23 June 2020

SIGNIFICANT 53% INCREASE IN MINERAL RESOURCE AT THE MAKUUTU RARE EARTHS PROJECT

KEY HIGHLIGHTS

- **Substantial 53% increase in the Makuutu Rare Earths Project Mineral Resource Estimate (MRE) to:**

  78.6 Million tonnes @ 840 ppm TREO, at a cut-off grade of 300 ppm TREO-Ce_2O_3

- **Total contained Rare Earth Oxide (TREO) resource increased to 66,000 tonnes TREO from Maiden Mineral Resource of March 2020[1]**
- **In situ resource TREO tonnes content of HREO (25%) and CREO (37%) confirms Makuutu as a globally significant rare earth project, with the potential to offset diminishing Chinese ionic adsorption clay reserves**
- **Increase in total resource and upgrade in confidence after recent successful infill and resource extension drilling & revision of marginal cut-off grade**
- **In-fill drilling has allowed classification of a 9.5 Million tonne component of the Mineral Resource Estimate at the higher confidence Indicated category, which represents 11% of the resource TREO tonnes**
- **Updated Mineral Resource is based on a total of 903 metres of core drilling undertaken within the Makuutu Central Zone, which covers only a portion (less than 20%) of the larger Makuutu Prospective area as represented by the Exploration Target[2]**
- **Resource grade has been maintained at the upper end of the Exploration Target range**
- **Drilling expected to restart in mid-July comprising 3,700 metres of drilling to test:**
  - **other areas of the Exploration Target within the 26 kilometre long mineralisation corridor to expand the Resource**
  - **in-fill drilling undertaken to increase the Resource confidence level**

[1] ASX Announcement OVL (IXR), 10 March 2020 "Maiden Mineral Resource at Makuutu Rare Earth Project Central Zone"
[2] ASX Announcement OVL (IXR), 4 September 2019, "Globally Significant Rare Earth Exploration Target at Makuutu"

Ionic Rare Earths Limited ("IonicRE" or "The Company") (ASX: IXR) is pleased to advise a significant 53% increase to the Makuutu Rare Earths Project reported Mineral Resource Estimate (MRE) and the initial component of Indicated Resource.

The updated resource is based on:

1. Revision of the reporting cut-off grade using project specific factors.
2. Inclusion of recent infill and extension drilling data[3].
3. Inclusion of infill drill data and additional geological information increasing resource classification confidence in a portion of the MRE.

Table 1: Makuutu Resource above 300ppm TREO-Ce_2O_3 Cut-off Grade

Resource Classification	Tonnes (millions)	TREO (ppm)	TREO-Ce_2O_3 (ppm)	LREO (ppm)	HREO (ppm)	CREO (ppm)
Indicated Resource	9.5	750	520	550	200	280
Inferred Resource	69.1	860	620	640	210	320
Total Resource	**78.6**	**840**	**610**	**630**	**210**	**310**

Rounding has been applied to 0.1Mt and 10ppm which may influence grade average calculations.
All REO are tabulated in Appendix 1 with formulas defining composition of LREO, HREO and CREO.

Commenting on the issue of the resource estimate, Ionic Rare Earths' Chairman, Mr Tony Rovira said:

"This outstanding result is based on a combination of in-fill and extension drilling, as well as advances the team has made in metallurgical optimisation and preliminary study activities. The team has been very effective in using the Covid19-related hiatus in the drilling program, by focusing on project development efforts which have and continue to rapidly advance.

The updated Mineral Resource Estimate further demonstrates the potential of the Makuutu Rare Earths Project to be a globally significant and strategic alternative supply of heavy and critical rare earths. The company aims to further substantively increase the Mineral Resource Estimate with further drilling that is scheduled to recommence in July, and considering the circa 900 metres of core drilling undertaken to date, the potential expansion of mineral resource size and confidence category are substantive.

Encouragingly, the resource grade is maintained at the upper end of expectations defined in the Exploration Target[4]. The cut-off grade changes derived from project specific inputs have been

[3] ASX Announcement IXR, 28 May 2020; "Makuutu Infill and Resource Extension Drilling Returns High Grade Rare Earths"
[4] ASX Announcement OVL (IXR), 4 September 2019, "Globally Significant Rare Earth Exploration Target at Makuutu"

validated as consistent with peer ionic adsorption rare earth projects, further reinforcing our expectations to be a low cost REO producer.

It is particularly noteworthy that Makuutu continues to demonstrate a significantly larger mineral endowment than some peer ionic adsorption clay projects, and with a highly desirable CREO/HREO content and basket potential as recently announced to the market[5]."

Cut-Off Grade Evaluation

The initial maiden Mineral Resource Estimate announced by IXR on 10th March 2020 was reported above a cut-off grade of 500ppm TREO-Ce_2O_3. The cut-off was derived from comparison to published documentation from a peer project.

Studies by the IXR project team on project scale, mining & processing techniques, REO extraction[5,6], operating costs and commodity pricing have been ongoing as part of the Preliminary Economic Assessment (PEA) on the Project.

As a function of this increase in knowledge of these factors, the resource cut-off grade has been reduced in line with industry peer reporting to 300ppm TREO-Ce_2O_3. The revised cut-off grade is considered consistent with peer ionic adsorption rare earth element (REE) clay projects using similar processing technologies. The resource reported above this cut-off is considered to have reasonable prospects for eventual economic extraction in accordance with the requirements of JORC (2012) Code.

Resource Classification

Eight infill drill holes were completed in the recent COVID-19 truncated drill program. These holes were spaced 200 metres from existing (2019) 400 metre spaced drill holes within the maiden MRE area. In addition to this recent drilling, the historical RAB drilling[7] geological logging has been re-classified and applied to support confidence in the regolith zone boundary definition used in the MRE model.

The resulting data has provided geological and geostatistical support for the resource grade estimation and increased the resource confidence in the drilled areas.

The component area of Indicated Resource is highlighted in Figure 1.

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[5] ASX announcement IXR, 26th May 2020 "Metallurgical Optimisation Program Significantly Improves Rare Earth Recoveries at Makuutu"

[6] ASX announcement OVL (IXR) 18th February 2020 "Makuutu Rare Earth Project Initial Metallurgical Results of Up To 75% Recoveries"

[7] ASX Announcement OVL (IXR) 28 August 2019 Due Diligence Confirmation of Makuutu Mineralisation Bearing Rare Earths"

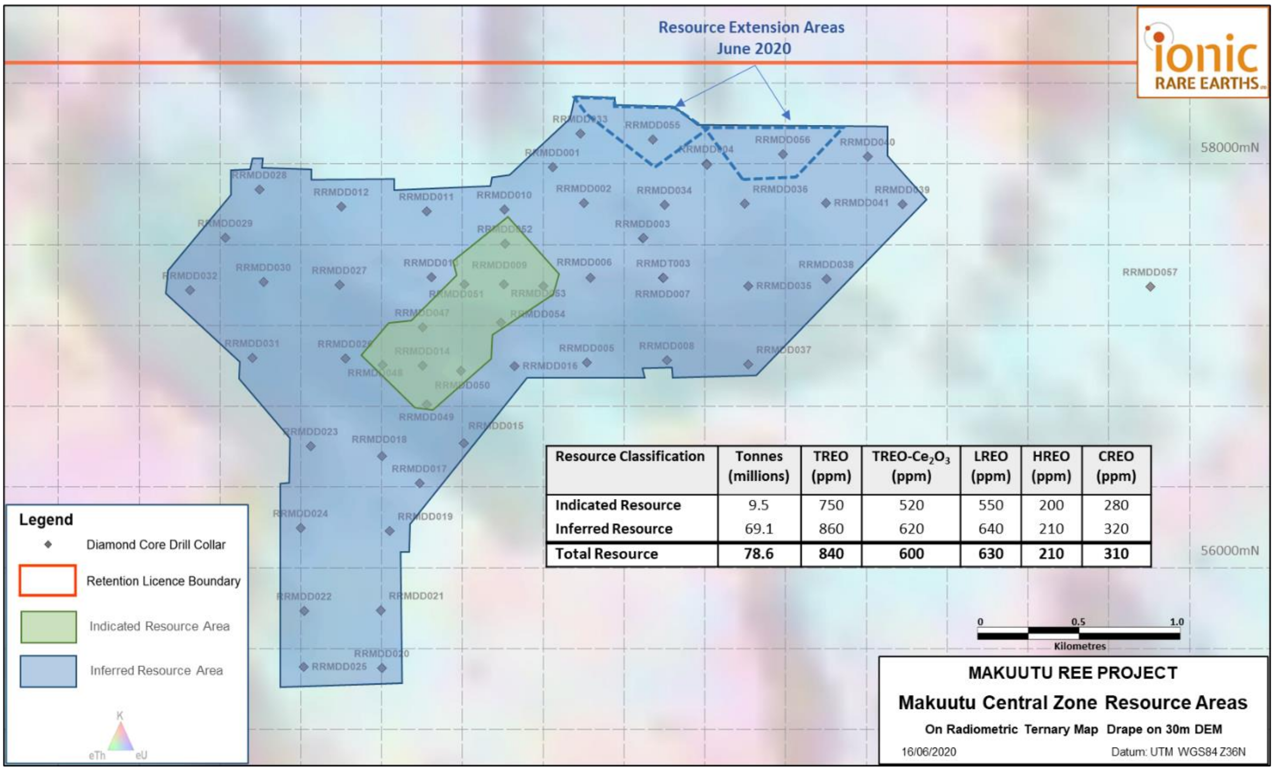
Resource Extension

The maiden resource has been expanded to incorporate two extension holes RRMDD055 and RRMDD056 that were drilled in April 2020. The extension areas are shown in Figure 1.

Resource Limits

The reported Mineral Resources include only clay and saprolite regolith types with surface hardcap excluded while processing alternatives are tested for this material.

The reported Mineral Resources have been assessed against a resource limiting optimisation shell using appropriate marginal cost, metallurgical recovery, and price assumptions. The shell is contiguous across most of the modelled resource and limited primarily by the extent of the model. Figure 2 is an oblique view looking north west of the clay and saprolite grade model with the limiting shell constraint coloured brown.



