

4 August 2020

# MAKUUTU EASTERN ZONE DEMONSTRATES GOOD PRELIMINARY METALLURGICAL RESULTS

## KEY HIGHLIGHTS

- **Initial metallurgical testing in the Makuutu Eastern Zone (MEZ) has returned favourable results consistent with earlier testing of mineralisation from the Makuutu Central Zone (MCZ) and is in-line with other globally significant ionic clay-hosted projects**
- **A major step change improvement in extraction was achieved with revised test conditions returning up to a 34% increase in TREE-Ce extraction over the initial test conditions**

Ionic Rare Earths Limited (“IonicRE” or “the Company”) (ASX: IXR) is pleased to provide an update on progress of the metallurgical evaluation of the Makuutu Eastern Zone. The MEZ is located approximately 6 kilometres east of the nearest metallurgical test sample from the Makuutu Central Zone (see Figures 2 & 3).

IonicRE has now completed the first metallurgical testwork on samples obtained from drilling in the MEZ. This testwork applied the similar parameters and simple process methods as were utilised in the MCZ optimisation program (ASX: 26 May 2020). They show high Rare Earth Element (**REE**) recoveries from the MEZ comparable with the recoveries returned from the earlier testwork on the MCZ mineralisation. Importantly, recovery of the high-value Critical Rare Earth Elements (**CREE**) and Heavy Rare Earth Elements (**HREE**) continues to be favoured over the lower value Light Rare Earths Elements (**LREE**).

These results support the concept of a second processing module in the MEZ producing a product dominant in Heavy and Critical Rare Earth Oxides (**HREO** and **CREO**) which will result in a favourable overall REO basket price.

Commenting on the results, Ionic Rare Earths Chief Executive Officer, Mr Tim Harrison said: *“These results continue to demonstrate the upside at Makuutu. The results confirm a major improvement on expected extractions of the Rare Earths and reinforce the metallurgical optimisation results identified in the previous programs. Most significantly, these initial results indicate we can expect such recoveries – which are in-line with other globally significant Rare Earths projects – throughout the greater Makuutu project area. Furthermore, the simple process regime is modular and scalable, which could enable rapid replication of low-cost process modules to ramp up REO production.”*

## DETAILS OF METALLURGICAL OPTIMISATION PROGRAM

To allow an initial assessment on metallurgy of the Makuutu Eastern Zone (MEZ) and assist with sequencing and prioritisation of the current 3,700 metre drill program, testwork was initiated on four samples to provide an early indication of metallurgical extraction potential.

Tests on each sample were undertaken as a two-stage acid desorption/leach test where each sample was 1) contacted with an ammonium sulfate solution at pH 3.5 (targeting ionic clay-hosted REE), then 2) spiked with sulfuric acid to adjust pH to 1 (targeting colloidal hosted REE).

The conditions were adapted from the learning from optimisation tests. For these tests, the total duration of the tests was 4 days and ammonium sulfate eluant was used after consideration of techno-economic aspects of alternatives when integrated with the precipitation circuit. A summary of the results is presented in Figure 1. Sample provenance details are provided in Table 1 and Table 2, and illustrated in Figure 2 and Figure 3.

