3 May 2022

SUBSTANTIAL INCREASE TO MAKUUTU RESOURCE TO OVER 500 MILLION TONNES

- **Significant 70% increase in Makuutu Mineral Resource Estimate (MRE) exceeds expectation:**
  - **Mineral Resource Estimate increased to 532 million tonnes at 640 ppm TREO, maintaining a cut-off grade of 200 parts per million (ppm) Total Rare Earth Oxide minus CeO_2 (TREO-CeO_2)**
  - **Indicated Resource component increased 512% to 404 million tonnes at 670 ppm TREO**
  - **Indicated Resource base is approximately 76% of the total Mineral Resource which will support the Feasibility Study**

- **Makuutu now cementing its position as key strategic, near development ready, non-China controlled ionic adsorption clay (IAC) resource, and a potential long-life supplier of magnet and heavy rare earths, with product available for US and EU markets**
- **Revised Makuutu Exploration Target underway to incorporate new data including highly successful Phase 3 scout drilling results**

The Board of Ionic Rare Earths Limited ("IonicRE" or "The Company") (ASX: IXR) is pleased to report the substantial 70% increase to the total Mineral Resource Estimate (MRE) and a material increase in resource confidence classification, at its 51% owned Makuutu Rare Earths Project ("Makuutu").

The updated Makuutu MRE is estimated at 532 million tonnes at 640ppm Total Rare Earth Oxide (TREO), above a cut-off grade of 200 parts per million (ppm) TREO minus CeO_2 (TREO-CeO_2). The Indicated component of the MRE has been increased to 404 million tonnes at 670 ppm TREO, representing a 512% increase on the previous March 2021 Indicated resource estimate[1].

[1] ASX announcement 03/03/2021 "*MINERAL RESOURCE ESTIMATE INCREASED THREEFOLD AT MAKUUTU*"

This updated MRE cements Makuutu amongst the world's largest ionic adsorption clay (IAC) deposits, with the potential to significantly increase, and as a globally strategic resource for low-cost, high-margin and long-term security of magnet and heavy rare earth oxide (HREO) supply.

Additionally, the updated Makuutu MRE contains a significant portion of highly valuable HREO (25%) and critical rare earth oxides (CREO, 34%), which collectively account for a substantial 42% of the Resource mineralisation.

The Makuutu MRE has been updated based on the following key inputs:

1. Phase 4 drill program of 432 HQ core drill holes for 8,200 metres, drilled between June and November 2021. A total of 8,503 samples from the drilling were analysed for a multi-element suite by ALS Perth laboratory;
2. Total drilling in the MRE is 711 HQ core drill holes for 12,935 metres and 14,044 analysed samples from 2020 and 2021 drilling campaigns;
3. The majority of the Phase 4 drilling was completed to provide a 200-metre grid of infill holes, in conjunction with previous programs, over the much of the resource area. This has increased resource confidence to Indicated status for these areas of the MRE;
4. 1,206 insitu dry bulk density measurements from drill core samples; and
5. Accurate surface digital terrain model (DTM) derived from high resolution satellite imagery acquired in 2021 covering all resource areas.

Table 1: Makuutu Resource above 200ppm TREO-CeO_2 Cut-off Grade

Resource Classification	Tonnes (millions)	TREO (ppm)	TREO-CeO_2 (ppm)	LREO (ppm)	HREO (ppm)	CREO (ppm)	Sc_2O_3 (ppm)
Indicated Resource	404	670	450	500	170	230	30
Inferred Resource	127	540	360	400	140	180	30
Total Resource	**532**	**640**	**430**	**480**	**160**	**220**	**30**

Rounding has been applied to 1Mt and 10ppm which may influence averaging calculation.
All REO are tabulated in Appendix 1 with formulas defining composition of (Light Rare Earth Oxides ("LREO"), HREO and Critical Rare Earth Oxides ("CREO").
Sc_2O_3 formula provided in Appendix 1.

Commenting on this significant MRE update, IonicRE's Managing Director, Mr Tim Harrison said:

"This resource update at Makuutu has significantly exceeded my expectation. In essence, the mineralised system appears to be significantly larger than we had contemplated."

"The potential of Makuutu is now clearly defined in a global context. This resource update will support the feasibility study currently underway, which will now look at incorporating both a faster ramp up and greater annual production capacity driven by a material step change in Indicated resources. The feasibility study to be completed later this year will be used to support a mining licence application expected to be submitted before the end of October 2022. Makuutu is clearly a unique asset, near development ready, with product to be available for markets developing in the US and Europe."

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"Beyond this MRE update, we will also review and update the previous Exploration Targets which will now be revised to incorporate new data plus the Phase 3 scout drilling from last year on EL00147 and the inclusion of the new tenement at EL00257."

Resource Limits

The MRE was conducted over eleven (11) low plateaus defined by radiometric eU/eTh anomalism on mineral retention licences RL00007, RL1693 and RL00234. These three tenements cover only 134 square kilometres (km^2) of the 298 km^2 which makes up the Makuutu Rare Earths Project. Figure 1 shows the 11 areas, denoted from A to I, along with the Makuutu Central Zone ("MCZ") and Makuutu Central Zone East ("MCZE").

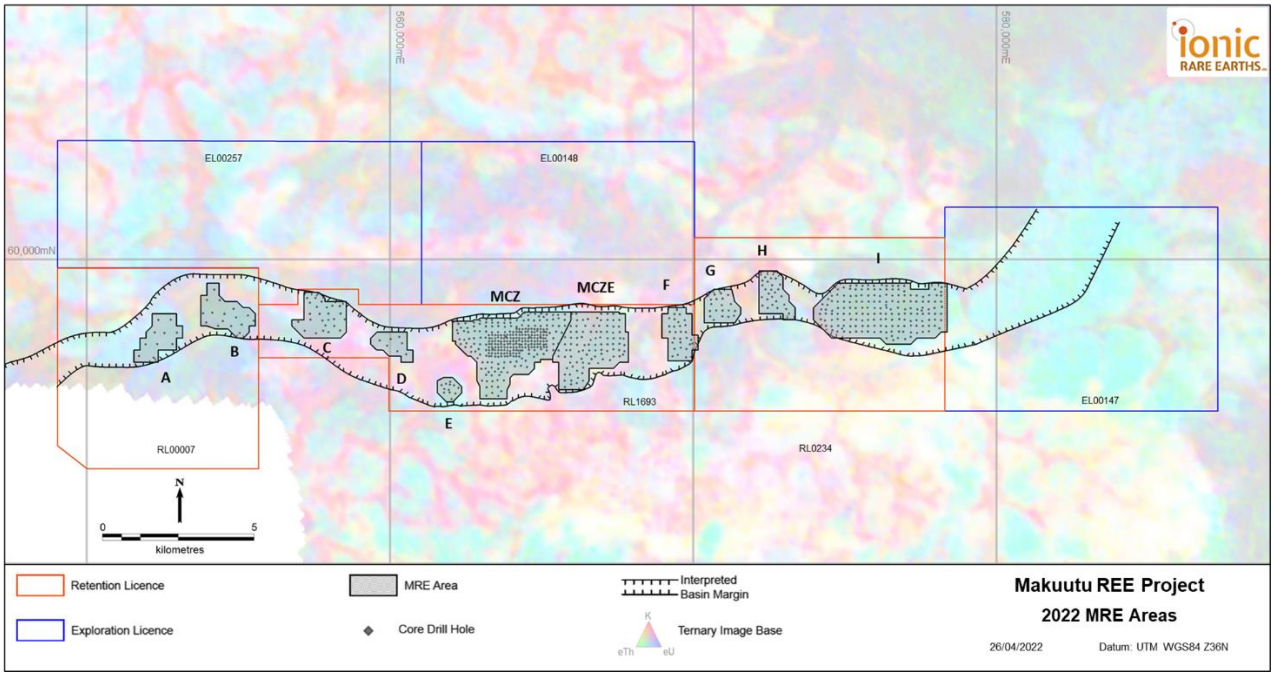

Figure 1: Figure 1: Plan view of resource estimation areas, drill hole locations and mineral licences on ternary radiometric image

The MRE only includes clay and saprolite regolith types, with surface hardcap material excluded while processing alternatives are tested for this material. This is consistent with the Company's knowledge of other IAC deposits, especially those in southern China.

Resource Areas

The MRE has determined classified resources in all of the eleven (11) drilled areas.

Indicated Resources have been determined in all areas where the drill spacing is 200-metre x 200-metre or closer and has provided adequate data and displayed geological continuity to support this level of confidence.

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The Inferred Resource areas are located in areas where the drilling is at a 400-metre x 400-metre spacing and on the margins of the Indicated Resource areas. To increase confidence on the Inferred Resources requires further drilling to reduce the drill spacing.

The reported resources designated by each of the areas is detailed within Table 2, the resource areas shown by resource classification in Figure 2.

Table 2: Mineral Resources by Area

Classification	Indicated Resource			Inferred Resource			Total Resource		
Area	Tonnes (millions)	TREO (ppm)	TREO-CeO_2 (ppm)	Tonnes (millions)	TREO (ppm)	TREO-CeO_2 (ppm)	Tonnes (millions)	TREO (ppm)	TREO-CeO_2 (ppm)
A				13	580	390	13	580	390
B				26	410	290	26	410	290
C	31	580	400	3	490	350	35	570	400
D				6	560	400	6	560	400
E				18	430	280	18	430	280
Central Zone	151	780	540	12	670	460	163	770	530
Central Zone East	59	750	490	12	650	430	72	730	480
F	18	630	420	7	590	400	25	620	410
G	9	750	500	5	710	450	14	730	480
H	6	800	550	7	680	480	13	740	510
I	129	540	350	19	530	350	148	540	350
Total Resource	**404**	**670**	**450**	**127**	**540**	**360**	**532**	**640**	**430**

Rounding has been applied to 1Mt and 10ppm which may influence averaging calculations.

The distribution of resource tonnes above cut-off grade is dominated by the combined higher grade Makuutu Central and Makuutu Central East Zones. These areas were not joined in the previous MRE (3rd March 2021), however following the Phase 4 drilling they now provide a continuous resource area over 5.5km long and 3km wide for a combined 234 million tonnes or 44% of the total resource and 52% of the total Indicated Resource above cut-off.

The next significant contiguous resource area is Area I which has been drilled to a 200-metre spaced drill pattern and now is estimated to contain 148 million tonnes above cut-off.

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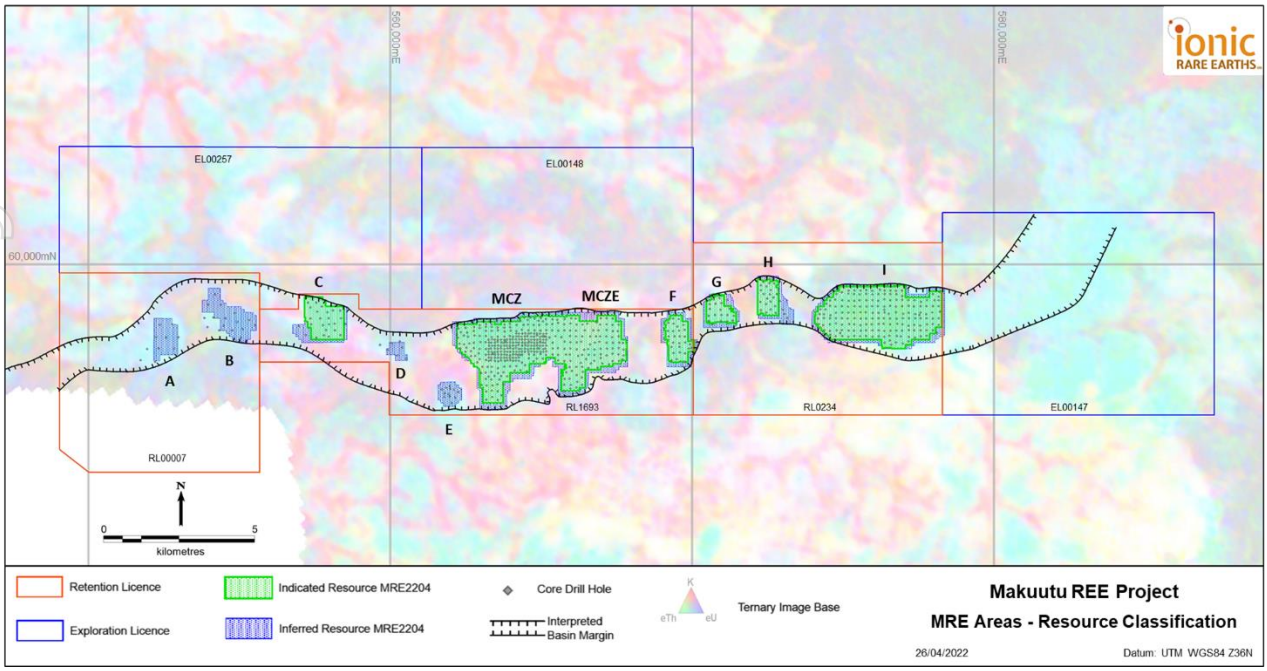

Figure 2: Mineral Resource Estimate (MRE) areas by classification. Green shading on Indicated resource areas and blue on Inferred resource areas.

