ASX ANNOUNCEMENT

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Lithium phosphate refining vindicates cathode production with no requirement for lithium hydroxide or carbonate

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HIGHLIGHTS

- **Lithium phosphate produced from Lithium Australia's SiLeach® Gen-2 Pilot Plant has been further refined using a simple, proprietary purification process.**
- **The resulting product has a significantly higher purity than that previously used to create lithium-iron-phosphate cells via Lithium Australia's 100%-owned VSPC cathode powder technology.**
- **The latest refining process paves the way for the production of very high-purity cathodes while bypassing the supply restrictions of lithium carbonates and hydroxides.**
- **High-quality lithium-ion batteries generated from mine waste are now a reality.**

Lithium Australia NL (ASX: LIT, or 'the Company') has successfully refined lithium phosphate ('LP') generated by its SiLeach® Gen-2 Pilot Plant to create a very pure product that is suitable for the direct generation of lithium-iron-phosphate ('LFP') powders for the production of lithium-ion batteries ('LIBs').

The Company's production of LIBs using LP generated direct from mine waste was first reported on 21 November 2018. Batteries produced in that manner demonstrated outstanding potential, notwithstanding the fact that they were manufactured from unrefined LP.

Now, further refining of the LP by way of a simple proprietary process (details of which will be provided once updated IP applications are in place) has reduced the concentrations of impurities such as potassium, sodium and sulphur by orders of magnitude, providing scope to further improve battery performance.

The new LP refining stage fits seamlessly into the Company's SiLeach® process, developed to capitalise on the abundance of lithium micas (for which SiLeach® is ideally suited). A combination of SiLeach® and VSPC cathode production reduces the number of processing steps required to generate battery precursors and, importantly, removes the requirement for the production of high-purity lithium hydroxide or carbonate, this being one of the most technically challenging steps in the battery manufacturing process.

Indicative impacts of the LP refining process in terms of impurity removal are shown in Table 1 below.

	Analysis % w/w		
	K	**Na**	**S**
SiLeach® Gen-2 Pilot Plant primary LP	0.25 – 0.35	0.15 – 0.25	0.51 – 0.57
Refined LP	0.008	0.005	0.027

Table 1. Typical impacts of LP refining to remove major Impurities.

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The LP refining process will be integrated into Lithium Australia's SiLeach® Gen-3 Pilot Plant, to be constructed at ANSTO Minerals (Sydney, Australia) in 2019. Once refined, the LP will be converted into cathode material and LIB cells for testing at the VSPC facility in Brisbane (results to be reported in due course).

Lithium Australia expects this refining step to also significantly enhance the next round of LieNA® process development. LieNA® is designed to recover lithium from spodumene (i.e. conventional lithium concentrates) in a caustic conversion that does not require roasting, unlike conventional 'conversion' processes used for such materials (ASX announcement 21 February 2019). Importantly, LieNA® is ideally suited to the recovery of lithium from fine spodumene that cannot be processed by conventional methods. That inability to recovery lithium from fine materials conventionally can reduce lithium yields from spodumene ore to as low as 50%. In other words, LieNA® provides a potential solution to the loss of lithium in fine material.

In combination, the Company's lithium extraction processes (SiLeach® and LieNA®) and VSPC cathode powder technology are effective in reducing the number of processing steps required to manufacture battery components. In so doing, they have the potential to reduce both the energy footprint and costs of production of battery components.

Comment from Lithium Australia Managing Director Adrian Griffin

“Process efficiency is the key to cost reduction in the battery industry. We have hit the nail on the head by using waste material as feed, and by reducing the number of processing steps required to produce high-quality battery components. Collaborative development with our technology partner ANSTO Minerals continues to deliver outstanding results for the Company. Our processing technologies also have great potential for the lithium brine industry, and we look forward to collaboration in that sector.”

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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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