

19 November 2024

Unique RE Business Emerges

NEED TO KNOW

- Belfast Rare Earths Recycling Plant – pivots to top priority for IXR
- Rare earths recycling feasibility study – NPV ~US\$500m and ~44% IRR; low capex, attractive margins, low-risk supply chain
- Unique IP; global potential for rare earths recycling business

Belfast Rare Earths Recycling Plant becomes top priority: The Belfast Rare Earths Recycling Plant (Belfast RE Recycling), which will produce high-value separated rare earth oxides (REOs), represents a low-risk, low-capex, near-term-cash-flow project. Belfast RE Recycling, and potentially other locations for this business globally, will become IXR's development focus.

Belfast RE Recycling Feasibility Study shows strong economics: IXR's feasibility study (FS) for Belfast RE Recycling shows a low-capex entry into the rare earths supply chain. The FS shows a post-tax NPV of US\$502m, IRR of 43.6% and positive NPV at spot prices. Payback on the estimated capex of US\$109m is just 2.4 years. IXR expects construction to be completed in late CY26 and first commercial production in CY27.

Recycling – a potential global business: IXR is seeing strong global interest in its magnet recycling technology, demonstrating the value of a closed-loop chain for end-of-life magnets and the production of a high-quality separated magnet REO product. We see the potential to 'copy and paste' the Belfast plant to other supply chains, setting the stage for a global business.

Investment Thesis

Downstream magnet recycling a unique business with a competitive edge: IXR possesses proprietary technology to separate and recover rare earth elements (REEs) from recycled permanent magnets and scrap, contributing to the production of high-performance magnets. The plant is low capex, and provides potential for rapid commercialisation, near-term cashflow and future global expansion.

Long-term supply chain partnerships: With Western world magnet producers seeking ex-China suppliers, IXR is poised to develop new, unique Western supply chains, commencing with recycling and potentially integrating mining and refining with the development of Makuutu.

Makuutu Rare Earths Project producing high-value REEs: The Makuutu Project in Uganda remains as a long-life, low-cost development option to produce high-value heavy REEs, potentially positioning IXR as a long-term, low-risk ex-China supplier of primary rare earths.

Valuation: \$0.12/Share (Previous A\$0.10)

Our fully diluted valuation is A\$0.12/share. The major change to our valuation is the significantly improved economics of Belfast RE Recycling after the release of the FS. We have decreased our valuation of Makuutu (and expected dilution from funding) due to the prioritisation of the recycling plant. The project shows positive margins at current low spot prices.

Risks

Key risks include ability to fund Belfast RE Recycling, capex/opex assumptions, and production or operating issues.

Report prepared by MST Access, a registered business name of MST Financial services ABN 617 475 180 AFSL 500 557. This report has been prepared and issued by the named analyst of MST Access in consideration of a fee payable by: Ionic Rare Earths (IXR.AX)

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ionic
rare earths

Ionic Rare Earths is focused on developing its Belfast Rare Earths Recycling Plant, given potential Government support and low capex cost. IXR also have the Makuutu Project in Uganda which is a significant long-life, low-cost supplier of high-value critical and heavy rare earths. www.ionicre.com.au

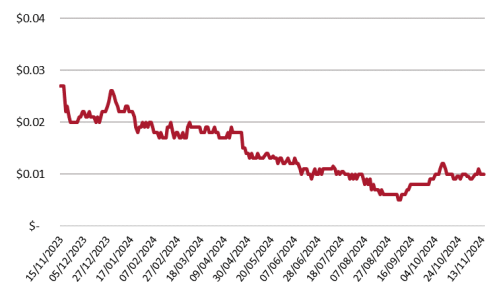
Valuation	A\$0.120 (from A\$0.100)
Current price	A\$0.009
Market cap	A\$44m
Cash on hand	A\$0.7m (30 Sep 24)

Additional Resources

Upcoming Catalysts / Next News

Period	
2HCY24	Advancing funding – Belfast plant
2HCY24	Government grant and funding
1HCY25	Belfast plant FID
1HCY25	Belfast plant construction commences

Share Price (A\$)



Source: FactSet, MST Access

Figure 1: Financial summary, IXR (June year-end)

