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## **Barroso Lithium Project Decarbonisation Update Preliminary Results and Studies Move to Next Phase**

Savannah Resources plc, the European lithium development company, is pleased to provide an update on its decarbonisation strategy for the Barroso Lithium Project (the 'Project') following the completion of the initial study phase by ECOPROGRESSO, the Portuguese environment, sustainability, and climate change consultants and part of the Quadrante Group.

The goals of the initial study were as follows: to update the pre-decarbonisation estimate of the Project's greenhouse gas inventory; identify and investigate opportunities to reduce greenhouse gas emissions at the Project; and to create a preliminary decarbonisation strategy to reach net zero Scope 1 and Scope 2 emissions over the life of the Project.

### **Highlights**

- Confirmation that Battery Electric Mining Equipment will provide the most effective and flexible means to reduce Scope 1 emissions at the Project to zero. Scope 1 emissions represent 68% of the Scope 1 and 2 total.
- The estimate of Scope 2 baseline emissions has been reduced by 54% from the original 2019 forecast, based on the potential for a reduction in the estimated power requirement of the Project's plant and a 41% reduction in the emissions associated with Portugal's grid power.
- In 2021, 62.2% of Portugal's grid power was generated from renewable sources.
- A number of viable options are available to secure 100% renewable energy supply to the Project including regional solar and wind generation, on market purchase, via direct Power Purchase Agreements, or a combination of these. Use of 100% renewable energy would reduce the Project's Scope 2 emissions to zero.
- Future work will include:
  - More detailed analysis of these and other initiatives as part of the Definitive Feasibility Study on the Project; and
  - Studies with a number of mining equipment OEMs to determine a site specific solution for a transition to battery operated mining fleet and associated charging infrastructure.

**Dale Ferguson, CEO of Savannah said:** "I am extremely encouraged with the results from the initial decarbonisation study work and the clear path it helps to define for further carbon reduction throughout the Project's life. Firstly, it is positive that the Project's carbon footprint, prior to execution of our decarbonisation strategy, is going to be smaller than initially estimated back in 2019, due to a potential 54% reduction in Scope 2 emissions. This in turn is due to a possible reduction in the power requirement of the plant, which could be achieved through greater efficiencies, and a 41% reduction in the emissions associated with Portuguese grid power as the contribution of renewable energy increased to over 60% in 2020 and was maintained above this threshold in 2021.

"Together with our technical partners, including ABB, we have a particular focus on either eliminating or significantly reducing the potential impacts of the Project, both locally and more generally in terms of emissions. Our initial work with the OEM's suggests that we will likely have access to both electric road haulage trucks and mine haul trucks early in the Project's life, which will significantly reduce our Scope 1 and 2 emissions. We are also exploring other ways to increase our percentage of renewables in the power mix to further reduce our Scope 2 emissions.

"As part of our DFS study we will complete further detailed analysis to continue to drive our goal of achieving a net zero carbon emission Project."

### **Further Details on the Study**

Early in 2022, Savannah commissioned ECOPROGRESSO to identify and investigate opportunities to reduce greenhouse gas emissions at the Barroso Lithium Project and create a preliminary decarbonisation strategy to reach net zero Scope 1 and Scope 2 emissions over the life of the Project.

Throughout the year, the study progressed through the following three Phases:

- Phase 1: Baseline and Ambition – reviewing the initial greenhouse gas ('GHG') inventory estimate from the 2019 study which was used for the 2020 Environmental Impact Assessment ('EIA') to identify improvements, and to validate our emission reduction goals by reviewing national goals, specific EU legislation, and conducting a benchmark analysis of the industry peers.
- Phase 2: Market studies and Strategy – identification of decarbonisation initiatives currently available in the market or under near term development through consultation with OEMs and suppliers, and determining those with both the greatest GHG reduction impact and technical viability.
- Phase 3: Roadmap for Implementation – aligning the Project's development strategy with the available initiatives to ensure decarbonisation objectives are met.

Suitable emission reduction initiatives were determined in three broad areas:

- **Operation Engineering:** initiatives which address technological solutions for emissions reduction in the Project, either through replacement of conventional fossil fueled equipment or through process optimisation aiming at reducing energy consumption.
- **Energy:** initiatives aimed at guaranteeing the supply of 100% renewable energy to the Project.
- **Environment:** initiatives aimed at offsetting residual emissions, i.e., emissions that were not possible to exclude due to the implementation of operation engineering initiatives and energy initiatives.

A number of scoring methodologies were then applied to determine a short list of initiatives based on their technical feasibility, potential environmental impact and potential economic impact. These initiatives were then modelled to assess the Total Cost of Ownership per tonne CO<sub>2</sub> equivalent ('tCO<sub>2</sub>e') abated of each initiative on an annualised basis. Various combinations of compatible initiatives were then modelled into scenarios to produce GHG abatement cost curves, based on the best available data. These scenarios will now be the subject of more detailed analysis as part of the Project's Definitive Feasibility Study.

