NKANGALA DISTRICT MUNICIPALITY

PROJECT NO: 150362/1

CONSTRUCTION OF THE LOSKOP REGIONAL BULK WATER SUPPLY SCHEME IN THEMBISILE HANI LOCAL MUNICIPALITY, WORK PACKAGE 1 (20 ML/ DAY RAW WATER ABSTRACTION WORKS, GRAVITY MAIN, PIPELINE TO PUMP STATION 2, PUMP STATION 1 AND 2, AND MOUTSE WATER SCHEME)

C3: SCOPE OF WORK

Part C3: Scope of Work

C3.1 Scope of Works (SANS 10403:2003)
C3.2 Standard Specification
C3.3 Project Specification
C3.4 Particular Specification

C3.1: SCOPE OF WORK (SANS 10403:2003)

1. DESCRIPTION OF THE SCOPE OF WORKS

1.1. EMPLOYER'S OBJECTIVES

The Employers objective is to construct a bulk water supply system which will be taken over by the Thembisile Hani Local Municipality.

This project entails the construction of approximately 11km of 700mm GRP SN 5000 raw water pump lines, raw water pump stations 1& 2 with balancing tank, as well as a 2.3km 750mm diameter steel raw water gravity main from the Dam Wall up to pump station 1. The pump stations will be equipped with the necessary electrical connections, equipment and telemetry by a nominated sub-contractor. An additional 3Ml/d Clear water treatment package plant to be installed at pump station 2. The package plant to include a new 6Ml clear water reservoir

1.2. OVERVIEW OF THE WORKS

This project entails the construction of approximately 11km of 700mm GRP SN 5000 raw water pump lines, raw water pump stations 1& 2 with balancing tank, as well as a 2.3km 750mm diameter steel raw water gravity main from the Dam Wall up to pump station 1. The pump stations will be equipped with the necessary electrical connections, equipment and telemetry by a nominated sub-contractor. An additional 3Ml/d Clear water treatment package plant to be installed at pump station 2. The package plant to include a new 6Ml clear water reservoir

1.3. EXTENT OF THE WORKS

The Works to be carried out by the Contractor under this Contract comprise mainly the following:

(i) General

1. Contractor's establishment on site.
2. Relocation of services by service provider.
3. Accommodation of traffic.
    - Particular attention to be given to allowing routine access to the Loskop Dam wall during construction of the 750mm dia. steel gravity line
4. Training of Temporary Workforce.

(ii) Concrete Works

1. Construction of pump stations

2. Construction of pipe pedestals and thrust blocks

(iii) Pipelines

1. Clear and grub and stockpile topsoil
2. Excavation of pipe trenches
3. Installation of suitable pipe bedding (insitu / imported)
4. Laying and testing of pipes
5. Backfilling of pipe
6. Installation of scour, isolation, check, air valves etc
7. Construction of valve chambers
8. Installation approximately 11 km of 700 mm dia. GRP SN 5000 pump main
    - Approximately 4km of the 700 mm dia. GRP SN 5000 pipeline is earmarked for subcontracting as part of the CPG as specifies in the Contract. Subcontractors to be Appointed in Consultation with the Employer
9. Installation of approximately 2.2 km 750 mm dia. steel pipeline on pedestals

(iv) Mechanical

1. Supply and installation of pumps and motors in two (2) raw water pump stations
2. Supply and install all steel flanged pipework and valves in the pump stations

(v) Electrical

1. Supply and installation of all electrical equipment, controllers and telemetry to be caried out by a Subcontractor Selected in Consultation with Employer in accordance with Clause 4.4.4 of GCC 2015

1.4. LOCATION OF THE WORKS

The proposed site is in the proximity of the Loskop dam area, within the Nkangala District Municipality in the Mpumalanga Province. The route traverses to following local municipal boundaries – Thembisile Hani LM, Steve Tshwete LM & Elias Motsoaledi LM

Site Co-ordinates:

25°22'57.03"S, 29°20'21.65"E

1.5. TEMPORARY WORKS

All temporary works (scaffolding, shuttering, shoring etc) to be designed by the contractor and to be approved by the Employer's Agent. (Clause 4.1.2 of the Contract)

2. ENGINEERING

2.1. 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

2.2. EMPLOYER'S DESIGN

The permanent works included in this contract has been designed by the Employer's agent. The detail of the works is indicated on the drawing and in the specifications.