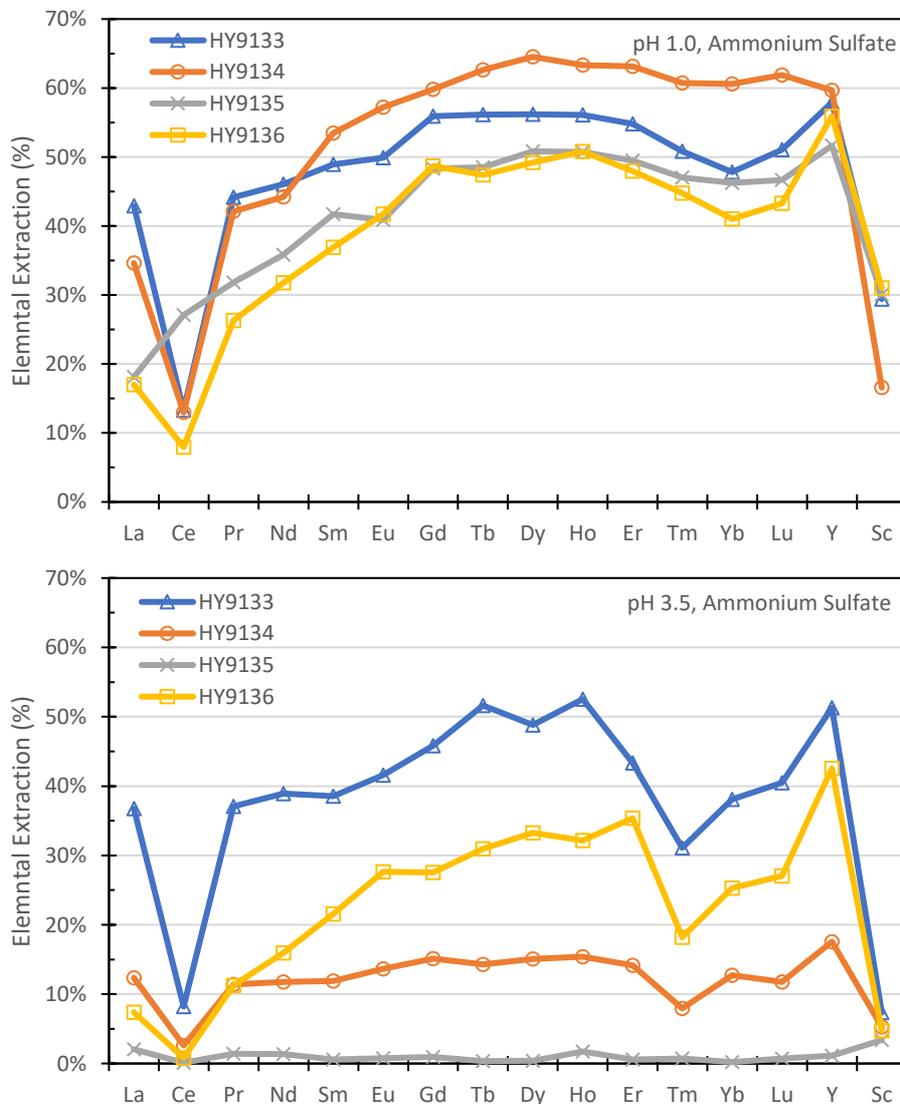


Figure 1: Elemental extractions for Tests HY9133-9136.

The key outcomes from these results are as follows:

- The average TREE-Ce recovery of the samples tested is 20% @ pH3.5, and 41% @ pH1, representing an average increase in 21%. The corresponding average recovery of the HREOs is 22% @ pH3.5 and 52% @ pH 1.
  - This demonstrated the majority of valuable HREOs are present in the ionic or colloidal form, which are readily recoverable using mild desorption/leaching conditions.
- The REO recoveries obtained here are consistent with;
  - Other globally significant ionic clay projects where Chinese government whitepapers have reported average REO extractions of 50%<sup>1</sup>.
  - The results of metallurgical work undertaken on sample from the MCZ (previously reported to ASX on 26<sup>th</sup> May 2020).
- The variability in rare earth recovery is attributed to sample mineralogy and its proximity to geological horizons. Specifically;
  - For test HY9133, the relatively modest increase in REE extraction was observed by decreasing the pH from 3.5 to 1.0 is attributed to a substantial portion of REE being ionic clay-hosted, with test-work demonstrating a moderate increase in average extraction from 40% TREE-Ce to 47% TREE-Ce; HREE extraction averaged 53%.
  - For test HY9134, a substantive increase in REO extraction from 13 to 47% TREE-Ce was observed by decreasing the pH from 3.5 to 1, which is attributed to this interval consisting of supergene enriched mineralisation (where rare earths have previously mobilized and deposited by natural weathering processes). This is enforced by the anomalously high TREE-Ce grade (1,368 ppm TREE-Ce (30% HREE) of the sample.
  - For test HY9135, the sample was obtained from immediately below a hard-cap boundary and appears largely anomalous. The head grade was relatively low (357 ppm TREE-Ce), and LREEs are more enriched than typical in the broader area. Acid consuming gangue minerals were also present, which appear to have hampered extraction at pH 3.5.
  - Sample tested in HY9136, like the sample tested in HY9133, allowed a modest increase in REE extraction by decreasing the pH from 3.5 to 1.0. The reason for the differences in rare earth extraction is attributable to the amount of geological weathering.
- Larger-scale tests are anticipated to be undertaken in an ensuing field trials program, where larger-scale testing is more practicable.
- Scandium extraction is favourable and has increased up to ~ 30% with the pH 1.0 conditions.
- Analysis of final liquors indicated an average acid consumption of 14 kg per tonne of dry ore tested.

