



Structuring the Future

Water
Capability



*Trusted engineering solutions for
water infrastructure*



ENGINEERING RESILIENT WATER INFRASTRUCTURE FOR COMMUNITIES AND INDUSTRY

Our Water and Sanitation team delivers integrated water engineering solutions across the full project life cycle, from investigation and planning through to design, implementation, and close out. Our expertise spans municipal water infrastructure, systems analysis, water management, and technical audits, supported by advanced design and analytical tools.

In an increasingly resource constrained and climate challenged environment, water engineering demands strategic, sustainable, and resilient solutions.

MPAMOT partners with municipalities, industries, and water institutions to design, manage, and optimise high performance water systems covering treatment, bulk supply, and reticulation networks that respond to today's challenges while safeguarding water resources for future generations.

MPAMOT's water engineering expertise ensures water resources are managed responsibly and efficiently, supporting both human needs and environmental sustainability.

MPAMOT'S EXPERTISE



WATER TREATMENT

- Feasibility studies
- Process design
- Civil, Structural design
- Mechanical and Electrical design
- Condition assessments





WASTEWATER TREATMENT

- Feasibility studies
- Process design
- Civil, Structural design
- Mechanical and Electrical design
- Condition assessments
- Process optimisation
- Site supervision
- BIOWIN process modelling
- Faecal sludge drying



BULK WATER

- Feasibility studies
- Bulk water pipelines
- Pumping stations
- Reservoirs
- River intakes
- Abstraction weirs
- Chlorine decay analysis



WATER RESOURCES

- Water resource investigation
- Stormwater master planning and management strategies
- Bulk water infrastructure planning
- Flood line analysis



ADDITIONAL CAPABILITIES

- Water and sewer reticulation networks design
- Design reviews and technical support to transaction advisors
- Design reviews and technical support to developers implementing turnkey or design-build projects



WATER TREATMENT

MPAMOT's water treatment expertise focuses on the planning, design, and management of water treatment infrastructure that ensures the reliable provision of safe, clean drinking water. Our engineers analyse key water quality parameters, including chemical composition and microbial contaminants to assess contamination levels and develop appropriate, effective treatment solutions.

Our team designs and oversees the implementation of comprehensive water treatment systems incorporating processes such as coagulation, flocculation, sedimentation, filtration, disinfection, and desalination. By applying proven engineering principles and advanced design tools, MPAMOT delivers compliant, resilient, and sustainable water treatment solutions that protect public health while safeguarding water resources for future generations.

JOZINI REGIONAL WATER TREATMENT WORKS (40ML/DAY)

The Jozini Regional Water Treatment Works (RWTW) was intended to be constructed in two stages with the initial stage providing for a treatment capacity of 40ML/day. The site allowed for the doubling of this capacity to 80ML/day. The raw water supply is extracted directly from the Pongolapoort Dam and conveyed to the RWTW by means of an 800 mm diameter 2,9 km gravity main. The RWTW process configuration for the initial 40ML/d allows for four 10 ML/d modules with an inlet works to facilitate chemical dosing, stabilisation and coagulation.

Each module consists of a flocculation channel, rectangular horizontal-flow sedimentation tank and two rapid gravity sand filters based on the principle of declining rate filtration. Filtered water is transferred to a clearwater tank which acts as a chlorine contact tank, and includes a constant head compartment for filter backwashing and emergency storage.



Treated water is pumped from a high lift pump station to a command reservoir via an 800 mm diameter 2.85 km rising main. This project provides clean water to some 400,000 residents in an area without any municipal services.

Location	Jozini, KZN
Client Name	Mhlathuze Water
Total Value Of Project	R180 million (2015)
Expertise Provided	• Business plan for funding • Process design • Civil and structural design • LV electrical design • Contract administration

METOLONG WATER TREATMENT WORKS (95ML/DAY)

MPAMOT as Lead Consultant in a joint venture was responsible for the design of the 95 ML/d Metolong Water Treatment Works which incorporates aeration cascade and coagulation and flocculation. The plant was further designed with three horizontal flow sedimentation tanks and 6 declining-rate dual media filters.

The remainder of the design allowed for a clearwater tank, chlorination facility, high lift pumping station, chemical building, administration building, mechanical and electrical work shops, sludge lagoons, roadworks, water and sewage infrastructure, stormwater and electrical supply and substations, 600m raw water rising main and 3000m rising main from the clearwater tank to the command reservoir.