2.3. DESIGN BRIEF (CONTRACTORS DESIGN)

<u>Connection to existing Loskop Dam Pipework:</u>

- The contractor is to provide a detailed methodology and design of temporary works required for the connection to the existing pipework at the Loskop Dam as indicated on the tender drawing details. Currently the pipe is open on the dam side and blank flanged in the downstream side. The contractor must arrange with the Department of Water Affairs to assist in blocking the pipe with the dam's trolley

gate in order to remove the blank flange and install the new butterfly valve to each of the three (3) connection points. The proposed methodology must be submitted for approval prior to any construction commencing on this portion of the works.

Construction of the 750mm dia. steel gravity main from the Loskop Connection to PS 1:

- The contractor is to provide a methodology and designs for temporary works such as shoring for the construction of the 750mm gravity steel pipeline portion from the Loskop Dam connection point to Pump Station no.1. The pipeline will mostly be place on low concrete pedestals on the outside of the irrigation canal service road which is bordered by a steep cut embankment. A geotechnical report on the stability of the fill next to the channel will be provided to the contractor. The contractors proposed methodology and proposal for associated temporary works is to be submitted to Employers Agent for approval. No work may commence on this portion until such approval has been provided in writing.

2.4. DRAWINGS

The Employer's Agent will provide the Contractor with one full set of drawings (over and above the drawings supplied for construction, which will be used exclusively for the recording of as built information by the Contractor.

Only dimensions, positions, levels, co-ordinates etc. that change from the original values, will be required to be entered on these drawings. These drawings, fully marked up, will be handed to the Employer's Agent at the issue of the Certificate of completion, which will not be issued until the as-built information has been received.

The drawings listed below are attached to provide an overview of the project.

Additional construction drawings will, in terms of Clause 5.9 of the General Conditions of Contract (2015), be issued to the Contractor by the Employer's Agent/Employer on the commencement date and from time to time as required.

CONSTRUCTION OF THE LOSKOP REGIONAL BULK WATER SUPPLY SCHEME IN THEMBISILE HANI LOCAL MUNICIPALITY, PHASE 1 – WORK PACKAGE 1	
DRAWING NUMBER	**DRAWING DESCRIPTION**
BULK PUMP MAIN	
N/3110/W/1/002/RA	GENERAL LAYOUT OF PROPOSED RAW WATER PUMP MAIN
GRAVITY MAIN	
N/3110/RW/W/1/001/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE
N/3110/RW/W/9/001/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – SHEET 1 OF 4
N/3110/RW/W/9/002/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – SHEET 2 OF 4
N/3110/RW/W/9/003/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – SHEET 3 OF 4
N/3110/RW/W/9/004/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – SHEET 4 OF 4
N/3110/RW/W/11/025/RA	PIPE SUPPORT AND PIPE HOOP DETAILS
N/3110/RW/W/11/002/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – GENERAL DETAILS SHEET 1 OF 2
N/3110/RW/W/11/003	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE – GENERAL DETAILS SHEET 2 OF 2

