Sydney WATER

Malabar Sewage Treatment Plant

Malabar Sewage Treatment Plant is the largest of 29 sewage treatment and recycling plants in greater Sydney. It serves the southern metropolitan area west to Homebush Bay, which is about 40% of metropolitan Sydney. Like all Sydney's treatment plants, Malabar's treatment processes have been influenced by the plant's location, the needs of the area served and the technology available when the plant was built.

Location

The plant is located on the headland at Malabar, on Sydney's southern coastline about 14 km from the city centre. Completed in the early 1970s, the plant receives wastewater from the southern and western suburbs sewerage network that serves much of southern Sydney. It treats wastewater to primary standard and discharges about 450 million litres a day through an underground pipe and diffusers about 3.6 kilometres out to sea.

Catchment

The plant serves 627 km^2, bounded by Liverpool, Glenfield, Fairfield, Strathfield and the Georges River. The catchment area includes a mix of homes and industries. This means that the plant treats a large amount of trade waste. The plant treats wastewater equal to that produced by 1.7 million people.

History

Like all Sydney's sewage treatment plants, treatment processes have developed over time to:

- improve the quality of the treated wastewater
- reduce the use of fresh drinking water
- minimise environmental impacts.

By the early 1900s, Sydney had settled on ocean outfalls as its main strategy for dealing with wastewater. A network of large pipelines was built and homes and industry connected to it. The Southern and Western Suburbs Ocean Outfall Sewer was completed in 1916. It carries wastewater to the Malabar sewage outfall, also completed in 1916.

At first, this outfall, and others at Bondi and North Head, discharged wastewater directly into the ocean, close to the coast, to be dispersed by ocean currents and wave action. The plants were located to take maximum advantage of ocean conditions.

As the population grew, so did public concern about beach pollution. Sydney Water (then the Metropolitan Water, Sewerage and Drainage Board) decided to treat wastewater before discharging to ocean outfalls.

Building of the Malabar Sewage Treatment Plant began in the late 1950s. When completed, the plant treated the wastewater to primary standard before discharging it through the coastal outfall.

In 1984, Sydney Water decided to build deep ocean outfalls to further improve coastal conditions.

Since 1990, the Malabar Sewage Treatment Plant has discharged treated wastewater about 3.6 km offshore.

Features

The plant runs continuously. About 50 staff, mainly production officers and maintenance specialists, operate and maintain the plant, monitor laboratory results and manage special projects to keep the plant running safely and efficiently.

Malabar STP produces about 33,000 tonnes a year of nutrient-rich biosolids, a soil conditioner/fertiliser developed by Sydney Water and used extensively to improve the fertility and structure of farming soils in NSW.

The plant operates under an environment protection licence from the NSW Department of Environment, Climate Change and Water (DECCW). Sydney Water monitors the deep ocean outfall discharges and reports regularly to DECCW to ensure minimal environmental impact.