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<sup>1</sup> Information Office of the State Council The People's Republic of China, Situation and Policies of China's Rare Earth Industry, June 2012.

Whilst the testwork was conducted at the nominal pH targets discussed above, larger scale testing is likely to reduce reagent consumption and pH conditions over a longer test duration. Testwork conditions suggest a static leach arrangement, akin to conventional dump / heap leaching, could be used on Makuutu using a lixiviant blend of both ammonium sulfate and sulfuric acid. Both reagents are readily available with a large sulfuric acid plant based less than 100k from site at Tororo, Uganda.

IonicRE is committed to the development of the Makuutu Rare Earths Project maintaining high Environmental, Social and Governance sustainability standards. As such, environmentally responsible practices are to be incorporated into the process flowsheet to manage the overall site water balance. Process liquors will be recycled within the process, and work has initiated on the inclusion of Reverse Osmosis (RO) and Nano-Filtration (NF) membrane technologies into the process flowsheet to enable the recovery of reagents for recycle (opex advantage) and overall site water management.

**Table 1: Makuutu Eastern Zone (EL 1766) preliminary testwork samples, Hole ID, Sample ID and interval details.**

Drill Hole ID	Sample ID / Test ID	From (m)	To (m)
RRMDD042	Z0908 / HY9133	3.80	4.80
RRMDD042	Z0912 / HY9134	7.15	8.15
RRMDD046	Z0986 / HY9135	3.75	4.83
RRMDD046	Z0992 / HY9136	8.00	8.80

**Table 2: Makuutu Eastern Zone (EL 1766) 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
RRMDD042 <sup>2</sup>	572,636	58,752	1,106	DD	11.20	0	-90
RRMDD043 <sup>3</sup>	574,615	58,301	1,125	DD	12.50	0	-90
RRMDD044 <sup>3</sup>	576,391	58,482	1,145	DD	15.00	0	-90
RRMDD045 <sup>3</sup>	577,588	58,310	1,147	DD	18.50	0	-90
RRMDD046 <sup>3</sup>	570,974	58,487	1,103	DD	12.00	0	-90

<sup>2</sup> Elevation is not considered accurate. Recorded with handheld GPS

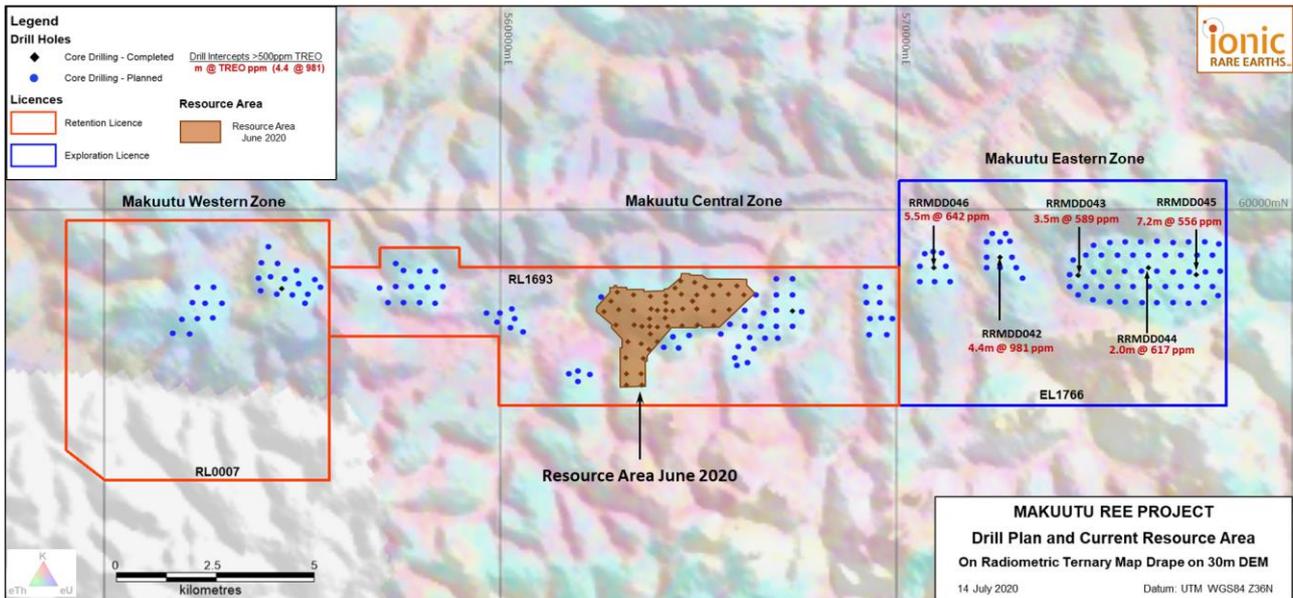


Figure 2: Makuutu Rare Earths Project planned drill program and previous drill holes from 2019 drill program, showing holes RRMDD042 and RRMDD046 from which the samples tested were sourced.

