

30 March 2021

## IONICRE INITIATES PHASE 2 METALLURGICAL TESTWORK PROGRAM

- **Extensive metallurgical program to be completed testing across the 315Mt resource of ionic adsorption clay hosted Rare Earth Element mineralisation**
- **Heap leach optimisation program commenced, expected to run throughout 2021**

Ionic Rare Earths Limited (ASX: IXR) ("IonicRE" or "the Company") is pleased to announce it has commenced the next phase of metallurgical testing associated with increasing the knowledge of key inputs to be applied to the Feasibility Study to be completed on its 51% owned Makuutu Rare Earths Project ("Makuutu" or "the Project"). The Company will move to 60% ownership of Makuutu on the completion of the Bankable Feasibility Study due for completion before end of October 2022.

As an ionic adsorption clay (IAC) hosted rare earths element (REE) deposit, Makuutu mineralisation can be processed via a low capital intensity simple processing flowsheet where the REE content is desorbed from the clay using a simple salt desorption process.

The Phase 2 metallurgical variability testwork program has commenced at ALS Metallurgy Balcatta, WA. The program will expand the knowledge of metallurgical performance across the Mineral Resource Estimate areas incorporating the optimisation testwork completed over the past 12 months. It is expected that the expanded variability program will be completed in Q4 2021. The program will also include analysis of scandium extraction base upon the optimised conditions.

The Company has also commenced heap leach testwork with ANSTO Minerals in Sydney, NSW. The initial work, which examined agglomeration, percolation and irrigation rate testwork, has confirmed that the IAC heap leach desorption conditions employed maintain column integrity and percolation properties and show no fatal flaws to date.

Evaluation of lixiviant conditions to achieve target outcomes continues. The initial phase is expected to be completed in Q3 2021.

Additionally, the Company has commenced discussions with key global experts in the evaluation and processing of IAC hosted REE deposits, including mineralogical investigations, with a view to starting further programs shortly.

The 2021 metallurgical program will ultimately feed into the planned Demonstration Plant at Makuutu the Company aims to initiate in early 2022.



Figure 1: Heap leach columns under desorption (irrigation) at ANSTO Minerals in Sydney.

