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**To:** [Melissa Halloran](#)  
**Subject:** Webform submission from: Activation Precincts SEPP and the Wagga Wagga master plan  
**Date:** Monday, 28 September 2020 8:36:18 AM  
**Attachments:** [iqa-submission-for-wagga-wagga-draft-master-plan.pdf](#)

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Submitted on Tue, 15/09/2020 - 15:33

Submitted by: Anonymous

Submitted values are:

Submission Type: I am submitting on behalf of my organisation

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Last Name: Foster

Name Withheld: No



Suburb/Town & Postcode: Essendon 3040

Submission file:

[iqa-submission-for-wagga-wagga-draft-master-plan.pdf](#)

Submission: Please find attached the submission from IQ Energy Australia for feedback for Wagga Wagga's Draft Master Plan.

URL: [https://pp.planningportal.nsw.gov.au/admin/structure/webform/manage/draft\\_plans\\_and\\_policies/submission/96861/resend](https://pp.planningportal.nsw.gov.au/admin/structure/webform/manage/draft_plans_and_policies/submission/96861/resend)



# **Local Modular Scalable Renewable Affordable**

**A Submission by**



**September 2020**

**Advanced Modular Gasification and Pyrolysis Technology Solutions**

# Feedback Wagga Wagga SAP draft master plan

## Benefits of a Local/Regional modular MATT plant:

- Using scalable technology means it is not imposing infrastructure and can easily be housed in a building.
- Innovative and emerging technology which will set Wagga Wagga apart as an industry leader with long term environmental sustainable goals.
- Focuses on a local issue and improves the community's amenity, jobs, and economy.
- Costs are lowered and is an affordable option for local communities.
- The technology can be adapted to match the size of the waste stream.
- Avoids the transportation costs of waste.
- Creates new opportunities for wastes which were previously pollutants in landfill.
- Provides a local resource of energy and valuable products.

Wagga Wagga's SAP draft master plan sets out environmental and community conscious objectives that would make Wagga Wagga a leader as a sustainable community. It prioritises key concerns of the community such as sustainable energy and employment and targets the need to ensure SAP amenities are clean and improve the livelihoods of all. An adaption we would like to propose is around waste and sewage in which carbon neutrality and renewable opportunities could be missed.

Localised scalable affordable Modular Advanced Thermal Treatment (MATT) solutions, can play a significant part in underpinning Wagga Wagga's SAP goals. IQ Energy's submission proposes a unique alternative solution that meets the specific needs of the Wagga Wagga SAP draft master plan and provides a **missing piece of the puzzle** to achieve the target of having a circular economy.

The Draft Master Plan has a large focus on having local issues addressed by local solutions. MATT technologies are scalable and affordable and repurpose problematic waste streams, such as wastewater, sewage and single-use plastic, into energy with additional useful products and can all be carried out within a local sustainable community.

Local waste problems need  
local solutions for local  
businesses and the local  
community

By Wagga Wagga introducing innovative technologies that create new directions for waste. MATT technology would project Wagga Wagga into being a global environmental leader and close gaps within the circular economy by ensuring products are used to their greatest potential.

Wagga Wagga's aim of sustainability and environmental protection align with our own aims as an environmental technologies company. Our technology produces products which can hold a range of beneficial uses for the community, from energy to power local amenities, water for agriculture use, biochar for industrial or agriculture use or even hydrogen and other industrial feedstocks. Our goal fits into Wagga Wagga's circular economy goal by avoiding any waste going into landfill.

Another sustainable objective for Wagga Wagga is considering food waste as it is a significant component of MSW and Commercial Waste. Composting is a valuable pathway for food waste. Unfortunately, within food waste, there are increasing incidences of contaminants, e.g. plastics and PFAS, that can limit its usefulness and may require thermal treatment. An alternative or collaborative method of utilising this food waste is to use technologies that can create new life for these products, by using them for the creation of energy, clean water and biochar and to ensure the harmful contaminants are dealt with as a safer solution for the community.

Wagga Wagga has a strong commitment to reducing their greenhouse gas emissions. MATT technologies will contribute significantly to these emissions goals and can work alongside other waste technologies to provide the cleanest alternative on this and other pollution issues with waste. Any emissions we do produce we are investigating ways to utilise these to offset them, such as feeding them directly into a greenhouse.

