

St Marys Water Recycling Plant

The St Marys plant serves mainly residential customers and some industrial customers treating the community's waste from the area bounded by Cambridge Park, Werrington Downs, Blackett, Mt Druitt, Minchinbury and St Clair.

When wastewater arrives at the plant, it enters one of two process lines. Each takes the wastewater through primary and secondary treatment before the process lines re-join at tertiary treatment. One line is known as Stages 1 and 2. The other is known as Stage 3.

Primary treatment

Stage 1&2

Step screens and aerated grit chamber

Wastewater passes through step screens to remove large items such as cotton tips and plastic. Aerated grit chambers remove sand and grit.

Sedimentation tank

The wastewater flows to the sedimentation tanks where solids settle to the bottom of the tank and oils and grease float to the top. Scrapers at both the bottom and top of the tanks remove the solids, oils and grease.



Stage 3

Step screens and a vortex grit chamber

Wastewater passes through step screens to remove large items such as cotton tips and plastic. A vortex grit chamber removes sand and grit.

The St Marys Water Recycling Plant is one of Sydney Water's 12 water recycling plants

Secondary treatment

Stage 1&2 plus Stage 3

Bioreactor

The wastewater flows to the bioreactor where different environments allow microorganisms to break down pollutants, such as nutrients and organics in the wastewater.

Clarifiers

The wastewater flows to the secondary clarifiers where more solids settle out. The clearer wastewater flows on for tertiary treatment.

Tertiary treatment

Stage 1, 2 & 3 combined

Mixing chamber

In the mixing chamber, we treat the combined wastewater flows from Stage 1&2 and Stage 3 with chemicals.

The chemicals make the smallest particles stick together (a process called flocculation) to make them easier to filter out.

Clarifiers

The wastewater flows through the tertiary clarifiers, which allows more solids to settle.

Filters

The dual media filters are made of sand and anthracite (crushed coal). The filters trap small particles while the wastewater flows through.

Chlorination

The treated wastewater is disinfected using chlorine and dechlorinated with sodium bisulphite before it is discharged to a tributary of South Creek, re-used at Dunheved Golf Course or sent on to St Marys Advanced Water Recycling Plant.

Solids handling

Solids collected from the treatment process are thickened by dissolved air flotation and then fed into an aerobic digester. The digested solids then enter a belt press which removes excess water.

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

Treated wastewater discharged from St Marys eventually enters the Hawkesbury–Nepean River.

The Hawkesbury–Nepean is not only a beautiful natural environment. It also supports important economic activity, including agriculture, oyster and prawn farming, tourism and recreational activities.