Resource Classification	Tonnes (millions)	TREO (ppm)	TREO-Ce_2O_3 (ppm)	LREO (ppm)	HREO (ppm)	CREO (ppm)
Indicated Resource	9.5	750	520	550	200	280
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Total Resource	**78.6**	**840**	**600**	**630**	**210**	**310**

Figure 1: Makuutu Central Zone Plan - Resource Areas June 2020

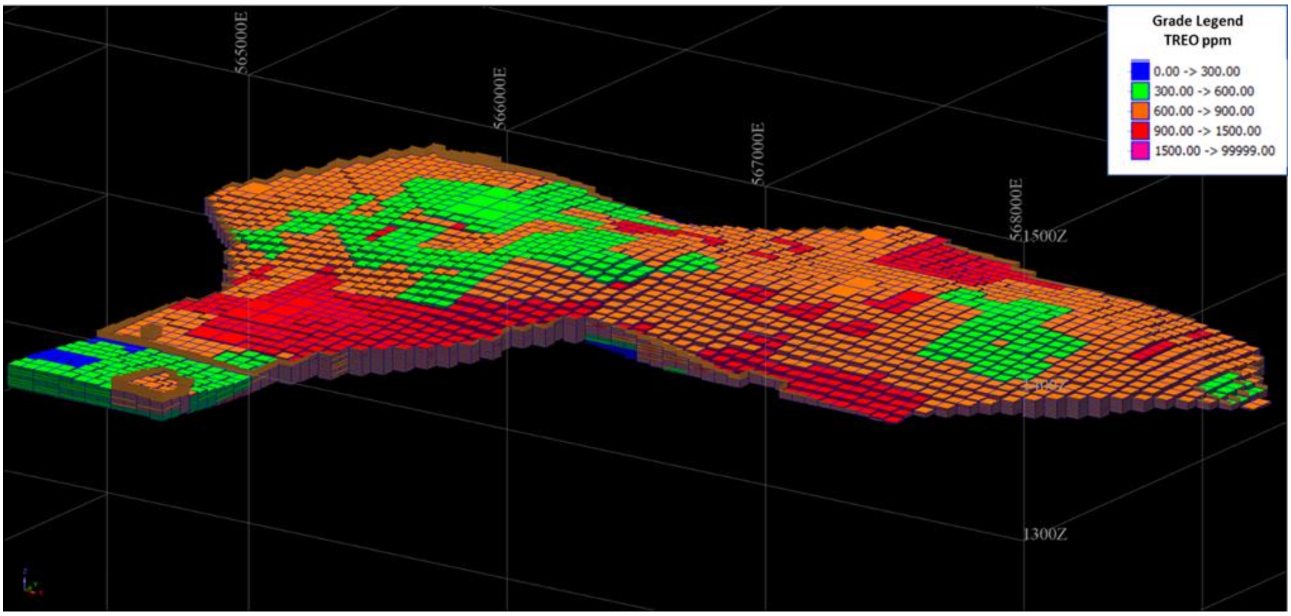

Figure 2: Oblique View Looking North West of Makuutu Resource Model Coloured by TREO ppm with Limiting Shell (Brown)

Summary of Material Information Used to Estimate the Mineral Resource

The following is a summary of material information used to estimate the Mineral Resource, as required by Listing Rule 5.8.1 and JORC 2012 Reporting Guidelines.

Mineral Tenement and Land Tenure Status

The Makuutu Rare Earths Project is in the Republic of Uganda. The mineral tenements comprise two (2) granted Retention Licences (RL1693 and RL0007), one (1) Exploration Licence (EL1766). All licences are in good standing with no known impediments.

The Makuutu Rare Earths Project is 100% owned by Rwenzori Rare Metals Limited ("RRM"), a Ugandan registered company. Ionic Rare Earths Limited (IXR) currently has a 31% shareholding in RRM and may increase its shareholding to 60% by meeting expenditure commitments as follows:

1. IXR to contribute US$1,700,000 of expenditure by 1 October 2020 to earn up to a 51% staged interest in RRM as follows:

Table 2: Expenditure Earn-in Requirement

Spend	Interest Earned	Cumulative Interest Earned
Exercise of Option US$100,000 of cash plus US$150,000 of shares	20%	20%
Expenditure contribution of US$650,000	11%	31%
Expenditure contribution of a further US$800,000	15%	46%
Expenditure contribution of a further US$350,000	5%	51%

2. IXR to fund to completion of a bankable feasibility study to earn an additional 9% interest for a cumulative 60% interest in RRM.
3. During the earn-in phase there are milestone payments, payable in cash or IXR shares at the election of the Vendor, as follows:
   - US$750,000 on the Grant of Retention Licence over RL1693 which is due to expire on 1 November 2020;
   - US$375,000 on production of 10 kg of mixed rare-earth product from pilot or demonstration plant activities; and
   - US$375,000 on conversion of existing licences to mining licences.
   - At any time should IXR not continue to invest in the project and project development ceases for at least two months RRM has the right to return the capital sunk by IXR and reclaim all interest earnt by IXR.

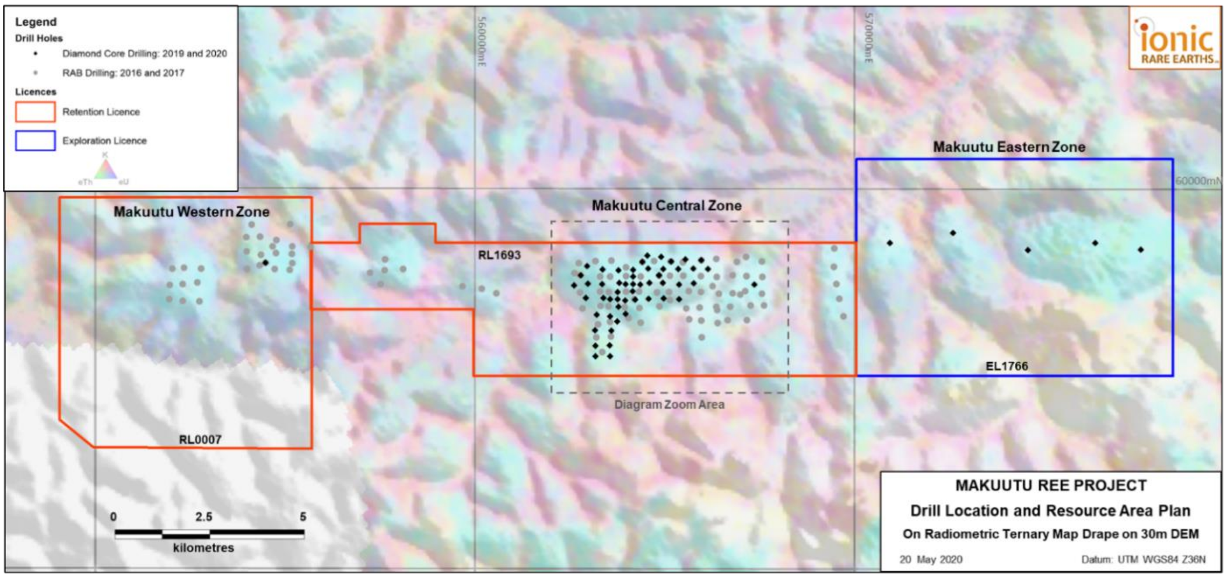

Figure 3: Makuutu Rare Earths Project Licence Areas and Drilling on Ternary Radiometric Base

Geology

The Makuutu deposit is interpreted to be an ionic adsorption REE clay-type deposits like those in South China, Madagascar, Chile and Brazil.

The mineralisation is contained within the tropical lateritic weathering profile of a basin filled with sedimentary rocks including shales, mudstones and sandstones potentially derived from the surrounding granitic rocks. These granitic rocks are considered the original source of the REE which were then accumulated in the sediments of the basin as the granites have degraded. These sediments then form the protolith that was subjected to prolonged tropical weathering.

The weathering developed a lateritic regolith with a surface indurated hardcap, followed downward by clay rich zones that grade down through saprolite and saprock to unweathered sediments (Figure 4). The thickness of the regolith is between 10 and 20 metres from surface.

The REE mineralisation is concentrated in the weathered profile where it has dissolved from its primary mineral form, such as monazite and xenotime, then adsorbed on to fine particles of aluminosilicate clays (e.g. kaolinite, illite, smectite). This adsorbed REE is the target for extraction and production of REO.

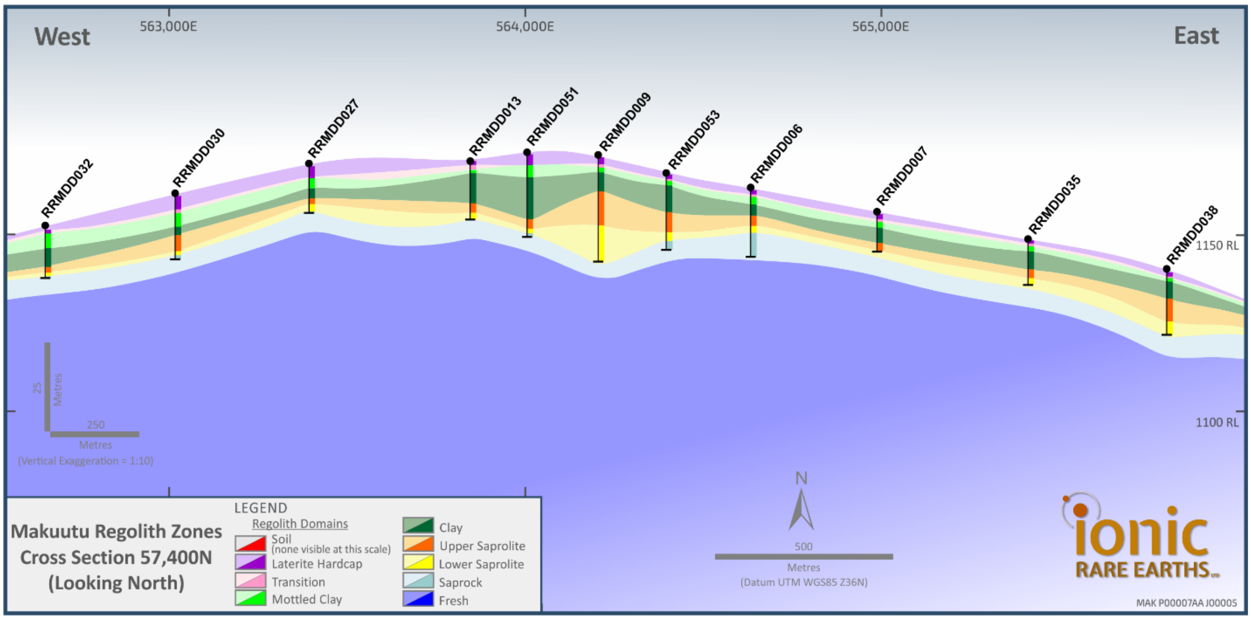

Figure 4: Makuutu Rare Earths Project; Cross Section of Regolith Zones

Drilling Techniques and Hole Spacing

Drilling completed at the Makuutu Rare Earths Project and used to support the MRE includes 51 diamond core (DDH) holes for a total of 902.9 m (Figure 5). All diamond holes are drilled from surface and oriented vertically. Drilling used a HQ size (~63.4 mm diameter) and employed triple tube techniques to maximise core recovery. Drill core was collected from a core barrel and placed in appropriately marked core trays. Down hole core run depths were measured and marked with core blocks. Core was measured for core loss and core photography and geological logging completed.