Gasification has a significantly positive impact on greenhouse gases in three main ways:

1. By replacing fossil fuels as an energy source.
2. Intercepting methane that would be produced by our landfill, or wastewater plants.
3. Sequestering carbon as char and producing a relatively small amount of carbon dioxide.

Wagga Wagga highlights key objectives of ensuring noise is reduced and air quality and odour is mitigated. Our technology uses a highly controlled 2 step process using controlled heat to produce gas from waste in an oxygen starved environment and secondly oxidising these gasses in a very controlled process to produce heat resulting in a cool, clean flue gas and very efficient extraction of energy from waste. We acknowledge we do produce some noise in the grinding of the waste process, but we do not create significant amounts which would disturb the community and could be mitigated by our noise emissions plan. We also would significantly reduce the odour and poorer air quality that a landfill can create by processing the waste all the time, rather than stockpiling it.

Our technology is set up on a pre-existing landfill site and will aid in cleaning up the amenity. We see ourselves as an alternative to landfill and not an alternative to recycling. We support recycling and see Wagga Wagga already having achieved productive recycling practices. Our goal is to assist in capturing the value of your waste that cannot be recycled and instead will be stockpiled into landfill. We fit in as utility that will not have any land impact, apart from a small shed which will house our unit and this will have clean emissions and no steam plume. By having lowered visibility and reducing the footprint of the landfill it can have direct impacts such as a cleaner and safer alternative with a positive community impact and other positives like reducing vermin.

The importance for Wagga Wagga and ourselves is to conserve our planet for the present and future. IQ Energy Australia and Wagga Wagga have similar values in a commitment to the United Nations values, which also includes aligning with the Sustainable Development Goals and ecologically sustainable development which underpin a brighter future for all.

Submission by IQ Energy Australia

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# Redeeming Waste to Clean Energy + Valuable Products



**IQ Energy is an innovative environmental technologies company providing unique advanced thermal treatment solutions for local communities and businesses in Australia and the region, to repurpose waste locally and create clean renewable energy and valuable products.**

## A Vision for a Cleaner World

Our vision for a cleaner, more abundant world by 'Redeeming Waste' was sparked while visiting projects in the developing world. At the same time as we were seeing rubbish everywhere, we learned of the immense energy trapped inside waste. This sent us on a worldwide search for technology that could unlock the energy hidden inside waste, a journey that led us to gasification and pyrolysis, connecting with IQ Energy in Canada.



**Did you know plastic has a higher calorific value than petrol? And yet, we are still burying or burning it!**

## Built on 75 Years Experience

The developers at IQ Energy Canada are experts in Advanced Thermal Treatments, with over 75 years of collective experience designing systems that unlock the energy inside various waste streams. Building their expertise and refining their system design in gasification and pyrolysis, they've demonstrated a strong track record, building 35 thermal treatment plants across North America, processing waste streams as diverse as sewage sludge and biosolids, manures and agricultural waste, municipal solid waste and mixed and dirty plastics, drill cuttings and other industrial waste streams.

## Our Goal

IQ Energy exists to clean up the environment, clean up waste and create:

- Clean air
- Clean water
- Clean pastures
- Clean land
- Clean habitat
- Clean soil
- Clean energy to power our Circular Economy

## Advanced Thermal Treatment

IQ Energy's Advanced Thermal Treatment technologies use highly-refined processes in a tightly-controlled, Oxygen-starved environment to convert biomass or hydrocarbon waste into energy-rich Syngas that undergoes controlled oxidation to produce heat + power and other useful products.

Gasification is not new. The science behind gasification has been known and understood for more than 200 years and used commercially since the mid-1800s.



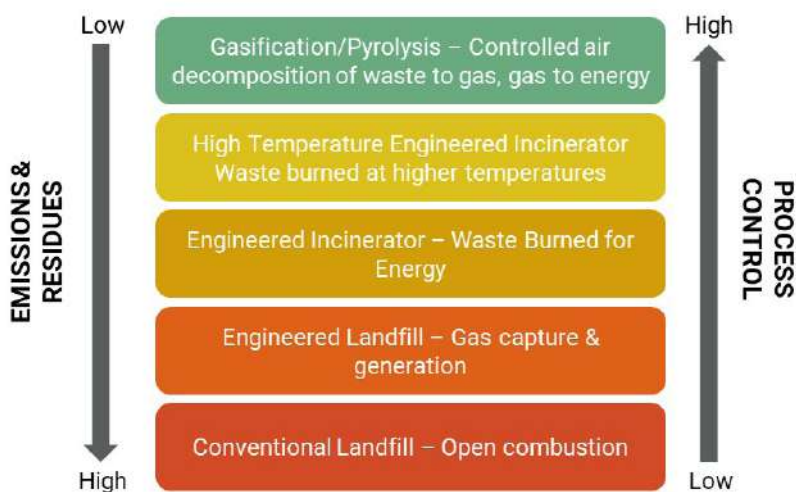
*All the gas streetlights in 19th and early 20th Century London, Europe and the USA used gas from gasification plants.*

