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Exciting Sustainable Diesel Partnership between Frontier Impact Group, REEP Development and WA Government's Collie Futures Fund

- New renewable energy project, allocated funding from WA's \$20 million Collie Futures Fund, designed to stimulate development and diversify Collie's economy
- Project could employ dozens of local workers
- Important step towards creating an Australian source of high quality renewable diesel fuel for immediate use, improving Australia's fuel security
- Project seeks expressions of interest for local sources of wood waste and agricultural plant residues (biomass) to convert to a renewable diesel fuel

An Australian-US joint venture has chosen **Collie** as its preferred site for a new facility that uses unique high-temperature technology to produce renewable diesel fuel from biomass. Australian environmental technology company **Frontier Impact Group** has teamed up with the US-based **REEP Development** to expand the use of the pyrolysis technology into the Asia Pacific region.

WA Regional Development Minister **Alannah MacTiernan** and Collie-Preston MLA **Mick Murray** today announced \$100,000 in funding from the **Collie Futures** Small Grants Program for a feasibility study to assess the viability of the estimated \$100 M project. If it goes ahead, the project will create 48 plant jobs, 30 construction jobs and 120 indirect jobs.

The high-temperature pyrolysis technology involves converting biomass to produce syngas, which can then be used to produce diesel fuel suitable for use in existing diesel vehicles. Unlike other biofuels, the high-quality diesel produced by this project is a like-for-like petroleum based diesel replacement and is able to be immediately used in vehicles without any modifications to the vehicle fuel systems.

The technology is already operating in a commercial plant that has been successfully operating for three years, with the capacity to produce up to 27 million litres of renewable diesel fuel and 10,000 tonnes of biochar each year. Biochar is a high quality, high value, charcoal by-product of the syngas production which has extensive uses including in soil improvement, pollution remediation and in advanced construction materials.

The project is calling for expressions of interest from local sources of biomass to convert to fuel. Sources of biomass can include forestry waste, bushfire-affected land clearings, agricultural waste and by-products, municipal and industrial wood-based waste. Providers of suitable waste will be paid for this important project input, generating further benefits to the local economy.

The project is also evaluating the potential to utilise miscanthus plantations as a biomass source for this project, as miscanthus can be grown in areas where soil is not of a suitable quality for food production.

Frontier Impact Group (FIG) is a Melbourne-based environmental sustainability company with a long history in successful commercial environmental projects that help transition communities and businesses towards a low carbon future. **Jennifer Lauber Patterson** and her team have decades of experience in environmental investment and renewable energy projects and bring a proven track record of commercial success to this project.

Quotes attributable to Jennifer Lauber Patterson, Managing Director, Frontier Impact Group

“This project will explore options for WA to produce its own renewable, high-quality diesel fuel, suitable for immediate use in vehicles already on the road, without any modifications. This is an important step towards Australian fuel security, will help WA transition towards lower carbon outcomes and holds very strong potential for future growth.”

“Investment in this smart technology in Collie will create a pipeline of jobs in this important region. I hope this exciting partnership is just the beginning of the future development of smart and environmentally sustainable technologies and investments in Collie and WA.”

“I feel blessed and privileged that I have the ability to make a difference and know that I have done all I can do for our children and future generations to leave the planet in a better place.”

“Fuel security is an essential element of sustainable communities supporting a circular economy, helping local businesses and creating local employment. I applaud this forward-thinking investment from the WA Government.”

Quotes attributable to WA Regional Development Minister Alannah MacTiernan:

"Through the Collie Futures Fund, we are beginning to see some very exciting initiatives for boosting the local economy, including this unique proposal for producing renewable diesel fuel.

"Bringing sustainable technologies and investments such as this is a fantastic way to help Collie, and WA, transition to lower carbon outcomes through new industries.

"This project has the potential to create dozens of direct local jobs and provide economic growth for biomass feedstock suppliers in Collie and the wider South-West region."

Comments attributed to Collie-Preston MLA Mick Murray:

"Collie has a long history in the energy industry and projects like this show we have potential for a long future in the energy industry as well, including new green technologies.

"I am hopeful this feasibility study can demonstrate the project can deliver a successful business for the proponents and more jobs for Collie."

About the project

FIG is developing renewable fuel projects in Collie, WA and other parts of Australia utilising predominantly waste biomass. The projects also produces 10,000 tonnes of biochar with a high graphene content that provide significant further benefits to the community and economic growth.

