



PUBLIC WATER DIVISION

Rethinking Water Security
Through Partnerships

A vertical photograph on the left side of the page showing industrial water treatment equipment. It includes large black cylindrical tanks, white flexible hoses, and various pipes and valves. The background shows a corrugated metal roof structure.

TABLE OF CONTENTS

03	Background
06	Bioremediation Chemicals
07	Disinfection: Chlorine Dioxide & Maxadox ⁵
08	Decentralised Filtration Technologies
09	Dosing Units & Monitoring Equipment
10	Advanced Water Technologies – RO, UF, Desalination, & AOP
11	Technologies
12	After-Care Services (O&M)
13	AECI Water Projects

AECI PUBLIC WATER

AECI Public Water team consists of multi-disciplinary specialists with over 100+ years combined industry experience.

Background

Supports municipalities, water boards, public utilities, and government infrastructure projects.

Extensive experience in potable water, wastewater, industrial effluent, and decentralised treatment systems.

Integrates chemical innovations, mechanical engineering solutions, and digital water technologies.

Mission Statement

- ✓ Provide innovative and sustainable water and wastewater treatment solutions
- ✓ Ensure safe and reliable drinking water
- ✓ Safeguard environment
- ✓ Uplift and support communities across Africa

Our Approach

- ✓ Client-Centred: Customised solutions for our clients
- ✓ Multi-Technology Integration
- ✓ Sustainability-Focused
- ✓ Rapid Deployment
- ✓ Lifecycle Partnership

WHAT WE OFFER

Desalination Technologies



Municipal Solutions



Industrial Wastewater



Process Chemicals



Utility Solutions



Zero Liquid Discharge



Monitoring and Control Solutions



Integrated/Customised Equipment and Engineering Projects/ Solutions

CPI and Additives

Cooling Water Treatment

Total Systems Management

Membrane Treatment and Supply

Solid Liquid Separation Solutions

Upstream and HPI

Boiler System Treatment



BIOREMEDIATION CHEMICALS:

Overview

Enhances biological degradation in wastewater, lagoons, and polluted environments.

Reduces sludge build-up, odours, and organic loading

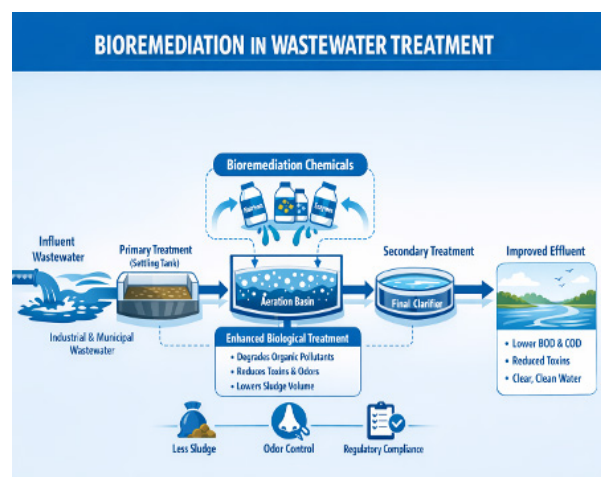
Technical Details

Utilises specialised microbial consortia targeting:

- ✓ Fats, oils, and grease (FOG)
- ✓ Hydrocarbons
- ✓ High-COD industrial effluent

Improves nitrification, denitrification, and anaerobic digestion

Restores biological stability in underperforming wastewater plants



DISINFECTION: CHLORINE DIOXIDE & MAXADOX⁵

Chlorine Dioxide (ClO₂)

Selective oxidant effective at low doses

Kills bacteria, viruses, and protozoa

Removes iron, manganese, and biofilm

Low DBP formation
compared to chlorine

Maxadox⁵

Stabilised disinfectant

Long-lasting residual in bulk water and
distribution networks

Ideal for potable water, wastewater
polishing, and cooling water



DECENTRALISED FILTRATION TECHNOLOGIES:

Applications

Rural communities, disaster relief, small municipal schemes

Community camps, schools, clinics, and remote settlements

Technical Features

Multi-barrier treatment:

- ✓ Multimedia filtration
- ✓ Activated carbon
- ✓ Zeolite filtration media

Containerised or skid-mounted



DOSING UNITS & MONITORING EQUIPMENT:

Mechanical Design

Modular, pre-assembled dosing systems

Precision dosing pumps
(diaphragm/peristaltic)

