haulage. The MOU also covers collaboration and sharing of infrastructure at Wyndham Port, where studies are underway with Ausenco for both solo and shared options for bulk handing infrastructure, including discharge, storage and barge loading.

Consultations are also underway with Transhipment Australia (**TSA**), which has operated transhipment services between the port and ocean-going vessels for the Ridges Iron Ore Mine owned by Kimberley Metals Group.

The metallurgical tests of the likely DSO rock phosphate showed much higher bioavailability levels than the industry high-standard (9%) for use as direct application fertiliser, which is probably a result of the formation and weathering of the deposit and could be a significant positive differentiator relative to other rock phosphate products. Additionally, because of the DSO direct application nature of this potential product, it is likely to be considered organic and would therefore be of interest to the speciality market focussed on high-value crops.

Table 1: DSO Bioavailability

Sample	Bioavailability, % P_2O_5
28% P_2O_5 DSO sample	41.9%
34% P_2O_5 DSO sample	49.3%

Note: Tests undertaken were the 2% citric acid leach tests which is an industry standard bioavailability assessment test that simulate the soil conditions and is used to predict the suitability of rock phosphate for use as direct application fertiliser.

An MOU is in place with OrdCo[7], the primary distributor of fertilisers in Kununurra, for the development of a product roadmap and an off-take and distribution agreement for the purposes of providing all the local phosphate fertiliser requirements for the regional agricultural and pastoral sector.

The Ord River irrigated region, in addition to the upcoming Carlton Plain by Kimberley Agricultural Investment (KAI), and other regions under clearing, soil conditioning and pre-cropping, accounts for approximately 50 thousand hectares of agricultural land.

This presents a small but important part of the off-take strategy.

Stage 2. Phosphate mineral concentrate (low-grade rare earths)

This stage continues with phosphate fertiliser production, but involves the proposed installation of simple flotation beneficiation infrastructure in order to concentrate the lower grade phosphate minerals from the regolith materials in the deposit.

[6] Agrimin ASX Announcement: Haulage Joint Venture and Strategic Alliance. 3 December 2019.
[7] ASX Announcement: RareX Signs MOU for Supply of Phosphate Products Locally. 7 November 2022.

Metallurgical testwork[8] has shown upgrades of c.13% feed grade mineral phosphate to over c.35% P_2O_5 using typical flotation methods.

Table 2: Phosphate Flotation Results

Product	CDX0015 Fresh			CDX0015 Regolith		
	P_2O_5		Bioavailability	P_2O_5		Bioavailability
	Grade %	Recovery %	%P_2O_5 Dissolution	% P_2O_5 Dissolution	Recovery %	%P_2O_5 Dissolution
Final Concentrate	**39.1**	**80.3**	**19.7**	**34.1**	**85.7**	**24.3**
Head Grade	13.4	-	-	12.8	-	-

The upgraded phosphate material has shown good results on both bioavailability tests as well as lower deleterious element grades than industry standards for fertilisers. This is a significant positive differentiator for igneous deposits over the more traditional sedimentary deposits, which typically contain much higher levels of heavy metals and lower bioavailability reactivity.

Studies are currently underway for a 5Mtpa feed beneficiation plant with Primero, a vertically integrated engineering group founded by RareX board member, Cameron Henry. Optimisation studies are about to commence to determine the installation schedule and, as a result, the duration of the Stage 1 project.

Off-takers of this stage are anticipated to comprise a mixture of direct application fertiliser distributors from Stage 1 as well as established phosphoric acid producers, particularly those with the capacity to develop rare earth extraction processes from the residue.

It is believed that high phosphorous extraction can be achieved with minimal rare earths loss during the phosphoric acid production process. This is supported by the initial refining testwork undertaken at Australia's Nuclear Science and Technology Organisation (**ANSTO**) and Nagrom where the results showed >90% P_2O_5 extraction with <2% RE loss to the leach solution. In addition, mineralogy studies on both high and low grade RE samples showed consistent mineralogy where monazite was not showed to be associated / locked by apatite, hence selective leaching of apatite should be achievable with minor RE loss. Refining testwork on low grade RE phosphate concentrate is underway to evaluate the extraction of phosphate for production of phosphoric acid and synthetic fertilisers as well as rare earths deportment during the process.

Stage 3. Rare Earths

This third stage is conceived to make the transition into rare earths production by expanding the beneficiation plant in Stage 2 with the requisite capital upgrades to manage the high-grade rare-earth regolith and subsequently fresh rock material.

