

IONSolv™ Achieves 93.5% Dysprosium Recovery from Commercial US E-Waste

Process optimisation successfully extends IONSolv™ into heavy rare earth recovery, with all reported recoveries now exceeding TEA assumptions

Highlights

- **Independent validation successfully targets Heavy Rare Earth (“HRE”) elements.** IONSolv™ optimised to specifically target HRE elements, achieving 93.5% dysprosium (“Dy”) recovery from commercial US e-waste feedstock, together with promising early results for other HRE elements such as holmium and gadolinium, across the leaching process.
- **This materially exceeds the 32.5% Dy recovery assumed in the Techno-Economic Analysis (“TEA”).** Dysprosium is amongst the most supply constrained and highest-unit-value elements in the magnet bundle and is expected to positively impact a revised TEA.
- **High recoveries of Light Rare Earth (“LRE”) elements maintained and further improved.** Recoveries across the leaching process of 96.5% for both Neodymium (“Nd”) and praseodymium (“Pr”) build on the 93.8% Nd and 95.1% Pr results announced on 16 April 2026.
- **Iron rejection quantified (unaudited).** Initial work using a solvent-extraction step demonstrated near-complete removal of iron with no measurable co-extraction of the targeted rare earth elements.
- **Selectivity of the process further optimised.** Ongoing refinement of the IONSolv™ formulation has further improved selectivity between the targeted rare earths and the impurities intended for removal such as iron, nickel, and manganese, while maintaining high rare earth recoveries.
- **Phased “hub-and-spoke” deployment pathways identified.** Multiple intermediate products within the flowsheet can support staged capital deployment.
- **Multi-feedstock commercialisation strategy advancing.** Evaluation continues across multiple feedstock pathways, including e-waste sorted ferrous streams, OEM production scrap and end-of-life motor sectors.

Iondrive Limited (ASX: ION) (“Iondrive” or “the Company”) is pleased to report results from further independent validation work undertaken on U.S. commercial e-waste feedstock supplied by Colt Recycling LLC (“Colt”).

The latest program focused on further optimisation of the Company’s proprietary IONSolv™ process targeting recovery of HRE elements from commercial e-waste streams, initially focussing on Dy, being amongst the highest-unit-value elements in the magnet bundle.

The independent evaluation achieved a recovery of 93.5% for Dy, demonstrating that the IONSolv™ platform can successfully target heavy rare earth elements, whilst maintaining and improving Nd and Pr recoveries that were previously reported and demonstrating high iron rejection via solvent extraction. The recovery rates for Dy, Nd and Pr are all well above the levels assumed in the Company’s TEA announced in November 2025.

Methodology

The validation work was conducted in the U.S. by a third-party facility, Kingston Process Metallurgy Inc., under the direction of ProProcess Engineering. The commercial grade e-waste feedstock was sourced from Colt, a leading US e-waste processor, under a binding agreement announced on 1 September 2025.

This application of the IONSolv™ flowsheet was developed by the Iondrive specific for REE applications. The e-waste feedstock samples (15-250 kg) were pretreated and divided into appropriate sample sizes to allow optimisation of downstream processes to ensure reliability and good metallurgical accounting.

All figures reported are based on leach efficiencies and are unaudited (see Cautionary Statements).

Commenting on the results, Mr Lewis Utting, Iondrive's Managing Director stated:

"The results seen here from this validation work are the standout. Dysprosium is among the most strategically constrained and highest-value elements in the magnet bundle, and recovering targets like this at above 93%, well above the TEA assumption, is a genuine step-change for the platform. Our April update confirmed strong Neodymium and Praseodymium extraction, which underpin the bulk of the magnet REE market value. These latest results extend that strength into the HRE elements as well, alongside high iron rejection with no measurable co-extraction of the target rare earths. We look forward to updating the TEA through the next phase into a PFS. Demonstrating use cases that are both technically effective and commercially viable is central to our commercialisation strategy and our alignment with US supply-chain resilience priorities."

Independent Evaluation Results

The independent evaluation demonstrated strong recoveries across both LRE and HRE elements. The figures below are unaudited leach efficiencies. These recoveries are compared against those assumed in the initial TEA lodged with the ASX on 17 November 2025:

Element	Prior TEA Assumption (%)	Independent Result (%) — unaudited, single-pass	Outcome
Dy	32.5	93.5	New disclosure; materially outperformed
Nd	95.5	96.5	In line; uplift on 16 April figure (93.8%)
Pr	92.0	96.5	Outperformed; uplift on 16 April figure (95.1%)
Fe rejection	Qualitative (April)	99.9	Quantified via SX

Solvent recycle performance, overall flow sheet mass-balance recoveries and pre-treatment outcomes will be assessed in the next phase of the programme.

