TENDER NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

CLOSING DATE: 31 May 2023 @ 11h00

TENDERER: _____

TENDERED AMOUNT (Incl. VAT): **R** _____

IMPLEMENTING AGENT ON BEHALF OF THE CITY OF MBOMBELA

Silulumanzi (RF) (Pty) Ltd
18 Nel Street, Mbombela,1200
PO Box 12753, Mbombela,1200
Tel: 013 752 6839
Fax: 013 755 2618
www.silulumanzi.com

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

SUMMARY FOR TENDER OPENING PURPOSES

NAME OF TENDERER : _____

ADDRESS : _____

_____

_____

_____

TELEPHONE NUMBER : _____

FAX NUMBER : _____

E-MAIL ADDRESS : _____

CLOSING DATE : _____

TENDERED AMOUNT : _____

Signed by authorised representative of the TENDERER : _____

DATE : _____

* Should any discrepancy occur between this figure and that stated in the Form of Offer and Acceptance, the latter shall take precedence and shall apply.

IMPORTANT INFORMATION

PLEASE READ CAREFULLY BEFORE COMPLETING DOCUMENT.

1. Notice to all tenderers.
2. Standards applied in this document.
3. Scope of Works (Remuneration Rates for unskilled labour and CLO)

1. NOTICE TO ALL TENDERERS

This is an original document:

1. It may not be re-typed or altered in any way.
2. It must be completed in black ink (non-erasable) – in an eligible handwriting. Mistakes are to be corrected by drawing a line through it and writing the correct information above it. Tenderer to sign next to the correction. The use of erasing fluid or strips is not allowed.
3. It may not be taken apart.
4. It is available and downloadable in electronic PDF format.
5. It is compulsory to attach required documents to the relative page (where requested). Any other form of presentation (loose pages or separate documents) will not be accepted.

2. STANDARDS APPLICABLE TO THIS DOCUMENT

Available from the S.A. Federation of Civil Engineering Contractors, the S.A. Institution of Civil Engineers and the S.A. Bureau of Standards, as applicable:

1.	CIDB	***CIDB Standard for uniformity in Construction Procurement,*** *10 July 2015, as amended.*
2.	SANS 10845-1	*Processes, methods and procedures.*
3.	SANS 10845-2	*Formatting and compilation of procurement documentation.*
4.	SANS 10845-3	*Standard conditions of tender.*
5.	GCC	*General Conditions of Contract for Construction Works, Third Edition (2015) issued by the South African institution of Civil Engineers.*
6.	This Document, as presented.	

CONTENTS

THE TENDER

THE CONTRACT

THE CONTRACT

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

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MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

PART T1: TENDERING PROCEDURES

BID NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

INVITATION TO TENDER

Silulumanzi invites tenders for the MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE.

Tenderers should have a CIDB contractor grading of 6CEPE or Higher.

It is compulsory that Bidders download a copy of the bid document that will ONLY be available as from 02 May 2023 @ 14h00 pm on the Silulumanzi website: https://www.silulumanzi.com/ on the Procurement's Folder: Tenders and Notices.

Duly completed tenders enclosed in a sealed envelope marked "Tender No. KAW-MG-201, Closing date: on 31 May 2023 with the name of the tenderer, shall be deposited in the tender box provided at the offices of Silulumanzi, Ground floor, Bateleur Building, 16 Nel Street before 11h00 on the closing date. The tenders will be opened in public. The following criteria of disqualification on tender opening will apply:

- Valid Tax Pin Certificate
- Fully completed and signed form of offer
- Completed in full bid documentation

A compulsory clarification meeting with representatives of the employer will take place at Kanyamazane Water Treatment Works. The employer will meet the contractors at the gate of the Kanyamazane WTW (25º 29' 03.99" S, 31º 10' 23.70" E) on 12 May 2023, starting at 10h00 am. Applicable COVID protocols will be observed. Contract documentation will not be available on site, and the engineer will not be available for inspection purposes on any other occasion. Technical enquiries may be directed in writing to the employers agent through email address: joubertn@skcm.co.za. Technical enquiries cut-off date is 19 May 2023 @15h00.

Bids received by telegram, fax or e-mail will not be considered. Late bids shall not be accepted nor considered.

A preferential point system shall apply whereby this contract will be allocated to a bidder in accordance with the Preferential Procurement Policy Framework Act, No 5 of 2000 and as defined in the conditions of bid in the bid document, read in conjunction with the Preferential Procurement Regulations, 2017, where 80 points will be allocated in respect of price and 20 points in respect of B-BBEE status level of contribution.

Procurement Enquiries	:	Samuel N Thobela Tel: 013 752 6839 email address: samuel.thobela@silulumanzi.com
Technical Enquiries	:	Nicky Joubert email address: joubertn@skcm.co.za
Employer	:	Silulumanzi (RF) (Pty) Ltd 18 Nel Street, Mbombela,1200 www.silulumanzi.com

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

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MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

T1.2 TENDER DATA

The conditions of tender are the standard conditions of tender as contained in SANS 10845-3, *Construction procurement, Part 3: Standard conditions of tender that apply specifically to this tender*.

The Tender Data shall be read with the Standard Conditions of Tender in order to expand on the Tenderer's obligations and the Employer's undertakings in administering the tender process in respect of the project under construction.

SANS 10845-3 makes references to the Tender Data for details that apply specifically to this tender. The Tender Data hereafter shall have precedence in the interpretation of any ambiguity or inconsistency between it and the provisions of SANS10845-3.

Each item of data given below is cross-referenced to the clause in the standard conditions of tender to which it mainly applies.

Clause Number	Data
3.1	The Employer is: Silulumanzi on behalf of the City of Mbombela, 18 Nel Street, Mbombela, 1200
	The tender documents issued by the Employer comprise of the following documents: **THE TENDER** **Part T1 Tendering Procedures** Part T1.1 Tender Notice and Invitation to Tender (white) Part T1.2 Tender Data (pink) **Part T2 Returnable Documents (Yellow)**
3.2	**THE CONTRACT** **Part C1 Agreement and Contract Data** C1.1 Form of Offer (pink) C1.2 Form of Acceptance (pink) C1.3 Schedule of deviations (pink) C1.4 Contract Data (yellow) C1.5 Performance Guarantee (yellow) C1.6 Agreement in terms of Occupational Health and Safety Act, 1993 (yellow) C1.7 Authority for Signatory in Terms of OH&S Act, 1993 (yellow) **Part C2 Pricing Data** C2.1 Pricing Instructions (yellow) C2.2 Schedule of Quantities (yellow)
	Part C3 Scope of Works C3 Scope of Works (blue) **Part C4 Site Information** C4 Site Information (green) **Appendices**

<table>
<tr><td></td><td>Annexure A Health and Safety Specification (white)
Annexure B Environmental Management Plan (white)
Annexure C Drawings for Tender Purposes (white)</td></tr>
<tr><td>3.4</td><td>The Employer’s Agent is: SKCMasakhizwe Engineers</td></tr>
<tr><td>3.5</td><td>The language for communications is English.</td></tr>
<tr><td>3.6</td><td>The competitive negotiation procedure shall not be applied.</td></tr>
<tr><td>4.1</td><td>Only those tenderers who satisfy the following eligibility criteria and who provide the required evidence in their tender submissions are eligible to submit tenders and have their tenders evaluated:

a) CIDB registration

Only those tenderers who are registered with the CIDB, or are capable of being registered prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, for a 6CEPE or Higher of construction work, are eligible to have their tenders evaluated.

Tenderers registered as potentially emerging enterprises but with a CIDB contractor grading designation lower than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations, are not eligible to have their tenders evaluated.

For the sake of clarity and subject to satisfactory proof of a tenderer’s ability to perform the work specified at the tendered value, the Employer lists in the table below the margins it considers reasonable. However, in the event that the sum tendered exceeds the margins shown then such tender shall be deemed non-responsive.

Amend table with latest upper limits from CIDB

<table>
<tr><th>Category of tender</th><th>Adjusted Upper limits per CIDB Table 8 Regulation 17</th></tr>
<tr><td>CE 1</td><td>R 500 000</td></tr>
<tr><td>CE 2</td><td>R 1000 000</td></tr>
<tr><td>CE 3</td><td>R 3 m</td></tr>
<tr><td>CE 4</td><td>R 6 m</td></tr>
<tr><td>CE 5</td><td>R 10 m</td></tr>
<tr><td>CE 6</td><td>R 20 m</td></tr>
<tr><td>CE 7</td><td>R 60 m</td></tr>
<tr><td>CE 8</td><td>R 200 m</td></tr>
<tr><td>CE 9</td><td>No limit</td></tr>
</table>
Joint Ventures are eligible to submit bids provided that:
1. every member of the joint venture is registered with the CIDB;
2. the lead partner has a contractor grading designation in the CE class of construction work; and
3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a CE or Higher or Higher class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.</td></tr>
</table>

	b) Key Personnel In order to be considered for an appointment in terms of this tender, the tenderer must have in its permanent employment key personnel who will be the single point of accountability and responsibility for the management and implementation of the works. Individuals must be identified for each of the key personnel listed under Forms T. Where the key personnel are no longer available to undertake the necessary work after the award of the tender, the contractor shall within a period of 14 working days replace the key personnel listed in Forms T with personnel with equivalent competencies and subject to approval by the Employer. Such approval shall not be unreasonably withheld. Failure to comply with the requirements or to complete Form T may render the tender non- responsive. c) National Treasury Central Supplier Database Tenderers who are not registered on the National Treasury Central Supplier Database at close of tender, shall submit a copy of their application of registration, with their tender submission. Tenders received from such tenderers who have not submitted proof of their registration within 21 days after the closing date for tender submissions, will not be considered.
4.6	Failure to apply instructions contained in addenda may render a tenderer's offer non-responsive in terms of Condition of Tender 5.8.
4.7	A compulsory clarification meeting with representatives of the employer will take place at Kanyamazane Water Treatment Works. The employer will meet the contractors at the gate of the Kanyamazane WTW (25º 29' 03.99" S , 31º 10' 23.70" E) on 12 May 2023, starting at 10h00 hrs. Full COVID protocols will be observed.
4.8	Request clarifications at least 7 working days before the closing time.
4.10	Tenderers are required to state the rates and currencies in South African Rands (ZAR).
4.12	Main tender offers are not required to be submitted together with alternative tenders.
4.13.1	Parts of each tender offer communicated on paper shall be submitted as an original (1 copy).
4.13.5 4.15	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: Location of tender box: Silulumanzi Physical address: 18 Nel Street, Mbombela 1200 Identification details: Tender KAW-MG-201, MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE
4.13.4	The tenderer is required to submit all certificates as listed in the Schedule of Tender Compliance (Form V).
4.13.5	The "ORIGINAL" copy of the bid shall be placed in a single sealed envelope or sealed packaging endorsed with the title and bid number stated on the front cover of these documents.
4.13.5	A two-envelope procedure will NOT be followed.
4.13.6	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted. All bid responses must be submitted in the tender box located at 18 Nel Street, Mbombela 1200 on or before 31 May 2023 by 11h00.
4.15	The closing time for submission of tender offer is as stated in the Tender Notice and Invitation to Tender.
4.16.1	The tender offer validity period is 90 days.

4.16.2	Where a tenderer, at any time after the opening of his tender offer but prior to entering into a contract based on his tender offer: a) withdraws his tender; b) gives notice of his inability to execute the contract in terms of his tender; or c) fails to comply with a request made in terms of 4.17, 4.18 or 5.9, such tenderer shall be barred from tendering on any of the Employer's future tenders for a period to be determined by the Employer, but not less than six (6) months, from the date of tender closure. The Employer may fully or partly exempt a tenderer from the provisions of this condition if he is of the opinion that the circumstances justify the exemption.
4.18	Any additional information requested under this clause must be provided within 5 (five) working days of date of request.
4.20	The tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part C1.5 of this procurement document.
4.22	Return all retained tender documents within 28 days after the expiry of the validity period
5.1	The employer shall respond to clarifications received up to 7 working days before tender closing time.
5.2	The employer shall issue addenda until 5 working days before tender closing time.
5.4	The time and date of tender closure is: Time: **11h00 on 31 May 2023** Location: Silulumanzi tender box @ 18 Nel Street, Mbombela, 1200 Tenders will be opened in public.
5.7	In the event of disqualification, the Employer may, at its sole discretion, impose a specified period during which tender offers will not be accepted from the offending tenderer and report same to CIDB and National Treasury.

5.9	Arithmetical errors, omissions, discrepancies and imbalanced unit rates Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount appearing in the summary to the Pricing Schedule shall govern. Check responsive tender offers for: a) the gross misplacement of the decimal point in any unit rate; b) omissions made in completing the pricing schedule or bills of quantities; or c) arithmetic errors in: i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or ii) the summation of the prices. d) imbalanced unit rates. Notify shortlisted tenderers of all errors, omissions or imbalanced rates that are identified in their tender offers. Where the tenderer elects to confirm the errors, omissions or re-balancing of imbalanced rates the tender offer shall be corrected as follows: a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the unit rate shall govern, and the line item total shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted and the unit rate shall be corrected. b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall be corrected. c) Where the unit rates are imbalanced adjust such rates by increasing or decreasing them and selected others while retaining the total of the prices derived after any other corrections made under (a) and (b) above. Where there is an omission of a line item, no correction is possible, and the offer may be declared non-responsive. Declare as non-responsive and reject any offer from a tenderer who elects not to accept the corrections proposed and subject the tenderer to the sanction under 4.16.2. The tenderer is required to submit balanced unit rates for rate only items in the pricing schedule. The rates submitted for these items will be taken into account in the evaluation of tenders.
5.11	The procedure for the evaluation of responsive tenders is Method 4: Financial offer, quality and preferences. Method 4 Financial offer, quality and preferences is scored as follows: a) Score each tender in respect of the financial offer made and preferences claimed, if any. b) Calculate the total number of tender evaluation points (TEV) in accordance with the following formula: $T_{EV} = N_{FO} + N_P + N_Q$

5.11.5

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;

N_P is the number of tender evaluation points awarded for preferences claimed in accordance with F.3.11.8.

N_Q is the number of tender evaluation points awarded for quality claimed in accordance with F.3.11.9.

c) Rank tender offers from the highest number of tender evaluation points to the lowest.

d) Recommend the tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points, and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this sub-clause is repeated.

f) Compelling and justifiable reasons not to recommend a tenderer are inter alia tenderers who:

- do not meet the minimum requirements listed in Part T2.1, List of Returnable Documents and/or
- failed to complete the tender document comprehensively with all the required information.

5.11.7

The financial offer will be scored using the following formula: $N_{FO} = W_1 \times A$

Where:

N_{FO} = the number of evaluation points awarded for the financial offer

W_1 = the maximum possible number of bid evaluation points awarded for the financial offer and will be:

(i) 90 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R 50,000,000; or

(ii) 80 where the financial value inclusive of VAT of one or more responsive tender offers equals or is less than R 50,000,000.

A = the number calculated using Formula 2 (Option 1) Table 1:

Formulae for calculating the value of A_a

Formula	Comparison aimed at achieving	Option 1[a]	Option 2[a]
1	Highest price or discount	$A = (1 + \frac{(P - P_m)}{P_m})$	$A = P / P_m$
2	Lowest price or percentage commission /fee '	$A = (1 - \frac{(P - P_m)}{P_m})$	$A = P_m / P$

[a] P_m is the comparative offer of the most favorable comparative offer.
P is the comparative offer of the tender offer under consideration.

Scoring preferences.

Up to 100 minus W_1 tender evaluation points will be awarded to tenderers who submit responsive tenders and who are found to be eligible for the preference claimed. Points are based on a tenderer's scorecard measured in terms of the Broad-Based Black Economic Empowerment Act (B-BBEE, Act 53 of 2003) and the Regulations (2017) to the Preferential Procurement Policy Framework Act (PPPFA, Act 5 of 2000).

5.11.8

Points awarded will be according to a tenderer's B-BBEE status level of contributor and summarised in the table below:

B-BBEE Status level of Contributor	Number of Points for Financial Value up to and including R 50 000 000.00
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant Contributor	0

Eligibility for preference points will be determined as follows:

- A tenderer's scorecard shall be a B-BBEE Verification Certificate issued in accordance with the revised Notice of Clarification published in the Notice 444 of 2015 published in Government Gazette 38799 on 15 May 2015 by the Department of Trade and Industry; And
- The scorecard shall be submitted as a certificate attached to Returnable Schedule Form D; and
- The certificate Shall:
- Be an original or an original certified copy of the original; and
- Have been issued by a Verification Agency accredited by the South African National Accreditation System (SANAS); or
- Have been issued prior to 30 September 2016 by a registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA); or
- Be valid at the tender closing date; and
- Have a date of issue less than 12 (twelve) months prior to the tender closing date (see Tender Data 4.15); and
- Compliance with any other information requested to be attached to Returnable Schedule Form D; and
- If a tenderer claims a preference score without submitting an acceptable Verification Certificate(s) and/or all of the information in compliance with Returnable Schedule Form D, a period of 1 (one) working day will be granted to submit this information; and
- Failure to submit a valid Verification Certificate(s) and/o all the information in compliance with Returnable Schedule Form D, will result in the award of 0 (zero) points for preference; and
- In the event of a Joint Venture (JV), a consolidated B-BBEE Verification Certificate in the name of the JV shall be submitted, as well as a valid B-BBEE Verification Certificate for each member of the JV; and
- If the tender documents indicate that the tenderer intends sub-contracting more than 25% of the value of the contract to any other person not qualifying for at least the points that the tenderer qualifies for, 0 (zero) points for preference will be awarded, unless the intended sub-contractor is an EME that has the capability to execute the sub-contract.

Description of quality criteria	Maximum number of points
Plant and equipment	10
Key Personnel	10
Company Experience	40
Locality	20
Financial References	20
Total evaluation points for quality (Ms)	**100**

5.11.9

Tender offers will only be considered responsive if the minimum quality requirement of **60 points** is achieved.

Tenderers are required to demonstrate their ability to undertake the work and provide proof of previous experience, expertise and availability of plant and equipment to undertake a project of this nature. Tenderers are therefore required to meet a minimum Quality Score of 60% (60 points out of 100) based on the criteria listed below. A score of less than 60 out of 100 points for Quality will render the tender non-responsive. The onus rests with the Tenderer to supply sufficient information to allow for evaluation and award of points detailed below. If insufficient information is provided, zero points will be awarded for that particular item.

Note that Quality points are only used to determine responsiveness and will not be used further in the evaluation.

i). Plant and Equipment (**Maximum 10 points**)

Details of owned and hired plant and equipment are to be entered in Form R of the Returnable Schedules.

ii). Key Personnel (**Maximum 10 points)**

Details of key personnel and their experience and qualifications are to be entered in Form T of the Returnable Schedules.

iii). Experience (**Maximum 40 points**)

Details of construction of bulk water pipelines in terms of the points to be claimed in terms of quality, must be entered in Form Q in the Returnable Schedule.

iv) Locality (**Maximum 20 points)**

Include details of the tenderer's head office location to the Form U.

v). Financial References (**Maximum 20 points**)

Financial references shall be added under Form S.

The prompts for judgment and the associated scores used in the evaluation of quality shall be as follows:

Score	Prompt for judgment
0	Failed to address the question / issue
20	A detrimental response / answer / solution – limited or poor evidence of skill / experience sought or high risk that relevant skills will not be available
40	Less than acceptable – response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
60	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
80	Above acceptable – response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
100	Excellent – response / answer / solution gives real confidence that the tenderer will add real value.

5.13	**In addition to the requirements of the Condition of Tender, offers will only be accepted if it complies with the below mandatory requirements and failure to adhere will lead to immediate disqualification:** • Submit tax compliance status (TCS) issued by SARS; • the tenderer submits an **Origina**l letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part C1.5 of this procurement document; • the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation of 6CEPE or higher; • prove of rates and taxes clearance from relevant local authority for the business and all business directors must be attached; • certified copy of B-BBEE / sworn affidavit for B-BBEE must be attached; • the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; • the tenderer has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; • the tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process; • the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer (**relevant COIDA registration must be attached**); • the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely; • No Tippex has been used on the bid document; • the tenderer has not used an erasable pen and completed the bid document with a pencil.
5.17	The number of paper copies of the signed contract to be provided by the employer is One.
5.19	All requests shall be in writing.

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

PART T2: RETURNABLE DOCUMENTS

PART T2: RETURNABLE DOCUMENTS

1. Failure to fully complete the **compulsory** returnable documents shall render such a tender offer unresponsive.
2. Tenderers shall note that their signatures appended to each returnable form **represents a declaration that they vouch for the accuracy and correctness of the information provided**, including the information provided by candidates proposed for the specified key positions.
3. Notwithstanding any check or audit conducted by or on behalf of the Employer, the information provided in the returnable documents is accepted in good faith and as justification for entering into a contract with a tenderer. **If subsequently any information is found to be incorrect such discovery shall be taken as willful misrepresentation by that tenderer to induce the contract**. In such event the Employer has the discretionary right under contract condition 9.2 to terminate the contract.

