

A landscape photograph showing a field of green corn plants in the foreground. In the middle ground, there are several large, mature trees with dense green foliage. The background shows a clear sky with some light clouds. The top of the image has an orange gradient with a network of white dots and lines, suggesting a molecular or technological theme.

Makuutu – An alternative critical and heavy REO source enabling drive towards Carbon Neutrality

Paydirt Battery Minerals Conference 2021

2 June 2021

Important Notice and Disclaimer



Forward Looking Statements

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Competent Persons Statement

Information in this announcement 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 (ASX:IXR). The Mineral Resource Estimate is as at 3 March 2021 and was reported in accordance with JORC Code 2012 guidelines. 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 and that relates to mine design, planning and optimisation is based on information reviewed by Mr Lee White who is Principal Engineer of Ionic Rare Earths Limited and engaged through a service contract with Libertas Infinity Pty Ltd. Mr White is a Member of the AusIMM. Mr White 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 White consents to the inclusion in this announcement of the matters based on their information in the form and context in which it appears.

The information in this report and that relates to metallurgy testwork is based on information reviewed by Mr Tim Harrison who is Managing Director 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.

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Cautionary Statement – Scoping Study Parameters

This Scoping Study has been undertaken to determine the potential viability of an open pit and heap leach process plan to produce a mixed rare earth carbonate product onsite at the Makuutu Rare Earths Project ("Makuutu" or the "Project"), and to provide Ionic Rare Earths Limited ("IonicRE" or "the Company") with the confidence to advance to Bankable Feasibility Study. The results should not be considered a profit forecast or a production forecast.

The Study is a preliminary technical and economic study of the potential viability of the Makuutu Rare Earths Project. In accordance with the ASX Listing Rules, the Company advises it is based upon low-level technical and economic assessments (+/- 50%) that are not sufficient to support the estimation of Ore Reserves, or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Study will be realised.

Further evaluation work including infill drilling, metallurgical testwork and appropriate studies are in progress and required before IonicRE will be in a position to estimate Ore Reserves and to provide assurance of an economic development case.

In accordance with ASX and ASIC guidance, the Base Case Production Target over an initial life of 11 years referred to in this announcement is based upon JORC Mineral Resources which are classified as approximately 69% Indicated and 31% Inferred. The Company has concluded that it has reasonable grounds for disclosing this Production Target. This 11-year period covers the full allocation of installed process plant capital investment.

IonicRE confirms that the Base Case financial viability of the Makuutu Rare Earths Project is not dependent on the inclusion of Inferred Resources in the production schedule.

The Study is based upon material assumptions outlined elsewhere in this announcement. These include assumptions about the availability of funding. While IonicRE considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Study will be achieved.

The Company has concluded it has a reasonable basis for providing forward-looking statements included in this announcement and believes that it has a reasonable basis to expect it will be able to fund the development of the Project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Study.

This announcement contains a series of forward-looking statements. Generally, the words "expect," "potential", "intend", "estimate", "will" and similar expressions identify forward-looking statements. By their very nature forward-looking statements are subject to known and unknown risks and uncertainties that may cause actual results, performance or achievements, to differ materially from those expressed or implied in any forward looking statements, which are not guarantees of future performance. Statements in this announcement regarding IonicRE's business or proposed business, which are not historical facts, are forward-looking statements that involve risks and uncertainties, such as Mineral Resource estimates, market prices of metals, capital and operating costs, changes in project parameters as plans continue to be evaluated, continued availability of capital and financing and general economic, market or business conditions, and statements that describe IonicRE's future plans, objectives or goals, including words to the effect that IonicRE or management expects a stated condition or result to occur.

Forward-looking statements are necessarily based on estimates and assumptions that, while considered reasonable by IonicRE, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies. Since forward-looking statements address future events and conditions, by their very nature, they involve inherent risks and uncertainties. Actual results in each case could differ materially from those currently anticipated in such statements. Investors are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date they are made.

IonicRE has concluded it has a reasonable basis for providing these forward-looking statements and believes it has reasonable basis to expect it will be able to fund development of the project. However, a number of factors could cause actual results or expectations to differ materially from the results expressed or implied in the forward-looking statements. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of this study.

