

Rouse Hill Water Recycling Plant

The Rouse Hill Water Recycling Plant is Australia's largest residential recycling system.

The Rouse Hill plant treats and disinfects wastewater to tertiary standard, then recycles most of it back to customers for non-drinking purposes, such as flushing toilets, watering gardens and washing cars.

The Rouse Hill Water Recycling Plant is one of Sydney Water's 13 water recycling plants.

Primary treatment

When wastewater arrives at the plant, the flow splitter divides the flow into two streams. Both streams go through the same primary treatment.

Step screens and aerated grit chamber

Wastewater is passed through step screens to remove items such as paper, cotton tips and plastic. A forced vortex grit chamber causes grit to spiral to the centre of the tank, where it is removed.

Secondary treatment

One stream of wastewater flows to the bioreactor and the other stream flows to the Intermittently Decanted Aerated Lagoons (IDAL).

Bioreactor

The bioreactor creates different environments in a number of tanks for microorganisms to treat pollutants in the wastewater, such as nutrients and organics. The wastewater is then decanted in a clarifier.

IDAL

In the IDAL, wastewater goes through three stages – aeration, settling and decanting – in the one tank.



Tertiary treatment

Mixing chamber

Chemicals are added in a mixing chamber. These chemicals make small particles stick together (a process called flocculation) to make them easier to settle and filter out.

Clarifiers

The wastewater flows through the tertiary clarifiers allowing more solids to settle.

Filters

The wastewater streams join together again, before passing through filters made of sand and crushed coal. The filters trap the small particles while the wastewater flows through.

Chlorination and ultraviolet light

All of the treated wastewater is disinfected with chlorine. We also treat some treated wastewater with ultraviolet light before distributing it to recycled water customers. We use sodium bisulphite to de-chlorinate any excess treated wastewater before discharging to the wetlands, which flow to Second Ponds Creek.

Solids handling

Solids collected from the treatment process are thickened in a rotary drum thickener. We pump the solids to an aerobic digester, where aerators stabilise the solids and reduce odours. The digested solids then feed through into high-speed centrifuges to remove excess water.

The dewatered sludge is known as biosolids and is beneficially re-used in agriculture, forestry, land rehabilitation and landscaping.