Grade Tonnage Relationship

Grade tonnage curve analysis of the resource shows the robustness of grade continuity in the Indicated resources with a gradual reduction in tonnes and grade with increasing cut-off.

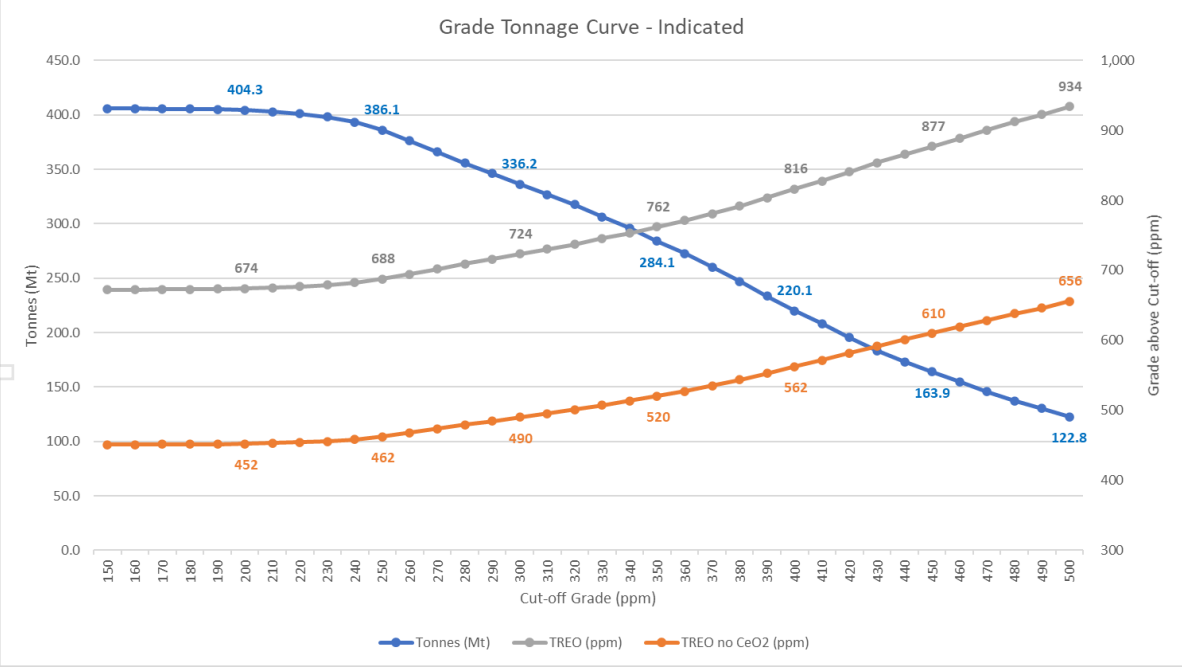

Figure 3: Grade Tonnage Curve – Indicated Resource

The Inferred resource displays a steeper relationship indicating the lower grade and marginal location of these resource areas.

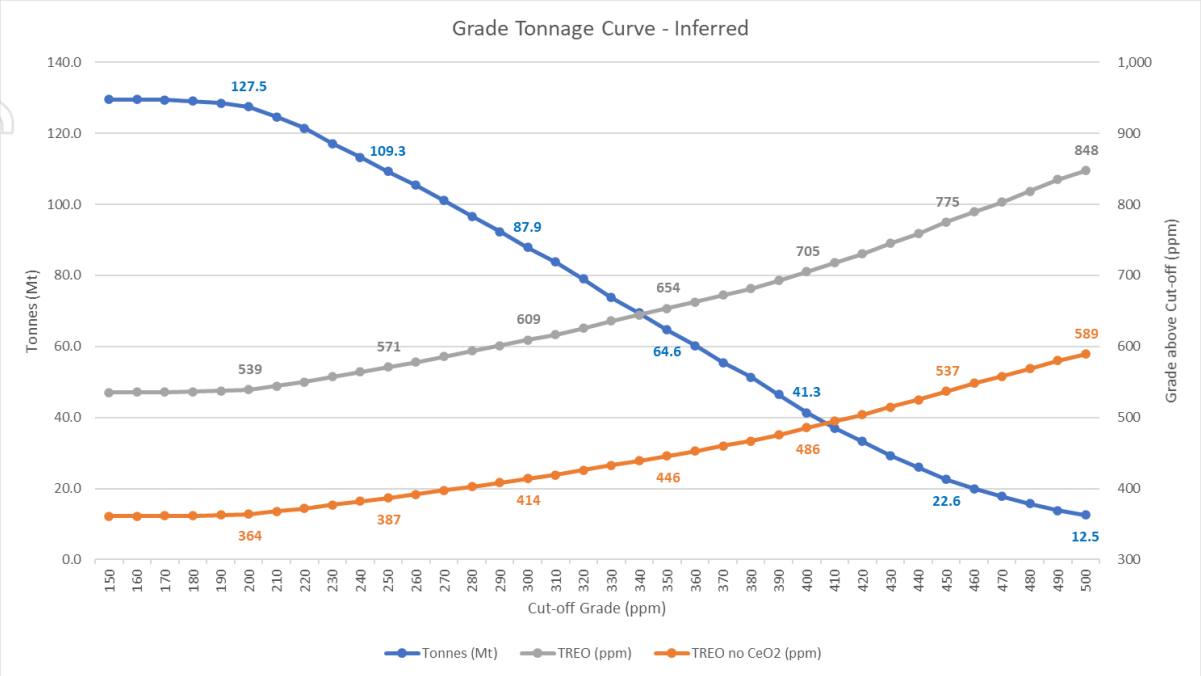

Figure 4: Grade Tonnage Curve – Inferred Resource

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. The MRE was prepared by independent specialist resource and mining consulting group, Cube Consulting Pty Ltd ("Cube").

Mineral Tenement and Land Tenure Status

The Makuutu Rare Earths Project is in the Republic of Uganda. The Project includes six (6) mineral tenements covering approximately 298 km^2, comprising of three (3) granted Retention Licences (RL00007, RL1693 and RL00234) and three (3) Exploration Licence (EL00147, EL00148 and EL00257). All licences are in good standing with no known impediments. Figure 1 shows the licence areas and Table 3 lists the details of each licence.

Table 3: Makutu Rare Earths Project Tenement Details.

Licence ID	Licence Type	Application Date	Granted Date	Expiry / Renewal Date	Area (km^2)
RL00007	Retention	27/03/2019	27/11/2019	27/11/2022	43.38
RL 1693	Retention	11/07/2017	02/11/2017	01/11/2022	43.78
RL00234	Retention	26/06/2021	06/07/2021	05/07/2024	47.03
EL00257	Exploration	15/07/2021	21/10/2021	20/10/2024	55.51
EL00147	Exploration	19/10/2020	28/12/2020	27/12/2023	60.30
EL00148	Exploration	21/10/2020	28/12/2020	27/12/2023	48.15

The Makuutu Rare Earths Project is 100% owned by Rwenzori Rare Metals Limited (RRM), a Ugandan registered company. IonicRE currently has earned a 51% shareholding in RRM and may increase its shareholding to 60% by meeting further commitments as follows:

1. IonicRE to fund to completion of a Bankable Feasibility Study (BFS) to earn an additional 9% interest for a cumulative 60% interest in RRM; and
2. A Milestone payment, payable in cash or IonicRE shares at the election of the Vendor, of US$375,000 on conversion of Retention Licence 1693 to a mining licence.

At any time should IonicRE 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 IonicRE and reclaim all interest earnt by IonicRE.

Geology

The Makuutu deposit is confirmed to be an ionic adsorption rare earth element (REE) clay-type deposits like those in south China, Myanmar, 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 and mafic rocks. 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 5). 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 ionically bonded (adsorbed) or colloidally bonded on to fine particles of aluminosilicate clays (e.g. kaolinite, illite, smectite). The adsorbed and colloidal REE is the target for extraction and production of REO at Makuutu.

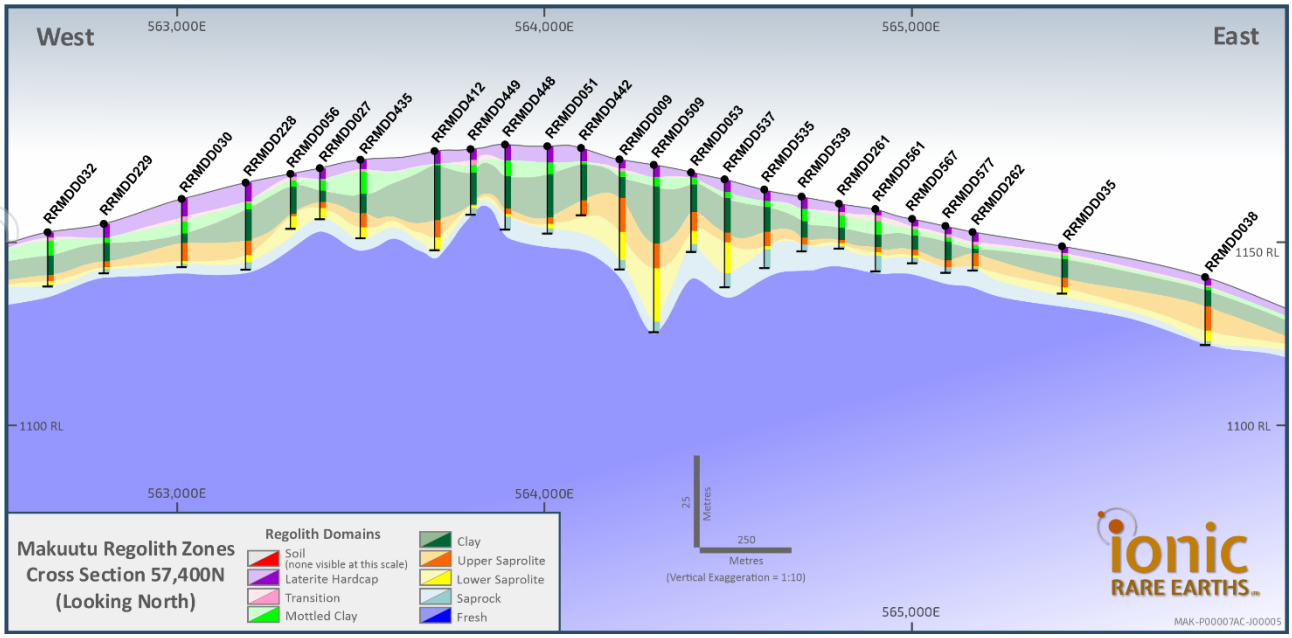

Figure 5: Makuutu Central Zone cross section 57,400N (Looking North) Regolith Zonation (10x vertical exaggeration)

Drilling Techniques and Hole Spacing

Drilling completed at Makuutu and used to support the MRE includes 711 diamond core (DDH) holes for a total of 12,935 m (average depth is 18.2 m). All diamond holes are drilled from surface and oriented vertically. Drilling used a HQ triple tube size (~61.1 mm diameter) with the triple tube techniques used 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 initial cut in half then one half was further cut in half to give quarter core. Quarter core was submitted to ALS Perth laboratory 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. Alternate method analysis has been conducted on a selection of sample pulps using Laser Ablation MS technique at Bureau Veritas Minerals laboratory in Perth WA.

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Sample Analysis

All DDH samples were dispatched by air freight direct to ALS Perth laboratory, 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 applicable regolith units. Estimation domains were based on grouping of the regolith domains into six zones as defined by regolith rheology, and by comparison of regolith statistics:

- Domain 1,2,3 – Cover zone (Soil, Hardcap and Transition regolith zones)
- Domain 4 – Mottled zone (Mottled regolith zone)
- Domain 5 – Clay zone (Clay regolith zone)
- Domain 6 – Upper Saprolite zone
- Domain 7 – Lower Saprolite zone
- Domain 8,9 – Basement zone (Saprock and Fresh Rock regolith zones)

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.