The project development schedule assumes the completion of a Bankable Feasibility Study (BFS) by the end of Q3 2022. Environmental permitting and development approvals are the main time determining factors to first production, scheduled for the first half of 2024. The key document for the environmental approval process is the Environmental and Social Impact Assessment (ESIA) and this is due to be lodged in Q1 2022. Delays in the environmental approval process or any other development approval could result in a delay to the commencement of construction (planned for early 2023). This could lead to a delay to first production. The Company's stakeholder management and community engagement programs are also intended to increase awareness and communication across the local districts within Uganda to assist with facilitating approvals. Given these factors, the dates are indicative only.

To achieve the range of outcomes indicated in the Scoping Study, pre-production funding of approximately US\$89 million will likely be required. Investors should note that there is no certainty that IonicRE will be able to raise that amount of funding when needed. It is also likely that such funding may only be available on terms that may be dilutive to or otherwise affect the value of IonicRE's existing shares.

It is also possible that IonicRE could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the Project. If it does, this could materially reduce IonicRE's proportionate ownership of the Project. Alternatively, IonicRE could seek to increase its ownership in the Project given the nature of the existing earn-in arrangement to the Project.

It is anticipated that finance will be sourced through a combination of equity from existing shareholders, new equity investment and debt providers. In February 2021, the Company completed a A\$12 million share placement of which A\$10 million was corner-stoned by highly experienced institutional investors. Further, strong indications of equity support exist from various groups including strategic partner interest and investment houses. The Board considers that the Project cash flows outlined in the Scoping Study are supportive of pre-production debt funding of the Project on normal commercial terms.

The Board considers that the Company has sufficient cash on hand to undertake the next stage of planned work programs, including the completion of a Bankable Feasibility Study (BFS), continued metallurgical testing, the commencement of further technical studies and ongoing exploration of the project area.

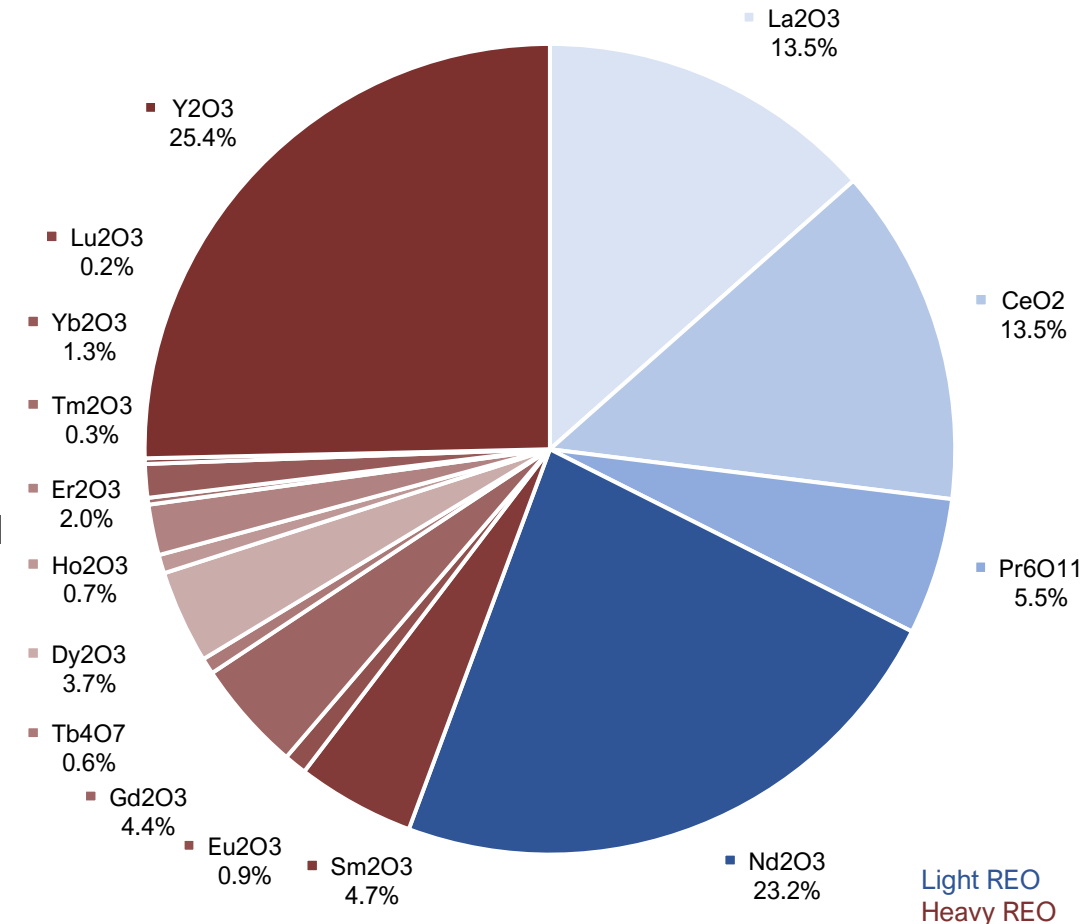
Makuutu – A Truly Unique Investment Opportunity