Testwork has been continuing with Auralia Metallurgy with parallel testwork underway at BTMR in China.

[8] ASX Announcement: Met Testwork Delivers Premium Phosphate Concentrate. 04 October 2022.

Early testwork has been very encouraging with positive results for both P_2O_5 and RE concentration achieved. While the majority of testwork to date are on regolith samples, fresh samples have shown good amenability to upgrading via ore sorting[9] and flotation.

The resulting rare earth and phosphate concentrate is anticipated to be well suited for the phosphoric acid producers from Stage 2 as well as deriving rare earth credits from the product mix. Additional work is underway to develop the off-take strategy and associated market placement opportunities for both the rare earth and phosphate value in Saudi Arabia, South Korea and Japan for the combined rare earth and phosphate mineral concentrate.

Hydrometallurgical testwork on a relatively high P_2O_5 and TREO grade concentrate at ANSTO has been conducted to confirm the basic amenability of this mineral concentrate to phosphoric acid generation and rare earths extraction. Although the test was preliminary in nature, the Company has received sufficient positive indications to pursue this approach, with further follow up work currently being planned.

Production of such a high value rare earth and phosphate concentrate also opens up the opportunity to grow the onshore value chain, including further beneficiation (i.e., sequential flotation or magnetic separation) and hydrometallurgical refining, where hydro-electric powered industrial sites at Wyndham Port and the closed Argyle Diamond Mine provide interesting optionality.

Feasibility Studies

This three-stage approach provides a potential expedited approach to revenue while de-risking the approach towards establishing a large rare earth and phosphate processing hub in northern Australia.

Feasibility studies are investigating this pathway and a specific emphasis is being placed on accelerating the DSO portion while maintaining a technical pathway towards the ultimate goal of producing rare earth critical metals. RareX aims to announced revised project economics this financial year and a Feasibility Study on Stage 1 by the end of 2023.

Heritage and Environmental Update

Negotiations with the Jaru Traditional Owners are on track with a draft Mining Agreement and compensation proposal complete. The RareX team, with support from Allens law firm, will meet with the Traditional Owners Negotiation Committee again towards the end of April with the goal of completing negotiations before the start of the 2023 wet-season.

RareX wishes to take this opportunity to thank the Jaru TONC for a constructive, collaborative, and pragmatic approach to the negotiations.

MBS Environmental, with support from WSP Golder, have designed the environmental approvals strategy and have been project managing the environmental and heritage surveys. The final flora and fauna surveys are due in May 2023.

[9] ASX Announcement: Positive Ore Sorting Testwork Results for Cummins Range. 11 October 2022.

Baseline environmental studies should be completed in 2023, allowing for the requisite approval submissions in early 2024. The DSO Stage 1 will follow a simplified approvals path with the more complex Stage 2 and Stage 3 approvals expected to run in parallel.

Marketing and Pricing Update

The Cummins Range Project gives investors exposure to two global mega-trends.

Rare earths have their macro market drivers in the new electronic revolution, particularly NdPr – which enables the clean production and use of electricity through wind turbine generators and electric vehicle motors. This is overlayed by government incentivisation and mandates to both reach net-zero carbon dioxide emissions by 2050 and to create independent, sovereign, critical mineral value chains.

While pricing has softened of late due to rare earth exports from China, RareX expects these macro drivers to support rare earth prices over the longer term. While alternative technology may cannibalise some of the electric vehicle market demand, global demand for rare earths is expected to remain strong due to the increasing use of rare earths in a multitude of technologies.

Rare earth pricing is usually calculated as a basket, and the NdPr price is keenly followed. Current Nd and Pr oxides are at approximately US$80 per kg[10], having come off their highs at close to US$200 per kg.

Demand is driven largely by electric vehicle market growth. By 2040, the world needs 15 times the rare earth output produced by Lynas (ASX: LYN)[11], which in 2021 was approximately 5,500 kg of NdPr oxide[12].

Phosphate consumption is driven by food security. As the population expands another 1.7B people by 2050, more intensive farming is required on ever more nutrient depleted soils. Phosphate is one of the three macro nutrients known as NPK – nitrogen, phosphate and potassium – and is applied annually on farms and pre-cropping on new, recently cleared areas.

Additionally, mineral phosphate is fed to cattle as a feed supplement, particularly in Australia's north where the soils are depleted, and the livestock need be robust in the more challenging environmental conditions.