The Tenderer must complete the following returnable Schedules:

Returnable Schedules required for Tender evaluation purposes

COMPULSORY TENDER DOCUMENTS		
FORM A1	CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING (***Not Applicable***)	T.14
FORM A2	CERTIFICATE OF EXPRESION OF INTEREST (***Not Applicable***)	T.15
FORM B	RECORD OF ADDENDA TO TENDER DOCUMENTS	T.16
FORM C	PROPOSED AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES	T.17
FORM D	PREFERENCING SCHEDULE: BROAD BASED BLACK ECONOMIC EMPOWERMENTSTATUS	T.18-T.19
FORM E	COMPULSORY DECLARATION	T.20-T.24
FORM F	MUNICIPAL DECLARATION AND RETURNABLE DOCUMENTS	T.25-T.27
FORM G	CERTIFICATE OF INDEPENDENT TENDER	T.28-T.29
FORM H	DECLARATION OF GOOD STANDING REGARDING TAX	T.30
FORM I	DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES	T.31-T.32
FORM J	REGISTRATION ON NATIONAL TREASURY CENTRAL SUPPLIER DATABASE (FULL REPORT) (***Not Applicable***)	T.33
FORM K	DECLARATION OF TENDERER'S LITIGATION HISTORY	T.34
FORM L	AUTHORITY OF SIGNATORY	T.35-T.37
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FORM Q	COMPANY EXPERIENCE IN RELATION TO SCOPE OF WORKS	T.44- T.45
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FORM S1	FINANCIAL RESOURCES: BANKING INFORMATION AND AUDITED FINANCIAL STATEMENTS WITH A MINIMUM TURNOVER OF R10 M OR HIGHER FOR REPORTING CYCLE	T.47- T.48
FORM S2	FINANCIAL RESOURCES: DECLARATION OF PROCUREMENT ABOVE R10 M	T.49-T.50
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FORM T	MANAGERIAL CAPACITY, EXPERIENCE AND QUALIFICATIONS	T.53-T.55
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CERTIFICATE OF TENDER COMPLIANCE		**T.58**
FORM V	SCHEDULE OF TENDER COMPLIANCE	T.59

COMPULSORY TENDER DOCUMENTS

FORM A1: CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING

NOT APPLICABLE TO THIS TENDER

Notes to Tenderer:

1. Unless the attendee's name, details and signature also appear on the attendance register this Certificate of Attendance shall not be accepted and the tenderer's offer shall be deemed non- responsive.

This is to certify that I, ...

representative of (tenderer) .....

of (address) .....

.....

.....

telephone number .....

fax number .....

e-mail .....

attended the clarification meeting on (date) .....

Signature of Representative .....

FORM A2: CERTIFICATE OF EXPRESSION OF INTEREST

NOT APPLICABLE TO THIS TENDER

Notes to Tenderer:

1. The duly completed certificate of Expression of Interest must be submitted by whoever intends to tender for this particular tender *within seven (7) days from the date the tender is advertised*. Failure to submit the certificate of Expression of Interest within the required period may render the tenderer non-responsive and City of Mbombela does not accept responsibility for any communication not received by the tenderer timeously.
2. Late notification of Expression of Interest by a prospective tenderer will not necessarily result in the tender closing date being extended.
3. Should you intend to submit a tender for this particular tender please sign the certificate, scan and email the completed document to the email address (tenders@mbombela.gov.za).
4. The Employer shall send all correspondence, including Addenda, only to the Tenderer's email address as provided herein.

This is to certify that I, ...

.....

representative of (insert name of tenderer) .....

of (address)

.....

.....

telephone number .....

fax number .....

e-mail .....

intends to submit a tender in response to the tender notice and invitation for tender this contract.

Signed ..... Date .....

Name ..... Position .....

FORM B: RECORD OF ADDENDA TO TENDER DOCUMENTS(SIPDM)

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	**Title or Details**
▪		
▪		
▪		
▪		
▪		
▪		
▪		
▪		
▪		
▪		

Attach additional pages if more space is required.

Signed ..... Date .....

Name ..... Position .....

FORM C: PROPOSED AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES(SIPDM)

The Tenderer should record any deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such deviations and qualifications in a covering letter to his tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause 5.8 of SANS 10845-3 regarding the employer's handling of material deviations and qualifications.

(a) AMENDMENTS

Page, Clause or Item No	Proposed Amendment

Note: (1) Amendments to the General and Special Conditions of Contract are not acceptable.
(2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his tender.

(**This is not an invitation for alternatives** but should the Tenderer desire to make any departures for the provisions of this contract he shall set out his proposals clearly hereunder.

(b) ALTERNATIVES

Proposed Alternative	Description of Alternative

Note: (1) Individual alternative items that do not justify an alternative tender, and an alternative offer for time for completion should be listed here.

(2) In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc. and a detailed statement setting out the salient features of the proposed alternatives must accompany the tender.

(3) Alternative tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main tender offer.

Signed ..... Date .....

Name ..... Position .....

FORM D: PREFERENCING SCHEDULE: BROAD BASED BLACK ECONOMIC EMPOWERMENT STATUS (MBD 6.1)

Preamble

Section 10(b) of the Broad-Based Black Economic Empowerment Act of 2003 (Act No. 53 of 2003) states that "*Every organ of state and public entity must take into account and. as far as is reasonably possible. apply any* ***relevant code of good practice*** *issued in terms of this Act in developing and implementing a preferential procurement policy:"*

A number of codes of good practice have been issued in terms of Section 9(1) of the B-BBEE Act of 2003 including a generic code of good practice and various sector codes. The sector codes vary the metrics, weightings and targets used in the generic code of good practice to establish the overall performance of an entity and its B-BBBEE status. The B-BBEE status needs to be assessed in accordance with the applicable code.

1. Conditions associated with the granting of preferences

Tenderers who claim a preference shall provide sufficient evidence of their B-BBEE Status in accordance with the requirements of section 2 in respect of the applicable code as at the closing time for submissions, failing which their claims for preferences will be rejected.

2 Sufficient evidence of qualification

2.1 Exempted micro enterprises

Sufficient evidence of qualification as an Exempted Micro-Enterprise is a:

a) a registered auditor's certificate or similar certificate issued by an accounting officer as contemplated in the Close Corporation Act of 1984 in respect of the entity's last financial year or a 12 month period which overlaps with its current financial year; or a certificate issued by a verification agency and which is valid as at the closing date for submissions; or.

b) a sworn affidavit - B-BBEE Exempted Micro Enterprise (see www.thedti.gov.za/gazzettes/Affidavit_EME.pdf

2.2 Enterprises other than micro exempted enterprises

Sufficient evidence of B-BBEE Status is:

a) an original or certified copy of the certificate issued by a verification agency accredited by the South African National Accreditation System (SANAS) or registered auditors approved by Independent Regulatory Board for Auditors (IRBA) and which is valid as at the closing date for submissions; or.

b) a sworn affidavit – B-BBEE Qualifying Small Enterprise (see www.thedti.gov.za/gazzettes/BBEE_QUALIFYING_SMALL_ENTERPRISE.pdf)

3 Tender preferences claimed

The scoring shall be as follows:

B-BBEE status determined in accordance with the referencing schedule for Broad-Based Black Economic Empowerment	**% max points for preference**
Form not completed or no-complaint contributor	0
Level 8 contributor	10
Level 7 contributor	20
Level 6 contributor	30
Level 5 contributor	40
Level 4 contributor	50
Level 3 contributor	80
Level 2 or contributor	90
Level 1 contributor	100

4 Declaration

The tenderer declares that

a) the tendering entity is a level contributor as stated in the submitted evidence of qualification as at the closing date for submissions

b) the tendering entity has been measured in terms of the following code (tick applicable box)

□ Generic code of good practice

□ Other – specify.....

c) the contents of the declarations made in terms of a) and b) above are within my personal knowledge and are to the best of my belief both true and correct

The undersigned, who warrants that he / she is duly authorized to do so on behalf of the tenderer, confirms that he / she understands the conditions under which such preferences are granted and confirms that the tenderer satisfies the conditions pertaining to the granting of tender preferences.

Signature: .....

Name: .....

Duly authorised to sign on behalf of: .....

Telephone: .....

Fax: ..... Date: .....

Name of witness ..... Signature of witness .....

Note:

1) Failure to complete the declaration will lead to the rejection of a claim for a preference.
2) Supporting documentation of the abovementioned claim for a preference must be submitted with the tender submission to be eligible for a preference. (see Clause 5.11.8 in Tender Data)

FORM E: COMPULSORY DECLARATION (SIPDM)

The following particulars must be furnished. In the case of a joint venture, separate declaration in respect of each partner must be completed and submitted.

Section 1: Enterprise Details

Name of Enterprise

Name of enterprise:	
Contact person:	
Email:	
Telephone:	
Cell no	
Fax:	
Physical address	
Postal address	

Section 2: Particulars of companies and close corporations Company / Close Corporation registration number.

Section 3: SARS Information

Tax reference number	
VAT registration number	*State Not registered if Not Registered for VAT*

Section 5: National Treasury Central Supplier Database

Supplier number	
Unique registration reference number	

Section 6: Particulars of principals

principal: means a natural person who is a partner in a partnership, a sole proprietor, a director of a company established in terms of the Companies Act of 2008 (Act No. 71 of 2008) or a member of a close corporation registered in terms of the Close Corporation Act, 1984, (Act No. 69 of 1984).

Full name of principal	Identity number	Personal tax reference number

*insert separate page if necessary

Section 7: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any principal is currently or has been within the last 12 months in the service of any of the following:

a) a member of any municipal council	☐	an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act of 1999 (Act No. 1 of 1999)	☐
b) a member of any provincial legislature	☐		
c) a member of the National Assembly or the National Council of Province	☐	member of an accounting authority of any national or provincial public entity	☐
1. a member of the board of directors of any municipal entity	☐		
2. an official of any municipality or municipal entity	☐	an employee of Parliament or an employee of Parliament or a provincial legislature	☐

If any of the above boxes are marked, disclose the following:

Name of principal	**Name of institution, public office, board or organ of state and position held**	**Status of service** *(tick appropriate column)*	
		Current	**Within last 12 months**

*insert separate page if necessary

Section 8: Record of family member in the service of the state

family member: a person's spouse, whether in a marriage or in a customary union according to indigenous law, domestic partner in a civil union, or child, parent, brother, sister, whether such a relationship results from birth, marriage or adoption.

Indicate by marking the relevant boxes with a cross, if any family member of a principal as defined in section 5 is currently or has been within the last 12 months been in the service of any of the following:

d) a member of any municipal council	☐	an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act of 1999 (Act No. 1 of 1999)	☐
e) a member of any provincial legislature	☐		
f) a member of the National Assembly or the National Council of Province	☐	member of an accounting authority of any national or provincial public entity	☐
3. a member of the board of directors of any municipal entity	☐		
4. an official of any municipality or municipal entity	☐	an employee of Parliament or an employee of Parliament or a provincial legislature	☐

If any of the above boxes are marked, disclose the following:

Name of principal	Name of institution, public office, board or organ of state and position held	Status of service *(tick appropriate column)*	
		Current	**Within last 12 months**

*insert separate page if necessary

Section 9: Record of termination of previous contracts with an organ of state

Was any contract between the tendering entity including any of its joint venture partners terminated during the past 5 years for reasons other than the employer no longer requiring such works or the employer failing to make payment in terms of the contract.

☐ Yes ☐ No (Tick appropriate box)

If yes, provide particulars (insert separate page if necessary)

Section 10: Declaration

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tendering entity confirms that the contents of this Declaration are within my personal knowledge, and save where stated otherwise in an attachment hereto, are to the best of my belief both true and correct, and:

neither the name of the tendering entity or any of its principals appears on:

a) the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 (Act No. 12 of 2004).

National Treasury's Database of Restricted Suppliers (see www.treasury.gov.za)

ii) neither the tendering entity of any of its principals has within the last five years been convicted of fraud or corruption by a court of law (including a court outside of the Republic of South Africa);

iii) any principal who is presently employed by the state has the necessary permission to undertake remunerative work outside such employment (attach permission to this declaration);

iv) the tendering entity is not associated, linked or involved with any other tendering entities submitting tender offers

v) has not engaged in any prohibited restrictive horizontal practices including consultation, communication, agreement, or arrangement with any competing or potential tendering entity regarding prices, geographical areas in which goods and services will be rendered, approaches to determining prices or pricing parameters, intentions to submit a tender or not, the content of the submission (specification, timing, conditions of contract etc.) or intention to not win a tender;

vi) has no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;

vii) neither the tenderer or any of its principals owes municipal rates and taxes or municipal service charges to any municipality or a municipal entity and are not in arrears for more than 3 months;

SARS may, on an on-going basis during the term of the contract, disclose the tenderer's tax compliance status to the Employer and when called upon to do so, obtain the written consent of any subcontractors who are subcontracted to execute a portion of the contract that is entered into in excess of the threshold prescribed by the National Treasury, for SARS to do likewise.

Signed ..... Date .....

Name ..... Position .....

NOTE 1 The Standard Conditions of Tender contained in SANS 10845-3 prohibits anticompetitive practices (clause 3.1) and requires that tenderers avoid conflicts of interest, only submit a tender offer if the tenderer or any of his principals is not under any restriction to do business with employer (4.1.1) and submit only one tender either as a single tendering entity or as a member in a joint venture (clause 4.13.1). Clause 5.7 also empowers the Employer to disqualify any tenderer who engages in fraudulent and corrupt practice. Clause 3.1 also requires tenderers to comply with all legal obligations.

NOTE 2: Section 30(1) of the Public Service Act, 1994, prohibits an employee (person who is employed in posts on the establishment of departments) from performing or engaging remunerative work outside his or her employment in the relevant department, except with the written permission of the executive authority of the department. When in operation, Section 8(2) of the Public Administration Management Act, 2014, will prohibit an employee of the public administration (i.e. organs of state and all national departments, national government components listed in Part A of Schedule 3 to the Public Service Act, provincial departments including the office of the premier listed in Schedule 1 of the Public Service Act and provincial departments listed in schedule 2 of the Public Service Act, and provincial government components listed in Part B of schedule 3 of the Public Service Act) or persons contracted to executive authorities in accordance with the provisions of section 12A of the Public Service Act of 1994 or persons performing similar functions in organs of state from conducting business with the State or to be a director of a public or private company conducting business with the State. The offence for doing so is a fine or imprisonment for a period not exceeding 5 years or both. It is also a serious misconduct which may result in the termination of employment by the employer.

NOTE 3: Regulation 44 of Supply Chain Management regulations issued in terms of the Municipal Finance Management Act of 2003 requires that organs of state and municipal entities not award a contract to a person who is the service of the state, a director, manager or principal shareholder in the service of the state or who has been in the service of the state in the previous twelve months.

NOTE: 4: Regulation 45 of Supply Chain Management regulations requires a municipality or municipal entity to disclose in the notes to the annual statements particulars of any award made to a close family member in the service of the state.

NOTE: 5 Corrupt activities which give rise to an offence in terms of the Prevention and Combating of Corrupt Activities Act of 2004) include improperly influencing in any way the procurement of any contract, the fixing of the price, consideration or other moneys stipulated or otherwise provided for in any contract and the manipulating by any means of the award of a tender.

NOTE: 6 Section 4 of the Competition Act of 1998 prohibits restrictive horizontal practice including agreements between parties in a horizontal relationship which have the effect of substantially preventing or lessening competition, directly or indirectly fixing prices or dividing markets or constitute collusive tendering. Section 5 also prohibits restrictive vertical practices. Any restrictive practices that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties.

ATTACH THE FOLLOWING DOCUMENTS TO THIS PAGE

- **(1) For Closed Corporations**
  - CK1 or CK2 as applicable (Founding Statement)
  - Certified Copies of the ID's of the Directors
  - Certified Shareholders Certificate (if any)

OR

- **(2) For Companies**
  - A copy of the Certificate of Incorporation
  - Certified Copies of the ID's of the Directors, and
  - Certified shareholders register (if any)

OR

- **(3) For Joint Venture Agreements**
  - Joint Venture Agreement between all the parties,
  - as well as the documents in (1) or (2) of each Joint Venture member.

OR

- **(4) For Partnership**
  - Certified Copies of the ID's of the partners

OR

- **(5) One person Business / Sole trader**
  - Certified Copy of ID

FORM F: MUNICIPAL DECLARATION AND RETURNABLE DOCUMENTS (SIPDM)

The following particulars must be furnished in relation to tenders for municipalities and municipal entities where:

a) contractors are required; and

b) goods, services or a combination thereof where the estimated total of the prices exceeds R 10 million including VAT.

In the case of a joint venture, separate municipal declarations and returnable documents shall be submitted in respect of each partner.

Section 1: Enterprise Details / Name of enterprise:

Name of enterprise:	
Contact person:	
Email:	
Telephone:	
Cell no	
Fax:	
Physical address	
Postal address	

Section 2: Declaration for Contractor's services:

The enterprise has been awarded the following contract services by an organ of state during the last five years.

Name of organ of state	Estimated value of contracts	Nature of service e.g. quantity surveying	Service number similar to required service (yes / no)?

Attach separate page as necessary

Section 3: Goods, services or a combination thereof where the estimated total of the prices exceeds R 10 million including VAT

I / we certify that

1) (tick one of the boxes):

☐ the enterprise is not required by law to prepare annual financial statements for auditing.

☐ the enterprise is required by law to have audited annual financial statements and attached the audited financial statements for the past three financial years, or since the establishment as the enterprise was established within the past three years.

2) the enterprise and its directors has / have no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days (i.e.: all municipal accounts are paid up to date) Attach Municipal Utility Account;

3) source of goods and / or services:

(tick one of the boxes and insert percentages if applicable):

☐ goods and / or services are sourced only from within the Republic of South Africa

☐ [ ] % of the total cost of goods and / or services will be sourced from outside the Republic of South Africa and the percentage of payment from the municipality or municipal entity which is expected to be transferred out of the Republic is [ ] %

I furthermore confirm that the following contracts were awarded to the enterprise by an organ of state during the last five years and attached particulars of any material non-compliance or dispute concerning the execution of such contracts:

Name of organ of state	**Estimated number of contracts**	**Nature of contracts**

*Attach separate page as necessary

I, the undersigned who warrants that I am duly authorised on behalf of the tendering entity, hereby declare that the contents of this Declaration are within my personal knowledge, and save where stated otherwise are to the best of my belief both true and correct.

Signed: _____ Date: _____

Name: _____ Position: _____

ATTACHED HERETO AN ORIGINAL OR CERTIFIED COPY OF THE MUNICIPAL UTILITY ACCOUNT NOT OLDER THAN 6 MONTHS

FORM G: CERTIFICATE OF INDEPENDENT TENDER (MBD 9)

Notes to tenderer:

a) This certificate conforms to Treasury Regulation 16A9 and the requirement of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, that prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive tendering.
b) Collusive tendering is a conspiracy between businesses that would normally be expected to compete, to agree not to compete, in a tender process.
c) This certificate serves as a declaration by the tenderer that the tender submitted is free from any collusion with a competitor.

CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying tender:

_____

(Tender Number and Description) in response to the invitation for the tender made by:

_____

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: _____ that:

(Name of Tenderer)

i) I have read and I understand the contents of this Certificate;

ii) I understand that the accompanying tender will be disqualified if this Certificate is found not to be true and complete in every respect;

iii) I am authorized by the tenderer to sign this Certificate, and to submit the accompanying tender, on behalf of the tenderer;

iv) Each person whose signature appears on the accompanying tender has been authorized by the tenderer to determine the terms of, and to sign, the tender, on behalf of the tenderer;

v) For the purposes of this Certificate and the accompanying tender, I understand that the word "competitor" shall include any individual or organization, other than the tenderer, whether or not affiliated with the tenderer, who:

(a) has been requested to submit a tender in response to this tender invitation;

(b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and

(c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer

vi) The tenderer has arrived at the accompanying tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.

vii) In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:

a) prices;
b) geographical area where product or service will be rendered (market allocation)
c) methods, factors or formulas used to calculate prices;
d) the intention or decision to submit or not to submit, a tender;
e) the submission of a tender which does not meet the specifications and conditions of the tender; or
f) bidding with the intention not to win the tender.

viii) In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.

ix) The terms of the accompanying tender have not been, and will not be, disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.

x) I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

Signature	Date
Capacity under which Tender is Signed	Name of Tenderer

FORM H: DECLARATION OF GOOD STANDING REGARDING TAX (GBD 2)

ATTACH TAX COMPLIANCE STATUS (TCS) PIN TO THIS PAGE

The Tax Compliance Status (TCS) PIN must be submitted together with the tender. Failure to submit the above-mentioned documentation will result in the invalidation of the tender.

In tenders where Consortia / Joint Ventures / Sub-contractors are involved; each party must submit a separate Tax Compliance Status (TCS) PIN.

FORM I: DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (MBD 8)

Notes to tenderer:

1. This tender document must form part of all tenders invited.
2. This form serves as a declaration to be used by institutions in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The tender of any tenderer may be disregarded if that tenderer or any of its directors have;
   a. abused the institution's supply chain management system;
   b. committed fraud or any other improper conduct in relation to such system;
   c. failed to perform on any previous contract.
4. In order to give effect to the above, the following questionnaire must be completed and submitted with this tender.

Item	Question	Yes	No
4.1	**Is the tenderer or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector?** **(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied).** **The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.**	Yes ☐	No ☐
4.1.1	If so, furnish particulars:		
4.2	Is the tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? **for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.**	Yes ☐	No ☐
4.2.1	If so, furnish particulars:		
4.3	Was the tenderer or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
4.3.1	If so, furnish particulars:		
4.4	Does the tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes	No

4.4.1	If so, furnish particulars:		
4.5	Was any contract between the tenderer and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.7.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) ……

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

Signature	Date
Capacity under which Tender is Signed	Name of Tenderer

FORM J: REGISTRATION ON NATIONAL TREASURY CENTRAL SUPPLIER DATABASE (FULL REPORT)

NOT APPLICABLE TO THIS TENDER

The tenderer shall provide a printed copy of the Active Supplier Listing on the National Treasury Central Supplier Database (Full Report). (www.treasury.gov.za). Tenderers who are not registered on the Central Supplier Database should attach proof of their application for registration (refer to Tender Data Clause 4.1). In the case of a Joint Venture, a printed copy of the Active Supplier Listing must be provided for each member of the Joint Venture.

Name of Contractor:

.....

Central Supplier Database Supplier Number:

.....

Affix Proof of the National Treasury Central Supplier Database (Full Report) to this page.

FORM K: DECLARATION OF TENDERER'S LITIGATION HISTORY

Does the tenderer have any litigation with which tenderer (including its directors, shareholders or other senior members in previous companies) have been involved with any organ of state or state department within the last ten years?