The earlier techno-economic evaluation, based on a 2,000 tpa modular processing plant with estimated capex of US\$4.6 million, indicated an NPV of US\$7 million (10% real discount rate), a 46% IRR and a payback of 2.6 years. With the above improved REE recovery assumptions, these economic parameters are expected to further improve, and this will be the subject of a Pre-Feasibility Study ("PFS"). The modular design is consistent with a rolling multi-site deployment, with each plant situated close to its feedstock source.

Why HRE Elements Matter

HRE elements, such as Dy in particular, command the highest unit values and are the most supply constrained elements in the magnet bundle. A flowsheet that recovers them efficiently and can later split out a dedicated heavy fraction is materially more valuable than one optimised LRE elements alone. The original TEA assumed only modest recoveries of HRE elements; the independent validation work indicates the IONSolv™ chemistry recovers Dy (with early promising results on other HRE elements) nearly as effectively as the LRE elements. That outcome reshapes the product value story and is a central argument for the next phase of work.

How These Results Differ From the 16 April 2026 Announcement

The 16 April 2026 announcement reported initial extraction results for Nd and Pr, with qualitative improvements in iron rejection. The current update extends those outcomes in four respects:

- The process was optimised to target HRE element recoveries, with recoveries of Dy above 93%, which is being reported for the first time by Iondrive.
- Iron rejection has progressed from a qualitative improvement to a quantified removal via solvent extraction, with no measurable co-extraction of the target rare earths.
- Ongoing refinement of the IONSolv™ formulation has further improved selectivity, supporting solvent recycle and process economics. Formulation specifics are retained as proprietary process know-how and are not disclosed.
- Phased “hub-and-spoke” deployment pathway identified, supporting staged capital deployment.

Colt Recycling LLC Partnership & Multi-Feedstock Strategy

Iondrive’s rare earth recycling strategy is built around validating the IONSolv™ platform across a spectrum of US commercial feedstocks. This validation work is part of an ongoing collaboration with Colt Recycling LLC, a US-based commercial recycler with established collection, handling, and shredding capabilities for rare-earth-bearing end-of-life e-waste materials.

The Colt sourced material showed higher iron content and lower rare earth grade than the assumptions underpinning the Company’s TEA. That makes the recovery results all the more significant: the IONSolv™ chemistry held up on commercially representative, sub optimal feed, with the solvent extraction step demonstrating an effective engineering response to iron contamination. The technology has been shown to be robust without relying on idealised feed grades.

Next Steps

To complete the validation and further optimise the IONSolv™ process, the next phase extends evaluation to higher-grade feedstock pathways. The Company is engaging with prospective partners across three principal pathways:

- **Sorted e-waste ferrous streams:** upgraded feedstock produced by mechanical or sensor-based sorting of mixed end-of-life electronic and motor scrap to concentrate the magnet-bearing fraction.
- **OEM production scrap:** high-purity rare earth magnet scrap from magnet manufacturing, with significantly higher rare earth content than post-consumer streams.
- **End-of-life motor stators:** recovered from EV drivetrains, wind turbines and industrial motors, with growing volumes as electrification accelerates.

Pre-treatment optimisation work has also been elevated within the next phase to provide an in-process route for upgrading lower-grade feed. Together, higher-grade feedstock pathways and in-process pre-treatment give the Company multiple commercial routes to deliver on the techno-economic case. Iondrive expects to publish a PFS once representative feedstock grades and volumes across the multi-feedstock strategy are established.

This announcement has been approved for release by the Board of Directors.

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About Iondrive Limited

IONDRIVE is advancing IONSolv™, an innovative metal extraction platform designed to support selective recovery of critical minerals across multiple feedstocks. The platform is being developed for scalable deployment across battery materials, rare earths and e-waste, with a focus on commercialisation pathways aligned to emerging critical-minerals supply chains.

About Colt Recycling

Colt Recycling LLC is a US-based commercial recycler with established collection, handling and shredding capability across rare-earth-bearing end-of-life materials. Colt has supplied the commercial e-waste feedstock used in the IONSolv™ validation programme referenced in this announcement.

Cautionary Statements

Validation results referenced in this announcement are unaudited leach efficiencies based on laboratory results on a commercial e-waste feedstock sample sourced from Colt Recycling and may not be representative of performance on different feedstocks or at larger scale. The recovery figures reported have not yet been confirmed through independent metallurgical accounting or overall flow sheet mass balance; reported leach efficiencies are not equivalent to overall process recovery and may change once the overall flow sheet mass balance is finalised. The Company's techno-economic analysis assumptions have not been updated to reflect feedstock composition information from the current evaluation; any update will follow the next phase of validation work, including across the higher-grade feedstock pathways identified above. Engagement with prospective higher-grade feedstock counterparties is at a non-binding, preliminary stage and there is no certainty that any such engagement will result in firm supply arrangements.

This announcement contains forward-looking statements based on the Company's current expectations and assumptions and subject to risks and uncertainties. Actual outcomes may differ materially.