

A high-speed photograph of a dark-colored Tesla Model S driving through a tunnel. The car is in the foreground, moving away from the viewer, with its rear lights glowing red. The tunnel walls are illuminated with blue lights, and the road has white dashed lines. The background is blurred due to motion.

Sustainably Sourcing Magnet and Heavy Rare Earths for Western Demand

Sydney RIU

Cautionary Statement

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This presentation should be considered in its entirety. If you do not understand the material contained in this presentation, you should consult your professional advisors. The sole purpose of this presentation is to provide shareholders with an update on current activities of the Company and the current state of exploration at the Makuutu Rare Earths Project in the Uganda.

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Competent Person Statement

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 May 2022 and is available to view on 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.

The information in this report that relates to Production Targets or forecast financial information derived from production the production target for the Makuutu Rare Earths deposit was first released to the ASX on 20 March 2023 and is available to view on www.asx.com.au. Ionic Rare Earths Limited confirms that all material assumptions and technical parameters underpinning the Production Targets or forecast financial estimates in the announcement continue to apply and have not materially changed.

IonicRE's Vision

Integrated, Full Life-Cycle Rare Earth Company



Mining Rare Earths

- Mining magnet and heavy rare earths from the Makuutu Rare Earths Project (60% IonicRE), producing REOs for net zero carbon targets
- Mining Licence Application, expected ML award end of Q2 2023
- Long-life Ionic Adsorption Clay (IAC) deposit, low capex development
- Scalable asset, exploration upside



Refining Rare Earths

- Developing standalone refinery to separate magnet and heavy rare earths for downstream value addition to metals, magnets and RE compounds
- Evaluating US locations and downstream collaborations
- Scoping Study nearing completion, expected H1 2023



Recycling Rare Earths

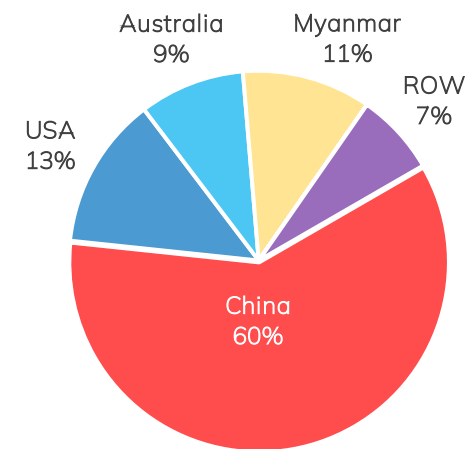
- Recycling secondary sourced spent NdFeB magnets and swarf to produce separated, refined magnet REOs
- Demonstration plant expected to be in operation H1 2023 in Belfast, UK
- Commercial scale up opportunities under evaluation
- Completing the circular economy of rare earths

Rare Earth Supply Chain – Alternate Capacity Requires Investment

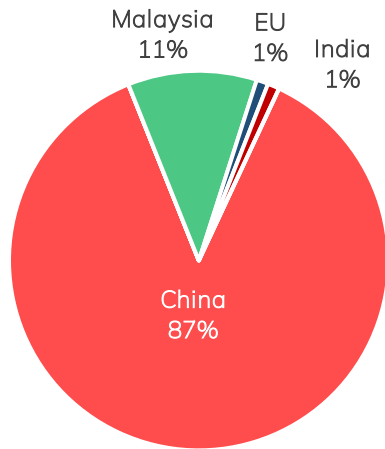
SUSTAINABLY SOURCING THE MOLECULES WILL REQUIRE DEVELOPING ALTERNATIVE CAPACITY GLOBALLY

- Rare earths are amongst the most resource-critical raw materials: they are of highest economic importance and at the same time feature a high supply risk – supply chain dominated by China
- China has a dominant position in every value addition step in conversion of mined REEs to value added products
- Developing a sustainable supply chain external from China needs scale and capacity in every step → Sustained, targeted investment needed to facilitate this

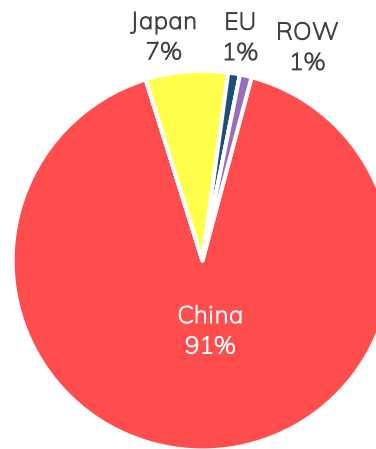
REE Mining¹



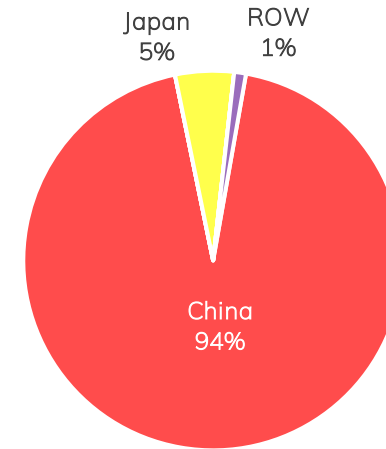
REE Processing¹



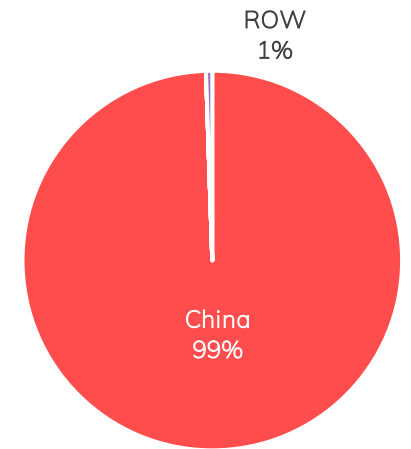
REE Metals¹



REE Magnets¹



REE Recycling²



Geo-Political Tensions – Driving Demand for Alternative, Resilient Supply

GLOBAL DESIRE TO DEVELOP ALTERNATIVE RARE EARTHS SUPPLY CHAINS TO PROTECT MANUFACTURING AND DEFENCE

The scramble for rare earths carries big geopolitical risks

But without these metals there are limited solutions to our planetary problems

MISHA GLENNY + Add to myPT



A worker blasts the ground with water at a rare earth metals mine in Nancheng county, Jiangxi province. China dominates the production and supply of rare earth metals © Reuters

DEFENSE

Pentagon suspends F-35 deliveries after discovering materials from China

The issue does not affect flight operations of F-35s already in service.