The recent war in Ukraine, and the subsequent sanctions on Russia, have disrupted global phosphate supply pushing up prices for at least the medium term.

Phosphate is priced Morocco FOB and currently US$ 300 – 350 per tonne13 for 32% P2O5. Historically pricing has remained between US$ 100 and US$ 200. Growth in demand is anticipated at 6% CAGR[14].

[10] https://www.metal.com/Rare-Earth-Oxides
[11] https://bnef.turtl.co/story/evo-2021/page/4/1?teaser=yes
[12] https://wcsecure.weblink.com.au/pdf/LYC/02434182.pdf
[13] https://www.indexmundi.com/commodities/?commodity=rock-phosphate
[14] https://www.businesswire.com/news/home/20230111005677/en/Phosphate-Rock-Global-Market-Report-2022-Increasing-Food-and-Feed-Production-Bolsters-Sector-Growth---ResearchAndMarkets.com#:~:text=The%20global%20phosphate%20rock%20market,(CAGR)%20of%206.2%25.

Timelines

Detailed project timelines for the 3-staged project are being prepared as part of the updated Scoping Study. The timeframes provided in this announcement are indicative only and are subject to change.

DSO Stage One

Five key deliverables are required to enable Stage One and are expected to be completed over the next 12-18 months:

1. Confirm the resource and further define the DSO phosphate portion.
    a. Global resource.
    b. Increased resource definition.
2. Confirm the business case.
    a. Scoping Study.
    b. Definitive Study.
3. Close infrastructure gaps (port facilities and mine site access road).
    a. Design and select solution.
    b. Construction / integration.
4. Develop the DSO marketing strategy.
    a. Market and customer segmentation.
    b. Local and regional offtake.
5. Complete approvals (environmental, heritage).
    a. Mining.
    b. Miscellaneous.

This approach has the potential to enable a financial investment decision to be made and potential operations of DSO material by 2025.

Stages 2 and 3

Feasibility Studies for the second and third stage of the Project will run in parallel to developing and executing an expedited DSO phosphate project with key dates estimated as follows, with further definition to be provided upon completion of the scoping level assessment:

1. Scoping Study (2H2023)
2. Pre-Feasibility Study (1H2024)
3. Definitive Feasibility Study (1H2025)

Consultants

RareX continue to be supported in studies and approvals by well renowned and qualified consulting individuals and firms as shown below.

Consultant	Scope
Mining Plus	Updated Scoping Study and PFS - Mining
Primero	Updated Scoping Study and PFS – process and NPI
Knight Piesold	Water and Tailings PFS
Shawmac	Product haulage road design PFS
Ausenco	Supply chain and transhipment PFS
Primero (Damien Krebs)	Metallurgical consulting
Gavin Beer	Metallurgical consulting
Resources WA	Power and location study and options study
Lab: Auralia-Met	Flotation
Lab: Nagrom	Digestion, mineralogy, magnetics.
Lab: Strategic Met	Ionic clay diagnostic leaching
BTMR	Flotation trials in China
MBS (Rapallo)	Environmental approvals management
Rapallo	Flora and fauna surveys
WSP Golder	Community engagement, aboriginal impact, heritage surveys
Allens (Legal)	Heritage negotiation
PWC (Legal)	Power purchase agreement

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

RareX Limited
ASX:REE
ABN: 65 105 578 756

RareX HQ
Level 1, 338 Barker Road
Subiaco WA 6008
Australia

P +61 (0) 8 6383 6593

info@rarex.com.au
rarex.com.au

RareX Limited (ASX:REE)
@rarex_asx

Competent Persons 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 and Chartered Professional of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Beer is a consulting metallurgist being the founder and principal of Met-Chem Consulting Pty Ltd and has 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 information in this release that relates to the Mineral Resource Estimate was reported in accordance with Listing Rule 5.8 on 30 March 2023. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimate in the relevant market announcement continue to apply and have not materially changed.

