

Sugarcane Bioenergy Inquiry 2025

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Queensland Primary Industry Resources Committee: Inquiry Into Sugarcane Bioenergy Opportunities in Queensland Submission

Introduction

Established in 1894, Isis Central Sugar Mill (ICSM), an unlisted public company, has been owned by its canegrower suppliers up until today - the last remaining grower-owned sugar mill in Australia. Under the company's constitution shareholders must be a cane supplier to the mill.

At present, there are approximately 200 growers supplying sugar cane to the Mill and the cane is harvested from an area of approximately 16,600 hectares. All the cane is delivered to the Mill over 153 kilometres of narrow gauge (610mm) railway, with approximately 40% being transferred from trucks (at a higher cost) to rail before delivery. The Mill has, in a single season, processed 1,505,400 tonnes of cane to produce 223,874 tonnes of raw sugar. In 2024/25 season the anticipated cane volume is 1.3M tonnes, with a budget revenue of \$130,000,000.

Well located in Isis Central (Childers) the mill has lost ground in its traditional district to tree crops like macadamias and avocados in recent years. Volume of cane crushed is the key revenue driver for a sugar mill and fortunately for both mill and cane growers we have been able to process cane from the Maryborough district when the mill closed there in 2021. Without taking the initiative to bring this cane to our mill the local cane volumes made the mill unsustainable. This however maintains a break-even scenario at best due to aging infrastructure and substantial replacement costs of end-of-life equipment. Investing in the Mill's infrastructure is a critical enabler of the value-add opportunities in biofuels and expanded co-generation.

During the last few years ICSM Board and management has engaged with the Bundaberg Regional Council to consider viable projects to establish Isis mill as a bioenergy hub. The aim is to diversify our income stream to pivot the business to an energy business whilst maintaining the current service to our shareholder suppliers. The focus is relegating the sugar milling business to being a part of the new business enterprise that focuses more on liquid fuels than only sugar production. This has also meant engaging with DESTI and actively seeking complementary business development opportunities.

ICSM BIOENERGY HUB OPPORTUNITIES

Licella - Project Swift – Biofuels from Sugarcane Residues

ICSM is working with Licella on developing a biorefinery project ("Project Swift") co-located at ICSM's mill in regional Queensland. The proposed biorefinery would utilise Licella's Australian-developed and commercially deployed Cat-HTR™ technology to convert sugarcane residues including bagasse into significant volumes of low carbon liquid fuel (LCLF), including sustainable aviation fuel (SAF). Importantly, Licella's proposed facility is targeting second generation, non-edible feedstocks (including residual streams from the agricultural and forestry sectors).

Licella has received funding support from the Australian Renewable Energy Agency (ARENA) as part of ARENA's Advancing Renewables Program.

Licella has commenced the Pre-FEED (Pre-Front End Engineering and Design) phase for the project and is advancing towards the FEED stage. Licella is targeting a Final Investment Decision (FID) in the second half of 2026, with construction targeted to start in 2027.

LMS Energy Project – Wide Bay Bioenergy Hub - Biogas

With more than four decades' experience in the waste and bioenergy sectors, LMS is Australia's most experienced landfill biogas company and has developed world-leading technology and expertise in this field. LMS owns and operates more than 60 biogas projects (90MW of installed capacity) across Australia, New Zealand and the United States.

Led by Helmont Energy –a fully owned subsidiary of LMS Energy— and in partnership with Australian Gas Infrastructure Group (AGIG), WBBH seeks to leverage the region's significant agricultural co-products, primarily from the sugar industry, to create renewable energy. This will be achieved using anaerobic digestion (AD) to generate biogas, which will then be upgraded to biomethane for gas pipeline injection. The project will strengthen local supply chains and contribute to Australia's net-zero emissions targets.

It is anticipated up to 1,000 terajoules (TJ) of biomethane will be generated annually – enough to supply natural gas to almost 135,000 Queensland homes. This will provide over twice the existing natural gas demand for the Wide Bay-Burnett region each year. Surplus biomethane will be transported by AGIG via its Wide Bay Pipeline to support the decarbonisation of industrial operations in Gladstone (a key Queensland manufacturing region).

The project is nearing completion of its detailed feasibility study to confirm the decision that the project is viable to proceed. Feedstock arrangements are under discussion and will include Mill Filter press mud and other crop residues from the region.