## High Efficiency Energy from Waste

There are more than 500 Energy from Waste plants operating safely close to population centres in Europe. There are also dozens of others across Asia, the Middle East and North America, which have been operating for decades.

IQ Energy Advanced Thermal Treatment Technologies utilise gasification and pyrolysis, well understood chemical thermal conversion processes.

Advanced Thermal Treatments have become the preferred solution for value-added treatment of waste and energy from waste, due to superior efficiency and improved environmental outcomes. The image below shows how thermal treatments have evolved over decades, with higher levels of process control and lower levels of emissions and residues.



*Thermal treatments have evolved over decades with higher levels of control and lower emissions replacing older forms such as combustion.*

## MODULAR ATT PLANT

The IQ Modular Advanced Thermal Treatment Plant is a modular turnkey waste conversion system, using gasification and pyrolysis to convert various wet and dry waste streams into energy-rich Syngas, Biochar and other valuable products for agriculture and industry.

The key innovation is the Plant's unique modular design. The developers used their expertise to redesign the key features of a full-size processing plant into standardised, highly-automated modules, scaled to fit inside a standard shipping container. Each IQ Modular ATT Plant is made up of one of more of the following modules:

1. IQ Gasifier-Oxidiser
2. IQ Indirect Dryer
3. IQ Thermolyser
4. IQ Pyrolyser
5. IQ Material Processing Line

## Local Scalable Solution

The Modular ATT Plant can be scaled up or down to meet the size of the waste stream, from a stand-alone shopping centre or hospital, circa 2,500 tonnes per year, through to a local government area or small city of 10,000 - 250,000 people.

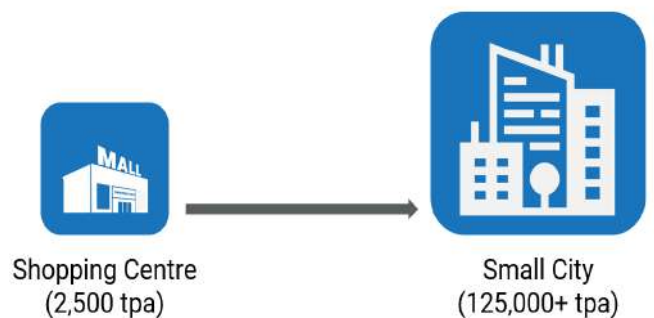
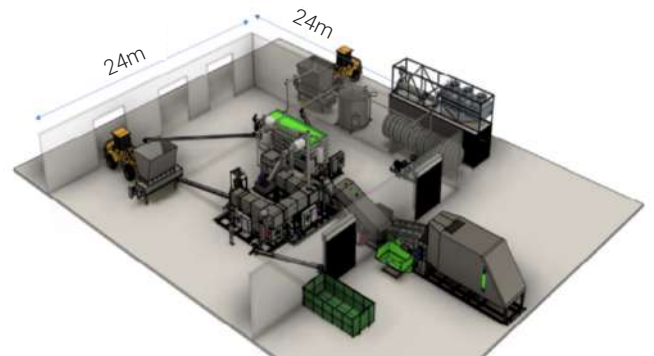
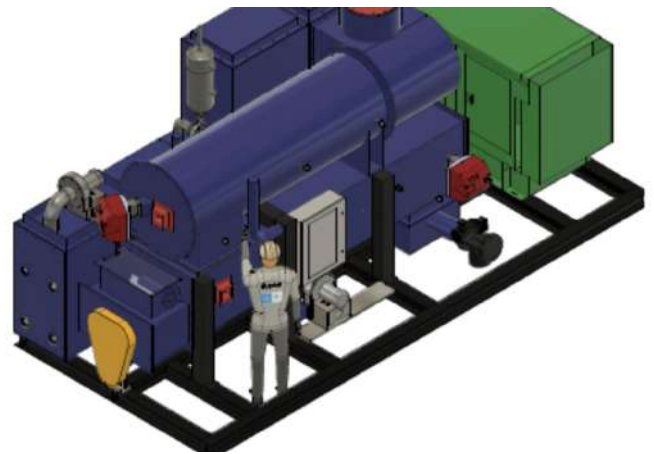
One of the biggest benefits for local communities and businesses is that the modular plant design presents an opportunity to create a local solution for their waste and energy needs. Local waste can be processed locally, reducing the need for transport, decreasing waste processing costs, and extending the life of local landfills. Additionally, the waste processing operation or nearby local businesses benefit from a source of affordable, reliable clean heat or power. Plant modules become a resaleable asset so can be added or removed, as required.

