

# EcoGraf Limited: Further Positive Results from Recycled Lithium-ion Battery Material

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## RESULTS SUPPORT THE COMMENCEMENT OF ENGINEERING DESIGN WORK FOR A MODULAR PILOT PLANT TO RECOVER CARBON ANODE MATERIAL

[EcoGraf Ltd.](#) (EcoGraf or the Company) (ASX: EGR) is pleased to announce encouraging progress with its battery recycling business after further testing confirmed the successful purification of carbon anode material from lithium-ion batteries.

### Key Highlights

- Positive results of up to 99.8% carbon achieved during testing with potential European customers on the recovery of high purity carbon anode material from battery black mass.
- Engineering design commenced for a containerised pilot plant.
- Funding for pilot plant to be sourced through the Company's R&D programs and collaboration with potential customers.
- Pilot plant to provide recovered carbon anode material for product qualification process, focussed on re-use of graphite in lithium-ion batteries and specialised industrial carbon products.
- Opportunity to blend its high purity battery spherical graphite from its planned WA manufacturing facility to provide a unique recycled anode material to the lithium-ion battery market.

EcoGraf's recycling activities are part of the Company's vertically integrated graphite business to provide an alternative, responsibly produced and cost effective active anode material to anode manufacturers, through the initial EcoGraf(TM) Processing Facility planned for Western Australia and the development of its long-life and low cost Epanko Graphite Project in Tanzania.

In conjunction with the extensive growth in lithium-ion battery use for electric vehicles and clean energy storage, recycling of batteries and battery materials has become a major environmental and economic concern for both Government and industry.

The Company is pleased to provide the following further purification results from end-of-life battery black mass samples, which has seen further increases in carbon grades to 99.8%. The results were achieved during testwork with potential European and Asian customers.

Achieving 99.5% carbon is an important level, as it meets the specification grade for high demanding industrial applications of graphite. A summary of both the production scrap and black mass outcomes are shown in the table below.

	PRODUCTION SCRAP (%C)	BLACK MASS (%C)
Before EcoGraf(TM) Purification	98.0%-99.85%	30.0%-50.0%
After EcoGraf™ Purification	98.6%-100%	98.0%-99.8%

Carbon (%C) grades determined by Loss on Ignition (LOI) method.

The results achieved to date and the positive customer feedback provides the confidence to commence the initial engineering design for a containerised pilot plant to recover carbon anode material.

The pilot plant will evaluate the recovery of carbon anode material from a range of hydrometallurgical processes and in-process production waste solutions and tailor these to customer needs.

The proposed plant will accommodate the existing EcoGraf™ purification flowsheet and be designed to deliver sufficient material to enable commercial qualification of the recovered carbon anode material for both the lithium-ion battery and industrial markets.

The engineering design works will provide a pilot plant capital cost estimate which the Company plans to fund with support from its R&D programs and collaboration with potential customers.

EcoGraf's strategy to recover and re-use carbon anode materials is focussed on two material streams:

1. Production scrap or waste from anode cell and battery manufacturing processes; and
2. Residual carbon materials from recycled anode material that remains after the metals have been extracted through hydrometallurgical processing.

The recycling of anode material will provide the opportunity to blend the Company's battery spherical graphite from its planned manufacturing facility in Western Australia with the recovered anode material which will provide a unique recycled product to the lithium-ion battery market.

On the basis of achieving 99.9% or 3N for carbon anode material, which appears realistic given the results achieved to date, the blend required to meet the critical 99.95% C grade specification by cell manufacturers would be two parts battery spherical graphite to one part carbon anode material.

#### Product Marketing and Value Proposition

The production of lithium-ion batteries represents the largest market for the re-use of the carbon anode material and there is significant value as shown below.

In addition to lithium-ion batteries, the Company is also working with potential customers to pursue broader industrial natural and synthetic graphite markets for alkaline and zinc carbon batteries, phosphate-ion and aluminium-ion batteries, friction materials, conductive coatings, refractories and carbon additives.

In addition to the potential cost benefit, recycling of carbon anode material has an important role in reducing carbon emissions, with the lithium-ion battery representing over 40% of the total carbon (CO<sub>2</sub>) emission footprint of electric vehicle production.

Source: (No Canary, Volkswagen)

Governments and industry are actively working to establish effective recycling processes to improve waste recovery, with Bloomberg(TM) forecasting the battery recycling market to reach US\$18 billion over the next decade.

The Company looks forward to providing further updates on this new initiative as testwork is ongoing with interest from customers, including leading electric vehicle and battery manufacturers in Europe, Asia and US.

This announcement is authorised for release by Andrew Spinks, Managing Director.

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## ENGINEERING CLEAN ENERGY.

### About EcoGraf

Founded on a commitment to innovation and sustainability, EcoGraf is building a vertically integrated business to produce high purity graphite for the lithium-ion battery market.

The new state-of-the-art processing facility in Western Australia will manufacture spherical graphite products for export to Asia, Europe and North America using a superior, environmentally responsible purification technology to provide customers with sustainably produced, high performance battery anode graphite. In time the battery graphite production base will be expanded to include additional facilities in Europe and North America to support the global transition to clean, renewable energy in the coming decade.

In addition, the Company's breakthrough recovery of graphite from recycled batteries using its EcoGraf™ process will enable the recycling industry to reduce battery waste and use recycled graphite to improve battery lifecycle efficiency.

To complement the battery graphite operations, EcoGraf is also developing the TanzGraphite natural flake graphite business, commencing with the Epanko Graphite Project, which will supply additional feedstock for the spherical graphite processing facilities and provide customers with a long term supply of high quality graphite products for industrial applications such as refractories, recarburisers and lubricants.

EcoGraf, a unique vertically integrated graphite business, positioned for the future of clean energy.

A video fly-through of this new facility is available online at the following link:  
<https://www.ecograf.com.au/#home-video>

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