

**C3.1: SCOPE OF WORKS****STATUS**

In the event of any discrepancy between the Scope of Work and any part of the SANS 1200 Standardized Specifications, the Bill of Quantities or the Drawings, the Scope of Work shall take precedence and prevail in the Contract.

C3.1.1 Overview of the Works

The Works comprise the construction, installation, testing and commissioning of a bulk water abstraction, treatment and storage system, including but not limited to the following:

- Construction of a new 11 ML/day raw water pump station at Rust De Winter Dam, complete with all associated civil, structural, mechanical, electrical, instrumentation and control work.
- Supply, installation and commissioning of pumps with Variable Speed Drives (VSDs) designed for a maximum pumping capacity of 11 ML/day, controlled to deliver an operational flow of approximately 7.28 ML/day.
- Construction of approximately 20 km of DN450 OPVC and steel rising main from the Rust De Winter Dam Pump Station to the proposed Water Treatment Works in Moretele, including all associated valves, fittings, chambers, thrust blocks, anchor blocks, air valves, scour valves, pipeline crossings and ancillary works.
- Construction and commissioning of a raw water storage tank at the proposed Water Treatment Works site in Moretele, including the tank foundation and associated civil and structural works, inlet and outlet pipework, overflow and scour arrangements, isolation valves, valve chambers, level control and instrumentation, access facilities, drainage and all other ancillary infrastructure required for a complete and operational raw water storage facility.
- Construction and commissioning of an 11 ML/day Water Treatment Works (WTW) in Moretele, including all treatment process units, buildings, process and interconnecting pipework, mechanical and electrical installations, instrumentation, control systems and associated infrastructure.
- Construction and commissioning of an 11.5 ML reinforced concrete Command Reservoir at Moretele, including inlet and outlet pipework, overflow and scour systems, valve chambers, control equipment and associated civil and structural works.
- Construction of staff accommodation, including associated buildings, internal services, water supply, sewer reticulation, electrical reticulation, access roads, fencing and ancillary infrastructure.
- Construction of all associated site infrastructure and ancillary works, including access roads, stormwater drainage, security fencing and gates, site services, electrical reticulation, lighting, communication systems and other infrastructure required for the successful operation and maintenance of the facilities.
- Testing, flushing, disinfection, commissioning and performance verification of the raw water abstraction, rising main, raw water storage tank, Water Treatment Works and Command Reservoir.
- Testing, commissioning and successful operation of the complete bulk water supply system, including demonstration of the required operational capacity and integration of all mechanical, electrical, instrumentation, control and telemetry systems.
- Submission of as-built drawings, operation and maintenance manuals, equipment schedules, test certificates, commissioning records, training of the Employer's personnel and all other documentation required for Practical Completion.

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C3.1.2 Extent of the Works

The Scope of Work envisaged to be carried out under this Contract is summarised as follows:

Raw Water Abstraction and Pump Station

Construction and commissioning of the raw water abstraction and pumping facilities comprising:

- Construction of an **11 ML/day raw water pump station** at Rust De Winter Dam.
- Installation of raw water pumps complete with Variable Speed Drives (VSDs) to regulate the pumping rate to an operational capacity of approximately **7.28 ML/day**.
- Construction of a raw water storage tank at the Water Treatment Works (WTW) site, including all associated civil, structural, inlet and outlet pipework, overflow, scour, level control, valves, instrumentation and access facilities.
- Construction of pump station buildings, pump chambers, pipe galleries and associated civil structures.
- Installation of all mechanical pipework, valves, fittings, manifolds and associated equipment.
- Installation of electrical reticulation, transformers, switchgear, Motor Control Centres (MCCs), standby power provisions where applicable, instrumentation, telemetry and SCADA systems.
- Construction of all associated access roads, drainage works, security fencing and site services.

Raw Water Storage Tank

Construction and commissioning of a raw water storage tank at the proposed Water Treatment Works (WTW) site in Moretele, including:

- Tank foundations and associated civil and structural works.
- Inlet, outlet, overflow and scour pipework, including valves, fittings and chambers.
- Level control, instrumentation, telemetry and SCADA integration.
- Access platforms, ladders, walkways, drainage and safety facilities.
- Testing, flushing, disinfection and commissioning of the tank and associated pipework.

Bulk Rising Main

Construction and commissioning of the bulk raw water rising main comprising:

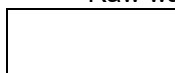
- Construction of approximately 20 km of DN450 OPVC and steel rising main between Rust De Winter Dam and the Moretele Water Treatment Works.
- Installation of all associated air valves, scour valves, isolating valves, valve chambers and pipeline markers.
- Construction of thrust blocks, anchor blocks and concrete encasement where required.
- Construction of road, river, railway and utility crossings where applicable.
- Testing, pressure testing, flushing, disinfection and commissioning of the complete pipeline system.