Strategic value defined by the Unique CREO/HREO Basket

- Makuutu (51% IonicRE ownership) presents **one of the best balanced REO baskets** for REO projects globally
- **Ionic Adsorption Clay (IAC) REE mineralisation**
 - The pick of REE mineralisation, source of 95% of HREO globally
 - Widespread Awareness that IAC mineralisation in southern China is being depleted → Makuutu represents one of the last large-scale undeveloped IAC deposits globally
- **CREO and HREO dominant** – 73% of basket → growing future demand
- **Key industrial applications** enabled via balanced REO basket
 - Electric Vehicles
 - Renewable Energy
 - Communications
 - Defence
- **Long life potential at 27+ years** with **significant Exploration upside** still to be realised → highly prospective EL00147 recently tested via RAB drilling (pending assays)
- **Infrastructure already there**
- Strategic partnering process underway → **Makuutu has wide appeal**
 - Non-binding MOU signed with Chinalco subsidiary **China Rare Earths Jiangsu** to accelerate Makuutu mine development to production
 - **Discussions continue with other groups** looking to secure CREO/HREO supply → limited supply future, massive demand looming

HIGH VALUE CREO / HREO PRODUCT



Ionic Rare Earths Limited Corporate Snapshot



CAPITAL STRUCTURE (as @ 28/05/2021)

Shares Outstanding	3,196,399,514
Total Options Outstanding	391,000,000 (exercisable at 0.75 to 6.0 cents)
Share Price	A\$0.028
Market Capitalisation	A\$90 million
52 week share price range	A\$0.005 – A\$0.065
Cash Balance (31/03/2021)	A\$12.2 million

IXR MAJOR SHAREHOLDERS

Major Shareholders	15%
Board, Executives, & Key Advisors	8%

BOARD AND MANAGEMENT

Trevor Benson (B.Sc.)	Chairman
Tim Harrison (B.E(Chem), FAusIMM)	Managing Director
Brad Marwood (B.E(Mining), FAusIMM)	Non Executive Director
Brett Dickson (B. Bus, FCPA)	Company Secretary & CFO

