ASX Release
8 June 2023

Broader-scale bioavailability tests further confirm potential of Cummins Range phosphate DSO for use as direct application fertiliser

Results show consistently high phosphorous bioavailability of bulk samples, highlighting the potential for Cummins Range DSO material to be used as organic fertiliser in agricultural applications

HIGHLIGHTS

- Broader-scale phosphorus **bioavailability tests show exceptionally high bioavailability** of Cummins Range DSO phosphate for use as direct application fertilisers
- **Outstanding results offer the potential of Cummins Range DSO material to use lower head grades** whilst still achieving the same fertiliser benefits, increasing the **potential for larger production volumes**
- **Deleterious elements including fluorine, chlorine, cadmium and lead are shown to be well below industry limits**, which is favourable for both Stage 1 DSO and Stage 2 beneficiation

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 further confirmed the strong potential of Cummins Range phosphate Direct Shipping Ore (**DSO**) to be used as direct-application agricultural fertiliser.

The latest testwork results follow previously reported positive bioavailability results on Cummins Range DSO and phosphate mineral concentrate[1], providing further support for the Company's proposed staged development of the Cummins Range Project[2]. This staged approach is designed to provide early, low-risk cash flows from phosphate production before transitioning into rare earths, with three proposed development stages:

- Stage 1: DSO
- Stage 2: Processed Phosphate
- Stage 3: Processed Rare Earths

A Scoping Study for the Stage 1 DSO mining operation is scheduled for delivery in July 2023, with a fast-tracked Definitive Feasibility Study (DFS) for the DSO product due at the end of 2023.

[1] ASX Announcement 23 March 2023; Phosphate Testwork Confirms Potential to Produce Fertiliser
[2] ASX Announcement 13 April 2023; Cummins Range Rare Earths-Phosphate Project – Development and Strategy Update

Beginning the project as a DSO phosphate operation, before transitioning through Stage 2 and into rare earths at Stage 3, significantly de-risks the Cummins Range development from the complexity, uncertainty, and significant cost implications of designing and constructing the full rare earth value chain from the outset.

RareX CEO, James Durrant, said: *"We're building a very good case for a fast-tracked start-up operation based on phosphate DSO, with these latest testwork results providing further strong support for our development strategy. By delivering higher bioavailability product, we can increase the value-in-use for any given production grade, with the opportunity to also lower head grades to extend the DSO operation before making the transition to Stage 2."*

Bioavailability Testwork Program

To better understand the DSO potential of the Cummins Range deposit, an additional 88 samples were selected from the two main geological units, the Rare Dyke (RD) and the Phos Dyke (PD). The samples were selected to ensure broad coverage of different P_2O_5 grades, locations within the orebody, and different weathering profiles. The testwork program comprised industry-standard 2% citric acid leach test and was conducted at LabWest Mineral Analysis.

The phosphorus bioavailability results were compared with industry "high" standard for the citric acid method and are shown in Figure 1 and Figure 2 for Rare Dyke and Phos Dyke respectively. As indicated, the majority of the 88 samples were shown to have very high phosphorus bioavailabilities which were 2-4 times the industry high standard (>9.4% P_2O_5 dissolution in 2% citric acid). Good bioavailabilities were also observed across all grades and weathering zones revealing potential for increased production volumes.

These exceptional results demonstrate the potential of Cummins Range DSO material for use as direct application fertilisers.