Water Treatment Works

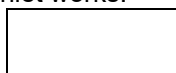
Construction and commissioning of the 11 ML/day Water Treatment Works including all civil, structural, mechanical, electrical and process components necessary for the treatment of raw water to potable water standards.

The Water Treatment Works shall include, but not be limited to:

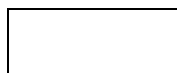
- Raw water inlet works.



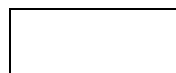
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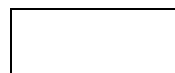
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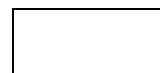
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- Chemical dosing facilities.
- Mixing and flocculation facilities.
- Clarification units.
- Filtration systems.
- Disinfection facilities.
- Clear water storage where applicable.
- Sludge handling and disposal facilities.
- Process pipework and valves.
- Administration, laboratory and operational buildings.
- Electrical reticulation.
- Instrumentation, telemetry, SCADA and process control systems.
- Internal roads, stormwater drainage, fencing, lighting and landscaping.

Command Reservoir

Construction and commissioning of the following storage infrastructure:

- One (1) 11.5 ML reinforced concrete Command Reservoir at Moretele.
- Construction of inlet, outlet, overflow and scour pipework.
- Construction of valve chambers and associated pipework.
- Installation of level monitoring instrumentation and control systems.
- Construction of access roads, security fencing and associated site works.

Staff Accommodation

Construction of staff accommodation facilities including:

- Residential accommodation units.
- Administration and support facilities where applicable.
- Internal water reticulation.
- Sewer reticulation and sanitation infrastructure.
- Electrical reticulation and lighting.
- Access roads, parking areas and walkways.
- Boundary fencing, gates and security infrastructure.
- Stormwater drainage and site services.
- Landscaping and site reinstatement.

Mechanical, Electrical, Instrumentation and Control Works

The Works include the complete supply, installation, testing and commissioning of all mechanical, electrical and control systems associated with the project, including:

- Pumps and associated mechanical equipment.
- Pipework, valves and fittings.
- Electrical distribution systems.

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- Motor Control Centres (MCCs).
- Variable Speed Drives (VSDs).
- Standby power interfaces where applicable.
- Instrumentation and telemetry systems.
- SCADA and process control systems.
- Earthing and lightning protection systems.
- Site lighting and security systems.

Ancillary Works

The Works further include all associated ancillary infrastructure and activities necessary for the successful completion of the Contract, including but not limited to:

- Site establishment and temporary works.
- Clearing and grubbing.
- Earthworks, excavation, trenching and backfilling.
- Concrete works.
- Structural steelwork.
- Mechanical and electrical installations.
- Stormwater drainage.
- Utility relocations and service crossings.
- Security fencing and gates.
- Testing, pressure testing, flushing and disinfection.
- Functional testing and commissioning of the pump station, rising main, Water Treatment Works and Command Reservoir.
- Training of Employer's operating personnel.
- Site reinstatement and environmental rehabilitation.
- Preparation and submission of as-built drawings.
- Operation and Maintenance Manuals.
- All documentation required for Practical Completion.

The Contract comprises the provision of all labour, materials, plant, equipment, supervision and all other resources necessary for the construction, testing, commissioning and successful completion of the Works

a) General

The Contractor shall provide all labour, plant, equipment, materials, supervision and incidentals necessary for the proper execution and completion of the Works, including but not limited to the following:

- Site establishment, mobilisation, maintenance of the site establishment throughout the Contract Period, and demobilisation upon completion of the Works.
- Provision and maintenance of temporary facilities, offices, storage areas, sanitation facilities, utilities, access arrangements, security and all other temporary works required for the execution of the Contract.
- Compliance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Construction Regulations, 2014, including the preparation, implementation and maintenance of all statutory health, safety and environmental requirements.

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- Overall management, supervision and administration of the Contract, including the provision of suitably qualified supervisory personnel and site management throughout the duration of the Works.
- Protection of existing services, public infrastructure, adjacent properties and the environment during construction.
- Traffic accommodation, access management and the implementation of all temporary traffic control measures where required.
- Housekeeping, environmental protection, waste management and rehabilitation of all disturbed areas upon completion of the Works.
- Preparation and submission of all documentation required under the Contract, including work programmes, method statements, quality control records, health and safety documentation, progress reports and as-built records.

