

# North Head Wastewater Treatment Plant

**North Head Wastewater Treatment Plant is the second largest of the 30 wastewater treatment and water recycling plants in greater Sydney, the Blue Mountains and the Illawarra.**

The plant serves an area of 452 km<sup>2</sup>, from Seven Hills in the west, south to Bankstown and north to Ku-ring-gai and Collaroy.

## Primary treatment

There are two streams of wastewater that can enter the North Head Wastewater Treatment Plant.

The first is the normal flow of wastewater received during dry weather.

The second comes from the Northside storage tunnel, which collects large volumes of wastewater during wet weather. The storage tunnel brings wastewater into the plant for treatment slowly during dry conditions.

Both streams of wastewater receive the same treatment.

### Drum screens

Wastewater passes through large drum screens to remove items such as paper, cotton tips and plastic. This waste is recycled for beneficial reuse.

The wastewater is then pumped to the grit removal stage.

### Aerated grit chamber

Grit is removed by the aerated grit chambers, which cause grit to spiral to the bottom of the tank where it is removed.

### Sedimentation tanks

The wastewater then flows to the sedimentation tanks where the solids settle to the bottom of the tanks. The solids are removed and transferred to the solids handling process. Oil and grease float to the top of the tank and are removed by scrapers.



# Deep water ocean outfall

The treated wastewater is then ready to be discharged to the deep ocean outfall. The treated wastewater passes through a hydroelectric generator which produces about 20% of the site's power.

The treated wastewater enters a large tunnel that carries it under the sea bed about 3.7 kilometres out to sea, where the ocean is about 60 metres deep.

The wastewater is released into the ocean through diffusers. The diffusers are spread over about 720 metres at the end of the tunnel into an area off the eastern seaboard that is naturally swept by currents flowing north to south.

We monitor the marine environment to check for any toxicity or other impact. The Environment Protection Authority (EPA) and Sydney Water continue to study the marine environment around the deep ocean outfalls.

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



We're turning waste methane gas (biogas) into electricity to help power our wastewater treatment plants. The biogas is captured and converted into electricity through combustion technology. We have cogeneration units at Malabar, Bondi, Warriewood, North Head and Cronulla wastewater treatment plants and at Glenfield, Liverpool and Wollongong water recycling plants.

## Solids handling

### Rotary drum thickener

Solids are collected from the sedimentation tanks. The solids are fed into a rotary drum thickener that thickens the sludge.

### Anaerobic digesters

The solids are then fed into anaerobic digesters that stabilise the solids, prevent odours and produce biogas. The biogas is then used to produce another 20% of the site's power. The solids are then fed into high speed centrifuges to remove excess moisture.

### Beneficial re-use

The treated biosolids are now ready for re-use in agriculture, forestry, land rehabilitation and landscaping.