IONIC RARE EARTHS LIMITED							IXR.AX
Year end June 30							
MARKET DATA							
Share Price	A\$/sh					0.009	
52 Week Low	A\$/sh					#Calc	
52 Week High	A\$/sh					0.030	
Market Cap (A\$m)	A\$m					44	
Net Debt / (Cash) (A\$m)	A\$m					(5)	
Enterprise Value (A\$m)	A\$m					39	
Shares on Issue	m					4,870	
Options/Performance shares	m					528	
Other Equity	m					2,222	
Potential Shares on Issue (Diluted)	m					7,620	
INVESTMENT FUNDAMENTALS							
		FY22A	FY23A	FY24A	FY25E	FY26E	
Reported NPAT	A\$m	(6)	(6)	(24)	(10)	(10)	
Underlying NPAT	A\$m	(6)	(6)	(24)	(10)	(10)	
EPS Reported (undiluted)	¢ps	(0.1)	(0.2)	(0.4)	(0.1)	(0.1)	
EPS Underlying (undiluted)	¢ps	(0.1)	(0.1)	(0.5)	(0.1)	(0.1)	
P/E Reported (undiluted)	x	n/m	n/m	n/m	n/m	n/m	
P/E Underlying (undiluted)	x	n/m	n/m	n/m	n/m	n/m	
Operating Cash Flow / Share	A\$	(0.001)	(0.003)	(0.005)	(0.001)	(0.001)	
Price / Operating Cash Flow	x	n/m	n/m	n/m	n/m	n/m	
Free Cash Flow / Share	A\$	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	
Price / Free Cash Flow	x	n/m	n/m	n/m	n/m	n/m	
Book Value / Share	A\$	0.01	0.01	0.01	0.01	0.01	
Price / Book	x	0.72	0.81	1.19	1.28	1.62	
NTA / Share	A\$	0.01	0.01	0.01	0.01	0.01	
Price / NTA	x	0.72	0.81	1.19	1.28	1.62	
Year End Shares	m	3,873	3,946	4,831	7,054	7,054	
Market Cap (spot)	A\$m	35	36	43	63	63	
Net Cash / (Debt)	A\$m	27	11	2	12	(177)	
Enterprise Value	A\$m	8	24	41	51	241	
EV / EBITDA	x	n/m	n/m	n/m	n/m	n/m	
Net Debt / Enterprise Value		(0.7)	(0.3)	(0.1)	(0.3)	4.6	
Dividend per share	¢ps	0	0	0	0	0	
PRODUCTION AND PRICING							
		Jun-22	Jun-23	Jun-24e	Jun-25e	Jun-26e	
CAPEX	\$AUD	(0)	-	-	-	(179)	
IXR REO Basket Price (excl. payability)	\$US/kg	77	88	96	101	100	
AUDUSD	:	0.73	0.70	0.67	0.67	0.67	
12-Month Relative Performance vs S&P/ASX Metals & Mining							
Profit & Loss (A\$m)							
		FY22A	FY23A	FY24A	FY25E	FY26E	
Revenue		-	-	-	-	-	
Expenses		(6)	(4)	(21)	(10)	(10)	
EBITDA		(6)	(4)	(21)	(10)	(10)	
D&A		(0)	(1)	(2)	(0)	(0)	
EBIT		(6)	(6)	(24)	(10)	(10)	
Interest		0	-	-	-	-	
Tax		-	-	-	-	-	
Underlying NPAT		(6)	(6)	(24)	(10)	(10)	
Exceptionals							
Reported Profit		(6)	(6)	(24)	(10)	(10)	
Net profit before tax		(6)	(6)	(24)	(10)	(10)	
Balance Sheet (A\$m)							
		FY22A	FY23A	FY24A	FY25E	FY26E	
Cash		27	11	2	12	2	
Receivables		1	1	-	-	-	
Inventory		-	1	-	-	-	
PP&E		0	2	2	2	181	
Exploration		12	2	-	-	-	
Other		9	28	33	36	36	
Assets		49	45	38	49	218	
Creditors		1	1	-	-	-	
Debt		-	-	-	-	179	
Other		0	0	1	-	-	
Liabilities		1	1	1	-	179	
Shareholder's Equity		48	44	37	49	39	
Cashflow (A\$m)							
		FY22A	FY23A	FY24A	FY25E	FY26E	
Net Cash From Operations		(4)	(12)	(23)	(10)	(10)	
Capex		(0)	-	-	-	(179)	
Exploration		(9)	-	-	-	-	
Other		(2)	-	0	-	-	
Net Investing Cashflow		(11)	-	0	-	(179)	
Equity		30	1	14	20	-	
Borrowings		-	-	-	-	179	
Dividend		-	-	-	-	-	
Net Financing Cashflow		30	1	14	20	179	
Effects of FX		(0)	0	-	-	-	
Net Increase / (Decrease) in Cash		16	(10)	(9)	10	(10)	

Source: MST, IXR.