Sampling

Sample lengths were determined by geological boundaries with a maximum sample length of 1 metre applied in clay zones and up to 2 metres in laterite zones where core recovery was occasionally low. Where the core contained continuous lengths of soft clay a carving knife was used to cut the core. When the core was too hard to knife cut it was cut using an electric core saw. Using either method, core was initially cut in half then one half was further cut in half to give quarter core. Quarter core was submitted to ALS for chemical analysis using industry standard sample preparation and analytical techniques. Half core was collected for metallurgical test work.

Certified reference materials (CRM), analytical blanks, and field duplicates were used as part of the QAQC procedures and were each inserted at a rate of 1:25 samples.

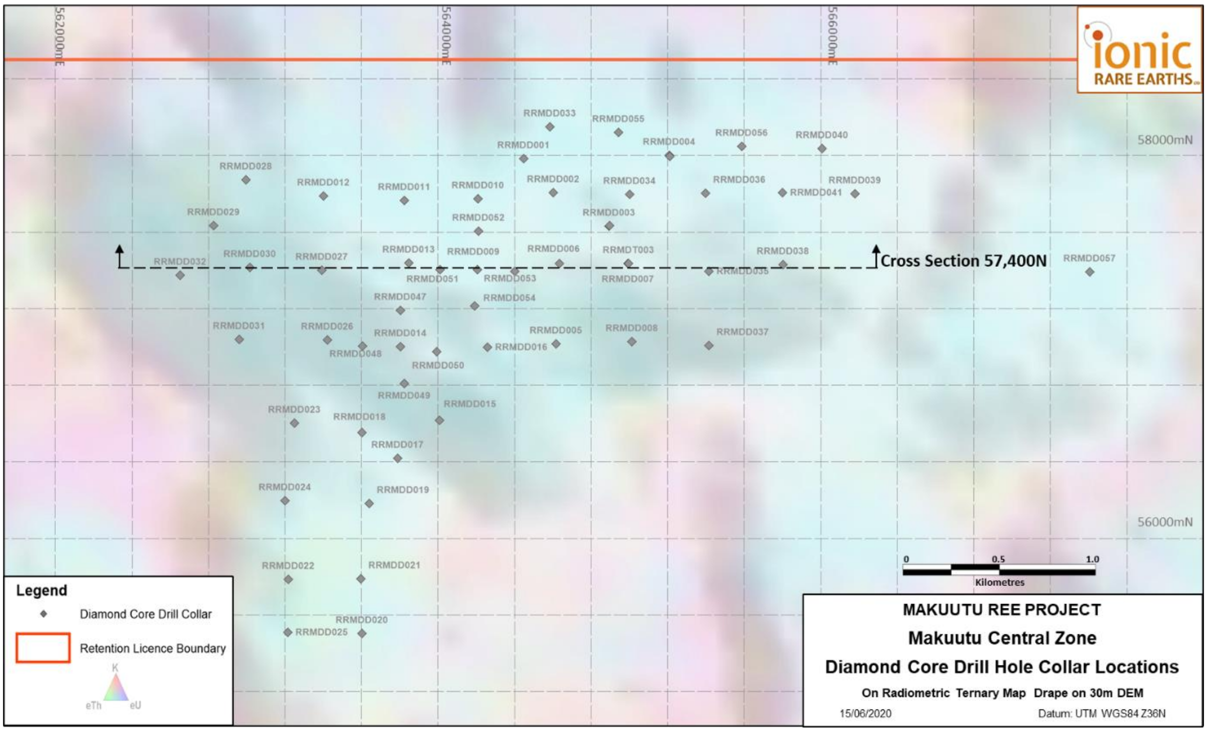

Figure 5: Makuutu Rare Earths Project; Drill Layout Plan

Sample Analysis

All DDH samples were dispatched by air freight direct to ALS laboratory Perth Australia. Sample preparation included whole sample crushing to 70% less than 2mm, Boyd rotary slitting to generate a 750g sub-sample, and pulverising to achieve better than 85% passing 75 microns. Analysis for REE suite was via Lithium Borate Fusion ICP-MS (ALS code ME-MS81), with elements analysed at ppm levels. This method is considered a total analysis.

Estimation Methodology

The geological interpretation utilised lithological logging data, and assay data to guide and control the Mineral Resource estimation. Leapfrog™ implicit modelling software was utilised to generate three-dimensional wireframes of the major regolith units. Estimation domains were based on grouping of the regolith domains into three zones as defined by regolith rheology, and by comparison of regolith statistics:

- Domain 3 – Cover zone – Soil, hardcap and transition regolith zones
- Domain 7 – Clay zone – Mottled, clay, upper saprolite and lower saprolite
- Domain 9 – Basement zone – Saprock and fresh rock regolith zones

Historic RAB drill hole data was assessed geochemically and used to guide the geological interpretation of the estimation domains. RAB samples were subjected to a hierarchical clustering analysis using the diamond drilling information as a basis. Following processing the resulting clusters were mapped to the estimation domains and used to define the thicknesses for respective domain profiles. The RAB data was excluded from use in the grade estimate.

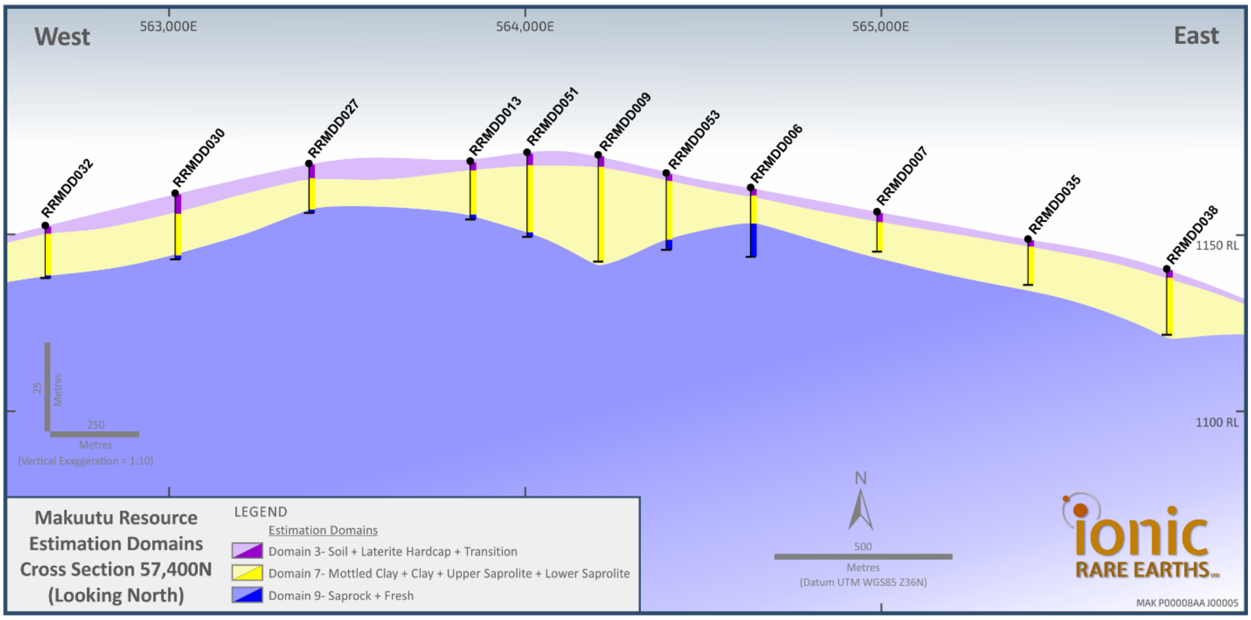

Figure 6: Cross Section of Estimation Regolith Domains

Drill hole sample data was flagged using domain codes generated from three-dimensional mineralisation domains. Sample data was composited to one-metre downhole lengths using a best fit-method. No residuals were generated. Statistical analysis was carried out on data from all estimated domains, with hard boundary techniques employed within each estimation domain.

Outlier analysis of the composite data indicated application of top-cut values was required for Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Sm, Tb, Tm, U, Y and Yb within both the cover zone and the clay zone. Top cuts were generally selected above the 99th percentile, with a total of 64 composites capped.

A total of 15 REE grade attributes (Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), the associated element Sc, and 2 deleterious elements (U, and Th) were estimated. Final estimated values are converted to stoichiometric oxide values by calculation using published ratios to support reporting of rare earth oxides (REO). The grade estimation process was completed using Leapfrog Edge software using Ordinary Kriging (OK) together with dynamic anisotropy to guide the grade interpolation parallel to the regolith boundaries. For estimation domains with insufficient sample data a variogram model from a comparable domain was assigned.

