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Battery recycling made easy

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Right now, Australia lags behind the rest of the world in battery recycling, in that only 3% – predominantly lithium-ion batteries (LIBs) – are returned for reprocessing. Recycling such materials onshore could augment the federal government's Critical Minerals Strategy, formally launched in March 2019. That strategy, while strongly focused on raw materials and supply chains, acknowledges the impact of innovation in processing to recover not only primary metals but also a range of by-products. Battery recycling relies on innovations of this type for sustainable and ethical supply of materials back into the battery-production cycle. The environmental benefits are also enormous because, aside from housing critical elements in high concentrations, batteries contain toxins in the form of electrolytes – materials that should never be relegated to landfill.

HIGHLIGHTS

- **Lithium Australia to acquire a significant equity position in recycling company Envirostream.**
- **This technical partnership will develop methods to retrieve critical metals from spent batteries within Australia.**
- **Recovery of such metals will support sustainable battery development.**
- **There is potential for these critical metals to be retained within the Australian battery supply chain.**
- **Stewardship of, and the creation of an ethical supply chain for, battery metals will be facilitated.**
- **Expansion of existing operations will create local jobs and more employment opportunities within the battery sector.**
- **There is the potential to 'close the loop' for LIB materials.**

An Australian first

Lithium Australia recognises Victorian-based Envirostream as the national leader in the primary reprocessing of LIBs. At present, it operates the only facility in Australia for shredding such batteries, producing a powder containing critical metals that is then exported for refining. Meanwhile, Lithium Australia is developing a hydrometallurgical flow sheet for the processing of powders of this type, in order to extract the chemicals (nickel, cobalt, manganese and lithium compounds) required to regenerate battery cathodes, with simultaneous recovery of graphite from the battery anodes.

Combining the key competencies of Lithium Australia and Envirostream will allow the latter to expand its operations, thereby ensuring that critical metals recovered from recycled batteries remain under Australian control to the point of sale. Moreover, it's anticipated that this joint venture will create new jobs, including employment opportunities in the battery industry not previously available within Australia.

Logistics expertise

Australia's failure to achieve adequate battery-recycling rates has been exacerbated by inadequate collection networks. Envirostream, which has

ASX ANNOUNCEMENT

considerable experience in battery collection, will roll out its own collection strategy to deal with the rapidly increasing quantity of spent batteries nationally.

The acquisition

Lithium Australia is to acquire a total of 560 shares (presently 18.9%) of Envirostream's issued capital, as follows.

- Tranche 1 payment of $300,000 (240 shares) scheduled for completion 6 April 2019.
- Tranche 2 payment of $100,000 scheduled for completion 15 June 2019 (80 shares).
- Tranche 3 payment of $100,000 scheduled for completion 15 July 2019 (80 shares).
- Tranche 4 payment of $100,000 in Lithium Australia scrip scheduled for completion 15 August 2019 (160 shares).

Future development

The funds Lithium Australia provides to Envirostream will be used to expand the latter's battery-shredding facilities. Meanwhile, Lithium Australia will continue its research into the chemical processing of alkaline batteries and LIBs. It is anticipated that Lithium Australia will complete the design of its flow sheet for the hydrometallurgical recovery of metals from LIBs later this year.

The VSPC opportunity

Critical metals and/or their compounds generated from spent batteries can potentially feed the production of cathode powder via Lithium Australia's wholly-owned VSPC technology. VSPC manufactures cathode powders at its Brisbane pilot-plant facility, and these powders are currently being testing by battery manufacturers in China, Japan and India.

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About Lithium Australia NL

Lithium Australia aspires to 'close the loop' on the energy-metal cycle in an ethical and sustainable manner. To that end, it has amassed a portfolio of projects and alliances and developed innovative extraction processes to convert *all* lithium silicates (including mine waste) to lithium chemicals. From these chemicals, the Company plans to produce advanced components for the lithium-ion battery industry. The final step for Lithium Australia involves the recycling of spent batteries and e-waste. By uniting resources and the best available technology, the Company aims to establish a vertically integrated lithium processing business.

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