Belfast Rare Earths Recycling Plant:

Now the No.1 Priority

Strong economics: post-tax NPV_{7.5} US\$502m, IRR ~44%

The Belfast rare earths recycling plant (Belfast RE Recycling) represents a low-risk, low-capex, near-term-cash-flow asset. This is now IXR's priority project.

IXR has published a feasibility study (FS) on the project, demonstrating a highly valuable and repeatable business model.

Belfast RE Recycling, and potentially other locations for this business globally, will become the development focus for IXR.

The strong economics demonstrate a long-term sustainable business, driven by low capex and near-term production. Key outputs of the FS are shown in Figure 2.

Figure 2: Key financial outcomes – Belfast RE Recycling

Metric	Units	Belfast Plant
NPV _{7.5} (post-tax)	US\$m	502
IRR (Post tax)	%	43.6
Payback period	Years	2.4
Project Lifetime Net Revenue	US\$m	2,116
Project Lifetime EBITDA	US\$m	1,782

Source: IXR.

A refresher – what Belfast RE Recycling does

In early 2022, IXR acquired SerenTech (now known as Ionic Technologies) for US\$1m in cash plus scrip valued at US\$1.5m and a milestone fee on the commercialisation of the technology, worth up to US\$1.5m. The acquisition gave IXR access to a proven team, established intellectual property (IP) and specialised knowledge.

Ionic Technologies has developed IP and processes for separating and recovering REEs from mining ore concentrates, swarf (waste from manufacturing processes) and recycled permanent magnets. This proprietary technology provides a flexible solution for extracting high-value REEs (Nd, Pr, Dy, Tb) from varying magnet grades. It has the potential to provide magnet REOs for the production of modern high-performance magnets, which are integral to sectors such as EVs and wind turbines.

The hydrometallurgical process is able to deliver high-purity separated magnet REOs, independent of variability in composition of magnet feedstock, enabling the creation of sustainable, traceable, and sovereign rare earth supply chains.

Why Belfast? A strategic location with good infrastructure and market access, potential for government grants and funding

Ionic Technologies is located within the Belfast Harbour Estate, which is the UK's largest single port estate comprising 2,000 acres. Belfast Harbour has world-class infrastructure, including the UK's first offshore wind terminal.

The UK Government has provided strategic funding and grants for IXR's demonstration plant and has actively encouraged the location of the plant in Belfast. There is strong potential for the availability of government grants and low-cost financing towards construction.

Belfast is strategically located to take full advantage of both the UK and European markets for rare earths. Both the UK and the European Union (EU) have critical minerals strategies in place:

- UK – trading arrangements are in place with Northern Ireland that make this location attractive and link it to the UK's Critical Minerals Strategy
- EU – the European Commission's Critical Raw Materials Act (CRMA)*

*While Brexit has imposed trade barriers on companies to access the UK and European markets; the CRM supply chain is highly integrated and each region has specialised operations needed to jointly address the complex challenges impacting the supply chain.

Figure 3: European CRMA strategic material supply chain regulations – showing the rules about sourcing from within the EU



Source: IXR.

Next steps – funding and getting moving towards production

Funding the project is the key focus – many non-dilutive options

Belfast RE Recycling has previously benefitted from UK Government grant funding, with up to £5m of funding and commitments received to date, including 2 recent grants with a combined value of £1.27m.

IXR will shortly submit an application for a significant capital grant from the UK Government via the Automotive Transformation Fund (ATF).

Other non-dilutive funding sources for the project include:

- government-backed financing
- offtake party funding
- strategic partner funding or project investment
- commercial bank project financing
- potential US funding – 2023's Atlantic Declaration outlines the countries' plans for greater cooperation on pressing economic challenges and strengthening their supply chains.