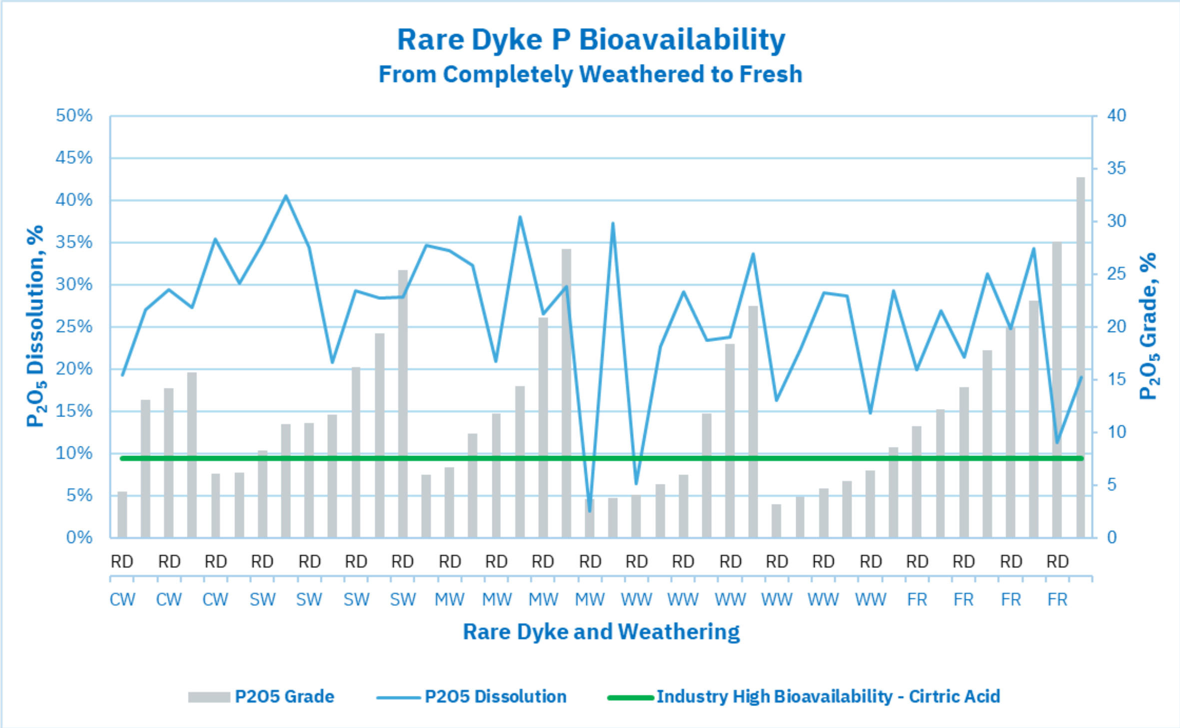

Figure 1: Phosphorous Bioavailability Results vs. Industry Standard - Rare Dyke

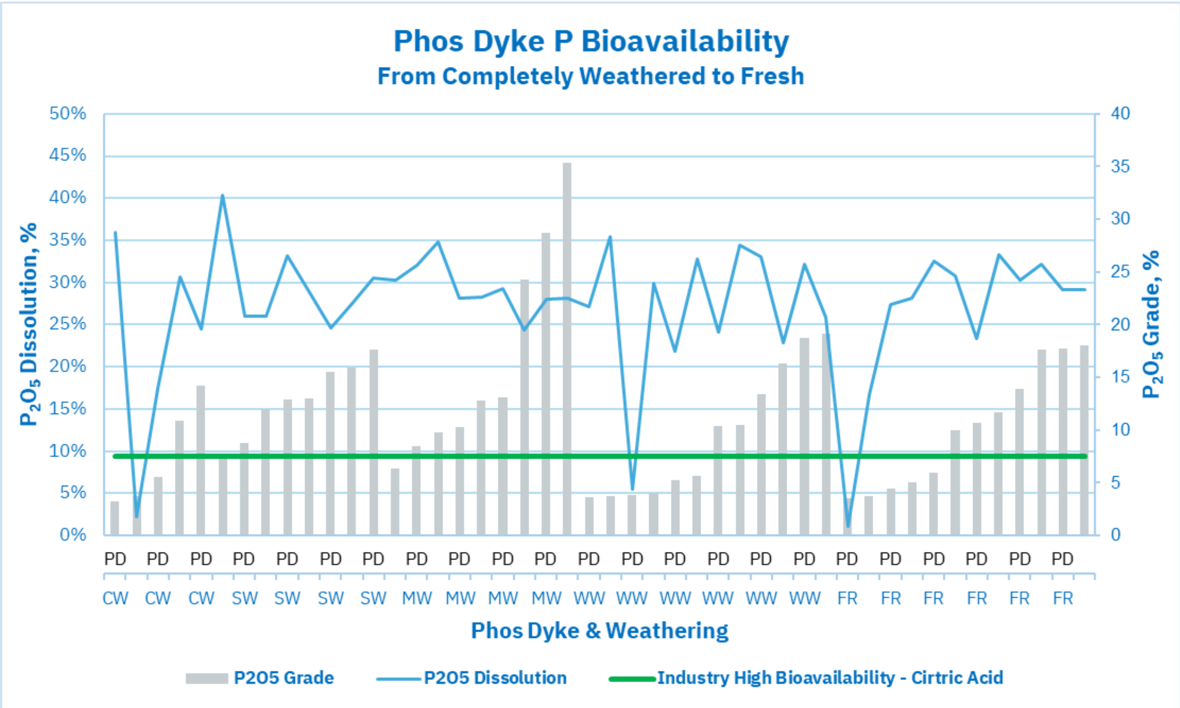

Figure 2: Phosphorous Bioavailability Results vs. Industry Standard - Phos Dyke

Note: CW – Completely Weathered; SW – Strongly Weathered; MW – Moderately Weathered, WW – Weakly Weathered; FR – Fresh

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

The Cummins Range resource is an igneous deposit which means the rocks are naturally lower in impurities and deleterious elements when compared with sedimentary rocks. The results from the 88 samples confirm very low levels of deleterious elements including fluorine (F), chlorine (Cl), cadmium (Cd) and lead (Pb) which are well below industry limits as shown in Table 1.

Table 1: Deleterious Elements Results Summary

Deleterious Element	Unit	Assay Range	Average Level	Industry Limit for Phosphorus Fertilisers[3]
F	%	0.18 - 4.00	1.02	<4
Cl	%	0.01 - 0.11	0.03	<2
Cd	mg/kg P	3.31 - 137.64	32.82	<300
Pb	mg/kg	1.70 – 208.00	24.32	<500

Following the positive results, additional formic acid and water leach tests are planned to further assess the phosphorus bioavailability of the potential DSO material. RareX has recently appointed a fertiliser consultant to leverage current and future DSO testwork results, assist with better understanding of the agronomic effects of the Cummins Range DSO material and support the development of product marketing and offtake agreements.

In addition to the DSO analysis, phosphate mineral beneficiation studies for both the Rare Dyke and Phos Dyke materials are underway, 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 Memorandum of Understanding (**MOU**) with OrdCo[4] 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, and are expected to remain, favourable for a fast-tracked DSO operation which could generate positive cash flows in the near term. These cashflows could then be used to fund the longer-term project which would include recovery of both rare earth and phosphate products.