“It’s a question of supply-chain security”

“Lithium and rare earths will soon be more important than oil and gas. Our demand for rare earths alone will increase fivefold by 2030. [...] We must avoid becoming dependent again, as we did with oil and gas. [...] We will identify strategic projects all along the supply chain, from extraction to refining, from processing to recycling. And we will build up strategic reserves where supply is at risk. This is why today I am announcing a European Critical Raw Materials Act.”

“We have to build a more resilient supply chain, supporting projects and attracting more private investment from mining to refining, processing and recycling.”

European Commission President von der Leyen recalled some hard facts: *without secure and sustainable access to the necessary raw materials, our ambition to become the first climate neutral continent is at risk.*

14 September 2022



White House Briefing, 22 February 2022

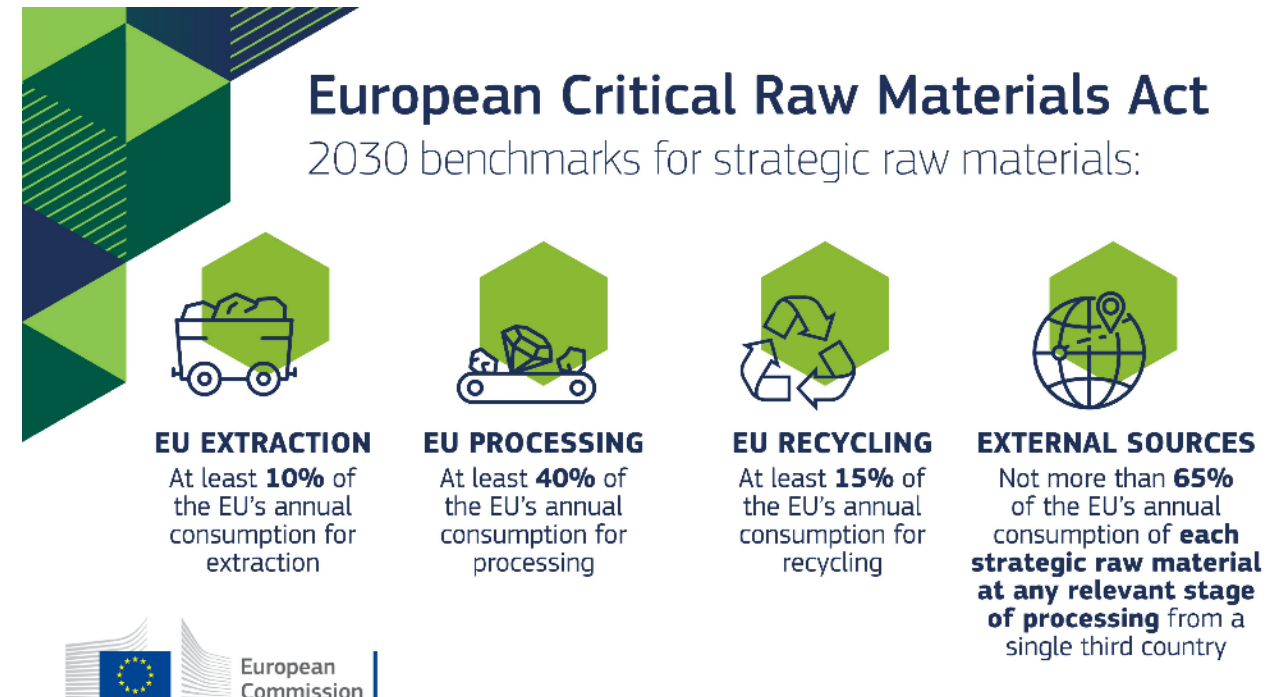
European Critical Raw Materials Act – “The Race is On!”

EUROPEAN COMMISSION’S CRITICAL RAW MATERIAL ACT TO UTILISE GLOBAL GATEWAY INSTRUMENT, A €300 BILLION INITIATIVE AIMED AT COUNTERING THE CHINESE BELT AND ROAD INITIATIVE

- In addition to an updated list of critical raw materials, the Act identifies a list of **strategic raw materials**, which are crucial to technologies important to Europe’s green and digital ambitions and for defence and space applications, while being subject to potential supply risks in the future. The Regulation sets clear benchmarks for domestic capacities along the **strategic raw material supply chain** and to diversify EU supply by 2030:
 - At least 10% of the EU's annual consumption for extraction,
 - At least 40% of the EU's annual consumption for processing,
 - At least 15% of the EU's annual consumption for recycling,
 - Not more than 65% of the Union's annual consumption of each strategic raw material at any relevant stage of processing from a single third country.
- Member States will need to adopt and implement national measures to improve the collection of critical raw materials rich waste and ensure its recycling into secondary critical raw materials. Member States and private operators will have to investigate the potential for recovery of critical raw materials from extractive waste in current mining activities but also from historical mining waste sites.
- Products containing permanent magnets will need to meet circularity requirements and provide information on the recyclability and recycled content.

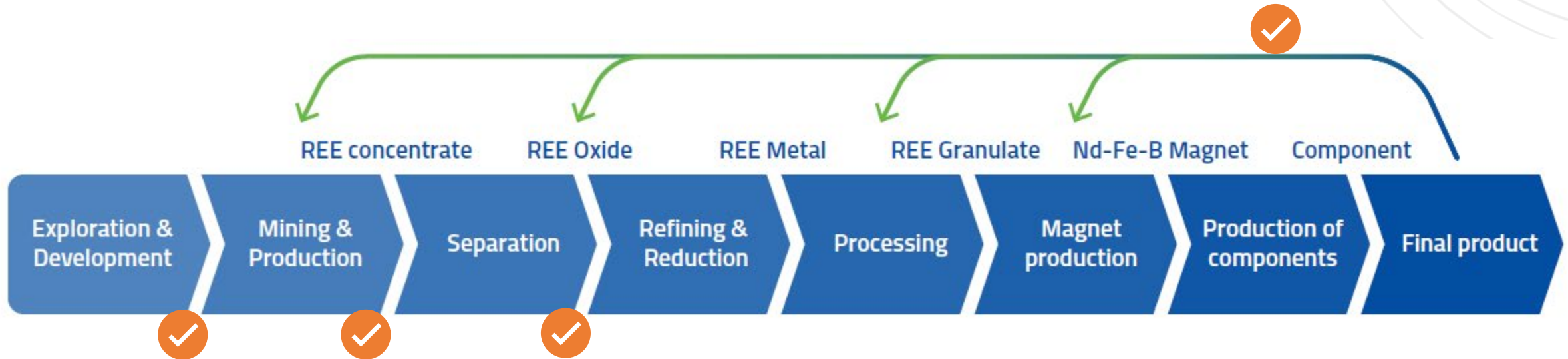
“This Act will bring us closer to our climate ambitions. It will significantly improve the refining, processing and recycling of critical raw materials here in Europe”