As a result of these alternatives, we think that IXR's equity requirements are likely to be significantly lower than what would typically be required under project finance scenarios.

The other key next steps

A number of key steps need to take place to progress the project towards first production in CY2027.

- Progress to front-end engineering design (FEED)
- Appoint an engineering, procurement and construction management (EPCM) partner
- Continue to engage with local stakeholders to expedite delivery
- Apply for additional UK Government financial support
- Final investment decision in 1HCY25

Feasibility study – long life, low capex; NPV_{7.5} = US\$502m

Figure 4: Key inputs driving NPV

Metric	Units	Belfast Plant
Capex	US\$m	108.7
Opex (excluding magnet procurement)	US\$/kg	27.7
Project Life	Years	20
NdPr Price assumption	US\$/kg (2027)	100
Discount Rate (real)	%	7.5
Annual Throughput - Magnets/Swarf (Feed)	tpa	1,200
Annual Output - REOs (Product)	tpa	400
Construction completion	Year	2026
First Production	Year	2027

Source: IXR.

A closer look at the key inputs

Capex: a low-cost entry into the rare earths supply chain

The projected capital cost for the project stands at US\$108.7m including a ~15% contingency.

A recycling facility's competitive edge over traditional upstream supply stems from its lower-capex entry point into the rare earths supply chain. When compared to the capital cost of bringing on a rare earths mine and associated processing, the recycling plant is much lower cost and allows for a faster construction timeline, and in some cases is in a more favourable jurisdiction. Its modular design can also be replicated elsewhere at likely lower capex, given Belfast is not a low-cost location.

Figure 5: Breakdown of Belfast RE Recycling capex

Description	GBP Value (£m)	USD Value (\$m)
Direct Cost / Plant & Equipment	58.8	75.3
Indirect Cost / FEED & Detail Design, Management	6.0	7.7
Risk Adjusted Cost / Escalation & Contingency	10.9	13.9
Belfast Specific Cost / Substructure	9.3	11.9
Total	85.0	108.7

Source: IXR

Opex: low-cost process, with potential savings on magnet inputs

The magnet procurement cost reflects the existing practice of paying for spent magnets and other REO content.

Magnet input costs may fall, given the fact that magnet producers are subject to regulatory requirements to recycle spent magnets. In addition, IXR could seek to toll treat for customers.

Figure 6: Operating cost breakdown – potential to reduce further via magnet sourcing

OPEX Summary	Costs, US\$/kg REO
Magnet Costs	14.99
Processing	
Reagents	11.13
Labour	6.64
Energy	5.36
Maintenance	2.11
Other Direct	0.12
G&A	2.32
Total Opex	42.67
Total Opex (excluding magnet costs)	27.68

Source: IXR.

Production capacity of 400tpa of high-value REOs

The plant will operate based on input of 1,200tpa of end-of-life permanent magnets and magnet manufacturing waste (including swarf), enabling production of around 400tpa separated magnet REOs.

The expected timeline to ramp up to nameplate capacity is over 2 years (year 1 – 65% nameplate, year 2 – 95% nameplate), after which production will reach 400tpa of magnet REOs.

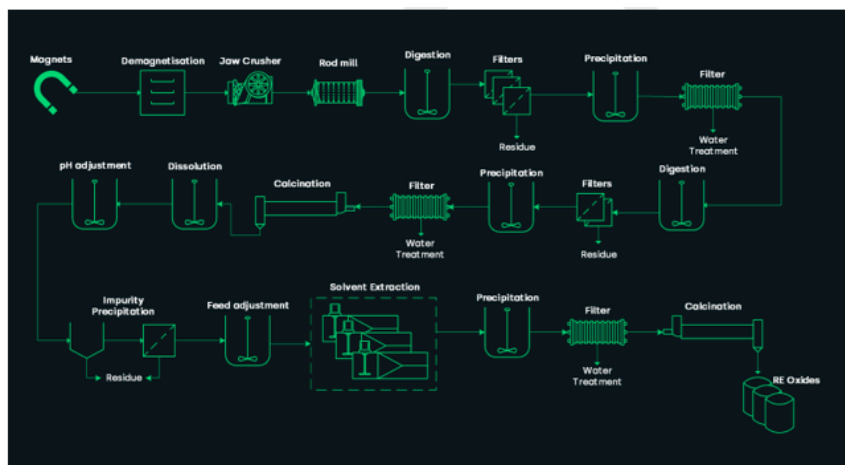
The focus is on high-purity, separated magnet REO products – didymium oxide ($(\text{NdPr}_2\text{O}_3)$), dysprosium oxide (Dy_2O_3) and terbium oxide (Tb_4O_7). Additionally, functionality for separated neodymium oxide (Nd_2O_3) and praseodymium oxide (Pr_6O_{11}) is under further investigation, driven by appetite for these products in several industries beyond the magnet supply chain.

