RENASCOR RESOURCES

ASX: RNU



# ASX Release

**1 July 2021**

## Renascor's HF-Free Purification Technology Delivers Improved Operational and Environmental Outcomes

### Highlights:

- Advanced mineral processing trials of Renascor's eco-friendly purification process undertaken by leading German independent battery mineral consultancy group Dorfner ANZAPLAN have resulted in potential operational and environmental enhancements to Renascor's planned Purified Spherical Graphite ("**PSG**") manufacturing facility in South Australia.
- Renascor has developed a purification process that avoids the use of hydrofluoric acid (**HF**), which is generally used in Chinese PSG operations, and instead uses less environmentally harmful reagents to purify Renascor's Siviour natural flake graphite for use in lithium-ion battery anodes[1].
- In the recently concluded trials, using sulfuric acid as the primary leaching agent, Renascor consistently met or exceeded lithium-ion battery anode specifications, with results of up to 99.99% Carbon (**C**) (versus anode industry standard of 99.95% C).
- By using sulfuric acid, Renascor expects increased operating efficiencies as a lower volume of sulfuric acid is required, as compared to hydrochloric acid, resulting in lower overall reagent costs.
- The revised reagent regime is also expected to offer environmental benefits, as the use of sulfuric acid will result in less chemical, energy and water consumption during the leaching and water treatment phases.
- **Renascor intends to use its HF-Free purification technology to create a competitive advantage in the production of high-quality, 100% Australian-made PSG with leading ESG[3] credentials in the first integrated in-country mine and battery anode material operation outside of China**.
- Renascor is now commencing lock-cycle tests based on the revised reagent regime, with results to be used for detailed engineering design for construction of Renascor planned PSG manufacturing facility in South Australia.


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Renascor Resources Limited (ASX: RNU) (**Renascor**) is pleased to announce potential operational and environmental enhancements to Renascor's purification technology resulting from recently concluded independent mineral processing trials undertaken by leading German battery mineral consultancy group Dorfner Analysenzentrum und Anlagenplanungsgesellschaft mbH (**Dorfner ANZAPLAN**).

In the recently concluded trials, after replacing hydrochloric acid with sulfuric acid as the primary leaching agent, Siviour graphite consistently met or exceeded lithium-ion battery anode specifications, with results of up to 99.99% Carbon (**C**) (versus anode industry standard of 99.95% C). Previously, Renascor has achieved similar purities using hydrochloric acid.

By replacing hydrochloric acid with sulfuric acid, Renascor expects to achieve operational benefits in the production of Purified Spherical Graphite ("**PSG**") through a lower reagent cost. Further, the use of sulfuric acid also offers environmental benefits, as the use of sulfuric acid will reduce chemical, energy and water consumption during the leaching and water treatment phases.

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

> *"We are delighted with the leading position our technical team has taken in the purification of graphite to lithium-ion battery anode grade and the continuing improvements that have resulted from the recent optimisation trials.*
>
> *These results suggest that, not only will we be able to produce ultra-high purity graphite at globally competitive costs, but we can achieve these results whilst also delivering positive ESG outcomes.*
>
> *We expect these results to further support our plans for our 100% Australian-made Siviour Purified Spherical Graphite to become a world-leader in sustainable and ethically-sourced battery anode material for the lithium-ion battery market."*

## Purification trials

Over the past five years, Renascor has undertaken comprehensive mineral processing tests on Siviour graphite as part of its plans to develop a vertically integrated graphite mine and manufacturing operation to produce sustainable and ethically-sourced PSG from its Siviour Graphite Deposit in South Australia.

Over this time, Renascor has adapted an HF-free caustic roasting technique to purify Siviour graphite concentrates to +99.95% C, the minimum purity level generally accepted for incorporation of natural flake graphite into lithium-ion battery anodes[4].

Caustic roasting involves treating unpurified spherical graphite with a caustic solution before roasting at low temperature and leaching. An important advantage of our caustic roasting process is that it offers an environmentally friendly process to purify graphite to battery-grade than the purification technique generally used in China uses more environmentally harmful HF.

In Renascor's initial HF-free purification trials, as well as for purposes of the Siviour Battery Anode Material Study in July 2020, Renascor used hydrochloric acid as the primary leaching agent[5]. Since this time, Renascor has continued to develop and refine its HF-free purification technique through programs designed to optimise both the quality of the graphite produced through its use, as well as the projected cost at commercial scale[6].

Earlier this year, Renascor commenced optimisation trials with Dorfner ANZAPLAN, in collaboration with Renascor's external engineering advisors Wave International.

Dorfner ANZAPLAN is a leading consultancy and engineering company with particular experience in battery minerals. Dorfner ANZAPLAN's graphite expertise includes testing, developing, piloting and adapting mineral processing parameters to purify graphite concentrates to lithium-ion battery grade levels of +99.95% C. Wave International is an Australian-based resource development and engineering consultancy with extensive experience in the battery minerals sector, including acting in

the capacity of external study manager and supervising engineers of Renascor's Battery Anode Material Project[7].