N/3110/RW/W/11/004	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE : BEDDING AND COLUMN MARKER DETAILS
N/3110/RW/W/11/005/RA	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE : AIR VALVE ASSEMBLIES
N/3110/RW/W/11/006	RAW WATER GRAVITY MAIN ALONG CANAL ROUTE :SCOUR VALVE FOR 750mmØ MAIN - DETAILS
PUMPSTATION 1	
N/3110/M/10/001/RA	RAW WATER BOOSTER PUMP STATION 1 : CANAL CROSSING TRUSS
N/3110/W/10/001/RA	RAW WATER ABSTRACTION PUMP STATION 1 : CANAL CROSSING TRUSS
N/3110/P1/W/9/001/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 1 OF 25
N/3110/P1/W/9/002/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 2 OF 25
N/3110/P1/W/9/003/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 3 OF 25
N/3110/P1/W/9/004/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 4 OF 25
N/3110/P1/W/9/005/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 5 OF 25
N/3110/P1/W/9/006/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 6 OF 25
N/3110/P1/W/9/007/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 7 OF 25
N/3110/P1/W/9/008/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 8 OF 25
N/3110/P1/W/9/009/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 9 OF 25
N/3110/P1/W/9/010/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 10 OF 25
N/3110/P1/W/9/011/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 11 OF 25
N/3110/P1/W/9/012/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 12 OF 25
N/3110/P1/W/9/013/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 13 OF 25
N/3110/P1/W/9/014/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 14 OF 25
N/3110/P1/W/9/015/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 15 OF 25
N/3110/P1/W/9/016/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 16 OF 25
N/3110/P1/W/9/017/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 17 OF 25
N/3110/P1/W/9/018/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 18 OF 25
N/3110/P1/W/9/019/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 19 OF 25
N/3110/P1/W/9/020/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 20 OF 25
N/3110/P1/W/9/021/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 21 OF 25
N/3110/P1/W/9/022/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 22 OF 25
N/3110/P1/W/9/023/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 23 OF 25
N/3110/P1/W/9/024/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 24 OF 25
N/3110/P1/W/9/025/RA	PROPOSED BULK WATER LINE. PUMPSTATION 1 LAYOUT 25 OF 25
N/3110/G/7/101/RA	RAW WATER BOOSTER PUMP STATION : 1 : EARTHWORKS
N/3110/G/10/001	SIGN BOARD
N/3110/W/6/101/RA	RAW WATER BOOSTER PUMP STATION : 1
N/3110/W/6/102/RA	RAW WATER BOOSTER PUMP STATION : 1
N/3110/W/6/103	RAW WATER BOOSTER PUMP STATION : 1 : ELEVATIONS
N/3110/W/6/104/RA	RAW WATER BOOSTER PUMP STATION : 1 : CHAMBERS
N/3110/M/6/101/RA	RAW WATER BOOSTER PUMP STATION : 1: MECHANICAL LAYOUT & SECTIONS
N/3110/M/6/102/RA	RAW WATER BOOSTER PUMP STATION : 1: PIPEWORK 1 OF 2

N/3110/M/6/103/RA	RAW WATER BOOSTER PUMP STATION : 1 : PIPEWORK 2 OF 2
N/3110/G/7/201/RA	RAW WATER BOOSTER PUMP STATION : 2 : EARTHWORKS
N/3110/W/6/201/RA	RAW WATER BOOSTER PUMP STATION : 2
N/3110/W/6/202	RAW WATER BOOSTER PUMP STATION : 2
N/3110/W/6/203	RAW WATER BOOSTER PUMP STATION : 2 : ELEVATIONS
N/3110/M/6/201/RA	RAW WATER BOOSTER PUMP STATION : 2: MECHANICAL LAYOUT & SECTIONS
N/3110/M/6/202/RA	RAW WATER BOOSTER PUMP STATION : 2: PIPEWORK 1 OF 2
N/3110/M/6/203/RA	RAW WATER BOOSTER PUMP STATION : 2 : PIPEWORK 2 OF 2
N/3110/W/6/091	HANDRAILING : STANDARD DETAILS
N/3110/W/6/092	1.82m HIGH SECURITY FENCE: TYPICAL PLAN VIEWS AND ELEVATIONS
N/3110/W/6/093	1.82m HIGH SECURITY FENCE: TYPICAL DETAILS
N/3110/W/7/210	RAW WATER BOOSTER PUMP STATION : ABECO STORAGE TANK PLINTH
N/3110/W/7/501	PUMP STATION GANTRY TYPICAL DETAILS
N/3110/W/8/097	PUMP STATIONS STANDARD DETAILS
N/3110/W/8/001	GENERAL LAYOUT WATER TREATMENT WORKS
N/3110/W/8/003	6Ml WATER RESERVOIR: FLOOR SLAB LAYOUT (36m RADUIS)
N/3110/W/8/004	6Ml WATER RESERVOIR: ROOF SLAB LAYOUT
N/3110/W/8/005	6Ml WATER RESERVOIR SUBSOIL DRAINAGE
N/3110/W/8/006	6Ml WATER: SECTION A-A TO SECTION D-D THROUGHT INLET AND SCOUR PIPE
N/3110/W/8/007	6Ml WATER: PIPE SUPPORT DETAILS
N/3110/M/8/001	6Ml WATER RESERVOIR : INLET DETAILS
N/3110/M/8/002	6Ml WATER RESERVOIR: SCOUR & OVERFLOW DETAILS
N/3110/M/8/003	6Ml WATER RESERVOIR:OUTLET DETAILS
N/3110/W/8/010	SEPTIC TANK AND FRENCH BASIN DETAILS
N/3110/W/7/100	6Ml RESERVOIR GENERAL CONSTRUCTION DETAILS
N/3110/W/7/101	6Ml RESERVOIR JOINT DETAILS
N/3110/W/7/103	6Ml RESERVOIR STEEL LADDER SHEET 1 OF 3
N/3110/W/7/104	6Ml RESERVOIR STEEL LADDER SHEET 2 OF 3
N/3110/W/7/105	6Ml RESERVOIR STEEL LADDER SHEET 3 OF 3
N/3110/W/7008	6Ml ACCESS LID DETAILS
GENERAL DETAILS	
N/3110/G/9/001	GENERAL NOTES
N/3110/RWM/11/001	DAM WALL – SECTION A-A
N/3110/RWM/11/002	DAM WALL – SECTION B-B & D-D
N/3110/RWM/11/003/RA	DAM WALL – SECTION D-D & E-E
N/3110/RWM/11/004/RA	DAM WALL – PIPE SCHEDULE
N/3110/W/11/013	BULK WATER PUMP MAIN – 200mm SCOUR VALVE FOR 700mmØ MAIN - DETAILS
CROSSINGS	
N/3110/W/11/014/RA	DETAIL – PS1 – PUMP LINE RIVER CROSSING 1 (SHEET 1 OF 4)