President of the European Commission, Ursula von der Leyen



REE Supply Chain and IonicRE Capability to date

IONICRE ADDING CAPACITY TO BECOME INTEGRATED IN FUTURE RARE EARTH SUPPLY CHAINS



1. Makuutu Rare Earths Project

- Low Capital, modular development enables IonicRE to bring on highly sought-after basket of REEs
- Expandable with free cash flows and growing market demand
- MLA on RL1693 being finalised now
- Expecting ML granted Q2 2023
- Commencing operations in 2024



2. IonicRE Refinery

- Under Evaluation now assessing potential economics → Scoping Study now expected H1 2023
- Targeting separation of MREC from Makuutu to produce refined REOs for downstream conversion to metals and alloys through collaboration / partnerships
- Potential to receive MREC feed or HREO products from other producers



3. Magnet Recycling

- Low capital development to recycle spent magnets and swarf to produce separated and refined 99.9%+ REOs
- Near term magnet REO production capacity (Nd, Pr, Dy and Tb – potential for Sm, Gd, Ho)
- Modular recycling plants located in numerous jurisdictions
- Potential opportunities in the US and EU

A map of East Africa with a Ugandan flag pin. The map shows countries including Nigeria, Chad, Sudan, Ethiopia, Somalia, Kenya, Uganda, Rwanda, Burundi, Congo, Gabon, and Angola. The Ugandan flag, which has horizontal stripes of black, red, and white with a central emblem, is pinned to the map over Uganda. The city of Nairobi is labeled in Kenya, and Mogadishu is labeled in Somalia. The map is partially obscured by a dark blue overlay at the bottom.

Makuutu Rare Earths Project – Stage 1 DFS

Low Capital, Modular, Ionic Adsorption Clay Project

Makuutu received Flagship Project status in October 2022
due to its significance to the Uganda's development

Makuutu Stage 1 DFS Results

BASE CASE LAYS FOUNDATION, EXTENSION OF LIFE POTENTIAL REMAINS

- The Mining Licence Application (MLA) over Retention Licence 1693 (Application TN03834) focuses on the Stage 1 DFS and provides for a **35-Year** mine life;
- Stage 1 DFS delivers:
 - an EBITDA of A\$2.29 billion (US\$1.60 billion);
 - Post Tax Free Cash Flow total ~ A\$1.46 billion (US\$1.02 billion);
 - Net Present Value (NPV8) (Pre-tax) of A\$580 million (US\$406 million); and an
 - Internal Rate of Return (IRR) of **32.7%**;
- Stage 1 production of a value-added product, mixed rare earth carbonate (MREC) (including Scandium), via a modular heap desorption processing plant, amounts to a total Capital Expenditure (CAPEX) of **US\$120.8 million**;
- Stage 1 plant capacity is **5.0 million tonne per annum** (Mtpa) Run of Mine (ROM) throughput;
- Stage 1 TREO production basket of **71% magnet plus heavy REO** content;
- Maiden Ore Reserve for the Makuutu Stage 1 over RL 1693 of **172.9 Mt** at 848 ppm TREO, or 584 ppm TREO – CeO₂, and 30 ppm Sc₂O₃;
- Uniquely positioned to be a long-term sustainable magnet and heavy REO producer, with first MREC production targeted for Q4 2024; and
- Further staged development at Makuutu with additional tenements

BASE CASE RL 1693 only

Stage 1 Life

35 Years

EBITDA

US\$1.28 billion

Post-Tax Free Cash Flow

US\$1.02 billion

Pre-Tax Net Present Value (8)

US\$406 million

IRR (Post-Tax)

