

Case Study

Advanced Bore Water Treatment for Winery Irrigation



The Problem

In viticulture, water quality directly affects both crop yield and product quality, especially in regions where irrigation is essential. A prominent winery in Victoria's Murray Valley was relying on a local aquifer to meet its irrigation and production needs, but variable water quality and rising operational risks were beginning to impact efficiency, plant health and compliance.

Key Issues Identified

High Total Dissolved Solids (TDS): Elevated levels (~550 ppm) reduced irrigation efficiency and posed a risk to long-term soil and vine health

Fluctuating Turbidity and Organic Content: Inconsistent feed water complicated treatment and filtration processes

High-Capacity Demand: The winery required a treatment system capable of handling large-scale irrigation volumes reliably

Regulatory Compliance: The system needed to align with Recycled Water Guidelines to ensure safe and sustainable agricultural reuse

To support ongoing production and future growth, the winery required a high-recovery, cost-effective water treatment system that could consistently deliver reliable, high-quality water year-round.

The Solution:

Waterform Technologies delivered a fully customised Barrier-FB Bore Water Treatment Plant, engineered to provide long term water security and operational resilience. Key features of the system included:

Pretreatment & Filtration:

- Filternox 300-micron automatic backwashing screen filter to remove coarse particulates.
- nextSand filtration system to capture fine sediments and remove heavy metals, ensuring improved downstream performance.

Reverse Osmosis (RO) System:

- Barrier-FB high-recovery RO plant designed to achieve 90% recovery through an efficient 3+1 multi-train configuration.
- Inline antiscalant dosing to maximise membrane longevity and performance.

Smart Automation & Monitoring:

- SCADA-integrated PLC control system for real-time monitoring and fully automated operations.
- iSiteControl remote monitoring enabling 24/7 performance tracking and proactive optimisation.

Infrastructure Enhancements:

- Installation of 375kL raw water storage tanks for consistent flow and buffering.
- Construction of evaporation ponds for environmentally responsible brine disposal.

The system was designed with modular scalability, allowing the winery to expand treatment capacity as operational demands grow.

The Outcome:

The Barrier-FB Bore Water Treatment Plant delivered substantial operational, environmental and economic benefits:

— High Quality Water Output:

Treated water consistently meets Recycled Water Guidelines, with significantly reduced Total Dissolved Solids (TDS) and turbidity. This ensures safe, effective irrigation and improved plant health.

— Increased Water Security:

The system delivers up to 16ML/day of treated water, reducing reliance on external sources and safeguarding operations during periods of scarcity.

— Cost & Operational Efficiency:

The high recovery RO process optimises water usage and cuts waste. Full automation has reduced manual intervention, minimising labour and maintenance costs.

— Environmental Sustainability:

The system ensures compliance with environmental regulations and supports the winery's broader sustainability goals, with a brine management strategy that protects surrounding ecosystems.

Through this innovative upgrade, the winery has secured a reliable, future ready water treatment solution that enhances operational resilience while supporting sustainable viticulture practices.



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