N/3110/W/11/015/RA	DETAIL – PS1 – PUMP LINE RIVER CROSSING 1 (SHEET 2 OF 4)
N/3110/W/11/016/RA	DETAIL – PS1 – PUMP LINE RIVER CROSSING 1 (SHEET 3 OF 4)
N/3110/W/11/017/RA	DETAIL – PS1 – PUMP LINE RIVER CROSSING 1 (SHEET 4 OF 4)
N/3110/W/11/018/RA	BULK WATER – DETAIL – ROAD CROSSING 1
N/3110/W/11/025	BULK WATER PUMP MAIN – 200mm SCOUR VALVE FOR 750mmØ MAIN - DETAILS
N/3110/W/11/026	BULK WATER PUMP MAIN: AIR VALVE ASSEMBLIES AND CHAMBERS FOR 700mm ø WATER PIPE SHEET 1 OF 2
N/3110/W/11/027	BULK WATER PUMP MAIN: AIR VALVE ASSEMBLIES AND CHAMBERS FOR 700mm ø WATER PIPE SHEET 2 OF 2

The applicable drawings mentioned above are attached under Part C5.2.

2.5. DESIGN PROCEDURES

As described in section 2.3 above, the contractor must submit his methodologies and designs as related to the works to the Employer's agent for approval before commencing the with specific portion of works. Work on the specific portions may only commence once written approval has been received from the Employer's Agent.

3. PROCUREMENT

3.1. 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

3.2. SUBCONTRACTING

a) Scope of mandatory subcontract work

- **Contract Participation Goals**

  30 % of the estimated value of the contract has been allocated to be subcontracted as part of the CPG as specified by the Contract. The scope of the works to be subcontracted is approximately 4km of 700mm GRP SN5000 pump line including its related works. Refer to section Particular Specification PSY for further clarification

- **Sub-contracting of all electrical, electronic and telemetry works**

All electrical, electronic (control panels, cablings, VSD controllers etc.) and telemetry associated with the pump stations will be subcontracted to a specialist. This subcontractor will be appointed in Consultation with the Employer as per Clause 4.4.4 of the GCC 2015

b) Preferred subcontractors / Supplier

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

c) Subcontracting procedures

Pease 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

4. CONSTRUCTION

a) Works specification

- **Applicable SANS standards**

  Refer to Standard Specifications in the contract

- **Applicable national and international standards**

  Refer to Standard Specifications in the contract

- **Particular/generic specifications**

  Refer to Particular Specifications in the Contract

- **Certification by recognized bodies**

  Only certification by SABS will be allowed

- **Acrément certificates**

  None

a) Plant and material

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

  No plant or material will be supplied by the employer

- **Material, samples and shop drawings**

  All materials used, where such mark has been awarded for a specific type of material, bear the SABS mark.

b) Construction Equipment

- **Requirements for equipment**

  The following equipment is deemed necessary for the successful completion of the project:

- Excavators
- Tipper trucks
- TLBs
- Water Carts
- Compactors (Wackers)
- LDVs

Point will be assigned for the number of plant supplied as per Returnable schedule O

- **Equipment provided by the employer**

No equipment will be supplied by the employer

c) Existing Services

- **Known services**

It is foreseen that the planned route will intersect electrical or Telkom services. The exact location of these will have to be established by the contractor prior to excavation in an area.