RareX has also recently announced an updated Mineral Resource Estimate (**MRE**)[5] for Cummins Range, which significantly enlarged the Resource and positioned Cummins Range as the largest undeveloped rare earths project in Australia. This Resource update, together with the testwork results outlined in this announcement, will underpin the completion of a scoping level study. This will provide a base for a more advanced study due later in the year.

[3] Industry limit as stated in "National Code of Practice for Fertilizer Description and Labelling", Fertiliser Australia 2018

[4] ASX Announcement 07 November 2022; RareX Signs MOU for Supply of Phosphate Products Locally

[5] ASX Announcement 01 May 2023; Cummins Range Resource Soars to 519Mt 0.32% TREO, 4.6% P_2O_5

The Cummins Range Project is located approximately 535km by road to the port of Wyndham, and slightly less to Kununurra, 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.

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 referred to in this announcement was reported by the Company in accordance with Listing Rule 5.8 on 1 May 2023. 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.

Cummins Range Mineral Resource Estimate, P_2O_5≥2.5%

RARE DYKE 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	45.9	6.2	5700	290	910	270	1000	90	90
Inferred	368.9	4.0	3030	160	490	150	570	60	40
Total	414.8	4.2	3320	180	540	160	620	70	50
PHOS DYKE 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	20.8	8.0	3580	300	720	190	470	80	100
Inferred	83.8	5.4	2340	200	470	120	450	60	60
Total	104.6	5.9	2590	220	520	140	450	70	70
COMBINED 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	66.6	6.8	5010	290	850	250	830	90	90
Inferred	452.7	4.2	2900	170	490	140	550	60	40
Total	519.3	4.6	3170	190	540	160	580	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): La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3; and Heavy Rare Oxides (HREO): Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3; + Y_2O_3
3. ThU comprises ThO_2 + U_3O_8 (ppm)
4. Mineral Resource is reported from all blocks, classified as either Indicated or Inferred, where interpolated block grade is >2.5%P_2O_5

About RareX Limited – ASX: REE

RareX Limited (ASX: REE) is a Perth-based rare earths and phosphate project development company. RareX's focus is on developing its flag-ship Cummins Range Rare Earths and Phosphate Project.

