

CASE STUDY

PROJECT	TUNNEL GROUND WATER TREATMENT PLANT
PRODUCT	Brackish Water Reverse Osmosis (BWRO)
INDUSTRY	Infrastructure
LOCATION	New South Wales



BACKGROUND

NorthConnex is the longest and deepest road tunnel in Australia. The Ground Water Treatment Plant that MAK Water designed, constructed, installed, commissioned in 2020 treats ground water inflow, stormwater first flush and tunnel washdown wastewater. It is critical to the tunnel's operation and is designed for 100% uptime over its 50 year design life.

The system developed treats up to 144 m³/hr, reducing the total dissolved solids (TDS) and removing suspended solids, heavy metals and other contaminants from the ground water, so it can be safely discharged to the local Blue Gum Creek, compliant with a 95% protection level for a river ecosystem as defined by the ANZECC 2000 Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

SOLUTION

Custom design and manufacture of 3.5 ML/day treatment system consisting of Dissolved Air Flotation (DAF) followed by Media Filtration (MMF), Cartridge filtration and finally Brackish Water Reverse Osmosis (BWRO), and sludge dewatering via a dewatering Screw Press (DSP).

- DAF pre-treatment to remove TSS and Oil & Grease
- Two stage reverse osmosis (RO) configuration with 75% recovery rate
- Two x 50% train system for improved plant reliability
- Discharge target for electrical conductivity (EC) between 125 - 356 μ S/cm
- Installation, commissioning, validation, and operation by MAK Water personnel for the first 12 months
- Ongoing service agreement with technical support and scheduled site visits by a MAK Service Technician

RESULTS AND BENEFITS

- **Environmental compliance & protection.** The treated water discharged is compliant with a 95% protection level for a river ecosystem as defined by the ANZECC 2000 guidelines
- **Turnkey solution.** MAK Water provided a full suite of services including design, manufacture, installation, commissioning, validation, and plant operation.
- **Lowest total operating cost.** By treating the water for discharge to environment the requirement to pay for discharge to sewer is minimised.



Two stage Reverse Osmosis (RO) configuration with 75% recovery rate



DAF pre-treatment to remove TSS and Oil & Grease