

CASE STUDY



PROJECT WASTEWATER RECYCLING FOR CHICKEN PROCESSOR

PRODUCT Dissolved Air Floatation (DAF), Dewatering Screw Press (DSP), Membrane Bioreactor (MBR), Reverse Osmosis (BWRO)

INDUSTRY Food & Beverage

LOCATION Perth, Western Australia

BACKGROUND

The Perth facility of a major national chicken processing & food manufacturing business was restricted from increasing production capacity due to trade wastewater discharge restrictions set by their local authority, and odour issues from the local community. The site, which processes around 40,000 chickens per day, uses over 1.6ML/day for various processing and cleaning operations.

There were several drivers for this large, publicly significant project, including;

- **Sustainability** - Recycling water enables increased production with lower environmental impact.
- **Odour** - Underperformance of existing tradewaste treatment system led to community impacts the new system had to correct.
- **Compliance** - Limit on discharge to sewer (max 15L/s) was restricting ability to expand production.
- **Operating cost reduction** - improving waste discharge reduces costs and water recycling reduces potable water costs.

If the site could not improve the wastewater treatment facilities to deal with these challenges it would have to close and relocate the entire processing plant at a cost of hundreds of millions of dollars. Management elected to build a new plant rather than upgrade the existing to limit downtime and extend plant life.

Treatment was primarily targeting BOD & TSS to limit the load the public sewage treatment system, and lower disposal costs. As well as improving the quality of their effluent for discharge, the customer was also looking for water recycling solutions to reduce their significant scheme water consumption, environmental impact and associated costs.

MAK Water worked consultatively with the customer for several years in the leadup to the project. This method of working collaboratively with the client placed both MAK Water and the customer in an empowered position with deep knowledge of the customer's facility, their constrictions, available treatment technologies and their goals. This collaborative working arrangement allowed us to develop an effective, efficient and sustainable solution for their complex needs.

SOLUTION

Multi-process treatment plant comprising clarification, sludge dewatering & handling, wastewater treatment, filtration and brackish water reverse Osmosis (BWRO) solutions in a dedicated building with all associated tanks, pipework, PLC control, client systems integration, construction, commissioning and ongoing operational & technical support.

MAK Water continues to support the project with our [Facilities Management](#) service, where we provide site operators and 24/7 remote support to operate and maintain the plant.

MAK WATER KEY SOLUTIONS

- [DAF](#) 75m³/h; [DSP](#)-401; [MBR](#) 680m³/day; [BWRO](#) 476m³/day; bespoke chemical dosing and odour scrubbing systems
- Custom building to house the treatment plant
- Participation in community and government consultation
- Collaboration with WA Department of Water and Environmental Regulation and WA Water Corporation
- Smart instrumentation
- Tanks and pipework
- ClearAccess™ Remote Access
- Flexible commercial model to accommodate client budget



Aerial view of some tanks and the main plant building



Overhead view of treatment plant

- Factory built modules combined with on-site assembly for efficient installation
- Onsite plant commissioning
- Client plant familiarisation & operator training
- 24/7 Facilities Management support from MAK Water operational team
- Consultation to acquire Recycled Water Scheme Approval from the Western Australian Government
- Recycled water is used for poultry processing including:
 - Live bird receipt
 - Immersion wash and chilling
 - Neck and giblet chilling
 - Plant and equipment sanitation
 - Make-up water for WRTP treatment chemicals



DAF system with Polymer Preparation Systems (ASPs) in foreground



Reverse Osmosis (RO) skid & small chemical containers during construction

RESULTS AND BENEFITS

- **Sustainability.** Achieves requirements for compliant discharge and non-potable reuse, reducing potable water consumption.
- **Cost Reduction.** The SMART water solution saved our client from having to relocate and achieved operating cost reduction with reduced discharge and potable water cost.
- **Technical Support.** Expert advice and consultation with all parties throughout the process and ongoing plant service and maintenance by MAK Water
- **Bespoke solution.** Customer's constraints - footprint, budget, treatment efficacy, production interruptions, operating budgets etc. were all accounted for in the holistic solution.
- **Community buy-in.** Consultation process with all stakeholders; client, community, suppliers and government ensured a solid and accepted solution.
- **Government Approval.** - Plant received Recycled Water Scheme Approval from the WA Department of Health to reuse the recycled water in a wide range of non-potable applications.
- **Reliability.** MAK Water demonstrated the breadth & depth of capability to delivery a project of this complexity and also has track record working with the customer's other sites around Australia.