32.7%

Pre-Production CAPEX

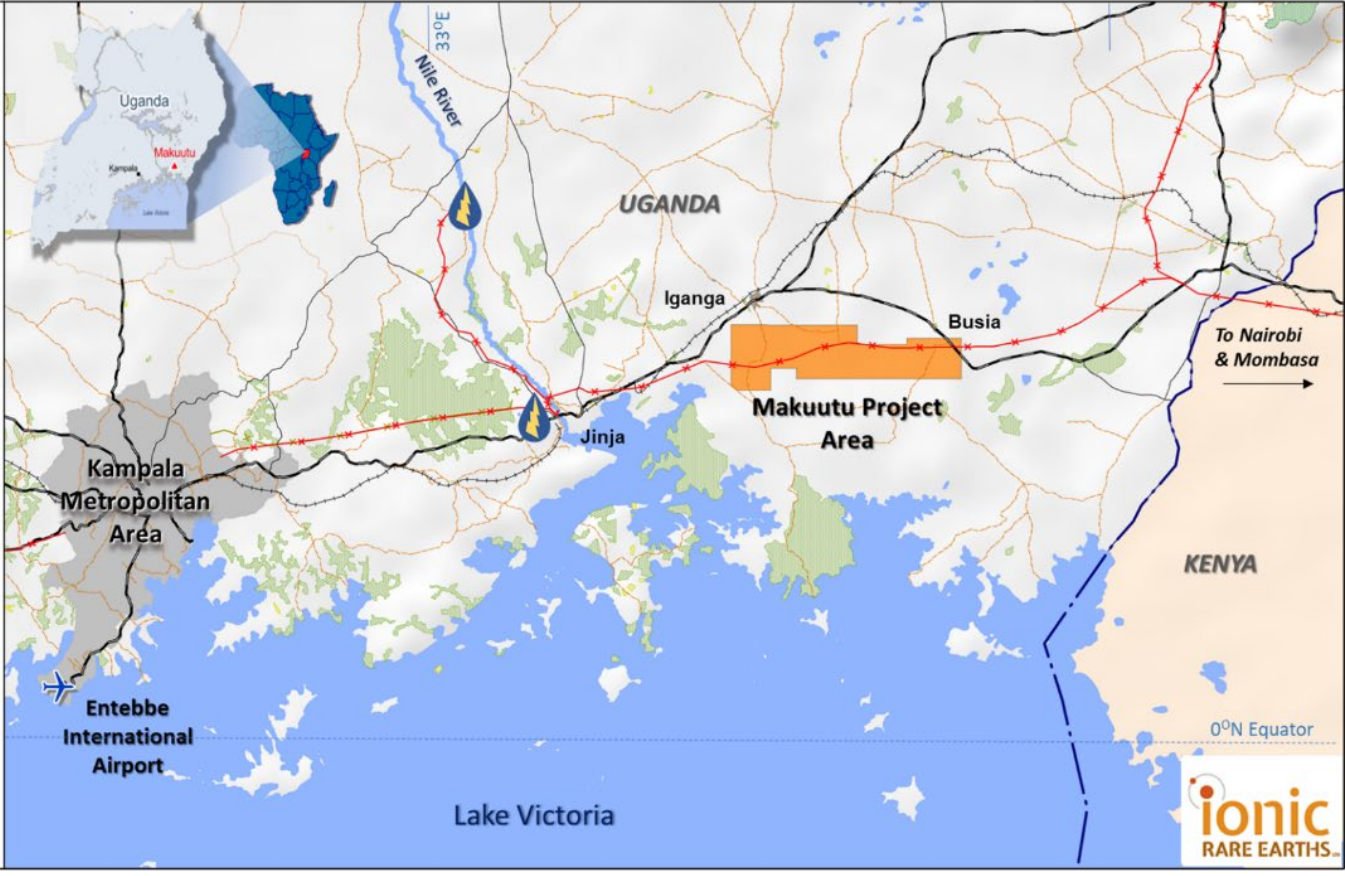
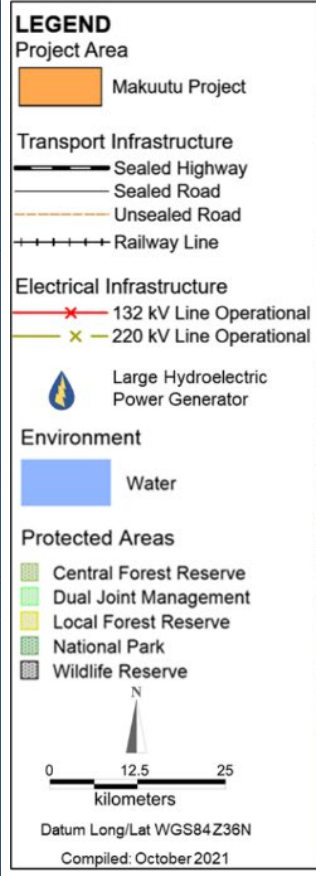
US\$120.8 million

Product Basket (magnet + heavy REE)

71%

Tier-One Infrastructure already there – supports low CAPEX Development

EXCELLENT LOCAL INFRASTRUCTURE SUPPORTS LOW CAPEX DEVELOPMENT



Makuutu Mineral Resource Estimate → Mining Lease Application

MAKUUTU MRE CURRENTLY >500 MILLION TONNES, FOCUS FOR MLA ON MAKUUTU CENTRAL ZONE (RL 1693)

JORC MRE¹ of 532 million tonnes @ 640 ppm Total Rare Earths Oxide (TREO), at a cut-off grade of 200 ppm TREO-CeO₂

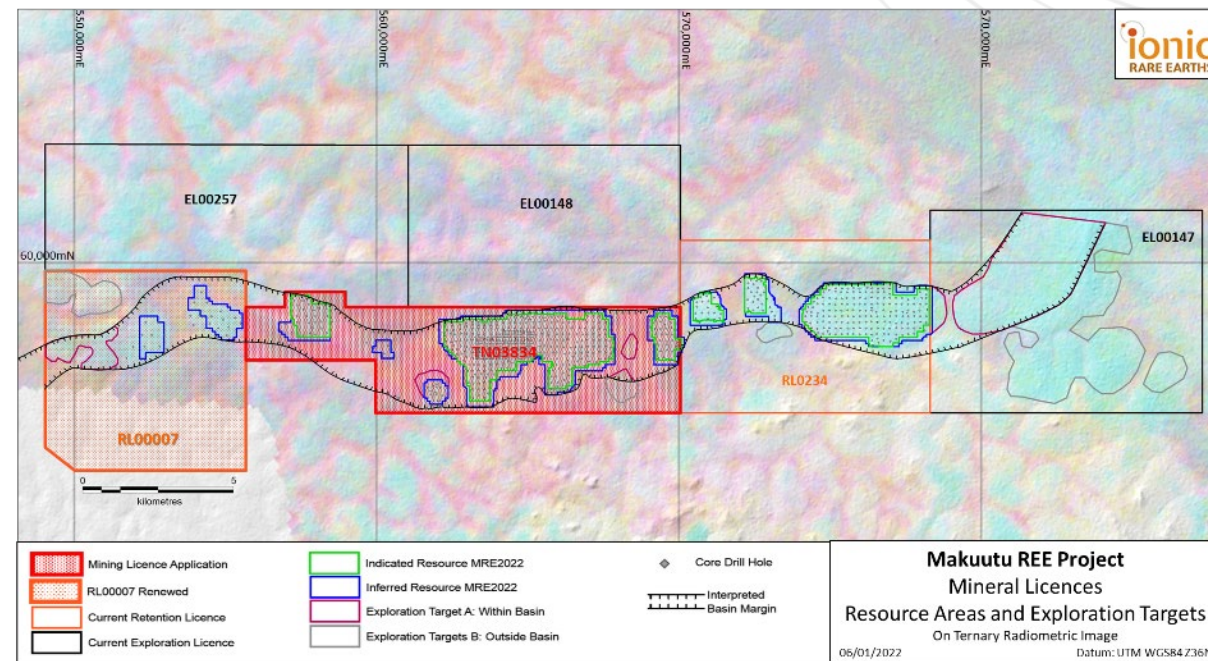
76% of Makuutu MRE now converted to Indicated Resource, at 404 million tonnes at 670 ppm TREO

Increased resource confidence at Makuutu to support MLA focused on RL 1693 – contains an Indicated Resource of 259 million tonnes at 740 ppm TREO