HDPE or SS chemical storage tanks

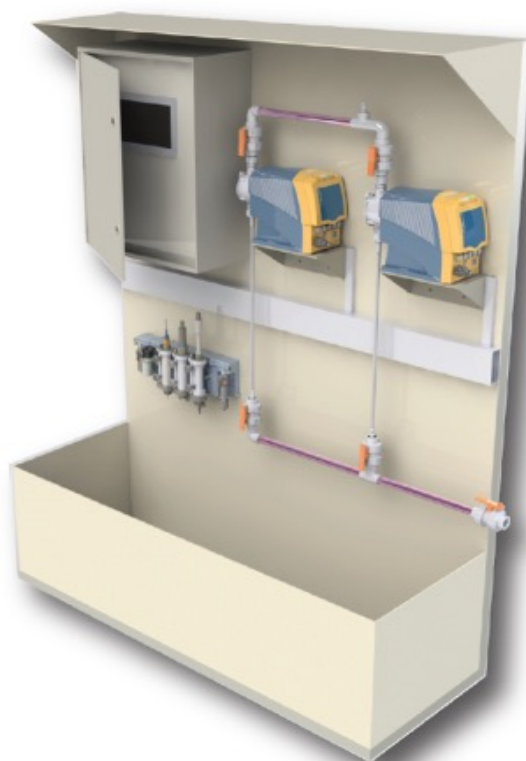
Instrumentation

Smart sensors (pH, turbidity, ORP, conductivity, chlorine, flow, pressure)

Integration with PLC/SCADA or telemetry enables automated control and links to AECL digital platforms

Auto-dosing optimisation adjusts chemical dosing automatically based on sensor data

Reduces chemical usage, improves efficiency, and minimises human error



ADVANCED WATER TECHNOLOGIES – RO, UF & DESALINATION:

UF

Removes suspended solids, bacteria, viruses, and colloids

Minimises fouling and extends RO membrane life

RO

Semipermeable membranes remove dissolved salts, heavy metals, and organics

High recovery rates and efficient desalination performance

Operational advantages

Modular, skid-mounted design enables scalable and rapid deployment

Energy-efficient pumps and high-pressure operation reduce operational costs

Automated cleaning cycles reduce downtime and maintenance labour



TECHNOLOGIES



POTABLE WATER TREATMENT BLUE DROP

- ✓ Ultrafiltration
- ✓ Softening
- ✓ Clarifiers or Lamella Settlers
- ✓ Cartridge Filters
- ✓ Dissolved Air Flotation
- ✓ Remineralisation
- ✓ Submerged UF



WASTEWATER TREATMENT GREEN DROP

- ✓ Membrane Bioreactor
- ✓ Moving Bed Biofilm Reactor
- ✓ Trickling Filters
- ✓ Sludge Thickeners
- ✓ Aeration Tanks
- ✓ Membrane Aerated Biofilm Reactor



AQUA ADVANCED

- ✓ Leak Detectors
- ✓ Address Non-Revenue Water (NRW) Challenges
- ✓ Biofilm Sensor



REVERSE OSMOSIS

- ✓ Sea Water Reverse Osmosis (SWRO)
- ✓ Brackish Water
- ✓ Low & High-Recovery
- ✓ Modular RO Units



DISINFECTION TECHNOLOGY

- ✓ Ozone
- ✓ Chlorine Dioxide
- ✓ Chlorine Gas
- ✓ HTH
- ✓ Non-Oxidising Biocides
- ✓ Sodium Hypochlorite

OPERATIONS & MAINTENANCE

AFTER-CARE SERVICES (OPERATION & MAINTENANCE):

O&M Contract Scope

Daily plant operation, optimisation, and compliance monitoring

Membrane cleaning & maintenance of chemical dosing systems

Monthly reporting, lab testing, and & SLA-driven performance KPIs

O&M Contract Scope

Skilled technicians and operators

24/7 technical support and remote monitoring

Ensures long-term plant reliability and performance





AECI WATER SUSTAINABILITY PROJECTS

5 MLD WATER TREATMENT PLANTS:

WASCO MAPUTSOE

River water abstraction

Pre-settling, conventional clarification, filtration, chlorine gas disinfection

Plant was commissioned and handed over to the client

AFRO ASIA

River water abstraction

Pre-settling, conventional clarification, filtration, chlorine gas disinfection

Mechanical, electrical, instrumentation installation complete, awaiting commissioning



ALTERNATIVE WATER SOURCE TREATMENT - AECI MINING:

THE CHALLENGE

AECI's goal is to reduce / replace 2 billion litres of potable water in the private industrial sector in five years.

Availability of three water sources, namely: PSE water (process sewage effluent), effluent water from the site run-off, and cooling tower blow-down from two cooling towers on site.

THE SOLUTION

Due to these streams having different chemistries, different technologies were utilised to ensure proper treatment and long-term sustainability.

All streams are treated to the correct specification for re-use as feed to cooling towers and boiler systems.

Technologies include DAF/ GAC, UF tolerating up to 5ppm oil; RO with our ZeeWeed 500D® ensuring a particulate-free effluent.