Interpolation parameters were derived using standard exploratory data analysis techniques of statistical and continuity analysis. Appropriate interpolation strategies were developed on a domain basis using kriging neighbourhood analysis (KNA) with a minimum number of 6 composites and a maximum number of 14 composites, with a restriction on the number of composites per drill hole set to four. Blocks were estimated in a single pass strategy with maximum search distances of 600 and 1,500 metres depending on estimation domain. A cross section looking north with estimated TREO block grades is presented in Figure 7.

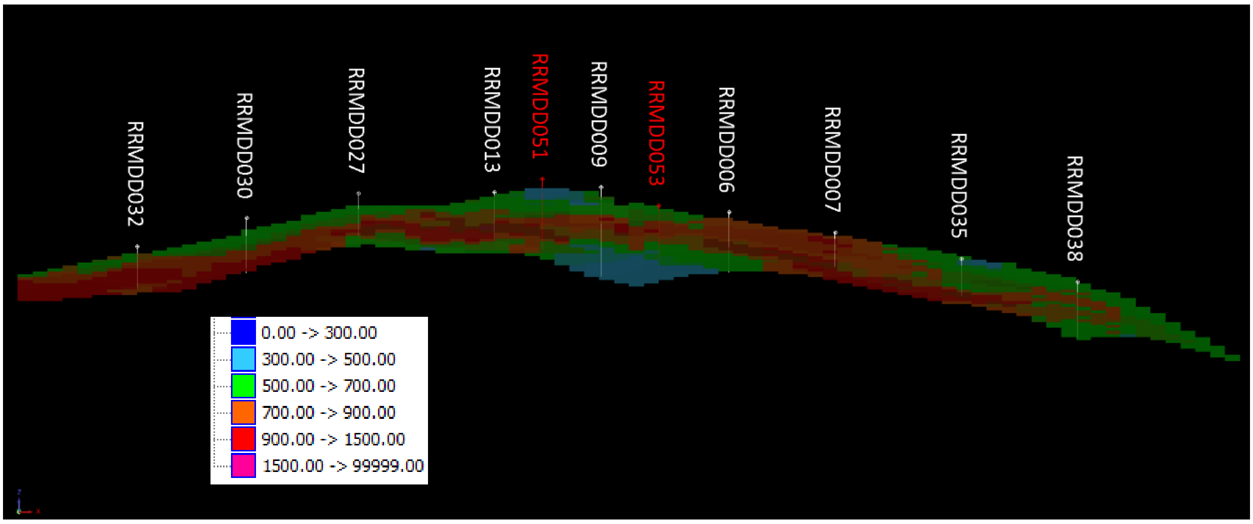

Figure 7: Makuutu Rare Earths Project – Cross section 57,400N (looking north) with TREO block grades (10x vertical exaggeration)

The model has a block size of 200 m (X) by 200 m (Y) by 4 m (Z) with sub-celling of 50 m (X) by 50 m (Y) by 1m (Z). Grades were estimated into the parent cells.

The block model was validated using a combination of visual and statistical techniques including global statistics comparisons, correlation coefficients comparisons, and trend plots.

Resource Classification

A range of criteria was considered by Cube when addressing the suitability of the classification boundaries. These criteria include:

- Geological continuity and volume;
- Drill spacing and drill data quality;

- Modelling technique; and
- Estimation properties, including search strategy, number of informing composites, average distance of composites from blocks and kriging quality parameters.

Based on the expected metallurgical performance and relative grade profile, only material within the clay zone (estimation domain 7) has been classified to support Mineral Resource reporting. Blocks in the cover (domain 3) and basement (domain 9) are excluded from reporting.

Blocks have been classified in both the Indicated (11%) and Inferred (89%) categories, primarily based on drill data spacing in combination with other model estimate quality parameters (Figure 8).

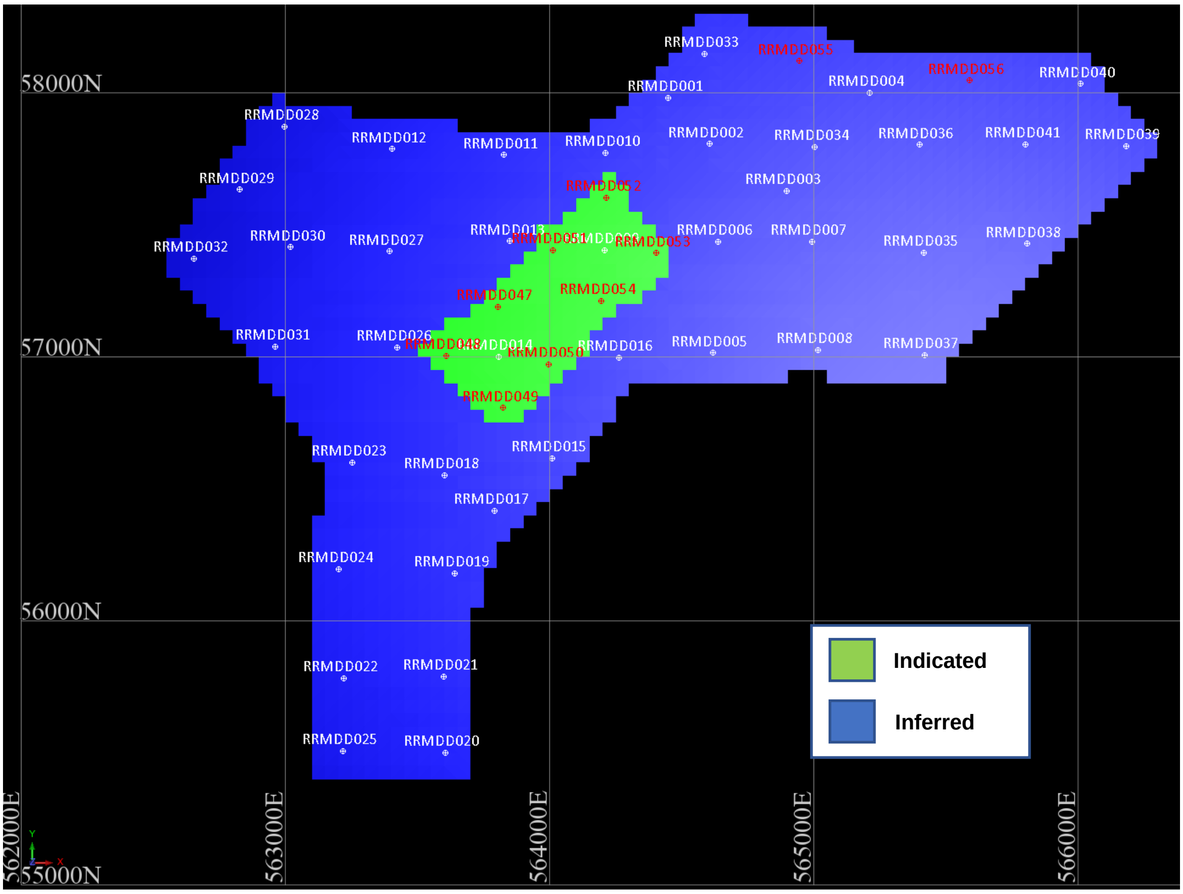

Figure 8: Makuutu Rare Earths Project – Inferred Mineral Resource Limits Plan View

Cut-off Grade

The Mineral Resource has been reported above a 300 ppm total rare earth oxide (TREO) minus Ce_2O_3 cut-off. Selection of the cut-off has considered recent metallurgical recoveries and distribution of recovered elements (ASX release 26 May 2020). Based on these results a consensus basket price for the predicted contained REO product has been determined, and together with other cost inputs, an indicative marginal cut-off grade has been defined. The applied cut-off has been reviewed against that reported from peer projects with similar mineralisation styles and proposed processing options and is considered comparable.

Reporting of Mineral Resources have been assessed against a resource limiting optimisation shell using appropriate cost, metallurgical recovery, and price assumptions. Material within the optimised pit shell has, in the opinion of the Competent Person, met the conditions for reporting of a Mineral Resource with reasonable prospects of economic extraction.

Mining and Metallurgy

Development of this Mineral Resource assumes mining using standard equipment and methods. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height.

Preliminary metallurgical test work on mineralisation at the project has been completed and previously reported (ASX release dated 18 February 2020 and 26 May 2020). Results of test work indicate metallurgical recoveries of up to 75% TREE-Ce (Total Rare Earth minus Cerium) were achieved using simple extraction techniques. These results are considered adequate to achieve reasonable expectations of economic metallurgical processing of the project mineralisation.

Current Makuutu Rare Earths Project Work Program

The Company is currently preparing for a resumption of drilling following the suspension of drilling due to COVID-19 in late March 2020 after only 240 metres of the planned 4,000 metre drill program were completed. Drilling will resume in July 2020, and will look to further define the Makuutu Rare Earths Project via the following:

- Extension the Makuutu Central Zone resource area initially to the east of the existing resource area (Figure 9),
- Further infill drilling within the Makuutu Central Zone to work toward upgrading resource confidence,
- Completion of exploration drilling to test the full 26-kilometre mineralisation corridor from Makuutu Eastern Zone to Makuutu Western Zones, and
- Provide samples for metallurgical test-work over a broader area of the Project.

Site exploration works and preparatory activities have recommenced in early June 2020 (ASX Release 11 June 2020) following approval from the Ugandan government. Additionally, metallurgical optimisation testwork continues along with activities supporting the Makuutu Rare Earths Scoping Study which the company intends to complete in Q4, 2020.

Furthermore, the Company continues to advance discussions with global parties regarding the Makuutu Rare Earths Project, given its strategic importance as a potential low cost source of critical and heavy rare earths.

Project Overview

Ionic Rare Earths Limited (ASX: IXR) is developing the Makuutu Rare Earths Project, located 120 kilometres east of Kampala, Uganda, to be a globally significant producer of both Heavy Rare Earths Oxides (HREO) and Critical Rare Earth Oxides (CREO), providing a viable large scale, low cost alternative Rare Earth Oxide (REO) supply chain outside of China.

Drilling at the project site to date totals 58 diamond core holes and 109 historic RAB holes, with the Company working toward **progressively** validating its previously announced exploration target of (ASX: 4 September 2019) with the current status shown in Figure 9:

270 - 530 million tonnes grading 0.04 – 0.1% (400 – 1,000 ppm) TREO*.

