Iondrive Advances Commercialisation of DES Technology in Collaboration with Livium

Highlights

- Iondrive has executed a binding Term Sheet with Livium Limited (ASX:LIT) to commercialise its Deep Eutectic Solvent (DES) technology in Australia.
- Livium will provide end of life solar panels, lithium-ion battery black mass, rare earths and other samples for evaluation using Iondrive's DES process.
- Agreement sets a pathway from technical evaluations to definitive agreements covering supply and co-location of DES processing units at Livium facilities.
- Iondrive's DES process has already demonstrated >95% metal recovery from battery black mass in testing, in a sustainable, closed-loop alternative to conventional processes, with the potential to adapt the process to recover high-value metals from other feedstock.
- The collaboration leverages Livium's national recycling network, providing Iondrive with a direct scale-up pathway across battery, solar and e-waste markets.
- Pilot plant for battery recycling targeted for commencement of commissioning at end of 2025, providing a clear timeline to accelerate commercial deployment.

Iondrive Limited (ASX: ION) ("Iondrive" or "the Company") has signed a binding Term Sheet with Livium Limited (ASX: LIT) ("Livium"), an Australian battery recycling company operating through its subsidiary Envirostream Australia Pty Ltd ("Envirostream").

Under the agreement, Livium will supply Iondrive with defined waste streams for processing & evaluation using its proprietary DES technology, including:

- Crushed photovoltaic solar panel cells
- Lithium-ion battery black mass
- Rare earth magnets and
- Other samples to be agreed, which may include e-waste.

Results of these programs will inform techno-economic assessments and support the negotiation of commercial supply and co-location agreements.

Strategic Context

Livium operates one of Australia's market-leading lithium-ion battery recycler, Envirostream, which has advanced lithium-ion battery collection and recycling networks, with a growing focus on solar panel recycling and e-waste processing. Iondrive's DES platform has the potential to complement these capabilities by extracting additional value from these waste streams, while addressing environmental and supply chain challenges.

This collaboration combines Livium's feedstock access and logistics with Iondrive's novel DES chemistry, positioning both companies as leaders in the emerging circular economy for critical and strategic materials in Australia.

Management Commentary

Iondrive Limited CEO Dr Ebbe Dommisse commented:

"Partnering with Livium provides us with an avenue to access feedstocks at commercial scale for our DES technology. This agreement aligns perfectly with our strategy to target battery, solar and magnet recycling – markets where sustainable solutions for recovering valuable metals are urgently needed."

Livium Limited MD&CEO, Simon Linge commented:

"We are pleased to partner with Iondrive on this initiative. Our strategy is to leverage our core strengths, which includes accessing and processing customer's problem waste. Combining Iondrive's innovative DES technology with our current reliable supply of black mass with the emerging capability in solar panels, and rare earth magnets,, has the potential to unlock new recovery pathways and accelerate the development of a domestic processing of Australia's clean energy waste."

Why It Matters

- Access to Local Feedstock: Livium's collection and recycling network gives Iondrive direct access to commercial volumes of solar, battery and e-waste, ensuring a reliable pipeline of material for testing and scale-up in Australia.
- Non-Dilutive Funding Opportunities: Demonstrating DES on real-world feedstocks strengthens Iondrive's eligibility for Australian and international grant programs, supporting growth without relying solely on equity markets.
- Faster Commercialisation: Working with Livium, commercial-scale volumes enables Iondrive to accelerate development from lab results to pilot and full-scale deployment, shortening the pathway to potential revenues.
- Strategic Market Positioning: This partnership brings Iondrive closer to downstream users of critical minerals, anchoring its technology in Australia's circular economy and supply chain security initiatives.

Summary of Key Agreement Terms:

- Livium to provide solar panel, battery black mass and rare earth magnets other samples to Iondrive at agreed volumes.
- Iondrive to apply its DES processes to evaluate recovery pathways and commercial scalability.
- Iondrive retains ownership of all DES IP and results. Livium retains IP in Sample generation
- Parties will use best endeavours to negotiate binding commercial agreements covering supply and co-location within 21 months.
- The Term Sheet includes limited exclusivity provisions in Australia during the evaluation process.
- Either party may terminate on 30 days' notice, subject to customary conditions.

