ionic
rare earths

ASX Announcement

21 May 2026

IXR JOINS FORCES WITH NTH CYCLE TO ENHANCE RARE EARTH REFINING & RECYCLING PROCESS

Lower OPEX & carbon footprint while securing Western supply

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- **IonicRE agrees Joint Development and Licensing Agreement with US-based Nth Cycle, Inc., a US based critical mineral refining technology company, to enhance end-to-end rare earth refining operations in the USA and globally;**
- **Nth Cycle to supply its proprietary electro-extraction technology for IonicRE's rare earth recycling and refining, optimising ex-China production pathway for long-loop recycling as well as potential to eliminate oxalic acid from the process;**
- **Partnership offers the most resilient and cost-competitive rare earth recycling and refining flowsheet currently available, reducing IonicRE's OPEX and carbon footprint while delivering Western rare earth independence on oxalic acid supply;**
- **IXR continuing to build sovereign, secure and sustainable U.S. domestic supply of rare earths critical to advanced manufacturing, defence and renewables.**

Ionic Rare Earths Limited ("IonicRE" or the "Company") (ASX: IXR) has formed a Joint Development and Licensing Agreement with U.S.-based Nth Cycle, Inc., a critical mineral refining technology company, to enhance end-to-end rare earth refining operations in the United States and globally.

Under the agreement, U.S.-based Nth Cycle will provide its proprietary electro-extraction technology for IonicRE's rare earth recycling and refining operations, establishing the first Western production pathway for both long-loop recycling to high purity REEs, and also the chemical agents, specifically oxalic acid, they produce to purify NdFeB swarf into magnet rare earth oxides (REOs) for new magnet manufacturing.

Patented technology developed by IonicRE's wholly owned UK subsidiary, Ionic Technologies leads Western industry in recycling and refining rare earths from pre-consumer magnet swarf and spent magnets, while Nth Cycle is the most advanced critical mineral refiner for black mass and refining

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technology provider in rare earths, with singular speed and scalability advantages in the supply chain's "missing midstream."

Together, the two companies will work to replace the precipitation step in IonicRE's flowsheet with Nth Cycle's electro-extraction closed-loop process, which uses electricity to produce the chemicals—rather than oxalic acid—to convert rare earth recycled feedstocks into high-purity oxides, the solid powders used in magnet metal and alloy production.

Unlike conventional refining processes for rare earths, where the precipitating oxalic acid agent is consumed and must be continuously resupplied, the companies' integrated system eliminates that dependency entirely, while regenerating hydrochloric acid for continuous reuse during processing. The result is the most resilient and competitive rare earth recycling and refining flowsheet available, reducing costs, external supply dependencies, and carbon footprint.

China currently refines 90% of the world's rare earth elements found in ore and end-of-life materials, with recovery occurring during precipitation, a step reliant on oxalic acid. This creates a hidden dependency facing all Western refiners building operations onshore, which this partnership between IonicRE and Nth Cycle aims to address.

IonicRE Managing Director and CEO, Tim Harrison commented: "*IonicRE is excited to form this partnership with Nth Cycle, one that leverages exciting technology from electroextraction for integration into IonicRE's patented long-loop recycling technology, with the potential to significantly reduce both our OPEX and carbon footprint. This can also translate directly to our refining process for primary mixed rare earth carbonate (MREC) separation and refining to high purity REOs.*"

"*Oxalic acid represents approximately 50% of IonicRE's benchmark carbon footprint, which has been demonstrated to be 60% lower than primary (mined) supply of rare earth oxides. This ongoing innovation will ensure we continue to stay a step ahead on providing not only the highest purity rare earth oxides in the market, but validated materials for Western end users*."

"*Rare earth refining in the U.S. has made progress, but building a resilient supply chain the West requires solving every point of dependence, not just the most visible ones*," said Megan O'Connor, CEO and Co-Founder of Nth Cycle.

"*Nth Cycle's technology closes one of the largest remaining links to Chinese chemical supply chains in the rare earth refining process. And because our electroextraction platform works across rare earths, nickel, cobalt, copper, and beyond, every application of our system accelerates the critical mineral supply chains our economy and national security depend on*."

The move follows IonicRE's recent MOU with Missouri-based US Strategic Metals (USSM) for the development of vertically integrated, multi-metallic rare earths production from recycling at USSM's fully permitted site in Missouri (refer ASX release 10 November 2025).