*****This Exploration Target is conceptual in nature but is based on reasonable grounds and assumptions. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

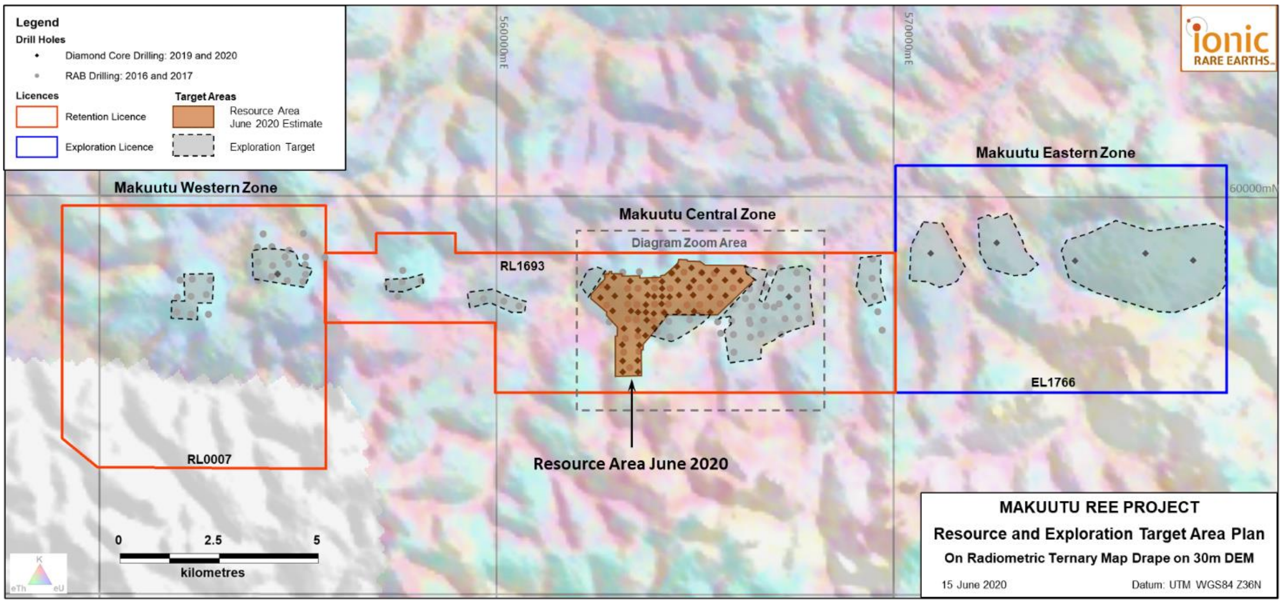

Figure 9: Makuutu Project Area with June 2020 Resource and Exploration Target Areas

The Makuutu Rare Earths Project contains ionic clay-hosted REE mineralisation, like those found in southern China, which are the source of the majority (>95%) of the world's heavy rare earths production, and vastly different to hard rock-hosted rare earths projects. Mineralisation at Makuutu occurs from surface to depths of 15-20 metres where simple shallow bulk mining methods will be applicable. The processing of ionic clays is also simple, where the clay undergoes a simple desorption process – akin to washing – in which rare earths are desorbed from the ore into a salt solution, concentrated and precipitated to create a mixed rare earth product. Tailings (the washed clay) are expected to be returned to the mined open pits and areas progressively rehabilitated. The process is expected to have a small environmental footprint.

The project area is well supported with infrastructure, which is illustrated in Figure 10. There is substantive nearby hydroelectric generation capacity with electrical grid infrastructure nearby to the project area, the project area is readily accessible with existing road and rail infrastructure nearby that connects to Kampala and Port of Mombasa, and the area has cell phone coverage. Additionally, nearby centres present a pool for a professional workforce.

The Company has acquired a 31% interest in the project and is working toward acquiring up to a further 29% interest via an "earn-in" process through the expenditure of funds, bringing its total potential interest in the project to 60%.

Key project highlights:

1. Ion Adsorption Clay deposits are currently the lowest cost sources of high value critical and heavy rare earths in the world,
2. Favourable concentration of high demand rare earths – Dy, Er, Nd, Pr and Tb,
3. Simple open pit mining and shallow deposit, and
4. Simple processing to produce a high-value mixed rare earth carbonate.

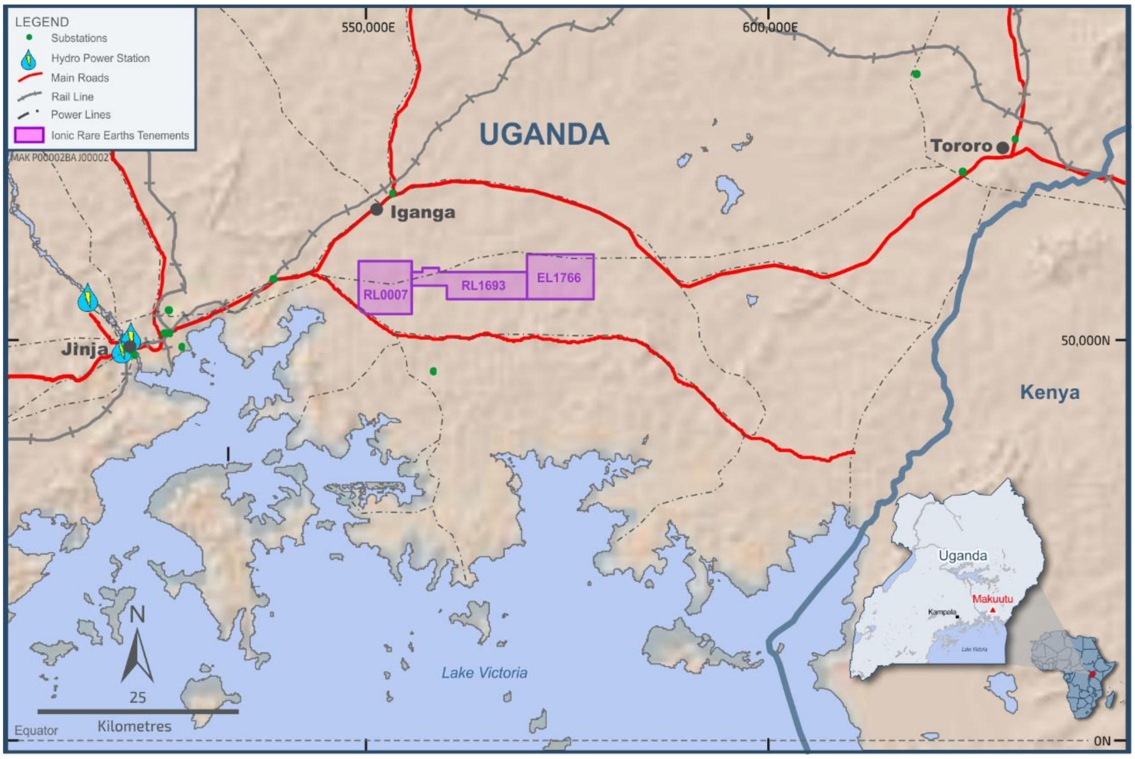

Figure 10: Map Showing Infrastructure Nearby to the Project

Addendums

Appendix 1: Makuutu Rare Earths Project June 2020 Mineral Resource Estimate Tabulations

Appendix 2: Makuutu Rare Earths Project RRMDD Diamond Core Hole Details

JORC Code, 2012 Edition – Table 1 Report.

Authorised for release by Brett Dickson, Company Secretary.

***** ENDS *****

For enquiries, contact: Brett Dickson

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Competent Person Statements

The information in this report that relates to Mineral Resources is based on information compiled by Mr Daniel Saunders, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Saunders is a full-time employee of Cube Consulting Pty Ltd, acting as independent consultants to Ionic Rare Earths Limited. Mr Saunders has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration, and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

Mr Saunders consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this Report that relates to exploration results including drilling, sampling, assay and bulk density data applied to the mineral resource estimate for the Makuutu Project is based on information compiled by Mr. Geoff Chapman, who is a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM). Mr. Chapman is a Director of geological consultancy GJ Exploration Pty Ltd that is engaged by to Ionic Rare Earths Limited. Mr. Chapman has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code).

Mr. Chapman consents to the inclusion in this report of the matters based on the information in the form and context in which it appears.

Information in this report that relates to previously reported Exploration Targets and Exploration Results has been crossed-referenced in this report to the date that it was originally reported to ASX. Ionic Rare Earths Limited confirms that it is not aware of any new information or data that materially affects information included in the relevant market announcements.

Appendix 1: Makuutu Rare Earths Project June 2020 Mineral Resource Estimate Tabulations

Table 3 Makuutu Rare Earth Resource Tabulation at 300ppm TREO- Ce_2O_3 Cut-off Grade

Resource Classification	Tonnes (millions)	La_2O_3 (ppm)	Ce_2O_3 (ppm)	Pr_2O_3 (ppm)	Nd_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	Gd_2O_3 (ppm)	Tb_2O_3 (ppm)	Dy_2O_3 (ppm)	Ho_2O_3 (ppm)	Er_2O_3 (ppm)	Tm_2O_3 (ppm)	Yb_2O_3 (ppm)	Lu_2O_3 (ppm)	Y_2O_3 (ppm)
Indicated	9.5	130	220	30	130	30	5	20	3	20	4	10	2	10	1	120
Inferred	69.1	180	240	40	160	30	5	20	4	20	4	10	2	10	1	130
Total	**78.6**	**170**	**240**	**40**	**160**	**30**	**5**	**20**	**4**	**20**	**4**	**10**	**2**	**10**	**1**	**130**

Notes:

Tonnes are dry tonnes rounded to the nearest 0.1Mt.

All material REO grades are rounded to the nearest 10 ppm except Eu_2O_3, Tb_2O_3, Ho_2O_3, Tm_2O_3, Lu_2O_3 which are immaterial to overall resource grade.