1. ENGINEERING

1.1. DESIGN SERVICES AND ACTIVITY MATRIX

Works designed by, per design stage:

Description	Responsibility
Design of Works (All stages)	Employer's Agent
Concept, feasibility and overall process	Employer
Basic Engineering and detail layouts to tender stage	Employer's Agent
Final Design of Works	Employer's Agent
Final Design to approved for construction stage	Employer
Preparation of tender documentation	Employer's Agent
Placement of Advertisements in newspapers	Employer
Application of Eskom connection point	Employer / Employer's Agent
Payment of Eskom connection fees	Employer
Appointment of sub-contractors	Contractor
Supervision	Employer's Agent
Preparation of as-built drawings	Contractor / Employer's Agent
Completion certificate	Employer's Agent / Employer / Contractor

1.2. EMPLOYER'S DESIGN

The permanent Works have been designed by the Employer's Agent. The scope, extent and technical requirements of the Works are defined in the Contract Drawings, Specifications, Bills of Quantities and other Contract Documents.

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The Contractor shall execute, complete, test and commission the Works in strict accordance with the approved Drawings, Specifications and the requirements of the Contract. Any discrepancies identified between the Drawings, Specifications or other Contract Documents shall be referred to the Employer's Agent for clarification prior to the execution of the affected Works. No deviation from the approved design shall be permitted without the prior written approval of the Employer's Agent.

1.3. DESIGN BRIEF (CONTRACTORS DESIGN)

The Contractor shall be responsible for the design, construction, operation, maintenance and removal of all temporary works required for the execution and completion of the Works, including, but not limited to:

- scaffolding;
- formwork and falsework;
- shoring, sheeting and trench support systems;
- temporary dewatering systems;
- temporary access roads and working platforms;
- temporary drainage and diversions;
- any other temporary works necessary for the safe execution of the Contract.

All temporary works shall be designed by, or under the supervision of, a suitably qualified and competent person and shall comply with the Occupational Health and Safety Act, the Construction Regulations, applicable SANS standards and the Contract Specifications.

Where required by the Contract, the Contractor shall submit temporary works drawings, calculations and method statements to the Employer's Agent for review prior to implementation.

The Contractor shall remain solely responsible for the adequacy, safety, stability and performance of all temporary works. Any review or acceptance by the Employer's Agent shall not relieve the Contractor of this responsibility.

1.4. DRAWINGS

The Employer's Agent shall provide the Contractor with one (1) complete set of Contract Drawings for the exclusive purpose of recording as-built information, in addition to the construction drawings issued for the execution of the Works.

The Contractor shall maintain the as-built drawings throughout the duration of the Contract by accurately recording all deviations from the approved Contract Drawings, including, but not limited to, changes in dimensions, levels, coordinates, alignments, locations, invert levels, pipe lengths, structures, services and any other permanent works constructed.

The as-built drawings shall be updated progressively as the Works proceed and shall be submitted to the Employer's Agent for review upon completion of the Works. The Contractor shall also submit the final as-built drawings in both hard copy and electronic format, where required by the Contract.

The issue of the Certificate of Practical Completion shall be subject to the submission and acceptance of the complete and accurate as-built drawings and all associated as-built information by the Employer's Agent.

In accordance with Clause 5.9 of the General Conditions of Contract (GCC) 2015 (3rd Edition), the Employer's Agent may issue additional drawings, revised drawings, details and instructions to the

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Contractor from time to time as may be necessary for the proper execution and completion of the Works. The Contractor shall execute the Works in accordance with the latest approved drawings and instructions issued by the Employer's Agent.

Where discrepancies or inconsistencies are identified between the Contract Drawings, Specifications or other Contract Documents, the Contractor shall immediately notify the Employer's Agent and shall not proceed with the affected work until written clarification has been received.

1.5. DESIGN PROCEDURES

The Contractor shall submit all temporary works designs, drawings, calculations, method statements and other technical submissions required under the Contract to the Employer's Agent for review prior to commencing the relevant portion of the Works.

The Contractor shall not commence the affected portion of the Works until written acceptance of the submission has been received from the Employer's Agent, where such acceptance is required in terms of the Contract.

The Employer's Agent's review or acceptance of the Contractor's submissions shall be solely for the purpose of confirming compliance with the Contract requirements and shall not relieve the Contractor of any responsibility or liability for the adequacy, safety, stability, constructability or performance of the temporary works or construction methods.

The Contractor shall remain fully responsible for the design, execution and performance of all temporary works and construction methodologies throughout the Contract Period.

2. PROCUREMENT

2.1. PREFERENTIAL PROCUREMENT PROCEDURES

a) Requirement:

Preferential procurement procedures are to be followed as specified in the PCY Particular Specification

b) Resource standard pertaining to targeted procurement:

Refer to PCY Particular Specification

2.2. SUBCONTRACTING

a) Scope of mandatory subcontract work

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Contract Participation Goals

In accordance with the Contract Data and the Community Participation Goal (CPG) requirements, Is that the successful tenderer shall subcontract portions of the works as identified and reinforced by the employer's agent.