The high-value mix of REOs differentiates the product from general RE mine outputs which only generate 20–30% of these high-value products.

The targeted output of key product is:

- 350tpa didymium oxide (NdPr oxide);
 - 262tpa neodymium oxide (Nd_2O_3)
 - 89tpa praseodymium oxide (Pr_6O_{11})
- 37tpa dysprosium oxide (Dy_2O_3)
- 13tpa terbium oxide (Tb_4O_7).

Figure 7: Project flowsheet



Source: IXR.

Long-life project with near-term production

The FS proposes a conservative 20-year life for the project, with strong potential to extend the life further given that it is an industrial process and not limited by resource.

The finalisation of construction is slated for late CY2026, a short 2-year timeline. This compares favourably with timelines for construction of mine and processing facilities, given that Belfast RE Recycling has far fewer regulatory requirements and approval processes.

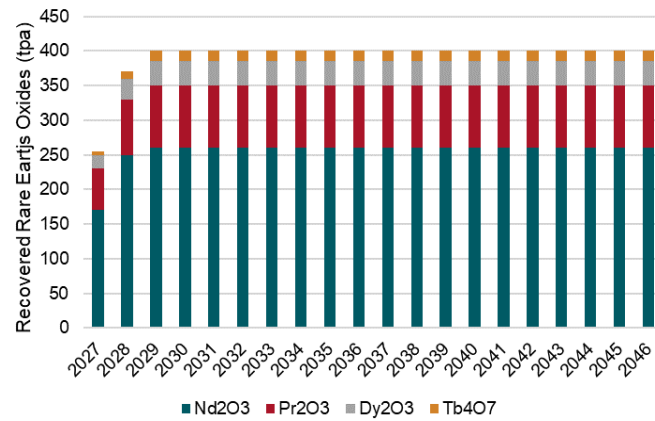
Pricing: assumptions above current spot – project is NPV positive at spot

Rare earth pricing (nominal) forecast data, from Adamas Intelligence and Argus, provides an estimate of forecast magnet REO pricing out to 2046 across the estimated 20-year operational life.

The assumptions utilised are well above current spot prices (starting price in CY2027 of ~US\$100/kg NdPr vs current spot price of ~US\$59/kg).

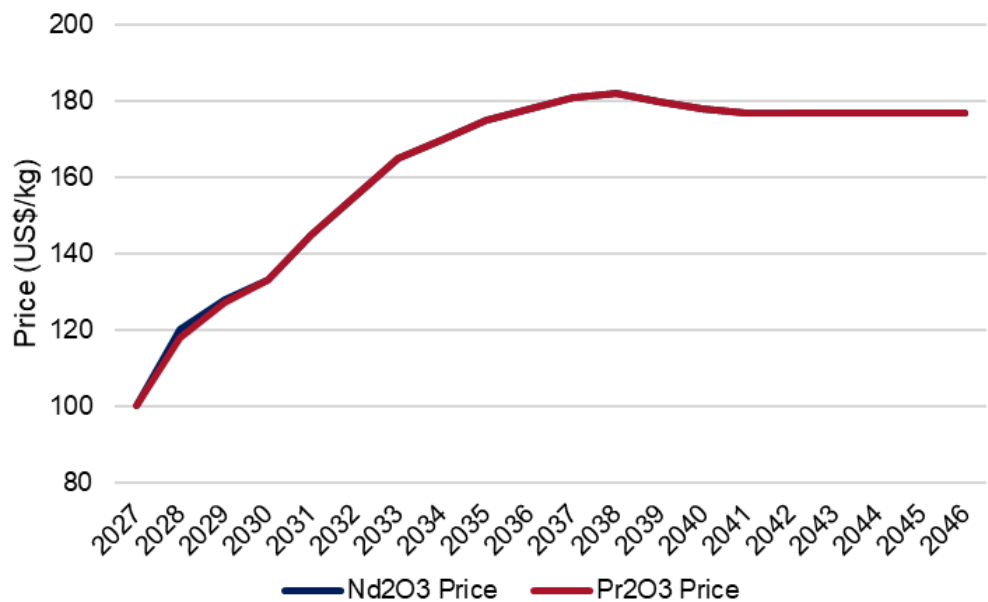
The neodymium (Nd) and praseodymium (Pr) pricing forecast for oxides from the FS is shown in Figure 9.

