17 April 2023

IONICTECH MAGNET RECYCLING DEMONSTRATION PLANT COMMISSIONING COMMENCED

- **Progress remains on track for first Demonstration Plant production of separated and refined high purity magnet rare earth oxides (REO) expected late June 2023;**
- **In excess of 40 tonnes of NdFeB permanent magnets now on hand, sourced globally from wind turbines, MRI's, EV motors swarf and other applications to provide feedstock for the Demonstration Plant trials; and**
- **Belfast facility welcomes the increase in visits from key supply chain / end users and investors with near term strategic potential for further roll out of the technology to address sovereign security on magnet REO production.**

The Board of Ionic Rare Earths Limited ("IonicRE" or the "Company") (ASX: IXR) is pleased to advise on progress at Ionic Technologies International Ltd ("IonicTech") Belfast facility in the UK, and the development of a Magnet Recycling Demonstration Plant to scale up the technology.

IonicTech is a 100% owned subsidiary based in Belfast UK, which the Company acquired in H1 2022 (formerly Seren Technologies Ltd). IonicTech has developed rare earth element separation and refining technology and applied this to the recycling of spent permanent Neodymium-Iron-Boron (NdFeB) magnets. The process uses a hydrometallurgical process to extract the rare earth elements (REE), then separate the individual magnet REEs within – Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy) and Terbium (Tb) – and finally refine to high purity individual magnet rare earths oxides (REO).

In September 2022, IonicTech was awarded a grant of £1.72 million (approximately A$2.9 million) from the UK Government's Innovate UK Automotive Transformation Fund Scale-up Readiness Validation (SuRV) program, to develop a demonstration scale magnet recycling plant, a significant step towards securing the UK supply of critical rare earth metals for EV manufacture. The magnet recycling Demonstration Plant represents a scale up of the successful pilot plant campaigns completed to date and will provide further data for the development of a commercial facility(s).

During Q1 2023, the majority of the Demonstration Plant equipment was received to the Belfast facility, which is being installed and hydrostatic testing of vessels has now commenced. Commissioning is progressing to schedule and process commissioning will commence throughout April.

The Company has already sourced, globally, in excess of 40 tonnes of NdFeB permanent magnets from wind turbines, electric vehicle (EV) motors, magnetic resonance imaging (MRI) scanners, and other applications, plus swarf from alloy and magnet manufacturing, to provide a diverse feedstock range for Demonstration Plant trials.

The variable magnet REE content within the feed stock materials, with fluctuating compositions of magnet REEs – Nd, Pr, Dy and Tb, along with other REE detected in the magnets after analysis – and will provide IonicTech with a solid foundation to demonstrate the technology's attributes. Unlike many other recycling technologies, the IonicTech magnet recycling process is agnostic on magnet quality, can process oxidised magnets and can manage coatings and films, to produce individually separated and refined high purity REOs, which is providing significant interest to potential downstream users.

Throughout the quarter just gone, IonicTech has also focused on implementing the Health and Safety systems, including completion of several safety best practise processes in advance of the demonstration plant installation, commissioning and operation.

Furthermore, the IonicTech team in Belfast continues to grow with the addition of technical and operational roles to support the work programs with commissioning ramping up towards the commencement of production, and further capability expected to be added over the next quarter.

Having recently visited the Belfast facility to observe the progress at IonicTech, IonicRE's Managing Director Mr Tim Harrison commented:

"The progress in Belfast has been substantial over the past few months since my last visit in November. With equipment now delivered and installed, with commissioning now underway, we are confident that full commissioning will be completed on time, and I expect to see production of REOs this quarter."

"The successful commissioning of the Magnet Recycling Demonstration Plant at our Belfast facility will be a key catalyst for the Company in being able to establish meaningful supply chain partnerships in value addition for the magnet REOs we will produce in Belfast. Our engagement with metal and alloy manufacturers is progressing, and we expect to be able to deliver inventory of separated magnet REOs for further value addition in the third quarter of this year."

"With the momentum the Company is seeing for alternative supply of magnet REOs and the recent European Critical Raw Material Act, and the intent to source 15% of these newly named Strategic Raw Materials, we continue to field new enquiries on the technology. The potential to rapidly deploy the modular technology is appealing to western markets looking to develop domestic, secure, and sustainable supply chains from secondary sources through recycling."

Demonstration Plant Update and Technology Overview

Since its founding in 2015, as a spinout from Queens University Belfast (QUB), IonicTech has developed processes for the separation and recovery of REEs from mining ore concentrates and waste permanent magnets. The technology developed has the potential to provide a step change in efficient, non-hazardous, and economically viable processing with minimal environmental footprint compared to current practices.

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

This presents an opportunity for IonicTech to have "first mover" advantage in the industrial elemental extraction of REEs from spent magnets and waste, enabling near term magnet REO production capability to satisfy growing demand from lagging new supply chains.

The technology developed by IonicTech provides considerable benefits over alternative magnet recycling technologies presently being marketed and operated, including hydrogen decrepitation, which simply breaks down spent magnets and swarf to be recast as magnets of lesser quality.

The advantage of the technology developed by IonicTech is to provide a universal method for the recovery of high purity grade rare earth elements from lower quality and variable grade magnets, to be used in the manufacture of high-performance and high specification magnets for EV and wind turbine production.

Figure 1: Process reactors undergoing hydrostatic testing.

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Figure 2: Process Reactors in position adjacent to installed utilities and services.

Figure 3: Plate and Frame filters in position along with process vessels and product drying kilns.

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Figure 4: Plate and Frame filters in position along with process vessels and product drying kilns.

Figure 5: Mixer-Settler circuit installed.

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Figure 6: Mixer-Settler circuit installed adjacent to process reactor and settling tank.

Figure 7: Process reactors installed in position adjacent mixer settler circuit.

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Figure 8: One of the Plate and Frame filter presses in position adjacent process reactor vessels.

Figure 9: Pilot plant relocated to new mezzanine area; left, demagnetisation oven and product drying kilns, and right showing glass reactor arrangement adjacent mixer-settler circuit.

Figure 10: Hydrometallurgical and analytical wet labs now operational, supported by two Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) instruments.

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Authorised for release by the Board of Ionic Rare Earths Limited.

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About Ionic Rare Earths Ltd

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

The flagship Makuutu 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 rare earths oxides (REO). In March 2023, IonicRE announced a positive Stage 1 Definitive Feasibility Study (DFS) for the first of 6 tenements to progress to a Mining Licence Application (MLA) which is pending in Uganda. The Makuutu Stage 1 DFS defined a 35-year life initial project producing a 71% rich magnet and heavy rare earth carbonate (MREC) product basket and the potential for significant potential and scale up through additional tenements. The Stage 1 MLA is expected to be awarded in Q2 2023.

Ionic Technologies International Limited ("IonicTech"), a 100% owned UK subsidiary acquired in 2022, has developed processes for the separation and recovery of rare earth elements (REE) from mining ore concentrates and recycled permanent magnets. Post-acquisition, IonicTech is now 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). This technology provides first mover advantage in the industrial elemental extraction of REEs from recycling, enabling near term magnet REO production capability to support demand for early-stage alternative supply chains.

As part of an integrated strategy to create downstream supply chain value, IonicRE is also evaluating the development of its own magnet and heavy rare earth refinery, or hub, to separate the unique and high value magnet and heavy rare earths dominant Makuutu basket into the full spectrum of REOs plus scandium.

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

IonicRE is a Participant of the UN Global Compact and adheres to its principles-based approach to responsible business.

Competent Persons Statement

The information in this report that relates to Ore Reserves 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 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.

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.

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