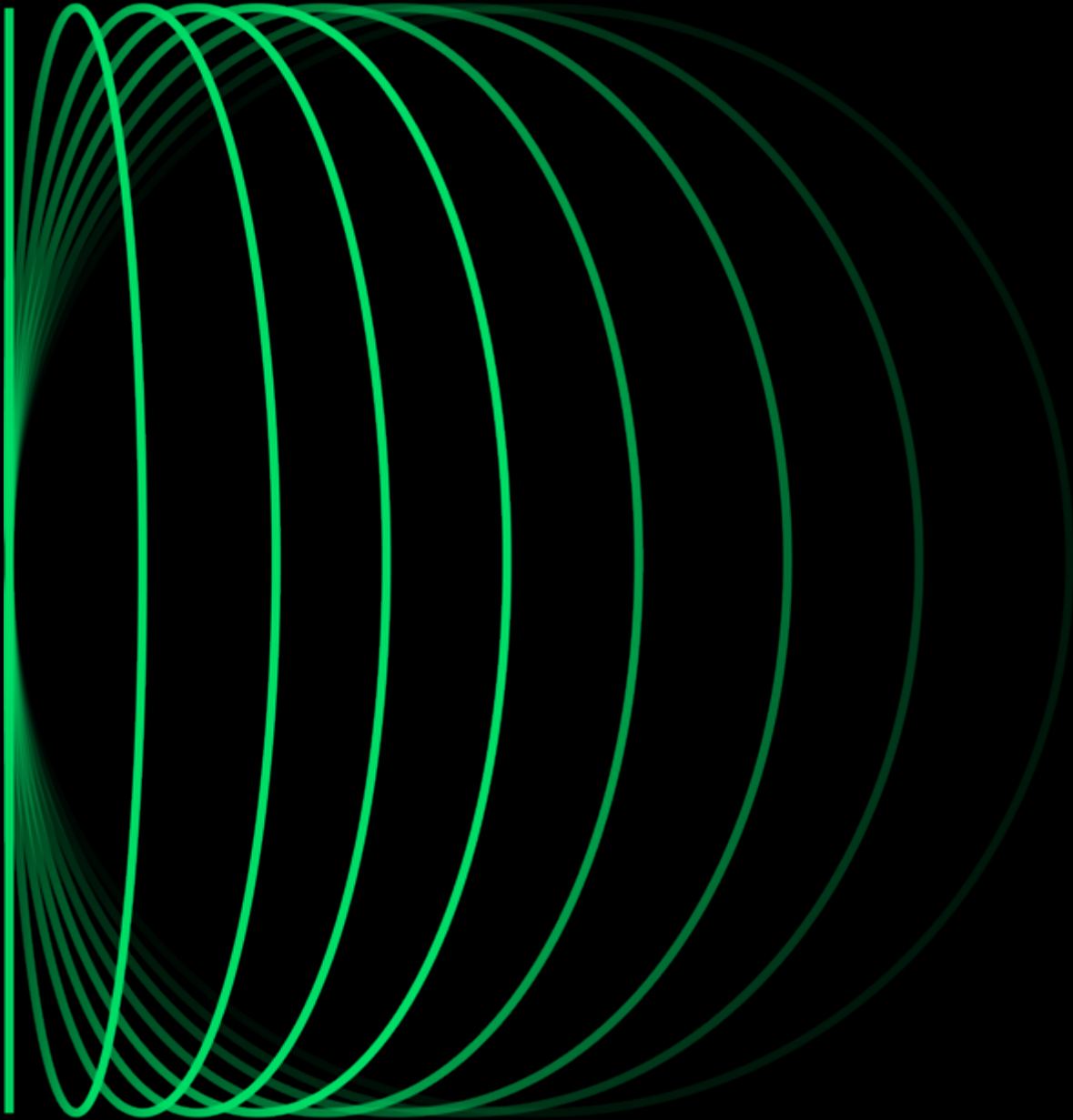
Makuutu Central Zone (MCZ), provides a continuous resource area over 5.5km long and 3km wide for a combined 234 million tonnes or 44% of the total resource and 52% of the total Indicated Resource

Other RLs and ELs will advance towards MLA as their Licences move to the next renewal period (RL 00007 expected to progress to MLA in Nov 2024). Drilling to commence May 2023.

Shallow, near surface IAC mineralisation, with clay layer averaging 5 to 12m thick under cover approximately 3m deep. Average hole depth ~18m, maximum clay thickness ~29m



Category	Estimation Domain	Tonnes (Mt)	TREO (ppm)	TREO no CeO ₂ (ppm)	LREO (ppm)	HREO (ppm)	CREO (ppm)	Sc ₂ O ₃ (ppm)
Indicated	Clay	404	670	450	500	170	230	30
Inferred	Clay	127	540	360	400	140	180	30
Total Resource	Clay	532	640	430	480	160	220	30