Ionic Rare Earths (ASX: IXR) Price / Volume Chart



315 Million tonne IAC Mineral Resource Estimate



Potential for 27 year plus Project life

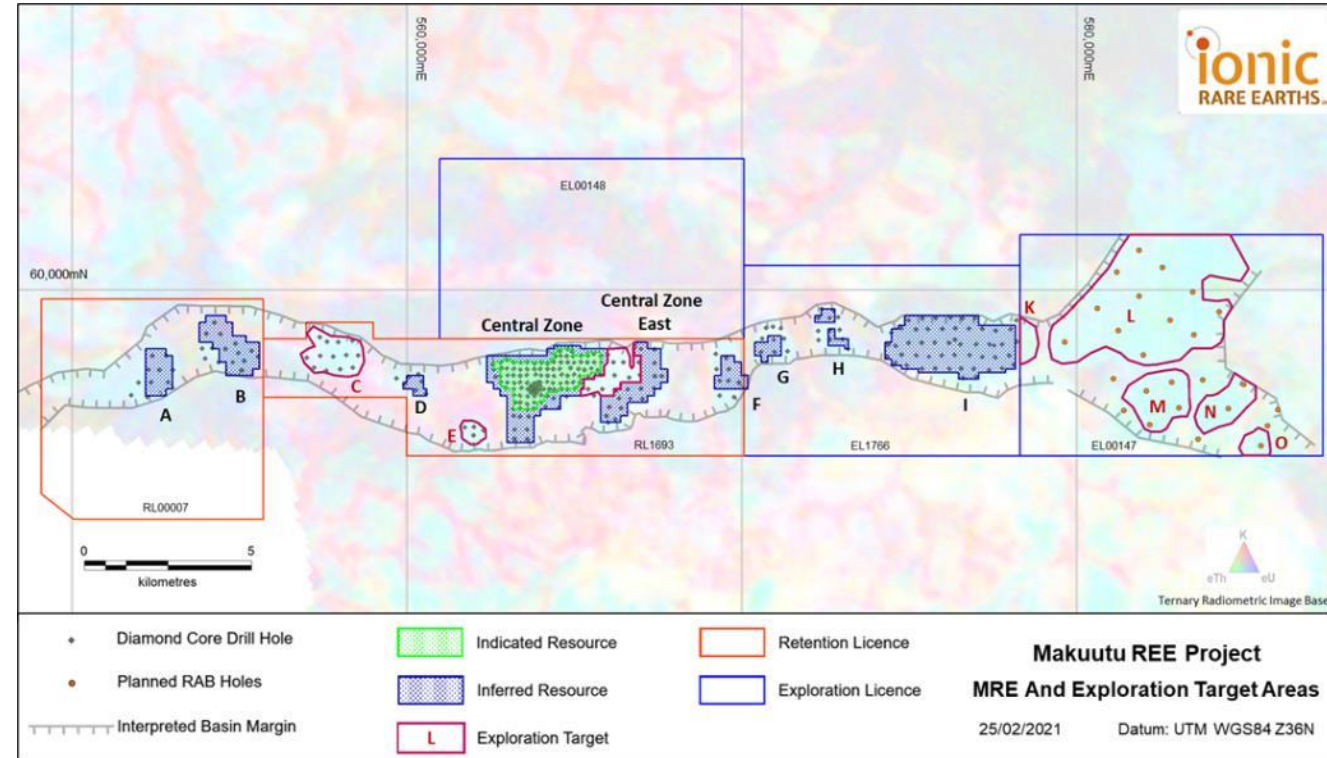
- 279 drill holes (4,754 metres) completed between October 2019 and October 2020 defining JORC MRE
- Updated MRE of **315 Mt @ 650 ppm Total Rare Earths Oxide (TREO)¹**, at a cut-off grade of 200 ppm TREO-CeO₂
- Base Case Production Target of 84.5 Mt @ 810 ppm TREO consisting of 69% Indicated Resource and 31% Inferred Resource – potential to **add +200Mt to Production Target**
- Upside Case out to 27 years plus
 - Infill drilling to commence in June to increase Indicated Resources and work towards Measured Resource base
- **Shallow, near surface mineralisation**, with clay layer averaging 5 to 12m thick under cover approximately 3m deep. Average hole depth ~17m
- Near term exploration upside on areas that haven't converted;

Area C: 14 – 27 Million tonnes grading 450 – 675 ppm TREO

Area E: 5 – 10 Million tonnes grading 450 – 675 ppm TREO

Central East: 8 – 17 Million tonnes grading 600 ppm – 820ppm TREO

This Exploration Target is conceptual in nature but is based on reasonable grounds and assumptions. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.



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	66	820	570	590	230	300	30
Inferred	Clay	248	610	410	450	160	210	30
Total Resource	Clay	315	650	440	480	170	230	30

¹ ASX announcement 3rd March 2021

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

Tier-One Infrastructure already there!



Excellent local infrastructure supports low CAPEX development

Logistics

- Approximately 10 km from Highway 109, connecting Makuutu to both capital city Kampala and Port of Mombasa, Kenya
- Approximately 20 km from rail line connecting to Port of Mombasa

Power

- Large hydroelectric generation capacity (+810MW) within 65 km of Makuutu Project area will deliver very low-cost (US\$0.05/kWh), plus further capacity being developed
- Existing electrical grid infrastructure immediately adjacent to site to provide stable power

Water

- Plentiful fresh water within and near project area (water harvesting)