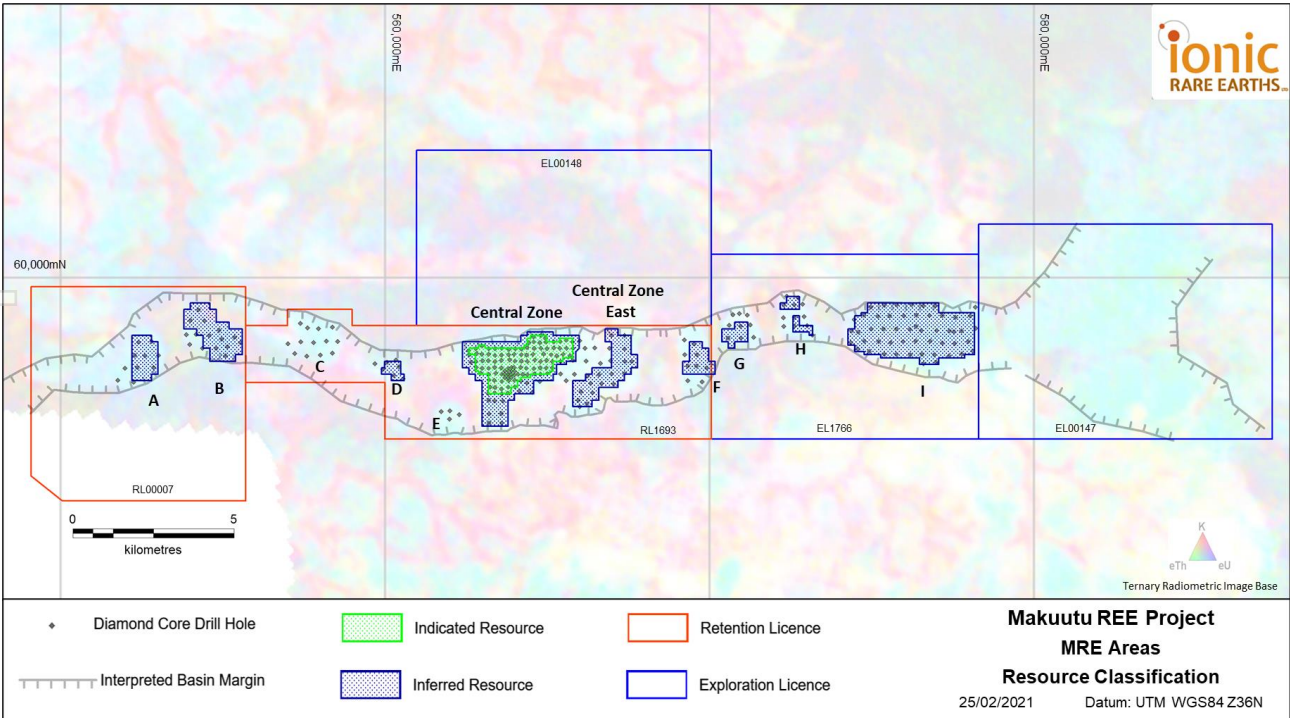


Figure 2: Mineral Resource Estimate (MRE) areas by classification.

## Heap Leaching of Ionic Adsorption Clays

Heap leaching of IACs has been applied in China for the past 40 years and given the relative flat topography available at the Makuutu site, the adoption of the technology has been validated in discussion with key IAC technology consultants familiar with existing operations.

The rapid kinetics of the desorption process and typical experience of Chinese IAC heap leach operations indicates time under irrigation is within 30 days, with totalised pregnant leach solution (PLS) liquor volumes less than 0.5m<sup>3</sup> per tonne processed, and a final wash and rinse stage important for REE and reagent recovery post desorption prior to residue reclaim and rehabilitation.

The selected process has a higher capital requirement than alternative Chinese technologies such as insitu leach, which has higher liquor consumption relative to heap leaching, and subsequently higher requirements for water treatment.

## Scoping Study Update

The Company is working through the update of the interim Scoping Study to reflect the larger scale of Makuutu further to the MRE announced 3<sup>rd</sup> March 2021. Mine plan optimisation activity was completed late last week to confirm the preferred scenario, with subsequent revisions to the report expected to be completed over the next fortnight.

Due to delays in finalising some critical inputs to the Scoping Study it is expected that results of the study will be reported to the market in mid-April.

Authorised for release by the Board.

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## 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 3.

The current resource is identified over a 20 km length. The potentially mineralised basin is 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 critical 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 19.5 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 critical 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 30 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.



Figure 3: Makuutu Rare Earths Project Location with major existing infrastructure

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 to 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.

*Table 1: Makuutu Resource above 200ppm TREO-CeO<sub>2</sub> Cut-off Grade*

Resource Classification	Tonnes (millions)	TREO (ppm)	TREO-CeO <sub>2</sub> (ppm)	LREO (ppm)	HREO (ppm)	CREO (ppm)	Sc <sub>2</sub> O <sub>3</sub> (ppm)
Indicated Resource	66	820	570	590	230	300	30
Inferred Resource	248	610	410	450	160	210	30
<b>Total Resource</b>	<b>315</b>	<b>650</b>	<b>440</b>	<b>480</b>	<b>170</b>	<b>230</b>	<b>30</b>

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

All REO are tabulated in MRE announcement dated 3 March 2021 with formulas defining composition of Light Rare Earth Oxides (LREO), Heavy Rare Earth Oxides (HREO), Critical Rare Earth Oxides (CREO) and Total Rare Earth Oxides (TREO).

### Competent Person Statements

*Information in this report that relates to previously reported Exploration Targets and Exploration 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 3 March 2021 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.*

### 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.*