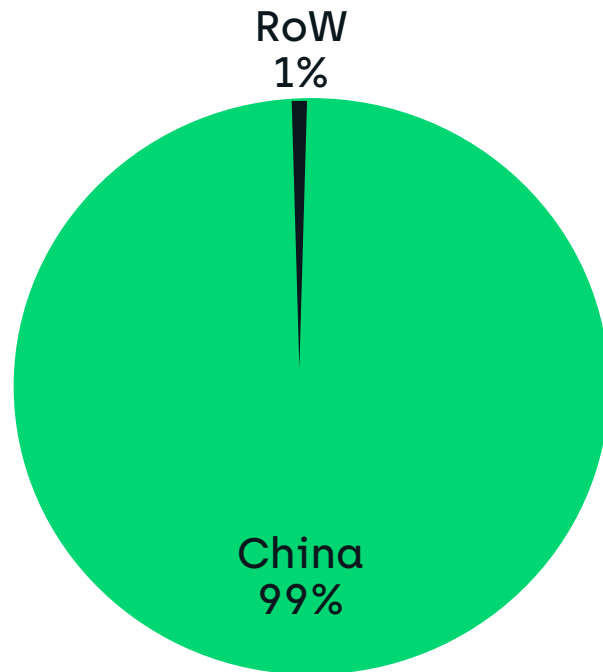


Magnet Recycling and the Circular Economy of Rare Earths

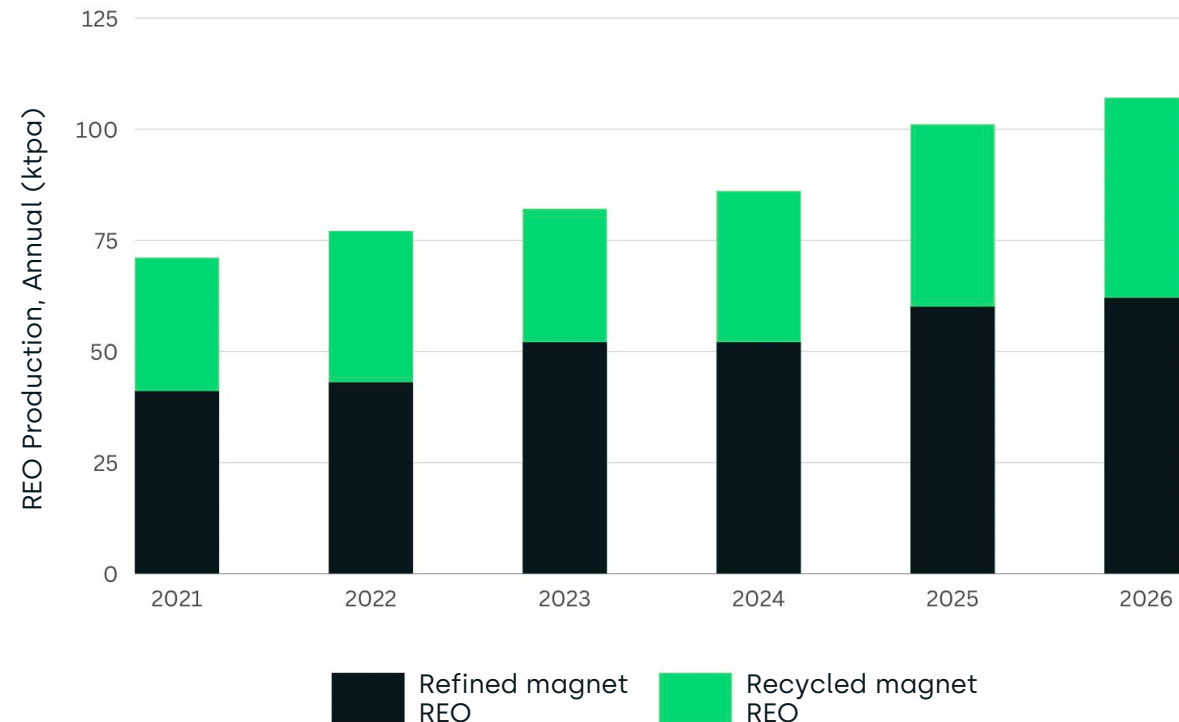
ionic
technologies

Ionic Technologies – NdFeB Magnet Recycling

Recycling of Magnet REO Dominated by China, Makes Up 40% of Existing Global Supply



Secondary sourcing (recycling) of rare earth oxides market share dominated by China



Current breakdown and forecast to 2026 of global magnet REO production by refined vs recycled sources globally

Ionic Technologies – NdFeB Magnet Recycling

Developing Capacity on rare earth separation, refining and recycling

- IonicRE advancing **Ionic Technologies**, a leading edge, patented magnet recycling technology company based in Belfast UK, technology developed within Queens University Belfast (QUB)
- Unique recycling technology that can **hydrometallurgically extract, separate and refine** magnet REOs from spent magnets and swarf to **high purity 99.9%+ oxides – Nd₂O₃, Pr₆O₁₁, Dy₂O₃ and Tb₄O₇**
- Sept 2022 awarded grant of **£1.72 million (~ A\$2.9 million) from the UK Government's Innovate UK Automotive Transformation Fund Scale up Readiness Validation (SuRV) programme** to help secure the UK supply of critical rare earth metals for EV manufacturing
- **New Belfast Technical Centre now operation**, and Magnet Recycling Demonstration Plant operational in **June 2023**, to convert 30 tonnes/annum NdFeB magnets → 10 tonnes/annum magnet REOs
- Provide springboard to accelerated rare earth production capacity, with potential to **commence magnet REO production at small scale in 2023** whilst Makuutu is being developed and ramped up and in parallel to the development of the Refinery
- Potential to **facilitate collaboration / partnership agreements on downstream supply chain** from REOs, RE metals, RE alloys and NdFeB magnets

Ionic Technologies – NdFeB Magnet Recycling

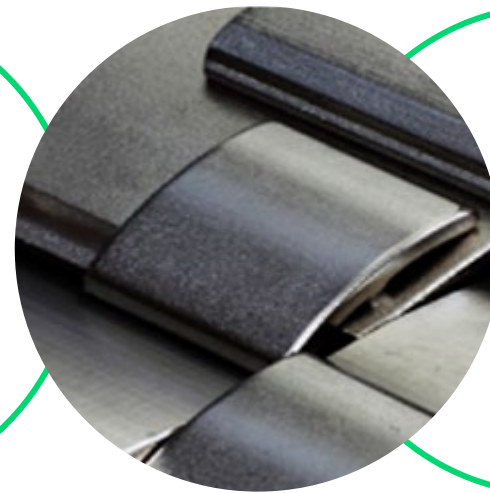
Developing Capacity on rare earth separation, refining and recycling