Workforce

- No camp required – low-cost professional local workforce available



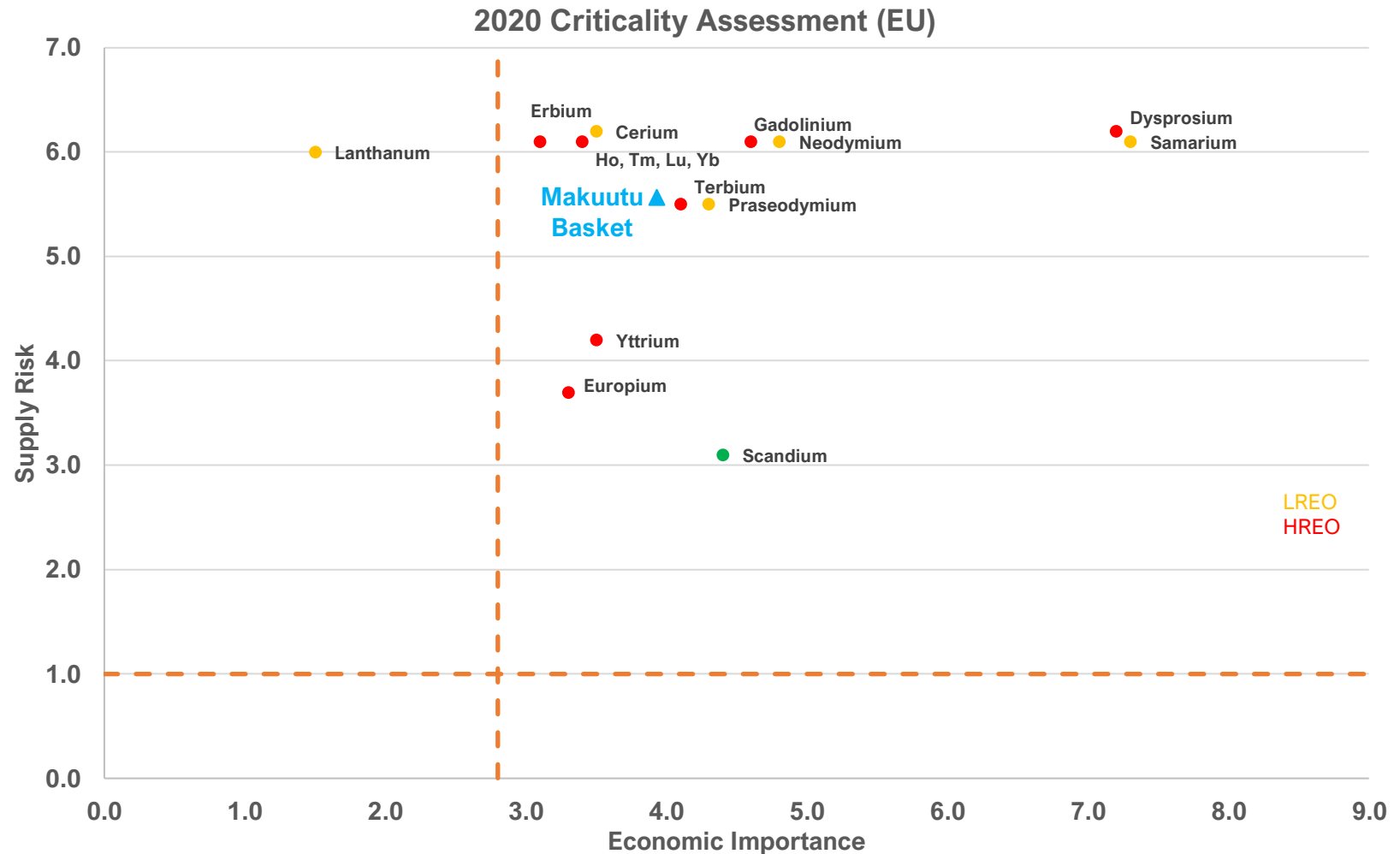
Makuutu Rare Earths Project site and existing Infrastructure Access



Images; From left, Isimba hydroelectric dam with 183 MW installed capacity at Jinja, rail line connect to Kampala and Port of Mombasa, all weather access roads connecting site to highway, sealed highway running directly adjacent site, and 132 kV power lines running through site.