Analysis of the composite data indicated the presence of outlier values indicating grade capping was required for Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Th, Tm, U, Y and Yb. Capped values were generally selected above the 99th percentile.

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 Maptek Vulcan 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 8 composites and a maximum number of 20 composites, with an octant search applied with a restriction on the number of composites per octant set to five. Blocks were estimated in a two-pass strategy with first pass maximum search distances of 320 and 3,350 metres depending on estimation variable and domain. The second pass relaxed the minimum samples to four and removed the octant restriction. A cross

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section looking north through the MCZ and MCZE with estimated TREO block grades is presented in Figure 6.

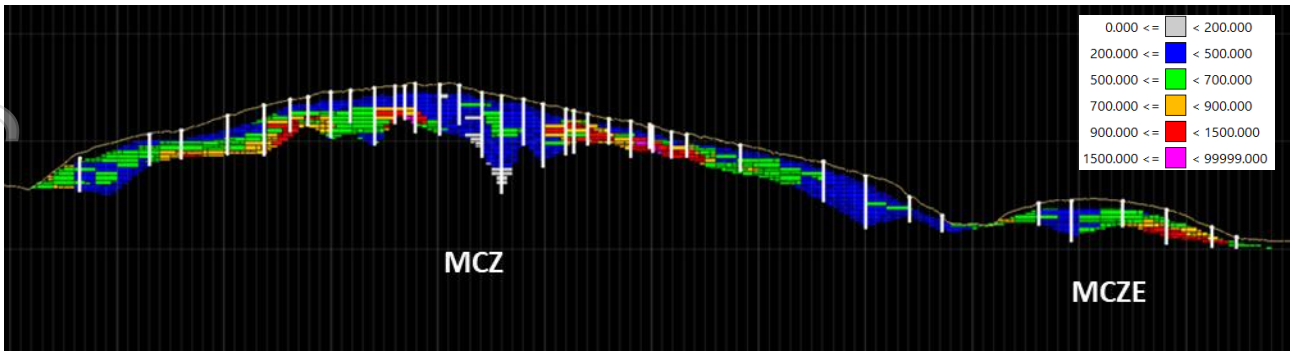

Figure 6: Makuutu Rare Earths Project – Cross section 57,400N (looking north) with TREO block grades (10x vertical exaggeration)

The model has a block size of 100 m (X) by 100 m (Y) by 2 m (Z) with sub-celling of 25 m (X) by 25 m (Y) by 1m (Z). Within the Central Main area drilling has been completed at an average of 100 m (X) by 100 m (Y), with the parent cells in this area reduced to 50 m (X) by 50 m (Y) by 2 m (Z) with sub-celling of 25 m (X) by 25 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.

Blocks have been classified in both the Indicated (76%) and Inferred (24%) categories, primarily based on drill data spacing in combination with other model estimate quality parameters.

The Indicated Resource is reported from all prospect areas except Areas A, B, D, and E which remain Inferred Resources based on the broad 400m x 400m drill spacing (Figure 7).

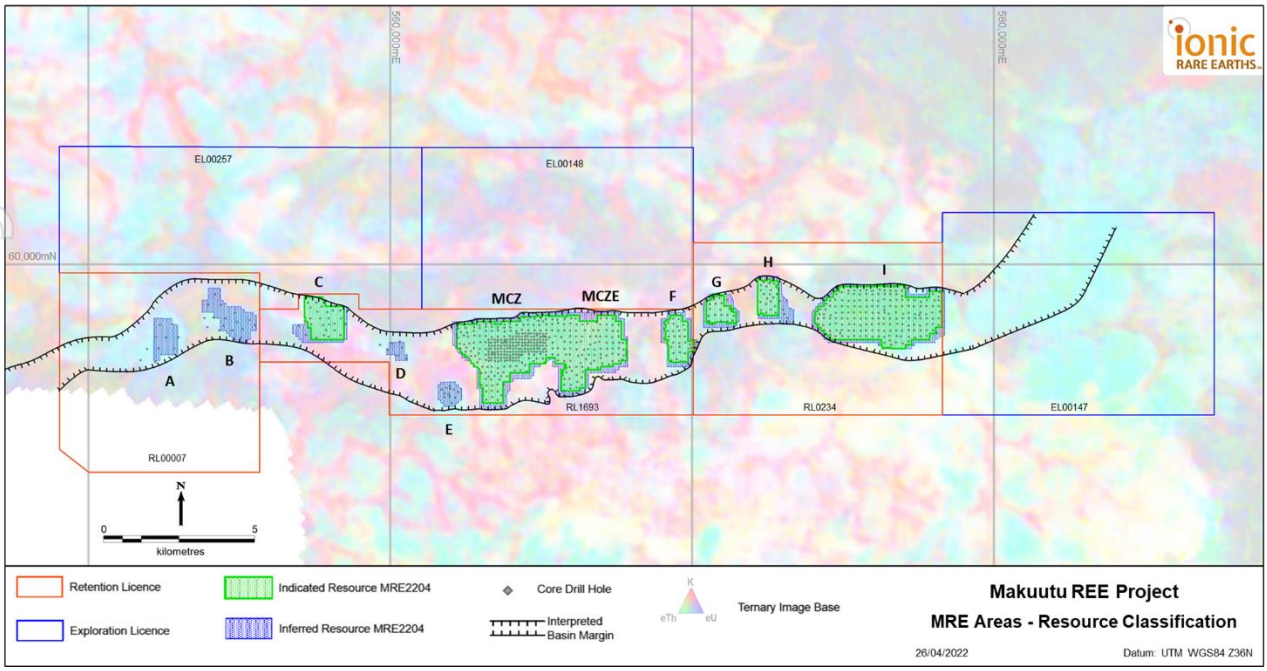

Figure 7: Makuutu Rare Earths Project – Indicated Mineral Resource Limits – Makuutu Central Zone

Cut-off Grade

The Mineral Resource has been reported above a 200 ppm TREO minus CeO_2 cut-off. Selection of the cut-off has considered metallurgical recoveries and distribution of recovered elements. 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.

Ongoing metallurgical test work on mineralisation at the Project indicate metallurgical recoveries of up to 75% TREE-Ce (Total Rare Earth Element 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.

Additionally metallurgical test work has been successfully completed on heap leach columns up to 3-metres, with a 5-metre column presently underway. A broad scale heap leach variability program

is due to commence in Q2 2022 which will confirm the broad scale metallurgical response across the 26 kilometres of resource area to be tested.

Current Makuutu Rare Earths Project Work Program

The updated MRE is now being used to complete mine planning activities which will feed into the Makuutu feasibility study, which is due to be completed later in 2022, and submitted to the Ugandan Government as part of the mining licence application by the end of October 2022.

The material step change in Indicated resource at Makuutu will now support a significantly faster ramp up and potential increase in annual throughput and production quantities to be adopted in the feasibility study.

Exploration Targets at Makuutu

Further to this material increase in the MRE at Makuutu, the previous Exploration Targets announced at Makuutu (3 March 2021) are now being revised to incorporate new data also including the very successful Phase 3 scout drilling program reported to the ASX in July last year[2,3].

Additionally, a new exploration program is being prepared to evaluate potential extension of REE bearing clays across the larger 298 km^2 tenement area which contains a 37-km long IAC mineralisation system, including the new tenement to the northwest, EL00257.

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 the Board.

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[2] ASX announcement 14/07/2021 – 'PHASE 3 DRILLING RESULTS CONFIRM MAJOR EXTENSION POTENTIAL AT MAKUUTU'

[3] ASX announcement 20/07/2021 – 'PHASE 3 DRILLING RESULTS INDICATE POTENTIAL EXTENSION TO NORTHWEST AT MAKUUTU'

About Makuutu Rare Earths Project

The Makuutu Rare Earths Project is an ionic adsorption clay ("IAC") hosted rare earth element ("REE") deposit located 120 km east of Kampala in Uganda and is well serviced by existing high quality infrastructure including roads, rail, power infrastructure and cell communications. The installed infrastructure is illustrated in Figure 8.

The deposit stretches 37 km in length and has demonstrated potential for a long life, low-cost capital source of critical and heavy rare earths. These IAC deposits are prevalent in southern China which have been the source of the world's lowest cost magnet and heavy REE production, however these deposits are gradually being exhausted and Makuutu represents one of only a handful of such deposits outside of southern China.

The Makuutu deposit is shallow, with less than 3 m of cover over a 9 m average thickness clay and saprolite zone which results in low-cost bulk mining methods with low strip ratio. A maximum thickness of 28.5 m has been identified at Makuutu. Processing is via simple acidified salt desorption heap leaching, breaking the chemical ionic bond which washes the rare earths (in a chemical form) from the ore into a pregnant leach solution ("PLS"). The PLS is concentrated up using membrane technology, from which the rare earths are precipitated as a mixed rare earth carbonate product; a product which attracts both a higher payability and achieves a high basket price due to the dominant high value magnet and heavy rare earths which make up over 70% of the product basket.

The Project has the potential of generating a high margin product with an operation life exceeding 27 years. The Project is also prospective for a low-cost Scandium co-product.

Existing Infrastructure

One of the Makuutu Rare Earths Project's competitive advantages is its proximity to existing infrastructure. The Makuutu site is approximately 10km from Highway 109 which is a sealed bitumen road connecting to Kampala, to Kenya and on to the Port of Mombasa. All weather access roads connecting the site to the adjacent sealed bitumen highway are already existing. A rail line lies within 10 kilometres north of the Makuutu site near the town of Iganga. There are four hydroelectric power plants located within 65 km of the project area, with total installed generating capacity of approximately 810 MW, providing an abundant supply of cheap power to the Project.

Water will be sourced at the project by harvesting water from the Makuutu site, given the Project location in a positive rainfall environment, and a net positive process water balance will require membrane processes to be used to process site discharge water for reagent recovery. Excess water management will be a key focus of the Project the ensure environmental standards are met and reagent consumption is minimised.

A workforce of semi-skilled and artisanal workers is available in nearby towns and population centres. The closest major population centre is Iganga, which has a population of 50,000. The town of Mayuge is approximately 10 km from the Project site and the intent is to source local operations staff from the immediate districts and train staff accordingly. The operation is to be staffed by a residential workforce. No fly in – fly out is envisaged, and the number of expatriate staff is intended to be low, and to be phased out over time.

Industrial facilities are available in the city of Jinja, approximately 40 km from the Project area. Additional industrial facilities are available on the outskirts of Kampala.

Figure 8: Makuutu Rare Earths Project Location with major existing infrastructure

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 Fellow 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.

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Forward Looking Statements

This announcement has been prepared by Ionic Rare Earths Limited and may include forward-looking statements. Forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions which are outside the control of Ionic Rare Earths Limited. Actual values, results or events may be materially different to those expressed or implied in this document. Given these uncertainties, recipients are cautioned not to place reliance on forward looking statements. Any forward-looking statements in this document speak only at the date of issue of this document. Subject to any continuing obligations under applicable law and the ASX Listing Rules, Ionic Rare Earths Limited does not undertake any obligation to update or revise any information or any of the forward-looking statements in this document or any changes in events, conditions or circumstances on which any such forward looking statement is based.

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Appendix 1: Makuutu Rare Earths Project April 2022 Mineral Resource Estimate Tabulations

Table 4: Makuutu Rare Earth Resource Tabulation at 200ppm TREO- CeO_2 Cut-off Grade

Resource Classification	Tonnes (millions)	La_2O_3 (ppm)	CeO_2 (ppm)	Pr_6O_{11} (ppm)	Nd_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	Gd_2O_3 (ppm)	Tb_4O_7 (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	404	130	220	30	110	20	4	20	3	10	3	10	1	10	1	100
Inferred	127	110	180	30	90	20	3	10	2	10	2	10	1	10	1	80
Total	**532**	**130**	**210**	**30**	**110**	**20**	**4**	**20**	**2**	**10**	**3**	**10**	**1**	**10**	**1**	**90**

Notes: Tonnes are dry tonnes rounded to the nearest 1Mt.

All material REO grades are rounded to the nearest 10 ppm except Eu_2O_3, Tb_4O_7, Ho_2O_3, Tm_2O_3, Lu_2O_3 which are immaterial to overall resource grade.

Table 5: Makuutu Rare Earth Project Resource Tabulation of REO Reporting Groups at 200ppm TREO- CeO_2 Cut-off Grade

Resource Classification	Tonnes (millions)	TREO (ppm)	TREO- CeO_2 (ppm)	CREO (ppm)	HREO (ppm)	LREO (ppm)	NdPr (ppm)	Sc_2O_3 (ppm)	U_3O_8 (ppm)	ThO_2 (ppm)
Indicated	404	670	450	230	170	500	150	30	10	30
Inferred	127	540	360	180	140	400	120	30	10	30
Total	**532**	**640**	**430**	**220**	**160**	**480**	**140**	**30**	**10**	**30**

Notes: All ppm rounded from original estimate to the nearest 10 ppm which may lead to differences in averages from Table 4

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

TREO (Total Rare Earth Oxide) = $La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Y_2O_3 + Lu_2O_3$.