The Missouri recycling facility is expected to produce significant quantities of NdPr (neodymium and praseodymium), and importantly a range of strategic heavy rare earths, including those subject to Chinese export restrictions, including dysprosium (Dy), terbium (Tb), samarium (Sm), gadolinium (Gd) and holmium (Ho). In addition, the parties are evaluating other heavy rare earth recycling

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opportunities within the USA. Additionally, the Company is evaluating several other opportunities to hyperscale the recycling footprint in the USA, and other target jurisdictions looking to develop secure sources of domestic magnet REO production.

The latest partnership announced by IonicRE also supports the historic critical minerals framework signed on 21 October 2025 by US President Donald J. Trump and Australian Prime Minister Anthony Albanese ("The United States– Australia Framework for Securing of Supply in the Mining and Processing of Critical Minerals and Rare Earths"), aimed at delivering a U.S.-Australia secured supply chain for critical minerals and rare earths, required for defence, advanced manufacturing and renewables.

The United States currently sources 70% of its rare earth imports from China, with the Trump administration ramping up efforts to expand U.S. domestic production of rare earths and other critical minerals to reduce its import dependence. By 2027, Chinese rare earth content must be completely removed from U.S. weapons systems under existing regulations. Chinese export controls on rare earths imposed in 2025 on U.S. exports and most recently on Japan, highlight the strategic vulnerability of relying on a foreign and monopolistic supplier.

IonicRE Executive Chairman, Brett Lynch commented: "*IonicRE is working to build secure, sustainable and sovereign ex-China rare earth supply chains and this latest agreement with a U.S. partner is another vital step forward in this process as we build a U.S. supply hub centred on Missouri.*

"Nth Cycle's technology pathway not only lowers costs, but also addresses critical supply chain vulnerabilities, exactly the kind of partnership that can make ex-China refining viable.

"With our base in the USA adding to our planned commercial magnet recycling plant in Belfast, UK, IonicRE is developing a global industrial business in rare earth permanent magnet refining and recycling which will deliver enormous value to all stakeholders as we advance the future of this industry critical to Western advanced manufacturing, defence and renewables."

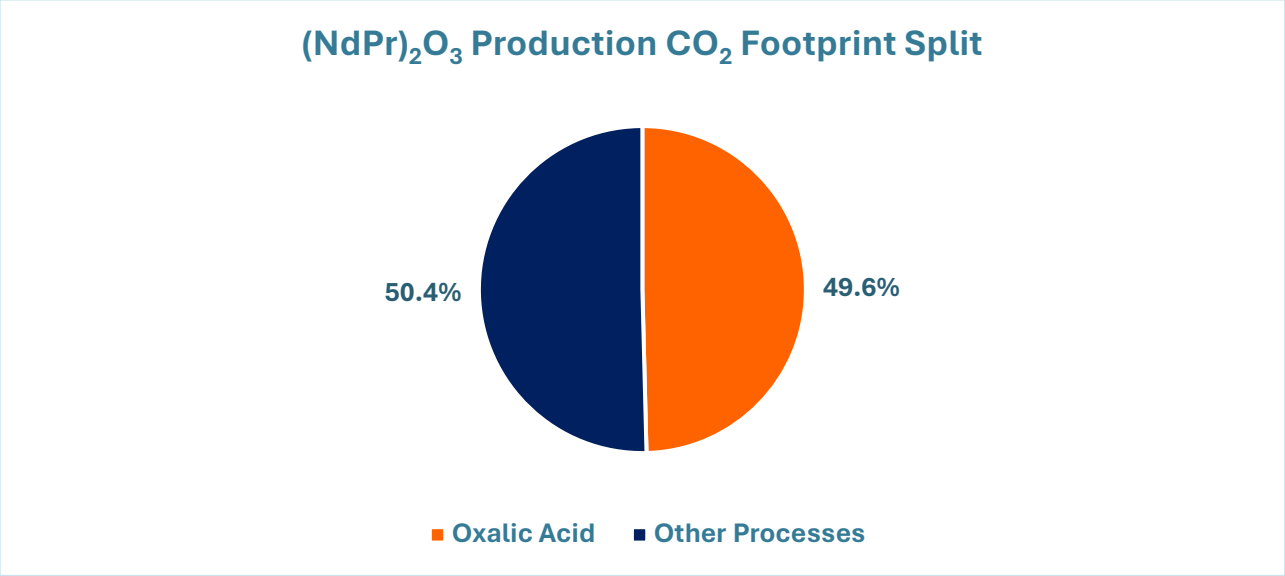

Figure 1: Proportion of CO_2 footprint for Ionic Technologies Belfast $(NdPr)_2O_3$ product.