YES	NO

If yes, furnish your details in table below.

NB: It is compulsory for all bidders to sign this form

The tenderer shall list below details of any litigation with which the tenderer (including its directors, shareholders or other senior members in previous companies) has been involved with any organ of state or state department within the last ten years. The details must include the year, the litigating parties, the subject matter of the dispute, the value of any award or estimated award if the litigation is current and in whose favour the award, if any, was made.

Client	Other Litigating Party	Dispute	Award Value	Date Resolved

Signature

Date

Capacity under which Tender is Signed

Name of Tenderer

FORM L: AUTHORITY OF SIGNATORY

Details of person responsible for tender process:

Name: ----------

Contact number: ----------

Office address: ----------

Signatories for close corporations and companies shall confirm their authority by attaching to this form **a duly signed and dated original or certified copy on the Company Letterhead** of the relevant resolution of their members or their board of directors, as the case may be.

PRO-FORMA FOR COMPANIES AND CLOSE CORPORATIONS:

"By resolution of the board of directors passed on *(date)*

Mr……

has been duly authorized to sign all documents in connection with the Tender for Contract Number/Name

……and any Contract which may arise there from on behalf of

……

(BLOCK CAPITALS) SIGNED ON BEHALF OF THE COMPANY

IN HIS CAPACITY AS .....……

DATE .....……

FULL NAMES OF SIGNATORY ……

SIGNATURE .....……

AS WITNESSES: 1. NAME …… SIGNATURE ……

2. NAME …… SIGNATURE ……

PRO-FORMA FOR JOINT VENTURES:

Certificate of Authority for Joint Ventures

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorize…… Mr./Ms ……., authorized signatory of the company....., acting in the capacity of lead partner, to sign all documents in connection with the tender offer an any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
		Signature: …….. Name: ……. Designation: ……..
		Signature: …….. Name: ……. Designation: ……..
		Signature: …….. Name: ……. Designation: ……..
		Signature: …….. Name: ……. Designation: ……..

ATTACHED HERETO THE DULY SIGNED AND DATED ORIGINAL OR CERTIFIED COPY OF AUTHORITY OF SIGNATORY ON COMPANY LETTERHEAD

FORM M: SCHEDULE OF SPECIALIST SUBCONTRACTORS

Notes to tenderer:

1. The tenderer shall list below the specialist items of work on this contract. Alternatives may be mentioned.
2. The tenderer shall state whether he intends to carry out any specialized work himself.

Acceptance of this tender shall not be construed as approval of all or any of the listed specialist subcontractors. Should any or all of the specialist subcontractors not be approved subsequent to the acceptance of the tender, it shall in no way invalidate this tender, and the tendered unit rates for the various items of work shall remain final and binding, even in the event of a subcontractor not listed below being approved by the Employer's Representative.

SPECIALISED ITEM	**INDICATE IF SUB-CONTRACTED (Tick correct option)**	
	YES	NO

In order to complete the Works under this Contract, I/we propose to employ the following sub-contractors to carry out the portion/type of work as detailed. **Affix Original or Certified proof of 3 previous projects for each sub-contractor.**

(Note: All proposed sub-contractors must be listed).

Sub-contractor: Name, Address and Telephone No.	**Portion/type of work to be undertaken**	
_____ _____ (____)_____		**Previous value of work:** **Previous Experience:**
_____ _____ (____)_____		**Previous value of work:** **Previous Experience:**
_____ _____ (____)_____		**Previous value of work:** **Previous Experience:**
_____ _____ (____)_____		**Previous value of work:** **Previous Experience:**

FORM N: PROOF OF GOOD STANDING WITH COMPENSATION COMMISSIONER

Notes to tenderer:

1. Discovery that the tenderer has failed to make proper disclosure may result in Silulumanzi terminating a contract that flows from this tender on the ground that it has been rendered invalid by the tenderer's misrepresentation.

2. The tenderer shall attach to this Form evidence that he is registered and in good standing with the compensation fund. or with a licensed compensation insurer who is approved by Department of Labour in terms of section 80 of the Compensation for Injury and Disease Act 1993 (COID) (Act 130 of 1993).

3. Relevant COIDA certificate must reflect the nature of works relevant / similar to the works of this contract. Failure to adhere will render your submission non-responsive.

Affix certificate of Good Standing with Compensation Commissioner (Dept. of Labour)

to this page.

FORM O: SCHEDULE OF CURRENT COMMITMENTS

Notes to tenderer:

(a) The tenderer shall list below all contracts currently under construction or awarded and about to commence and tenders for which offers have been submitted but awards not yet made.
(b) In the event of a joint venture enterprise, details of all the members of the joint venture shall similarly be attached to this form.
(c) The lists must be restricted to not more than 5 contracts and 5 tenders. If a tenderer's actual commitments or potential commitments are greater than 5 each, those listed should be in descending order of expected final contract value or sum tendered.

Contracts Awarded				
Employer	Project	Expected Value of contract (Inclusive of VAT)	Durations (Months)	Expected Completion Date

Tenders not Yet Awarded				
Employer	Project	Tendered Amount (Inclusive of VAT)	Tendered Durations (Months)	Expected Commencement Date

Signature

Date

Capacity under which Tender is Signed

Name of Tenderer

FORM P: REGISTRATION WITH CIDB

The tenderer shall provide a printed copy of the Active Contractor's Listing off the CIDB website. (www.cidb.org.za). Tenderers whose CIDB registration expires within 21 days after close of tender should attach proof of their application for re-registration (refer to Tender Data Clause 4.1). In the case of a Joint Venture, a printed copy of the Active Contractor's Listing must be provided for each member of the Joint Venture.

Name of Contractor: .....

Contractor Grading Designation: .....

CIDB Contractor Registration Number: .....

Expiry Date: .....

RETURNABLES FOR QUALITY CRITERIA

FORM Q: COMPANY EXPERIENCE IN RELATION TO SCOPE OF WORKS

The Tenderer will receive a maximum of 40 points based on information provided in this schedule. The tenderer may list only 4 projects of similar nature and size. The minimum points to be obtained will be 20 points.

The following is a statement of work of similar nature and size recently successfully executed by myself / ourselves:

1 Points will be given for projects completed of similar nature and size and will be allocated points in the following manner:
2 The tenderer scores 5 points per project with a value of between R2 million to R7 million completed in the last 5 years.
3 The tenderer scores 10 points per project with a value of more than R7 million or more completed in the last 5 years.
4 The maximum Quality points for each criterion are listed below.
5 Positive feedback from the Consulting Engineer from the designated / listed contact person will contribute toward points allocated for the attached reference letters/testimonials.
6 Positive feedback from the Employer from the designated / listed contact person will contribute toward points allocated for the attached certificates of completion.
7 Points for completion certificate or reference letters attached will be given for similar projects. Negative feedback will forfeit all points, meaning zero (0) points will be allocated for the attached reference letters/testimonials from the Client.
8 Failure to submit all relevant information per project will result in the forfeiture of all points for that relevant project.
9 The experience of the Tenderer or joint venture partners in a consortium will be evaluated based on experience in similar projects or similar areas and conditions in relation to the scope of work required for this project. NB: include points scoring

Appointment letter as well as Completion Certificate or Reference Letter from Client of Relevant Work done previously (letters to be attached – zero points if not attached) **Certified copies are compulsory**	**Consulting Employer's Representative: Contact Person and Telephone Number**	**Employer: Contact Person and Telephone Number**	**Value of Work** (inclusive of VAT)	**Date Completed (Completion certificate / Reference Letter)** (max 10 points/project- see scoring above)

Appointment letter as well as Completion Certificate or Reference Letter from Client of Relevant Work done previously (letters to be attached – zero points if not attached) **Certified copies are compulsory**	**Consulting Employer's Representative: Contact Person and Telephone Number**	**Employer: Contact Person and Telephone Number**	**Value of Work** (inclusive of VAT)	**Date Completed (Completion certificate / Reference Letter)** (max 10 points/project- see scoring above)
*Attach additional pages if more space is required		Total Points		

FORM R: PLANT & EQUIPMENT

The tenderer will receive a maximum of 10 points based on information provided in this schedule.

1. The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract or will acquire or hire for this contract if my / our tender is accepted.

2. The tenderer will receive Quality points for listing of plant available for this specific contract as follows:
   - Major plant for construction works if well identified and 100% is owned and available at start of contract maximum points will be as stated in allocated points if owned column.
   - Half points will be allocated for leased plant. **If there is a lease contract in place with a fleet management company whose contract cover the period of appointment under this Contract, full points will be allocated provided the lease agreement between the parties is valid and verifiable.**
   - Plant correctly identified and owned will be calculated according to allocated points.

3. Proof of ownership to be submitted: Natis to be attached and all submissions will be verified for ownership. The same principle is applicable to a lease agreement with a fleet management service provider. Failure to provide Natis certificate of ownership of the intended fleet management service provider shall result in Zero points allocated.

Description, size, capacity, etc.	**Allocate Points if owned**	**Allocate Points if Hired/leased**	**Quantity Required**	**Quantity owned**	**Quantity hired**	**Points Scored**
Excavator (20 ton)	2	1	1			
TLB	2	1	1			
Walk behind compactor	2	1	1			
Tipper Truck	2	1	1			
Water Tanker	2	1	1			
Total	**10**	**5**				
Total Points Allocated						

*Attached additional pages if more space is required.

FORM S1: FINANCIAL RESOURCES: BANKING INFORMATION

The tenderer will receive a maximum of 20 points based on information provided in this schedule.

DETAILS OF TENDERERS BANKING INFORMATION

Notes to tenderer:

- The tenderer shall attach to this form an **Original Letter** from the bank not older than three (3) months confirming the bank account, details and bank rating. **10** Points for Bank Rating C or better and **10** points for Intent to provide 10% guarantee from the bank or any other institution (See Form S3).
- In the event that the tenderer is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

BANK NAME:	
ACCOUNT NAME: ***(e.g. ABC Civil Construction cc)***	
ACCOUNT TYPE: ***(e.g. Savings, Cheque etc.)***	
ACCOUNT NO:	
ADDRESS OF BANK:	
CONTACT PERSON:	
TEL. NO. OF BANK / CONTACT:	
How long has this account been in existence:	0-6 months ☐ 7-12 months ☐ 13-24 months ☐ More than 24 months ☐ ☐ (Tick which is appropriate)
BANK RATING:	

ATTACH HERETO AN ORIGINAL LETTER FROM THE BANK TO THIS PAGE NOT OLDER THAN THREE (3) MONTHS

FORM S2: FINANCIAL RESOURCES: DECLARATION OF PROCUREMENT ABOVE R 10 MILLION (MBD5)

For all procurement expected to exceed R10 million (all applicable taxes included), tenderer must complete the following questionnaire:

- Are you by law required to prepare annual financial statements for auditing?

  YES / NO

1.1. If yes, submit audited financial statements for the past three years or since the date of establishment if established during the past three years.

……..

……..

2. Do you have any outstanding undisputed commitments for municipal services towards any municipal for more than three months or any other service provider in respect of which payments is overdue for more than 30 days?

YES / NO

……

……

2.1 If no, this serves to certify that the tenderer has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for then 30 days?

……

……

2.2 If yes, please provide particulars

……

……

3.1 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?

YES / NO

.....

……

a. If yes, furnish particulars

……

……

4.1 Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion of payment from the municipality / /municipal entity is expected to be transferred out of the Republic?

YES / NO

4.1 If yes, furnish particulars

……

……

CERTIFICATION

I, THE UNDERSIGNED (NAME) ……..……..…

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE

Signature	Date
Capacity under which Tender is Signed	Name of Tenderer

FORM S3: FINANCIAL RESOURCES: TO PROVIDE A PERFORMANCE GUARANTEE

The Tenderer will receive a maximum of 10 points based on information provided in this schedule.

*The Tenderer must attach hereto an **Original Letter** from the bank or institution with whom he has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee when asked to do so. (Letter of Intent)*

A Pro forma follows herewith for the tenderer to use.

PRO-FORMA FOR A PERFORMANCE GUARANTEE
PERFORMANCE GUARANTEE

Employer

(Name and Address) _____

_____

Contract No _____

Contract Title _____

WHEREAS _____

(hereinafter referred to as "the Employer") entered into, a Contract with:

_____

(Hereinafter called "the Contractor") on the____day of_____20 _____ for the (Contract Title)

_____

at _____

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of a guarantee for the due and faithful fulfilment of such Contract by the Contractor;

AND WHEREAS WE _____ (hereinafter referred to as the Guarantor") has/have at the request of the Contractor, agreed to give such guarantee;

NOW THEREFORE WE do hereby guarantee and bind ourselves jointly and severally as Guarantor and Co-Principal Debtor to the Employer under renunciation of the benefits of division and exclusion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions:

1) The Employer shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorized and/or contemplated by the terms of the said contract, and/or to agree to any modifications, variations, alterations, directions or extension of the completion date of the Works under the said contract, and that its rights under this guarantee shall in no way be prejudiced nor or liability hereunder be affected by reason of any steps which the Employer may take under such contract, or of any modification, variation, alterations of the completion date which the Employer may make, give, concede or agree to under the said contract.

2) This guarantee shall be limited to payment of a sum of money.

3) The Employer shall be entitled, without reference to us, to release any guarantee held by it, and to give time to or compound or make any other arrangement with the Contractor.

However, upon receipt by us of an authenticated copy of the Certificate of Completion in terms of the Contract, the amount of liability shall be reduced by 50% which shall be in force until the issue of the Final Approval Certificate at expiry of the Defects Liability Period.

This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of Completion.

4) His intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid of liquidated,

5) Our total liability hereunder shall not exceed the sum of

_____

_____(in words)

_____(in figures)

(10% of the tender sum) that amount I/we agree to hold at your disposal.

6) The Guarantor reserves the right to withdraw from this guarantee by depositing the Guaranteed Sum with the beneficiary, whereupon the Guarantor's liability hereunder shall cease.

I/We declare that I/we, on behalf of the Guarantor, waive the legal exceptions available to a guarantor and undertake to pay the said amount or such portion thereof as may be demanded, immediately on receipt of a written demand from you.

A certificate under your hand shall be sufficient and satisfactory evidence as to the amount of the Guarantor's liability for the purpose of enabling provisional sentence or any similar relief to be obtained against the Guarantor.

This guarantee is neither negotiable or transferable, and must be surrendered to the Guarantor in the event of the full amount of the Guarantee being paid to the Employer.

7) I/We hereby choose our address for the serving of all notices for all purposes arising here from as

_____

_____

IN WITNESS WHERE OF this guarantee has been executed by us at _____

_____ on the _____ day of _____ 20

As witness:

1. _____ Signature _____

2. _____ Signature _____

Duly authorized to sign on behalf of
(Guarantor) _____

Address _____

_____

FORM T: MANAGERIAL CAPACITY, EXPERIENCE AND QUALIFICATIONS (KEY PERSONNEL)

The Tenderer will receive a maximum of 10 points based on information provided in this Schedule

Notes to tenderer:

1. The intention of this form is to demonstrate the tenderer's project structure, as well as the lines of responsibility between members of the project team and the overall company structure. Attach own organogram to this form.
2. Joint Venture tenders require each element of the venture to submit separate organograms that show the individual structure of each member company and the lines of responsibility of the proposed personnel involved in the project. In addition, there must also be a combined organogram that indicates how the joint venture itself will function and the proposed share of the work will become a contractual obligation between the members of the joint venture.
3. State the city or town where the company's head office is located. The locality of regional or satellite offices, regardless of degree of autonomy or size is not required. Only submit the number of offices other than the head office. Do not count offices outside RSA.
4. The details of qualified and experienced project managers, site agents, technicians, foreman must be supplied for those people who will be involved with the execution of the works.

Qualifications				
Resource	**Item**	**Tendered Goal**	**Points Claimed by Tenderer**	**Allocated Points**
Project manager	Project manager (No Degree or Diploma)	0.25		
	Project manager (Degree or diploma not in related field)	0.5		
	Project manager (Degree or Diploma in related field)	1		
	Max points	**1**		
Site Agent	Site Agent (No NQF)	0.25		
	Site Agent (NQF 2)	0.5		
	Site Agent (NQF 5)	1		
	Max points	**1**		
Foreman	Foreman (No NQF)	0.25		
	Foreman (NQF 1)	0.5		
	Foreman (NQF 2)	1		
	Max points	**1**		
Safety Officer	No qualifications	0		
	SACPCMP Registered Safety Officer	1		
	Max points	**1**		
Total points for Qualifications		**4**	4	

Experience				
Resource	**Item (indicate project with dates on CV in order to score points)**	**Tendered Goal**	**Points Claimed by Tenderer**	**Allocated Points**
Project manager	0-2 years Experience in bulk water pipelines	0.5		
	2-5 years Experience in bulk water pipelines	1		
	>5 years Experience in bulk water pipelines	2		
	Max points	**2**		
Site agent	0-2 years Experience in bulk water pipelines	0.5		
	2-5 years Experience in bulk water pipelines	1		
	>5 years Experience in bulk water pipelines	2		
	Max points	2		
Foreman	0-2 years Experience in bulk water pipelines	0.5		
	2-5 years Experience in bulk water pipelines	1		
	>5 years Experience in bulk water pipelines	2		
	Max points	**2**		
Total points for experience		**6**		
Total points for qualifications and experience		**10**		

ATTACH CV'S AND CERTIFIED QUALIFICATIONS OF KEY PERSONNEL TO THIS PAGE

Note: **Only signed CV's accompanied byCertified ID copies and Qualifications of Key personnel that were named and shown on the organogram to be attached.**

CVs must indicate that resource is working for the company or a letter must be supplied that the resource is available if the resource is supplied by another company (signed by both companies).

Indicate project with dates on CV in order to score points for years experience.

On appointment you will be requested to resubmit the CVs and qualification of the proposed project team as submitted or similar.

FORM U: LOCALITY OF CONTRACTOR'S HEAD OFFICES

Notes to tenderer:

1. Attach municipal billing account, Sillulumanzi account or lease agreement to this form not older than 3 months or a letter from a tribal authority.

Locality			
	Tendered Goal	**Points Claimed by Tenderer**	**Allocated Points**
City of Mbombela	20		
Ehlanzeni district	10		
Mpumalanga	5		
Maximum Points	**20**		

SUMMARY OF COMPETENCE ACHIEVEMENT SCHEDULE (QUALITY)

		MAXIMUM POINTS TO BE ALLOCATED	MINIMUM POINTS REQUIRED	POINTS CLAIMED BY TENDERER	ALLOCATED POINTS
Company Experience	Form Q	40	20		
Plant and Equipment	Form R	10	N/A		
Financial References	Form S1 & S2	20	10		
Key Personnel	Form T	10	N/A		
Locality	Form U	20	N/A		
TOTAL		100	60		

Note:

Total allocated for Quality is 100 points. The minimum threshold required to qualify for the next stage of evaluation is 60 points. Only those tenders that achieve the minimum number (points) will proceed to the price and preference evaluation stage**.**

SUPPLY CHAIN POLICY USING 80/20 PREFERENCE POINT SYSTEM

PREFERENTIAL POINT SYSTEM	MAXIMUM POINTS TO BE ALLOCATED
Price	**80**
B-BBEE Status Level of Contribution	**20**
TOTAL	**100**

CERTIFICATE FOR TENDER COMPLIANCE

FORM V: SCHEDULE OF TENDER COMPLIANCE

Note to tenderer:

This Table has been created as an aid to ensure a tenderer's compliance with the completion of the returnable forms and schedules and subsequent placement in the correct envelope.

FORM NO / GBD NO	FORM DESCRIPTION	TICK IF COMPLETED
B	RECORD OF ADDENDA TO TENDER DOCUMENTS	
C	PROPOSED AMENDMENTS AND QUALIFICATIONS	
D	PREFERENCING SCHEDULE: BROAD BASED BLACK ECONOMIC EMPOWERMENT STATUS	
E	COMPULSORY DECLARATION	
F	MUNICIPAL DECLARATION AND RETURNABLE DOCUMENTS	
G	CERTIFICATE OF INDEPENDENT TENDER	
H	DECLARATION OF GOOD STANDING REGARDING TAX	
I	DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES	
K	DECLARATION OF TENDERER'S LITIGATION HISTORY	
L	AUTHORITY OF SIGNATORY	
M	SCHEDULE OF SPECIALIST SUBCONTRACTORS	
N	PROOF OF GOOD STANDING WITH COMPENSATION COMMISSIONER	
O	SCHEDULE OF CURRENT COMMITMENTS	
P	REGISTRATION WITH CIDB	
	RETURNABLES FOR QUALITY CRITERIA	
Q	COMPANY EXPERIENCE IN RELATION TO SCOPE OF WORKS	
R	PLANT & EQUIPMENT	
S	FINANCIAL RESOURCES	
T	MANAGERIAL CAPACITY, EXPERIENCE AND QUALIFICATIONS	
U	PROOF OF OFFICE LOCALITY	
	CERTIFICATE OF TENDER COMPLIANCE	
V	SCHEDULE OF TENDER COMPLIANCE	

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

THE CONTRACT

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

PART C1 AGREEMENT AND CONTRACT DATA

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C 1.1: FORM OF OFFER

OFFER

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of: **DEVELOPMENT OF KANYAMAZANE CENTRAL HIGH LEVEL ZONE PHASE 1: NEW BULK PIPELINE FROM KANYAMAZANE OLD WATER TREATMENT WORKS TO TEKWANE SOUTH RESERVOIR**

The tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the tender returnable and, by submitting this offer, has accepted the conditions of tender.

By the representative of the tenderer, deemed to be duly authorized, signing this part of this form of offer and acceptance, the tenderer offers to perform all of the obligations and liabilities of the contractor under the contract, including compliance with all its terms and conditions according to their true intent and meaning, for an amount to be determined in accordance with the conditions of contract identified in the contract data.

