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ASX Announcement

18 February 2025

MAGNET RECYCLING LIFE CYCLE ASSESSMENT INDICATES REVOLUTIONARY 30-50% LOWER CO2 FOOTPRINT COMPARED WITH EXISTING GLOBAL PRIMARY REO PRODUCERS

- **Preliminary results from Minviro's Life Cycle Assessment of Ionic Technologies' magnet recycling process indicate substantial carbon emission reductions of circa 30-50%, compared to conventional primary Rare Earth Oxide sources;**
- **Study results undergoing peer review, with final outcomes expected in March 2025;**
- **Smaller carbon footprint to benefit UK/Europe REE supply chain, with IXR assembling partners for commercial REO manufacturing plant in Belfast, UK.**

Ionic Rare Earths Limited ("IonicRE" or the "Company") (ASX: IXR) wholly owned subsidiary Ionic Technologies is progressing a first-of-kind Product Carbon Footprint analysis in partnership with Minviro Ltd. for its proposed Belfast magnet recycling plant, with preliminary results indicating a significant reduction in CO_2 emissions.

Based on this initial analysis, the patented magnet recycling technology developed by Ionic Technologies has the potential to reduce emissions by at least 30 to 50% per unit of Rare Earth Oxide (REO), compared to two well established conventional REO producers.

The study results are currently undergoing peer review to ensure the highest standards of robustness and consistency. Final results are expected in March 2025, in a potential major boost for a more sustainable REE supply chain for the UK/Europe and global ex-China market, positioning Ionic Technologies as a global leader in reducing the CO_2 emission impact of goods containing REOs.

The study is based on LCA methodology and is in compliance with ISO-14040:2006-07 and ISO-14067:2018-08 standards, and follows a successful Feasibility Study announced in November 2024 that demonstrated the financial and environmental sustainability of a commercial REO manufacturing facility in Belfast, UK.

Commenting on the preliminary results, IonicRE's Managing Director, Tim Harrison said: *"These preliminary results indicate that Ionic Technologies' patented process represents a step-change in the CO_2 impact of REO production. Minviro is a global leader in peer-reviewed, ISO certified studies,*

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utilising LCA methodologies to accurately quantify the CO_2 impact of technologies, and the validation of our process that their assessment provides is invaluable.

"Manufacturers are obliged to quantify and actively manage the CO_2 impact of their supply chain, and critical raw material legislation globally is driving this even harder. Substantially more magnet REO demand, and therefore more CO_2 impact, is now anticipated from emerging technologies, such as artificial intelligence (AI) and robotics, which amplifies the CO_2 benefit that Ionic Technologies demonstrates."

He added: *"With the data that the study has generated, Ionic Technologies will now work with offtakers to quantify the CO_2 impact of our products, and how this can benefit entire supply chains.*

"We look forward to announcing to stakeholders the LCA study findings, post peer review, and how Ionic Technologies is demonstrably minimising CO_2 impact in the permanent magnet supply chain, creating a cleaner and greener market in this critical technology for advanced manufacturing, defence and the net-zero transition."

Product Carbon Footprint Study

The functional units selected for the study are Didymium oxide ($(NdPr)_2O_3$) and Dysprosium oxide (Dy_2O_3), with a sensitivity analysis on Neodymium oxide (Nd_2O_3), which reflects the expected product mix from the Belfast commercial plant. The study also incorporates an evaluation of the application of Ionic Technologies' magnet REO products in direct drive wind turbine generators, utilising Rare Earth Permanent Magnet (REPM) technology.

Minviro has conducted a comprehensive, ISO-compliant LCA for Ionic Technologies' rare earth recycling process, comparing its environmental footprint to traditional primary extraction methods. The findings validate the sustainability benefits of REE recycling, demonstrating significant carbon footprint reductions over conventional mining.

The study is currently undergoing critical peer review to ensure transparency, accuracy, and ISO compliance. Minviro looks forward to supporting Ionic Technologies' leadership in sustainable REE supply chains and providing data to drive science-based sustainability action.

Alternative Supply Chains and Geopolitical Drivers

Ionic Technologies is currently collaborating with UK-based metals and alloy manufacturer, Less Common Metals and Ford Technologies with the aim of developing a UK supply chain for recycled magnets, backed by UK Government support. Under the agreement, magnets produced from recycled REOs will be delivered to Ford's EV drive train production facility in Halewood, supporting the US automaker's European EV drive.