Makuutu basket contains high ranked CRMs identified in 2020 EU study required to achieve carbon neutrality

- Secure and sustainable supply of both primary and secondary raw materials, specifically of critical raw materials (CRM), for key technologies and strategic sectors as renewable energy, e-mobility, digital, space and defence is one of the **pre-requisites to achieve climate neutrality**
- European Commission report identified Global **competition for resources will become fierce in the coming decade**
- **Dependence of critical raw materials may soon replace today's dependence on oil**
- **Makuutu has them all** in appreciable quantities



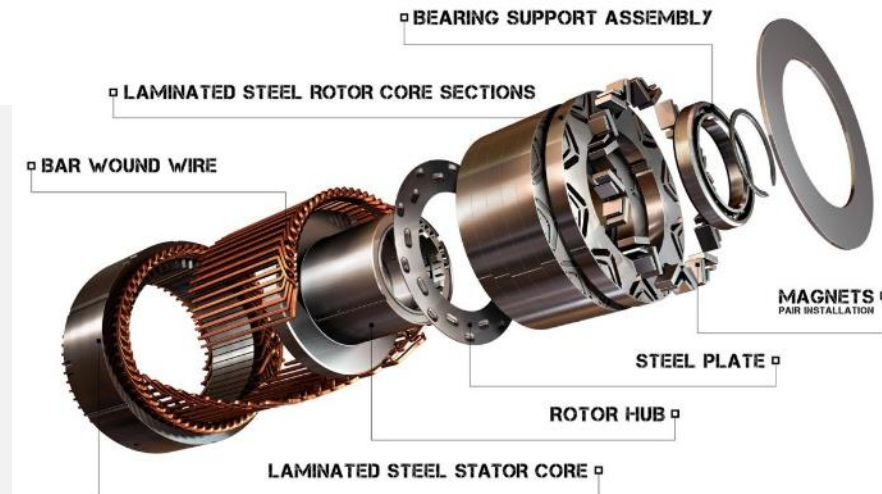
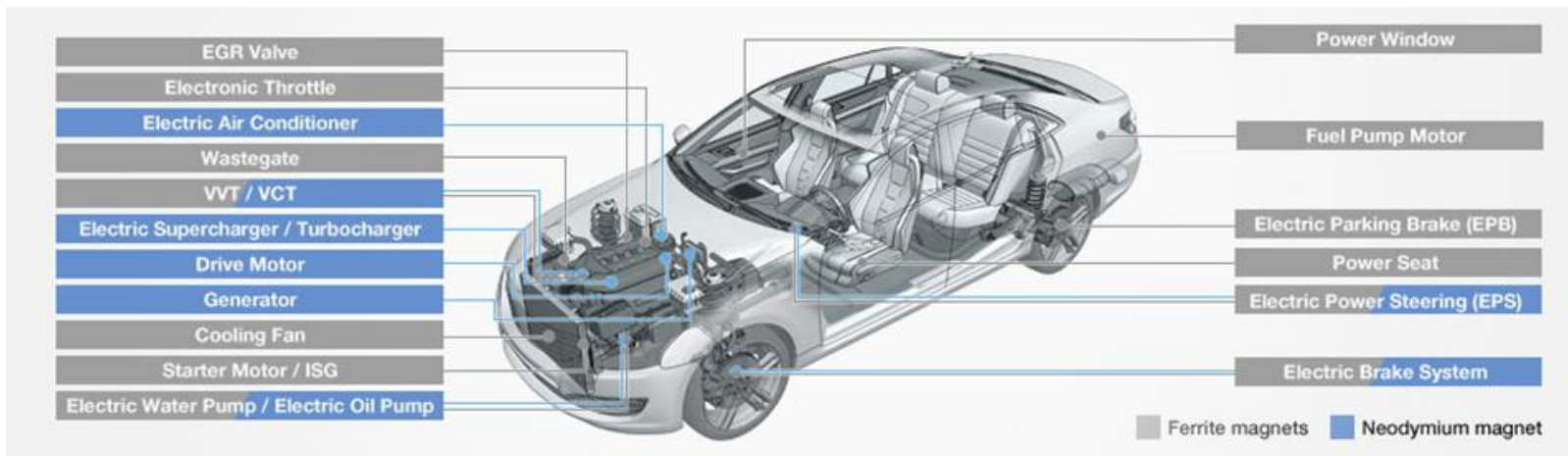
Electric Vehicles – Driven by NdPr (and DyTb)



Focus on supply constraint beyond NdPr needs attention

- Worldwide EV demand driving insatiable appetite for NdPr ... DyTb very little focus
- NdFeB permanent magnets (PM) are essential for producing light, compact and high efficiency traction motors. Approx. 28-32% of the NdFeB magnet is magnet NdPr, with DyTb used as a minor additive (~4-8%) to improve magnet performance at high temperatures¹
- Global governments mandate change with ICE to be banned in several countries from 2025, with significant changes expected in Europe where demand driven by government incentives will see it overtake China by 2030 as largest market for EVs
- Global EV sales in 2020 ~ 3.1 million, with global EVs sales expected to hit ~11 million in 2025, and ~23 million by 2030
- What happens when EVs become cheaper than ICE alternatives?