Figure 8: Recovered REOs (tpa)



Source: IXR.

Figure 9: FS REO pricing assumptions



Source: IXR.

How does the FS NPV stack up at different pricing assumptions?

The key to the project's value is that, even at current cyclical lows for REOs, the project still has a positive NPV, under IXR's assumptions. Figure 10 shows the FS scenarios under different prices, including spot.

Figure 10: NPV pricing scenarios – positive NPV of US\$83m at spot (scenario 1)

Reo Pricing Scenario	NPV (post tax) US\$m	Average Project Life Reo Prices (US\$/kg)			
		Nd ₂ O ₃	Pr ₆ O ₁₁	Dy ₂ O ₃	Tb ₄ O ₇
Scenario 1 - Spot Price	83	61	61	248	842
Scenario 2	218	90	90	400	1,200
Scenario 3	313	120	120	400	1,500
Scenario 4	389	133	131	492	1,758
Scenario 1 - FS Pricing	502	160	159	618	1,958
Scenario 6	547	181	172	549	1,745
Scenario 7	644	212	201	615	1,955

Source: IXR.

Potential to Take the Belfast RE Recycling Business Global

Belfast RE Recycling will be the first producer of recycled separated magnet REOs in the Western world.

Through the FS, IXR also identified further strategic locations for potential future sites in other key markets including the USA, Europe, Brazil and Asia. The model has strong potential to be 'cut and paste' given its low opex and capex base and direct local access to even larger Western key markets.

The completion of the FS enables IXR to accelerate negotiations to establish multiple commercial operating sites internationally and presents opportunities to significantly scale the model globally.

The IXR recycling model is fundamentally an industrial business model based on patented magnet recycling technology and has fewer risks than building a rare earths mining and processing business, as it requires relatively low capex and opex. It also has inherently low permitting risk and can be located in many stable and developed markets with low sovereign risk and strong government support for green industries, leading to the potential for higher returns.

Given the potential to replicate the model, a 'bare' module cost including contingency and escalation has been developed, indicating the potential to replicate the facility on another site costing US\$96.9m (£75.7m). IXR has already identified several areas for capital reduction in replicated facilities which will undergo further evaluation during FEED. A breakdown is provided in Figure 11.

Figure 11: 'Bare' module economics

Metric	Units	Bare Module \$US
Discount Rate (real)	%	7.5
NPV (pre-tax)	US\$m	683
NPV (post-tax)	US\$m	510
IRR (pre-tax)	%	57.0
IRR (post-tax)	%	47.4
Capex	US\$m	96.9
Payback Period	Years	2.2
Net Revenue	US\$m	2,116
EBITDA	US\$m	1,782
OPEX (ex magnet costs)	US\$/kg	27.68

Source: IXR.

Makuutu RE Project – Still a Long-Term Ambition

The current state of play

Makuutu is the most advanced new ionic adsorption clay (IAC) project globally which has product available for Western customers.

In a major milestone for the company, the Large-Scale Mining Licence for the Makuutu Project was approved by the Ugandan Government on 17 January 2024. The approval, which represents the first large-scale mining licence to be issued in Uganda under the Mining Act of 2022, adds to the flagship project status awarded to Makuutu in 2022 and reflects the strong support received from the government.

On 25 March 2024, IXR announced a major milestone: maiden mixed rare earth carbonate (MREC) production from the Makuutu Demonstration Plant. The company will now use these MREC products for advanced offtake and strategic partner negotiations.

In addition, the MRE has been updated with results from the 2023 Phase 5 infill and extension drilling results which targeted MRE areas A and B. The previous Makuutu Project MRE, reported in May 2022, contained Inferred Resources only for Areas A and B, with the Phase 5 drilling program increasing resource confidence and extending the defined mineralisation in these areas by approximately 85m tonnes.