Together with this commercial drive, regulatory moves are also supporting IonicRE's growth plans, with the Belfast plant strategically located to access both UK and European markets for rare earths.

In the UK, the Critical Minerals Strategy and Critical Minerals Refresh included a focus on "making the UK's rare earth element supply chains more resilient and boost the circular economy." The UK Government has announced plans to "work with the private sector to double onshore wind, triple

solar power, and quadruple offshore wind by 2030" as well as establishing a publicly owned company, Great British Energy, which will partner with private companies to deliver "clean power."

In Europe, the European Critical Raw Materials Act (CRMA), a 300 billion euro initiative, sets clear benchmarks for domestic capacities in strategic raw materials, of which magnet REOs are classified as strategic, including requiring at least 25 per cent of annual consumption from recycling and 40 per cent supplied from processing within the EU by 2030.

With only around 1 per cent of EU magnet waste currently recycled with the EU, Ionic Technologies' planned facility in Belfast, Northern Ireland, under the Windsor Framework, could make a significant contribution towards achieving both the 25 per cent recycled target and 40% EU processing target.

In the United States, the 2023 Atlantic Declaration includes collaborating with the UK on critical minerals to enhance "sustainable, secure, high-standard critical mineral and battery supply chains." The United States has also stated plans to develop its own domestic rare earths supply chain for defence requirements by early 2027.

In an Executive Order dated 20 January 2025 entitled "Unleashing American Energy," U.S. President Donald Trump pledged to ensure the United States is the "leading producer and processor of non-fuel minerals, including rare earth minerals which will create jobs and prosperity at home, strengthen supply chains for the United States and its allies, and reduce the global influence of malign and adversarial states."

Significantly, Ionic Technologies' Belfast plant is currently the first producer of recycled, individually separated magnet REOs in the Western world, with the Company moving rapidly to commercialise rare earth separation, refining and recycling. Ionic Technologies is now producing small quantities of separated Dy_2O_3 and Tb_4O_7 at its Belfast demonstration facility, two heavy REOs used in the manufacturing of REPM for high end applications. Initial heavy REOs have been provided to LCM as part of the collaboration with Ford on demonstrating a UK supply chain.

Next Steps

IonicRE will now work in collaboration with Minviro to conclude the LCA peer review and announce the final details of the LCA, expected in March 2025.

IonicRE Executive Chairman, Brett Lynch commented: *"We are delighted by these preliminary results, which demonstrate that Ionic Technologies is leading the way in decarbonising net-zero technologies, an important consideration for OEMs across the UK/Europe rare earths supply chain.*

"The study's final results are expected to show significant benefits from the Ionic Technologies patented process, highlighting the advantages of our 'made in Belfast' technology compared to conventional REO production.

"With IonicRE focused on de-risking through de-mining, results like these provide conclusive evidence of the benefits of our process. We look forward to exploring these results further with our supply chain partners as we unlock value from our magnet recycling technology for the benefit of all stakeholders."

Figure 1: Tailings generated from conventional rare earth production at Bayan Obo mine, Inner Mongolia, PRC.

About the production of REOs at Ionic Technologies

Owned 100% by IonicRE, Ionic Technologies has developed rare earth element (REE) separation and refining technology and applied this to the recycling of spent permanent NdFeB magnets.

The process uses a hydrometallurgical process to extract the REEs, then separate the individual magnet REEs within –Nd, Pr, Dy and Tb – and finally refine to high purity individual magnet REO.

Ionic Technologies' proprietary technology provides a universal method for the recovery of high purity REEs from lower quality and variable grade magnets, to be used in the manufacture of modern, high-performance and high specification REPMs required to support substantial growth in both electric vehicle (EV) and wind turbine deployment. The Ionic Technologies magnet recycling process is agnostic on magnet quality, can process oxidised magnets, and can also manage coatings and films, to produce individually separated and refined high purity REOs.

The technology developed is a step up in efficient, non-hazardous, and economically viable processing with minimal environmental footprint.

Ionic Technologies has demonstrated capability for REEs to achieve near complete extraction of REO's from lower quality spent magnets and waste (swarf) to a recovery of high value magnet REO product quality exceeding 99.9% REO.

Ionic Technologies now has "first mover" advantage in the industrial elemental extraction of separated REOs from spent magnets and waste, enabling near term magnet REO production capability to satisfy growing demand from the energy transition, advanced manufacturing, and defence.

For more information about IonicRE and its operations, please visit www.ionicre.com.

Authorised for release by the Board.