Mixed grades of waste permanent magnets



100% recycled individual virgin grade rare earth oxides



High specification permanent magnets

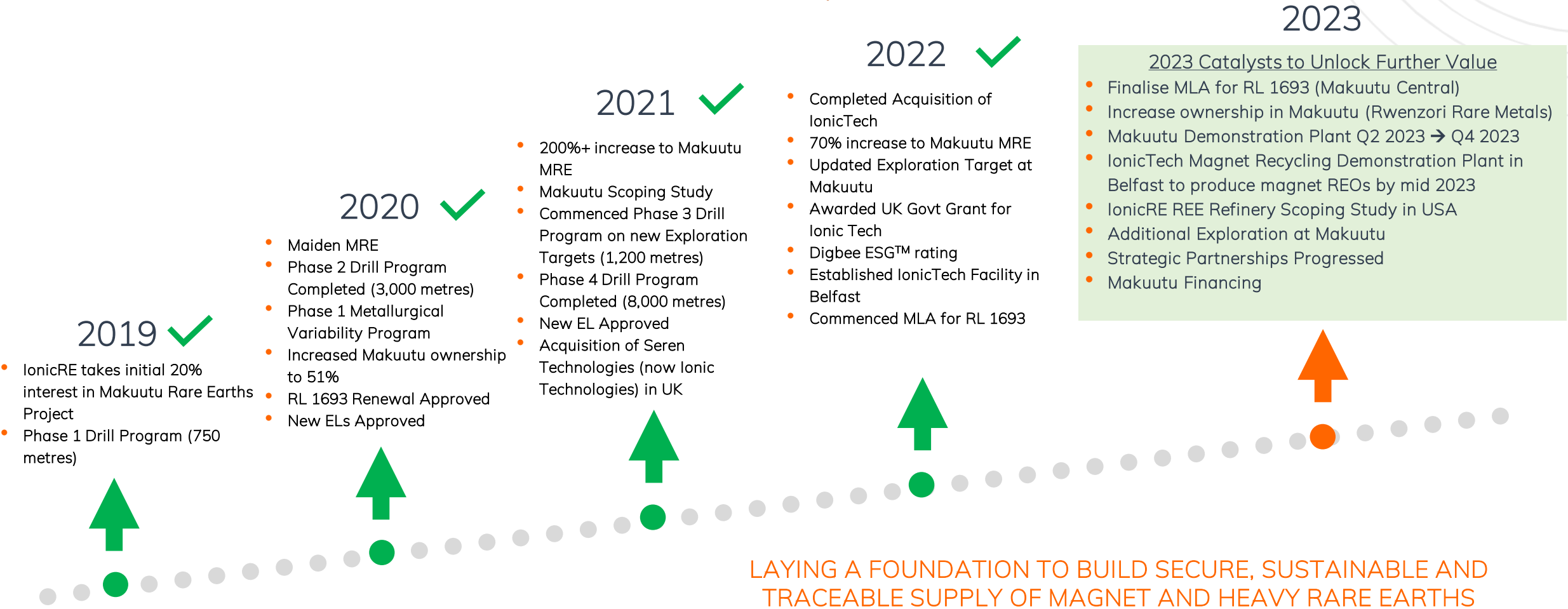
Ionic Technologies Demonstration Plant

Our Demonstration Plant recovers, separates and refines high-purity magnet Rare-Earth Oxides (REOs) from 30 tonnes per annum of waste magnets and swarf, producing over 10 tonnes of separated magnet REOs from June 2023.



IonicRE Activity Ramping Up Year-on-Year

VALUE UNLOCKED THROUGH ACCELERATED WORK PROGRAMS AT MAKUUTU, NOW IONIC TECH



IonicRE is on the cusp of a re-rate via de-risking Makuutu / IonicTech

CAPITAL STRUCTURE (as @ 10/05/2023)

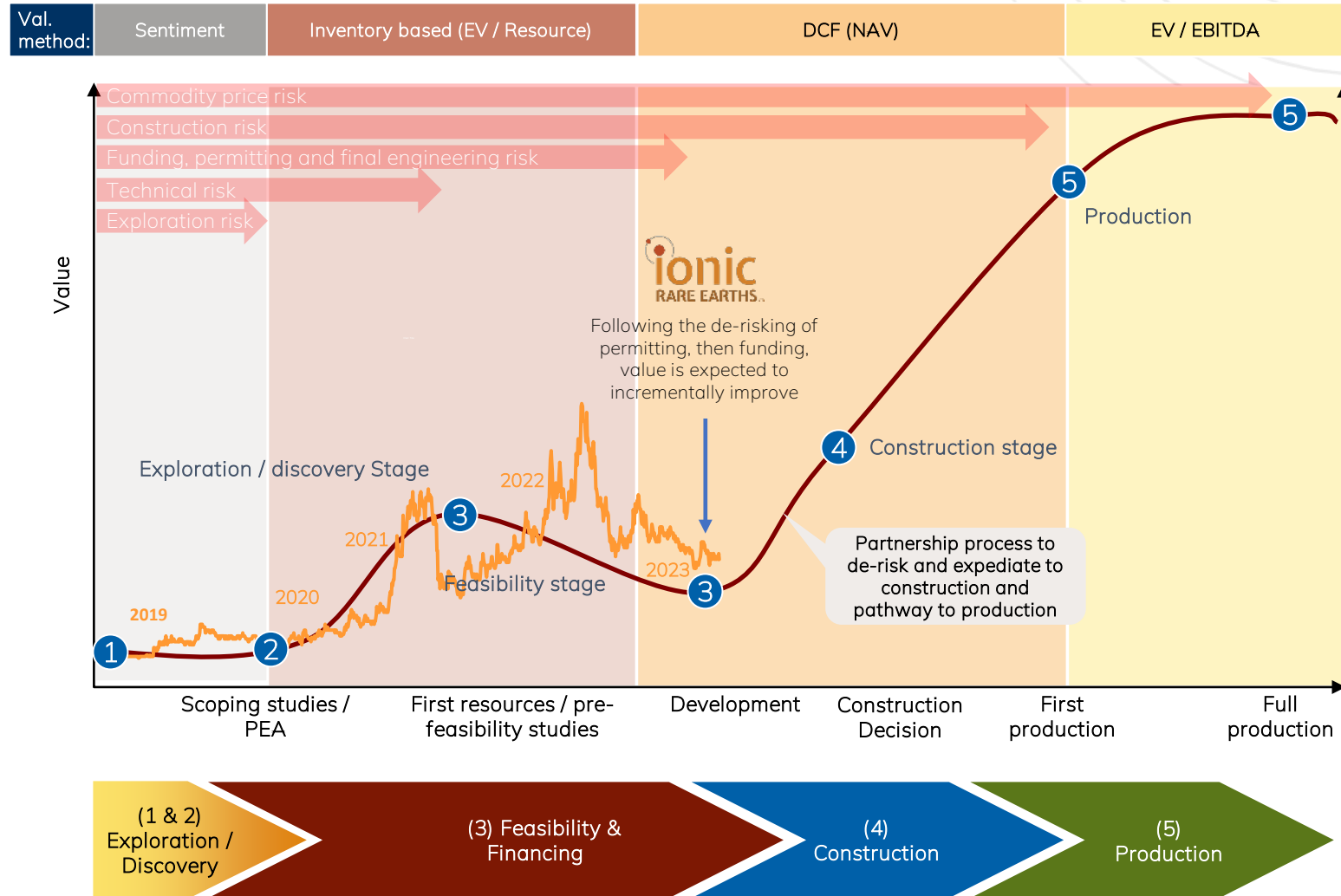
Shares Outstanding	3,946,104,920
Total Options Outstanding	150,000,000 (exercisable at 2.15 to 6.4 cents)
Total Outstanding Performance Rights	6,700,000
Share Price	A\$0.025
Market Capitalisation	A\$99 million
12-month Share Price Range	A\$0.022 – A\$0.059
12-month Average Daily Volume / Turnover	21m shares (~A\$0.9m)
Cash Balance (31/03/2023)	A\$14.5 million