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.

Phosphates are one of the three macro nutrients required in fertilisers. Fertilisers are in ever more demand due to population growth, depleting soils and reduced arable land requiring ever more intensive farming.

The Cummins Range Rare Earths and Phosphate Project is in the East Kimberley region of Western Australia. RareX is committed to developing 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.

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

APPENDIX A

Table 1: Drill Collar Information

Hole ID	East MGA	North MGA	RLUTM	End Depth	Azimuth	Dip	Type
CDX0003	307195	7866698	392	97	50	60	Diamond
CDX0004	307342	7866505	391	155	50	60	Diamond
CDX0006	307193	7866537	392	216	51	59	Diamond
CDX0007	307269	7866499	392	199	52	59	Diamond
CDX0009	307325	7866444	391	213	49	59	Diamond
CDX0010	307159	7866508	391	231	51	60	Diamond
CDX0012	307038	7866666	392	211	52	59	Diamond
CDX0013	307044	7866720	392	205	51	59	Diamond
CDX0014	307014	7866694	392	227	50	59	Diamond
CDX0015	307374	7866770	392	205	48	58	Diamond
CDX0029	307116	7866264	391	579	50	58	Diamond
CRX0002	307266	7866621	392	90	181	58	RC
CRX0004	307266	7866701	392	102	182	58	RC
CRX0016	307077	7866807	392	126	180	59	RC
CRX0023	307317	7866533	391	114	182	60	RC
CRX0026	307316	7866659	392	132	180	59	RC
CRX0027	307402	7866862	392	108	182	59	RC
CRX0028	307402	7866820	392	114	185	60	RC
CRX0029	307459	7866860	392	114	183	60	RC
CRX0030	307457	7866821	392	114	184	60	RC
CRX0031	307315	7866701	392	102	180	60	RC
CRX0033	307371	7866512	392	84	186	58	RC
CRX0034	307372	7866550	392	108	184	60	RC
CRX0041	307516	7866427	392	96	184	59	RC
CRX0042	307559	7866422	392	90	181	59	RC
CRX0043	307609	7866410	392	96	180	59	RC
CRX0045	307210	7866446	391	72	185	60	RC
CRX0046	307692	7866550	392	96	183	59	RC
CRX0047	307693	7866591	391	96	183	61	RC
CRX0048	307690	7866508	392	96	187	59	RC
CRX0050	307417	7866544	392	102	182	59	RC
CRX0051	307465	7866541	392	96	182	59	RC
CRX0054	307183	7866749	392	156	183	59	RC
CRX0058	307584	7866630	391	84	182	58	RC
CRX0059	307463	7866483	392	96	50	61	RC
CRX0062	307224	7866711	392	108	179	60	RC
CRX0065	307531	7866372	391	120	52	61	RC

Hole ID	East MGA	North MGA	RLUTM	End Depth	Azimuth	Dip	Type
CRX0066	307345	7866543	392	132	278	89	RC
CRX0067	307434	7866712	391	120	51	60	RC
CRX0069	307455	7866682	391	120	56	60	RC
CRX0070	307476	7866643	391	144	54	60	RC
CRX0074	307530	7866795	392	120	46	61	RC
CRX0081	307480	7866749	391	156	49	61	RC

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.	• Diamond drill cores and RC chips 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 Perth and/or BV Perth and/or ALS Perth and/or Nagrom Perth and/or LabWest 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. 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: ○ Reverse Circulation (RC) drilling in 2020-2021, 2022 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 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.
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.

Criteria	JORC Code explanation	Commentary
	• 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 were diamond drill cores and RC chips 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.
	• 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.

Criteria	JORC Code explanation	Commentary
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 0.1 m.
Data spacing and distribution	• Data spacing for reporting of Exploration Results.	• All the samples tested were selected from 43 holes from Rare Dyke and Phos Dyke from a range of depth and weathering profiles and varying P_2O_5 grades.
	• 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.	• No composition was undertaken for selected diamond intervals for this metallurgical testwork. Quarter cores of each selected intervals were crushed and ground into suitable sizes before splitting the representative samples for the test. • 2 m to 4 m RC composites were completed in areas where higher grades were not expected. Representative portion of each selected intervals were sent to the designated laboratories to undergo staged crushing and grinding before being composited, homogenised and split with suitable equipment.
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 1,000-2,000 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.