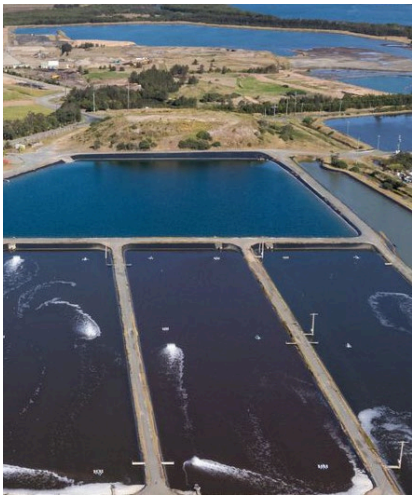
Aquaculture Water Reuse — OHX AOP Treatment

AusAOP Pty Ltd is a 100% Australian owned and operated company. Our products are manufactured by master boilermakers and electricians in Bundaberg, QLD using locally sourced products and strictly to Australian standards.



Overview

Aquaculture ponds generate large volumes of nutrient- and organic-rich wastewater. Many Australian pond-based aquaculture facilities, rely primarily on settlement ponds for wastewater management. While effective for solids settling, these systems do little to remove pathogens, dissolved organics, colour, odour, or microbial contaminants.

Our modular OHX Advanced Oxidation Process (AOP) system with polishing enables fish farms to reclaim a portion of pond water for internal reuse. This reduces fresh water extraction, supports stable pond operations, and improves sustainability metrics.

A single module of this modular system treats a 100 kL/day side-stream, allowing aquaculture farms to **reclaim ~33 million Litres of high-quality water per year**—without disrupting existing pond infrastructure.

Key Benefits

1. Immediate Operational Value

- Produces a reliable, clear water stream, oxygen rich stream for:
  - Pond top-up and stabilisation
  - Equipment and net washing
  - Landscape irrigation

- Farm process-water uses
- Reduces nutrient and organic load recirculating through ponds
- Enhances pond clarity and overall farm water stability
- Provides higher resistance to disease and pathogens
- Creates oxygen rich refugia and outflow point of treated water
- Reduces sludge buildup
- Reduces buildup of off-flavour compounds (e.g. Geosmin and MIB)

2. Estimated Financial Gains (33 ML/year Case)

- Treatment Capacity: 100 kL/day (33 ML/year)
- System CapEx: ~$180,000 (installed, skid mounted)
- Annual OpEx: ~$20,000/year

Annual Savings / Value:

- Fresh water replacement (33 ML × $2/kL): A$66,000
- Reduced discharge fees/levies: A$10,000
- Sustainability/brand value: A$5,000

Total Annual Benefit: $81,000

Net Annual Benefit (after OpEx): $61,000

Payback Period: ~3 years

10-Year Net Benefit: Over $600,000

Why 33 ML/year?

This 100 kL/day module is intentionally sized as a first-step, low-risk add-on. It fits within existing pond systems, requires no redesign, and is not complicated to finance. It demonstrates value quickly and can be expanded by adding more modules.

Technology Summary

Our OHX AOP breaks down COD/BOD and colour, eliminates blue-green algae, pathogens, viruses, odours and microbial contaminants, and improves biodegradability of dissolved organics. For a fish farm, lower BOD generally results in higher dissolved oxygen which leads to healthier, faster growing fish.

Further polishing removes biodegradable byproducts and stabilises dissolved organic carbon (DOC), producing clear, low-odour water. Less remaining microbes results in lower buildup of Geosmin, MIB and algal metabolites which can help to shorten depuration times and improve fish flavour.

Drought-Period Wins (Resilience Benefits)

Drought increases pressure on freshwater sources, extraction licenses, and pumping costs. Our OHX AOP provides:

1. Water Security

- Reliable access to 33 ML/year of reclaimed water
- Reduced dependence on external intake sources

2. Operational Continuity

- Maintains ability to refill ponds during dry periods
- Stabilises water quality even during low-flow or zero-flow river conditions

3. Enhanced Production Stability

- Cleaner top-up water reduces stress on fish
- Helps mitigate harmful algal bloom conditions
- Reduces water quality swings that affect feeding and growth

4. Strong Drought-Year ROI

If freshwater costs rise (e.g., due to pumping restrictions):

- Reclaimed water value can double or triple
- Payback can shorten to 1–2 years

Operational Fit

1. Pump side-stream from settlement ponds

2. Pre-filtration removes suspended solids

3. OHX AOP oxidises refractory organics and metabolites

4. Integrated polishing system stabilises treated water

5. Treated water stored in a reuse tank for operations

6. Overflow directed to irrigation or controlled discharge

Modular Expansion

Start with 100 kL/day, then scale:

- 200 kL/day → 66 ML/year
- 300 kL/day → 100 ML/year
- 500 kL/day → 165 ML/year

Summary

- Produces valuable reusable water from pond waste streams
- Improves operational water quality and consistency
- Reduces discharge load and regulatory exposure
- Strong financial justification with multi-year ROI
- Enhances drought resilience and production stability
- Modular, low-risk adoption path

Next Steps

We can prepare a site-specific ROI assessment using your actual water intake volumes and costs, pond turnover rates, COD/BOD, colour, and organic loading data, reuse priorities and farm workflows.

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