As Consultant to CMC/Botjheng JV, the Design-Build Contractor, our responsibilities included preparation of the preliminary design document for inclusion in the technical bid submission, provision of the bill of quantities for the financial bid submission, production of the preliminary design report and detailed design of all components.

The facility supplies potable water to industries and domestic users in Maseru, Mazenod, Roma, and Morija.

Location	Metolong Dam, Lesotho
Client Name	Millennium Challenge Account (MCA)
Total Value Of Project	USD 50 million
Expertise Provided	• Project Management • Process design • Civil and structural design • LV electrical design





WASTEWATER TREATMENT

Wastewater engineering is a critical component of sustainable infrastructure development and public health protection. Our wastewater engineering capability focuses on the planning, design, and management of wastewater and sanitation systems that respond to community needs while ensuring the safe collection, treatment, and disposal of effluent.

Our engineers specialise in the design and optimisation of wastewater treatment and sewage systems serving residential, industrial, and commercial developments. By delivering efficient, compliant, and resilient wastewater infrastructure, MPAMOT supports public health, enables sustainable development, and minimises adverse environmental impacts.

The projects below exemplify MPAMOT's leadership and technical excellence in this discipline:

FISANTEKRAAL WASTEWATER TREATMENT WORKS (24ML/DAY)

The Fisantekraal Wastewater Treatment Works (WWTW) Phase1 project was to design a 24ML/day WWTW. The WTW was necessary to unlock development in the catchment area. The following infrastructure was provided as part of the facility:

- Inlet works with automatic screens and grit removal
- Odor control
- Biological treatment reactors
- Secondary settling tanks
- Sludge thickening and dewatering
- Maturation ponds
- Disinfection and effluent discharge
- Offices and workshops
- Electrical supply, networks, motor control centres and control panels
- Instrumentation and SCADA
- Access roads, services, internal roads and drainage



For this project MPAMOT was in a joint venture with Atana (formerly SSI)

Location	Fisantekraal, Cape Town
Client Name	City of Cape Town
Total Value Of Project	R125 million
Expertise Provided	• Civil Engineering • Structural engineering • Electrical engineering • Mechanical Engineering • Contract administration

SAINT HELENA ISLAND WASTEWATER PROJECT

MPAMOT was appointed by the St Helena Government to deliver design and construction supervision services for a new wastewater system on St Helena Island, focusing on Jamestown, Half Tree Hollow (HTH), and Jamestown Wharf. This initiative forms part of the Economic Development Investment Programme (EDIP).

Untreated and unscreened sewage from Jamestown was discharged directly into the ocean. This practice posed significant risks to the surrounding marine environment. A 2019 study identified elevated levels of harmful bacteria and ammonium near the outfall, underscoring serious public health and environmental concerns.

In HTH, sewage was routed to six separate septic tanks before being discharged above ground over nearby cliffs. These tanks only provided primary treatment and fell short of EU and UK effluent standards. The system was further undermined by excess fats, oils, and grease (FOG) accumulation, hydraulic overloading from roof runoff, and ageing, leaking infrastructure. Foul odours were a frequent complaint from residents. The existing arrangement presented clear health hazards and demanded immediate intervention.

MPAMOT proposed and designed a wastewater treatment plant for each location to effectively treat the sewage to acceptable discharge standards. In addition, a bypass mechanism was designed at each plant to bypass excess stormflows for protection of the biological processes.



Location	Jamestown and Half Tree Hollow; Saint Helena Island
Client Name	Saint Helena Government
Total Value Of Project	GBP 1.3 million (estimate)
Expertise Provided	• Environmental assessments • Planning approval • Process design • Civil and structural design • LV electrical design



KRAAIFONTEIN WWTW UPGRADES

The scope of work undertaken was to design upgrades required at Kraaifontein WWTW to eliminate bottle necks and improve performance. The upgrade incorporated the following facilities:

- New inlet works with automatic screens and grit removal
- Maturation ponds bypass pump station (625 l/s capacity) and 600 mm rising main
- Odor control
- A system to enable the emptying and cleaning of the primary sedimentation tanks by discharging raw sewage directly to the activated sludge plant
- Electrical supply, networks, motor control centres and control panels associated with the inlet works and bypass pumpstation
- Instrumentation and centralised SCADA which incorporates both the new and existing facilities
- Access roads, services and drainage



