

Carbon neutral Logan

In 2017, Logan City Council committed to a Carbon Reduction Strategy and action plan with an objective to be carbon neutral by 2022. Projects that Logan Water have implemented to align with the strategy to reduce carbon emissions include the Cedar Grove Environmental Centre and the Loganholme WWTP Biosolids Gasification Facility.

CLIMATE THEMES ADDRESSED



NET ZERO EMISSIONS



FUGITIVE EMISSIONS



REGULATORY OBLIGATIONS



ENERGY EFFICIENCY



EMERGING TECHNOLOGY



RENEWABLE ENERGY



RESOURCE RECOVERY/ REUSE

Background

Cedar Grove Environmental Centre

Cedar Grove Environmental Centre (CGEC) is a 204ha site located on the Logan River comprising a state-of-the-art wastewater treatment plant, 7 hectares of constructed wetlands, vegetation corridors, community facilities including 2.5 km walking track along the Logan River, picnic tables and amenities, as well as a Landcare nursery, a solar farm and 37 hectares of biodiversity offset planting.

Loganholme WWTP Biosolids Gasification Facility

The environmental license for the first stage of the wastewater treatment plant (WWTP) is the strictest in Queensland and perhaps Australia. Under this license, Council must achieve a net environmental benefit for the surrounding catchment. This means that Council must find ways to reduce nutrients entering the Logan River (from all sources) by 1.5 times the amount discharged in the high-quality reclaimed water from the WWTP. This has not been done previously in Queensland.

FIGURE 32 Loganholme WWTP



Logan City's largest wastewater treatment plant (WWTP) at Loganholme provides services to 300,000 people. It produces 34,000 tonnes of biosolids (treated and partially dewatered sewage sludge) each year. Every day, six trucks of biosolids are transported 300km to the Darling Downs agricultural area for use as a soil improver.

This is a major operating cost for Logan City Council; about \$1.8 million per year or 30% of the total operating costs at Loganholme WWTP. Transporting biosolids by truck can also adversely affect communities and the environment through increased traffic, fumes, odours and high greenhouse gas emissions.

FIGURE 33 Cedar Grove Environmental Centre



Benefits to the utility, and to climate-related outcomes

Council extended the environmental features of the CGEC by:

- Planting native trees on 37ha of the site to offset approved vegetation removal by developers across Logan.
- Installing a 150kW on-site solar farm to contribute energy for WWTP operations.
- Integrating the reclaimed water outfall pipeline in a fish ladder on Seqwater's weir on the Logan River to replace water released to maintain environmental flows. This saves 3ML of water per day in the weir pool which is a future drinking water resource.
- Reducing the environmental impacts of trunk pipeline construction by using horizontal directional drilling on long sections (up to 1.3km) to reduce vegetation cleaning around waterways and koala habitat.
- Initiating environmental research projects on-site with Griffith University.

The benefits included:

- A net environmental benefit for the catchment
- New recreational facilities for the community
- Reforestation of previously cleared farmland, increasing biodiversity and wildlife habitat, and capturing CO₂ from the atmosphere
- Rehabilitation of parts of the Logan River banks
- Environmental research and education opportunities.

Loganholme WWTP Biosolids Gasification Facility

Council has a target of achieving carbon neutrality for its operations by 2022. The biosolids gasification facility will help achieve this by:

- recovering energy from waste
- reducing energy consumption
- sequestering carbon and binding heavy metals which reduces carbon emissions (initially by about 4,800 tonnes per year)
- destroying persistent organic pollutants and micro and nano-plastics to comply with environmental regulations.

The facility will significantly reduce the disposal of biosolids, saving about \$500,000 in operating costs each year for Council and the community.

The biosolids gasification facility produces a safe, environmentally friendly biochar. This product can be marketed as a soil conditioner and added to potting mix; providing a sustainable solution for an existing waste product.

FIGURE 34 Loganholme WWTP gasification demonstration plant



Further information

WWTP at Cedar Grove video

<https://www.youtube.com/watch?v=cBRJzGNz62I>

Loganholme Gasification Facility video

<https://www.youtube.com/watch?v=ahetsXyFU6M>