## Environmental

IQ Energy's Modular ATT Plant is designed to meet or exceed the most stringent and well recognised emissions standard. The Advanced Thermal Treatments used in the Plants sequester more Carbon, produces less GHGs and provide more control over emissions than older incineration technologies. The IQ Plant's digital process control allows tuning of equipment to changing waste streams.

## Improved Community Amenity

IQ Plant Modules are installed inside a building, with no smokestack or steam plume, usually on an existing site close to the source of waste. This means low visibility, reduced odour and noise, attracting less birds and vermin, improving local amenity. The plant outputs are also safe and healthy with controlled, low-temperature flue gas, clean usable water, valuable biochar, fertiliser or mineral ash.





## WASTE OMNIVOROUS

Each IQ Plant module can be digitally configured to multiple waste streams and adjusted for seasonal variations.

### Hydrocarbon

- Dirty and mixed plastic
- Recycling residual waste
- Medical waste
- Manufacturing waste
- Oil based drill cuttings
- Contaminated soils (e.g. hydrocarbons and PFAS)

### Mixed

- MSW - garbage
- Mixed Waste Organic Outputs (MWOO)

### Organics

- Garden / food waste
- Agri-waste
- Brewery or ethanol waste
- Forest or sawmill waste
- Biosolids / sewage sludge
- Animal manures
- Abattoir waste
- C&D wood waste

## GLOBAL IMPACT GOALS

IQ Energy's bigger picture goal is to make a social and environmental impact in Australia and the developing world, using our unique modular technology to clean up waste, create jobs, and provide clean, reliable and affordable energy for manufacturing and recycling. With this we will clean land, air and water for communities, along with clean nutrients for food production. We will work collaboratively with governments and private sector businesses to contribute towards the UN's Sustainable Development Goals.

## SUSTAINABLE DEVELOPMENT GOALS



## BENEFITS OF AN IQ ENERGY MODULAR ATT PLANT

### Centralised Manufacture

- Increased reliability, standardised manufacture, high quality process, consistent production
- Reduced unit costs, economies of scale, bulk purchase raw materials, labour efficiency

### Economics

- Affordable, lower capex, repeatable engineering
- Reduced opex, standardised maintenance
- Reliable outputs, baseload power, continuous heat, 24/7 operation
- Valuable commodities including Syngas, Hydrogen and Carbon Monoxide, clean water, biochar, mineral ash and Carbon Dioxide for horticulture
- Super high efficiency energy capture

### Operational

- Easy operation, streamlined software interface
- Limited supervision, sophisticated process
- Ongoing monitoring, 24/7 digital remote access
- Quality control, SCADA system
- Scalable operation, multi-unit or multi-plant control

### Plant Location

- Scalable, scaled to waste stream, modules added or removed as required
- High-tech solution accessible to smaller local communities or businesses
- On-site processing, at source of waste (landfill site, wastewater plant, hospital, shopping centre, manufacturing or agri-business plant)
- Faster build, installation in days

### Community Amenity

- Low visibility, no smokestack or steam plume
- Improved amenity, limited storage, reduced odour
- Less traffic, fewer trucks, just-in-time processing

### Environmental

- Carbon sequestration
- Contaminant treatments
- Reduced need for transport, processed near source
- Exceptionally low GHG emissions
- Safe low-temperature flue gas
- Reduce leachates and fugitive emissions from landfills

## CONTACT US



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