

Partnering with Sydney Water to ensure the continued supply of high quality drinking water during extreme weather events



TRILITY was contracted to upgrade the water filtration plant to ensure it continues to deliver high quality drinking water.



The upgrade ensures Sydney Water continues to provide high quality drinking water to current and future residents living in the Camden, Campbelltown, Liverpool and Wollondilly areas of NSW.

Wholly owned by TRILITY, the Macarthur Water Filtration Plant (WFP) supplies over 500,000 Sydney Water customers.

The plant upgrade was the culmination of an extensive and collaborative investigation between Sydney Water and TRILITY and had three major components. The first was a group of projects to improve the reliability of treated water quality. The second provides a filter-to-waste capability providing the best solution against out-of-specification water entering the potable water network. The third provides Sydney Water with direct access to plant data.

The upgrade provided online water quality monitoring to eliminate the non-productive time and safety concerns for people conducting manual water sampling. It also introduced a submersible scanning spectrometer to detect a range of water quality parameters. An algorithm was developed specifically for the plant which uses this data and artificial intelligence to predict the required chemical dose rate and send it to the plant control and SCADA system. The existing chlorine building was extended to accommodate chlorine dosing of the raw water before it enters the plant. This pre-treatment will be activated during extreme events.

A research and development exercise was undertaken to optimise the filter backwashing practices, which resulted in a decrease of backwash water production by an average of 437 megalitres per year. This decrease reduced the electricity costs of processing the backwash by 32%.



Who

Sydney Water provides drinking water, recycled water, wastewater services and storm water services to more than five million people in Sydney, Illawarra and the Blue Mountains. It is Australia's largest water utility, supplying about 1.5 billion litres of water to their customers.

What

The scope of works included:

- installation of water quality monitoring
- advanced coagulant control
- pre-chlorination of raw water
- construction of water storage tanks
- optimisation of filter backwashing
- additional chemical dosing
- improvements in sludge handling
- providing the client remote access to real-time plant data

Where

The historic town of Appin, 70km southwest of Sydney in the Macarthur region of New South Wales. A relatively small volume of treated water is used locally, with most gravitating to storage reservoirs supplying the fast-growing Campbelltown and Narellan areas.

Why

The original plant was built to improve drinking water quality under variable source water characteristics. During storms, fast flowing creeks which feed local water storages pick up sediments, increasing the amount of colour, turbidity and other contaminants in the raw water. The filtration process is the primary method used to remove these contaminants. At times, under these extreme conditions, the process struggled to maintain consistent treated water quality. The upgrade ensures the continued supply of high quality drinking water to current and future residents.

Snapshot

Client	Sydney Water
Facilities	Water filtration plant, pumping station and water storage tanks
Technology	Filtration, chemical dosing, gas chlorination, and chloramination
Capacity	265ML/d
Cost	\$18.5m

For further information

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