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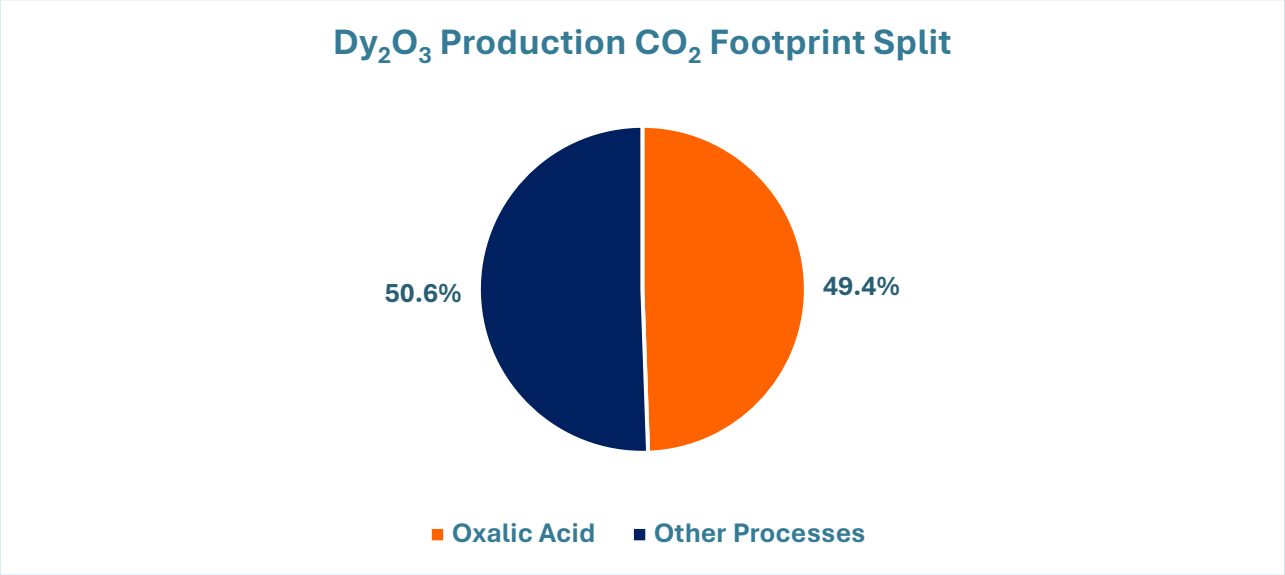

Figure 2: Proportion of CO_2 footprint for Ionic Technologies Belfast Dy_2O_3 product.

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).

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The Makuutu Heavy Rare Earths Project in Uganda, 60% owned by IonicRE, is well-supported by existing tier-one infrastructure and is on track to become a long-life, low Capex, scalable and sustainable supplier of high-value magnet and heavy REO.

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 Nth Cycle

Nth Cycle is a critical minerals midstream refining company building the technology and infrastructure needed for Western supply chains. The company addresses the market's structural bottleneck: feedstock volumes do not align with the scale and economics of large, traditional refineries.

Nth Cycle solves this constraint with a modular system, dramatically lowering capital intensity, deployment time and emissions to convert industrial scrap, black mass and primary feeds into intermediate and refined products within the nickel, cobalt, copper and rare earth value chains. These advancements enable the domestic production and allied partnerships vital to industrial competitiveness, national security and supply chain resilience.

For more information about Nth Cycle, please visit nthcycle.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

- *March Quarterly Activities and Cash Flow Report – 24 April 2026*
- *IXR inks MOU with US Strategic Metals for Missouri magnet recycling – 10 November 2025*
- *IXR eyeing multiple magnet recycling plants in USA – 23 June 2025*
- *Peer review confirms up to 61% lower CO_2 emissions from Ionic Technologies magnet recycling process – 13 March 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.

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