CREO[4] (Critical Rare Earth Oxide) = $Nd_2O_3 + Eu_2O_3 + Tb_4O_7 + Dy_2O_3 + Y_2O_3$

HREO (Heavy Rare Earth Oxide) = $Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3, + Y_2O_3 + Lu_2O_3$

LREO (Light Rare Earth Oxide) = $La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3$

NdPr = $Nd_2O_3 + Pr_6O_{11}$

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

[4] 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	564447	57983	1158	HQ DD	21.60	0	-90
RRMDD002	564602	57807	1163	HQ DD	15.40	0	-90
RRMDD003	564894	57630	1161	HQ DD	15.60	0	-90
RRMDD004	565209	58002	1150	HQ DD	15.60	0	-90
RRMDD005	564617	57016	1154	HQ DD	21.40	0	-90
RRMDD006	564635	57437	1164	HQ DD	20.10	0	-90
RRMDD007	564992	57437	1157	HQ DD	11.60	0	-90
RRMDD008	565014	57028	1144	HQ DD	13.60	0	-90
RRMDD009	564207	57405	1172	HQ DD	30.10	0	-90
RRMDD010	564210	57775	1164	HQ DD	14.50	0	-90
RRMDD011	563824	57766	1164	HQ DD	29.70	0	-90
RRMDD012	563401	57788	1169	HQ DD	19.40	0	-90
RRMDD013	563848	57440	1171	HQ DD	16.10	0	-90
RRMDD014	563804	57003	1170	HQ DD	14.10	0	-90
RRMDD015	564009	56616	1154	HQ DD	14.20	0	-90
RRMDD016	564259	56999	1162	HQ DD	21.69	0	-90
RRMDD017	563789	56419	1152	HQ DD	20.00	0	-90
RRMDD018	563601	56553	1159	HQ DD	13.80	0	-90
RRMDD019	563639	56181	1153	HQ DD	14.30	0	-90
RRMDD020	563602	55502	1163	HQ DD	20.10	0	-90
RRMDD021	563596	55789	1153	HQ DD	18.10	0	-90
RRMDD022	563217	55785	1158	HQ DD	17.60	0	-90
RRMDD023	563250	56602	1155	HQ DD	23.60	0	-90
RRMDD024	563201	56196	1155	HQ DD	15.00	0	-90
RRMDD025	563216	55508	1163	HQ DD	11.60	0	-90
RRMDD026	563422	57037	1164	HQ DD	16.10	0	-90
RRMDD027	563394	57400	1170	HQ DD	14.10	0	-90
RRMDD028	562995	57874	1163	HQ DD	17.90	0	-90
RRMDD029	562826	57635	1159	HQ DD	15.00	0	-90
RRMDD030	563017	57416	1162	HQ DD	18.50	0	-90
RRMDD031	562961	57040	1154	HQ DD	11.60	0	-90
RRMDD032	562651	57374	1152	HQ DD	14.50	0	-90
RRMDD033	564585	58149	1154	HQ DD	17.00	0	-90
RRMDD034	565002	57796	1158	HQ DD	12.50	0	-90
RRMDD035	565415	57396	1148	HQ DD	12.50	0	-90
RRMDD036	565397	57804	1154	HQ DD	15.00	0	-90
RRMDD037	565416	57008	1136	HQ DD	8.30	0	-90
RRMDD038	565804	57430	1141	HQ DD	19.00	0	-90
RRMDD039	566180	57799	1132	HQ DD	9.50	0	-90
RRMDD040	566007	58035	1136	HQ DD	16.50	0	-90
RRMDD041	565799	57806	1149	HQ DD	13.20	0	-90
RRMDD042	572635	58755	1106	HQ DD	15.40	0	-90
RRMDD043	574614	58303	1119	HQ DD	15.60	0	-90
RRMDD044	576391	58482	1142	HQ DD	15.60	0	-90
RRMDD045	577560	58312	1143	HQ DD	21.40	0	-90
RRMDD046	570971	58486	1107	HQ DD	20.10	0	-90
RRMDD047	563803	57189	1174	HQ DD	27.00	0	-90
RRMDD048	563605	57004	1168	HQ DD	24.00	0	-90
RRMDD049	563822	56802	1164	HQ DD	18.50	0	-90
RRMDD050	563994	56977	1169	HQ DD	19.00	0	-90
RRMDD051	564010	57409	1175	HQ DD	24.00	0	-90
RRMDD052	564210	57605	1169	HQ DD	19.00	0	-90
RRMDD053	564401	57397	1169	HQ DD	21.70	0	-90

RRMDD054	564194	57215	1173	HQ DD	28.50	0	-90
RRMDD055	564944	58121	1149	HQ DD	17.20	0	-90
RRMDD056	565593	58051	1150	HQ DD	24.00	0	-90
RRMDD057	567410	57394	1119	HQ DD	16.50	0	-90
RRMDD058	563914	57209	1176	HQ DD	22.70	0	-90
RRMDD059	563994	57214	1176	HQ DD	19.50	0	-90
RRMDD060	564001	57098	1172	HQ DD	28.50	0	-90
RRMDD061	563902	57099	1173	HQ DD	23.50	0	-90
RRMDD062	563814	57098	1173	HQ DD	26.70	0	-90
RRMDD063	563701	57107	1171	HQ DD	27.00	0	-90
RRMDD064	563704	57005	1170	HQ DD	18.60	0	-90
RRMDD065	563802	56896	1166	HQ DD	15.00	0	-90
RRMDD066	563702	56896	1166	HQ DD	14.00	0	-90
RRMDD067	563901	56994	1170	HQ DD	16.20	0	-90
RRMDD068	563895	56901	1166	HQ DD	15.00	0	-90
RRMDD069	562582	57733	1153	HQ DD	15.00	0	-90
RRMDD070	564154	56479	1146	HQ DD	12.00	0	-90
RRMDD071	564388	56731	1154	HQ DD	25.50	0	-90
RRMDD072	564550	56449	1143	HQ DD	21.00	0	-90
RRMDD073	564778	56781	1139	HQ DD	16.50	0	-90
RRMDD074	565591	56807	1120	HQ DD	10.50	0	-90
RRMDD075	565849	57007	1126	HQ DD	10.10	0	-90
RRMDD076	566206	57410	1125	HQ DD	12.00	0	-90
RRMDD077	566478	57809	1115	HQ DD	8.30	0	-90
RRMDD078	567052	56703	1124	HQ DD	24.00	0	-90
RRMDD079	567394	57030	1121	HQ DD	12.00	0	-90
RRMDD080	567003	57017	1127	HQ DD	13.70	0	-90
RRMDD081	566681	56711	1128	HQ DD	12.50	0	-90
RRMDD082	567621	57397	1111	HQ DD	9.80	0	-90
RRMDD083	567398	57779	1115	HQ DD	14.00	0	-90
RRMDD084	566254	56957	1118	HQ DD	6.00	0	-90
RRMDD085	566929	57805	1117	HQ DD	9.20	0	-90
RRMDD086	566349	56724	1129	HQ DD	12.00	0	-90
RRMDD087	566999	58202	1114	HQ DD	11.60	0	-90
RRMDD088	567399	58197	1122	HQ DD	25.50	0	-90
RRMDD089	566231	56096	1137	HQ DD	12.50	0	-90
RRMDD090	566013	56004	1143	HQ DD	29.90	0	-90
RRMDD091	566965	57424	1123	HQ DD	19.50	0	-90
RRMDD092	566603	56994	1127	HQ DD	13.30	0	-90
RRMDD093	566649	57344	1118	HQ DD	9.00	0	-90
RRMDD094	566052	56466	1134	HQ DD	27.00	0	-90
RRMDD095	565967	56205	1140	HQ DD	13.40	0	-90
RRMDD096	566407	56431	1129	HQ DD	26.50	0	-90
RRMDD097	569240	58054	1106	HQ DD	16.20	0	-90
RRMDD098	569542	57929	1108	HQ DD	13.20	0	-90
RRMDD099	569255	57603	1109	HQ DD	10.30	0	-90
RRMDD100	569621	57603	1109	HQ DD	16.50	0	-90
RRMDD101	569613	57258	1115	HQ DD	11.00	0	-90
RRMDD102	569348	57253	1114	HQ DD	23.00	0	-90
RRMDD103	569791	56766	1126	HQ DD	15.70	0	-90
RRMDD104	569926	57199	1110	HQ DD	22.50	0	-90
RRMDD105	569349	56803	1123	HQ DD	22.00	0	-90
RRMDD106	570587	58116	1112	HQ DD	15.50	0	-90
RRMDD107	570621	58517	1105	HQ DD	10.60	0	-90
RRMDD108	570737	58832	1099	HQ DD	11.00	0	-90
RRMDD109	570940	58876	1099	HQ DD	10.70	0	-90
RRMDD110	571185	58822	1098	HQ DD	10.70	0	-90

RRMDD111	571273	58520	1102	HQ DD	12.00	0	-90
RRMDD112	570988	58117	1114	HQ DD	21.00	0	-90
RRMDD113	571375	58136	1106	HQ DD	11.30	0	-90
RRMDD114	572403	59404	1104	HQ DD	10.40	0	-90
RRMDD115	572313	59134	1103	HQ DD	8.50	0	-90
RRMDD116	572296	58748	1104	HQ DD	6.50	0	-90
RRMDD117	572312	58474	1104	HQ DD	7.40	0	-90
RRMDD118	572641	58492	1108	HQ DD	11.20	0	-90
RRMDD119	572936	58774	1104	HQ DD	10.50	0	-90
RRMDD120	572635	59138	1104	HQ DD	16.80	0	-90
RRMDD121	573189	58211	1114	HQ DD	24.60	0	-90
RRMDD122	572892	59157	1100	HQ DD	8.30	0	-90
RRMDD123	572752	59361	1101	HQ DD	11.50	0	-90
RRMDD124	573032	58496	1108	HQ DD	7.20	0	-90
RRMDD125	574373	57976	1111	HQ DD	15.00	0	-90
RRMDD126	574398	58337	1115	HQ DD	25.10	0	-90
RRMDD127	574792	58029	1122	HQ DD	16.50	0	-90
RRMDD128	574483	58685	1114	HQ DD	16.00	0	-90
RRMDD129	575231	58013	1130	HQ DD	17.50	0	-90
RRMDD130	575607	57979	1136	HQ DD	17.30	0	-90
RRMDD131	575988	58009	1141	HQ DD	11.70	0	-90
RRMDD132	576376	58027	1142	HQ DD	8.00	0	-90
RRMDD133	576204	58384	1143	HQ DD	12.70	0	-90
RRMDD134	576394	58827	1140	HQ DD	20.00	0	-90
RRMDD135	576008	58806	1139	HQ DD	20.90	0	-90
RRMDD136	575781	58400	1139	HQ DD	12.20	0	-90
RRMDD137	575389	58394	1132	HQ DD	16.00	0	-90
RRMDD138	575573	58805	1132	HQ DD	11.00	0	-90
RRMDD139	575216	58785	1126	HQ DD	9.60	0	-90
RRMDD140	574780	58824	1116	HQ DD	13.00	0	-90
RRMDD141	575004	58393	1126	HQ DD	18.00	0	-90
RRMDD142	574996	59063	1115	HQ DD	18.00	0	-90
RRMDD143	575412	59127	1122	HQ DD	14.20	0	-90
RRMDD144	575798	59138	1129	HQ DD	18.50	0	-90
RRMDD145	576253	59147	1137	HQ DD	20.00	0	-90
RRMDD146	576604	59118	1138	HQ DD	22.50	0	-90
RRMDD147	576546	58345	1141	HQ DD	13.70	0	-90
RRMDD148	576799	58812	1134	HQ DD	18.00	0	-90
RRMDD149	576986	59117	1132	HQ DD	27.40	0	-90
RRMDD150	577196	58812	1133	HQ DD	19.00	0	-90
RRMDD151	576567	57619	1146	HQ DD	11.50	0	-90
RRMDD152	576825	58024	1145	HQ DD	12.80	0	-90
RRMDD153	576950	57605	1150	HQ DD	18.50	0	-90
RRMDD154	577019	58346	1141	HQ DD	20.70	0	-90
RRMDD155	577422	58341	1144	HQ DD	24.00	0	-90
RRMDD156	576214	57608	1142	HQ DD	17.20	0	-90
RRMDD157	577587	57958	1146	HQ DD	21.40	0	-90
RRMDD158	575786	57619	1133	HQ DD	14.50	0	-90
RRMDD159	577201	57960	1150	HQ DD	16.70	0	-90
RRMDD160	575405	57612	1123	HQ DD	14.80	0	-90
RRMDD161	577800	57625	1136	HQ DD	20.80	0	-90
RRMDD162	577412	57572	1146	HQ DD	22.50	0	-90
RRMDD163	574595	57785	1114	HQ DD	12.50	0	-90
RRMDD164	578145	57725	1128	HQ DD	19.20	0	-90
RRMDD165	577999	58012	1136	HQ DD	17.40	0	-90
RRMDD166	578233	58423	1130	HQ DD	19.20	0	-90
RRMDD167	574940	57714	1119	HQ DD	19.00	0	-90