Production

Our products include raw sugar, molasses and electricity (made from renewable sugarcane bagasse) through our commercial arrangement with Sustainable Energy Infrastructure (SEI), delivering dispatchable base load power to the grid.

Raw sugar is exported via the port of Bundaberg through a marketing arrangement with Queensland Sugar Limited.

Molasses is a byproduct from milling sugar cane and is sold domestically as a livestock feed. Mill mud and ash are other by-products that are used for fertiliser and sold back to farmers in a cyclical process.

Many changes to farming, milling and the economy have occurred over the intervening years, but our business remains central to the community. We are a proud, locally owned company that prides itself on the efficient and reliable operation of the business to deliver a sustainable service to our grower-supplier shareholders.

Significant local employer

We employ more than 200 people in our business during the crushing season from June to November, in both permanent and seasonal employment, with reduced numbers during the maintenance season of approximately 190. Salaried roles make up 37 of those jobs, with the balance being wages positions.

The roles encompass the full range of positions required to run a manufacturing and transport business, including human resources, engineering, operations, accounting, trades, administrative, purchasing, information technology, processing and management.

Terms of Reference

The role and benefits of sugar cogeneration in Queensland's electricity generation mix, including existing capacity and potential for expansion.

- ICSM currently has installed Cogen capacity of 25MW, 22MW of which is accessible for internal power use and/or for export to the grid. Our proposed projects will require 65MW of electricity.
- The existing boilers can be altered to burn other feedstocks, liberating bagasse that is required to produce the LCLF. Investment is needed to alter the boilers capability to achieve this and to expand the Cogen capacity. Traditionally, the Mill has only been able to generate power within the season, making these alterations would create the capacity to generate power year-round. Adding the capability to burn other feedstock in our boilers can allow power generation almost year-round.
- Renewable electricity can be supplied behind-the-meter to the proposed industrial facilities on-site within the bioenergy hub, one of the significant synergistic benefits of the combined facilities.
- Market, regulatory, and infrastructure barriers to increased bioenergy production from sugar.

Infrastructure Barriers

- ICSM was established in 1894, making it over 130 years old. It has played an essential role in the region's economic development, but its ageing infrastructure is a key barrier to increasing bioenergy production. Mills of this age were not designed with modern energy integration or biofuel pathways in mind, which poses challenges for efficiency, productivity, and adaptability - making it harder to free up the volumes of feedstock required for low-carbon liquid fuel (LCLF) production. Investment is needed to ensure that ICSM can be both economically sustainable over the long-term and can participate in the increased bioenergy opportunity. Investment in upgrading the mill's infrastructure would allow for improved efficiency in the mill's co-generation, liberating significant quantities of bagasse for LCLF production.

Recommendations: - Queensland and Federal co-funding for mill efficiency upgrades and feedstock liberalisation initiatives.

- Assist with access to finance for sugar manufacturers with a cooperative structure.

Regulatory Barriers

- A lack of regulatory certainty remains a key barrier to scaling the LCLF industry. For projects well advanced in their feasibility phase, like Licella's Project Swift, the availability and clarity of enabling regulatory frameworks plays a critical role in securing investment into these First of-a-Kind (FOAK) projects in the local market and reaching Final Investment Decision (FID). Without clear policy settings, this causes perceived risks for investors, fuelling the lack of long-term offtake agreements.

- Additionally, policy support for LCLF production should extend beyond hydroprocessed-esters and fatty acids (HEFA). While this reflects the pathway's early commercial availability, HEFA is fundamentally constrained by limited lipid feedstocks, which are insufficient to meet even a fraction of the LCLF demand required by aviation and other hard-to-abate sectors. If Queensland were to rely solely on HEFA, it would lock itself into a pathway that cannot deliver the scale needed for national or international decarbonisation goals. Non-HEFA pathways, such as hydrothermal liquefaction (HTL), and alcohol-to-jet (AtJ) offer the ability to process a much wider range of biomass residues (such as sugarcane residues). By backing multiple technology pathways, Queensland can de-risk reliance on a single pathway and maximise use of its diverse biomass base.

Recommendation: Co-funding for feasibility and final investment decision analysis to derisk bio-opportunities within the sugar industry

Opportunities to align sugar biofuel production with national security and Defence liquid fuel needs.

- Production of biocrude, upgraded to marine biofuel and ultimately SAF, provides domestic production of LCLFs that can meet the needs of Defence for fuel security with replacements for fossil fuel in these hard-to-abate sectors.
- Biogas production can supply the needs of the entire Wide Bay region and supply additional gas to other regions.

