Iondrive Advances Battery Recycling with Global Market Study and Technological Progress

Iondrive Limited (ASX: ION) (Iondrive or the Company) is pleased to announce the outcomes of a comprehensive market research study conducted by Rho Motion, highlighting the compelling market dynamics for battery recycling and the Company's emerging role in it. The study, which comes at a time when the global push for electric vehicles is intensifying, underscores the critical need for sustainable battery end-of-life solutions.

Highlights

- **Rho Motion recycling market study concludes that multiple factors support a competitive advantage for the commercialisation of Iondrive's exclusively licensed Battery Recycling Technology in a rapidly growing market:**
    - Compelling market fundamentals for battery recycling, supported by environmental regulations, supply chain security concerns for critical minerals and the growing demand for electric vehicles
    - Battery material available for recycling (Black Mass) is forecast to grow at a CAGR of 25% pa, reaching two million tonnes by 2030, and continuing at 19% pa for a decade thereafter
    - The potential for 'green' price premiums in Europe is recognised and increasing demand for sustainable recycled materials, with EU legislation leading the way mandating the inclusion of recycled metals in new EV vehicle batteries from 2030
    - Existing recycling capacity uses either smelting or acid hydrometallurgical processes which collectively have a number of environmental issues (air pollutants, harmful acid waste, high greenhouse gas emissions, high energy use/cost)
    - Manufacturers in the vehicle supply chain are increasingly looking to establish relationships with raw materials suppliers, whilst increasing their recycling credentials and reducing their environmental footprint
    - Iondrive is well positioned as an early mover with a novel, environmentally friendly process with higher recovery rates and selectivity in extraction of individual critical minerals
    - Securing supply of Black Mass feedstock and establishing strong offtake agreements were identified as critical to Iondrive's commercial strategy
- **Large-scale bench trials have commenced at the University of Adelaide, scheduled for completion in April**
- **In parallel, independent verification of the large-scale bench trials is underway at Independent Metallurgical Operations in Perth, which will also generate the necessary process data for the design of a pilot plant**
- **Iondrive is assessing multiple business models with prospective partners, including licensing and toll manufacturing, to strengthen the execution strategy for its battery recycling technology**
- **The bench trials, the Rho Motion study and the execution strategy serve as crucial steps in the**

Prefeasibility Study (PFS) which is expected to be completed in June

- **The PFS aims to reduce the technical, commercial and execution risks of the project ahead of the anticipated pilot plant construction planned for FY2025**

Iondrive CEO Ebbe Dommisse commented:

"I am exceptionally pleased with the findings from the Rho Motion study, which not only validate our strategic position but also highlight the growing demand for sustainable battery recycling solutions, especially in Europe. Being an early mover in this space, our focus is on the ongoing process of technological de-risking, which is currently underway with the commencement of bench trials in Adelaide and Perth. These trials mark the beginning of our journey towards de-risking our technology. Alongside, our commercial strategies are being refined, guided by the study's insights, to align with market needs as a key aspect of execution de-risking. The dedication and expertise of our team in Adelaide, complemented by the strategic oversight of our experienced board, are key to advancing our innovative recycling process. These collective efforts are critical milestones as we progress towards a Prefeasibility Study, ensuring we are well-placed to meet the industry's future demands."

Rho Motion's Battery Recycling Market study

The study affirms the market's attractiveness and the strong business case for battery recycling, forecasts a substantial ramp-up in volume.

Black Mass feedstock is forecast to grow by 25% per annum CAGR to two million tonnes by 2030 and will be driven by growth in:

- Production Scrap –presently the majority of material available for recycling comes from batteries and materials that have not passed quality control during battery cell manufacturing. Production of Lithium batteries in particular is expected to increase at a CAGR of 30% per annum through to 2030, driven by growth in electric vehicles. The average scrap level for gigafactories is 10% to 20% in the first four years of production, with production efficiencies reducing this to an average of 7.5% thereafter.
- End-of-Life (EoL) Batteries – material from batteries that have reached the end of their usefulness or 'first life' will grow at a faster rate such that, material from EoL batteries will exceed production scrap by 2030.

Thereafter, battery material available for recycling is forecast to continue to grow at a CAGR of 19% per annum for the next decade, reaching 11.3m tonnes by 2040, with growth continuing to be driven by EoL batteries as electric vehicles become increasingly prevalent.