Mineral Resource Estimate Table

Classification	Tonnes (Mt)	P_2O_5 (%)	TREO + Y_2O_3 (ppm)	HREO (ppm)	Nd_2O_3 (ppm)	Pr_6O_{11} (ppm)	Nb_2O_5 (ppm)	Sc_2O_3 (ppm)	ThU (ppm)
Indicated	44.3	6.3	5,800	290	930	280	1,020	100	90
Inferred	352.9	3.9	2,960	165	490	140	570	70	40
Total	397.2	4.2	3,270	180	540	160	620	70	50

Notes:

1. Due to effects of rounding, the total may not represent the sum of all components.
2. TREO (ppm) includes: Light Rare Earth Oxides (LREO): La2O3, CeO2, Pr6O11, Nd2O3; and Heavy Rare Oxides (HREO): Sm2O3, Eu2O3, Gd2O3, Tb4O7, Dy2O3, Ho2O3, Er2O3, Tm2O3, Yb2O3, Lu2O3; + Y2O3
3. ThU comprises ThO2 + U3O8 (ppm)
4. Mineral Resource is reported from all blocks, classified as either Indicated or Inferred, where interpolated block grade is >2.5%P2O5

RareX Limited
ASX:REE
ABN: 65 105 578 756

RareX HQ
Level 1, 338 Barker Road
Subiaco WA 6008
Australia

P +61 (0) 8 6383 6593

info@rarex.com.au
rarex.com.au

RareX Limited (ASX:REE)
@rarex_asx

Appendix A
Metallurgical test sample source

Hole ID	East MGA	North MGA	RLUTM	End Depth	Azimuth	Dip	Type
CDX0005	307141	7866598	392	210.9	56	59	Diamond
CDX0006	307193	7866537	391	215.8	51	59	Diamond
CDX0009	307325	7866444	391	213.4	49	59	Diamond
CDX0010	307159	7866508	391	231.3	50	60	Diamond
CDX0012	307038	7866666	392	210.9	52	59	Diamond
CDX0016	307007	7866638	392	298.2	52	59	Diamond
CRX0003	307267	7866661	392	97	182	60	RC
CRX0010	307209	7866731	392	126	182	60	RC
CRX0035	307372	7866583	392	138	182	60	RC

Appendix B
JORC Table 1
Section 1: Exploration Results - Metallurgy
(Criteria listed in this section also apply to following section.)

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.	• Both RC chips and 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 Nagrom 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.	• For RC chips, the entire bulk samples were riffle split to ensure a representative sample from the selected interval. For diamond drill cores, half core was sent to a laboratory to conduct crushing and sampling. 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.
Drilling techniques	• Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details	• Drilling techniques used for the Cummins Range samples used for the metallurgical testwork were:

Criteria	JORC Code explanation	Commentary
	(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).	○ Reverse Circulation (RC) drilling in 2020-2021 using 5 ½ inch diameter hammer. ○ 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. 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 include lithology, grainsize, weathering, colour, alteration, sulphide quantity and type, structure and veining. Photos were taken for all core samples. • Mineralogy was also completed via XRD and QEMSCAN
	• 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 half cores from each selected interval were used for metallurgical testwork.
	• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• RC chips were riffle split from the bulk bags. Samples were dry when riffle split.
	• For all sample types, the nature, quality and appropriateness of the sample preparation technique.	• Samples used for the metallurgical testwork included RC and diamond drill cores which were split and prepared with appropriate equipment. Where required, the samples were crushed / ground and/or chemically treated 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 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).

Criteria	JORC Code explanation	Commentary
	• 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 apart from the use of a portable XRF to quickly track the progress of metallurgical tests. These XRF results were later confirmed with ICP analysis at the laboratory. The XRF had been calibrated for very elevated levels of REE and phosphate. System checks, blanks and standards were analysed before any PXRF readings were taken.
	• 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. Bench-top XRF assays were also verified with additional ICP assays and the XRF equipment was further calibrated to ensure the precision is well established.
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.	• GDA94, MGA Zone 52 and MGA2020 Zone 52
	• Quality and adequacy of topographic	• Drillhole collar locations for the metallurgical testwork have been surveyed using a

Criteria	JORC Code explanation	Commentary
	control.	differential GPS with accuracy to 0.1m.
Data spacing and distribution	• Data spacing for reporting of Exploration Results.	• The regolith samples were mainly collected from three drill holes that were spaced out over ~120 m x 180 m of the deposit and were ranging from 0 m down hole to 112 m down hole. For the fresh core samples, the drill holes that the metallurgical samples came from were spread out over 400 m of strike and range from 70 m down hole to 285 m down hole.
	• 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.
	• 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, half 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.	• Not applicable to the metallurgical test work undertaken.

Criteria	JORC Code explanation	Commentary
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.

Criteria	JORC Code explanation	Commentary
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.