The specific work packages to be subcontracted shall be identified by the Employer's Agent in consultation with the Contractor following site handover and prior to the commencement of the relevant activities. The allocation of work packages shall take into consideration the availability and capability of suitable subcontractors, the nature of the works, and the need to maximise local economic development and employment opportunities.

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- **Nominated Subcontractor: Sub-contracting of Mechanical and Electrical works**

All mechanical and electrical work (including telemetry) will be subcontracted to a specialist (nominated subcontractor). This subcontractor will be appointed in Consultation with the Employer as per . Provision has been made for a mark-up on the M&E contractor. All costs associated with accommodating M&E contractor on site should be included in the mark-up. All costs associated with the planning, programming and administration of the M&E contract will be deemed covered under the mark-up provided for it.

b) **Preferred subcontractors / Supplier**

Details of preferred subcontractor / suppliers will be made available by the Employer a later stage

c) **Subcontracting procedures**

Please refer to Particular Specification PCY 8

d) **Attendance on subcontractors**

- **Subcontractors appointed as per CPG specified**

The contractor is to supply additional staff to assist and monitor appointed subcontractors as specified in Particular Specification PCY.

3. CONSTRUCTION

Applicable South African National Standards (SANS)

The Works shall comply with all applicable South African National Standards (SANS) and the Standard Specifications referenced in the Contract Documents.

Applicable National and International Standards

Where specified in the Contract Documents, the Works, materials and equipment shall comply with the applicable South African standards or, where no applicable South African standard exists, with the relevant internationally recognised standards referenced in the Contract Specifications.

Particular Specifications

The Works shall comply with the Particular Specifications contained in this Contract, which shall take precedence over the Standard Specifications where specifically stated.

Certification by Recognised Bodies

All materials, products and equipment incorporated into the Works shall comply with the applicable SANS or other specified standards and shall, where required, be supported by certificates of compliance issued by SABS or another recognised and accredited certification body acceptable to the Employer's Agent.

The Employer's Agent may require the Contractor to submit test certificates, manufacturers' certificates or certificates of compliance to demonstrate conformity with the specified standards.

a) **Plant and material**

- **Plant and material supplied by the employer**

No plant, equipment or materials will be supplied by the Employer. The Contractor shall provide, at its own cost, all plant, equipment, tools, materials, labour and other resources necessary for the execution, testing, commissioning and completion of the Works in accordance with the Contract.

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**- Material, samples and shop drawings**

All materials incorporated into the Permanent Works shall be new, fit for purpose and shall comply with the requirements of the Contract Specifications, the applicable South African National Standards (SANS), and any other relevant statutory or industry standards.

Where a product is covered by a South African Bureau of Standards (SABS) certification scheme or an equivalent recognised certification, the material shall bear the applicable certification mark or be accompanied by documentary evidence demonstrating compliance with the relevant standard.

The Contractor shall, where required by the Contract or instructed by the Employer's Agent, submit:

- Material samples for review and acceptance prior to procurement or installation;
- Manufacturers' data sheets and technical literature;
- Test certificates and certificates of compliance;
- Shop drawings, fabrication drawings and installation details for review before manufacture or installation; and
- Any other documentation necessary to demonstrate compliance with the Contract Specifications.

No material shall be incorporated into the Works until it has been accepted by the Employer's Agent where such acceptance is required under the Contract.

The Contractor shall remain fully responsible for ensuring that all materials supplied and installed comply with the Contract requirements, irrespective of any review or acceptance by the Employer's Agent.

b) Construction Equipment**- Requirements for equipment**

The Contractor shall provide, at its own cost, all plant, equipment, tools, vehicles and other resources necessary for the proper execution, testing, commissioning and completion of the Works.

No construction plant or equipment will be supplied by the Employer. The Contractor shall be solely responsible for the provision, operation, maintenance, replacement and removal of all plant and equipment required for the duration of the Contract.

The Contractor shall ensure that sufficient plant and equipment are available at all times to execute the Works in accordance with the approved construction programme and the requirements of the Contract.

The minimum plant and equipment required for the execution of the Works includes, but is not limited to, the following:

- Excavators;
- Tipper trucks;
- Tractor Loader Backhoes (TLBs);
- Water carts (water tankers);
- Compaction equipment (plate compactors, pedestrian rollers and vibrating rollers, as applicable);

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- Light Delivery Vehicles (LDVs); and
- Any other specialist plant and equipment required for the successful execution of the Works.

Where plant and equipment form part of the functionality evaluation, the Tenderer shall complete Returnable Schedule O and provide documentary proof of ownership, lease agreements or letters of intent from plant hire companies confirming that the proposed plant and equipment will be available for the duration of the Contract.