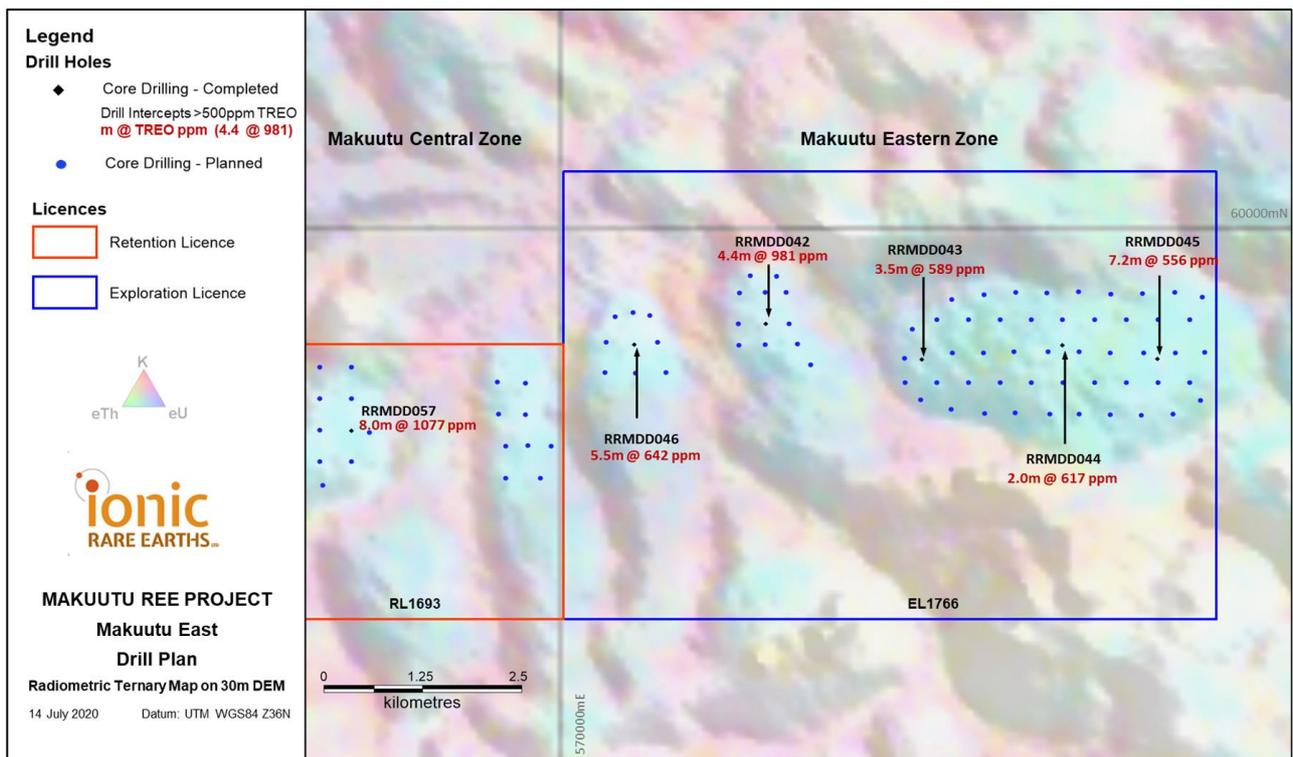


Figure 3: Makuutu Eastern Zone (MEZ, EL 1766) showing location of MEZ drill holes from 2019 drill program from which drill core has been tested from holes RRMDD042 and RRMDD046.

The Company has recently resumed drilling at Makuutu, and in parallel is continuing with project development activities including the Scoping Study, which is due for completion in November 2020. IonicRE remains focused on progressing the Makuutu Rare Earths Project towards a commercial development.