The recent purification trials were designed to utilise Renascor's historical work and parameters for producing PSG from Siviour graphite concentrates, validate its suitability for producing battery-grade anode material and optimise its application for use at commercial scale.

As part of the recent trials, hydrochloric acid was replaced with sulfuric acid as the primary leaching reagent, with the trials consistently meeting or exceeding lithium-ion battery anode specifications, with results of up to 99.99% Carbon (**C**) (versus anode industry standard of 99.95% C). Further, these results were achieved with a decreased consumption of sulfuric acid, as compared to previous trials using hydrochloric acid.

### Significance

The transition to sulfuric acid has the potential to reduce reagent consumption costs due to the lower volume requirement as compared to hydrochloric acid.

Further, the revised reagent regime is also expected to result in environmental benefits. Due to its relative chemical stability, as compared to hydrochloric acid, sulfuric acid is transported and used without significant dilution, which results in reduced chemical, energy and water consumption in both the leaching and water treatment phases.

### Next steps

With the optimisation trials with Dorfner ANZAPLAN now completed, Renascor will now commence lock-cycle tests, with results to be used for detailed engineering design for construction of Renascor planned PSG manufacturing facility in South Australia. The locked cycle tests will not only focus on the purification process, but also reagent usage optimisation and the water treatment circuit.

This ASX announcement has been approved by Renascor's Board of Directors and authorised for release by Renascor's Managing Director David Christensen.

### Disclaimer

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.

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.

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## About Renascor

Renascor is committed to powering the clean energy transition through the development, in Australia, of a vertically integrated graphite mine and manufacturing operation to produce sustainable and ethically-sourced battery anode material for the lithium-ion battery market.

Renascor's operation will combine:

- The Siviour Graphite Deposit in South Australia, the largest reported graphite Reserve outside of Africa[9], and
- A state-of-the-art processing facility in South Australia to manufacture purified spherical graphite through Renascor's eco-friendly purification process.

Renascor's aim is to become a leading supplier of 100% Australian-made and low-cost purified spherical graphite for lithium-ion battery anode makers worldwide.

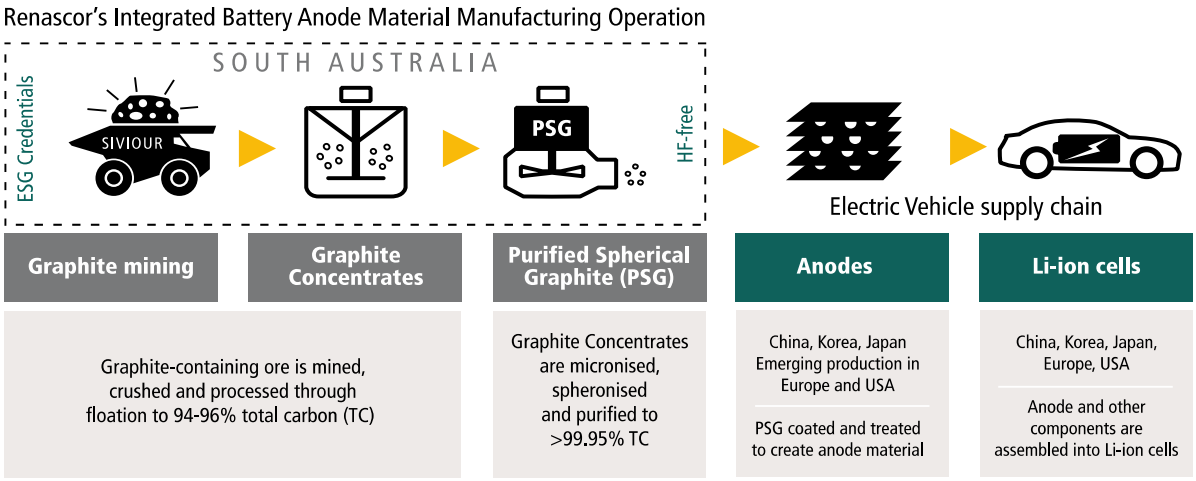


**Figure 1: Renascor's vertically integrated Mine and Concentrator and Downstream PSG production facility within the Electric Vehicle supply chain**

[1] See Renascor ASX releases dated 28 November 2018, 12 August 2019, 22 February 2021 and 28 May 2021.
[3] Environmental, social and corporate governance.
[4] See Renascor ASX releases dated 28 November 2018, 12 August 2019, 22 February 2021 and 28 May 2021.
[5] See Renascor ASX releases dated 28 November 2018, 12 August 2019 and 1 July 2020.
[6] See Renascor ASX releases dated 14 July 2020, 12 August 2020 and 22 February 2021.
[7] See Renascor ASX release dated 1 July 2020.
[9] See Renascor ASX release dated 21 July 2020.