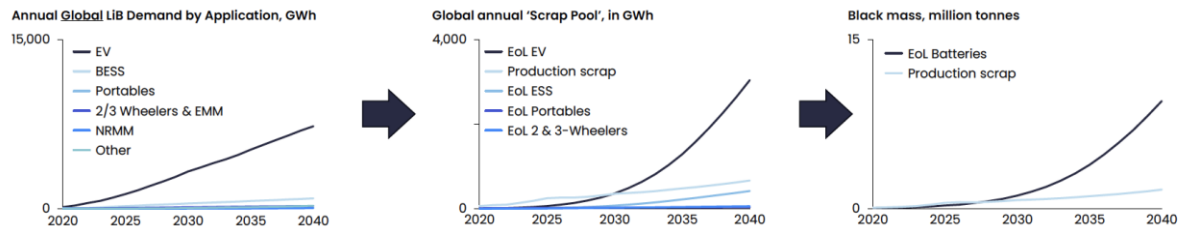

Figure 1 – Projected Growth in LiB's and Black Mass
(Source: Rho Motion Study March 2024 for Iondrive Ltd)

The report underscores the compelling commercial potential for Iondrive's recycling technology, bolstered by legislative support, circular economy principles, and the escalating electric vehicle market coupled with growing deficits of critical battery-grade materials. With these factors, the study outlines a powerful business case, positioning Iondrive favourably in a market still in its infancy.

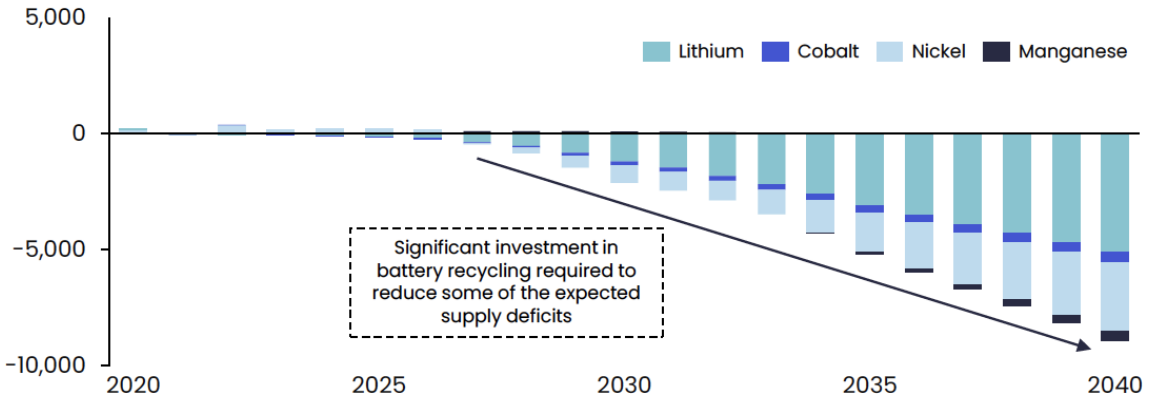

Figure 2 - Global market deficit for battery-grade cathode active materials, thousand tonnes per annum (Source: Rho Motion Study March 2024 for Iondrive Ltd)

As competition is expected to grow, Iondrive's early adoption of a novel process using benign solvents is set to enhance recovery rates from mixed battery feedstocks, improving margins and offering a distinct value proposition.

The study further delineates the roadmap to commercialisation, highlighting the necessity of securing black mass volumes through stable supply agreements with Western producers, and ensuring robust offtakes for the resulting precursors and cathode active materials. Additionally, the potential for 'green' price premiums for recycled materials is recognised, particularly to meet stringent content requirements in Europe, adding another layer to the business model's appeal.

Large-scale bench trials

Iondrive Limited is also pleased to report the commencement of large-scale bench trials at the University of Adelaide (UoA), which began in early March. These trials are critical for ensuring that our technology can be effectively applied on a larger scale, enhancing the precision of our process data for mass and energy balances and subsequent process engineering design work. The trials are expected to be completed in April.