The highlights of the preliminary findings include:

- **Confirmation that Battery operated electric mining equipment will provide the most effective and flexible means to reduce Scope 1 emissions to zero.** Through engagement with a number of leading manufacturers of mining equipment, we have assessed that a transition to fully electric mining equipment will be possible during the life of the Project. Annual Scope 1 baseline emissions were assessed to be 27.7 ktCO<sub>2</sub>e during the life of the Project, representing 68% of total Scope 1 and 2 emissions. The adoption of a battery operated mining fleet would remove the bulk of these emissions, assuming 100% renewable energy is sourced for the Project.
- **Scope 2 baseline emissions have reduced by 54%.** The most recent information available for the proposed plant has shown that our annual baseline energy consumption is 21% lower than original estimates, equivalent to 80,158 MWh (compared with 101,616 MWh from the 2019 assessment). Further, the carbon dioxide equivalent ('CO<sub>2</sub>e') emission factor for electricity production in mainland Portugal, provided by APREN, the Portuguese Renewable Energy Association, was updated based on the 2020 value of 162 kgCO<sub>2</sub>/MWh, a reduction of 41% in comparison to the 2018 value of 275 kgCO<sub>2</sub>/MWh used in the 2019 study. In combination, these revisions result in an annual reduction to the baseline Scope 2 emissions of 15.0 ktCO<sub>2</sub>e due to the consumption of 21,458MWh less energy per year, and the growing contribution of renewable energy to the national grid.
- **Additional plant optimisation and operational efficiencies have been identified for further study.** Specific electricity consumption savings of between 5-10% in each of the areas of

crushing, grinding and floatation were identified as possible with greater energy efficiency and/or improved operational performance, with associated cost benefits.

- **A number of options are available to secure 100% renewable energy supply to the Project.** Preliminary assessments were made of the viable alternatives available to reduce emissions and the associated capital and operating costs. These were assessed in isolation and in combination and included:
  - On site or regional solar power generation.
  - On site or regional wind power generation.
  - The use of battery storage units on site.
  - Purchasing 100% green energy on market with guarantees of origin.
  - Direct long term Power Purchase Agreements for 100% renewable energy.

### **Next steps**

During the course of this study, Savannah agreed to enter an 'Article 16' phase in the review of the Project's EIA with Portugal's environmental regulator, Agência Portuguesa do Ambiente ('APA'). This additional review phase has resulted in enhancements to the Project's design to further reduce its environmental impact. These enhancements are presently being incorporated into a revised EIA submission to APA, as advised most recently via the Company's announcement dated 20 December 2022. If the proposed revised Project is approved by APA, those decarbonisation initiatives that are compatible with the final design will be further analysed for incorporation into the Definitive Feasibility Study process.

In the meantime, Savannah is commencing further studies with a number of mining equipment OEMs to determine a site specific solution for a transition to battery operated mining fleet and associated charging infrastructure, including options for priority access to these new machines at the earliest opportunity.

### **About ECOPROGRESSO - Quadrante Group**

Founded in 2002, ECOPROGRESSO - CONSULTORES EM AMBIENTE E DESENVOLVIMENTO, LDA is a Portuguese consulting company providing Environmental, Sustainability, Climate Change and Resources Management services, with focus on sustainability strategies. ECOPROGRESSO was the first-mover in Portugal focusing on carbon management and climate change business. Currently the company offers a wide range of services, which includes carbon management, sustainability, climate support projects, public policies, green investments and carbon compensation projects, ensuring its clients' carbon neutral status with its own brand Carbonfree®.

As a QUADRANTE Group company, ECOPROGRESSO combines forces with a global Engineering, Architecture, Environment and Sustainability Services Group, with offices in three continents (Europe, Africa and Latin America) and extensive experience in Special Projects, Transport Infrastructure, Energy and Industry, Buildings and Urban Development, Waste and Water Utilities, Environment and Construction Management and Supervision.

The types of Environmental services provided by QUADRANTE Group range from Environmental Management Planning, Strategic Environmental Assessments, and specific studies that integrate the environmental licensing of projects and/or accompany the various phases of a project: Environmental Due Diligence, Environmental Feasibility Study, Environmental Impact Studies, Environmental Compliance Report of the Execution Project, and Environmental Monitoring.

### Further information

#### Scope 1-3 definitions

- Scope 1 emissions relate to the direct GHG emissions that a company produces from owned or controlled sources, for example from running petrol or diesel vehicles
- Scope 2 emissions relate to a company's indirect GHG emissions from the generation of purchased electricity and other forms of non-renewable power
- Scope 3 emissions cover all other indirect emissions that occur in a company's value chain, for example the transport of raw materials and finished products

### Regulatory Information

This Announcement contains inside information for the purposes of the UK version of the market abuse regulation (EU No. 596/2014) as it forms part of United Kingdom domestic law by virtue of the European Union (Withdrawal) Act 2018 ("UK MAR").

Savannah - **Enabling Europe's energy transition.**

**\*\*ENDS\*\***



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For further information please visit [www.savannahresources.com](http://www.savannahresources.com) or contact:

**Savannah Resources PLC**

Tel: +44 20 7117 2489

Dale Ferguson, CEO

**SP Angel Corporate Finance LLP (Nominated Advisor & Joint Broker)**

Tel: +44 20 3470 0470

David Hignell/ Charlie Bouverat (Corporate Finance)

Grant Barker/ Abigail Wayne (Sales & Broking)

**RBC Capital Markets (Joint Broker)**

Tel: +44 (0) 20 7653 4000

Farid Dadashev/ Jamil Miah

**Camarco (Financial PR)**

Tel: +44 20 3757 4980

Gordon Poole/ Emily Hall

## About Savannah

Savannah is the owner of the Barroso Lithium Project, located close to key infrastructure in Northern Portugal which contains the most significant spodumene lithium resource in Western Europe. Following a positive Scoping Study which outlined a conventional operation producing 175,000t of spodumene concentrate per annum, Savannah is progressing the development and environmental licencing of the Barroso Lithium Project.

The Company is listed and regulated on AIM and the Company's ordinary shares are also available on the Quotation Board of the Frankfurt Stock Exchange (FWB) under the symbol FWB: SAV, and the Börse Stuttgart (SWB) under the ticker "SAV".