Proposed Internal Combustion Engine (ICE) Bans	
Year	Country
2025	Norway
2030	Denmark, Iceland, Ireland, Netherlands, Slovenia, Sweden, UK
2040	France, Spain
2050	Japan



An exploded view of a permanent-magnet electric-vehicle traction (propulsion) motor. The rare-earth-containing magnets are embedded in the rotor.

¹ Pavel, et al., Role of substitution in mitigating the supply pressure of rare earths in electric road transport applications, 2017; Roskill, Rare Earths: Outlook to 2030, January 2021; Argus Analytics, March 2021;

Magnet REO Demand – Supply Constrained



EVs plus Offshore Wind Turbines competing for limited CREO supply

- REO demand increasing at rates that exceed forecast driven by Government Stimulus spending on electric vehicles (EVs), renewable energy, communications, defence
- Offshore wind turbine demand growing at 20% CAGR this decade will create compete demand for magnet REOs
 - Projected future wind turbine growth beyond 2030 to 2050 estimated to consume 11-to-26-fold expansion of current magnet REO supply required to meet global wind turbine targets¹.
- By 2025 forecast supply of magnet REOs is forecast to be below demand
- By 2027 heavy magnet REOs Dy₂O₃ and Tb₄O₇ significantly in deficit
- By 2030 demand of magnet REOs forecast to exceed supply by 40%

“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.

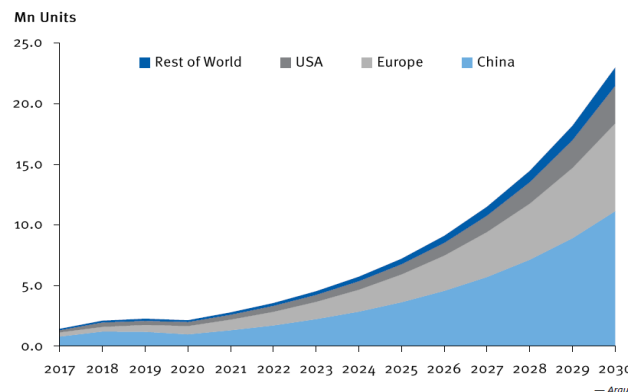
If the global industry continues to operate myopically – preparing, anticipating and investing only for a three to five-year outlook – the rate of demand growth for magnet rare earths will soon reach ‘escape velocity’; a point at which annual demand growth becomes so great (i.e. >6,000 tonnes per annum)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

Adamas Intelligence, Sept 28, 2020

Questions to ponder;

1. **Where does the supply chain think CREO & HREO will come from?**
2. **With limited supply, where are CREO and HREO prices going?**

EV sales forecast by geography, Argus Rare Earth Analytics, 2020.