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About Ionic Rare Earths Ltd

Ionic Rare Earths Limited (ASX: IXR or IonicRE) is an emerging miner, refiner and recycler of sustainable and traceable magnet and heavy rare earths needed to develop net-zero carbon technologies.

Ionic Technologies International Limited ("Ionic Technologies"), a 100% owned UK subsidiary, has developed processes for the separation and recovery of rare earth elements (REE) from mining ore concentrates and recycled permanent magnets. Ionic Technologies is focusing on the commercialisation of the technology to achieve near complete extraction from end of life / spent magnets and waste (swarf) to high value, separated and traceable magnet rare earth products with grades exceeding 99.9% rare earth oxide (REO).

In June 2023, Ionic Technologies announced initial production of high purity magnet REOs from its newly commissioned Demonstration Plant and moved to continuous production in March 2024, providing a first mover advantage in the industrial elemental extraction of REEs from recycling. In September 2023, Ionic Technologies announced collaboration partnerships with Ford Technologies, Less Common Metals (LCM) and the British Geological Survey (BGS) to build a domestic UK supply chain, from recycled REOs to metals, alloys and magnets and supplying UK based electric vehicles (EV) manufacturing, with potential to replicate across other key markets.

Ionic Technologies gained further UK Government support in September 2024, via its CLIMATES funding programme to demonstrate a circular supply chain for pre-consumer NdFeB magnet scrap (swarf) in partnership with LCM and Vacuumschmelze. The business also benefited from support from the UK Government to develop magnet demagnetisation and comminution processes in partnership with Materials Processing Institute (MPI) and Swansea University.

In November 2024, IonicRE released a Feasibility Study showing the strong potential for a profitable and unique commercial REO manufacturing facility in Belfast, UK, recycling pre-consumer rare earth magnet scrap and end-of-life magnets, delivering sovereign capability to the UK and supporting regional investment in Northern Ireland.

IonicRE has also executed a transformational 50/50 joint venture refinery and magnet recycling facility in Brazil with Viridis Mining and Minerals Limited (ASX: VMM) to separate high value magnet and heavy rare earths from the Colossus Project's full spectrum of REOs.

This integrated strategy completes the circular economy of sustainable and traceable magnet and heavy rare earth products needed to supply applications critical to EVs, offshore wind turbines, communication, and key defence initiatives.

For more information about IonicRE and its operations, please visit www.ionicre.com.

About Minviro

Minviro is a globally recognised leader in Life Cycle Assessment (LCA), specialising in the raw materials and technology sectors serving businesses in the energy transition through consultancy, software and data. Their expertise spans from EV, batteries and electronics to renewables and circular economy strategies, helping companies navigate sustainability challenges, regulatory compliance, and decarbonisation pathways. With hundreds of LCAs completed for leading companies like Tesla, Rio Tinto, Stellantis, Freyr, and CMOC through a 4x award winning team, Minviro continues to set the standard for science-based environmental impact assessment in critical materials supply chains.

Minviro has extensive experience with rare earth sustainability, having developed Product Category Rules (PCRs) for rare earth magnets, setting the global standard for LCAs in the sector. As a key partner in multi-year UK and EU-funded consortia (CSyARES, MineMT), they have advanced magnet, motor, and supply chain environmental analysis. Their team has delivered ISO-compliant LCAs for a range of rare earth companies, making it one of our largest commodity sectors they serve. With offices in the UK, China, and Australia, their team of scientists and engineers have spoken at leading rare earth and magnet conferences, shaping best practices in sustainability and impact reduction. Their research and consulting have driven carbon footprint reductions, supply chain transparency, and regulatory compliance, including alignment with EU Battery Regulations.

To find out more, visit https://www.minviro.com/

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.

References to Previous ASX Releases

- *Life Cycle Assessment to Show Ionic Technologies' Carbon Benefits – 5 February 2025*
- *December Quarterly Activities & Cash Flow Report – 31 January 2025*
- *UK govt grant application lodged for magnet recycling plant – 5 December 2024*
- *Feasibility Study demonstrates profitable magnet REO business case – 18 November 2024*
- *Ionic Technologies secures UK funding for recycled rare earth permanent magnets partnership – 1 October 2024*
- *IXR and LCM advance rare earth supply chain collaboration – 27 May 2024*
- *Life Cycle Assessment to Show Ionic Technologies' CO2 footprint benefit – 05 February 2025*

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and all material assumptions and technical parameters continue to apply and have not materially changed.