IXR MAJOR SHAREHOLDERS

Major Shareholders (Top 20)	26.5%
Board, Executives, & Key Advisors	8.0%

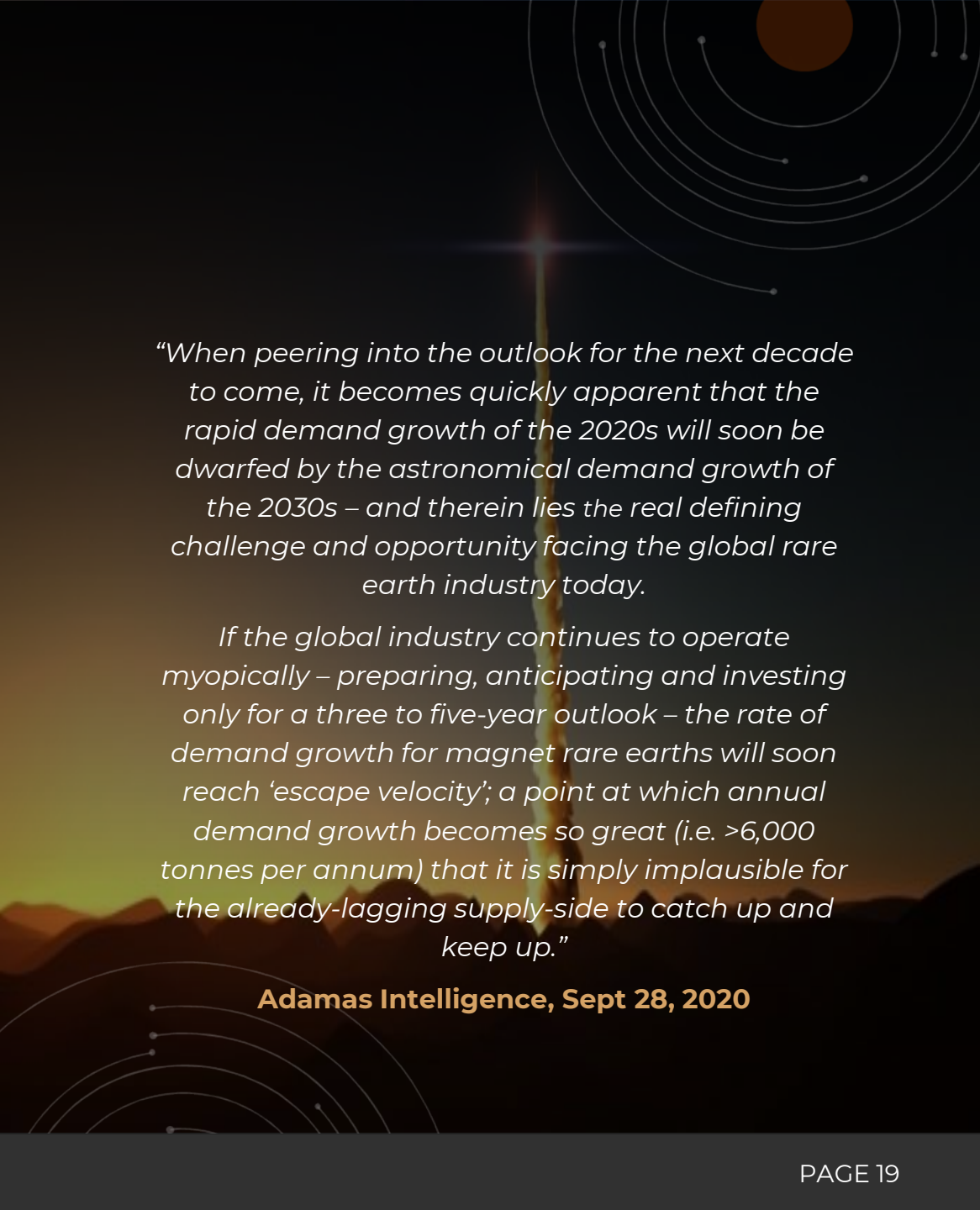
BOARD AND MANAGEMENT

Trevor Benson	Chairman
Tim Harrison	Managing Director
Max McGarvie	Non-Executive Director
Sufian Ahmad	Non-Executive Director
Brett Dickson	Company Secretary & CFO



IonicRE Value Proposition

1. MAKUUTU IS A LARGE UNIQUE IONIC ADSORPTION CLAY DEPOSIT, PROVIDING SCALABLE EXPANSION POTENTIAL TO TAP INTO SURGING RARE EARTHS PRICING IN THE FUTURE
2. MAKUUTU A LOW CAPITAL DEVELOPMENT PROJECT, PRODUCING MAGNET & HEAVY RARE EARTHS CRITICAL FOR TOMORROW'S NET ZERO CARBON TARGETS
3. MAKUUTU'S STRATEGIC IMPORTANCE WILL INCREASE LONG TERM WITH DRAMATIC INCREASES IN DEMAND AT THE DOORSTEP
4. GEOPOLITICAL TENSIONS DRIVING SECURE, ALTERNATIVE SUPPLY OF MAGNET & HEAVY RARE EARTHS
5. DOWNSTREAM REFINING POTENTIAL TO UNLOCK VALUE OF MAKUUTU BASKET
6. MAGNET RECYCLING EXPOSURE WITH TECHNOLOGY READY TO COMMERCIALISE IN MODULAR, GLOBAL DEPLOYMENT



“When peering into the outlook for the next decade to come, it becomes quickly apparent that the rapid demand growth of the 2020s will soon be dwarfed by the astronomical demand growth of the 2030s – and therein lies the real defining challenge and opportunity facing the global rare earth industry today.

If the global industry continues to operate myopically – preparing, anticipating and investing only for a three to five-year outlook – the rate of demand growth for magnet rare earths will soon reach ‘escape velocity’; a point at which annual demand growth becomes so great (i.e. >6,000 tonnes per annum) that it is simply implausible for the already-lagging supply-side to catch up and keep up.”

Adamas Intelligence, Sept 28, 2020



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