The Employer reserves the right to verify the availability of the proposed plant and equipment during the tender evaluation process and throughout the Contract Period.

- Equipment provided by the employer

No equipment will be supplied by the employer

Existing Services

Known Services

No known underground or above-ground services have been identified within the Site based on the information available at the time of tender. However, the Employer does not warrant that all existing services have been identified.

The Contractor shall, prior to commencing any excavation or construction activities, verify the location of all existing services and take all reasonable precautions to avoid damage to such services.

Treatment of Existing Services

All existing services encountered during construction shall be adequately protected and supported to prevent damage or interruption. Where an existing service is found to conflict with the Works, the Contractor shall immediately notify the Employer's Agent and shall not proceed with the affected work until written instructions have been issued.

No existing service shall be relocated, altered or removed without the prior written instruction of the Employer's Agent and, where applicable, the approval of the relevant service authority.

Location of Underground Services

The Contractor shall be responsible for locating and exposing existing underground services by means of trial pits, hand excavation or other approved methods where necessary prior to excavation.

The use of specialised service detection equipment shall be at the Contractor's discretion where considered necessary to accurately locate underground services.

Damage to Existing Services

The Contractor shall take all reasonable measures to prevent damage to existing services. Any damage caused by the Contractor's operations shall be immediately reported to the Employer's Agent and the relevant service authority.

The Contractor shall, at its own cost, promptly repair or reinstate any service damaged as a result of its operations to the satisfaction of the Employer's Agent and the relevant service authority, unless otherwise provided for in the Contract.

Reinstatement of Services and Structures

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The Contractor shall reinstate all existing services, roads, pavements, fences, structures and any other property disturbed or damaged during construction to a condition equal to or better than that which existed prior to commencement of the Works, all to the satisfaction of the Employer's Agent and the relevant authority.

c) Site establishment

Services and Facilities Provided by the Employer

No services or facilities will be provided by the Employer.

The Contractor shall be responsible, at its own cost, for the provision, operation, maintenance and removal of all temporary services and facilities required for the execution and completion of the Works. This shall include, but not be limited to:

- Temporary water supply for construction purposes;
- Temporary electricity supply, including generators where required;
- Communication facilities;
- Site offices, stores, workshops and ablution facilities;
- Security, fencing and access control;
- Temporary access roads and working areas, where required; and
- Any other temporary services or facilities necessary for the proper execution of the Contract.

There are no municipal services available for connection at the Site. The Contractor shall make all necessary arrangements with the relevant authorities and service providers, where applicable, to secure suitable temporary services for the duration of the Contract.

The Contractor shall remove all temporary facilities upon completion of the Works and reinstate all affected areas to the satisfaction of the Employer's Agent.

d) Facilities provided by the contractor

Offices

The various types of offices required shall be as instructed by the Engineer. Unless otherwise specified in the Contract Documentation, the fittings, furniture and equipment shall conform to the following requirements:

- ✓ Office desks shall have a surface area of at least 1,5 m² and shall be provided with at least three drawers, one of which can be locked.
- ✓ General-purpose steel cabinets shall have at least 1,5 m² shelf area and a volume of 0,7 m³ each. Each cabinet shall have a lock with two keys.
- ✓ Steel filing cabinets shall each be fitted with four drawers on runners. Each cabinet shall be fitted with a lock and shall be 1,3 m high, 460 mm wide and 600 mm from front to back.
- ✓ Shelves shall be suitable for storing all the contract files and documents.
- ✓ Electric power plug points shall be provided. Each office shall have at least two 15 ampere plug points.
- ✓ Lights shall be 1 500 mm, 58W fluorescent tubes or 1 500 mm, 22W LED tubes.