Benefits to Community

- Increases WA's and Australia's fuel security, with a zero carbon product
- Supports a circular economy reducing waste and creating value added outputs for the local community
- Large economic benefits include direct employment of 48 plant jobs, 30 construction jobs and 120 indirect jobs in a high unemployment area
- Provides the ability for large trucks / mining plant to use a zero carbon fuel without any vehicle modifications
- Development of new industries created from the utilisation of the biochar, graphene and wood vinegar that are produced as by-products of the renewable diesel process
- Ability to utilise waste biomass that would otherwise be left to decompose or be buried such as wood and other plant material sourced from bush fire residues, forestry waste, municipal council

waste, agricultural and industrial waste. Use of these otherwise wasted resources will benefit the local economy, as appropriate providers of biomass would be paid for their product.

- Potential for community investment in the project

Renewable Diesel, Biochar/Graphene and Wood Vinegar

FIG's Renewable Diesel projects will use proprietary high temperature pyrolysis technology to convert biomass feedstock into Renewable Diesel and other value-added outputs including biochar and wood vinegar. The biochar produced can have 75% - 90% graphene content (depending on the feedstock).

The demand for high graphene content biochar is significant. The demand is evidenced by a letter of intent to purchase significant quantities of high graphene biochar from a major participant in the US and international graphene based material markets.

Renewable Diesel is diesel produced from renewable biomass-based feedstock and, unlike biodiesel, it has properties consistent with petroleum oil derived diesel fuel. The technology identified by FIG produces diesel that has been certified to US and European diesel standards and tested to NZ diesel standards and will meet the Australian Fuel Standard for Automotive Diesel.

The technology utilises a gasification (high temperature pyrolysis) process which combusts the biomass feedstock at over 800 degrees C in the absence of oxygen to produce a Syngas (synthesis gas) which is in turn converted to renewable diesel.

This is a very low emissions technology with the design developed so that it can be constructed in an industrial site that may be close to city locations.

The overall process is carbon neutral and even carbon negative in most circumstances. The principal sources of greenhouse emissions come from the transport of the biomass feedstock to the site and the pre-processing of the biomass. However, these are almost negligible in comparison to the overall net greenhouse gas benefits of replacing conventional diesel with the renewable diesel produced by the plant.

The process is actually a net producer of water with the water used to produce wood vinegar (a high quality fertiliser) and grey water suitable for agricultural production purposes. The grey water can be filtered to produce potable water if required.

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About the Frontier Impact Group Executive Team

Jennifer Lauber Patterson – Managing Director

From a background in banking at NAB and ANZ, and energy generation in the Latrobe Valley, Jennifer Lauber Patterson established Frontier Impact Group (FIG) in 2012 to drive the business and economic benefits of environmentally sustainable investment. FIG uses Jennifer's unique experiences and networks to directly and strategically assist businesses and the community to bring environmental and energy sustainability projects to fruition. Having served on many boards and advisory panels, Jennifer is currently on the boards of Sustainability Victoria and Carbon8, is a member of the Southern Cross Regenerative Farming Alliance Advisory Business panel and was awarded a 2020 Telstra Victorian Women's Business Awards finalist.

Mal Campbell – Executive: Finance & Risk

Mal Campbell has over 30 years' senior executive experience in all aspects of the energy industry including generation, network/pipeline, retail and broader business development activities in IT and marketing areas since 1983. Mal is an engineer with over a decade's experience specialising in renewable fuel technology and managing the financial modelling and risk mitigation aspects of a number of high profile projects.

Ian Smith - Executive: Waste streams & Technology

Ian Smith has 35 years' experience advising companies worldwide on technologies and methods in the management of waste streams. Ian's expertise is in understanding various waste streams and the conversion of those streams into optimal waste management products. Ian has a vision to establish a pipeline of projects across Australia and considers this as essential to regional communities having food and fuel security.

About Frontier Impact Group (FIG)

In 2012, Jennifer Lauber Patterson attended the Copenhagen Conference, which changed her future. She realised other countries saw the transition to a low carbon economy as a business and economic advantage, leading her to establish Frontier Impact Group (FIG). FIG is unique as a business because it works both directly to support key projects, as well as strategically to assist businesses and the community get their own environmental and energy sustainability projects off the ground.

The business quickly originated global projects and is now thriving with projects across Australia as a sophisticated and agile environmental sustainability development business consultancy.

FIG helps to bridge the gap between technology, finance and consumers through sophisticated project management techniques, unique networks and capacities, and unparalleled access and understanding of both real needs in communities on the ground, and the requirements of the large banking and finance sectors.

Current FIG projects include renewable diesel, renewable energy, organic fertilisers, carbon farming and vertical farming - all of which are potential game changers in the pursuit of a more sustainable planet. On a more strategic level, FIG also works to assist corporates that may want to invest in solar energy, community groups that may need help with financing, entrepreneurs that want to commercialise technologies or even farmers that want to move to regenerative farming. Another key passion for the group is the financing of regenerative farming activities and other low carbon technologies to assist in a low carbon economy.