Addendums to this release: Addendum 1: Head Assays

JORC Code, 2012 Edition – Table 1 Report.

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Authorised for release by Brett Dickson, Company Secretary.

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### **Competent Person Statements**

*The information in this announcement and that relates to metallurgy testwork is based on information reviewed by Mr Tim Harrison who is CEO of Ionic Rare Earths Limited and engaged through a service contract with Horizon Metallurgy Pty Ltd. Mr Harrison is a Fellow of the AusIMM. Mr Harrison 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 by the JORC Code 2012. Mr Harrison consents to the inclusion in this announcement of the matters based on their information in the form and context in which it appears.*

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

*The information in this report that relates to Mineral Resources for the Makuutu Rare Earths deposit was first released to the ASX on 23 June 2020 and is available to view on [www.asx.com.au](http://www.asx.com.au). Ionic Rare Earths Limited confirms that it is not aware of any new information or data that materially affects information included in the relevant market announcement, and that all material assumptions and technical parameters underpinning the estimates in the announcement continue to apply and have not materially changed.*

## Addendum 1: Head Assays

**Table 3: Rare Earth Elemental (REE) head analysis**

	<b>La</b>	<b>Ce</b>	<b>Pr</b>	<b>Nd</b>	<b>Sm</b>	<b>Eu</b>	<b>Gd</b>	<b>Tb</b>	<b>Dy</b>	<b>Ho</b>	<b>Er</b>	<b>Tm</b>	<b>Yb</b>	<b>Lu</b>	<b>Y</b>	<b>TREE</b>	<b>HREE</b>	<b>CREE</b>	<b>Sc</b>
	ppm	ppm	ppm	ppm	ppm	ppm													
HY9133	157	333	39	141	22	3.6	15	2.0	10	2.0	5.4	0.7	4.5	0.7	55	790	120	212	12
HY9134	426	234	93	371	65	12.1	58	7.7	41	7.8	19.8	2.7	14.9	2.1	248	1,602	478	680	34
HY9135	122	200	27	98	17	2.8	12	1.8	10	1.9	5.7	0.9	5.4	0.8	54	557	111	166	26
HY9136	89	221	29	126	26	4.6	22	3.3	19	3.9	11.3	1.6	10.6	1.5	114	682	217	267	14

**Table 4: Rare Earth Oxide (REO) head analysis**

	<b>La2O3</b>	<b>Ce2O3</b>	<b>Pr2O3</b>	<b>Nd2O3</b>	<b>Sm2O3</b>	<b>Eu2O3</b>	<b>Gd2O3</b>	<b>Tb2O3</b>	<b>Dy2O3</b>	<b>Ho2O3</b>	<b>Er2O3</b>	<b>Tm2O3</b>	<b>Yb2O3</b>	<b>Lu2O3</b>	<b>Y2O3</b>	<b>TREO</b>	<b>HREO</b>	<b>CREO</b>	<b>Sc2O3</b>
	ppm	ppm	ppm	ppm	ppm	ppm													
HY9133	184	390	46	164	25	4.1	17	2.3	12	2.2	6.1	0.8	5.1	0.7	70	929	145	252	18
HY9134	500	274	109	433	75	14.0	66	8.9	47	8.9	22.6	3.0	16.9	2.4	315	1,895	580	817	52
HY9135	142	234	31	114	19	3.3	14	2.0	11	2.2	6.5	1.0	6.2	0.9	68	656	135	199	40
HY9136	104	259	34	147	30	5.3	25	3.8	22	4.5	12.9	1.9	12.0	1.7	145	807	263	323	21