Based on the Phase 5 drilling assays, the mineral resource estimates have been updated in Areas A and B only.

Figure 12: Updated and expanded MRE for Makuutu

Resource Classification	Tonnes (Millions)	TREO (ppm)	TREO-CEO ₂	LREO (ppm)	HREO (ppm)	CREO (ppm)	S ₂ O ₂ (ppm)
Indicated	517	650	440	470	170	220	30
Inferred	99	560	380	420	140	190	30
Total	616	630	430	460	160	210	30

Source: IXR.

The plan for Makuutu – remains important

For now, Makuutu remains a key asset in the IXR portfolio. The project is in an advanced stage, including an operational demonstration plant, producing MREC.

IXR will continue to advance the project, and will still consider bringing the project to production when both rare earth markets and capital markets improve.

Belfast RE Recycling has taken priority given its much lower capex and the ability to bring production on more rapidly in a developed western jurisdiction. The ready availability of government grants and funding also enable much easier funding.

Valuation: A\$0.12/Share (Previous A\$0.10);

Belfast RE Recycling Takes Precedence

We have made some significant revisions to our valuation. With the release of the FS for Belfast RE Recycling, there is significantly more detail available for us to financially model the plant and attain a far more detailed valuation. Our previous model was based on a lower throughput and lower margin model. The key changes to our valuation are as follows:

- We have completed a financial model of Belfast RE Recycling.
- We have risked the recycling plant valuation at a 75% probability.
- We have assumed a A\$20m capital raising to fund both the equity portion of the recycling plant and ongoing corporate expenses and working capital.
- We have maintained an NPV valuation for the Makuutu mine, but have reduced our probability weighting for the project from 75% to 25%, to reflect that the mine still has value within the portfolio but is now the second priority for IXR. As a result, we no longer include a significant equity raising (A\$154m) in the valuation for the funding of Makuutu.

Our valuation has increased from A\$0.10 to A\$0.12 per share, driven by the significant uplift in the valuation of Belfast RE Recycling, and less dilution after excluding the equity raising for Makuutu.

Valuation summary

Our valuation is derived from our discounted cash flow (DCF) analysis of Belfast RE Recycling and the Makuutu Project. We assign a 75% probability risk weighting to Belfast and a 25% probability risk weighting to Makuutu (down from 75%).

Figure 13 summarises our valuation, using a discount rate of 10% for the Belfast operation and 12% for Makuutu. Our valuation assumes a A\$20m capital raise (for IXR's share of capex for Belfast RE Recycling) at the current share price. Our fully diluted share count is 7.1bn.

Figure 13: Valuation summary – IXR

	Ionic Rare Earths Valuation			Current Valuation	Previous Valuation
	Discount rate	Risk weighting	AUD\$mn	AUD\$/sh	AUD\$/sh
Belfast recycling	10.0%	75.0%	566	0.08	0.01
Makuutu (94%)	12.0%	25.0%	312	0.04	0.09
Total operating assets			878	0.12	0.10
Corporate/SG&A	12.0%		(30)	(0.00)	(0.01)
Net cash/(debt) (\$AUD)			17	0.00	0.01
Net Asset Value			865	0.12	0.10
Current Share Price				0.009	
Upside				1263%	

Source: MST.

Key valuation assumptions

Key assumptions for Belfast RE Recycling (risked NPV= A\$566m)

Belfast RE Recycling is now the key driver of our valuation. With the release of the FS, we have been able to conduct a detailed DCF valuation for the asset. Our previous valuation contained preliminary assumptions and significantly undervalued the asset.

Our base-case NPV valuation is based on the FS – our assumptions are detailed in Figure 14.

We have assumed IXR funds its 100% share of the project, requiring US\$120m. We assume the majority of the project is funded via government loans and project finance, with IXR requiring a A\$20m capital raise (at the current share price).

There is potential to reduce the funding requirements through government grants or a sell down of the project to strategic partners such as LCM and Ford.

Figure 14: Belfast recycling plant – our key valuation assumptions

Recycling Valuation	Unit	LOM
Operating Life	Years	20
Product capacity	tpa TREO	400
Capex	US\$m, real	120
Pricing - IXR basket	US\$/kg	278
Recycling margin	US\$/t	236
EBITDA	US\$m	94
NPV10 (post-tax)	US\$m	505

Source: MST estimates.

