

St Marys Advanced Water Recycling Plant

St Marys Advanced Water Recycling Plant produces highly treated recycled water, which contributes to the healthy flow and water quality of the Hawkesbury-Nepean River.

The wastewater arriving at St Marys Advanced Water Recycling Plant from Penrith, St Marys and Quakers Hill water recycling plants has already gone through many treatment steps, including filtering, to remove nearly all biodegradable organic material and nutrients and has been disinfected.

Pre-treatment

The tertiary treated wastewater is collected in a feedwater balance tank, which ensures there is a constant water supply for the plant. The water passes through a mechanical strainer on its way to the ultra-filtration process. This retreatment process removes any particles that may still be present.

Ultra-filtration

The water is pumped into a tank filled with ultra-filtration membranes. A vacuum sucks the water through these semi-permeable membranes. The membranes block suspended solids, bacteria and some viruses. Substances removed by ultra-filtration are returned to the earlier process stages of St Marys Water Recycling Plant to be re-treated.

Reverse osmosis

Water from the ultra-filtration process is forced at high pressure into a module that contains 3,696 reverse osmosis membranes.

The reverse osmosis membranes are like very fine sieves. They block particles over 0.0005 microns (a micron is a millionth of a metre). High quality water passes through, leaving behind a saline concentrate. Pipelines carry the concentrate to the northern suburbs wastewater system for further treatment at North Head Wastewater Treatment Plant.

Decarbonators and balance tank

The treated water is pumped through the decarbonators to reduce the amount of carbon dioxide in the water. Water is temporarily stored in the recycled water balance tank. The pH level is corrected to meet the water quality requirements for discharge under the *Protection of the Environment Operations (POE) Act*.

The water is then pumped to Penrith, where it is released into Boundary Creek. It flows into the Hawkesbury-Nepean River, just below Penrith Weir.

The St Marys Advanced Water Recycling Plant produces up to 50 million litres of highly treated recycled water a day. That's up to 18 billion litres of water a year.