

Wanneroo Ground Water Treatment Plant (GWTP)

Customer

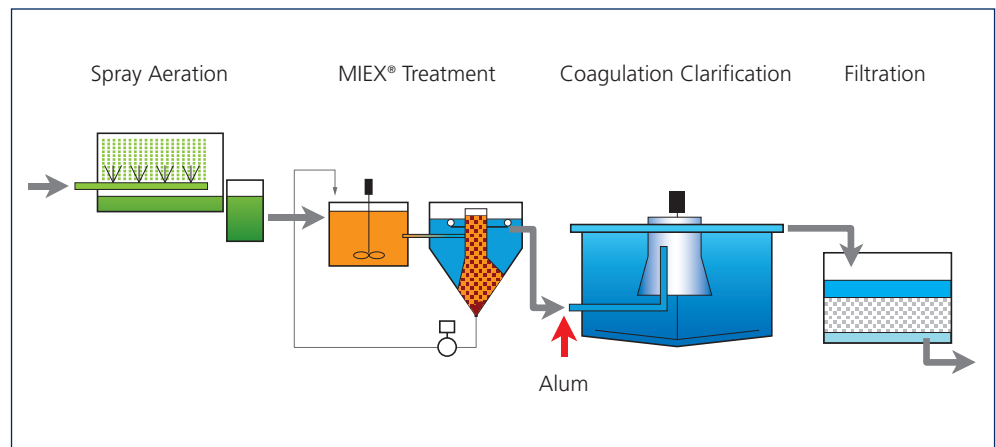
Water Corporation of Western Australia

Application

MIEX® pre-treatment to improve existing conventional drinking water treatment

Commissioned

2001



The Problem

Perth, the capital of Western Australia, is a city with a population of over 1.3 million people. Over half of the drinking water supply is sourced from groundwater supplies.

Prior to the MIEX® pre-treatment upgrade, the 225 MLD Wanneroo GWTP relied upon conventional aeration, alum coagulation, sedimentation and dual media filtration processes to treat water sourced from a combination of approximately 60 shallow (unconfined) and artesian (confined) wells. This treatment process was unable to achieve effective removal of dissolved organic carbon (DOC) even in the enhanced coagulation mode, especially during summer months when most of the raw water was sourced from high colour (DOC), soft, shallow wells.

The residual DOC in treated water from the Wanneroo GWTP was identified to be a root cause of a number of water quality issues including intermittent biologically induced odour problems and consumer complaints and elevated disinfection by-product levels.

The Solution

A number of processes including enhanced coagulation/GAC, Ozone/BGAC and MIEX® pre-treatment were evaluated on their ability to provide improved and more efficient DOC removal. One particular challenge for the evaluation was the highly variable raw water quality.

Following a three-year period of evaluations, a 112.5 MLD MIEX® pre-treatment system was installed in 2001 to pre-treat half the raw water supply to the Wanneroo GWTP, with provision made for a future full scale upgrade to 225 MLD.

The upgraded plant incorporated an initial aeration step designed to remove H₂S and oxidize iron. Following steps include MIEX® pre-treatment, coagulation, clarification and filtration.

Orica Watercare
Head Offices

Asia Pacific

T 61-3-9665-7111
F 61-3-9665-7937

USA

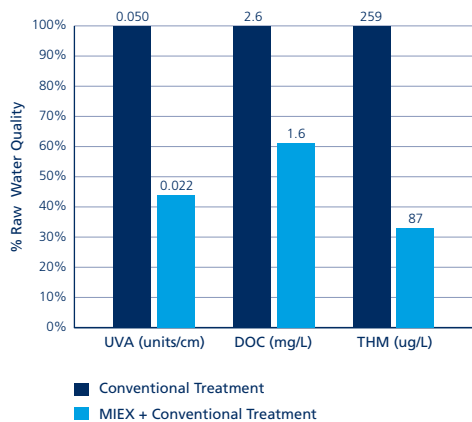
Toll Free 1-877-414-miex
T 303-268-5243
F 303-268-5250

Europe

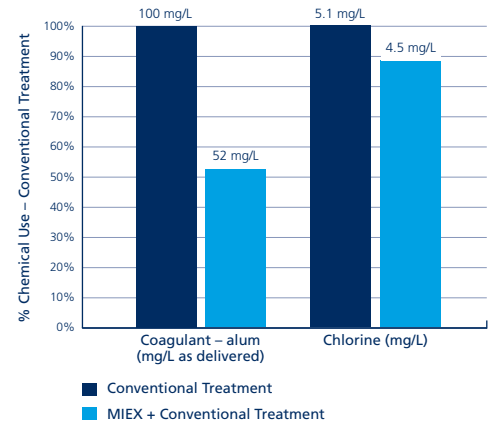
T 44-1257-256-616
F 44-1257-256-149

E miex@orica.com
www.miexresin.com

Water Quality – Wanneroo GWTP, Australia



Process Efficiency – Wanneroo GWTP, Australia



Project Outcomes

The performance of the MIEX® pre-treatment system has been monitored for over 6 years. During this period, MIEX® pre-treatment has consistently provided both significant improved final treated water quality and reductions in coagulant and disinfection chemical requirements.

Specifically, the implementation of MIEX® pre-treatment of 50% of raw water has provided:

- A 38% reduction of DOC levels in final treated water
- A 66% reduction in THM concentrations in the distribution system
- Reduced coagulation and disinfection chemical costs
- Improved stability of disinfectant residual in treated water
- Reduced biofilm growth in the distribution system
- Eliminated DMTS odour problem, and
- Noticeably improved taste of water

MIEX® pre-treatment operating costs are largely offset by improved process efficiencies. Significantly improved water quality is achieved without a substantial increase in total operating costs.

Installation Details

The MIEX® pre-treatment plant has a modular design with the footprint measuring 1,300 m².

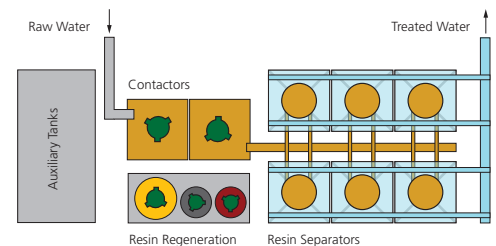


Figure 1 MIEX® Plant Footprint



Figure 2 MIEX® Pre-treatment Plant