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- ✓ Drawing tables shall have either an inclined or a horizontal drawing surface as may be required and a smooth top built to the dimensions instructed by the Engineer.
- ✓ Draughtsman's stools shall be fitted with a padded seat with an adjustable seat height.
- ✓ The conference table shall be large enough to seat twelve persons and shall have a surface area of at least 4m².
- ✓ Chairs shall be robust and comfortable.
- ✓ A complete telecommunication and electronic data transfer service with uncapped Wi-Fi connectivity to the internet shall be provided for the use of all the Engineer's site staff.
- ✓ The colour combination printer, copier, scanner machines shall be capable of printing on A3 & A4 sized paper
- ✓ Blinds shall be adjustable venetian blinds to permit light to enter the room.
- ✓ Notice boards and white boards shall be provided as specified or as required by the Engineer.
- ✓ Bookcases shall have at least three shelves, each with a minimum length of 0,9 m.
- ✓ Wall mounted pivot plan filing systems shall be complete with wall rack and pivot brackets to accommodate ten plan clamps where each plan clamp can hold at least ten A0 size drawings.
- ✓ Where required by the Engineer, the Contractor shall provide and install air-conditioning units and heaters. Air-conditioning units shall be of the wall mounted split unit inverter type capable of either cooling or heating a room. The capacity of the air-conditioning units shall be adequate for the room area as recommended by the supplier thereof. Heaters shall be of a space-heating type without exposed elements and shall have a capacity of not less than 1.5 kW each.
- ✓ Where required by the Engineer, the following items shall be provided by the Contractor for his use:
 - ✓ A rain gauge securely mounted on a pole in a position as indicated by the Engineer.
 - ✓ A minimum and maximum atmospheric temperature gauge.
 - ✓ An approved digital thermometer capable of measuring surface temperatures from -10oC up to +35oC.
 - ✓ Mobile weather stations capable of measuring temperature, wind, chill, barometric pressure, UV levels, rainfall, wind direction and speed. The device shall also have on-board storage capabilities for at least 7 (seven) days and shall include a USB PC connection with software, allowing data to be downloaded electronically.
 - ✓ A three-metre aluminium straight edge complete with two wedges 200 mm long, tapering from 0 to 20 mm, calibrated in mm.
 - ✓ A measuring wheel with a circumference of 1,0 m and equipped with a distance recording device.
 - ✓ Approved first aid kits to be kept at the site office and/or laboratories and in the site staff vehicles.

Kitchen

The contractor shall provide a separate kitchen unit for the use of the Engineer and his staff which includes the following:

- ✓ Min 300 l fridge/freezer combination fridge

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- ✓ Microwave of min 36 l and 1 000 W
- ✓ Cordless kettle
- ✓ A set of 12 x each of knives, forks, spoons and teaspoons
- ✓ A set of 12 x each of white ceramic crockery including dinner plates, side plates, bowls, coffee mugs, tea cups and saucers
- ✓ A set of 24 x beer glasses
- ✓ 1 x large wooden cutting board
- ✓ 1 x kitchen knife set in knife block which includes at least a large carving knife, bread knife, medium knife, pairing knife and kitchen scissors
- ✓ 2 x braai tongs
- ✓ 1 x meat casserole with lid

Car ports

Car ports shall be so constructed as to protect vehicles parked in them at all times against the direct rays of the sun. The car ports shall have either a concrete floor or a layer of broken stone to alleviate dusty and muddy conditions. Each car port shall be at least 3,0 m wide, 6,0 m long and 2,5 m high. The roofs of all car ports shall be waterproof.

Areas around offices and laboratories

The access roads and parking areas at the offices and laboratories shall be treated to make them dust free, either with a layer of crushed stone or with an approved bituminous surfacing. They shall be well drained and kept trafficable and free from mud at all times. Footpaths shall be paved with concrete, interlocking blocks or paving slabs to provide convenient, all-weather access to all buildings.

Ablution unit

An ablution unit with a clean potable hot and cold-water supply and a water-borne sewerage system, including septic tanks if necessary, shall be provided for the Engineer's facilities. The ablution unit shall be established in a position that is easily accessible to both the Engineer's offices and the laboratory buildings. The ablution unit shall have separate rooms for males and females, and each room shall have a floor area of at least 6m² with a lockable door and shall be equipped with:

- ✓ A 1 500 mm, 58W fluorescent tube or 1 500 mm, 22W LED tube.
- ✓ An opening window fitted with a blind,
- ✓ A vitreous enamel WC pan with a PVC seat and covers, a flush cistern and a toilet roll holder. The WC must be separate from the entrance/basin area and it shall also have a lockable door.
- ✓ A vitreous enamel urinal with flush cistern in the male unit.
A vitreous enamel wash basin.
- ✓ A mirror and a paper towel dispenser.
- ✓ A covered wastepaper bin next to the WC and another bin next to the towel dispenser.

Where specified in the Contract Documentation a separate shower and change room complete with shower, hot and cold running water and drains shall also be provided

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**Storage and laboratory facilities**

No on-site laboratory facilities will be required. The contractor must ensure that he provides adequate storage for the construction activity needs.

Other facilities and services

No temporary services will be supplied by the Employer. The contractor must ensure to supply his own foreseen required services

Vehicles and equipment

As stated under "Facilities provided by the Contractor"

Advertising rights

No additional advertising will be allowed other than branding of vehicles, equipment and employee clothing.

