

ASX Release

April 17, 2018

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RNU

**Developing
Australia's Largest
Graphite Deposit****Battery Anode Material Successfully Produced from Siviour Spherical Graphite**

- **Results from initial battery anode tests demonstrate Siviour spherical graphite meets key performance criteria for lithium-ion battery anodes**
- **Test anodes formed from Siviour spherical graphite achieve successful (SEI) formation and electrochemical charging and discharging from first pass testing**
- **Excellent stability shown over 150-cycle battery tests, suggesting long-life durability**
- **Results further support commercial viability of Siviour graphite for the growing lithium-ion battery anode market**

Renascor Resources (ASX: RNU) is pleased to announce the results of initial battery anode tests utilising Siviour spherical graphite. The tests successfully produced lithium-ion battery anode material, demonstrating that Siviour spherical graphite meets several key performance criteria for lithium-ion battery anodes.

Commenting on the test results, Renascor Managing Director David Christensen stated:

“Spherical graphite produced from Siviour continues to meet or exceed industry standards, suggesting Siviour graphite will be a highly-sought after product by battery anode manufacturers.

While China currently dominates this market, our discussions with graphite end-users has highlighted the increasing importance of diversity of supply from secure jurisdictions like Australia.

We believe our ability to produce high-quality graphite products from Siviour, as demonstrated by the results announced today, at globally competitive prices will offer an important comparative advantage for Siviour as we seek to advance offtake discussions with potential partners and move Siviour closer to production.”

Background

To test the suitability of Siviour graphite concentrates for use in lithium-ion battery anodes, Renascor has undertaken test programs overseen by a European graphite specialist¹ with expertise in the spheroidisation and purification of natural flake graphite.

As reported earlier this year, previous test work undertaken by this specialist included tests that produced uncoated 99.99% carbon (C) spherical graphite from Siviour graphite concentrates, with the spherical product meeting or exceeding industry specifications across all parameters tested. See Renascor ASX announcements dated 25 January 2018 and 15 February 2018.

Spherical graphite produced from these previous tests was then used to manufacture lithium-ion battery cells.

The results reported today are from the initial testing of the performance of a lithium-ion battery anode manufactured with Siviour spherical graphite.

¹ For confidentiality purposes, the identity of the European graphite specialist is not disclosed.

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**Developing
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The test program was designed as an initial sighter test using Siviour uncoated spherical graphite to produce lithium-ion battery anodes.

An anode slurry was produced using 94% Siviour spherical graphite (at 99.99% C) and 6% binder. The anode was then tested in a lithium-ion battery coin cell filled with standard electrolyte. Rate capability tests were undertaken to analyse the behaviour of the lithium-ion battery anodes across a range of different charge and discharge rates.

It is important to note that the tests were undertaken to assess the performance of the Siviour spherical graphite under standard conditions that can be achieved in a cost-efficient manner at industrial scale. Battery making test parameters, such as coating or electrolyte composition, were not altered to increase the conductivity and capacity rates.

The results for the initial tests confirm that the Siviour spherical graphite meets several key performance criteria for lithium-ion battery anodes as explained below.

Formation behaviour

The first three cycles of charging and discharging relate to the formation of the battery. This is when a protective solid electrolyte interphase (or SEI) layer is formed on the graphite particles. The interfacial relations relating to this layer are a vital factor in battery function, particularly in respect of the reactivity of the electrode material and the reactions that occur on the surface particles of both anodes and cathodes.

The formation cycles observed using Siviour spherical graphite were reported as normal for uncoated graphite, suggesting positive performance in terms of cycle life limitations, capacity reversibility and safety.

Charge/discharge

Rate capability tests were undertaken to analyse the charge and discharge capacity across a range of standard times and intensities.

The test work showed that the Siviour spherical graphite could be charged to very high capacities exceeding 367mAh/g, with minimal irreversible capacity loss.

Durability

To assess the stability of anode performance over time, tests were performed to measure the amount of energy that can be released from the battery after it is charged over multiple cycles. In total, the test material was charged and discharged over 153 cycles, and measurements were undertaken to assess the ability to release (or discharge) the charge from each cycle.

The tests demonstrated that this durability standard, referred to as coulombic efficiency, was very high with Siviour spherical graphite, with an efficiency of 99.9% after 153 cycles. This result suggests Siviour spherical graphite would perform at a high level over a long battery life, with excellent durability.

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The successful production of lithium-ion battery anodes using Siviour spherical graphite builds upon the previous spheroidisation and purification tests of Siviour graphite concentrates and suggests the Siviour Graphite Deposit has several positive physical features that are suitable for the growing market for natural flake graphite in the manufacture of lithium-ion battery anodes.

The Siviour Deposit also appears to have advantages that may permit it to produce high-quality graphite concentrates, including products suitable for the lithium-ion battery anode market, at a comparatively low cost.

The recently completed Siviour Prefeasibility Study (Renascor ASX announcement dated 14 March 2018) confirmed the potential of Siviour to produce graphite concentrates at an estimated operating cost of US\$335/tonne, among the lowest reported cost of any graphite development in the world.

In addition, Renascor is investigating the viability of producing uncoated spherical graphite using Siviour graphite concentrates. Renascor's Spherical Graphite Scoping Study (Renascor ASX announcement dated 8 February 2018) confirmed the potential to significantly increase the value of Siviour through development of a downstream facility producing uncoated spherical graphite at competitive prices.

Currently, China is the dominant producer of both natural flake graphite concentrates, as well as uncoated spherical graphite.

By offering Australian-made, high-quality graphite products (either in the form of graphite concentrates or uncoated spherical graphite) at a low cost, Renascor believes it may be advantaged in off-take negotiations by its ability to offer valuable diversity of supply at globally competitive costs.

Next steps

In addition to progressing to a Definitive Feasibility Study on the production of graphite concentrates from Siviour, Renascor's upcoming work programs are expected to include the following work programs in respect of production of graphite products for the lithium-ion battery sector:

- Purification testing aimed at optimising the production process flow sheet parameters of a spherical graphite manufacturing operation,
- Further battery testing aimed at identifying the optimal physical characteristics of Siviour uncoated spherical graphite for use lithium-ion battery cells, and
- A prefeasibility study assessing the viability of producing spherical graphite using Siviour graphite concentrates.

Concurrently, Renascor expects to advance discussions with potential finance and offtake partners.

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**Developing
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1. Renascor ASX announcement dated 25 January 2018, "Battery Grade Spherical Graphite Produced from Siviour"
2. Renascor ASX announcement dated 8 February 2018, "Siviour Scoping Study Further Improves Siviour Economics"
3. Renascor ASX announcement dated 15 February 2018, "99.99% Spherical Graphite Produced from Siviour"
4. Renascor ASX announcement dated 14 March 2018, "Siviour Prefeasibility Study and Maiden Ore Reserve"

Renascor confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. Renascor confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

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This report may contain forward-looking statements. Any forward-looking statements reflect management's current beliefs based on information currently available to management and are based on what management believes to be reasonable assumptions. It should be noted that a number of factors could cause actual results, or expectations to differ materially from the results expressed or implied in the forward-looking statements.