Table 4 Makuutu Rare Earth Project June 2020 Resource Tabulation of REO Reporting Groups at 300ppm TREO- Ce_2O_3 Cut-off Grade

Resource Classification	Tonnes (millions)	TREO (ppm)	TREO- Ce_2O_3 (ppm)	CREO (ppm)	HREO (ppm)	LREO (ppm)	NdPr (ppm)	Sc_2O_3 (ppm)	U_3O_8 (ppm)	ThO_2 (ppm)
Indicated	9.5	750	520	280	200	550	**170**	**30**	**20**	30
Inferred	69.1	860	620	320	210	640	**200**	**30**	**20**	30
Total	**78.6**	**840**	**610**	**310**	**210**	**630**	**200**	**30**	**20**	**30**

Notes:

All ppm rounded from original estimate to the nearest 10 ppm which may lead to differences in averages from Table 3

Y_2O_3 is included in the TREO, HREO and CREO calculation.

TREO (Total Rare Earth Oxide) = La_2O_3 + Ce_2O_3 + Pr_2O_3 + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_2O_3 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Y_2O_3 + Lu_2O_3.

CREO[8] (Critical Rare Earth Oxide) = Nd_2O_3 + Eu_2O_3 + Tb_2O_3 + Dy_2O_3 + Y_2O_3

HREO (Heavy Rare Earth Oxide) = Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_2O_3 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3, + Y_2O_3 + Lu_2O_3

LREO (Light Rare Earth Oxide) = La_2O_3 + Ce_2O_3 + Pr_2O_3 + Nd_2O_3NdPr = Nd_2O_3 + Pr_2O_3

U_3O_8 and ThO_2 are deleterious elements being reported in accordance with JORC (2012) Guidelines.

[8] U.S. Department of Energy, Critical Materials Strategy, December 2011

Appendix 2: Makuutu Rare Earths Project RRMDD Diamond Core Hole Details (Datum UTM WGS84 Zone 36N)

Drill Hole ID	UTM East (m.)	UTM North (m.)	Elevation (m.a.s.l.)	Drill Type	Hole Length EOH (m.)	Azimuth	Inclination
RRMDD001	564,447	57,983	1,158	HQ DD	21.60	0	-90
RRMDD002	564,602	57,807	1,163	HQ DD	15.40	0	-90
RRMDD003	564,894	57,630	1,161	HQ DD	15.60	0	-90
RRMDD004	565,209	58,002	1,150	HQ DD	15.60	0	-90
RRMDD005	564,617	57,016	1,154	HQ DD	21.40	0	-90
RRMDD006	564,635	57,437	1,164	HQ DD	20.10	0	-90
RRMDD007	564,992	57,437	1,157	HQ DD	11.60	0	-90
RRMDD008	565,014	57,028	1,144	HQ DD	13.60	0	-90
RRMDD009	564,207	57,405	1,172	HQ DD	30.10	0	-90
RRMDD010	564,210	57,775	1,164	HQ DD	14.50	0	-90
RRMDD011	563,824	57,766	1,164	HQ DD	29.70	0	-90
RRMDD012	563,401	57,788	1,169	HQ DD	19.40	0	-90
RRMDD013	563,848	57,440	1,171	HQ DD	16.10	0	-90
RRMDD014	563,804	57,003	1,170	HQ DD	14.10	0	-90
RRMDD015	564,009	56,616	1,154	HQ DD	14.20	0	-90
RRMDD016	564,259	56,999	1,162	HQ DD	21.69	0	-90
RRMDD017	563,789	56,419	1,152	HQ DD	20.00	0	-90
RRMDD018	563,601	56,553	1,159	HQ DD	13.80	0	-90
RRMDD019	563,639	56,181	1,153	HQ DD	14.30	0	-90
RRMDD020	563,602	55,502	1,163	HQ DD	21.60	0	-90
RRMDD021	563,596	55,789	1,153	HQ DD	18.10	0	-90
RRMDD022	563,217	55,785	1,158	HQ DD	17.60	0	-90
RRMDD023	563,250	56,602	1,155	HQ DD	23.60	0	-90
RRMDD024	563,201	56,196	1,155	HQ DD	15.00	0	-90
RRMDD025	563,216	55,508	1,163	HQ DD	11.60	0	-90
RRMDD026	563,422	57,037	1,164	HQ DD	16.10	0	-90
RRMDD027	563,394	57,400	1,170	HQ DD	14.10	0	-90
RRMDD028	562,995	57,874	1,163	HQ DD	17.90	0	-90
RRMDD029	562,826	57,635	1,159	HQ DD	15.00	0	-90
RRMDD030	563,017	57,416	1,162	HQ DD	18.50	0	-90
RRMDD031	562,961	57,040	1,154	HQ DD	11.60	0	-90
RRMDD032	562,651	57,374	1,152	HQ DD	14.50	0	-90
RRMDD033	564,585	58,149	1,154	HQ DD	17.00	0	-90
RRMDD034	565,002	57,796	1,158	HQ DD	12.50	0	-90
RRMDD035	565,415	57,396	1,148	HQ DD	12.50	0	-90
RRMDD036	565,397	57,804	1,154	HQ DD	15.00	0	-90
RRMDD037	565,416	57,008	1,136	HQ DD	8.30	0	-90
RRMDD038	565,804	57,430	1,141	HQ DD	19.00	0	-90
RRMDD039	566,180	57,799	1,132	HQ DD	9.50	0	-90
RRMDD040	566,007	58,035	1,136	HQ DD	16.50	0	-90
RRMDD041	565,799	57,806	1,149	HQ DD	13.20	0	-90
RRMDD047*	563,803	57,191	1,182	HQ DD	27.00	0	-90
RRMDD048*	563,606	57,005	1,180	HQ DD	24.00	0	-90
RRMDD049*	563,823	56,808	1,189	HQ DD	18.50	0	-90
RRMDD050*	563,994	56,974	1,164	HQ DD	19.00	0	-90
RRMDD051*	564,009	57,405	1,175	HQ DD	24.00	0	-90
RRMDD052*	564,212	57,605	1,164	HQ DD	19.00	0	-90
RRMDD053*	564,400	57,394	1,188	HQ DD	21.70	0	-90
RRMDD054*	564,192	57,213	1,212	HQ DD	28.50	0	-90
RRMDD055*	564,942	58,121	1,151	HQ DD	17.20	0	-90
RRMDD056*	565,588	58,048	1,151	HQ DD	24.00	0	-90

* Hole collars surveyed by handheld GPS with potentially have lower accuracy than all other hole coordinates

JORC Code, 2012 Edition – Table 1 report

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg 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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *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 (eg 'reverse circulation drilling was used to obtain 1 m 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 (eg submarine nodules) may warrant disclosure of detailed information.*	**Diamond Core Drilling** Drill core was collected from a core barrel and placed in appropriately marked core trays. Down hole core run depths were measured and marked with core blocks. Core was measured for core loss and core photography and geological logging completed. Sample lengths were determined by geological boundaries with a maximum sample length of 1 metre applied in clay zones and up to 2 metres in laterite zones where core recovery was occasionally low. Where the core contained continuous lengths of soft clay a carving knife was used to cut the core. When the core was too hard to knife cut it was cut using an electric core saw. Using either method core was initial cut in half then one half was further cut in half to give quarter core. Quarter core was submitted to ALS for chemical analysis using industry standard sample preparation and analytical techniques. Half core was collected for metallurgical testwork.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	**Diamond Core Drilling** Core size was HQ triple tube. The core was not oriented (vertical)
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure*	**Diamond Drilling**

Criteria	JORC Code explanation	Commentary
	representative nature of the samples. • *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.*	Core recovery was calculated by measuring actual core length versus drillers core run lengths. Core recovery ranged from 70% to 100% and averaged 97%. No relationship exists between core 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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	All (100%) drill core has been geologically logged and core photographs taken. Logging is qualitative with description of colour, weathering status, alteration, major and minor rock types, texture, grain size and comments added where further observation is made. Additional non-geological qualitative logging includes comments for sample recovery, humidity, and hardness for each logged interval.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of 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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	**Diamond Drill Core** Where the core contained continuous lengths of soft clay a carving knife was used to cut the core. When the core was too hard to knife cut it was cut using an electric core saw. Sample lengths were determined by geological boundaries with a maximum sample length of 1 metre applied in clay zones and up to 2 metres in laterite zones where core recovery was occasionally low. Samples were collected from core trays by hand and placed in individually numbered bags. These bags were dispatched to ALS for analysis with no further field preparation. Sample weights were recorded prior to sample dispatch. Sample mass is considered appropriate for the grain size of the material being sampled that is generally very fine grained and uniform. Field duplicate sampling was conducted at a ratio of 1:25 samples. Duplicates were created by lengthways halving the ¼ core primary sample into 2 identical portions. Duplicate samples were allocated separate sample

Criteria	JORC Code explanation	Commentary
		numbers and submitted with the same analytical batch as the primary sample.
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.* • *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.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	**Assay and Laboratory Procedures – All Samples** Samples were dispatched by air freight direct to ALS laboratory Perth Australia. The preparation and analysis protocol used is as follows:

ALS Code	Description
WEI-21	Received sample weight
LOG-22	Sample Login w/o Barcode
DRY-21	High temperature drying
CRU-21	Crush entire sample
CRU-31	Fine crushing – 70% <2mm
SPL-22Y	Split sample – Boyd Rotary Splitter
PUL-31h	Pulverise 750g to 85% passing 75 micron
CRU-QC	Crushing QC Test
PUL-QC	Pulverising QC test

The assay technique used for REE was Lithium Borate Fusion ICP-MS (ALS code ME-MS81). This is a recognised industry standard analysis technique for REE suite and associated elements. Elements analysed at ppm levels:

Ba	Ce	Cr	Cs	Dy	Er	Eu	Ga
Gd	Hf	Ho	La	Lu	Nb	Nd	Pr
Rb	Sm	Sn	Sr	Ta	Tb	Th	Tm
U	V	W	Y	Yb	Zr		

Criteria	JORC Code explanation	Commentary
		Analysis for scandium (Sc) was by Lithium Borate Fusion ICP-AES (ALS code Sc-ICP06). The sample preparation and assay techniques used are industry standard and provide a total analysis. All laboratories used are ISO 17025 accredited **QAQC** Diamond Drill Core Samples • Analytical Standards CRM AMIS0275 and AMIS0276 were included in sample batches at a ratio of 1:25 to drill samples submitted. This is an acceptable ratio. The assay results for the standards were consistent with the certified levels of accuracy and precision and no bias is evident. • Blanks CRM blanks AMIS0681 and OREAS22e were included in sample batches at a ratio of 1:25 to drill samples submitted for analysis. This is an acceptable ratio. Both CRM blanks contain some REE, with elements critical elements Ce, Nd, Dy and Y present in small quantities. The analysis results were consistent with the certified values for the blanks. No laboratory contamination or bias is evident from these results. • Duplicates Field duplicate sampling was conducted at a ratio of 1:25 samples. Duplicates were created by lengthways halving the ¼ core primary sample into 2 identical portions. Duplicate samples were allocated separate sample numbers and submitted with the same analytical batch as the primary sample. Variability between duplicate results is considered acceptable and no sampling bias is evident.