Notice boards

The contractor shall supply 2 x name board as per the details indicated on the construction drawings for the entire duration of the contract.

e) Site Usage

Site usage is limited to functions associated with the project only. The water treatment works and pipeline are all located on government land or servitudes registered in the name of the government. The contractor may not traverse on any private properties without written approval from Employer's Agent and the Landowner. It is however not foreseen that access will be required to any privately owned land.

f) Permits and way leaves

The Contractor to apply for the construction permit.

g) Alterations, additions, extensions and modifications to the existing works

Not applicable.

h) Inspection of adjoining properties

Not applicable.

i) Water for construction purposes

The Contractor shall be solely responsible for making all arrangements for the supply of water required for the execution, testing, commissioning and completion of the Works. The Contractor shall make adequate provision in the Tendered Rates for the procurement, transportation, storage and distribution of water, including all associated costs, permits, licences, charges and approvals.

Water required for construction purposes shall include, but not be limited to:

- Concrete production and curing;
- Earthworks and dust suppression;
- Pressure testing of pipelines;
- Flushing and disinfection of pipelines, reservoirs and associated infrastructure;
- Hydrostatic testing of storage facilities; and
- General construction activities.

Water used in concrete production shall comply with the applicable requirements of the Contract Specifications and relevant SANS standards. Where ready-mix concrete is utilised, compliance with the required water quality shall form part of the concrete supplier's quality management system.

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No water shall be abstracted from any river, stream, dam, wetland, borehole, irrigation canal or any other natural water source without the prior written approval of the Employer's Agent and the relevant statutory authorisations, permits or licences issued by the competent authority.

The Contractor shall ensure that all water abstraction, transportation, storage and use comply with the applicable environmental legislation, water use authorisations and the requirements of the Contract. Any costs associated with obtaining water for construction purposes shall be deemed to be included in the Contract Rates and Prices.

j) Survey control and setting out of the works

The Employer's Agent shall provide the Contractor with the primary survey control points and reference beacons required for the setting out of the Works.

The Contractor shall be responsible for the true and accurate setting out of the Works and for the correctness of all positions, lines, levels, dimensions and alignments of the Permanent Works. The Contractor shall provide all qualified personnel, surveying instruments, equipment, materials and labour necessary for the setting out, checking and maintenance of survey control throughout the Contract Period.

The Contractor shall verify all survey information provided by the Employer's Agent before commencing construction and shall immediately notify the Employer's Agent of any discrepancies identified.

The Contractor shall take all reasonable precautions to protect and preserve property beacons, survey control points, trigonometrical beacons and setting-out beacons during the execution of the Works. No beacon shall be removed, disturbed or destroyed without the prior written approval of the Employer's Agent and, where applicable, the relevant authority.

Any property beacon, survey beacon or trigonometrical beacon disturbed or destroyed as a result of the Contractor's operations shall be reinstated by a registered Professional Land Surveyor in accordance with the requirements of the Land Survey Act and the regulations of the Surveyor-General. The Contractor shall submit the surveyor's certificate confirming the reinstatement of the affected beacon(s) to the Employer's Agent.

All costs associated with the protection, replacement and certification of any beacons damaged or destroyed by the Contractor shall be borne by the Contractor and shall be deemed to be included in the Contract Rates and Prices.

4. MANAGEMENT

4.1. Management of the works

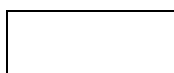
a) Applicable SANS standards

The Contractor is referred to SANS 1921: 2004 parts 1, 2 and 3: Construction and Management Requirements for Works Contracts. These specifications shall be applicable to the contract under consideration, and the Contractor shall comply with all requirements relevant to the project.

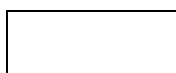
Certain aspects however require further attention as described hereafter.

b) Particular / Generic specifications

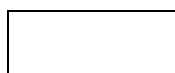
Refer to Part C3.4



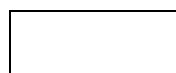
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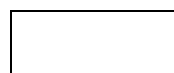
Witness 1



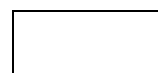
Witness 2



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Witness 2

**c) Planning and programming**Preliminary programme

The Contractor shall include with his tender a preliminary programme on the prescribed form to be completed by all Tenderers. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works, and shall motivate his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions and special non-working days as specified in the Special Conditions of Contract, in the Project Specifications and in the Contract Data.

The following constraints shall be taken into account in preparing the preliminary construction programme which must be submitted with the Tender. These same constraints shall apply to the final construction programme:

- (a) the Contractor must indicate in his tender the proposed contract period;
- (b) plant and personnel requirements to complete the project must be incorporated in the Tender and shown on the programme;
- (c) Provision must be made for the incorporation of the M&E sub-contract;
- (d) All costs associated with the planning, programming and administration of the M&E contract will be deemed covered under the mark-up provided for it;

Programme in terms of Clause 5.6 of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to Clause 5.6 of the General Conditions of Contract, be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the tender shall be used as basis for this programme.