- **Treatment of existing services**

Existing services which are encountered must be reported to the Employer's Agent who will instruct on which action to be taken.

- **Use of detection equipment for the location of underground services**

None foreseen

- **Damage to services**

The contractor shall repair any amend any services damaged directly due to the construction activities. The cost of which will be covered by the rate for crossing of services in the bill of quantities.

- **Reinstatement of services and structures damaged during construction**

As per the previous item

d) Site establishment

- **Services and facilities provided by the employer**

No services or facilities will be provided by the employer. The contractor will be responsible to make his own arrangements for the supply of water, electricity and communication. There will be no municipal services to connect to.

- **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 cab

- net 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.
- 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 +350oC.
- 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
- Microwave of min 36 l and 1 000 W
- Cordless kettle
- A set of 12 x each of knifes, 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 water proof.

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

- **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 pipeline and pump stations 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 Land Owner. It is however not foreseen hat access will be required to any privately owned land.

f) Permits and way leaves

- **Way leaves:**

  The bulk of the pump lines are located in road servitudes. Wayleaves to install the pipeline in the road have been secured and will be supplied to the appointed contractor after appointment. Once the contractor has confirmed the above, he should inform the Employer’s Agent of his findings.

  The contractor must ensure to adhere to the RAL Pipeline Conditions contained in the Annexures of the Scope of Works.

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

The contractor should ensure that the dimensions indicated on the construction drawings for chambers and pipework which is to be connected to at the Loskop dam before the connection

pipework is ordered. Once the contractor has confirmed the above, he should inform the Employer's Agent of his findings.

h) Inspection of adjoining properties

The Contractor must together with the Employer's Agent and Dept. of Water and Sanitation / Loskop Irrigation Board representative inspect the works at the Loskop irrigation outlet works as well as the lengths of the irrigation channel for any existing damage. A comprehensive report with and index of photos must be accepted and signed by all prior to any construction activities taking place with regards to the construction of the connection pipework to Loskop Dam and the 700 mm diameter gravity main (Loskop dam to PS 1)

i) Water for construction purposes

The contractor shall make his own arrangements regarding a suitable supply of water for the project and he must make adequate provision in his tender for all negotiations and procurement of water for construction activities and all related costs will be deemed to be included in his tendered rates.

Water may not be abstracted from the local river, streams or Irrigation canals. If the contractor wishes to do so he must submit a request to the Employers agent which includes all the necessary permissions, permits or licenses required to do so.

j) Survey control and setting out of the works

The client will provide survey beacons along the route of the pipeline. The contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith.

The Contractor shall take care that property beacons, trigonometrical survey beacons or setting-out beacons are not displaced or destroyed without the consent of the Employer's Agent. Property beacons and trigonometrical survey beacons that have been displaced or destroyed shall be replaced by a registered land surveyor, who shall certify such replacement.

The cost of replacing all beacons displaced or destroyed during the course of the Contract without the consent of the Employer's Agent shall be borne by the Contractor.

5. MANAGEMENT

5.1. 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

None applicable

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) a high standard of traffic accommodation must be adhered to at all times;

(d) the relocation of services;

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 in any as to ensure that the works is completed within the duration stated I the Contract Data

e) Software application for programming

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.

- 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

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

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

p) Electronic payment

Requirements for electronic payments to be communicated by the Employer after appointment.

q) Daily records

A daily site diary must be kept on site whereby the deliveries, rainfall, daily progress, plant, staff and general daily events are recorded. Both the Site agent and Employer's Agent's Representative must sign each entry off at the end of the day.

r) Bonds and guarantees

As specified in the Contract Data

s) Payment certificates

As specified in the Contract Data

t) Permits

No permits are foreseen to be required

u) Proof of compliance with the law

Refer to Contract Data

v) Insurance provided by the employer

Refer to Contract Data

w) Quality plans and control

The contractor will be provided with a set of standard Quality Control Check sheets which will be used to monitor the quality of the works. Each portion of the works must be signed off by the Employer's Agent and the Site Agent.

6. HEALTH AND SAFETY

Refer to the Baseline Risk Assessment and Health and Safety Specifications contained in the Document's Annexures.

7. ANNEXURES

7.1. Roads Agency Limited – Specification for pipelines