The offered total of the prices, inclusive of any value added tax or sales tax which the law requires the employer to pay, is

_____

_____(**in words) R**_____**(in figures)**

This offer may be accepted by the employer by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the tenderer before the end of the period of validity stated in the tender data, whereupon the tenderer becomes the party named as the contractor in terms of the conditions of the contract identified in the contract data.

for the TENDERER

Signature: _____

Name: _____

Capacity: _____

Witness:

Name: _____

Signature:_____

Date: _____

C1.2: FORM of ACCEPTANCE

ACCEPTANCE

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer. In consideration thereof, the employer shall pay the contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the tenderer's offer shall form an agreement between the employer and the tenderer upon the terms and conditions contained in this agreement and in the contract, that is the subject of this agreement.

The terms of the contract, are contained in:

Part C 1: Agreements and contract data, (which includes this agreement)
Part C 2: Pricing data
Part C 3: Scope of work.
Part C 4: Site information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the tender schedules, as well as any changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this agreement. No amendments to or deviations from said documents are valid unless contained in this schedule.

The tenderer shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the employer's agent (whose details are given in the contract data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five working days of the date of such receipt, notifies the employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

for the EMPLOYER

Signature: _____ Date: _____

Name: _____

Capacity: _____

Witness:

Name: _____

Signature: _____ Date: _____

C1.3: SCHEDULE of DEVIATIONS

1 Subject
Details
2 Subject
Details
3 Subject
Details
4 Subject
Details

By the duly authorized representatives signing this agreement, the employer and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

It is expressly agreed that no other matter, whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Agreement, shall have any meaning or effect in the contract between the parties arising from this agreement.

for the TENDERER

Signature: _____

Name: _____

Capacity: _____

for the EMPLOYER

Name: _____

Signature: _____ Date: _____

Capacity: _____

Witness:

Name: _____

Signature: _____ Date: _____

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C1.4 CONTRACT DATA

C1.4: CONTRACT DATA

CONDITIONS OF CONTRACT

PART 1: DATA PROVIDED BY THE EMPLOYER

CONDITIONS OF CONTRACT

The General Conditions of Contract for Construction Works, Third Edition, 2015, published by the South African Institution of Civil Engineers, Private Bag X200, Halfway House, 1685, are applicable to this contract and is obtainable form www.saice.org.za.

CONTRACT SPECIFIC DATA

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract.

PART 1: DATA PROVIDED BY THE EMPLOYER

The following contract specific data are applicable to this Contract:

Clause	Data
1.1.1.13	The Defects Liability Period is **365 DAYS** measured from the date of the Certificate of Completion.
1.1.1.14	The time for practical completion is **12 months**.
1.1.1.15	The Name of the Employer is **Silulumanzi on behalf of the City of Mbombela**.
1.2.1.2	The Employer's address for receipt of communications is: **Physical address:** / **Postal address:** **8 Nel Street** / **PO Box 12753** **MBOMBELA** / **MBOMBELA** **1200** / **1200** **Telephone: 013 752 6123** **E-mail: prince.nyakane@silulumanzi.com**
1.1.1.16	The Name of the Employer's Agent is: SKCMasakhizwe Engineers.
1.2.1.2	The Employer's Agent address for receipt of communications is: **Physical address:** / **Postal address:** **34 Murray Street** / **PO Box 514** **MBOMBELA** / **MBOMBELA** **1200** / **1200** **Telephone: 013 753 2535** **E-mail: joubertn@skcm.co.za**
1.1.1.26	The pricing strategy: **Re-Measurement Contract**

2.4	Add the following at the end of sub clause 2.4.1: " The several documents forming the Contract shall rank in the following order of precedence: 1. Contract Agreement, 2. Form of Offer and Acceptance, 3. Contract Data, 4. Specification Data, 5. Standardized Specifications, 6. Drawings, 7. Bill of Quantities, 8. Statutory Regulations, 9. Other standard specifications. If the contents of any part of the documents contradict any other part, the document in the highest position on the above order of precedence shall have preference and apply."
3.2.3	The Employer's Agent shall obtain specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract: **Clause 5.6.3** Approval of programme of the Works. **Clause 5.9.7** Approval of the Contractor's designs. **Clause 5.7.2** Approval to work on special non-working days and between sunset and sunrise (night). **Clause 5.11** Suspension of progress of Works. **Clause 5.12** Granting of extension of time. **Clause 5.13.2** Reduction of penalty for delay. **Clause 6.6** Instruction to expend on Provisional and Prime Cost Sums. **Clause 5.14.2** Issue of Certificate of Practical Completion. **Clause 5.16.1** Issue Final Approval Certificate. **Clause 7.8.1** Order to execute work of repair, etc, during the Defects Liability Period. **Clause 7.9** Urgent remedial work **The Employer's Agent shall obtain specific approval of the Employer for expenditure that exceeds the Contract Price.**
4.4.1	Add the following: **It is a compulsory requirement of this project that the successful tenderer subcontract a minimum of thirty percent (30%) (excluding Preliminaries and Generals and Contingencies) of the work by the end of the contract to local people/ companies (Silulumanzi) irrespective of the *domicilium et exicutandi* of the contractor.** **Add the following sub-paragraphs:** **4.4.8** The Contractor shall enter into a written subcontract agreement with the

	Subcontractor. The subcontract agreement between the Contractor and the Subcontractor shall be the General conditions of subcontract for construction works, first edition (2018). **4.4.9** The Contractor shall disclose all subcontracting arrangements. **4.4.10** The security held for all subcontractors shall not exceed the security provided by the Contractor in term of clause 6.1 of this contract. **4.4.11** 50% of the retention money held for each Subcontractor shall be released on completion of the subcontract works. The remainder of the Subcontractor's retention money shall be released when a Subcontractor's work does not show any defect within 12 (twelve) months after the completion of the subcontract. However, the Subcontractor's retention money may be withheld but only if the Performance Certificate is unable to be issued because of defective workmanship attributable to the Subcontractor. **4.4.12** Penalties for sub-contractors shall be limited to 10% of the accepted sub-contract amount. **4.4.13** All Subcontractors shall be in good standing in terms of COIDA and shall be registered with the Bargaining Council for the Civil Engineering Industry (Government Notice R.490 – Part III contained in Government Gazette No. 37750) or other relevant Bargaining Council. **4.4.14** All Subcontractors shall be registered with the CIDB in the appropriate category for the class of work to be performed. If the Contractor fails to disclose all subcontracting agreements, or fails to comply with the requirements of this clause he shall be given 14 days to make representation as to why: (i) the contract shall not be terminated; (ii) the Contractor shall not be penalised up to 10% of the value of the contract."
5.1.1 & 5.8.1	The non-working days are **Sundays.** The special non-working days for the purpose of this clause only are all **statuary public holidays proclaimed in terms of the Public Holidays Act and All Construction Industry Shutdown periods as determined by the South African Bargaining Council for the Civil Engineering Industry (BBBEI), as published by the South African Forum of Civil Engineering Contractors (SAFCEC)**
5.3.1	The documentation required before commencing with the works are: • **Health and Safety Plan (Refer to Clause 4.3)** • **Initial Programme (Refer to Clause 5.6)** • **Security (Refer to Clause 6.2)** • **Insurance (Refer to Clause 8.6)** • **A detailed cash flow forecast (Refer to Clause 5.6.2.6)**
5.3.2	The time to submit the documentation required (Refer to Clause 5.3.1) before commencement with Works execution is **14 days**.
5.13.1	The penalty for failing to complete the Works is ***R2000,00 per calendar day.***
5.14.1	The requirements for achieving Practical Completion are:

	• **All pipe lines to be laid and backfilled and tested in accordance to the specifications.** • **All stream crossings are to be complete.** • **All interconnections with manholes to be complete** • **All valve chambers with pipework and valves to be complete and backfilled and sealed.** • **The water pipe line must be fully operational.** • **As-built survey by registered surveyor.**
5.16.3	• The latent defects period is **10 years.**
6.2.1	The security to be provided by the Contractor shall be a **Fixed Performance Guarantee of 10% of the contract sum plus Retention of 10% of the value of the Works**.
6.5.1.2.3	The percentage allowance on the net cost of materials actually used in the completed work is **10%.** The percentage allowance on the gross remuneration of the workmen and foremen actually engaged is **0%**
6.8.2	Contract Price Adjustment will be applicable for this contract. The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule included in the General Conditions of Contract. The value of "x" is 0.15 The values of the coefficients are: a = 0.2 Labour b = 0.15 Contractor's equipment c = 0.55 Material d = 0.1 Fuel “Labour Index” and shall be the price index for “Consumer Price Index” for the Mpumalanga Province, as published in the Statistical Release P0141, Table A, of Statistics South Africa. “Equipment Index” and shall be the price index for “Plant and Equipment”, as published in the Statistical Release P0151.1, Table 4, of Statistics South Africa. “Materials Index” and shall be the price index for the “Civil engineering material (excluding bitumen)” as published in the Statistical Release P0151.1, Table 6, of Statistics South Africa. “Fuel Index” and shall be the price index for “Coal and Petroleum Products”, for “Diesel”, as published in the Statistical Release P0142.1, Table 1, of Statistics South Africa. The base month is: the month prior to the closing of the tender.
6.8.3	Price Adjustments for variations in the cost of special materials will be allowed. “The Contractor will be required to provide full details in Part 2 of the Contract Data”.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is **80%.** The percentage advance on Plant not yet supplied to Site is **Not required.**
6.10.3	The limit of the retention money is **TEN PERCENT (10%)** of the Contract Price. A Retention Money Guarantee is **not permitted.**

8.6.1.1.2	The value of the materials supplied by the Employer to be included in the insurance sum.
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is **10% of the TENDERED PRICE**.
8.6.1.3	The limit of indemnity for liability insurance is **R10 000 000.**
10.5.3	The number of Adjudication Board Members to be appointed is **1 (One)**.

PART 2: DATA PROVIDED BY THE CONTRACTOR

The Contractor is advised to read the *General Conditions of Contract for Construction Works,* Third Edition (2015) published by the South African Institution of Civil Engineers, in order to understand the implications of this Data which is required to be completed.

Each item of data given below is cross-referenced to the clause of Conditions of Contract to which it mainly applies.

<table>
<tr><th>Clause</th><th>Description</th></tr>
<tr><td>1.1.1.9</td><td>The Contractor is ……..
……..</td></tr>
<tr><td>1.2.1.2</td><td>The Contractor's address for receipt of communications is:
Physical address: Postal address:
…… …….
…….. …….
…….. ……
…….. …….
Telephone: ……..……..……
Fax: ……. ……..……..
E-mail: ……..……...</td></tr>
<tr><td>6.8.3</td><td>The variation in cost of special materials is:
<table>
<tr><th>Special Material</th><th>Method</th><th>Price for Base Month</th></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C1.5 PERFORMANCE GUARANTEE

PRO FORMA PERFORMANCE GUARANTEE

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

Physical address: .....

"Employer" means: .....

"Contractor" means: .....

"Employer's Agent" means: .....

"Works" means: .....

"Site" means: .....

"Contract" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

"Contract Sum" means: The accepted amount inclusive of tax of R .....

Amount in words: .....

"Guaranteed Sum" means: The maximum aggregate amount of R .....

Amount in words.....

"Expiry Date" means.....

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Employer's Agent of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.
3. The Guarantor hereby acknowledges that:
   - 3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
   - 3.2 its obligation under this Performance Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
   - 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made

in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

13. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed .....

Date .....

Guarantor's signatory (1) .....

Capacity .....

Guarantor's signatory (2) .....

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C1.6 AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

THIS AGREEMENT made at .....

on this the ..... day of ..... in the year …….....

between Silulumanzi (hereinafter called "the Employer") of the one part, herein represented by

in his capacity as .....

and .....

(hereinafter called "the Mandatory") of the other part, herein represented by .....

.....

in his capacity as .....

WHEREAS the Employer is desirous that certain works be constructed, viz **DEVELOPMENT OF KANYAMAZANE CENTRAL HIGH LEVEL ZONE PHASE 1: NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR** and has accepted a Tender by the Mandatory for the construction, completion and maintenance of such Works and whereas the Employer and the Mandatory have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatory with the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1 The Mandatory shall execute the work in accordance with the Contract Documents pertaining to this Contract.

2 This Agreement shall hold good from its Commencement Date, which shall be the date of a written notice from the Employer or Employer's Agent requiring him to commence the execution of the Works, to either

(a) the date of the Final Approval Certificate issued in terms of Clause 52.1 of the General Conditions of Contract (hereinafter referred to as "the GCC"),

(b) the date of termination of the Contract in terms of Clauses 54, 55 or 56 of the GCC.

3 The Mandatory declares himself to be conversant with the following:

(a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act:

(i) Section 8 : General duties of employers to their employees;
(ii) Section 9 : General duties of employers and self-employed persons to persons other than employees;
(iii) Section 37 : Acts or omissions by employees or Mandatory, and
(iv) Subsection 37(2) relating to the purpose and meaning of this Agreement.

(b) The procedures and safety rules of the Employer as pertaining to the Mandatory and to all his subcontractors.

(c) All the requirements, regulations and standards of the COVID-19 Occupational Health and

Safety Measures in Workplaces, COVID-19 (C19 OHS), 2020.

4 In addition to the requirements of Clause 33 of the GCC and all relevant requirements of the above-mentioned Volume 3, the Mandatory agrees to execute all the Works forming part of this Contract and to operate and utilise all machinery, plant and equipment in accordance with the Act.

5 The Mandatory is responsible for the compliance with the Act by all his subcontractors, whether or not selected and/or approved by the Employer.

The Mandatory warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act, 1993, which cover, shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.

6 The Mandatory undertakes to ensure that he and/or subcontractors and/or their respective employers will at all times comply with the following conditions:

(a) The Mandatory shall assume the responsibility in terms of Section 16.1 of the Occupational Health and Safety Act. The Mandatory shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Employer. If the Mandatory obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.

(b) All incidents referred to in the Occupational Health and Safety Act shall be reported by the Mandatory to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.

(c) The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of section 32 of the Occupational Health and Safety Act into any incident involving the Mandatory and/or his employees and/or his subcontractors.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE EMPLOYER: _____

WITNESS 1_____ 2_____

NAME 1_____ 2 _____

(IN CAPITALS)

SIGNED FOR AND ON BEHALF OF THE MANDATORY: _____

WITNESS 1_____ 2 _____

NAME 1_____ 2_____

(IN CAPITALS)

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C1.7 TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

The signatory for the company that is the Contractor in terms of the above-mentioned Contract and the Mandatory in terms of the above-mentioned Act shall confirm his or her authority thereto by attaching to this page a duly signed and dated copy of the relevant resolution of the Board of Directors.

An example is given below:

"By resolution of the Board of Directors passed at a meeting held on_____20____,

Mr/Ms_____whose signature appears below, has been duly authorised to sign the AGREEMENT in terms of THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 of 1993) on behalf of:

_____

SIGNED ON BEHALF OF THE COMPANY:_____

IN HIS CAPACITY AS:_____

DATE: _____

SIGNATURE OF SIGNATORY: _____

WITNESS: 1._____ 2. _____

NAME (in capitals): 1. _____ 2. _____

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C2.1 PRICING INSTRUCTIONS

C2.2 SCHEDULE OF QUANTITIES

PART C2 PRICING DATA

C2.1: PRICING INSTRUCTIONS

1 The Tender Data, the Contract Data, the Scope of Work, the Site Information and the Drawings shall be read in conjunction with the Schedule of Quantities.

2 The Schedule comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

Although the Tenderer is at liberty to insert a rate of his own choosing for each item in the Schedule, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Employer's Agent is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Schedule.

The measurement and payment clauses of each Specification, read together with the relevant clauses of the Specification Data, all set out which ancillary or associated activities are included in the rates for the specified operations.

3 Descriptions in the Schedule of Quantities are abbreviated and may differ from those in the Standardized and Specification Data. No consideration will be given to any claim by the Contractor submitted on such a basis. The Schedule has been drawn up generally in accordance with the latest issue of Civil Engineering Quantities[1]. Should any requirement of the measurement and payment clause of the appropriate Standardized or Specification Data be contrary to the terms of the Schedule or, when relevant, to the Civil Engineering Quantities, the requirement of the appropriate Standardized Specification or Specification Data as the case may be, shall prevail.

4 Unless stated to the contrary, items are measured and paid for net, in accordance with the Drawings, without any allowance having been made for waste.

5 The amounts and rates to be inserted in the Schedule of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding value-added tax), liabilities and obligations set forth or implied in the documents on which the Tender is based.

6 An amount or rate shall be entered against each item in the Schedule of Quantities, whether or not quantities are stated. An item against which no amount or rate is entered will be considered to be covered by the other amounts or rates in the Schedule.

The Tenderer shall also fill in a rate against the items where the words "rate only" appears in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the tender rates shall apply should work under these items actually be required. Work under these items should be approved by the Engineer before the Contractor commences with any construction activities for rate only items.

Should the Tenderer group a number of items together and tender one sum for such group of items, the single tender sum shall apply to that group of items pro rata and not to each individual item, or should he indicate against any item that full compensation for such item has been included in another item, the rate for the item included in another item shall be deemed to be nil.

The tender rates, prices and sums shall, subject only to the provisions of the General Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.

7 The quantities of work as measured and accepted and certified for payment in accordance with the General Conditions of Contract, and not the quantities stated in the Schedule of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by **any** differences between the quantities in the Schedule of Quantities and the quantities certified for payment.

The ordering of materials shall **not** be based on the quantities in the Schedule of Quantities. Materials ordered from the Schedule of Quantities without prior confirmation by the Employer's Agent shall be at the risk of the Contractor. No compensation shall be paid for materials ordered erroneously and all costs shall be borne by the Contractor.

1 The standard system of measurement of civil engineering quantities published by the South African Institution of Civil Employer's Representatives.

8 The quantities of work as measured and accepted and certified for payment in accordance with the General Conditions of Contract, and not the quantities stated in the Schedule of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by **any** differences between the quantities in the Schedule of Quantities and the quantities certified for payment.

The ordering of materials shall **not** be based on the quantities in the Schedule of Quantities. Materials ordered from the Schedule of Quantities without prior confirmation by the Employer's Agent shall be at the risk of the Contractor. No compensation shall be paid for materials ordered erroneously and all costs shall be borne by the Contractor.

9 For the purposes of this Schedule of Quantities, the following words shall have the meanings hereby assigned to them:

Unit	:The unit of measurement for each item of work as defined in the SANS 1200
Quantity	:The number of units of work for each item
Rate	:The payment per unit of work at which the Tenderer tenders to do the work
Amount	:The quantity of an item multiplied by the tender rate of the (same) item
Sum	:An amount tender for an item, the extent of which is described in the Schedule of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units

10 The units of measurement indicated in the Schedule of Quantities are metric units. The following abbreviations may appear in the Schedule of Quantities:

mm	=	millimetre
m	=	meter
km	=	kilometre
km-pass	=	kilometre-pass
m^2	=	square metre
m^2-pass	=	square meter-pass
ha	=	hectare
m^3	=	cubic meter
m^3-km	=	cubic meter kilometre
kW	=	kilowatt
kN	=	kilo-Newton
kg	=	kilogram
l	=	litre
kl	=	kilolitre
Ml	=	mega litre
t	=	ton (1 000 kg)
%	=	per cent
MN	=	mega-Newton
MN-m	=	mega-Newton-meter

Prov Sum	=	Provisional Sum
Sum	=	Lump Sum
Month-days	=	Month days

11 PRODUCT NAMES OR SIMILAR APPORVED

Wherever reference has been made to product names, it also includes all similar CoM approved product names. Should alternative products be included, all relevant information to be supplied for approval by the CoM.

12 The submission of alternative copies of the BOQ i.e. "electronic copies" is not allowed even if it is printed out and completed by hand. The BOQ as provided with the Tender document must be completed by hand, failure to do so will lead to immediate disqualification.