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

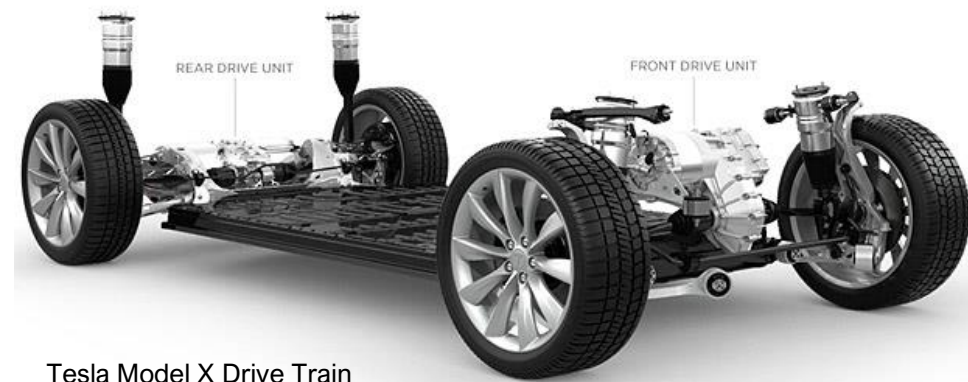
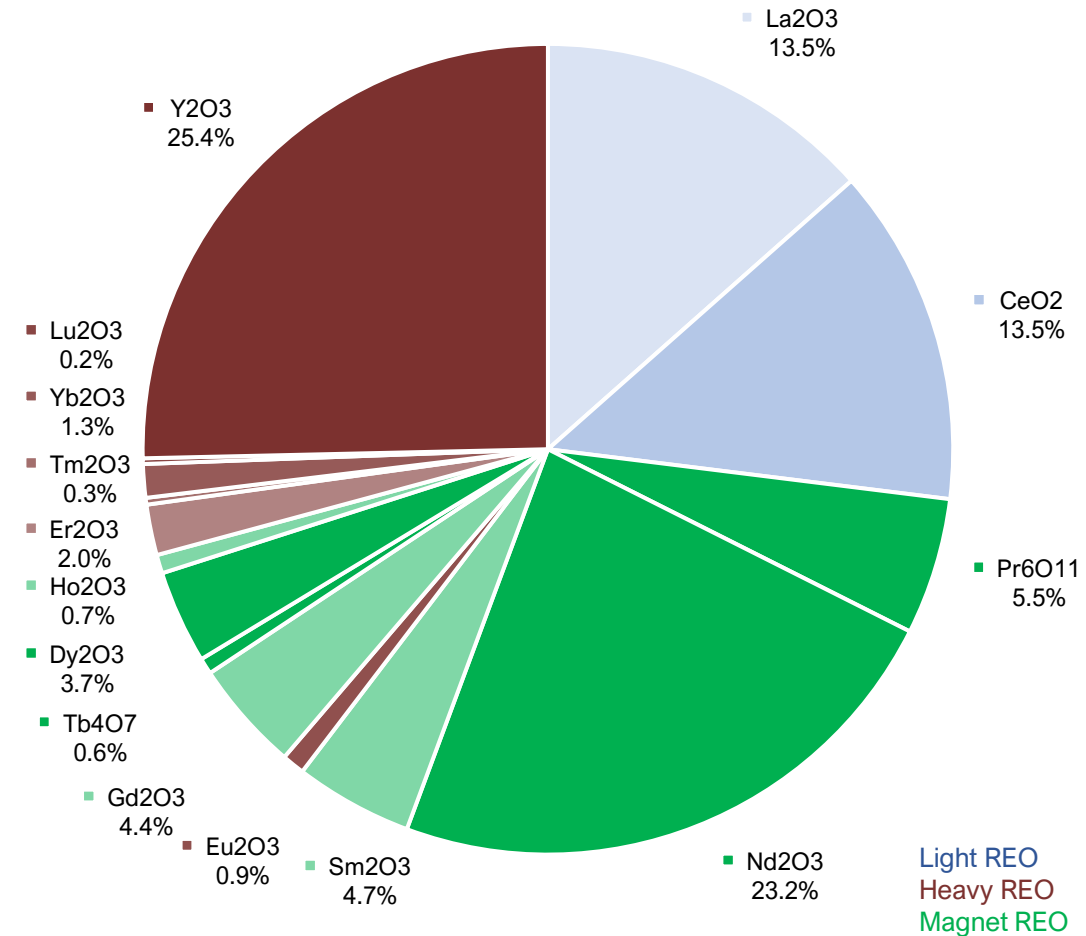
Makuutu Investment Highlights



Strategic value driven by the 43% magnet REO Basket

- Scoping Study confirms robust Base Case (11-year) CREO and HREO production potential
- Makuutu basket highly sought after with ~ 43% magnet REOs
- Highly attractive Base Case economic parameters;
 - Post tax long term free cash flow **US\$766 million** over 11 years
 - EBITDA of **US\$1.28 billion**
 - Post tax Net Present Value (8) of **US\$321 million**
 - Internal Rate of Return of **38%**
 - Pre-production CAPEX requirement of **US\$89 million**
 - Expansion CAPEX of \$212 million funded by Project free cash flow
- Optimisation of Project ramp up sequence under review
- **Clear scope for substantial extension of Life to 27 years +**

MAGNET REO DOMINANT PRODUCT





Ionic Rare Earths Limited
Level 1, 34 Colin Street
West Perth WA 6005 Australia

T +61 8 9481 2555
F +61 8 9485 1290

www.ionicre.com.au