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# **MAKUUTU SETS SIGHTS ON WORLD STANDARD COMPLIANCE FOR ENVIRONMENT, SOCIAL AND GOVERNANCE (ESG)**

- **Makuutu Rare Earths Project has received first stage approval from Uganda's National Environmental Management Authority**
- **Environmental and Social Impact Assessment and enhanced Stakeholder Engagement Program commenced**
- **Appointment of Key Consultants**
- **Low CO<sub>2</sub> footprint at Makuutu forecast through use of hydroelectric power**
- **Makuutu's magnet rare earth element (REE) basket to enable world offshore wind turbine capacity**

The Board of Ionic Rare Earths Limited ("IonicRE" or "The Company") (ASX: IXR) is pleased to advise a key milestone has been received in Uganda with the National Environmental Management Authority (NEMA) approving the Terms of Reference for the completion of an Environmental and Social Impact Assessment (ESIA) for 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 the end of October 2022.

This approval enables the Company to commence the ESIA and key programs have now been awarded to NEMA accredited Environmental Impact Assessor (EIA) practitioners and consultants located within Uganda and the Project area.

JBN Consults and Planners (JBN) has been contracted to complete the ESIA. Based in Kampala, JBN is a private consulting firm registered in Uganda that provides integrated environmental, engineering and development consulting services in the Great Lakes Region of Uganda. JBN, having substantial local experience in the immediate Project area, assisted the company with the submission of the Terms of Reference Report to NEMA which has confirmed the Project status and alignment.

Atacama Consulting (“Atacama”) has been engaged to develop a Stakeholder Engagement Plan (SEP) and to complete baseline socio-economic studies for the development of the Project. Atacama is also based in Kampala, with a wealth of expertise in providing similar services on major long-term projects in Uganda that will be key for Uganda’s socio-economic development.

IonicRE will ensure that the Project meets the world standard environmental and social standards and has commissioned an Equator Principles Audit of the ESIA work program to ensure conformance. The Equator Principles (EPs) is a risk management framework, adopted by financial institutions, for determining, assessing, and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence and monitoring to support responsible risk decision-making.

The ESIA is expected to be formally submitted to NEMA in early 2022 with an outcome expected by the end of Q3 2022.

### **Carbon Footprint at Makuutu**

One of the major benefits of the Makuutu Rare Earths Project is the existing infrastructure available immediately adjacent to the Project. The presence of the existing low-cost hydroelectric power provides readily available renewable energy to the Project which will minimise the carbon footprint at Makuutu. The Project is investigating ways to further minimise and offset the Greenhouse Gas Emissions at Makuutu.



*Figure 1: 183 MW Isimba hydroelectric power station.*

## **Producing Nd, Pr, Dy and Tb and enabling Offshore Wind Turbine Capacity**

Makuutu when operational has the potential to produce significant quantities of the magnet rare earth element (REE) Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy) and Terbium (Tb) that are critical to the development of high intensity permanent magnets used for direct drive wind turbine applications. Specifically, the addition of minor quantities of Dy and Tb are required to maintain magnetic characteristics at high temperatures.

By the end of 2020, global offshore wind turbine installation reached an estimated 36 GW. 2020 was a record year for the installation of offshore wind turbines, with 6.6 GW of new installation, representing a 20% increase on that installed in 2019. It is forecast that over the next 9 years to 2030, offshore wind turbine installation will continue to increase at approximately 20% compound annual growth rate, with a further 200 GW to be installed by 2030.

Furthermore, projections of future wind turbine installation growth beyond 2030 to 2050 have highlighted the inadequacy of existing REE supply chains, with an estimated 11-to-26-fold expansion of current magnet REE supply required to meet global wind turbine targets<sup>1</sup>.

Given the world's existing supply of heavy magnet REE's Dy and Tb is the ionic adsorption clay (IAC) deposits of southern China, Makuutu is positioning itself to have substantial strategic importance in years to come, presenting a viable alternative source of critical and heavy rare earths including the magnet REE's.

### **Environment**

The Company will carry out best practice in regard to Project design to limit the impact on the local environment at Makuutu.

The selected processing technology at Makuutu is heap leaching, which has been successfully demonstrated on numerous applications for copper gold, nickel and uranium mines and is an effective method to minimise the impact on the surrounding environment. The technology has been used in China for over 40 years, and the application at Makuutu has been enhanced to include three membrane circuits, using nano filtration, which have been included to enable 1) REE upgrading, 2) salt and reagent recovery, and 3) water treatment of excess water flows to mitigate environmental impact.

The Project will also develop dynamic (on / off) heap leach pads and ponds, that will include using geomembrane liners. The geomembrane liners prevent loss of leach liquors into the ground by providing secure containment barriers and drainage systems using geosynthetics. The use of geomembranes have been a common inclusion in heap leaching and tailings dams and is common practice in the development of modern heap leach projects.

Progressive backfill, enabled by the shallow nature of the mineralisation and low strip ratio at Makuutu will minimise the requirement for waste stockpiles and also enable mining to progress in well-defined

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<sup>1</sup> Li et al., 2020, One Earth 3, Critical Rare-Earth Elements Mismatch Global Wind Power Ambitions.

areas which will limit the disturbance to the environment and the stakeholders at Makuutu. As such, no tailings dam will be required at Makuutu with the residues to be washed and rinsed post processing to minimise residual salt – ammonium sulfate, which is a common fertiliser – within the residues.

Water harvesting has been nominated for the supply of water to the operation, including the process plant. Water collection ponds and monitoring bores will be developed to ensure water is collected from across the site, including the rehabilitated areas.

### **Social**

Rwenzori Rare Metals Limited (“Rwenzori”), the 100% owner of the Makuutu of which IonicRE is presently the 51% major shareholder (and may increase its interest to 60%), has been admitted to the Ugandan Chamber of Mines and Petroleum (UCMP). The admission to the UCMP is part of a formal program to have greater direct participation in the development of an internationally recognised mining industry within Uganda.

By actively managing our relationships with key stakeholders we will maintain our ‘social licence to operate’ – primarily the local communities across the Makuutu Rare Earths Project. We have also commenced identifying initiatives to assist and benefit local community programs.

With the recent resumption of drilling, a series of information briefings has been conducted across the 5 tenements at Makuutu to provide information on the Project status and also the Phase 3 drill program (refer ASX announcement 19<sup>th</sup> March 2021).



*Figure 2: Community engagement underway at Makuutu.*



*Figure 3: Stakeholder engagement activity on EL00147 ahead of the first drill program to be competed there.*

The appointment of key Ugandan consultants, and ongoing activity with local government and agencies will continue to increase over the coming year as we increase our established presence within Uganda.

### **Key Appointment**

The Company has engaged the services of Dr James (Jim) Tyler from Environment Plus Pty Ltd in the role of Environmental and Community Advisor, with a mandate being the oversight of key environmental and social programs at Makuutu. Jim has a strong technical capacity with demonstrated experience meeting EPs that has delivered and maintained excellent environmental and community stakeholder relationships for major mining projects in Australia, PNG and Africa.

Jim has firsthand experience leading and delivering large scale ESIA studies within Africa, collaborating with local service providers and meeting International Finance Corporation (IFC) standards. Jim's previous roles have included Manager Environment and Quality at Nyrstar, Environment Director for Barrick Gold, Group Environment Manager for Harmony Gold and Manager, Environment and Community for Sundance Resources.

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 4.

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.

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.



Figure 4: Makuutu Rare Earths Project Location with major existing infrastructure.

### 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.*