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

C2.2 SCHEDULE OF QUANTITIES

SCHEDULE 1 : GENERAL

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
	SABS 1200A	**GENERAL**				
1.1	**8.3**	**FIXED CHARGE AND VALUE-RELATED ITEMS**				
1.1.1	8.3.1	Contractual Requirements	sum	1		
1.1.2	8.3.2	**Establish facilities on site**				
1.1.2.1	8.3.2.1	i) Facilities for Engineer				
		a) Name Boards (x2)	sum	1		
		b) Furnished Office	sum	1		
1.1.2.2	8.3.2.2	ii) Facilities for Contractor				
		a) Offices and storage sheds	sum	1		
		b) Workshops	sum	1		
	PSA8.3.2.2.(c)	c) Laboratories	sum	1		
		d) Living accommodation	sum	1		
		e) Ablution and latrine facilities	sum	1		
		f) Tools and equipment	sum	1		
		g) Water supplies, electric power and communication	sum	1		
		h) Dealing with water	sum	1		
	PSA8.3.2.2.(i)	i) Access	sum	1		
		j) Plant	sum	1		
1.1.2	PSA8.3.3 PSA8.4.5 PSA8.8.7	Other fixed charge obligations	sum	1		
1.1.3	8.3.4	Removal of site establishment	sum	1		
1.1.4	PSA8.3.5	Health, Safety and Environmental				
		a) Safety, Health and Environmental (SHE) Plan	sum	1		
		b) SHE File	sum	1		
		c) Provision of Personal Protective Equipment	sum	1		
		d) Other Health, Safety and Environmental matters	sum	1		
1.2	**8.4**	**TIME RELATED ITEMS**				
1.2.1	8.4.1	Contractual requirements	sum	1		
1.2.2	8.4.2	**Operations and maintenance of facilities on site**				
1.2.2.1	8.4.2.1	Facilities for Engineer				
		a) Name boards (x2)	sum	1		
		b) Furnished Office	sum	1		
		c) Survey assistant and equipment	sum	1		
		CARRIED FORWARD				

SCHEDULE 1 : GENERAL

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
		BROUGHT FORWARD				
		d) Telephone phone	sum	1		
1.2.2.2	8.4.2.2	Facilities for Contractor a) Offices and storage sheds	sum	1		
		b) Workshops	sum	1		
	PSA8.4.2.2.(c)	c) Laboratories	sum	1		
		d) Living accommodation	sum	1		
		e) Ablution and latrine facilities	sum	1		
		f) Tools and equipment	sum	1		
		g) Water supplies, electric power and communication	sum	1		
		h) Dealing with water	sum	1		
	PSA8.4.2.2.(i)	i) Access	sum	1		
		j) Plant	sum	1		
1.2.3	8.4.3	Supervision for duration of the construction	sum	1		
1.2.4	8.4.4	Company and Head Office overhead costs for the duration of the Contract	sum	1		
1.2.5	PSA8.3.3	Other time related obligations	sum	1		
1.2.6	PSA8.4.6	Health, Safety and Environmental				
		a) SHE Compliance	month	12		
		b) SHE Specialist Consultant	month	12		
		c) Handling fees (a & b)	%	10		
1.2.7	PSA 8.4.7	Community Liaison Officer (CLO)				
		a) CLO Salary	Prov sum			R 126 000.00
		b) Handling fees (a)	%	10		
		CARRIED FORWARD				

SCHEDULE 1 : GENERAL

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
		BROUGHT FORWARD				
1.3	**8.5**	**SUMS STATED PROVISIONALLY BY THE ENGINEER** Provisional Sum				
1.3.1	PSA8.5	Quality Control				
		a) Independent tests in factory on valves	Prov sum			R 10 000.00
		b) Independent tests on all fittings and specials	Prov sum			R 10 000.00
		c) Percentage adjustment to item a & b to cover Contractor's expenses (max 10%)	%	10		
1.3.2	PSA8.5	Labour Desk Officer	Prov sum			R 12 000.00
1.4	**8.8**	**TEMPORARY WORK**				
1.4.1	8.8.1	Main access road to works (construct and maintain)	sum	1		
1.4.2 L	PSA8.8.2	Dealing with traffic	sum	1		
1.4.3	8.8.3	Protection of existing structures in nearby vicinity	sum	1		
1.4.4	PSA8.8.4	Existing services				
		a) Supply/hire of specialist equipment for the detection of services	sum	1		
		b) The use of equipment referred to in item (a) above	sum	1		
LI		c) Excavation by hand in soft material to expose existing services	m3	400		
		TOTAL SCHEDULE 1 CARRIED FORWARD TO SUMMARY				

SCHEDULE 2 : EARTHWORKS

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
2.1	**SABS 1200C**	**SITE CLEARANCE**				
LI	PSC 8.2.1	Clear and grub pipeline route with special care not to damage existing pipeline (1.5m)	m	3 173		
	8.2.2	Remove and grub all trees and tree stumps of girth up to 3m	No	10		
	PSC 8.2.11	c) Remove, store, re-install and protection of fences and masonry boundary walls.	m	900		
	PSC 8.2.12	d) Remove and reinstall steel carport structure including the breaking and of concrete and reconstruction of slab and bund wall (15x8m)	No	1		
	PSC 8.2.8	e) Demolish, remove and re-construct drive ways and other concrete structures on route (for ex. kerbs, paving etc.)	Sum	1		
2.2	**SABS 1200DB**	**EXCAVATION**				
2.2.1	8.3.2a)	Excavation in all materials for trenches for 355 and 400 Dia pipes				
	PSDB8.3.2(a) PSDB 8.3.2(d) PSDB 8.3.2(e)	Rates to include backfill, compact and dispose of surplus materials all within the free haul distance				
LI		a) Up to 1,5m deep	m	1 084		
		b) Over 1,5 up to 2,0m deep	m	2 260		
		c) Over 2,0 m up to 3m deep	m	226		
2.2.2	8.3.2b)	Extra-over item 2.2.1a for				
		a) Intermediate excavation	m^3	300		
		b) Hard rock excavation	m^3	1 600		
2.2.3	8.3.2c)	Excavate and dispose of unsuitable material from trench bottom	m^3	536		
2.2.4	8.3.3.1b)	Import backfill material from designated borrow pits	m^3	3 800		
2.2.5	8.3.3.1c)	Import backfill material from commercial sources	m^3			Rate only
2.2.6	PSDB8.3.4(c)	Pipeline waterlogged conditions				
		a) Over excavate bottom of trench	m^3	500		
		b) Supply and Install 19mm stone under pipe as subsoil drain	m^3	500		
		c) Supply and Install A2 bidim under pipe as part of subsoil drain	m^2	2 600		
		d) Supply and Install 100mm dia perforated pipe as part of subsoil drain	m	1 000		
		CARRIED FORWARD				

SCHEDULE 2 : EARTHWORKS

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
		BROUGHT FORWARD				
2.2.7	8.3.3.2	Opening up and closing of borrow pit	Sum	1		
	8.3.3.3	Compaction in road reserves	m³	550		
2.2.8	PSDB 8.3.3.4	Overhaul				
		a) Wheelbarrow haul	m³.m			Rate only
		b) Tractor and trailer haul (limited)	m³			Rate only
LI		c) Truck haul (long)	m³.km	7 611		
2.3	**SABS 1200LB**	**PIPE BEDDING**				
2.3.1		Selected granular material for bedding cradle and fill blanket				
LI	PSLB 8.2.1	a) Excavated Material				
		i) Selected granular material	m³	314		
		ii) Selected fill material	m³	1 897		
LI	8.2.2.2	b) Borrow Pit				
		i) Selected granular material	m³	79		
		ii) Selected fill material	m³	474		
LI	8.2.2.3	c) Commercial Sources				
		i) Selected granular material	m³			Rate only
		ii) Selected fill material	m³			Rate only
2.4	**SABS 1200DB 8.3.5**	**EXISTING SERVICES**				
2.4.1 LI	PSDB 8.3.5a)	Services that intersect a trench				
		a) Water and sewer pipelines	no	25		
		b) Cables	no	15		
2.4.2 LI	PSDB 8.3.5b)	Services that adjoin a trench				
		a) Water pipelines	m	2 856		
		b) Cables	m	900		
2.5	**8.3.6**	**FINISHING**				
	PSDB 8.3.6.1	Reinstate road surfaces complete with all courses				
		a) Gravel on shoulders	m2	1 350		
		b) Asphalt of thickness 40mm in roadway	m2	132		
		TOTAL SCHEDULE 2 CARRIED FORWARD TO SUMMARY				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SABS 1200L					
3.1		**PIPELINES AND FITTINGS**				
3.1.1 LI		**oPvC Pipes SANS 16422**				
	PSL 8.2.1 PSL8.2.10	Supply, install and test the following diameter PvC pipes (rates to be inclusive of collection, transporting, all tests on material and for watertightness and jointing materials. ***It should be noted that water should also be supplied by the Contractor for testing and included in the rates.***)				
		a) 355 dia oPvC - class 16	m			Rate Only
		a) 355 dia oPvC - class 20	m	735		
		b) 400 dia oPvC - class 20	m	160		
		c) 400 dia oPvC - class 25	m			Rate Only
3.1.2 LI		Material to be supplied by the Client (the rates below shall include the collection, transporting, installation, all tests on material and for watertightness and jointing materials. ***It should be noted that water should also be supplied by the Contractor for testing and included in the rates.***)				
		a) 400 dia oPvC - class 20	m	2300		
		b) 400 dia oPvC - class 25	m	460		
3.1.3 LI	8.2.1	Steel pipes				
		Collect, transport, install and test the following diameter steel pipes. Pipes to be supplied complete with couplings and gaskets. Pipes to be coated with metallic zinc (galvanized) OR similar approved for Corrosion protection. Rates to include all the tests required by the Engineer and per 8.2.1.				
		a) 400mm Steel Grade B 4.5mm SABS 719	m	33		
3.2		**Extra over item 3.1.1 and 3.1.2 for fittings for Pipes**				
3.2.1 LI	8.2.2	Bends (Horizontal and Vertical)				
		a) 355 Dia - 11˚ class 16 (oPVC)	no	2		
		355 Dia - 11˚ class 20 (oPVC)	no	6		
		b) 355 Dia - 22˚ class 16 (oPVC)	no	4		
		355 Dia - 22˚ class 20 (oPVC)	no	9		
		c) 355 Dia - 45˚ class 16 (oPVC)	no	1		
		355 Dia - 45˚ class 20 (oPVC)	no	1		
		d) 355 Dia - 90˚ class 16 (oPVC)	no	5		
		e) 400 Dia - 11˚ class 20 oPVC	no	7		
		f) 400 Dia - 11˚ class 25 oPVC	no	2		
		g) 400 Dia - 22˚ class 20 oPVC	no	5		
		h) 400 Dia - 22˚ class 25 oPVC	no			Rate Only
		i) 400 Dia - 45˚ class 20 oPVC	no	2		
		j) 400 Dia - 45˚ class 25 oPVC	no	5		
		k) 400 Dia - 90˚ class 20 oPVC	no			Rate Only
		l) 400 Dia - 90˚ class 25 oPVC	no	1		
		m) 400 Dia - 90˚ Steel Grade B 4.5mm SABS 719	no	4		
		CARRIED FORWARD				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		BROUGHT FORWARD				
3.3		**Pipeworks**				
3.3.1 LI	8.2.3	Air valves Material, coating, lining and classes to be as per details on drawing.				
		a) 355mm diameter pipeline				
		i) 80mm AV class 25	no	1		
		b) 400mm diameter pipeline				
		i) 50mm AV class 16	no			Rate Only
		ii) 50mm AV class 25	no	5		
		iii) 80mm AV class 25	no	2		
		iv) 100mm AV class 25	no	1		
		v) 150mm AV class 16	no			Rate Only
		vi) 150mm AV class 25	no	2		
3.3.2 LI	8.2.3	Scour valves Material, coating, lining and classes to be as per details on drawing.				
		a) 200mm Dia class 25	no			Rate Only
		b) 250mm Dia class 16	no			Rate Only
		c) 250mm Dia class 25	no	4		
3.3.3 LI	8.2.3	Line Valves (Isolating Valves) Material, coating, lining and classes to be as per details on drawing.				
		a) 100mm Dia class 25	no	2		
		b) 250mm Dia class 16	no			Rate Only
		c) 250mm Dia class 25	no	3		
		d) 350mm Dia class 16	no			Rate Only
		e) 350mm Dia class 25	no	3		
		f) 400mm Dia class 16	no			Rate Only
		g) 400mm Dia class 25	no	14		
		CARRIED FORWARD				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		BROUGHT FORWARD				
3.4 LI		**VALVE CHAMBERS INCLUDING PIPEWORKS (REFER TO DWGs)**				
3.4.1	PSL8.2.13	Air Valve Chamber including pipeworks (**DWG 103**) (Valves captured under 3.3.1).				
		Below numbering is in line with drawing 103 pipe schedule:				
		1) Double acting air release valve assembly, VAG or similar approved (PN25) - valves accounted for under 3.3.1.				
		2) Extension piece, 200mm long (male threaded both ends) - Heavy duty steel 2500kPA				
		a) 50mm	No.	3		
		b) 80mm	No.			Rate Only
		c) 100mm	No.	1		
		d) 150mm	No.	2		
		3) Brass full way gate valve (female threaded PN25)				
		a) 50mm	No.	3		
		b) 80mm	No.			Rate Only
		c) 100mm	No.	1		
		d) 150mm	No.	2		
		4) Extension piece, 300mm long (male threaded both ends) - Heavy duty steel 2500kPA				
		a) 50mm	No.	3		
		b) 80mm	No.			Rate Only
		c) 100mm	No.	1		
		d) 150mm	No.	2		
		5) Reducing flange (PN25)				
		a) 200mm to 50mm	No.	3		
		b) 200mm to 80mm	No.			Rate Only
		c) 200mm to 100mm	No.	1		
		d) 200mm to 150mm	No.	2		
		6) 400ø to 200ø steel flanged reducer (510mm)	No.	6		
		7) 400ø steel flanged equal tee-piece	No.	6		
		8) 400ø VJ flange adaptor (PN25)	No.	24		
		9) 400ø - 1080mm long steel pipe piece with puddle flange, flanged only on one end	No.	12		
		10) Valve chamber/pre-cast manhole (the tender unit rate shall include the supply and installation of the chamber which will include earthworks, backfilling, concrete, masonry, reinforcement, anchor blocks, drainage, ventilators, step irons, locking device and any other items not mentioned but required for a complete installation in line with drawing **103**).	No.	7		
3.4.2	PSL8.2.13	Valve Chamber for Scour Valve including pipeworks (**DWG 101**) (Valves captured under 3.3.2 & 3.3.3).				
		Below numbering is in line with drawing 101 pipe schedule:				
		1) 400ø steel scour tee piece with 250ø branch, flanged all 3 ends	No	4		
		2) 250ø - 1,400mm long steel pipe piece, flanged one end only, other end plain	No	4		
		3) 250ø VJ flange adaptor (PN25)	No	4		
		4) 250ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.2				
		5) 250ø - 600mm long steel puddle pipe piece, flanged one end only, puddle flange = 450mm from flange face	No	4		
		6) 400ø VJ flange adaptor (PN 25)	No	8		
		7) 400ø RSV gate valve with non-rising spindle (PN 25) - valves accounted for under 3.3.3				
		8) Valve chamber (the tender unit rate shall include the supply and installation of the chamber which will include earthworks, backfilling, concrete, masonry, reinforcement, anchor blocks, drainage, ventilators, step irons, locking device, gabions, reno mattress, lifting hooks, cover lid and any other items not mentioned but required for a complete installation in line with drawing **101**).	No	4		
		CARRIED FORWARD				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		BROUGHT FORWARD				
3.4.3	PSL8.2.13	Valve Chamber for Connections including pipeworks				
3.4.3.1		**DWG 104** - Pump Station Connection Detail 1:				
		Below numbering is in line with drawing 104 pipe schedule:				
		1) 400ø VJ flange adaptor (PN 25)	No	2		
		2) 400ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		3) 400ø - 1385mm long steel pipe piece, flanged one end only	No	1		
		4) 400ø equal tee piece, flanged all 3 ends	No	1		
		5) 400ø to 200ø steel flanged reducer	No	1		
		6) Reducing flange 200mm to 80mm	No	1		
		7) 80mm extension piece, 200mm long, (male threaded both ends)	No	1		
		8) 80mm brass full way gate valve (female threaded PN25)	No	1		
		9) 80mm extension piece, 200mm long, (male threaded both ends)	No	1		
		10) 80ø double acting air release valve assembly, VAG or similar approved (PN25) - valves accounted for under 3.3.1				
		11) Water meter SENSUS to fit 400ø steel pipe	No	1		
		12) 400ø - 45 degree medium bend flanged both ends	No	1		
		13) 400ø lateral tee piece, flanged all 3 ends	No	1		
		14) 400ø to 250ø concentric steel reducer flanged both ends	No	2		
		15) 250ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		16) 250ø VJ flange adaptor (PN25)	No	4		
		17) 250ø - 890mm long steel puddle pipe piece, flanged both ends	No	1		
		18) 250ø - 1040mm long steel puddle pipe piece, flanged only one end	No	1		
		19) 250ø - 2245mm long steel puddle pipe piece, flanged only one end	No	1		
		20) 500 x 500mm concrete cover with galvanised steel ring encased in concrete cover slab	No	1		
		21) Valve chamber (the tender unit rate shall include the construction of the chamber which will include earthworks, backfilling, concrete, masonry, reinforcement, anchor blocks, drainage, ventilators, step irons, locking device and any other items not mentioned but required for a complete installation in line with drawing **104**).	No	1		
3.4.3.2		**DWG 105** - MDC Reservoir Connection Detail 2:				
		Below numbering is in line with drawing 105 pipe schedule:				
		1) 400ø steel tee piece with 100ø branch, flanged all 3 ends	No	1		
		2) 400ø VJ flange adapter (PN25)	No	4		
		3) 400ø - 1235mm long steel puddle pipe piece, flanged one end only	No	2		
		4) SENSUS strainer to fit 100ø steel pipe	No	1		
		5) BERMAD series 700 pressure reducing & flow control valve, complete with control pilot and pressure gauges to fit 100ø steel pipe (PN25)	No	1		
		6) 100ø equal steel tee piece, flanged all 3 ends	No	1		
		7) 100ø to 80ø steel flanged reducer	No	1		
		8) Reducing flange to 80ø	No	1		
		9) 50ø extension piece, 300mm long, (male threaded both ends)	No	1		
		10) 50ø brass full way gate valve (female threaded PN25)	No	1		
		11) 50ø extension piece, 200mm long, (male threaded both ends)	No	1		
		12) 50ø double acting air release valve assembly, VAG or similar approved PN 25 - valves accounted for under 3.3.1				
		13) 100ø VJ flange adapter (PN25)	No	2		
		14) 100ø - 918mm long steel puddle pipe piece, flanged one end only, puddle flange = 350mm from flange face	No	1		
		15) 100ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		16) Water meter SENSUS to fit 100ø steel pipe	No	1		
		17) 500 x 500mm concrete cover with galvanised steel ring encased in concrete cover slab	No	1		
		17) Valve chamber (the tender unit rate shall include the construction of the chamber which will include earthworks, backfilling, concrete, masonry, reinforcement, anchor blocks, drainage, ventilators, step irons, locking device and any other items not mentioned but required for a complete installation in line with drawing **105**).	No.	1		
		CARRIED FORWARD				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		BROUGHT FORWARD				
3.4.3.3		**DWG 106** - Tekwane South reservoir T-off connection detail 3:				
		Below numbering is in line with drawing 106 pipe schedule:				
		1) 250ø VJ flange adapter (PN25)	No	7		
		2) 250ø - 1040mm long steel puddle pipe piece, flanged one end only	No	2		
		3) 250ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		4) 250ø SENSUS strainer to fit	No	1		
		5) 250ø - 754mm long steel puddle pipe piece, flanged one end only	No	1		
		6) Water meter SENSUS to fit 250ø steel pipe	No	1		
		7) 250ø equal steel tee piece, flanged all 3 ends	No	1		
		8) 250ø to 80ø steel flanged reducer	No	1		
		9) Reducing flange to 80ø	No	1		
		10) 80ø extension piece, 300mm long, (male threaded both ends)	No	1		
		11) 80ø brass full way gate valve (female threaded PN25)	No	1		
		12) 80ø extension piece, 200mm long, (male threaded both ends)	No	1		
		13) 80ø double acting air release valve assembly, VAG or similar approved PN 25 - valves accounted for under 3.3.1				
		14) 400ø VJ flange adapter (PN25)	No	2		
		15) 400ø steel long steel puddle pipe piece, flanged only one end	No	1		
		16) 400ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		17) 400ø steel lateral tee piece with 250ø branch, flange all 3 ends	No	1		
		18) 400ø to 350ø concentric steel reducing pipe	No	1		
		19) 350ø RSV gate valve with non-rising spindle (PN25) - valves accounted for under 3.3.3				
		20) 350ø SENSUS strainer to fit	No	1		
		21) Water meter SENSUS to fit 350ø steel pipe	No	1		
		22) 350ø - 880mm long steel puddle pipe piece, flanged one end only, puddle flange = 300mm from flange face	No	1		
		23) BERMAD series 700 pressure reducing & flow control valve, complete with control pilot and pressure gauges (PN25)	No	1		
		24) 350ø equal steel tee piece, flanged all 3 ends	No	1		
		25) 350ø to 200ø steel flanged reducer	No	1		
		26) Reducing flange 200ø to 80ø	No	1		
		27) 80ø extension piece, 300mm long, (male threaded both ends)	No	1		
		28) 80ø brass full way gate valve (female threaded PN25)				
		29) 80ø extension piece, 200mm long, (male threaded both ends)	No	1		
		30) 80ø double acting air release valve assembly, VAG or similar approved PN25 - valves accounted for under 3.3.1				
		31) 350ø VJ flange adapter (PN25)	No	3		
		32) 350ø - 1200mm long steel puddle pipe piece, flanged only one end	No	1		
		33) 250ø - 45 degree bend steel pipe piece	No	1		
		34) 250ø - 4215mm long steel pipe piece, flanged both ends	No	1		
		35) 250ø - 1165mm long steel puddle pipe piece, flanged only one end	No	1		
		36) 500 x 500mm concrete cover with galvanised steel ring encased in concrete cover slab	No	2		
		37) Valve chamber (the tender unit rate shall include the construction of the chamber which will include earthworks, backfilling, concrete, masonry, reinforcement, anchor blocks, drainage, ventilators, step irons, locking device and any other items not mentioned but required for a complete installation in line with drawing **106**).	No	1		
		CARRIED FORWARD				

SCHEDULE 3 : PIPELINES

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		BROUGHT FORWARD				
3.5		**Test of Pipeline**				
	8.2.9	Additional to the tests in 3.1.1 any tests deemed necessary by the Engineer	Pov Sum			R50 000.00
3.6	**SABS 1200L**	**MISCELLANEOUS**				
3.6.1 LI	8.2.11	Pipeline markers Supply and install pipeline markers as per drawing.	no	40		
3.6.2 LI	8.2.11	Concrete thrust blocks (inclusive of additional excavations, formwork, concrete grade 20/20 and reinforcement a) Concrete volume up to 2.0 m^3	no	85		
3.6.3		Level control valve including required telemetry at Tekwane South Reservoir for new incoming 400mm pipe and all mechanisms to connect and fix the pumpline to outside of the reservoir to be able to supply the reservoir with water	no	1		
3.7		**River Crossing**				
3.7.1	PSH 8.3.14 PSHC 8.1.1	Steel pipe river crossing 40m, detailed DWG to be provided during construction (includes pipe, gabions, bidim, concrete anchor blocks, steel structure, corrosion protection etc.)	Prov. Sum			R200 000.00
3.8	PSL8.2.16	Connection to existing line, cutting of existing line and all work required to arrange for connection with LM and additional effort required to make connection within 4hrs at WTW PS see drawing 104.	Sum	1		
3.8		**Provincial Road Crossing Horizontal Drilling**				
	PSL8.2.17	The rate shall include for horizontal drill underneath Kanyamazane Rd2296 (1.5m below road layer works and 20m wide), near the Rietbokloop bridge crossing. The amount should be all inclusive - site establishment, excavation, drilling, installation of sleeve and 400mm oPVC pipe, decommissioning etc.	Prov. Sum			R370 000.00
		TOTAL SCHEDULE 3 CARRIED FORWARD TO SUMMARY				

SCHEDULE 4 : DAYWORKS (Provisional)

ITEM NO.	PAYM. REF.	DESCRIPTION	UNIT	QUANT.	RATE	AMOUNT
	SABS 1200A					
4.1	PSA8.7	**Dayworks Labour**				
		a) Contractor's Representative	hr			Rate only
		b) Surveyor	hr			Rate only
		c) Qualified artisan	hr			Rate only
		d) Foreman, leader-hand (9 hr/workday)	workday			Rate only
		e) Semi skilled labourer (9 hr/workday)	workday			Rate only
		f) Labourer (9 hr/workday)	workday			Rate only
4.2		**Plant hire : Work Rates on Site**				
4.2.1		Tipper truck (specify capacity)				
		a) 5m³ (small)	hr			Rate only
		b) 10m³ (large)	hr			Rate only
4.2.2		Flat bed truck (specify capacity)				
		a) 5 ton (small)	km			Rate only
4.2.3		LDV	km			Rate only
4.2.4		Wheel loader: ..... m³ bucket (specify type)	hr			Rate only
4.2.5		Bull dozer				
		a) ..... m³ (small)	hr			Rate only
4.2.6		TLB (Tractor Loader Backhoe)				
		(..... m³ bucket) (specify type)	hr			Rate only
4.2.7		Compactor				
		a) ..... (specify applied force) ..... kg	hr			Rate only
4.2.8		Concrete mixer (specify dry/wet capacity)				
		a) ..... (small towable)	hr			Rate only
4.2.9		Miscellaneous				
		a) Compressor with capacity of ± 10m³/min	hr			Rate only
		b) Water pump with 80mm outlet - diesel driven	hr			Rate only
4.3		Mark up on materials supplied for dayworks	%			

SUMMARY OF SCHEDULES

Schedules	Amount
Schedule 1 Preliminary and General	
Schedule 2 Earthworks	
Schedule 3 Pipelines	
Schedule 4 Dayworks	Rate Only
Sub Total A	
Contingencies (10%)	
Sub Total B	
VAT @ 15%	
TOTAL CARRIED FORWARD TO FORM OF OFFER	

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

PART C3 SCOPE OF WORKS

PART C3: SCOPE of WORK

C3.1: GENERAL REQUIREMENTS AND PROVISIONS (DESCRIPTION OF WORKS)

C3.1.1 EMPLOYER'S OBJECTIVE

The City of Mbombela (CoM) through Silulumanzi as the implementing agent wants to improve the water supply to Kanyamazane, Tekwane and South Nsikazi.