Recommendation: Funding for a prefeasibility into bio-opportunities between the sugar industry and Defence.

Policy and funding mechanisms to de-risk investment in cogeneration and biofuels by manufacturers and growers, including examples of successful policy implementation from overseas and other industries.

- Policy support for mill upgrading - Investing in sugar mills as a critical part of the LCLF value chain. For example, sugar mills use a large quantity of steam throughout the milling process. Traditionally, ICSM has been an inefficient user of steam, partly because the goal was to burn off the available bagasse. Significant efficiencies to improve the steam-on-cane usage are available through investing in upgrades to the steam process. This has not been a viable option with the current power supply to the grid, but improving efficiency certainly contributes to releasing bagasse for LCLF, and in that scenario is a positive return on investment.
- The supply of power to the grid through a retailer is restrictive, and it would be welcome for more innovative solutions to be available to us. For example, we have our own housing around the mill site that we could supply power to rather than having to buy it in from the retailer who pays us substantially less than we are charged. This could be extended in some way to the local townships and growers around the Mill in what could be a cost saving for the producer and the end-user, without having a retailer clipping the ticket in the middle.
- National Feedstock Strategy with a use hierarchy: Prioritise and direct low carbon feedstocks including sugarcane residues towards hard-to-abate sectors, including aviation, heavy transport and shipping. By allocating a priority use hierarchy, biomass

residues suitable for LCLF production can be re-directed (both through investment in co-generation efficiency and by supplementation with lower value feedstocks for co-generation such as cane not suitable for sugar production with higher fibre content – and also wood waste).

The R&D agenda to underpin a world leading sugar-led bioenergy industry.

- Studies have been conducted to consider the accumulation of cane leaves and trash and transforming them into a product capable of being burnt in the boilers – these have not found an acceptably efficient method of doing so. For use in producing LCLF, these by-products have the added complication of having a chlorine level too high for untreated use. This could be a potential avenue for R&D to investigate using this resource.

Recommendation: Establishment of a joint industry – Queensland and Federal government R&D agenda for advanced sugar manufacturing, with a focus on bio-opportunities.

Strategic land use and regional development considerations affecting cane growing and sugar manufacturing capacity.

- Additional and higher skilled jobs can be created through bioenergy projects co-located with the sugar mill. Workforce planning is required to support the emerging bioenergy sector roles and maximise job opportunities for the region.
- Closely related is the need for new local housing for employees to move to the region. Very little extra housing stock is available, and almost nothing as a rental within 40km of the Mill. This long-term project is ideal to build on our traditional central role as a major business in the local community, rather than having to engage FIFO workers (for whom new accommodation would be required in any event).
- Transport and logistics considerations – there is great potential for additional rail infrastructure to reduce the burden of additional trucks (supplementary feedstock transportation as well as product distribution – e.g. wood waste for expanded co-generation). ICSM has in the last few years had to source cane well beyond its traditional supply area, and trucks have been the only viable method to undertake this. With the accumulation of possible other feedstocks, the case for improving logistics efficiency and safety is heightened. An expanded rail network would require government funded support to realise the long-term benefits and sustain the cane/crop farmers and the Mill's viability.
- Compliance with NHVR by the Mill and Growers comes at a substantial cost, and removing trucks from the Bruce Highway, travelling through Childers and other built-up areas, would be beneficial.

Recommendation: Government co-investment in the maintenance and potential expansion of the cane rail network.

Benefits for growers in diversification opportunities.

- The benefit of additional revenue supports on-going Capex to maintain mill reliability and appropriate season length crushing, to harvest crops in the best timeframe possible for growers to maximise their sucrose content and cane production.
- Growers will have additional opportunities to grow feedstock crops on areas that aren't necessarily suitable for regular cane production.

- As a grower-owned Mill, the shareholders may now realise dividends on their investment, once the mill upgrades are completed and the future is secure.

Consideration of food versus fuel.

- All currently available sugar remains available for our existing food markets. A highly beneficial aspect of our feasibility study projects is that they use by-products and not sugar. **Leveraging bagasse and filter press mud does not compete with food production**, compared for example to using first generation feedstock crops (e.g. canola), and ethanol that uses cane juice. Adding value to our waste streams is earnings positive for the business.



Craig Wood
Chief Executive Officer

30 September 2025