THE CONCLUSION

AECI WATER designed, built, supplied and are operating a water-treatment plant that will produce 60 m³/hr of treated water which will be fed to the cooling towers and demin plant for operation of the boilers.

THE RETURN ON INVESTMENT

A R30-million state-of-the-art water-treatment plant designed to save the city 400 million litres of potable water per year, which is sufficient for 4600 people annually!



BOREHOLE WATER TREATMENT:

THE CHALLENGE

AECI's goal is to reduce / replace 2 billion litres of potable water in the private industrial sector in five years.

THE SOLUTION

Borehole water is upgraded to feed 3 x 20 ton and 2 x 8 ton boilers. The AECI WATER treatment plant produces on average 11 m³/hour of good quality water. The treated borehole water is then used directly into the boilers as feed water, eliminating the use of softener.

THE CONCLUSION

Borehole water treatment for boilers, saving close to 100 million litres per annum.

Design 16 m³/hr

Positive impact on boiler operation and carbon footprint by enabling a reduction in CO₂ emissions due to better feed-water quality.

THE RETURN ON INVESTMENT

Increased cycles of concentration in boiler, leading to a saving of water, fuel and reducing air emissions from the boiler stacks.

Sustainable operation.

AECI water provides not just sustainable water, but also solutions yielding benefits on air quality compliance and improved energy efficiency to a key food & beverage customer.



CIRCULAR INDUSTRIAL SOLUTIONS

THE CHALLENGE

AECI's goal is to reduce/replace 2 billion litres of potable water in the private industrial sector in five years.

Alternative water solution:
RO plant operational.

Managing high dissolved iron and salt content

THE SOLUTION

STEP 1: Iron removal with DAF

STEP 2: AFM filtration for suspended solids removal

STEP 3: GAC filtration for polishing

STEP 4: RO for desalination

STEP 5: Calcite filter for re-mineralisation

THE CONCLUSION

Reducing potable water usage by 30%. Target to have 100% potable water replaced with RO water provided water can be used in production.

Plant capacity is 6 m³/h product water

THE RETURN ON INVESTMENT

A water-treatment plant designed to supply water from an onsite borehole, reducing potable water demand by almost 24 million litres per year.

Water re-use project for AECI



DESALINATION:

**ST HELENA BAY (864 000 L/D)
and AMAWANDLE PELAGIC
(624 000 L/D)**

Beach wells water abstraction

Pre-oxidation, containerised filtration,
containerized high pressure reverse
osmosis, energy recovery device

Plant was commissioned and handed
over to the respective clients



CONTAINERISED SOLUTIONS:

HARA POKOLANA SPORTS COMPLEX 1 MLD

River water abstraction

Pre-oxidation, containerised filtration,
containerized UV and dosing station

Plant was commissioned and
handed over



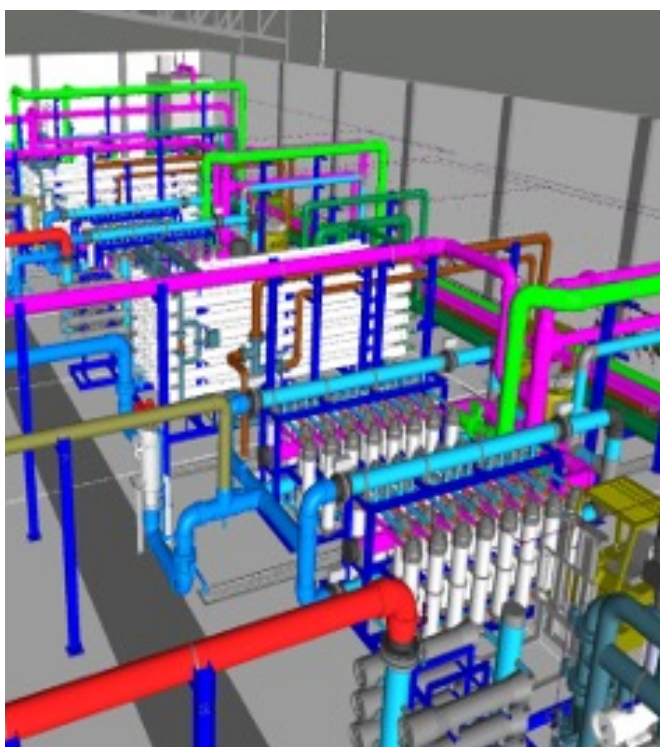
26 MLD UF & RO:

MZANSI WATER

Extension to a conventional WTP

4 x UF trains (28 modules per train),
4 x RO trains (3 stage, 42 pressure
vessels per train), ancillary dosing
stations

Mechanical, instrumentation
installation complete, awaiting
commissioning



good chemistry

