CASE STUDY

PROJECT	CORRECTIONAL FACILITY WATER RECYCLING
PRODUCT	MBR & BWRO
INDUSTRY	Infrastructure and Urban Development
LOCATION	Queensland

mak water
water | wastewater | sewage

BACKGROUND

A large correctional facility in Queensland was looking at options to reduce water consumption as a result of prolonged drought conditions. Using Class A+ recycled effluent in their laundry and cooling towers was identified as a practical solution to reduce the environmental footprint rather than the existing process of dispersing it to a spray field. MAK Water was invited to competitively tender and was subsequently awarded the project.

SOLUTION

MAK Water designed, supplied and commissioned a packaged 200 m^3/day Membrane Bioreactor (MBR) Sewage Treatment Plant (STP) to supply the laundry followed by a packaged 100 m^3/day Brackish Water Reverse Osmosis (BWRO) plant to improve the Class A+ water quality to an acceptable level for re-use in cooling towers and laundry.

ENGINEERING AND DESIGN REQUIREMENTS

- HAZOP, safety in design, operability and constructability studies
- Detailed 3D modelling for human factors engineering
- Premium instrumentation and remote monitoring
- Turn-key supply package with MAK Water designing, building, installing and commissioning the plants

MBR

- Packaged inlet screw screen in tank in stainless steel, with Integrated screenings washing and compaction and discharge fitted with automatic bagging system to contain odours
- Corrosion resistant fibre-reinforced plastic (FRP) bioreactor with internal plant room providing 20+ year plant design life
- Duty/ standby arrangement for all process essential equipment
- Validated UV disinfection
- Containerised ancillary equipment and control system

BWRO

- Two stage brackish water reverse osmosis
- Containerised (1 x 20') with non-slip floor, air conditioning and access door
- High level of instrumentation with online monitoring of conductivity, pH, flow and pressure

Arial view of the MBR and BWRO installation

Internal view of the containerised BWRO plant

RESULTS AND BENEFITS

- **Safe, compliant effluent.** Membranes provide a physical barrier to viruses and pathogens, as well as suspended solids. The disinfection system includes UV, tank chlorine recirculation and online analysers for monitoring of free chlorine, pH and turbidity.
- **Reduced potable water consumption.** It makes sense, commercially and environmentally, to reuse treated wastewater for non-potable applications.