The focus of the CoM is the construction / refurbishment of the Kanyamazane Water Treatment Works (KWTW), pump line from KWTW to Tekwane South Reservoir, pump station and pump line from Tekwane East reservoir to new and central high-level reservoir, internal water reticulation and distribution of water from the new reservoir including the upgrading of components in the Southern Nsikazi Water scheme to improve the overall water supply to these areas.

However, the proposed project for this tender will only include the first phase, which consists of a pump line from the KWTW to Tekwane South Reservoir.

C3.1.2 OVERVIEW OF THE WORKS

Raw water is abstracted from the Crocodile river, and pumped to the old and new KWTW. From the Old Kanyamazane Water Treatment Plant, purified water is pumped to the Kanyamazane certral area and Tekwane.

There is currently a 250mm pump line running from the Old KWTW pump station up to the Tekwane South Reservoir. However, this pump line will be replaced by a proposed 400mm diameter pipe that will also augment the water supply to other areas of Kanyamazane and Tekwane.

The works consist of the setting out, excavation, bedding, laying pipeline, backfill, compaction, installation of valves (line valves, scour valves, air valves, pressure reducing and flow control valves), connections to the existing pipeline and the construction and pipe work for the required valve chambers.

C3.1.3 EXTENT OF THE WORKS

Installation of a pump line from the Old KWTW up to the Tekwane South Reservoir. The new pump line will ultimately replace the existing pipeline to be able supply the required future water demand for the area. The work essentially includes;

- New 400mm oPVC pipeline of 2,901m from Kanyamazane Old WTW to T-off to Tekwane South Reservoir (varies between Class 20 and 25);
- New 400mm steel pipeline (making use of existing bridge crossing) of 40m to cross the Kusabani River, a tributary of the Crocodile River (4.5mm Grade B steel);
- New 350mm oPVC pipeline of 664m from T-off to Tekwane South Reservoir (varies between Class 16 and 20);
- Application for the required wayleaves with the relevant authorities;
- Horizontal drilling underneath road Rd2296 for the New 400mm oPVC pipe (Mpumalanga Department of Public Works, Roads and Transport – provincial road);
- Setting out, excavation, bedding, compaction, pipe laying, backfilling, cleaning and testing of pipeline and components;

- Installation of drainage systems depending on the sub-soil conditions;
- Construction of line valves, scour valves, air valves, pressure reducing and flow control valves, interconnections, ancillary works including the construction and pipe works for the required valve chambers;
- Connections to the existing pump line;
- Concrete anchor blocks;
- Removal of existing fences and steel structure, storing and re-installation;
- Breaking and re-construction of asphalt, concrete, masonry and other type of material infrastructure (road crossings, driveways, curbs, etc.);
- Working in close proximity to existing services (electrical, water and sewer pipelines, stormwater etc.) and residential property;
- Any other works not mentioned above but is required to be able to complete the project, refer to drawings and schedule of quantities for additional information.

C3.1.4 LOCATION OF THE WORKS

The works (Kanyamazane Water Treatment Works) is located approximately 20km East of Nelspruit and is situated on the Southern side of the Kanyamazane township. The works can be reached via the N4 to Komatipoort. From the N4 the secondary roads to the Kanyamazane water treatment works are tarred roads. The works coordinates are as follows:

Latitude: 25°29'9.10"S

Longitude: 31°10'21.11"E

The new proposed 400mm pump line will run for most of the route adjacent to the existing 250mm line. The existing pump line will be replaced by the new line. The pump line starts at the Old KWTW and runs towards the Kusabani River (tributary to the Crocodile River) where it crosses and continues North-West all the way up to road Rd2296 (Kanyamanzane Road). At Rd2296 the pipeline turns South-West and runs next to the road, all the way up to the Entokozweni East turn-off (at Vukuzimele Street). At Entokozweni East the pipeline crosses underneath Rd2296 and continues in Vukuzimele Street. The pump line then turns East, the first street after Linden Street all the way up to the Tekwane South Reservoir. The location of the reservoir is:

Latitude: 25°28'29.24"S

Longitude: 31° 9'24.62"E

C3.2: ENGINEERING

C3.2 ENGINEERING

C3.2.1 DESIGN

(a) The Engineer is responsible for the design of the permanent Works as reflected in the Contract Documents unless otherwise stated.

(b) The contractor will provide all plant, material, transport and labour required for the construction and commissioning of the works. The contractor will acquire the services of specialists to ensure that specific equipment (as indicated) is installed as per the manufacturer specifications (this will be indicated in the tender documents).

(c) The Contractor is responsible for the design of the temporary Works (if applicable) and their compatibility with the permanent Works.

(d) The Contractor shall supply all details necessary to assist the Engineer's Representative in the compilation of the record drawings and the contractor will provide operating manuals and training as specified.

(e) The principal features of the scope of works do not limit the responsibility of the contractor. He shall perform all work and furnish all labor, equipment and material to ensure the satisfactory operation of the works. Material and devices, which are normally part of the supplied equipment and are essential for the proper operation of all equipment or are necessary for the proper functioning of the whole installation, shall be supplied even if not explicitly called for in these specifications.

C3.2.2 ENGINEER'S DESIGN

The engineer is responsible for the design of the permanent works. The information contained in the tender documentation with the specifications and construction drawings is provided to assist the contractor with the execution of the works.

C3.2.3 CONTRACTOR'S DESIGN

The tender document includes specifications of all installations and equipment required to tenderers to be able to submit a competitive tender.

C3.2.4 DRAWINGS

The following drawings are applicable to the contract and are issued with this tender document and will form part of the Contract Document.

The drawings contained in these documents show generally the character and extent of the proposed works, but they shall not be held as showing or describing all or every position of the works to be executed.

Additional and detailed drawings will be furnished by the Engineer as the works proceeds.

NO	PLAN NO	DESCRIPTION
1	N1315-001	LOCALITY PLAN
2	N1315-002	PROPOSED PIPELINE LAYOUT
3	N1304-101	ISOLATION & SCOUR VALVE TYPICAL DETAIL
4	N1304-102	TYPICAL ISOLATING VALVE DETAIL
5	N1304-103	AIR VALVE CHAMBERS TYPICAL DETAIL
6	N1304-104	PUMP STATION CONNECTION DETAIL 1
7	N1304-105	MDC RESERVOIR CONNECTION DETAIL 2
8	N1304-106	TEKWANE SOUTH RESERVOIR T-OFF CONNECTION DETAIL 3
9	N1304-201	LONG SECTION 1
10	N1304-202	LONG SECTION 2
11	N1304-203	LONG SECTION 3
12	N1304-204	LONG SECTION 4
13	N1304-205	LONG SECTION 5
14	N1304-206	LONG SECTION 6

C3.2.5 DESIGN PROCEDURES

See item C3.2.3.

C3.3: PROCUREMENT

C3.3 PROCUREMENT

C3.3.1 PREFERENTIAL PROCUREMENT

C3.3.1.1 Requirements

Tenders will be evaluated in terms of the Silulumanzi Preferential Procurement Policy. Points will be awarded for price and specific contract participation goals as contained in the Tender Data.

C3.3.1.2 Resource standard pertaining to targeted procurement

The Preferential Procurement Policy (PPP) of the Silulumanzi is applicable to this project. Refer to the Tender Data.

C3.3.2 SUBCONTRACTING

See contract data 4.4

C3.4 STANDARD SPECIFICATIONS

The standard specifications on which this contract is based are the South African Bureau of Standard Standardized Specifications for Civil Engineering Construction SANS 1200. (Note to complier "SABS" has been changed to "SANS"; the SABS 1200 specifications are due to be replaced in the foreseeable future by SANS 1200)

SANS 1200:A	-	GENERAL
SANS 1200:AB	-	ENGINEER'S OFFICE
SANS 1200:C	-	SITE CLEARANCE
SANS 1200:D	-	EARTHWORKS
SANS 1200:DB	-	EARTHWORKS (PIPE TRENCHES)
SANS 1200:G	-	CONCRETE (STRUCTURAL)
SANS 1200:H	-	STRUCTURAL STEEL
SANS 1200:HC	-	CORROSION PROTECTION OF STRUCTURAL STEEL
SANS 1200:L	-	MEDIUM PRESSURE PIPELINES
SANS 1200:LB	-	BEDDING (PIPES)
SANS 1200:M	-	ROADS (GENERAL)
SANS 1200:ME	-	SUBBASE
SANS 1200:MF	-	BASE
SANS 1200:MJ	-	SEGMENTED PAVING
SANS 1200:MK	-	KERBING AND CHANNELLING
SANS 1200:MM	-	ANCILLARY ROADWORKS

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 10396:2003 : Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures

SANS 1914-1 to 6 (2002) : Targeted Construction Procurement

SANS 1921 – 1 (2004) : Construction and Management Requirements for Works Contracts Part 1: General Contracting and Construction Works where accommodation of traffic is involved:

SANS 1921-2 (2004) : Construction and Management Requirements for Works Contracts Part 2: Accommodation of Traffic on Public Roads Occupied by the Contractor.

Other documents:

General Conditions of Contract 2015 Obtainable from the South African Institute of Civil Engineers (SAICE).

C3.5 PROJECT SPECIFICATIONS

The project specification, consists of three parts and forms an integral part of the contract and supplements the standard specifications.

Part 1 contains a general description of the civil works, the site and the requirements to be met and detailed specifications.

Part 2 contains variations, amendments and additions to the standard civil specifications.

Part 3 contains particular civil specifications.

In the event of any discrepancy between a part or parts of the standardized or particular specifications and the project specification, the project specification shall take precedence. In the event of a discrepancy between the specifications (including the project specifications) and the drawings and / or the bill of quantities, the discrepancy shall be resolved by the engineer before the execution of the work under the relevant item.

C3.5.1 GENERAL (PART 1)

C3.5.1.1 SCOPE

This Section describes the works that are to be executed under the Contract, and covers matters that relates to the Works as a whole. Various matters dealt with in the Condition of Contract are expanded upon within this Section.

C3.5.1.2 PROJECT DESCRIPTION

Raw water is abstracted from the Crocodile river, and pumped to the old and new KWTW. From the Old Kanyamazane Water Treatment Plant, purified water is pumped to the Kanyamazane certral area and Tekwane.

There is currently a 250mm pump line running from the Old KWTW pump station up to the Tekwane South Reservoir. However, this pump line will be replaced by a proposed 400mm diameter pipe that will also augment the water supply to other areas of Kanyamazane and Tekwane.

The works consist of the setting out, excavation, bedding, laying pipeline, backfill, compaction, installation of valves (line valves, scour valves, air valves, pressure reducing and flow control valves), connections to the existing pipeline and the construction and pipe work for the required valve chambers. Refer to Section 3.1 for detail on the Employer’s objective.

C3.5.1.3 DESCRIPTION OF THE SITE AND ACCESS

The works (Kanyamazane Water Treatment Works) is located approximately 20km East of Nelspruit and is situated on the Southern side of the Kanyamazane township. The works can be reached via the N4 to Komatipoort. From the N4 the secondary roads to the Kanyamazane water treatment works are tarred roads. The works coordinates are as follows:

Latitude: 25°29'9.10"S

Longitude: 31°10'21.11"E

The new proposed 400mm pump line will run for most of the route adjacent to the existing 250mm line. The existing pump line will be replaced by the new line. The pump line starts at the Old KWTW and runs towards the Kusabani River (tributary to the Crocodile River) where it crosses and continues North-West all the way up to road Rd2296 (Kanyamanzane Road). At Rd2296 the pipeline turns South-West and runs next to the road, all the way up to the Entokozweni East turn-off (at Vukuzimele Street). At Entokozweni East the pipeline crosses underneath Rd2296 and continues in Vukuzimele Street. The pump line then turns East, the first street after Linden Street all the way up to the Tekwane South Reservoir. The location of the reservoir is:

Latitude: 25°28'29.24"S

Longitude: 31° 9'24.62"E

The nearest railway station is at Karino station.

C3.5.1.4 CLIMATE AND WEATHER

The site is situated in the Lowveld of Mpumalanga and the climate is sub-tropical with warm summers, mild frost-free winters and high humidity levels. The average maximum temperature in the area is approximately 310C and the average minimum approximately 160C, with extremes of 430C and -20C. The annual mean daily temperature is approximately 210C.

C3.5.1.5 NATURE OF GROUND AND SUBSOIL CONDITIONS

A Geotechnical investigation was conducted. The detail report is available for perusal if required. The sub-soil conditions generally consist of sandy gravel, silt sand and clayey sand. A majority of rock was also encountered on the pipeline route and was accounted for in the bill of quantity. The appointed Contractor should consider the quantity of rock and price accordingly.

C3.5.1.6 DETAILS OF THE WORKS

Installation of a pump line from the Old KWTW up to the Tekwane South Reservoir. The new pump line will ultimately replace the existing pipeline to be able supply the required future water demand for the area. The work essentially includes;

- New 400mm oPVC pipeline of 2,901m from Kanyamazane Old WTW to T-off to Tekwane South Reservoir (varies between Class 20 and 25);
- New 400mm steel pipeline (making use of existing bridge crossing) of 40m to cross the Kusabani River, a tributary of the Crocodile River (4.5mm Grade B steel);
- New 350mm oPVC pipeline of 664m from T-off to Tekwane South Reservoir (varies between Class 16 and 20);
- Application for the required wayleaves with the relevant authorities;
- Horizontal drilling underneath road Rd2296 for the New 400mm oPVC pipe (Mpumalanga Department of Public Works, Roads and Transport – provincial road);
- Setting out, excavation, bedding, compaction, pipe laying, backfilling, cleaning and testing of pipeline and components;
- Installation of drainage systems depending on the sub-soil conditions;
- Construction of line valves, scour valves, air valves, pressure reducing and flow control valves, interconnections, ancillary works including the construction and pipe works for the required valve chambers;
- Connections to the existing pump line;
- Concrete anchor blocks;
- Removal of existing fences and steel structure, storing and re-installation;
- Breaking and re-construction of asphalt, concrete, masonry and other type of material infrastructure (road crossings, driveways, curbs, etc.);
- Working in close proximity to existing services (electrical, water and sewer pipelines, stormwater etc.) and residential property;
- Any other works not mentioned above but is required to be able to complete the project, refer to drawings and schedule of quantities for additional information.

C3.5.1.7 CONSTRUCTION IN CONFINED AREAS

The Tenderer shall take cognisance of the fact that the works will run adjacent to the existing pump line. Connection to the existing pump line should be done in a manner to minimize the disruption in water supply.

Construction will also take place in areas where there are vehicle and pedestrian movement (next to streets and on pavement) and therefore safety is of the utmost importance. Strategic safety measures will need to be incorporated for the entire duration of the project. The construction site will be an active site.

The appointed Contractor will also work in close proximity to existing services such as:

- ESKOM overhead powerlines (pipeline route running adjacent to the powerlines for a majority of the way);

- Existing bulk water pump lines and sewer gravity mains.
- Horizontal drilling underneath road Rd2296 (Kanyamazane Road) at turn-off to Entokozweni East (Vukuzimele Street);
- Pipeline in Entokozweni East residential area will run in confined spaces due to the narrow streets and services;
- Other local road crossing etc.

C3.5.1.8 LABOUR INTENSIVE AND SUBCONTRACTING

The employer's objectives are to deliver public infrastructure using labour intensive methods. The works in contract are to be executed by using both conventional construction and labour-intensive construction methods according to the Expanded Public Works Programme (EPWP).

The portion of the works earmarked for the EPWP Labour Intensive construction methods will be numbered with a prefix "LI" in the bill of quantities to distinguish them from the conventional construction works. Such work shall be constructed using local workers who are temporarily employed in terms of the project specification. The tenderer must ensure that they tender accordingly.

Activities to be performed by hand are as follows:

- Formwork
- Small concrete works
- Building works
- Loading/haulage/Unloading/Spreading
- Mixing concrete by hand
- Excavations (not exceeding 1.0m)
- Bedding
- Pipe laying
- Backfilling
- Compaction

The activities are identified in the Bill of Quantities using the prefix "LI". Such works shall be constructed using local workers who are temporarily employed in terms of this Scope of Work.

C3.5.1.9 ENVIRONMENTAL CONDITIONS OF SITE

The project footprint shall not be regarded as a severe environment. There is however some industrial pollution.

The project footpring is accessible accessible via the existing Kanyamazane tar road. From an on-site inspection it can be seen that there are section with rocky outcrops, refer to **C3.5.1.5** above for further detail.

C3.5.1.10 ATTENDANCE ON OTHER CONTRACTORS

No attendance on other Contractors is required.

C3.5.1.11 SITE MEETINGS

A meeting between the Employer, or his Representative, the Contractor and the Engineer, or his Representative, will be held once per month at a time, date and venue determined by the Engineer/Employer's Representative to discuss all aspects of the works.

The venue may be the Employer's office at Nelspruit or at the Kanyamazane WTP (dependant on the site camp of the contractor), and no additional compensation will be given for travelling costs.

The site meetings will be under the chairmanship of the Employer Representative/Engineer or his Representative.

C3.5.1.12 CONSTRUCTION PROGRAMME

General

The submission of a construction programme as stated per clause 5 of the general conditions of contract is compulsory.

Before any work is to be commenced on the site (within a period as stated in clause 5.6 of the general conditions of contract), the contractor must submit a detailed project programme for the construction of the works to the engineer for his approval.

The programme must consist of a detailed schedule or block diagram covering all aspects of the works and the planned time thereof must, with the contract period as time basis, be shown.

Rainfall conditions will be taken as abnormal when the average rainfall, as shown in the contract data, is exceeded and the contractor must then apply in writing for extension of the contract period using clause 5.12 of the special conditions of contract.

The contractor shall submit to the engineer a realistic, detailed programme not later than 14 days after receipt of the letter of acceptance. The programme shall be in bar-chart format showing in detail how the contractor proposes to complete the work covered by this contract by the due completion date.

The following details must be stated:

- The quantity of work applicable to each bar item as well as the rate at which the work will be completed.
- A budget of the value of completed work, month by month, for the full contract period.
- The contractor's plant commitment on the contract for every fortnight.
- The critical path.

The programme shall be kept up to date. If a contractor fails to maintain progress in terms of the programme, he shall produce a revised programme showing the modifications to the original programme necessary to ensure completion of the works before the due completion date.

The approval of any programme by the engineer shall have no contractual significance, other than satisfying the engineer that the work is carried out according to such programme and that the contractor undertakes to carry out the work in accordance with the programme. The engineer will have the right to instruct the contractor to revise the programme if necessitated by circumstances.

The contractors programme must allow for the following:

1) Delivery period of valves, pipes and other specialised equipment.

Time for completion

The maximum time allowed for the completion of the contract is **12 months** (excluding special non-working days and the year-end break) from the date of letter of acceptance.

Deviation from construction programme

The programme of work as required in terms of the "General Conditions of Contract – 3rd Edition (2015)" shall be submitted to the engineer not later than fourteen days after the commencement date.

The contractor shall take into account the requirements of the Occupational Health and Safety Act, as well as the construction regulations in the drafting of the programme.