RRMDD168	578054	58807	1129	HQ DD	17.30	0	-90
RRMDD169	576623	57329	1150	HQ DD	16.30	0	-90
RRMDD170	578219	59071	1118	HQ DD	12.00	0	-90
RRMDD171	577794	58341	1140	HQ DD	21.10	0	-90
RRMDD172	577607	58753	1135	HQ DD	18.00	0	-90
RRMDD173	577016	57371	1148	HQ DD	20.50	0	-90
RRMDD174	555545	57973	1155	HQ DD	19.00	0	-90
RRMDD175	555143	57846	1165	HQ DD	15.90	0	-90
RRMDD176	554961	58082	1164	HQ DD	25.20	0	-90
RRMDD177	554794	57802	1170	HQ DD	27.00	0	-90
RRMDD178	555076	57569	1168	HQ DD	23.50	0	-90
RRMDD179	554577	58202	1164	HQ DD	21.10	0	-90
RRMDD180	554370	57804	1167	HQ DD	20.10	0	-90
RRMDD181	555354	58143	1158	HQ DD	17.00	0	-90
RRMDD182	553975	57916	1156	HQ DD	15.00	0	-90
RRMDD183	554883	58364	1160	HQ DD	21.70	0	-90
RRMDD184	554426	58648	1155	HQ DD	26.90	0	-90
RRMDD185	553878	58216	1154	HQ DD	10.90	0	-90
RRMDD186	554002	58658	1155	HQ DD	15.00	0	-90
RRMDD187	554243	58992	1152	HQ DD	16.10	0	-90
RRMDD188	553012	57579	1155	HQ DD	12.50	0	-90
RRMDD189	552804	58008	1158	HQ DD	12.70	0	-90
RRMDD190	552394	57995	1168	HQ DD	18.50	0	-90
RRMDD191	552278	57586	1173	HQ DD	24.40	0	-90
RRMDD192	552599	57571	1169	HQ DD	11.30	0	-90
RRMDD193	552861	57205	1162	HQ DD	14.00	0	-90
RRMDD194	552362	57206	1172	HQ DD	16.30	0	-90
RRMDD195	551759	56815	1153	HQ DD	8.00	0	-90
RRMDD196	552245	56762	1162	HQ DD	22.00	0	-90
RRMDD197	551983	57192	1171	HQ DD	12.90	0	-90
RRMDD198	554173	58233	1160	HQ DD	12.80	0	-90
RRMDD199	557012	57938	1162	HQ DD	18.00	0	-90
RRMDD200	557409	58005	1165	HQ DD	11.20	0	-90
RRMDD201	557800	57979	1170	HQ DD	19.30	0	-90
RRMDD202	557223	57639	1166	HQ DD	12.00	0	-90
RRMDD203	557594	57558	1165	HQ DD	23.80	0	-90
RRMDD204	558003	57598	1164	HQ DD	21.80	0	-90
RRMDD205	558192	58025	1165	HQ DD	17.20	0	-90
RRMDD206	558539	58016	1152	HQ DD	17.00	0	-90
RRMDD207	557619	58427	1169	HQ DD	18.90	0	-90
RRMDD208	557394	58564	1165	HQ DD	16.70	0	-90
RRMDD209	557951	58407	1171	HQ DD	12.50	0	-90
RRMDD210	558378	58457	1161	HQ DD	10.20	0	-90
RRMDD211	558385	57648	1157	HQ DD	17.00	0	-90
RRMDD212	559693	57328	1151	HQ DD	19.00	0	-90
RRMDD213	560060	57372	1153	HQ DD	20.80	0	-90
RRMDD214	560432	57229	1148	HQ DD	18.20	0	-90
RRMDD215	560344	57446	1151	HQ DD	22.00	0	-90
RRMDD216	559936	57148	1150	HQ DD	15.40	0	-90
RRMDD217	560568	56867	1146	HQ DD	15.00	0	-90
RRMDD218	560277	56966	1149	HQ DD	20.40	0	-90
RRMDD219	562009	55869	1154	HQ DD	23.60	0	-90
RRMDD220	561733	55851	1152	HQ DD	18.90	0	-90
RRMDD221	562291	55761	1154	HQ DD	11.20	0	-90
RRMDD222	561997	55621	1157	HQ DD	20.00	0	-90
RRMDD223	562803	57790	1158	HQ DD	14.60	0	-90
RRMDD224	562606	57601	1154	HQ DD	16.50	0	-90

RRMDD225	563197	57791	1168	HQ DD	23.30	0	-90
RRMDD226	563200	57615	1168	HQ DD	24.20	0	-90
RRMDD227	562996	57620	1163	HQ DD	17.00	0	-90
RRMDD228	563186	57416	1166	HQ DD	24.00	0	-90
RRMDD229	562801	57396	1155	HQ DD	13.70	0	-90
RRMDD230	563002	57192	1159	HQ DD	21.00	0	-90
RRMDD231	562812	57213	1153	HQ DD	19.00	0	-90
RRMDD232	563203	57189	1163	HQ DD	17.00	0	-90
RRMDD233	563381	57209	1167	HQ DD	22.30	0	-90
RRMDD234	563396	57585	1170	HQ DD	14.30	0	-90
RRMDD235	563200	57000	1158	HQ DD	19.00	0	-90
RRMDD236	563602	57801	1167	HQ DD	14.00	0	-90
RRMDD237	563208	56824	1155	HQ DD	21.30	0	-90
RRMDD238	563599	57599	1172	HQ DD	27.40	0	-90
RRMDD239	563377	56812	1160	HQ DD	23.00	0	-90
RRMDD240	563395	56599	1158	HQ DD	12.00	0	-90
RRMDD241	564024	57795	1159	HQ DD	19.50	0	-90
RRMDD242	563819	57601	1172	HQ DD	18.80	0	-90
RRMDD243	563596	57198	1172	HQ DD	22.60	0	-90
RRMDD244	563186	56403	1153	HQ DD	14.60	0	-90
RRMDD245	563986	57613	1171	HQ DD	17.50	0	-90
RRMDD246	563593	57427	1173	HQ DD	15.60	0	-90
RRMDD247	563386	56428	1156	HQ DD	17.60	0	-90
RRMDD248	564368	57189	1168	HQ DD	18.60	0	-90
RRMDD249	563385	56176	1156	HQ DD	16.20	0	-90
RRMDD250	563605	56394	1156	HQ DD	17.00	0	-90
RRMDD251	563803	56603	1158	HQ DD	15.00	0	-90
RRMDD252	563606	56783	1163	HQ DD	11.50	0	-90
RRMDD253	564007	56820	1164	HQ DD	19.50	0	-90
RRMDD254	564101	57002	1168	HQ DD	15.50	0	-90
RRMDD255	564198	56808	1160	HQ DD	24.20	0	-90
RRMDD256	564598	57178	1161	HQ DD	23.30	0	-90
RRMDD257	564795	57199	1155	HQ DD	16.50	0	-90
RRMDD258	564396	56994	1161	HQ DD	18.60	0	-90
RRMDD259	564799	57001	1146	HQ DD	18.00	0	-90
RRMDD260	564977	57204	1151	HQ DD	19.80	0	-90
RRMDD261	564801	57401	1160	HQ DD	12.00	0	-90
RRMDD262	565164	57397	1153	HQ DD	10.60	0	-90
RRMDD263	565169	57195	1148	HQ DD	13.70	0	-90
RRMDD264	565132	57606	1157	HQ DD	17.70	0	-90
RRMDD265	564815	57807	1161	HQ DD	18.00	0	-90
RRMDD266	564970	57989	1154	HQ DD	18.00	0	-90
RRMDD267	564779	57983	1157	HQ DD	18.50	0	-90
RRMDD268	564818	58198	1150	HQ DD	18.00	0	-90
RRMDD269	564577	57614	1165	HQ DD	13.30	0	-90
RRMDD270	564600	58000	1158	HQ DD	29.50	0	-90
RRMDD271	564385	57821	1163	HQ DD	20.70	0	-90
RRMDD272	564374	57598	1167	HQ DD	18.00	0	-90
RRMDD273	565205	57816	1155	HQ DD	16.50	0	-90
RRMDD274	565303	57572	1154	HQ DD	12.00	0	-90
RRMDD275	565408	58015	1150	HQ DD	12.80	0	-90
RRMDD276	565507	57617	1153	HQ DD	15.00	0	-90
RRMDD277	565600	57801	1153	HQ DD	15.30	0	-90
RRMDD278	565797	58003	1147	HQ DD	10.50	0	-90
RRMDD279	565705	57575	1148	HQ DD	18.50	0	-90
RRMDD280	567202	58202	1120	HQ DD	31.30	0	-90
RRMDD281	566868	58065	1108	HQ DD	5.40	0	-90

RRMDD282	566987	57993	1114	HQ DD	8.40	0	-90
RRMDD283	567203	58002	1120	HQ DD	14.40	0	-90
RRMDD284	567394	57991	1118	HQ DD	11.40	0	-90
RRMDD285	567598	57999	1113	HQ DD	8.40	0	-90
RRMDD286	567576	57781	1109	HQ DD	11.40	0	-90
RRMDD287	567603	57601	1110	HQ DD	8.40	0	-90
RRMDD288	567385	57579	1118	HQ DD	14.40	0	-90
RRMDD289	567736	57388	1107	HQ DD	5.40	0	-90
RRMDD290	567205	57398	1123	HQ DD	12.40	0	-90
RRMDD291	567392	57204	1122	HQ DD	13.10	0	-90
RRMDD292	567192	57607	1121	HQ DD	19.40	0	-90
RRMDD293	567196	57810	1120	HQ DD	15.20	0	-90
RRMDD294	566983	57603	1121	HQ DD	11.40	0	-90
RRMDD295	566845	57604	1118	HQ DD	10.00	0	-90
RRMDD296	566753	57808	1112	HQ DD	4.30	0	-90
RRMDD297	566658	57609	1112	HQ DD	14.20	0	-90
RRMDD298	566811	57394	1121	HQ DD	10.40	0	-90
RRMDD299	566998	57198	1127	HQ DD	12.60	0	-90
RRMDD300	567206	57195	1125	HQ DD	13.10	0	-90
RRMDD301	567197	56973	1125	HQ DD	14.40	0	-90
RRMDD302	567597	57213	1117	HQ DD	11.40	0	-90
RRMDD303	567763	57171	1109	HQ DD	5.40	0	-90
RRMDD304	567403	56790	1119	HQ DD	9.90	0	-90
RRMDD305	567287	56680	1119	HQ DD	22.60	0	-90
RRMDD306	566803	57174	1126	HQ DD	15.00	0	-90
RRMDD307	567716	56856	1110	HQ DD	10.50	0	-90
RRMDD308	567609	56801	1113	HQ DD	9.40	0	-90
RRMDD309	567763	56967	1109	HQ DD	5.40	0	-90
RRMDD310	567590	57006	1116	HQ DD	11.00	0	-90
RRMDD311	566586	57188	1120	HQ DD	8.40	0	-90
RRMDD312	566454	57164	1116	HQ DD	5.40	0	-90
RRMDD313	567002	56887	1126	HQ DD	14.90	0	-90
RRMDD314	566802	56992	1128	HQ DD	11.00	0	-90
RRMDD315	566797	56795	1128	HQ DD	14.40	0	-90
RRMDD316	566524	56855	1128	HQ DD	13.10	0	-90
RRMDD317	566396	56993	1121	HQ DD	8.40	0	-90
RRMDD318	566591	56565	1127	HQ DD	12.00	0	-90
RRMDD319	566897	56573	1123	HQ DD	16.40	0	-90
RRMDD320	566397	56598	1130	HQ DD	17.40	0	-90
RRMDD321	566377	56248	1129	HQ DD	8.40	0	-90
RRMDD322	566198	56327	1135	HQ DD	26.40	0	-90
RRMDD323	566193	56601	1131	HQ DD	23.40	0	-90
RRMDD324	566391	55998	1132	HQ DD	11.50	0	-90
RRMDD325	566190	55919	1142	HQ DD	10.90	0	-90
RRMDD326	566005	55881	1145	HQ DD	19.40	0	-90
RRMDD327	565797	56005	1143	HQ DD	19.10	0	-90
RRMDD328	565806	56203	1139	HQ DD	19.90	0	-90
RRMDD329	565869	56413	1136	HQ DD	13.90	0	-90
RRMDD330	565802	56790	1122	HQ DD	6.40	0	-90
RRMDD331	565979	56590	1131	HQ DD	16.90	0	-90
RRMDD332	566005	56798	1122	HQ DD	4.90	0	-90
RRMDD333	565584	57216	1141	HQ DD	11.40	0	-90
RRMDD334	565592	57000	1131	HQ DD	9.40	0	-90
RRMDD335	565422	57204	1144	HQ DD	13.90	0	-90
RRMDD336	565804	57196	1135	HQ DD	7.90	0	-90
RRMDD337	565976	57009	1123	HQ DD	13.40	0	-90
RRMDD338	565999	57204	1130	HQ DD	10.90	0	-90