# 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
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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.</li> </ul>	<p><b>Diamond Core Drilling</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Using either method core was initially cut in half then one half was further cut in half to give quarter core.</p> <p>Quarter core was submitted to ALS for chemical analysis using industry standard sample preparation and analytical techniques.</p> <p>Half core was collected for metallurgical testwork.</p>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>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).</li> </ul>	<p><b>Diamond Core Drilling</b></p> <p>Core size was HQ triple tube.</p> <p>The core was not oriented (vertical)</p>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> </ul>	<p><b>Diamond Drilling</b></p>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>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.</li> </ul>	<p>Core recovery was calculated by measuring actual core length versus drillers core run lengths. Core recovery ranged from 70% to 100% and averaged 97%.</p> <p>No relationship exists between core recovery and grade.</p>
<b>Logging</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<p>All (100%) drill core has been geologically logged and core photographs taken.</p> <p>Logging is qualitative with description of colour, weathering status, alteration, major and minor rock types, texture, grain size and comments added where further observation is made.</p> <p>Additional non-geological qualitative logging includes comments for sample recovery, humidity, and hardness for each logged interval.</p>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<p><b>Diamond Drill Core</b></p> <p>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.</p> <p>Core was cut lengthways into uniform halves, then one half was again halved lengthways to produce equal quarters of the original core.</p> <p>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.</p> <p><b>Geochemical Samples</b></p> <p>Geochemical samples used one quarter of the cut core per sampling interval.</p> <p><b>Metallurgical Test Samples</b></p> <p>Metallurgical test samples were collected from quarter core of the entire sample interval corresponding with the geochemical samples. Each metallurgical sample interval was collected in numbered plastic bags, directly sealed to maintain moisture and physical condition and weighed. Metallurgical samples were numbered to correlate with the geochemical sample numbers.</p>

Criteria	JORC Code explanation	Commentary																														
		All individual interval metallurgy samples were transported via airfreight to the ALS Metallurgy laboratory in Perth for analysis with no further field preparation.																														
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<p><b>Assay and Laboratory Procedures</b></p> <p>The metallurgy testwork samples were analysed by ALS Metallurgy in Perth Australia (ISO 17025 accredited).</p> <p>The analysis was conducted on bottle rolled residues and liquors. Using recognised industry standard analysis technique for REE suite and associated elements. The techniques provide a total analysis for the elements of interest.</p> <p>Two analytical techniques were used as follows:</p> <p><b>ALS code DZ4:</b> Sodium peroxide fusion in a zirconium crucible to make a bead which is then digested in HCl/H<sub>2</sub>O<sub>2</sub> with ICP-MS finish. Elements analysed and their lower detection limits (LDL) via this method were:</p> <table border="1"> <thead> <tr> <th>Element</th> <th>LDL</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Al</td> <td>0.04</td> <td>%</td> </tr> <tr> <td>Ce</td> <td>1</td> <td>ppm</td> </tr> <tr> <td>Dy</td> <td>1</td> <td>ppm</td> </tr> <tr> <td>Er</td> <td>1</td> <td>ppm</td> </tr> <tr> <td>Eu</td> <td>1</td> <td>ppm</td> </tr> <tr> <td>Fe</td> <td>0.02</td> <td>%</td> </tr> <tr> <td>Gd</td> <td>4</td> <td>ppm</td> </tr> <tr> <td>Ho</td> <td>0.4</td> <td>ppm</td> </tr> <tr> <td>La</td> <td>1</td> <td>ppm</td> </tr> </tbody> </table>	Element	LDL	Unit	Al	0.04	%	Ce	1	ppm	Dy	1	ppm	Er	1	ppm	Eu	1	ppm	Fe	0.02	%	Gd	4	ppm	Ho	0.4	ppm	La	1	ppm
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Ho	0.4	ppm																														
La	1	ppm																														

Criteria	JORC Code explanation	Commentary
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Lu	0.4	ppm
Mg	0.04	%
Mn	100	ppm
Nd	1	ppm
Pr	0.4	ppm
Si	0.1	%
Sm	1	ppm
Tb	0.4	ppm
Tm	4	ppm
Y	2	ppm
Yb	1	ppm