Reducing environmental impacts

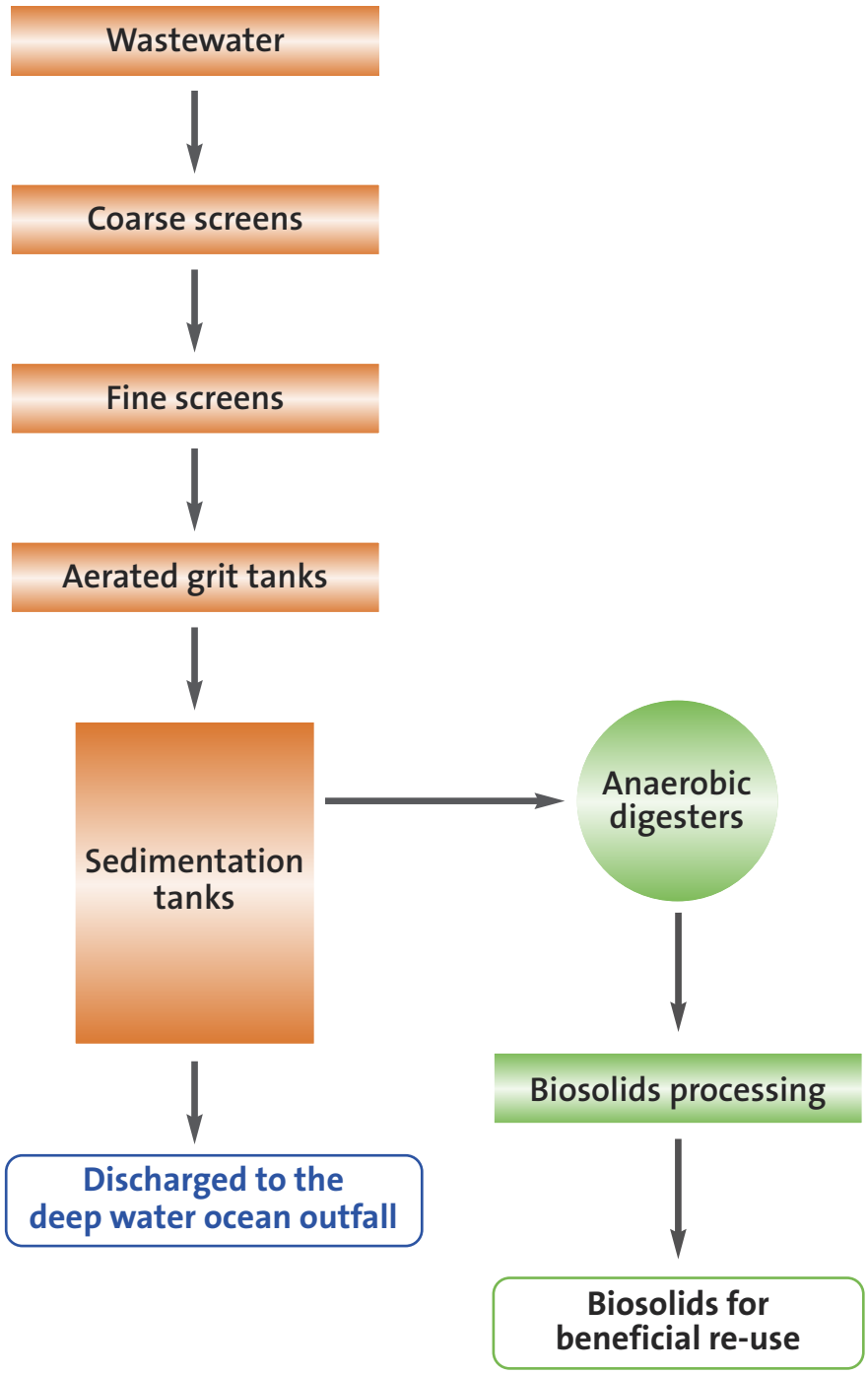
The plant generates about 60% of the electricity needed to run its own processes. Electricity is generated using methane produced during biolosids production.

This is part of Sydney Water's plan to be carbon neutral for energy and electricity use by 2020.

The plant uses treated wastewater for some of its own processes, saving about 600 million litres of drinking water a year. The plant has reduced its use of drinking water by over 70% since 2004. The plant's odour scrubbers were upgraded in 2006, to reduce odours experienced by the local community.

Malabar Sewage Treatment Plant process

Primary treatment Solids handling



Treatment process

Screens and grit removal

Wastewater is filtered through six coarse and six fine screens to remove larger items such as paper and plastic. These screenings are beneficially reused at the Wingecaribee Shire Council's vertical composting unit. Four aerated grit tanks remove sand, gravel and other heavy inorganic matter from the sewage. Grit is dewatered, then added to the screenings for recycling.

Sedimentation

Waste solids settle to the bottom of the sedimentation tanks. The solids are removed and transferred to the solids handling process (see 'Treating the solids' below). Oil and grease float to the top of the tank and are removed by scrapers. Most of the treated wastewater flows to the deep ocean outfall. Some is reused in the plant to wash screens and clean equipment.

Treating the solids

The solids from the sedimentation tanks are treated in anaerobic digesters. This stabilises the solids for biosolids production, preventing offensive odours. At the Malabar plant, anaerobic solids treatment produces methane gas that is used to heat the digesters and generate electricity for the plant.

The deep ocean outfall

Treated wastewater from the Malabar Sewage Treatment Plant enters a large tunnel, which carries the wastewater under the sea bed about 3.6 kilometres out to sea, where the ocean is about 80 metres deep. The wastewater is released into the ocean through about 200 diffusers. The diffusers are spread over about 800 metres at the end of the tunnel.

Sunlight, salt water and wave action work together to break down and disinfect the treated wastewater.

DECCW and Sydney Water continue to study the marine environment around the deep ocean outfalls.

Contact us

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