Criteria	JORC Code explanation	Commentary
		Laboratory inserted standards, blanks and duplicates were analysed as per industry standard practice. There is no evidence of bias from these results.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	No independent verification of significant intersection undertaken. No twinning of diamond core drill holes was undertaken. Sampling protocols for diamond core sampling and QAQC were documented and held on site by the responsible geologist. No procedures for data storage and management have been compiled as yet. Data were collected in the field by hand and entered into Excel spreadsheet. Data are then compiled with assay results compiled and stored in Access database. Data verification is conducted on data entry including hole depths, sample intervals and sample numbers. Sample numbers from assay data are verified by algorithm in spreadsheet prior to entry int the database. Assay data was received in digital format from the laboratory and merged with the sampling data into an Excel spreadsheet format for QAQC analysis and review against field data. Once finalised and validated data is stored in a protected Access database. Data validation of assay data and sampling data have been conducted to ensure data entry is correct. All assay data is received from the laboratory in element form is unadjusted for data entry. Conversion of elemental analysis (REE) to stoichiometric oxide (REO) was undertaken by spreadsheet using defined conversion factors.(Source:https://www.jcu.edu.au/advanced-analytical-centre/services-and-resources/resources-and-extras/element-to-stoichiometric-oxide-conversion-factors)

Criteria	JORC Code explanation	Commentary

Element ppm	Conversion Factor	Oxide Form
Ce	1.1713	Ce_2O_3
Dy	1.1477	Dy_2O_3
Er	1.1435	Er_2O_3
Eu	1.1579	Eu_2O_3
Gd	1.1526	Gd_2O_3
Ho	1.1455	Ho_2O_3
La	1.1728	La_2O_3
Lu	1.1371	Lu_2O_3
Nd	1.1664	Nd_2O_3
Pr	1.1703	Pr_2O_3
Sm	1.1596	Sm_2O_3
Tb	1.151	Tb_2O_3
Tm	1.1421	Tm_2O_3
Y	1.2699	Y_2O_3
Yb	1.1387	Yb_2O_3

Rare earth oxide is the industry accepted form for reporting rare earths. The following calculations are used for compiling REO into their reporting and evaluation groups:

Note that Y_2O_3 is included in the TREO, HREO and CREO calculation.

TREO (Total Rare Earth Oxide) = $La_2O_3 + Ce_2O_3 + Pr_2O_3 + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_2O_3 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Y_2O_3 + Lu_2O_3$.

HREO (Heavy Rare Earth Oxide) = $Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_2O_3 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3$, $+ Y_2O_3 + Lu_2O_3$

CREO (Critical Rare Earth Oxide) = $Nd_2O_3 + Eu_2O_3 + Tb_2O_3 + Dy_2O_3 + Y_2O_3$

Criteria	JORC Code explanation	Commentary
		(From U.S. Department of Energy, Critical Materials Strategy, December 2011) LREO (Light Rare Earth Oxide) = La_2O_3 + Ce_2O_3 + Pr_2O_3 + Nd_2O_3 NdPr = Nd_2O_3 + Pr_2O_3 HREO% of TREO= HREO/TREO x 100 In elemental form the classifications are: Note that Y is included in the TREE, HREE and CREE calculation. TREE: La+Ce+Pr+Nd+Sm+Eu+Gd+Tb+Dy+Ho+Er+Tm+Yb+Lu+Y HREE: Sm+Eu+Gd+Tb+Dy+Ho+Er+Tm+Yb+Y+Lu CREE: Nd+Eu+Tb+Dy+Y LREE: La+Ce+Pr+Nd
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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	Drill hole collar locations for holes RRMDD001 to RRMDD041 were surveyed a relational DGPS system. The general accuracy for x,y and z is ± 0.2m. Hole locations for RRMDD042 – RRMDD057 were surveyed using handheld GPS. The accuracy for this type of device is considered ± 5m in x and y coordinates however the elevation component of coordinates is variable and z accuracy may be low using this type of device. Datum WGS84 Zone 36 North was used for location data collection and storage. This is the appropriate datum for the project area. No grid transformations were applied to the data. No downhole surveys were conducted. As all holes were vertical and shallow, the rig setup was checked using a spirit level for horizontal and vertical orientation Any deviation will be insignificant given the short lengths of the holes

Criteria	JORC Code explanation	Commentary
		Detailed topographic data was not sourced or used.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	Drilling of holes RRMDD001 to RRMDD041 was conducted on a nominal 400m x 400m spacing. Historic RAB drilling has also been conducted on this spacing however the diamond drilling was offset by 200m from the RAB drilling Infill drill holes RRMDD047 to RRMDD054 were drilled on a 200-metre offset from 2019 400m spaced holes providing an approximate 200m grid in those areas. Drill holes RRMDD055 to 057 were designed to conform with 400m x 400m grid spacing. Exploration drill holes on EL1766 were drilled where convenient on ternary and elevation anomalies and are not to any specific spacing.
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.* • *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.*	The Makuutu mineralisation is interpreted to be in a flat lying weathered profile including cover soil, lateritic caprock, clays transitioning to saprolite and saprock. Below the saprock are fresh shales, siltstones and mudstones. Pit mapping and diamond drilling indicate the mineralised regolith to be generally horizontal All drill holes are vertical which is appropriate for horizontal bedding and regolith profile.
Sample security	• *The measures taken to ensure sample security.*	After collection, the samples were transported by Company representatives to Entebbe airport and dispatched via airfreight to Perth Australia. Samples were received by Australian customs authorities in Perth within 48 hours of dispatch and were still contained in the sealed shipment bags. Samples were subsequently transported from Australian customs to ALS Perth via road freight and inspected on arrival by a Company representative.

Criteria	JORC Code explanation	Commentary
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	No audits or reviews have been undertaken

Section 2 Reporting of Exploration Results

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

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr>
<td>Mineral tenement and land tenure status</td>
<td>

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 security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.

</td>
<td>
The Makuutu Project is located in the Republic of Uganda. The mineral tenements comprise two (1) granted Retention Licences (RL1693 and RL0007), one (1) Exploration Licence (EL1766).
All licences are in good standing with no known impediments.
The Makuutu Rare Earths Project is 100% owned by Rwenzori Rare Metals Limited (RRM), a Ugandan registered company. Ionic Rare Earths (IXR) currently has a 31% shareholding in RRM and may increase its shareholding to 60% by meeting expenditure commitments.
1. IXR to contribute US$1,700,000 of expenditure by 1 October 2020 to earn up to a 51% staged interest in RRM as follows;
<table>
<tr><th>Spend</th><th>Interest earned</th><th>Cumulative Interest earned</th></tr>
<tr><td>Exercise of Option US$100,000 of cash plus US$150,000 of shares</td><td>20%</td><td>20%</td></tr>
<tr><td>Expenditure contribution of US$650,000</td><td>11%</td><td>31%</td></tr>
<tr><td>Expenditure contribution of a further US$800,000</td><td>15%</td><td>46%</td></tr>
<tr><td>Expenditure contribution of a further US$350,000</td><td>5%</td><td>51%</td></tr>
</table>
2. IXR to fund to completion of a bankable feasibility study to earn an additional 9% interest for a cumulative 60% interest in RRM.
3. During the earn-in phase there are milestone payments, payable in cash or IXR shares at the election of the Vendor, as follows:

US$750,000 on the Grant of Retention Licence over RL1693 which is due to expire on 1 November 2020;

</td>
</tr>
</table>

Criteria	JORC Code explanation	Commentary
		• US$375,000 on production of 10 kg of mixed rare-earth product from pilot or demonstration plant activities; and • US$375,000 on conversion of existing licences to mining licences. At any time should IXR not continue to invest in the project and project development ceases for at least two months RRM has the right to return the capital sunk by IXR and reclaim all interest earnt by IXR.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	Previous exploration includes: 1980: Country wide airborne geophysical survey identifying uranium anomalies in the Project area. 1990s: French BRGM and Ugandan DGSM undertook geochemical and geological survey over South-Eastern Uganda including the Project area. Anomalous Au, Zn, Cu, Sn, Nb and V identified. 2006-2009: Country wide high resolution airborne magnetic and radiometric survey identified U anomalism in the Project area. 2009: Finland GTK reprocessed radiometric data and refined the Project anomalies. 2010: Kweri Ltd undertook field verification of radiometric anomalies including scout sampling of existing community pits. Samples showed an enrichment of REE and Sc. 2011: Kweri Ltd conducted ground radiometric survey and evaluated historic groundwater borehole logs. 2012: Kweri Ltd and partner Berkley Reef Ltd conducted prospect wide pit excavation and sampling of 48 pits and a ground gravity traverse. Pit samples showed enrichment of REE weathered profile. Five (5) samples sent to Toronto Aqueous Research Laboratory for REE leach testwork.