**ALS Code D3:** 4 Acid digest with ICP-MS finish. Elements analysed and detection limits were:

Element	LDL	Unit
Ca	50	ppm
Cu	2	ppm
K	0.01	%
na	0.002	%
pb	5	ppm
Sc	2	ppm

**QAQC Metallurgy Test Samples**

- Analytical Standards and Blanks

Criteria	JORC Code explanation	Commentary												
		<p>CRM AMIS0275 and AMIS0276 and a quartz blank were included in residue analysis at a rate of 1:30 samples. The assay results for the standards were consistent with the certified levels of accuracy and precision and no bias is evident.</p> <p><b>Metallurgical Testwork Procedures</b></p> <p>Recovery testwork procedures were as follows:</p> <ul style="list-style-type: none"> <li>• Subsamples of the composites were used.</li> <li>• Samples were individually bottle rolled using the following criteria;</li> </ul> <table border="1" data-bbox="1189 549 1906 833"> <thead> <tr> <th>Process Parameter</th> <th>Setpoint</th> </tr> </thead> <tbody> <tr> <td>Pulp Density</td> <td>~15% w/w</td> </tr> <tr> <td>pH</td> <td>Sequential; Natural, 3.5, 1.0</td> </tr> <tr> <td>Lixiviant</td> <td>Ammonium Sulfate, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> Sulfuric Acid, H<sub>2</sub>SO<sub>4</sub></td> </tr> <tr> <td>Lixiviant concentration</td> <td>132gpl (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> (~1.0M)</td> </tr> <tr> <td>Contact time</td> <td>4 days</td> </tr> </tbody> </table> <p>Individual samples were subjected to multiple phases of filtering and pressing.</p> <ul style="list-style-type: none"> <li>• Pulp residues were repulp washed with DI water.</li> <li>• Head samples were assayed.</li> <li>• Resulting solid residues and liquors were separately analysed.</li> </ul> <p>Recovery was determined by products method.</p>	Process Parameter	Setpoint	Pulp Density	~15% w/w	pH	Sequential; Natural, 3.5, 1.0	Lixiviant	Ammonium Sulfate, (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> Sulfuric Acid, H <sub>2</sub> SO <sub>4</sub>	Lixiviant concentration	132gpl (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> (~1.0M)	Contact time	4 days
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Contact time	4 days													
<p><b>Verification of sampling and assaying</b></p>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<p>Verification was undertaken by submitted head and residue samples for analysis with ALS Geochemistry in Perth Australia (ISO 17025 accredited).</p> <p>Verification using recognised industry standard analysis technique for REE suite and associated elements. The techniques provide a total analysis for the elements of interest.</p>												

Criteria	JORC Code explanation	Commentary
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Two analytical techniques were used as follows:

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

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

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.

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.

All field sampling data were collected in the field by hand and entered into Excel spreadsheet.

Metallurgical testwork assay and physical data was received in digital format from the laboratory in an Excel spreadsheet format. Data entry was reviewed and checked for correctness by the Project Manager.

All assay data is received from the laboratory in element form is unadjusted for data entry.

The following calculations are used for compiling REE into their reporting and evaluation groups in elemental form:

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+Lu+Y

LREE: La+Ce+Pr+Nd

Criteria	JORC Code explanation	Commentary
		CREE; Nd+Eu+Tb+Dy+Y
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Specification of the grid system used.</li> <li>• Quality and adequacy of topographic control.</li> </ul>	<p>Drill hole collar locations for holes RRMDD001 to RRMDD041 were surveyed a relational DGPS system. The general accuracy for x,y and z is <math>\pm 0.2</math>m.</p> <p>Hole locations for RRMDD042 – RRMDD046 were surveyed using handheld GPS. The accuracy for this type of device is considered <math>\pm 5</math>m in x and y coordinates however the elevation component of coordinates is variable and z accuracy may be low using this type of device.</p> <p>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.</p> <p>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</p> <p>Detailed topographic data was not sourced or used.</p>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>• Data spacing for reporting of Exploration Results.</li> <li>• 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.</li> <li>• Whether sample compositing has been applied.</li> </ul>	<p>Drilling was conducted on a nominal 400m x 400m spacing based on statistical analysis of REE distribution from historic RAB drilling. Some infill drilling on a 200m x 200m basis has been conducted. The Updated Mineral Resource Estimate announced to the ASX on 23<sup>rd</sup> June 2020 was 78.6 Mt @ 840 ppm TREO at a cut-off grade of 300 ppm TREO-Ce<sub>2</sub>O<sub>3</sub>.</p> <p>Reconnaissance drilling across Makuutu Easter Zone (EL 1766) was on step out holes approximately 1,000m apart. Metallurgical testwork samples were collected from holes drilled on that spacing.</p> <p>Testwork covered in this release was collected from core drilling holes RRMDD042 and RRMDD046.</p>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>• 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.</li> </ul>	<p>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</p> <p>All drill holes are vertical which is appropriate for horizontal bedding and regolith profile.</p>

Criteria	JORC Code explanation	Commentary
<b>Sample security</b>	<ul style="list-style-type: none"> <li data-bbox="349 264 898 288">• <i>The measures taken to ensure sample security.</i></li> </ul>	<p data-bbox="1032 264 2040 392">After collection, all 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.</p> <p data-bbox="1032 408 2040 472">Samples were subsequently transported from Australian customs to ALS Perth via road freight and inspected on arrival by a Company representative..</p>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li data-bbox="349 496 898 552">• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	No independent audits or reviews have been undertaken on sampling techniques or data.