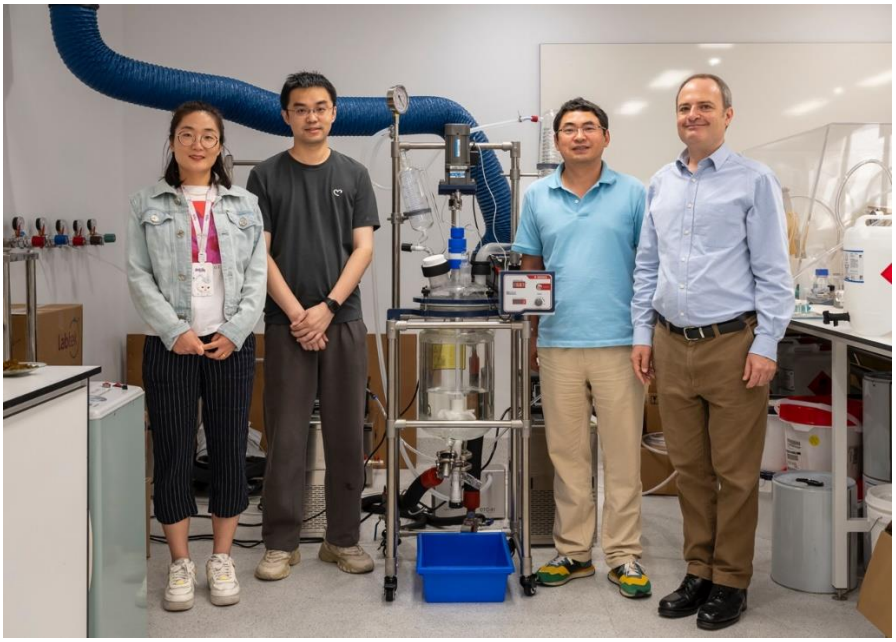

Figure 3 – Team at UoA commissioning equipment for large-scale laboratory trials

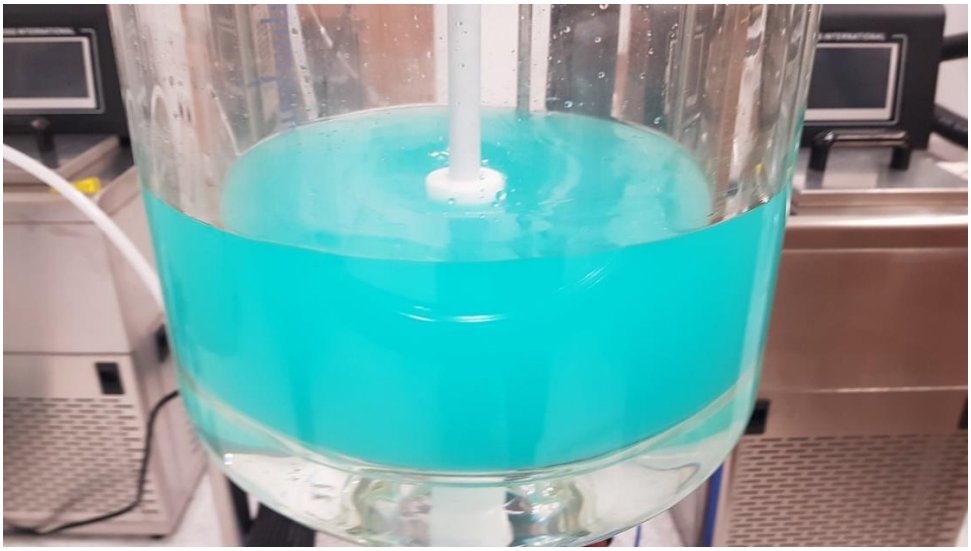

Figure 4 – Cobalt extracted during large-scale laboratory trials

Furthermore, additional large-scale bench trials are slated to begin this week at Independent Metallurgical Operations (IMO) in Perth. These trials are conducted by a third party and are aimed at independently verifying our technology, while also generating the necessary process data for the design of a pilot plant, with results expected by end April.

Prefeasibility Study Completion & Pilot Plant

The Company is actively de-risking its execution strategy by evaluating various business models in collaboration with potential partners. Options such as licensing agreements and toll manufacturing are being explored to ensure the most efficient and profitable paths to market are chosen.

Iondrive is navigating the path to completion of the Prefeasibility Study in June, focusing on technological, commercial, and executional de-risking strategies. This approach ensures a strong foundation for the anticipated pilot plant construction planned for financial year 2025.

A continuous, fully integrated closed loop pilot plant process is an important next step following the large-scale bench trials, performed in batch-mode, in order to scale the technology and reflect a commercial process operating in continuous mode. Lessons learned in continuous mode with closed loop recycled streams is essential at pilot plant-scale before advancing to commercial-scale operations.

Authorised for release by the Board of Iondrive Limited.

Further Information

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Iondrive Limited: Company Profile

Iondrive is an emerging battery technology commercialisation and critical minerals exploration group listed on the Australian Securities Exchange (ASX: ION).

The commercialisation business holds three exclusive world-wide licences from the University of Adelaide comprising next generation battery technologies: 1) an environmentally sustainable method for recycling lithium batteries; 2) an enhanced performance non-flammable lithium-ion based battery, and 3) a low-cost, high cycle life water-based battery.

The mineral exploration business based in South Korea is advancing exploration on its five priority Lithium Projects through an Earn-In and Joint Venture Agreement with a subsidiary of KoBold Metals Company (KoBold). Under the agreement, KoBold may earn a 75% interest through a two-stage earn-in of $7 million over 5 years to November 2028. Iondrive's in-country technical team is providing field operator services to, and is largely funded by, KoBold. Iondrive is actively pursuing opportunities to realise value for its rare earth elements and precious metals projects through external funding (earn-in agreement) or divestment.