Criteria	JORC Code explanation	Commentary
		2016 – 2017: Rwenzori Rare Metals conduct excavation of 11 pits, ground gravity survey, RAB drilling (109 drill holes) and one (1) diamond drill hole. The historic exploration has been conducted to a professional standard and is appropriate for the exploration stage of the prospect.
Geology	• *Deposit type, geological setting and style of mineralisation.*	The Makuutu deposit is interpreted to be an ionic adsorption REE clay-type deposits similar to those in South China, Chile, Madagascar and Brazil. The mineralisation is contained within the tropical lateritic weathering profile of a basin filled with sedimentary rocks including shales, mudstones and sandstones potentially derived from the surrounding granitic rocks. These granitic rocks are considered the original source of the REE which were then accumulated in the sediments of the basin as the granites have degraded. These sediments then form the protolith that was subjected to prolonged tropical weathering. The weathering developed a lateritic regolith with a surface indurated hardcap, followed downward by clay rich zones that grade down through saprolite and saprock to unweathered sediments. The thickness of the regolith is between 10 and 20 metres from surface. The REE mineralisation is concentrated in the weathered profile where it has dissolved from its primary mineral form, such as monazite and xenotime, then adsorbed on to fine particles of aluminosilicate clays (e.g. kaolinite, illite, smectite). This adsorbed REE is the target for extraction and production of REO. There is insufficient geological study to determine any geological disruptions, such as faults or dykes, that may cause variability in the mineralisation.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*	The material information for drill holes relating to this announcement are contained in Appendix 2.

Criteria	JORC Code explanation	Commentary
	○ *easing and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	No metal equivalents values are used.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	Down hole lengths, true widths are not known. The mineralisation is interpreted to be horizontal, flat lying sediments and weathering profile, with the vertical drilling perpendicular to mineralisation. Any internal variations to REE distribution within the horizontal layering was not defined, therefore the true width is considered not known.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	Refer to diagrams in body of text.

Criteria	JORC Code explanation	Commentary
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	This report contains all drilling results that are consistent with the JORC guidelines. Where data may have been excluded, it is considered not material.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	Metallurgical leach testing was previously conducted on samples derived from exploration pits, RAB drilling, and one 8.5 tonne bulk pit sample. In 2012, 5 pit samples were sent to the Toronto Aqueous Research Laboratory at the University of Toronto for leachability tests In 2017, 2 pit samples were sent to SGS Laboratory Toronto for leachability tests. 2017/18, 29 samples were collected from 7 RAB drill holes. 20 of these were consigned to SGS Canada and 4 to Aqueous Process Research (APR) in Ontario Canada. The remaining 5 samples were consigned to Bio Lantanidos in Chile. 2018/19, 8.5 tonne bulk sample was consigned to Mintek, South Africa, to evaluate using Resin-in-leach (RIL) technology for the recovery of REE. 2019: 118 samples from 31 holes from the 2019 diamond drilling program had preliminary variation testwork conducted TREE-Ce extraction ranged from 3% to 75%. 2020: Testing of composite samples with lower extractions from the 2019 variation testing using increasing rates of acid addition and leach time. Significant increases in extractions were achieved. Testing of samples from the project is ongoing.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	Future work programs are intended to evaluate the economic opportunity of the project including extraction recovery maximisation, continued resource definition and estimation, regional exploration on adjoining licences and compilation of a Preliminary Economic Assessment (PEA)

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	Data collected in the field has been validated against core photography and original data collection files Analytical data is received in digital format from the laboratory and merged with the sampling data into an Excel spreadsheet format for QAQC analysis and review against field data. Once finalised and validated data is stored in a protected Access database. Data validation of original sampling and assay data have been conducted on the database on a 1:10 entries spot check basis. Data has also been correlated against interval lengths and EOH details. Any data entry errors identified have been correct in the database.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	The project site has been visited by the Competent Person for Exploration Results who has observed drilling operations, reviewed drill core, sampling and QAQC procedures. The project has not been visited by the Competent Person responsible for the reporting of Mineral Resources.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	The mineral deposit is hosted in a tropical laterite regolith profile derived from generally flat lying sediments. The regolith commences from surface to an average depth of approximately 15 metres. All drilling was geologically logged in the field including rock type and degree of weathering. Following field data collection and receipt of analytical data the deposit has been categorised on a Regolith Zone basis based on visual observation from drill core and multi-element ratio analysis. There is a moderate to high degree of confidence in the interpretation of the regolith units given the flat lying and reasonably consistent nature of the

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		regolith. There is unlikely to be any significant structural disruption to the mineralisation through the resource area. Estimation domains were based on grouping of the regolith domains into three zones as defined by regolith rheology, and by comparison of regolith statsitics: • Domain 3 – Cover zone • Domain 7 – Clay zone • Domain 9 – Basement zone
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The overall defined mineralised zone is elongated to the north-east with a strike extent of ~6,500m, across strike extent of ~3,000m an average vertical thickness of 12m. The top of the mineralised zone is defined by a thin surficial soil/hardcap zone that averages 3.5m in thickness. The base of the mineralised zone is defined by the top of the saprock/fresh rock boundary which extends to an average vertical depth of 17m.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).*	A total of 15 rare earth element (REE) grade attributes (Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu) and 2 deleterious elements (U, and Th) were estimated. Final estimated values are converted to stoichiometric oxide values by calculation using published ratios to support reporting of rare earth oxides (REO). The grade estimation used the Ordinary Kriging ("OK") technique together with dynamic anisotropy to guide the grade interpolation parallel to the regolith boundaries. Grade interpolation used 1m composited samples constrained by the estimation domain hard boundaries.

Criteria	JORC Code explanation	Commentary
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	An appropriate top cutting strategy (generally above the 99th grade percentile) was used to minimise the influence of isolated high-grade outliers. Interpolation parameters were derived using standard exploratory data analysis techniques of statistical and continuity analysis. Appropriate interpolation strategies were developed on a domain basis using kriging neighbourhood analysis ("KNA"), which included: • Oriented ellipsoidal search radii ranged from 600m to 1500m depending on the estimation domain; • Minimum number of samples = 6; • Maximum number of samples = 14, and • Limited to a maximum of 4 samples per hole. The maximum extrapolation distance from the last data points was no more than 100m, which is the less than half the average drill hole spacing (~400 m) for the deposits. Computer software used for the modelling and estimation were: • Leapfrog Geo v5.0.4 was used for geological and estimation domain modelling. • Leapfrog Edge v3.0 was used for grade estimation. • Supervisor v8.1 for geostatistical analysis. • Surpac v6.9 for block modelling and reporting The estimation block model definitions are: • Non-rotated block model with an azimuth of 000ºGN; • OK panel size was set at 200m x 200m x 4m (XYZ) • Sub-block size of 50m x 50m x 1m (XYZ); • The bulk of the drilling data is on 400m by 400m grid spacings with some local infill holes at 200m spacing, and • Appropriate search ellipses were derived from KNA with an average search radii of 600m to 1500m and anisotropy of 15:7.5:1 to 5:4:1 (major/semi/minor).

Criteria	JORC Code explanation	Commentary
		Selection of the block size was based on the geometry of the mineralisation, data density, and the likely degree to which selective mining can be successfully applied to the geologically based domain boundaries. Estimations of U and Th elements were completed for the Mineral Resource estimate. No other deleterious elements or other non-grade variables of economic significance are reported. Correlations between the elements were determined from statistical analysis of the REE and demonstrated strong positive correlations between the majority of REE variables, particularly within the Clay Zone (estimation domain 7) The estimation model was validated using the following techniques: • Visual 3D checking and comparison of informing samples and estimated values; • Global statistical comparisons of raw sample and composite grades to the block grades; • Comparison of correlation coefficients between composite and block data; • Validation 'swath' plots by northing, easting and elevation for each domain, and • Analysis of the grade tonnage distribution. No by-product recoveries were considered. No previous estimates or mining production has taken place at the deposit.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Tonnes are estimated on an Insitu Dry Bulk Density basis. No moisture content has been determined by testwork or used in estimation.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	Ionic Rare Earths Ltd have completed numerous metallurgical studies on composite samples of mineralisation at Makuutu as previously announced to the ASX on 18 February and most recently 26 May 2020. These results

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		together with indicative mining and processing costs and other cost inputs supports application of a marginal cut-off grade of 300 ppm TREO (excluding Ce_2O_3). This cut-off is comparable to peer projects with similar mineralisation types and processing assumptions.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	Mineralisation is near surface, broadly flat lying, and of grades amenable to conventional open pit mining methods. The assumed mining method would be 'free dig' using truck and shovel.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Processing of the REE mineralisation is considered relatively simple, with the clay undergoing a desorption process in which the REE are desorbed from the mineralisation into a salt and acid solution, concentrated, and precipitated to create a mixed rare earth product. Preliminary metallurgical test work has been completed on core samples from the project area (ASX Releases 18 February 2020, 26 May 2020). This reports metallurgical recoveries up to 75% TREE minus Cerium using simple extraction techniques. These recoveries compare favourably to other known ionic clay hosted rare earth projects.
Environmen-tal factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	Tailings (the processed clay) are expected to be returned to the mined open pits and areas progressively rehabilitated.

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Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	Bulk density has been determined from 64 individual drill core measurements from 18 drill holes. Measurements were made on samples of approximately 10cm length from HQ core. Methods employed were the caliper method (54 samples) and Archimedes method (13 samples) Samples measured with the caliper method had dimensions recorded in the field using a Vernier caliper. Samples were then dried and weighed on an analytical balance. Samples tested using the Archimedes method were dried, coated with water repellent spray then weighed dry and in water using an appropriate analytical balance. Bulk densities for the Clay Zone varied from 1.3 to 1.4. Density for all regolith zones was by direct assignment based on reported measurements.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	Classification of the mineral resource considered the interpretation confidence, drilling density, demonstrated continuity, estimation statistics (conditional bias, kriging efficiency) and block model validation results. Following a diamond drilling in-fill program, completed at an average spacing of 200m, the Makuutu Mineral Resource has been classified into Indicated (11%) and Inferred (89%) categories. Previously excluded RAB drilling was reviewed geochemically and together with geostatistical processes was used to better define the thickness and continuity of the estimation domains. This provided additional confidence in the reported clay volumes which form the basis of the reported Mineral Resources. The assigned Mineral Resource classification reflects the Competent Person's view of the deposit.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	No audits or review have been completed for the Mineral Resource estimate.

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Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resource as per the guidelines of the 2012 JORC Code. The statement relates to the global estimates of tonnes and grades. No production data is available.