About Livium

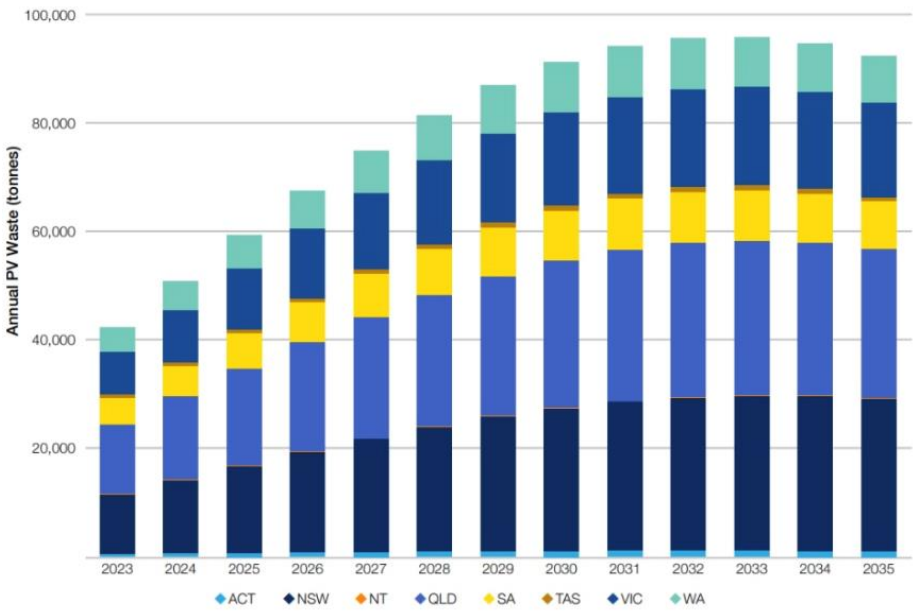
Livium (previously Lithium Australia) is aiming to lead and enable the global transition to sustainable lithium production. The Company operates Australia's market leading battery recycler, Envirostream, a revenue and profit generating business which is well-placed to capitalise on growing lithium-ion battery demand. Additionally, the Company aims to commercialise patented lithium extraction technology (LieNA®), through a 50:50 joint venture with Mineral Resources Ltd (ASX: MIN), and critical battery material lithium ferro phosphate (LFP), through wholly owned subsidiary VSPC.

Expanding into Solar Panel Recycling: A New Vertical Opportunity

Iondrive has previously focused on battery and e-waste streams. This release now underscores a promising new vertical – solar panel recycling – targeting high-value materials like silver and silicon.

Solar panels represent one of the fastest-growing waste streams globally, with cumulative volumes forecast to reach ~78 million tonnes by 2050[1]. In Australia, waste is projected to climb from around 50,000 tonnes annually today to more than 1.16 million tonnes by 2035[2].

Annual PV waste in tonnes in each state and territory in Australia[2]



Each panel contains valuable recoverable materials, particularly silver and high-purity silicon. Silver is a critical mineral essential to solar and electronics manufacturing. Silicon recovered from end-of-life modules can be re-used in new solar cells or upcycled into lithium-ion battery anodes, with recent studies confirming >99% purity levels in recovered material[3].

[1] https://www.sciencedirect.com/science/article/abs/pii/S0956053X23007146

[2] https://www.energycouncil.com.au/analysis/australia-s-solar-waste-a-growing-problem

[3] https://www.pv-magazine-australia.com/2025/03/05/unsw-develops-pv-panel-recycling-method-that-recovers-cell-metals-for-upcycling

This combination of scale and material value creates a compelling new opportunity for Iondrive. Solar panel recycling has the potential to deliver significant economic upside – Australia stands to unlock over AUD 1 billion in recoverable materials from end-of-life solar panels by 2035[4] - while reinforcing national supply chain security for critical minerals.

Approved for release by the Board of Iondrive Limited.

Further Information

Dr Ebbe Dommisse
Chief Executive Officer
08 8368 888
info@iondrive.com.au

Aiden Bradley
Investor and Media Relations
+61 (0) 414 348 666
aiden@nwrcommunications.com.au

About Iondrive

Iondrive is developing an innovative metal extraction process using Deep Eutectic Solvent technology (DES). Its initial business case is focussed on battery recycling where the proprietary method is designed to efficiently recover critical metals, including nickel, cobalt, lithium, and manganese, from black mass in a closed-loop, environmentally friendly process. Unlike conventional hydrometallurgical and pyrometallurgical approaches, Iondrive's DES technology operates at lower temperatures, eliminates the need for aggressive acids, and offers a tuneable chemistry that can selectively extract individual metals. Whilst progressing the battery recycling application for its DES technology, Iondrive is actively seeking to expand the commercialisation opportunities into other markets, including mineral processing and Urban mining of e-waste.

[4] https://apvi.org.au/scoping-study-solar-panel-end-of-life-management-in-australia