The format shall not be in the form of a bar chart only, but shall also clearly indicate the anticipated quantity of work to be executed each month. The construction programme shall also clearly indicate the labour to be utilised for the duration of the Contract and activities specially programmed for LI activities.

If during the progress of the work, the quantities of the work performed per month fall below the expected indicated in the construction programme, or if the sequence of operation is altered, or if the programme is deviated from in any other way, the contractor shall, within one week after being notified by the engineer, submit a revised construction programme.

Such a revised construction programme shall be based on the tempo of work achieved by the contractor up to the date of revision. Any proposal to increase the tempo of work must be accompanied by positive steps to increase production by providing more labour and plant on site or by using the available labour and plant in a more efficient manner.

Failure on the part of the contractor to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps as provided for in the "General Conditions of Contract –3rd Edition (2015)".

C3.5.1.13 MEASUREMENTS AND PAYMENT

Contract rates

In computing the final Contract amount, payments shall be based only on actual quantities of authorized work done, or personnel provided or services rendered in accordance with the specifications. The stated rates shall apply, subject to the provisions of the Conditions of Contract, irrespective of whether the actual quantities are more or less than the scheduled quantities.

Rates to be inclusive

The stated rates shall, amongst other things, include procuring and furnishing all materials, labour, supervision, plant, tool, and equipment, wastage, transport, loading and off-loading handling, testing, quality, overheads and all other items deemed to successfully complete the works which are not covered by specific payment items in the Schedule of Quantities.

Certificates of payment

A draft certificate of payment shall be submitted by the Contractor in terms of Clauses 6.10 of the Conditions of Contract to the Engineer or Employer's Representative and shall be prepared in accordance with the standard payment certificate prescribed by the Engineer or Employer's Representative. Documentary proof of substantiating all claims for payment shall be attached to the certificate as may be required by the Engineer or Employer's Representative.

All costs resulting from the preparation and submission of the draft certificate shall be borne by the Contractor.

Contract price adjustment

Contract price adjustment is not applicable to this Contract.

C3.5.1.14 SITE FACILITIES AVAILABLE

Water supply

Water supply is not available on site. The Contractor shall make his own arrangements to obtain potable water for the drinking purposes. If water is available and the Contractor connects to the water reticulation, the Contractor will arrange with the Employer a water metered standpipe connection for which at least 14 days' notice shall be given. The size of the connection provided will be as specified in the Water and Sanitation By-laws.

The Contractor may only draw water from fire hydrants through means of a legal, Employer owned, potable water metered standpipe/connections. Failure to use such Employer owned potable water metered standpipes/connections, or using illegal, non-Employer owned equipment for purposes of drawing water from fire hydrants, will result in the Contractor having to pay an account to Employer, for an amount determined by Employer.

The potable water metered standpipe(s) must be made available to the Employer's water inspectors for purposes of reading and inspection, and failure to do so, will result in the immediate withdrawal of such potable water metered standpipe(s). The onus is on the Contractor to return such potable water metered standpipe(s) if they are found to be defective (not registering consumption). Failure to do so will result in an account being levied, payable to and determined by the Employer. Claims for delays caused where standpipe(s) are withdrawn and/or replaced will not be considered.

The current water tariffs applicable to the Contract are available from the Employer.

The availability of water cannot be guaranteed by the municipality and in the event of water no longer being freely available, the contractor must make his own arrangements to acquire it.

The rates tendered for the relevant items in the preliminary and general section of the schedule shall include all costs for the establishment and maintenance of water supply to the works and the contractor shall make his own arrangements for the possible conveyance and storage of water if necessary. The contractor will be held responsible for any wastage of water due to negligence.

The water as described above include all the water as required by the contractor for the successful execution of the works, health and safety and environmental requirements including the water required for testing of pipes.

Power supply

There is no power on site. The Contractor shall make arrangements with the relevant authority for the supply and distribution of power for purposes of this Contract, the cost of which shall be deemed to be included in the rates inserted in the Schedule of Quantities.

Power used for carrying out of the works in accordance with these Specifications will be subject to measurement or payment.

Electrical power without failures cannot be guaranteed by the municipality. During power failures and shortages, the contractor must make his own arrangements for the provision of electricity.

The rates tendered for the relevant items in the preliminary and general section of the schedule shall include all costs for the establishment and maintenance of a power supply to the works.

Sewer supply

The Contractor shall provide, maintain, move to positions as required and finally remove proper sanitary accommodation at each work front. Sanitary accommodation shall be properly screened and its use strictly enforced. The Contractor shall comply with the Employer's Sanitation General By-Laws Section 19(1) and 19(3).

The situation of sanitary accommodation prescribed in terms of the Sanitary General By-Laws shall be approved by the Engineer as being convenient for the person for whose use it is intended. The sanitary accommodation provided must be adequately ventilated, properly disinfected and kept in a thoroughly clean condition at all times.

The Contractor shall bear all costs associated with the provision of sanitary accommodation. Compensation for these costs will be made under the relevant item in the Schedule of Quantities.

The contractor's workforce may not use the Employers facilities on site.

C3.5.1.15 FACILITIES REQUIRED ON SITE

Facilities for the engineer

A dedicated site office for the engineer is not required. An office must be made available for use by the engineer with a table and 6 chairs.

Facilities for the contractor

The following facilities are required on the site for the contractor in addition to the facilities required by the contractor for his own purposes:

Ablution and sanitary facilities

The contractor shall erect and maintain on the site proper ablution facilities. The contractor shall service and maintain the facilities in a clean and hygienic state for the duration of the contract period and on completion of the works remove it from the site.

Contractor offices and sheds

The Contractor shall provide offices for his own use and for the use of his representatives and all necessary shelter for workmen and sheds for the storage of tools, plant and materials. Sheds for the storage of cement and corrodible material must be waterproofed and weatherproofed with a raised floor of wood or concrete. Materials prone to UV degradation shall be stored under cover and in such a manner that they are not directly exposed to sunlight.

The employer will point out the position of the lay down area.

Accommodation for contractor's employees

No housing is available in the schedule of quantities for the Contractor's employees. The Contractor shall make his own arrangements to house his employees and transport them to the Site.

Laboratory facilities (Clause 7 SABS 1200A)

The contractor shall provide Laboratory facilities at a SABS accredited laboratory to conduct tests as required or as specified/measured in the bills of quantity.

Municipal name board

Two official name boards are required for this contract.

Housing for the engineer and/or his representative

No housing is required for the engineer or his representative.

Telephone Facilities

Additional telephone facilities are not needed on the site. The contractor's representative on site shall at all times be reachable by cell phone.

C3.5.1.16 FEATURES OF THE CONTRACT REQUIRING SPECIAL ATTENTION

Existing Services

The Contractor shall make himself acquainted with the site and inspect all areas for existing services before any clearing or excavation is commenced.

Although every effort has been made to ensure the accuracy of any underground services that may be shown on the drawings, Silulumanzi takes no responsibility for the accuracy thereof, or for any omissions that may have been made. Under no circumstances is the Contractor to alter or in any way interfere with existing works or underground services unless authorised by the Engineer.

Where there is uncertainty as to the existence of, or the exact position or depth of any underground service, the Contractor shall carry out exploratory excavations using hand tools, in order to obtain the required information without causing damage. Exploratory excavations shall be carried out, refilled and reinstated in an approved manner as expeditiously as possible. This work will be measured and paid for as specified in variations to Standard Specification SABS 1200 A.

Where existing works are of such a nature that the Engineer may require them to be moved by the Contractor, the cost of such work will be paid for at scheduled rates.

The Contractor shall take adequate measures approved by the Engineer to protect and prevent damage to existing works and services and all damage caused to existing works and services shall be made good at the Contractor's cost.

Where the Contractor is responsible for the cost of repairs carried out by the Employer or an outside Authority to services damaged by the Contractor's operations, and where the Contractor fails to make payment to the Authority concerned for the cost of such repairs, the Employer reserves the right to make such payment directly to the relevant Authority and to recover the costs thereof from the Contractor by means of a deduction from the Contractor's monthly Payment Certificate.

The Council reserves the right to prosecute under the terms of Local Government Ordinance No. 17 of 1939 and the Electricity Act No. 40 of 1958 where Council services have been wilfully or negligently damaged.

Except only for exploratory excavations, for the location of existing services and deviations of such services where ordered by the Engineer, no specific payment will be made for any other work of any description connected with such services; the costs thereof being deemed to be included in the tendered rates.

Protection to Public and Property: Watching, Lighting and Barricading

The Contractor shall fence or otherwise protect all parts of the works dangerous to the safety of the public or property.

All excavations are to be barricaded. Barricades shall consist of at least three 19mm diameter hemp ropes or 2,5mm wires, or more if required, stretched tightly between poles, standards, etc. securely planted in solid ground, well clear of the excavation and enclosing the spoil from the excavations.

The poles, standards, etc. shall not be more than 15m apart, but if circumstances require they shall be placed closer. The ropes or wires shall be stretched tight approximately 0,5m, 1,0m and 1,5m above the ground. Red flags shall be fixed to the barricades at distances not exceeding 15m along excavations for pipelines and structures, at the end of trenches, at manhole excavations, etc. All posts shall be painted white with bands 0,3m wide of red reflecting material painted around at 0,3m spacing.

All protection, lighting and barricading measures shall be carried out to the satisfaction of the Engineer.

No specific payment will be made for watching, lighting and protecting the costs of which will be deemed to be included in the rates tendered for excavation.

C3.5.1.17 RAINFALL FIGURES

Extensions of time in respect of clause 42 in respect of abnormal rainfall shall be calculated using the following formula for each calendar month or part thereof:

$$V = (N_w - N_n) + \frac{(R_w - R_n)}{X}$$

Where:
V is the extension of time in calendar days in respect of the calendar month under consideration.

N_w is the actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded.

N_n is the average number of days in the relevant calendar month, as derived from existing rainfall records, as stated in the Site Information, on which a rainfall of 20mm or more has been recorded for the calendar month.

R_w is the actual average rainfall in mm recorded for the calendar month under consideration.
R_n is the average rainfall in mm for the calendar month as derived from existing rainfall records as stated in the Site Information.

X will be equal to 20.

For purposes of the Contract N_n, R_n and X shall have those values assigned to them in the Appendix and/or the Specification.

If V is negative and its absolute value exceeds N_n, then V shall be taken as equal to minus N_n.

The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total is negative the time for completion shall not be reduced due to subnormal rainfall.

Extensions of time for part of a month shall be calculated using pro rata values of N_n and R_n.
This formula does not take account flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned.

The factor ($N_w – N_n$) shall be considered to represent a fair allowance for variations from the average in the number of days during which rainfall exceeds 10 mm. The factor (R_w-R_n) shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed 10 mm but wet conditions prevented or disrupted work.

For the purpose of applying the formula, accurate rain gauging shall be taken at a suitable point on the Site and the Contractor shall at his own expense, take all necessary precautions to ensure that rain gauges cannot be interfered with by unauthorized persons.

The following are the most reliable values of Nn and Rn available and will be used unless prior agreement is reached on other values:

Source of information : Department of Environmental Affairs
Rainfall district : Nelspruit
Period : January to December

MONTH	**Nn (days)**	**Rn (mm)**
January	3.9	137.4
February	3.5	120.1
March	2.8	86.4
April	1.3	48.0
May	0.4	11.7
June	0.3	8.2
July	0.2	10.4
August	0.3	9.4
September	0.6	26.4
October	2.2	8.2
November	3.6	110.2
December	4.2	124.9
Annual average	23.3	701.3

C3.5.1.18 SAFETY

Safety of workmen

The safe conduct of the works shall be a primary consideration and the entire works shall be carried out in conformity with all applicable statutory regulations and requirements and tenderers must price their tenders accordingly.

The contractor shall provide and maintain in readiness on the site, all equipment, and materials necessary to render first aid in case of accidents or other emergencies. The contractor shall also assign to the works and designate for this purpose, trained employees who are able to render first aid.

Health and safety requirements

It is a requirement of this contract that the contractor shall provide a safe working environment and to direct all his activities in such a manner that his employees and any other persons who may be directly affected by his activities are not exposed to hazards to their health and safety.

To this end the contractor shall conform to all the stipulations of the Occupational Health and Safety Act (Act 85 of 1993) and the regulations applicable at the time of tender, which inter alia provide for the designation of a health and safety representative (or representatives) when an employer has more than 20 employees in his employ.

C3.5.1.19 SUB-CONTRACTORS

The employer shall have the right to cede any sub-contract under this contract to a pre-approved subcontractor, in accordance with the provisions of clause 4 and 9 of the general conditions of contract.

C3.5.1.20 DELAY IN COMPLETION

The contractor shall organise the works in such a manner that no delays occur. Delay due to faulty organisation or lack or shortage of materials or labour or co-operation with other parties or to any other cause within the control of the contractor will not be countenanced and full power is reserved by the engineer to order the contractor to expedite the work should the work, in the opinion of the engineer, not progress in a satisfactory way.

C3.5.1.21 SUPPLY OF MATERIALS

All material to be used in the works is to be supplied by the contractor.

The contractor shall ensure that the work is not delayed due to the lack of materials on site, by placing orders for material required under this contract as soon as possible. No extension of time will be allowed for any delay due to the supply of materials unless it can be proven that the delay is attributed to conditions outside of the control of the contractor.

Although the quantities have been carefully calculated, it must be considered as approximate only and the contractor, before ordering any materials, should check the quantities required. The bill of quantities is provisional.

C3.5.1.22 EXECUTIONS OF THE WORKS

Inspection by the engineer

No portion of the work shall be proceeded with until the engineer or his representative has examined and approved the previous stage. If any work is covered or hidden from view before the engineer or his representative has inspected the work, the contractor shall at his own cost expose the covered or hidden work for inspection. The contractor shall also be responsible for making good any work damaged during the uncovering.

C3.5.1.23 INFORMATION THAT WILL BE PROVIDED BY THE MUNICIPALITY

To be made available on compulsory site briefing:

- Borrow Pits
- Water and electrical connections
- Position of known services

C3.5.1.24 SECURITY CLEARANCES OF PERSONNEL

Tenderers to note that the client may require that security clearance investigations be conducted on any number of the tenderer's personnel.

If so required, by the client, the tenderer must remove personnel as indicated immediately and ensure that they have no access to the works or documentation or any other information pertaining to the site.

The employer shall not be liable for any cost concerning the removal of personnel or the effect thereof on the execution of the work.

C3.5.2 VARIATIONS TO THE STANDARD SPECIFICATIONS – PART 2

This part of the project specifications deals with matters relating to the standard specifications. Where reference is made in the standard specifications to the project specifications this part shall also contain the relevant information e.g. the requirements where a choice of materials or construction methods are provided for the standard specifications.

In certain clauses, the Standardized Specifications allow a choice to be specified in the Specification Data between alternative material or methods of construction, and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the Specification Data. It also contains such additional specifications as are required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix “PS” followed by a number corresponding to the number of the relevant clause or payment item in the Standardized Specifications. New clauses and payment items not covered by clauses or payment items in the Standardized Specifications if included here are also designated “PS”, followed by a number. The new numbers follow on the last clause or item number used in the relevant section of the Standardized Specifications.

PSA GENERAL (SANS 1200A)

PSA3 MATERIAL

PSA3.1 Quality of Materials and Workmanship (Clause A3.1)

"Add to Clause 3.1"
Unless otherwise specified, directed or approved, all materials and workmanship on the Works shall comply with the appropriate SANS Specification or Code, or in absence thereof, the appropriate BS Specification or Code, and shall bear the official mark of the appropriate standard. The latest revisions of all specifications and codes shall apply.

All materials, shall, except where otherwise specified, be new and of the best quality and shall be suitable to withstand and to operate satisfactorily under all possible climatic and weather conditions which can reasonably be expected at the Site.

All storage, handling, transport, erection or installation of plant, equipment and materials shall be carried out in accordance with the supplier's or manufacturer's instructions, provided that the Engineer may vary such instructions should he deem such variations necessary. Where supplier's or manufacturer's instructions are in conflict with the Specifications, the requirements of the Specifications shall apply unless otherwise agreed to by the Engineer. Any such conflict shall be brought to the Engineer's notice by the Contractor.

PSA4 PLANT

PSA4.2 Telephone

"Add new clause"
The Contractor shall make all necessary arrangements, within 7 days of the award of the Contract, and pay all costs in connection with the supply and maintenance of a telephone service for his representative on site. The service is to be maintained in proper working order for the duration of the Contract.

PSA5 CONSTRUCTION

PSA5.1.1 Setting Out of the Works (Clause A5.1.1)

"Add to Clause 5.1.1"
The Contractor will be responsible for the setting out of the Works from existing reference marks (benchmarks). Before commencement of construction work the Contractor shall clearly mark all reference marks on Site.

The Engineer may vary the final exact location of any part of the Works taking the local conditions into consideration. The Contractor shall therefore notify the Engineer immediately after any preliminary setting out of any portion of the Works has been done and before detailed setting out or construction work is started. Only after approval of that portion of the Works by the Engineer may the detailed setting out and construction be commenced.

Benchmarks that are to be disturbed by the temporary or permanent works must be referenced by the Contractor, prior to the disturbing thereof, at the Contractor's cost.

PSA5.1.3 Setting out of Tasks for Labour Intensive Work

"Add new clause"
The Contractor shall be responsible for the setting out of all Daily Tasks and Task Work whether LIC work is specified in the Project Specification for such tasks or not.

PSA5.4 Services (Clause A5.4)

"Add to Clause 5.4"

Where services have to be deviated or re-routed temporarily or permanently, such work shall only be carried out with the prior approval of the Engineer and the appropriate Authority and in a manner as directed or approved by the Engineer and the appropriate Authority.

All necessary final arrangements with the appropriate Authority for such deviation or re-routing shall be made by the Contractor.

PSA5.5 Dealing with Water on the Works (Clause A5.5)

"Add to Clause 5.5"

The Contractor's attention is drawn to the fact that, apart from normal dealing with stormwater and seepage water which may influence the construction of the temporary or permanent Works, special arrangements and de-watering measures will have to be made to control and/or remove water for the protection of excavations.

PSA5.9 Workman's Compensation Act (Clause A5.9)

"Add new clause"

All labour employed on the Site shall be covered by the Workmen's Compensation Act. The Contractor shall pay in full, such amounts, as are due in terms of the Act, including the payment of the necessary levies. The manner in which Workman's Compensation will be handled, shall be resolved by the Contractor with all the relevant parties at the commencement of the Contract.

PSA8 MEASUREMENT AND PAYMENT

PSA8.2.1 Fixed-Charge and Value - Related Items (Clause A8.2.1)

"Add to Clause 8.2.1"
The sums contracted in respect of fixed-charge and value-related items shall not be increased should extension of time be granted for the completion of the Works.

Initial payments in respect of fixed-charge and value-related items, excluding the item for removal of site establishment, will be limited to a combined maximum of 7,5% of the Contract Sum for the Works and the balance, if any, will be paid after 50% of the Contract Sum for the Works has been certified for payment.

All fixed-charged costs relating to watching, barricading, lighting, traffic crossings and access routes required shall be included in the amounts for the relevant "Other Obligations".

All costs relating to the telephone calls and telephone rental shall be included in the relevant amounts in the Schedule of Quantities for the telephone.

Health and Safety: Payment for compliance with the requirements of this Section of the Specification shall be from the sum price under fixed-charged and value-related items.

PSA8.2.2 Time-Related Items (Clause A8.2.2)

"Add to Clause 8.2.2"
The sum Contracted in respect of a time-related item will be increased should extension of time be granted for the completion of the Works, provided that the activity for which the relevant sum was contracted has to be maintained during the extended period. The relationship between the increased sum for a time-related item to the Contracted sum for such item, shall be the same as the relationship of the extended time for completion of the Works to the original time allowed for completion of the Works. Payment for such increased amounts will be considered as full compensation for all time related, provisional and general costs which arise as a result of the extension of time.

Payment for time-related items will take place in equal monthly amounts, calculated on the tendered amount for the item, divided by the contract period in months, with the understanding that the total of the monthly payments which was paid for this specific item does not exceed the proportion that the progress of the works to date bears in relation to the works as a whole.

All costs relating to the telephone calls and telephone rental shall be included in the relevant amounts in the Schedule of Quantities for the telephone.

Health and Safety: Payment for compliance with the requirements of this Section of the Specification shall be from the sum price under fixed-charged and value-related items.

PSA8.3.2.2.(c) / PSA8.4.2.2.(c) Laboratories (Clause A8.3.2.2(c) / A8.4.2.2(c))

"Add to Clause 8.3.2.2.(c) / 8.4.2.2.(c)"
The tendered sums for the Sub-clauses 8.3.2.2(c) and 8.4.2.2(c) shall cover the Contractor's overhead costs, profit and all costs related to the use of an outside or private laboratory, or both, as the case may be. The sum tendered shall be paid to the Contractor in full.

PSA8.3.2.2.(i) / PSA8.4.2.2.(i) Access to the Works (Clause A8.3.2.2(i) / A8.4.2.2(i))

"Add to Clause 8.3.2.2.(i) / 8.4.2.2.(i)"
The tendered sums for the Sub-clauses 8.3.2.2(i) and 8.4.2.2(i) shall cover all the Contractor's costs for the work required for the provision and maintenance of access to and on the Site of Works as specified in Sub-clause 5.8.

The rates shall include for the supply, placing, maintenance and removal on completion of the Works (if any) of gravel on temporary access roads and the re-stabilization of roads as may be required.

PSA8.3.3 Setting Out of Works (Clause A8.3.3)

"Add to Clause 8.3.3"
The cost to the Contractor for the setting out of the Works and for the checking of the Surveyor's pegs and Benchmarks in terms of the General Conditions of Contract (GCC) and PSA5.1.1 and for the setting out of Tasks in terms of PSA5.1.3, shall be covered by the tendered items under "other fixed-charge and time-related items " in the Schedule of Quantities.