RRMDD339	566001	57411	1135	HQ DD	24.60	0	-90
RRMDD340	565798	55794	1147	HQ DD	25.40	0	-90
RRMDD341	566206	57179	1121	HQ DD	9.40	0	-90
RRMDD342	566360	57437	1117	HQ DD	7.90	0	-90
RRMDD343	566182	57607	1129	HQ DD	11.40	0	-90
RRMDD344	565996	57610	1137	HQ DD	12.40	0	-90
RRMDD345	566395	57608	1119	HQ DD	8.40	0	-90
RRMDD346	565997	57797	1139	HQ DD	12.00	0	-90
RRMDD347	566199	57994	1129	HQ DD	21.40	0	-90
RRMDD348	566179	58199	1129	HQ DD	18.40	0	-90
RRMDD349	565803	58176	1144	HQ DD	15.40	0	-90
RRMDD350	566026	58200	1136	HQ DD	13.10	0	-90
RRMDD351	565569	58161	1147	HQ DD	20.40	0	-90
RRMDD352	566398	58000	1118	HQ DD	5.60	0	-90
RRMDD353	566561	58023	1109	HQ DD	4.90	0	-90
RRMDD354	565408	58166	1146	HQ DD	20.40	0	-90
RRMDD355	565195	56993	1138	HQ DD	11.80	0	-90
RRMDD356	565199	58180	1135	HQ DD	6.40	0	-90
RRMDD357	565096	56873	1132	HQ DD	10.90	0	-90
RRMDD358	564890	56871	1138	HQ DD	20.40	0	-90
RRMDD359	564503	56657	1148	HQ DD	15.70	0	-90
RRMDD360	564620	56884	1150	HQ DD	21.20	0	-90
RRMDD361	564352	56490	1149	HQ DD	8.50	0	-90
RRMDD362	564202	56628	1154	HQ DD	26.90	0	-90
RRMDD363	563707	56286	1153	HQ DD	19.70	0	-90
RRMDD364	563787	56013	1145	HQ DD	25.90	0	-90
RRMDD365	563908	56278	1141	HQ DD	14.40	0	-90
RRMDD366	563412	55979	1157	HQ DD	22.40	0	-90
RRMDD367	563398	55808	1159	HQ DD	23.00	0	-90
RRMDD368	563575	56017	1154	HQ DD	37.90	0	-90
RRMDD369	563405	55596	1162	HQ DD	23.30	0	-90
RRMDD370	563709	55658	1152	HQ DD	20.40	0	-90
RRMDD371	563230	55985	1156	HQ DD	19.50	0	-90
RRMDD372	563064	55998	1154	HQ DD	29.40	0	-90
RRMDD373	563288	56283	1156	HQ DD	24.70	0	-90
RRMDD374	563047	56391	1147	HQ DD	12.90	0	-90
RRMDD375	563493	56299	1156	HQ DD	12.40	0	-90
RRMDD376	563081	56603	1145	HQ DD	19.90	0	-90
RRMDD377	562998	56854	1149	HQ DD	8.40	0	-90
RRMDD378	562847	56962	1147	HQ DD	10.80	0	-90
RRMDD379	562916	56741	1141	HQ DD	17.00	0	-90
RRMDD380	562707	56950	1140	HQ DD	8.40	0	-90
RRMDD381	563203	57920	1167	HQ DD	21.40	0	-90
RRMDD382	562708	57113	1147	HQ DD	23.40	0	-90
RRMDD383	563401	57910	1168	HQ DD	23.70	0	-90
RRMDD384	563592	57906	1166	HQ DD	24.50	0	-90
RRMDD385	563808	57898	1159	HQ DD	32.10	0	-90
RRMDD386	564006	57911	1149	HQ DD	19.30	0	-90
RRMDD387	562521	57101	1142	HQ DD	15.90	0	-90
RRMDD388	562557	57237	1147	HQ DD	18.20	0	-90
RRMDD389	564218	57991	1151	HQ DD	23.30	0	-90
RRMDD390	564354	58107	1151	HQ DD	22.10	0	-90
RRMDD391	562363	57205	1139	HQ DD	6.70	0	-90
RRMDD392	562480	57343	1148	HQ DD	26.40	0	-90
RRMDD393	562326	57361	1141	HQ DD	16.00	0	-90
RRMDD394	562474	57633	1150	HQ DD	16.40	0	-90
RRMDD395	564466	58223	1152	HQ DD	24.10	0	-90

RRMDD396	562275	57557	1144	HQ DD	15.00	0	-90
RRMDD397	564671	58233	1151	HQ DD	24.40	0	-90
RRMDD398	562377	57740	1147	HQ DD	17.40	0	-90
RRMDD399	562249	57665	1142	HQ DD	15.20	0	-90
RRMDD400	565096	58103	1140	HQ DD	15.60	0	-90
RRMDD401	562287	57873	1142	HQ DD	21.40	0	-90
RRMDD402	565020	58211	1138	HQ DD	19.20	0	-90
RRMDD403	562523	57886	1151	HQ DD	18.50	0	-90
RRMDD404	562804	57917	1158	HQ DD	23.40	0	-90
RRMDD405	564000	58021	1142	HQ DD	12.40	0	-90
RRMDD406	563820	57999	1155	HQ DD	13.10	0	-90
RRMDD407	563394	58002	1167	HQ DD	24.40	0	-90
RRMDD408	563002	57975	1162	HQ DD	11.40	0	-90
RRMDD409	563210	58014	1166	HQ DD	19.40	0	-90
RRMDD410	569409	58192	1106	HQ DD	16.40	0	-90
RRMDD411	569494	58330	1105	HQ DD	15.40	0	-90
RRMDD412	569590	58180	1106	HQ DD	14.00	0	-90
RRMDD413	569411	58019	1108	HQ DD	14.40	0	-90
RRMDD414	569407	57779	1110	HQ DD	15.00	0	-90
RRMDD415	569235	57791	1108	HQ DD	23.40	0	-90
RRMDD416	569593	57794	1107	HQ DD	15.30	0	-90
RRMDD417	569749	57988	1103	HQ DD	11.40	0	-90
RRMDD418	569778	57823	1101	HQ DD	6.20	0	-90
RRMDD419	569788	57595	1102	HQ DD	4.90	0	-90
RRMDD420	569444	57601	1111	HQ DD	11.40	0	-90
RRMDD421	569809	57405	1106	HQ DD	7.90	0	-90
RRMDD422	569406	57401	1113	HQ DD	15.20	0	-90
RRMDD423	569605	57383	1112	HQ DD	17.50	0	-90
RRMDD424	569414	57055	1118	HQ DD	17.40	0	-90
RRMDD425	569522	56852	1125	HQ DD	20.90	0	-90
RRMDD426	569958	57341	1104	HQ DD	13.00	0	-90
RRMDD427	569626	57083	1119	HQ DD	19.50	0	-90
RRMDD428	569800	57039	1118	HQ DD	12.40	0	-90
RRMDD429	570581	58290	1109	HQ DD	16.90	0	-90
RRMDD430	570614	58666	1100	HQ DD	11.00	0	-90
RRMDD431	570006	57220	1107	HQ DD	5.40	0	-90
RRMDD432	570801	58684	1102	HQ DD	10.10	0	-90
RRMDD433	563404	57509	1170	HQ DD	20.40	0	-90
RRMDD434	563502	57494	1172	HQ DD	20.40	0	-90
RRMDD435	563500	57400	1172	HQ DD	21.40	0	-90
RRMDD436	563599	57499	1173	HQ DD	16.40	0	-90
RRMDD437	563808	57496	1174	HQ DD	28.50	0	-90
RRMDD438	563898	57507	1173	HQ DD	23.00	0	-90
RRMDD439	564000	57510	1173	HQ DD	24.00	0	-90
RRMDD440	563698	57501	1173	HQ DD	18.00	0	-90
RRMDD441	564090	57505	1173	HQ DD	18.00	0	-90
RRMDD442	564102	57394	1175	HQ DD	18.40	0	-90
RRMDD443	564098	57301	1176	HQ DD	20.40	0	-90
RRMDD444	563497	57301	1172	HQ DD	20.40	0	-90
RRMDD445	563996	57298	1176	HQ DD	22.30	0	-90
RRMDD446	563900	57299	1176	HQ DD	18.20	0	-90
RRMDD447	563405	57296	1168	HQ DD	18.80	0	-90
RRMDD448	563895	57404	1175	HQ DD	23.00	0	-90
RRMDD449	563800	57401	1175	HQ DD	17.80	0	-90
RRMDD450	571003	58704	1101	HQ DD	12.90	0	-90
RRMDD451	563292	57496	1169	HQ DD	22.40	0	-90
RRMDD452	563704	57403	1174	HQ DD	26.80	0	-90

RRMDD453	571001	58313	1110	HQ DD	14.20	0	-90
RRMDD454	563805	57299	1175	HQ DD	19.60	0	-90
RRMDD455	570791	58310	1110	HQ DD	11.40	0	-90
RRMDD456	563310	57401	1169	HQ DD	15.40	0	-90
RRMDD457	563700	57291	1174	HQ DD	20.50	0	-90
RRMDD458	571198	58310	1107	HQ DD	12.80	0	-90
RRMDD459	571409	58288	1103	HQ DD	7.90	0	-90
RRMDD460	563694	57205	1174	HQ DD	20.10	0	-90
RRMDD461	563306	57299	1167	HQ DD	20.70	0	-90
RRMDD462	571192	58099	1112	HQ DD	17.70	0	-90
RRMDD463	563607	57304	1173	HQ DD	25.90	0	-90
RRMDD464	570705	57995	1116	HQ DD	20.60	0	-90
RRMDD465	564104	57200	1174	HQ DD	19.20	0	-90
RRMDD466	564106	57098	1172	HQ DD	28.50	0	-90
RRMDD467	563299	57201	1164	HQ DD	27.00	0	-90
RRMDD468	564199	57300	1174	HQ DD	19.20	0	-90
RRMDD469	572769	58608	1107	HQ DD	12.10	0	-90
RRMDD470	564202	57094	1169	HQ DD	30.00	0	-90
RRMDD471	563291	57099	1163	HQ DD	33.30	0	-90
RRMDD472	573092	58353	1111	HQ DD	7.70	0	-90
RRMDD473	572805	58390	1110	HQ DD	10.30	0	-90
RRMDD474	563501	57204	1170	HQ DD	23.90	0	-90
RRMDD475	564299	56908	1162	HQ DD	24.00	0	-90
RRMDD476	572483	58395	1106	HQ DD	10.20	0	-90
RRMDD477	563300	57006	1161	HQ DD	18.30	0	-90
RRMDD478	572480	58677	1106	HQ DD	9.80	0	-90
RRMDD479	572520	58862	1106	HQ DD	12.80	0	-90
RRMDD480	564201	56896	1164	HQ DD	17.60	0	-90
RRMDD481	563394	57101	1167	HQ DD	22.20	0	-90
RRMDD482	572725	58899	1105	HQ DD	13.70	0	-90
RRMDD483	564296	56797	1159	HQ DD	25.20	0	-90
RRMDD484	572834	58999	1103	HQ DD	6.60	0	-90
RRMDD485	563399	57001	1164	HQ DD	25.10	0	-90
RRMDD486	572605	58993	1105	HQ DD	9.10	0	-90
RRMDD487	572413	59003	1105	HQ DD	10.40	0	-90
RRMDD488	564196	57003	1166	HQ DD	27.00	0	-90
RRMDD489	572489	59258	1104	HQ DD	10.70	0	-90
RRMDD490	572313	59293	1103	HQ DD	10.60	0	-90
RRMDD491	564302	57101	1167	HQ DD	37.90	0	-90
RRMDD492	572592	59369	1103	HQ DD	15.30	0	-90
RRMDD493	563500	57091	1167	HQ DD	24.40	0	-90
RRMDD494	563496	57002	1166	HQ DD	24.60	0	-90
RRMDD495	564331	57000	1163	HQ DD	20.70	0	-90
RRMDD496	564293	57200	1171	HQ DD	31.60	0	-90
RRMDD497	563501	56898	1165	HQ DD	21.40	0	-90
RRMDD498	558005	58001	1168	HQ DD	29.70	0	-90
RRMDD499	563392	56902	1161	HQ DD	30.80	0	-90
RRMDD500	564399	57097	1164	HQ DD	28.90	0	-90
RRMDD501	564494	57099	1161	HQ DD	49.00	0	-90
RRMDD502	563499	56799	1162	HQ DD	22.30	0	-90
RRMDD503	558197	57801	1163	HQ DD	30.50	0	-90
RRMDD504	563296	56904	1159	HQ DD	28.80	0	-90
RRMDD505	564291	57321	1172	HQ DD	42.30	0	-90
RRMDD506	557903	57813	1168	HQ DD	28.10	0	-90
RRMDD507	563302	56802	1158	HQ DD	28.70	0	-90
RRMDD508	557831	57641	1167	HQ DD	21.40	0	-90
RRMDD509	564299	57402	1171	HQ DD	45.80	0	-90