The following must be stated on the programme:

- (a) The quantity of work applicable to each bar item as well as the rate at which the work will be completed.
- (b) A budget of the value of completed work, month by month, for the full contract period.
- (c) The critical path.
- (d) Works to be undertaken by Local Contractor (if applicable).
- (e) Works to be undertaken by Sub-Contractors.
- (f) Schedule of plant and resources to be utilized.

The Contractor's attention is also drawn to clause 5.6 of the General Conditions of Contract 2015.

d) Sequence of the works

The contractor may programme the work as to ensure that the works is completed within the duration stated in the Contract Data. This program must make allowance for the M&E contractor to commission his works and complete a 28-day, trouble free, trial operational period.

e) Software application for programming

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All programmes must be compiled in Microsoft Projects

f) Methods and procedures

- Cleanliness of the site:
The contractor shall ensure that the site remains clear off all rubbish
- Protecting of trees and shrubs:
Protection of trees and shrubs to be as per EMP and ROD
- Blasting operations:
Blasting operations must adhere to the following acts:
 1. Occupational Health and Safety Act (85 Of 1993)
 2. Explosives Act, 1956 (Act 26 Of 1956)
- Borrow pits, disposal of access material, deposition of material etc. in earthworks activities:
Spoil sites shall be determined on site in conjunction with the Employers Agent, the PSC, and the local authority. The Contractor shall be permitted to use only those spoil areas approved by the Engineer. Should the Contractor wish to use any other spoil area for the disposal of soil, rubble, vegetation, etc., its use shall be subject to the approval of the Employers Agent and the landowner.
- The management and disposal of water on site: (Read with SANS 1921 - 1: 2004 clause 4.6)
The Contractor shall pay special attention to the management and disposal of water and stormwater on the site. It is essential that all completed works or parts thereof are kept dry and properly drained. Claims for delay and for repair of damage caused to the works as a result of the Contractor's failure to properly manage rain and surface water, will not be considered
- Access, roads, maintenance of accesses
The contractor will maintain the access roads to the works at all times.
Access to all properties affected by the construction activities must remain open, and any temporary closures must be arranged in writing with the affected parties.
- Hours of work:
Hours of work are daylight hours from Monday to Saturday.
- Training of operators
The contractor must train the municipal staff who will be taking over works

g) Quality plans and control

- Quality Assurance (QA) (Read with SANS 1921 – 1: 2004 clause 4.4)
The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure.

The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer's representative to act as foreman or surveyor.

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- Process control

The Contractor shall arrange for his own process control tests. The Contractor may establish his own laboratory on site for this purpose, or he may employ the services of an independent commercial laboratory. Whatever method is used, the Contractor must submit the results of tests carried out on materials and workmanship when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates and no additional payment will be made for testing as required.

- Acceptance control

The process control test results submitted by the Contractor for approval of materials and workmanship may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer shall have his own acceptance control tests carried out by the dedicated site laboratory as approved by the client. The cost of acceptance testing shall be to the account of the client.

h) Environmental

Refer to the Environmental Plan in the Particular Specification

i) Accommodation of traffic on public roads occupied by the contractor

- Basic Requirements

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

The Contractor shall ensure that all road signs, barricades, delineators, flagmen and speed controls are effective and that courtesy is extended to the public at all times.

Failure to maintain road signs, warning signs or flicker lights, etc., in a good condition shall constitute ample reason for the Engineer to suspend the work until the road signs, etc., have been repaired to his satisfaction.

The Contractor may not commence constructional activities affecting existing roads before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual.

The Contractor shall construct and maintain all temporary drainage works necessary for temporary deviations.

The Contractor shall provide and grant access to persons whose properties fall within or adjoin the area in which he is working.

- Payment

The Contractor's tendered rates for the relevant items in the Bill of Quantities shall include full compensation for all possible additional costs which may arise from this, and no claims for extra payment due to inconvenience as a result of the modus operandi will be considered.

j) Other contractors on site

No other contractors other than appointed sub-contractors are foreseen to be on site.

k) Recording of weather

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The Contractor shall provide a rain gauge close to the office of the Employer's Agent or as directed by the Employer's Agent and precautions shall be taken to restrict access to the rain gauge.

l) Format of communications

All communication to be done via electronic mails or written correspondence.

m) Key personnel

Key personnel must be as stipulated in the Returnable schedules under Tender Data. Points will be allocated for the qualifications and experience of the key personnel listed.

n) Management meetings

- Site Meetings:

Times: Every two weeks

Location: Site office

Attendance: Contract manager, Site Agent, Health and Safety Officer and Sub-contractor representatives as required.

- Technical Meetings:

Times: Every other two weeks

Location: Site office

Attendance: Contract manager, Site Agent, Health and Safety Officer and Sub-contractor representatives as required.

o) Forms for contract administration

To be formalized after appointment

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