Location	Kraaifontein, Cape Town
Client Name	City of Cape Town
Total Value Of Project	R30 million
Expertise Provided	• Civil Engineering • Structural engineering • Electrical engineering • Contract administration





BULK WATER

MPAMOT delivers large scale bulk water infrastructure solutions that support the storage, treatment, and distribution of water to municipalities, commercial developments, industrial zones, and agricultural areas. Our team plays a critical role in improving reliable access to water, particularly within water stressed and underserved communities.

From township developments to regional and provincial water schemes, we design and implement resilient, safe, and efficient bulk water systems that prioritise long term operability. Our expertise across regional supply schemes and industrial and agricultural networks enables infrastructure that supports economic growth while strengthening water security across urban and rural South Africa. Our expertise in this category is demonstrated through the successful delivery of the following projects:



THE BOTSWANA NORTH SOUTH CARRIER 2.1

PROJECT DESCRIPTION

Unlocking the potential of the dry southern parts of Botswana requires water for mining, industries, and potable consumption. The North South Carrier pipeline transports water from the northern part of the country to the south.

To augment the supply a new pipeline was constructed next to the existing pipeline to increase the capacity and reliability of supply.

The following structures were built as part of the project:-

- 80km of 1200 diameter steel pipeline
- Various chambers
- Access roads and stream crossings
- Pumping station (1,68 m3/s)
- Balancing tank
- 24,5 Ml Break pressure tank
- Surge protection

Location	Botswana
Client Name	CWJV (CCCC – WBHO)
Total Value Of Project	R1.5 billion
Expertise Provided	• Civil Engineering • Structural Engineering • Mechanical Engineering • Electrical engineering



MTHONJANENI SSA2 BULK WATER SUPPLY

PROJECT DESCRIPTION

The project entailed the feasibility study, funding application, design and contract administration of bulk water infrastructure to Mthonjaneni Ward 5. Infrastructure planned for the project included the following:

- Reservoirs: 1 x 2.5ML, 1 x 2ML, 4 x 0.5ML
- Pump Stations: 2
- Bulk Gravity Mains: 22km ranging between 150Ø to 400Ø
- Bulk Rising Mains: 4.6km ranging between 200Ø to 400Ø

Of the above infrastructure Phase 1, to the value of R45 million, has been constructed under supervision of MPAMOT.

Location	Melmoth KZN
Client Name	King Cetshwayo District Municipality
Total Value Of Project	R600 million (estimate)
Expertise Provided	• Civil Engineering • Structural Engineering • Mechanical Engineering • Electrical Engineering • Contract administration • Site supervision



SAPPI SAICCOR WEIR

The Sappi Saiccor Mill at Umkomaas, KwaZulu-Natal, depends on the uMkhomazi River weir as its primary water abstraction infrastructure. The weir is critical to the mill's continued operation. Without a functional weir, the pump station cannot maintain the upstream head required to abstract the volumes of water needed for production.

The existing weir sustained significant structural damage during the flooding events of April 2022. Temporary repair works were implemented in 2024 after the existing lateral support measures were found to be compromised and capping materials mostly stripped away. However, this temporary structure is not designed to withstand a major flood event.

MPAMOT Africa (Pty) Ltd (MPAMOT) was appointed by Sappi Ltd to undertake a concept design for the weir reinstatement that could withstand 1:100 year flood event.



Location	Sappi Saiccor Mill, Umkomaas, KZN
Client Name	Sappi Southern Africa Ltd
Total Value Of Project	R180 million (estimate)
Expertise Provided	• Flood hydrology • Hydrodynamic modelling • CFD modelling of hydraulic forces • Geotechnical investigations • Structural engineering



As the largest women-owned engineering, development and advisory consulting practice on the African continent, MPAMOT delivers multidisciplinary services across Infrastructure, Renewable Energy, Water, Advisory, Transportation and Power. Inspired by nature and the people we serve, we turn vision into impact—shaping a future defined by innovation, resilience, and meaningful progress.



CONTACT US

For more detailed information on the projects featured in this brochure or to discuss how MPAMOT can support your projects related to our Water capabilities, contact:

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