RRMDD510	563598	56901	1166	HQ DD	19.80	0	-90
RRMDD511	558002	58204	1169	HQ DD	26.20	0	-90
RRMDD512	563600	57098	1169	HQ DD	30.90	0	-90
RRMDD513	564201	57508	1171	HQ DD	21.00	0	-90
RRMDD514	564101	57598	1171	HQ DD	26.90	0	-90
RRMDD515	563902	56804	1164	HQ DD	28.60	0	-90
RRMDD516	563701	56806	1164	HQ DD	18.50	0	-90
RRMDD517	564208	57703	1168	HQ DD	24.20	0	-90
RRMDD518	563999	56900	1166	HQ DD	21.90	0	-90
RRMDD519	564299	57605	1168	HQ DD	19.50	0	-90
RRMDD520	564098	56900	1165	HQ DD	35.40	0	-90
RRMDD521	564293	57700	1167	HQ DD	26.60	0	-90
RRMDD522	564105	56801	1162	HQ DD	30.60	0	-90
RRMDD523	564402	57700	1166	HQ DD	23.80	0	-90
RRMDD524	558403	58206	1156	HQ DD	13.10	0	-90
RRMDD525	564604	57099	1157	HQ DD	36.60	0	-90
RRMDD526	564302	57507	1169	HQ DD	22.50	0	-90
RRMDD527	564705	57103	1154	HQ DD	24.50	0	-90
RRMDD528	564500	57604	1166	HQ DD	25.80	0	-90
RRMDD529	564400	57502	1168	HQ DD	25.00	0	-90
RRMDD530	564698	57201	1158	HQ DD	28.80	0	-90
RRMDD531	564500	57506	1166	HQ DD	27.00	0	-90
RRMDD532	564599	57504	1165	HQ DD	19.50	0	-90
RRMDD533	564805	57301	1158	HQ DD	14.00	0	-90
RRMDD534	564702	57301	1161	HQ DD	18.70	0	-90
RRMDD535	564600	57401	1164	HQ DD	21.70	0	-90
RRMDD536	558131	58464	1169	HQ DD	17.50	0	-90
RRMDD537	564492	57397	1167	HQ DD	29.50	0	-90
RRMDD538	564593	57296	1164	HQ DD	26.10	0	-90
RRMDD539	564703	57403	1162	HQ DD	14.80	0	-90
RRMDD540	564502	57302	1166	HQ DD	33.80	0	-90
RRMDD541	557393	58197	1161	HQ DD	19.50	0	-90
RRMDD542	564706	57498	1163	HQ DD	23.00	0	-90
RRMDD543	564895	57498	1160	HQ DD	23.10	0	-90
RRMDD544	564499	57201	1164	HQ DD	44.20	0	-90
RRMDD545	557717	58197	1170	HQ DD	31.00	0	-90
RRMDD546	564705	57596	1163	HQ DD	15.00	0	-90
RRMDD547	564806	57498	1161	HQ DD	16.90	0	-90
RRMDD548	564601	57701	1165	HQ DD	24.90	0	-90
RRMDD549	564800	57600	1162	HQ DD	16.20	0	-90
RRMDD550	557305	58722	1164	HQ DD	18.70	0	-90
RRMDD551	564505	57707	1165	HQ DD	21.00	0	-90
RRMDD552	564801	57699	1162	HQ DD	22.30	0	-90
RRMDD553	564398	57300	1170	HQ DD	44.00	0	-90
RRMDD554	564900	57206	1152	HQ DD	16.30	0	-90
RRMDD555	557580	58719	1170	HQ DD	32.50	0	-90
RRMDD556	564802	57101	1151	HQ DD	25.90	0	-90
RRMDD557	564698	57702	1163	HQ DD	18.70	0	-90
RRMDD558	564897	57101	1148	HQ DD	26.00	0	-90
RRMDD559	557775	58599	1173	HQ DD	32.50	0	-90
RRMDD560	564899	57303	1156	HQ DD	18.00	0	-90
RRMDD561	564903	57399	1158	HQ DD	17.10	0	-90
RRMDD562	565097	57296	1151	HQ DD	16.60	0	-90
RRMDD563	561883	55897	1152	HQ DD	21.40	0	-90
RRMDD564	565100	57191	1149	HQ DD	15.60	0	-90
RRMDD565	565203	57103	1144	HQ DD	16.30	0	-90
RRMDD566	564996	57300	1154	HQ DD	15.90	0	-90

RRMDD567	565004	57402	1156	HQ DD	12.60	0	-90
RRMDD568	565102	57498	1156	HQ DD	17.50	0	-90
RRMDD569	565001	57102	1147	HQ DD	25.90	0	-90
RRMDD570	562016	55963	1152	HQ DD	20.00	0	-90
RRMDD571	565200	57500	1155	HQ DD	13.60	0	-90
RRMDD572	565201	57301	1150	HQ DD	20.90	0	-90
RRMDD573	565194	57599	1156	HQ DD	18.20	0	-90
RRMDD574	562148	55844	1154	HQ DD	33.10	0	-90
RRMDD575	565105	57101	1145	HQ DD	13.60	0	-90
RRMDD576	565205	57697	1156	HQ DD	26.10	0	-90
RRMDD577	565093	57395	1154	HQ DD	12.60	0	-90
RRMDD578	565101	57691	1158	HQ DD	16.80	0	-90
RRMDD579	565090	57603	1157	HQ DD	19.80	0	-90
RRMDD580	564998	57699	1159	HQ DD	23.20	0	-90
RRMDD581	561972	55696	1156	HQ DD	30.00	0	-90
RRMDD582	564898	57701	1160	HQ DD	19.20	0	-90
RRMDD583	561817	55610	1156	HQ DD	38.60	0	-90
RRMDD584	564996	57599	1159	HQ DD	17.70	0	-90
RRMDD585	564995	57502	1158	HQ DD	18.10	0	-90
RRMDD586	561828	55731	1154	HQ DD	32.20	0	-90
RRMDD587	562194	55579	1157	HQ DD	37.50	0	-90
RRMDD588	578199	58802	1125	HQ DD	22.80	0	-90
RRMDD589	578200	58921	1124	HQ DD	22.40	0	-90
RRMDD590	562064	55402	1160	HQ DD	36.00	0	-90
RRMDD591	577998	59001	1125	HQ DD	25.30	0	-90
RRMDD592	577810	58807	1133	HQ DD	32.50	0	-90
RRMDD593	577401	58802	1134	HQ DD	23.60	0	-90
RRMDD594	577799	57803	1140	HQ DD	19.50	0	-90
RRMDD595	577599	58602	1139	HQ DD	21.30	0	-90
RRMDD596	577996	57805	1134	HQ DD	17.20	0	-90
RRMDD597	577795	58604	1136	HQ DD	28.60	0	-90
RRMDD598	577594	58398	1142	HQ DD	25.80	0	-90
RRMDD599	578199	57991	1131	HQ DD	10.00	0	-90
RRMDD600	577198	58382	1142	HQ DD	22.20	0	-90
RRMDD601	577599	58202	1144	HQ DD	30.20	0	-90
RRMDD602	577211	58209	1147	HQ DD	19.10	0	-90
RRMDD603	577797	58205	1141	HQ DD	31.40	0	-90
RRMDD604	578202	58201	1132	HQ DD	19.30	0	-90
RRMDD605	577981	58391	1136	HQ DD	26.30	0	-90
RRMDD606	578200	58604	1128	HQ DD	21.30	0	-90
RRMDD607	577999	58600	1133	HQ DD	31.50	0	-90
RRMDD608	577807	58003	1141	HQ DD	28.90	0	-90
RRMDD609	578003	58197	1137	HQ DD	22.20	0	-90
RRMDD610	577416	58203	1146	HQ DD	31.40	0	-90
RRMDD611	577600	57802	1144	HQ DD	18.50	0	-90
RRMDD612	576782	58402	1138	HQ DD	24.60	0	-90
RRMDD613	577392	57806	1148	HQ DD	29.40	0	-90
RRMDD614	577201	58609	1138	HQ DD	23.60	0	-90
RRMDD615	577602	57609	1142	HQ DD	26.90	0	-90
RRMDD616	577212	57589	1149	HQ DD	20.50	0	-90
RRMDD617	577384	58599	1139	HQ DD	28.50	0	-90
RRMDD618	577198	57445	1147	HQ DD	29.00	0	-90
RRMDD619	577000	58006	1148	HQ DD	15.10	0	-90
RRMDD620	576984	58608	1135	HQ DD	22.40	0	-90
RRMDD621	576813	57619	1150	HQ DD	22.90	0	-90
RRMDD622	576785	58588	1136	HQ DD	22.60	0	-90
RRMDD623	576584	57467	1148	HQ DD	17.30	0	-90