Key assumptions for Makuutu

Our critical valuation assumptions for Makuutu are shown in Figure 15.

Our base-case NPV valuation is based on a mine plan consistent with the Stage 1 DFS, but it assumes a final plant capacity of 15Mtpa ROM throughput instead of the DFS's 5Mtpa. We consider this a reasonable assumption given the resource size (currently: 532 Mt @ 640ppm) and anticipated demand.

We have decreased the probability of Makuutu from 75% to 25% reflecting the priority of the recycling business.

Figure 15: Makuutu assumptions

Assumptions (LOM)	MSTe
PROJECT ASSUMPTIONS (Real FY23)	
Project Ownership (%)	94%
Strip Ratio (waste : ore)	0.57
Mixed Rare Earth Carbonate (% REO)	>90%
TREO Average Recovery (%)	35.0%
Average REO Produced - ex. Scandium (tpa)	3,312
Mine Life (years)	35
Capex - first module (US\$m) - for 100% (Real)	150
COST & FINANCING ASSUMPTIONS	
Discount Rate - Nominal (%)	12%
Inflation Rate (%)	2%
PRICING & EXCHANGE RATE ASSUMPTIONS	
USD/AUD	0.67
Average REO Price LOM (Real) (US\$/kg) - incl. Payability factor	86
Royalty Rate (%)	5%
Corporate Tax Rate (%)	30%

Source: MST.

Key catalysts

Belfast RE Recycling

- **Advancing with customers and partners:** Advancing offtake agreements with potential customers as well as the strategic relationship with Ford.
- **Government grants and loans:** Belfast RE Recycling is in a strong position to receive both grants and low-interest loans from the government to advance the project.
- **Other funding:** Other funding – such as project finance, offtake finance or strategic partner investment – would be a positive catalyst for the stock price.
- **FID:** FID is the key decision to advance to project to construction.

Makuutu

- **Progress to funding/construction:** Any advancement of Makuutu towards funding and construction would be a positive for IXR.
- **REO price increase:** The valuation and share price sentiment is highly sensitive to REO prices. Increases in REO prices would positively affect the valuation.

Risks to the share price and valuation

Project-specific risks: Belfast RE Recycling

- **Access to funding:** The availability of funding for the project is not guaranteed. A lack of sufficient funding could have a negative impact on the stock.
- **Delays to development:** Any delays in moving into construction would be a negative for the stock.
- **Technical risks at commercial scale:** IXR have a demonstration plant in place. This has been producing REOs at a small scale. A key risk is the ability to ramp up to commercial scale.
- **Competing technology for the recycling facility:** IXR have IP in place that is unique and have a competitive advantage in the RE recycling space. A key risk to the project is having that advantage competed away by alternative processes coming on to the market.
- **Cost inflation:** Inflation is a global theme and is particularly concerning in the mining industry. If operational or capital costs increase without a corresponding increase in the commodity price, the project's margins will be reduced, which could impact the economics and viability.

Macro risks

- REO price – this is the key valuation sensitivity
- Foreign exchange rates
- Increasing interest rates and the potential impact on the cost of debt finance

Country-specific risks: Makuutu

The Makuutu project, operating in Uganda, may face several country-specific risks. For example, changes in government policies or regulations could significantly affect the project's success.

- **Political instability:** Any changes to government policies or leadership could impact the Makuutu project, as these could cause adverse changes in laws, taxes, or other regulations that could increase costs or decrease revenues.
- **Regulatory environment:** Any adverse changes in regulations or laws could potentially impact the project's success.

Personal disclosures

Michael Bentley received assistance from the subject company or companies in preparing this research report. The company provided them with communication with senior management and information on the company and industry. As part of due diligence, they have independently and critically reviewed the assistance and information provided by the company to form the opinions expressed in this report. They have taken care to maintain honest and fair objectivity in writing this report and making the recommendation. Where MST Financial Services or its affiliates has been commissioned to prepare content and receives fees for its preparation, please note that NO part of the fee, compensation or employee remuneration paid has, or will, directly or indirectly impact the content provided in this report.

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Ionic Rare Earths (IXR.AX) | Price A\$0.009 | Valuation A\$0.120;

Price and valuation as at 19 November 2024 (not covered)*

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