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History of the plant

The first wastewater treatment plant south of Perth was built in South Fremantle in 1910. It served the immediate Fremantle area, with three large septic tanks that discharged wastewater into the ocean from Robbs Jetty.

Fremantle grew quickly after World War II and in 1966, a new plant was established at Woodman Point. It was relocated further south, to its present location, in 1983.

In 2002, a \$150 million upgrade to the plant increased its capacity from 125 million litres to 160 million litres a day. The new works included a secondary treatment process to improve effluent quality, including the ability to reduce the quantity of nitrogen in the treated wastewater, to make it suitable for industrial re-use.

The current Woodman Point plant occupies 82 hectares of land in a natural bushland setting adjacent to Cockburn Road in the suburb of Munster.

Future initiatives

The Water Corporation is committed to continuous improvement of the social and environmental performance of its wastewater treatment plants, and ongoing initiatives to:

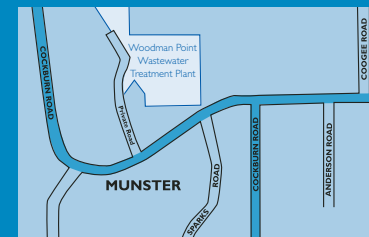
- Improve the quality of treated wastewater before disposal;
- Increase re-use of treated wastewater and biosolids; and
- Reduce any odour and other off-site impacts associated with treatment.



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Woodman Point Wastewater Treatment Plant
Cockburn Road, MUNSTER

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Wastewater Treatment Plant

Woodman Point



The Water Corporation's Woodman Point plant manages wastewater for a population of more than half a million people living south of the Swan River in the Perth metropolitan area.

Woodman Point plant

The Water Corporation's Woodman Point Wastewater Treatment Plant treats wastewater for a population of more than half a million people living south of the Swan River in the Perth metropolitan area.

The plant is designed to treat up to 160 million litres of wastewater each day to ensure that environmental, health and community impacts are minimised. The wastewater is predominantly from household kitchens, bathrooms, toilets and laundries.

Wastewater entering the plant is about 99.97 per cent water, and this is treated using physical and biological processes to achieve a quality suitable for recycling and ocean disposal.

Presently, more than 100 million litres per day of wastewater is treated and released into the ocean 4.2 kilometres offshore. It disperses into the ocean and is returned to the natural water cycle.

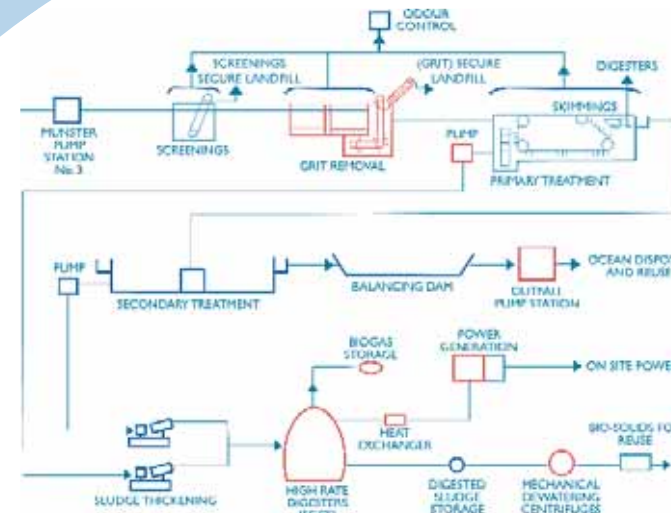
The plant also produces valuable by-products. These include:

- stabilised biosolids for soil enrichment and agricultural use;
- treated wastewater suitable for industrial re-use; and
- bio-gas (predominantly methane) is used for on-site electricity production, reducing the plant's reliance on grid power. As a consequence, the plant is accredited as a renewable energy facility by the Office of the Renewable Energy Regulator.

Like all wastewater treatment plants across the State, the Woodman Point plant is subject to regulation and licensing by the Department of Environment and Conservation.

The Water Corporation values community input to help guide its decisions and it operates a Community Reference Group, consisting of local community members and key stakeholders. Nearby residents are also kept informed by direct mail, website information on the plant, and local newspaper articles.

To make odour reporting easier for people living near the Woodman Point Wastewater Treatment Plant, the Water Corporation has a 24-hour free call service. Residents can call 1800 068 570 to have their concerns registered and investigated.



Wastewater treatment process

The wastewater treated at Woodman Point comes from an area bounded by Midland and Kalamunda to the east, Dandalup to the south, and the coast to the west. Treatment of the wastewater at the site is an advanced, highly automated process. It is closely monitored by a team of expert managers and technicians, who work to maintain treatment efficiency and minimise off-site impacts. Technically termed 'advanced secondary' treatment, the process at Woodman Point removes a high proportion of wastewater solids and nutrients using a series of physical and biological processes.

Screening and Grit Removal

As raw wastewater enters the plant, it is screened to remove any large objects like plastic material and rags. The collected matter is washed and compacted before being deposited into bins for off-site disposal. The screened wastewater then passes through settling tanks to remove grit (such as sand).

Primary Sedimentation

The wastewater then passes slowly through rectangular sedimentation tanks to remove the majority of solids. The settled solids (sludge) from these tanks receives further treatment through a sludge digestion process. The wastewater (termed 'primary wastewater' at this stage of the process) contains just 0.015 per cent of fine solids and passes to the advanced secondary treatment process.

Advanced Secondary Treatment

Advanced secondary treatment takes place in a Sequencing Batch Reactor which is both an aeration tank and clarifier. The primary wastewater is introduced into one of four operating basins where it is aerated, creating ideal conditions for microorganisms to consume the organic material available. It then progresses to the settling phase, during which the clear liquid separates from the solids and is decanted off making it suitable for ocean discharge or industrial re-use.

During settlement, an environmentally friendly process takes place in which microorganisms use oxygen from within the settled solids and in the process release nitrogen into the atmosphere. This reduces the nitrogen load on the receiving environment.

Sludge Digesters

Bacterial action in the digesters (at 35 degrees celsius) converts sludge into a residue that is an excellent soil conditioner for landscaping or agricultural use. The stabilised sludge (known as biosolids) is trucked off-site daily. Bio-gas is a by-product of this process. It is burned in the plant's on-site generators to produce both power and heat (in the form of hot water) for site use.

Odour Control

To minimise the impact of odours on the surrounding community, the pretreatment and primary treatment processes are covered and the gases are extracted and treated using a chemical odour scrubbing system before being emitted. Over the next few years, more processes will be covered and gases extracted, while the chemical scrubbing technology will be upgraded to further reduce the odour impact.

Wastewater Disposal

Treated wastewater travels 23 kilometres by underground pipeline to Cape Peron. From there the treated wastewater flows a further 4.2 kilometres out into the ocean and is discharged into the 20 metre deep Sepia Depression (west of Garden Island), where it is quickly dispersed.

Regular checks are made by divers on the pipeline in the Sepia Depression. Frequent ocean water sampling is undertaken as part of the Perth Long-term Ocean Outlet Monitoring (PLOOM) program to assess trends in water quality. To date, no adverse impacts on the marine environment have been detected.

Biosolids are applied to agricultural land as a soil enhancement product to help increase crop production.

For more information on the PLOOM and Biosolids Re-use programs, visit www.watercorporation.com.au (wastewater section)