RRMDD624	576985	57795	1150	HQ DD	21.50	0	-90
RRMDD625	576784	57408	1149	HQ DD	28.00	0	-90
RRMDD626	576585	58004	1143	HQ DD	12.50	0	-90
RRMDD627	576996	58813	1128	HQ DD	25.90	0	-90
RRMDD628	576805	58190	1142	HQ DD	15.00	0	-90
RRMDD629	576390	57786	1144	HQ DD	18.50	0	-90
RRMDD630	576211	58012	1142	HQ DD	7.50	0	-90
RRMDD631	576991	58936	1129	HQ DD	15.90	0	-90
RRMDD632	576398	57589	1144	HQ DD	19.20	0	-90
RRMDD633	576382	58201	1142	HQ DD	13.70	0	-90
RRMDD634	576402	57398	1146	HQ DD	17.20	0	-90
RRMDD635	576404	58398	1142	HQ DD	17.50	0	-90
RRMDD636	576211	57807	1142	HQ DD	18.10	0	-90
RRMDD637	576799	59001	1135	HQ DD	21.00	0	-90
RRMDD638	576003	57808	1140	HQ DD	18.30	0	-90
RRMDD639	576397	58594	1141	HQ DD	21.90	0	-90
RRMDD640	575793	57802	1137	HQ DD	15.00	0	-90
RRMDD641	576583	58196	1142	HQ DD	17.80	0	-90
RRMDD642	576786	59116	1136	HQ DD	24.10	0	-90
RRMDD643	575598	57616	1127	HQ DD	16.80	0	-90
RRMDD644	575611	57800	1133	HQ DD	13.80	0	-90
RRMDD645	576603	58999	1137	HQ DD	18.00	0	-90
RRMDD646	576793	57795	1148	HQ DD	16.80	0	-90
RRMDD647	576598	58800	1138	HQ DD	24.10	0	-90
RRMDD648	576599	57799	1144	HQ DD	15.00	0	-90
RRMDD649	577208	57817	1150	HQ DD	21.70	0	-90
RRMDD650	576594	58614	1138	HQ DD	27.50	0	-90
RRMDD651	576201	58205	1143	HQ DD	12.00	0	-90
RRMDD652	577389	57987	1149	HQ DD	14.10	0	-90
RRMDD653	575799	58001	1139	HQ DD	18.00	0	-90
RRMDD654	576001	57600	1137	HQ DD	16.00	0	-90
RRMDD655	576402	58999	1139	HQ DD	21.10	0	-90
RRMDD656	575402	58005	1133	HQ DD	19.60	0	-90
RRMDD657	575794	58192	1140	HQ DD	13.50	0	-90
RRMDD658	576406	59124	1138	HQ DD	22.80	0	-90
RRMDD659	575189	58195	1130	HQ DD	15.10	0	-90
RRMDD660	576199	59001	1138	HQ DD	18.30	0	-90
RRMDD661	575601	58400	1136	HQ DD	16.10	0	-90
RRMDD662	575205	58398	1129	HQ DD	11.00	0	-90
RRMDD663	575002	58802	1121	HQ DD	17.00	0	-90
RRMDD664	575991	59117	1133	HQ DD	16.90	0	-90
RRMDD665	575194	58583	1128	HQ DD	15.00	0	-90
RRMDD666	576006	58997	1136	HQ DD	22.10	0	-90
RRMDD667	575411	58207	1134	HQ DD	15.80	0	-90
RRMDD668	575402	58788	1129	HQ DD	13.60	0	-90
RRMDD669	575614	58199	1137	HQ DD	22.70	0	-90
RRMDD670	575411	58604	1132	HQ DD	18.00	0	-90
RRMDD671	575802	58803	1136	HQ DD	19.40	0	-90
RRMDD672	576005	58197	1142	HQ DD	15.40	0	-90
RRMDD673	576010	58388	1142	HQ DD	15.00	0	-90
RRMDD674	575815	58598	1139	HQ DD	22.50	0	-90
RRMDD675	575596	58597	1136	HQ DD	20.40	0	-90
RRMDD676	575999	58604	1141	HQ DD	22.20	0	-90
RRMDD677	575796	59010	1132	HQ DD	25.00	0	-90
RRMDD678	575586	58998	1129	HQ DD	17.40	0	-90
RRMDD679	575609	59118	1126	HQ DD	19.60	0	-90
RRMDD680	575212	59124	1117	HQ DD	12.10	0	-90

RRMDD681	575385	59001	1125	HQ DD	15.70	0	-90
RRMDD682	574804	59001	1113	HQ DD	18.00	0	-90
RRMDD683	575206	59018	1121	HQ DD	16.90	0	-90
RRMDD684	574602	58795	1114	HQ DD	17.50	0	-90
RRMDD685	574453	58494	1115	HQ DD	21.20	0	-90
RRMDD686	574599	58615	1116	HQ DD	17.40	0	-90
RRMDD687	574999	58604	1123	HQ DD	19.30	0	-90
RRMDD688	574600	58001	1118	HQ DD	19.40	0	-90
RRMDD689	574790	58598	1120	HQ DD	18.60	0	-90
RRMDD690	574801	58389	1122	HQ DD	17.00	0	-90
RRMDD691	574398	58210	1114	HQ DD	16.80	0	-90
RRMDD692	574256	58345	1111	HQ DD	15.00	0	-90
RRMDD693	574995	58201	1127	HQ DD	22.00	0	-90
RRMDD694	574205	58198	1106	HQ DD	9.00	0	-90
RRMDD695	574598	58203	1119	HQ DD	18.00	0	-90
RRMDD696	574233	58016	1104	HQ DD	6.00	0	-90
RRMDD697	574796	58202	1123	HQ DD	18.40	0	-90
RRMDD698	574410	57811	1107	HQ DD	21.00	0	-90
RRMDD699	574291	58506	1112	HQ DD	17.10	0	-90
RRMDD700	574618	57662	1110	HQ DD	6.80	0	-90
RRMDD701	574814	57809	1119	HQ DD	17.90	0	-90
RRMDD702	575005	57611	1116	HQ DD	8.00	0	-90
RRMDD703	575001	57999	1125	HQ DD	15.20	0	-90
RRMDD704	574787	57614	1112	HQ DD	9.00	0	-90
RRMDD705	574991	57811	1123	HQ DD	23.20	0	-90
RRMDD706	575202	57600	1120	HQ DD	18.00	0	-90
RRMDD707	575215	57793	1126	HQ DD	15.10	0	-90
RRMDD708	575385	57801	1129	HQ DD	19.20	0	-90
RRMDD709	577008	58207	1144	HQ DD	15.50	0	-90
RRMDD710	576191	58784	1140	HQ DD	26.40	0	-90
RRMDD711	576180	58602	1142	HQ DD	21.50	0	-90

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 with a nominal diameter of 61.1mm. The core was not oriented (vertical holes)
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.*	**Diamond Drilling**

Criteria	JORC Code explanation	Commentary
	• *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, regolith zone, 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

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>numbers and submitted with the same analytical batch as the primary sample.</td></tr>
<tr><td>Quality of assay data and laboratory tests</td><td>• 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.</td><td>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:

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

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:

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

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

Criteria	JORC Code explanation	Commentary
		All laboratories used are ISO 17025 accredited. **QAQC** <u>Diamond Drill Core Samples</u> • Analytical Standards CRM AMIS0275 and AMIS0276 and a specific Makuutu CRM MUIACREI01 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. • Alternative Analysis Technique A selection of sample pulps was re-analysed at Bureau Veritas Minerals laboratory Perth W.A. using Laser Ablation MS technique.

Criteria	JORC Code explanation	Commentary
		There is no evidence of systematic analytical bias or errors 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	1.2284	CeO_2
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	1.2082	Pr_6O_{11}
Sm	1.1596	Sm_2O_3
Tb	1.1762	Tb_4O_7
Tm	1.1421	Tm_2O_3
Y	1.2699	Y_2O_3
Yb	1.1387	Yb_2O_3
Sc	1.5338	Sc_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) = $La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Y_2O_3 + Lu_2O_3$.

HREO (Heavy Rare Earth Oxide) = $Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3, + Y_2O_3 + Lu_2O_3$

Criteria	JORC Code explanation	Commentary
		CREO (Critical Rare Earth Oxide) = Nd_2O_3 + Eu_2O_3 + Tb_4O_7 + Dy_2O_3 + Y_2O_3 (From U.S. Department of Energy, Critical Materials Strategy, December 2011) LREO (Light Rare Earth Oxide) = La_2O_3 + CeO2 + Pr_6O_{11} + Nd_2O_3 NdPr = Nd_2O_3 + Pr_6O_{11} 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 RRMDD711 were surveyed a relational DGPS system. The general accuracy for x,y and z is ± 0.2m. 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 Topography has been defined by creating a wireframe from drill hole collar locations

Criteria	JORC Code explanation	Commentary
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.*	Drill spacing was optimised to suite grade estimation ranges as determined from variogram analysis of data distribution 162 drill holes were spaced on a nominal 100m x 100m spacing within the MCZ. 517 holes in Areas C, E MCZ, MCZE, F, G, H and I were drilled on a 200m spacing 32 drill holes in Areas A, B and D were drilled on a 400m 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.
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.)

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 security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	The Makuutu Rare Earths Project is 100% owned by Rwenzori Rare Metals Limited ("RRM"), a Ugandan registered company. IonicRE currently has earned a 51% shareholding in RRM and may increase its shareholding to 60% by meeting further commitments as follows: 1. IonicRE to fund to completion of a Bankable Feasibility Study (BFS) to earn an additional 9% interest for a cumulative 60% interest in RRM. 2. Milestone payments, payable in cash or IonicRE shares at the election of the Vendor, as follows: a. US$375,000 on production of 10 kg of mixed rare-earth product from pilot or demonstration plant activities; and b. US$375,000 on conversion of existing licences to mining licences. At any time should IonicRE 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 IonicRE and reclaim all interest earnt by IonicRE.
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.

Criteria	JORC Code explanation	Commentary
		2011: Kweri Ltd undertook field verification of radiometric anomalies including scout sampling of existing community pits. Samples showed an enrichment of REE and Sc. 2011: The GTK conducted a ground gravity traverse which indicated a gravity low in the area. 2011: Kweri Ltd conducted ground radiometric survey and evaluated historic groundwater borehole logs. 2012: Kweri Ltd and 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. 2012 Kweri Ltd. Sent Five (5) samples to Toronto Aqueous Research Laboratory for REE leach testwork. 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 and mafic rocks. These rocks are considered the original source of the REE which were then accumulated in the sediments (via ionic bonds with the clays) of the basin as the surrounding rocks 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

Criteria	JORC Code explanation	Commentary
		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 ionically bonded (adsorbed) or colloidally bonded on to fine particles of aluminosilicate clays (e.g. kaolinite, illite, smectite). The adsorbed and colloidal REE is the target for extraction and production of REO at Makuutu.

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:*
	  ○ *easting 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.*
		The material information for drill holes relating to this announcement are contained in Appendix 2.

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.

Criteria	JORC Code explanation	Commentary
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.
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.

Criteria	JORC Code explanation	Commentary
		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. 2020: Testing of composited samples from two exploration holes east of the Makuutu Central Zone provided an average extraction of TREE-Ce recovery of 41% @ pH1 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 Scoping Study.

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, and reviewed sampling and QAQC procedures. The project has been visited by the Competent Person responsible for the reporting of Mineral Resources who reviewed the field project area, drill core, sampling and bulk density procedures.
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 18 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 regolith.

Criteria	JORC Code explanation	Commentary
		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 five zones as defined by regolith rheology, and by comparison of regolith statistics: • Domain 1,2,3 – Cover zone • Domain 4 – Mottled zone • Domain 5 – Clay zone • Domain 6 – Upper Saprolite zone • Domain 7 – Lower Saprolite zone • Domain 8,9 – 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 extends across 11 discrete prospect areas defined by radiometric and topographical features. The overall strike for the eastern-most to western-most prospects is approximately 37 kilometres, with an across strike extent of ~3,000m and an average vertical thickness of 18m. 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*	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 Sc, and 2 deleterious elements (U, and Th) were estimated. Additionally, bulk density was estimated for those domains with sufficient numbers of measurements. Final estimated values are converted to stoichiometric oxide values by calculation using published ratios to support reporting of rare earth oxides (REO).

Criteria	JORC Code explanation	Commentary
	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).* • *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.*	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 boundaries which were either treated as hard or soft boundaries based on statistical boundary analysis. 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 = 8; • Maximum number of samples = 20, and • Octant search with a maximum of 5 samples per octant The maximum extrapolation distance from the last data points was no more than 200m. Computer software used for the modelling and estimation were: • Leapfrog Geo v2021 was used for geological domain modelling. • Supervisor v8.14 was used for geostatistical analysis. • Maptek Vulcan 2022 was used for grade estimation, block modelling and reporting.

Criteria	JORC Code explanation	Commentary
		The estimation block model definitions are: • Non-rotated block model with an azimuth of 000ºGN; • OK panel size was set at 100m x 100m x 2m (XYZ) ○ A smaller parent cell size of 50m x 50m x 2m (XYZ) was used in the Central Main prospect where drilling was completed to 100m x 100m on average • Sub-block size of 25m x 25m x 1m (XYZ); • The bulk of the drilling data is on 200m by 200m grid spacings with a portion of the Central Main prospect infilled to 100m spacing, and • Appropriate search ellipses were derived from KNA with an average search radii of 600m to 1500m and average anisotropy of 30:20:1 (major/semi/minor). 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. Estimates of Sc were also completed. 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 for the heavy rare earth elements in the primary mineralised domains (domains 4, 5, 6 and 7) The estimation model was validated using the following techniques:

Criteria	JORC Code explanation	Commentary
		• 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 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 2020, 26 May 2020, and most recently 4 August 2020. These results together with indicative mining and processing costs and other cost inputs supports application of a marginal cut-off grade of 200 ppm TREO (excluding CeO_2). 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*	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.

Criteria	JORC Code explanation	Commentary
	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.	
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 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, 4 August 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.
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*	Bulk density has been determined from 1,223 individual drill core measurements using Archimedes method. Samples were oven dried, weighed, coated with wax then weighed dry and in water using an appropriate analytical balance. Bulk densities for the primary mineralised domains (domain 4, 5, 6 and 7) were estimated using an omnidirectional variogram with soft boundaries

Criteria	JORC Code explanation	Commentary
	within the deposit. • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	following boundary analysis. Densities for the remaining regolith zones were 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. The Makuutu Mineral Resource has been classified into Indicated (76%) and Inferred (24%) categories. 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.
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.