PSA 8.3.5 Health, Safety and Environmental

"Add new clause"
a) Safety, Health and Environmental (SHE) Plan ..... Unit: Sum
b) SHE File ..... Unit: Sum
c) Provision of Personal Protective Equipment ..... Unit: Sum
d) Other Health, Safety and Environmental matters ..... Unit: Sum

The tendered rates shall include full compensation for the Contractor's obligation regarding the compilation of the SHE plan, the SHE file and provision of resources to ensure compliance with occupational Health and Safety Act, and Environmental Management Act, as amended.

PSA8.4.5 Testing (Clause A8.4.5)

"Add to Clause 8.4.5"
The cost of all sampling and testing to be carried out by the Contractor or by approved laboratories shall be included in the sum for "Other Time-Related Obligations" and no separate payments will be made in connection therewith. This also applies to the casting, curing and testing of concrete test cubes.

Control testing by the Engineer will be paid for from the Provisional Amount in the Bill of Quantities.

PSA 8.4.6 Health, Safety and Environmental

"Add new clause"
a) SHE Compliance .....Unit: Month
b) SHE Specialist Consultant.....Unit: Month
c) Handling fees (a & b) .....Unit: %

The Contractor is liable and responsible for the execution of the contract within the parameters set out by the Occupational Health and Safety Act, Act 85 of 1993 and so doing will be duly expected to conform to at least minimum requirements for ensuring the health and safety of the personnel, community (3rd parties) and all other project stakeholders. It is also the responsibility of the Contractor to comply with the Environmental Management Act.

The tendered rates for SHE compliance shall include full compensation for the Contractor's compliance with the abovementioned acts, including the maintenance and general upkeep of the SHE File which shall be kept safe on site and accessible by the parties as and when required.

The tendered rates for the SHE Specialist Consultant shall include a full audit and approval of the SHE File at the start of the project, followed monthly audits to ensure continuous compliance. The SHE Specialist will also conduct monthly audits of the entire site and associated works and present a report with all findings at the monthly progress meetings.

PSA 8.4.7 Community Liaison Officer (CLO)

"Add new clause"
Liaison with authorities, stakeholders and the community through the appointed Community Liaison officer (CLO).

The contractor shall appoint a CLO after consultation with the local councilor, beneficiaries, community, the Engineer and the Employer. The Contractor shall direct all his liaison efforts with the local communities through the appointed officer. The duties of the CLO:

- To be available on site daily between the hours of 07:00 and 10:30 and at other times as the need arises. His normal working day will extend from 07:15 in the morning until 16:30 in the afternoon.
- To facilitate the recruitment and fulfillment of the contractor's need for temporary labour. This labour must be procured openly, fairly, responsibly and equitably from the benefiting local community or if not possible nearest advance community.
- He will be co-responsible with the PSC and Contractor for the identification of suitable trainees and will attend one of the training sessions.
- To communicate daily with the Contractor and the Engineer to determine the labour requirements with regard to numbers and skill, to detect possible labour disputes and community dissatisfaction and assist in avert them, where disputes arise assist in their resolution.

- To report to the PSC Meetings the progress of the works.
- To attend all meetings in which the community and/or labour are present or are required to be represented.
- To assist in the identification and screening of labourers from the community as per Contract requirements.
- To attend disciplinary proceedings to ensure that hearings are fair and reasonable.
- To keep daily written record of his interviews and community liaison.
- To attend monthly site meetings to report on labour and community matters
- To assist the contractor to approach and access specific areas of work for execution of the project.
- All such other duties are agreed upon between all parties concerned.
- To submit monthly returns regarding community liaison.

a) CLO salary……Unit: Month
b) Handling fees (a)……..…Unit: %

PSA 8.5 Sums stated provisionally by Engineer (Clause A8.5)

"Add the following"

Quality Control
a) Independent tests in factory on valves……Unit: Prov sum
b) Independent tests on all fittings and specials……..……Unit: Prov sum
c) Percentage adjustment to item a & b to cover Contractor's expenses (max 10%)…..……Unit: %

Labour Desk Officer…….Unit: Prov sum

PSA8.7 Dayworks (Clause A8.7)

"Add to Clause 8.7"
No day work shall be undertaken unless such work is instructed and directed by the Engineer, where the Engineer considers no other appropriate rate is available in the schedule of quantities. Prior to the commencement of any work, the Contractor must obtain written consent from the Engineer regarding the classification of all labourers in terms of "unskilled", "semi-skilled" and "skilled" labourers, or type of plant and material.

All costs in connection with the location and deviation or rerouting of existing services will be paid under Dayworks.

PSA8.8.2 Dealing with traffic (Clause A8.8.2)

"Add to Clause 8.8.2"
Dealing with traffic shall be measured for payment at the tendered lump sum under Temporary Works. The sum tendered and paid shall include full compensation for the installation and all subsequent moving and re-establishment and final removal of lighting, signboards, traffic signs, barricades, drums, flashing lights, labour, transport or any other item required for the safe accommodation of traffic on public roads, all to the satisfaction of the Engineer and where applicable, in accordance with the requirements of the Employer.

Although the tender sum for Dealing with traffic shall be paid out as specified for time-related items during the construction period, the sum tendered will be a fixed amount and will not be subject to adjustment due to a possible extension or reduction of the Time for Completion or for any other reason whatsoever.

PSA 8.8.4 Temporary works (Clause A8.8.4)

"Add to clause 8.8.4"
The rate shall include the costs of confirming, protecting and reporting on, all existing services, in addition to the material types and all hand excavations required.

PSA8.8.7 Protection of Surveyor's Pegs

"Add new clause"
The costs to the Contractor for the location, protection and replacement (if any) of survey beacons, pegs and benchmarks in terms of Sub-clause 5.1.2, shall be covered by the items "other fixed-charge and time-related sums" in the Schedule of Quantities.

PSC SITE CLEARANCE (SANS 1200C)

PSC5 CONSTRUCTION

PSC5.2.3.2 Individual Trees (Clause C5.2.3.2)

"Add to clause"
The penalty for damaging or removing trees not specifically instructed by the Engineer to be removed, shall be R5500-00 per tree.

PSC5.3.(e) Removal, Re-erection and Protection of Fences and Boundary Walls (Clause C5.3.(e))

"Add to clause"
All existing fences on the Site through which the Works have to be executed, shall be temporarily removed. The removal shall be carried out in such a manner that all materials shall be re-usable for re-erection on completion of the Works. The fences shall be so re-erected in such a manner that they are in a similar condition to that prior to removal. Where required, the Contractor shall supply and install new materials, should the existing materials not be suitable for re-use.

In terms of protection, where possible fences and boundary walls will be protected to ensure no damage occurs during construction. The Contractor shall make an effort in order to secure fences and boundary walls. Any fence or boundary wall damaged during the construction process shall be fixed in a similar condition to that prior to construction.

The Contractor shall keep an adequate photo record to ensure that there is no arbitrary claims by the community for damages to infrastructure.

PSC5.3.(f) Removal and Re-erection of Carports (Clause C5.3.(e))

"Add to clause"
Existing carport structures shall be temporarily removed. The removal shall be carried out in such a manner that all materials shall be re-usable for re-erection on completion of the Works. The carports shall be so re-erected in such a manner that they are in a similar condition to that prior to removal.

PSC5.6 Topsoil (Clause C5.6)

"Add to clause"
Topsoil shall be stored in designated stockpile areas for later use as indicated by the Engineer.

PSC5.8 Demolition of Structures (Clause C5.8)

"Add to clause"
The existing building(s) and or structures that must be demolished will be indicated by the Engineer at the site(s). The building(s) and or structures is to be demolished, reconstructed in a similar condition to that prior to removal and the rubble disposed of as indicated by the Engineer. Any material retrieved will be given to the current owner of the structure.

PSC8 MEASUREMENT AND PAYMENT

PSC8.1 Basic Principles (Clause C8.1)

"Add to clause"
The transport of cleared and grubbed materials and debris and the disposal thereof by the Contractor away from the Site shall not be measured separately and all costs in connection therewith shall be included in the rates for the relevant items.

PSC8.2.1 Clear and Grub Unit : m

"Add to clause"
For LIC Methods:-
(a) Clear vegetation and tress of girth up to 0,25 m.
(b) Clear trees of girth over 0,25 m and designated obstacles.

PSC8.2.8 Demolish And Remove Structures (Clause C8.2.8) Unit : Sum

"Add to clause"
The rate shall cover the cost of the removal of all structures on the site, the disposal thereof at the dumping site, the levelling and shaping of the site and the backfilling of any holes with material of at least the same quality as that of the in situ material. Structures to be reconstructed (where applicable) will be installed in a similar condition as prior to removal for e.g. concrete driveway to be replaced with same type of material and the necessary processes to ensure its structurally sound etc. The rate shall also cover the cost of removing cleaning and handing over of all usable material to the Employer / Current Owner.

Payment for the removal of individual structures will be made pro rata in the relation of the area thereof to the total area of structures that has to be demolished and removed.

PSC8.2.11 Removal, Re-erection and Protection of Fences and Boundary Walls

"Add new clause"
The removal, re-erection and protection of existing fences and boundary walls shall be measured and paid per linear meter. The rate shall include the cost of removal of the fences, the temporary storage of the components, the re-erection of the components on completion of the Works and any costs relating to the securing of fences and boundary walls and the loading and transportation of the components. The supply and installation of new materials, where required, will be paid for at daywork rates for removal and re-erection of fences.

If damage occurs during the protection of fences and boundary walls due to construction, the effected items shall be fixed in a similar condition to that prior to construction and will be for the account of the Contractor.

PSC8.2.12 Removal and Re-erection of Carports

"Add new clause"
The removal and re-erection of existing carports shall be measured and paid per structure. The rate shall include the cost of removal of the carport, the temporary storage of the components, the re-erection of the components on completion of the Works and any costs relating to the loading and transportation of the components. The supply and installation of new materials, where required, will be paid for at daywork rates.

PSD EARTHWORKS

PSD1 SCOPE

"Add to clause"
The following work in this Section 1200 D shall be carried out using Labour Intensive Construction (LIC) Methods and for such work it shall be held that this specification covers earthworks carried out by hand tools and equipment or, where so permitted in the project specification, by restricted plant usage in accordance with PSD4 :-

a) Clear and strip site;
b) Restricted excavation and backfilling;
c) Remove, stockpile and spread excavated material;
d) Filling and compacting holes where trees and stumps have been cleared;
e) Selecting and removing unsuitable material;
f) Spreading and compacting surplus excavated material on Site;
g) Hauling of material under (a) to (f) above up to 100 m by wheelbarrow.

PSD2 INTERPRETATIONS

PSD 2.3 Definitions

"Add LIC methods"
For LIC Methods the definition for "restricted excavation" shall read:-
"an excavation required to be carried out using only hand tools and equipment or, where so permitted in the project specification carried out with restricted use of plant."

PSD3 MATERIALS

PSD3.1.1 Method of Classifying

For LIC Methods add at the beginning:-

"Subject to the restrictions on the use of plant ….."

PSD3.1.2 Classes of Excavation

"Add to clause for LIC methods"
For LIC Methods the excavation of material will be classified as follows:-

"Soft excavation": Soft excavation shall be excavation in material that can be efficiently removed or loaded by manual operations with a pick and shovel, without the use of handheld pneumatic (compressor driven) tools such as paving breakers or prior ripping, and boulders up to 25 kg in mass.

"Intermediate excavation" : Intermediate excavation shall be excavation (excluding soft excavation) in material that requires to be broken up by the use of handheld pneumatic tools before removal or loading by equipment equivalent to that specified for soft excavation and boulders of mass more than 25 kg up to 50 kg, or material that requires to be loosened and broken up by a back-acting excavator of flywheel power exceeding 0,10 kW per mm of tined-bucket width or material that requires ripping by a bulldozer of 35 t mass with a single-tine ripper and flywheel power of 220kW, for the material to be removed or loaded as soft material.

"Hard rock excavation": Hard rock excavation shall be excavation in material that requires to be broken up by drilling and blasting with explosives and/or wedging and splitting before removal or loading by equipment equivalent to that specified for soft excavation, and boulders of mass more than 50 kg.

In the event of the Engineer instructing that boulders in excess of 50 kg mass or isolated ridges of rock be broken up by sledgehammer or by heating and cooling (fire and water), such operations will be measured and paid for separately from other excavations.

PSD3.2.1Material suitable for embankments and terraces

“Add to clause for LIC methods”

For LIC Methods in paragraph (b) “300 mm” shall read “150 mm”.

PSD4 PLANT

PSD4.1 General

“Add to clause”

There shall be no restriction on the use of mechanical plant and equipment for work identified in the Schedule of Quantities as "Bulk" or "Mass" earthworks.

Where it is required that the work be carried out using LIC Methods (Refer PSD1) the first two sentences of 4.1 shall read:

"Except where permitted in the project specification, the Contractor shall use only hand tools and equipment such as picks, shovels, sledgehammers and wheelbarrows. Although, for the purpose of classifying excavations, particular items of plant are specified in PSD3.1.2, the Contractor is not obliged to provide or use those specified items of plant for carrying out the work but he may use such plant for the excavation that is so classified as an exception to the restriction on plant."

PSD4.2 Compaction Plant

“Add to clause”
For LIC Methods the Contractor shall, save by arrangement with the Engineer, not use compaction plant larger than manually-operated self driven “pedestrian” compactors.

PSD4.3 Haul Vehicles

“Add to clause”
Although, for the purpose of classifying haulage, particular items of plant are identified in PSD5.2.5.2, the Contractor shall not be obliged to use wheelbarrows for the haul of materials over terrain where it may be impracticable to push a wheelbarrow manually.

PSD5 CONSTRUCTION

PSD5.1 Disposal of surplus and unsuitable material from excavation (Sub-clauses 5.1.4.3 and 5.2.2.3).

“Add to clauses”
Surplus material from excavations which is suitable to use in fills shall be placed and spread in fills or placed in embankments in areas on the Site designated by the Engineer and compacted to at least 90% Mod. AASHTO density (98% for cohesion less materials).

Unsuitable material from excavations shall be disposed of by spreading as uncompacted fill or by placing in embankments in areas designated by the Engineer during the Contract. When ordered by the Engineer, the material shall be compacted to at least 90% Modified AASHTO maximum density (98% for cohesion less materials), or to such greater density as directed by the Engineer.

PSD5.2.2.3 Disposal and spoil site(s) (Sub-clause 5.2.2.3)

"Add to clause"
Except when it is required and designated by the Engineer that surplus and unsuitable material from excavations shall be disposed of on the Site, such material shall be disposed of to Spoil Sites in accordance with the terms specified in Portion 1 of the Project Specification.

Haulage shall be payable on transport outside the freehaul distance in terms of PSD5.2.5.1.

PSD5.2.3.1 Embankments(Sub-clause 5.2.3.1)

For LIC Methods, the first sentence of the third last paragraph shall read:

"The material of each embankment shall, unless otherwise approved, be deposited in layers of thickness before compaction, not exceeding 150 mm."

PSD5.2.3.2 Backfilling against structures

"Add to clause"
For LIC Methods all trenches and excavations outside structures shall be carefully refilled with approved material in layers of thickness not exceeding 150 mm before compaction. During the placing of each layer, the filling shall be well stamped and compacted.

PSD5.2.5.1 Freehaul

"Add to clause"
For LIC Methods freehaul shall be 2,5 m or the average distance of a single throw with a standard shovel full of soil, whichever is the greater distance.

PSD5.2.5.2 Overhaul

"Add to clause"
For LIC Methods, transportation of all excavated material beyond the freehaul distance in terms of PSD5.2.5.1 will be regarded as overhaul. Overhaul will be classified as

Wheelbarrow haul or Tractor and trailer haul or Truck (long) haul, based on the following ranges, unless otherwise approved by the Engineer :-

Distance beyond the end of the freehaul in terms of PSD5.2.5.1 by the shortest practicable route

a)	Wheelbarrow haul	Up to 100 m
b)	Tractor and trailer haul	Over 100 m up to 0,5 km
c)	Truck or long haul	Over 0,5 km

The Contractor shall not incur overhaul expenses without prior approval/authorization by the Engineer.

PSD5.2.3.3 Compaction of Cut Areas

"Add new clause"
All cut areas in sandy soil shall be compacted to 100% Mod AASHTO to a depth of 300 mm after final finishing.

PSD6 TOLERANCES

PSD6.1 Position, Dimensions and Level for Bulk Earthworks

"Add to clause"
Except that finished levels shall comply with Sub-clause 6.1(b) (3) for Degree of Accuracy II, a degree of accuracy III shall be applicable to bulk earthworks.

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB1 SCOPE (Clause 1)

The following work in this section 1200 DB shall be carried out using Labour Intensive Construction (LIC) Methods, subject to the provisions in PSDB4.1 and PSDB5.4 :

- Excavation of all trenches up to 1,5 m depth;
- Selecting material for backfilling and backfilling and compaction of all trenches, excluding additional compaction for areas subject to traffic loads;
- Spreading and compacting surplus material on site;
- Hauling of excavated material up to 100m by wheelbarrow.

PSDB3 MATERIALS

PSDB3.1 CLASSES OF EXCAVATION

For LIC Methods, the classes of excavation are specified in PSD3.1.2.

PSDB4 PLANT

PSDB4.1 EXCAVATION EQUIPMENT

For LIC Methods, Sub-clause 4.1 shall read:
"Except that the Contractor may use the tools, equipment and plant specified in PSD3.1.2 for the classification of the material in the excavation of that material, the Contractor shall use only hand tools and equipment such as picks, shovels, sledgehammers and wheelbarrows."
Where LIC Methods is not a requirement, Sub-clause 4.1 shall apply without amendment thereto.

PSDB4.3 COMPACTION EQUIPMENT

For LIC Methods, Sub-clause 4.3 shall read as follows:
"The Contractor shall use only hand tampers and hand held pneumatic tampers to compact the material in the trench. He shall carry out his compaction in such a manner that the pipeline, duct or cable is not stressed or damaged. The material directly above the pipe, duct or cable shall not be compacted until sufficient backfill has been placed to ensure the loads transmitted to the top of the pipe, etc. are no greater than would be imposed by normal road traffic over a pipeline with cover of depth 600 mm."

PSDB5 CONSTRUCTION

PSDB5.2 MINIMUM BASE WIDTHS

Amend Sub-clause 5.2 to read as follows:-
"Unless otherwise specified (Refer PSDB4.1) in the Project Specification or on the drawings, the base width of a trench shall be not less than the nominal diameter of the pipe ("nominal" being the catalogue or trade name for a specific pipe) plus twice the side allowance determined from the following table :-

Nominal Φ of pipe (mm)		Side Allowance on each Side (mm)
Over	Up to and Incl.	(Irrespective of trench depth, unless otherwise stated)
- - 50 600 900 2000	50 50 600 900 2000 -	200 (for trench depth up to 1,0 m) 300 (for trench deeper than 1,0 m) 325 450 550 650

In Sub-clause 5.2(a) substitute “external diameters of the pipe barrels” with “nominal diameters of the pipes”. Delete Sub-clause 5.2(b).

PSDB5.4 EXCAVATION

For LIC Methods, the first sentence of Sub-clause 5.4 shall read as follows:
"Pipe trenches shall be excavated in lengths approved by the Engineer to widths such that the side allowance does not exceed the appropriate value specified in Sub-clause 5.2 and PSDB5.2 by more than 50%, except that where in terms of the project specification or the drawings, the base width of a trench for a pipeline or a portion of a pipeline is not to exceed the minimum base width or other specified value, and further to such widths that half of the base width is on either side of the designated centre line of the pipe or duct.

Add the following to Sub-clause 5.4:-
"Although particular items of plant are identified in PSDB4.1 for LIC Methods, the Contractor shall not be restricted in the use of plant of his preference when the Engineer considers that the excavation of trenches using hand tools becomes impracticable or hazardous due to the subsurface conditions such as, for example, unstable trench sides resulting from seepage water."

PSDB5.5 UNSUITABLE OR UNSTABLE TRENCH BOTTOM

Where the trench bottom is in waterlogged or unstable or unsuitable conditions during the construction operations, the Engineer may order in writing the placing of a working floor. The working floor shall consist of:-

19 mm singularly graded crushed rock aggregate of 150 mm minimum thickness, unless otherwise ordered by the Engineer, to be wrapped in a geotextile filter fabric of mass 210 g/m2 ("Kaytech" grade 210 g/m2, or similar).

The filter fabric shall be placed on the trench bottom prior to placing the stone aggregate on the filter fabric. After the aggregate have been placed and spread to the required thickness, the filter fabric shall be wrapped/folded over the aggregate to a minimum overlap of 300 mm. The specified bedding shall be placed on the enclosed drain/working floor.

PSDB5.6.3 Disposal of Excavated Material

Surplus material from trench excavation shall be disposed of as specified in PSD5.1.4.3.

PSDB8 MEASUREMENT AND PAYMENT

PSDB8.1 BASIC PRINCIPLES

PSDB8.1.2(a) Unit of Measurement

For LIC Methods, Sub-clause 8.1.2(a) shall read as follows:-
"Trench excavations will normally be measured volumetrically but may be measured by length".

PSDB8.1.2(b) Depth Increments

For LIC Methods, Sub-clause 8.1.2(b) shall read:-
"Separate items will be scheduled for lengths of trench of depth not exceeding 1,0m; for lengths of trench of depth exceeding 1,0 m but not exceeding 1,5 m, and so on, in graduations of 0,5 m, which illustrates the depth classification, albeit on the basis of 1,0m increments."

PSDB8.3 SCHEDULED ITEMS

PSDB8.3.2(a) Excavated in all Materials for Trenches, Backfill, Compact

Dispose of Surplus Material, all within the Freed-haul Distance Unit : m3 or m
For LIC Methods, amend the first two paragraphs to read:-

"Items will be provided for various depths in increments of 0,5 m measured to the bottom of the bedding layer in accordance with PSDB5.2, PSDB8.1.2(a) and (b), 8.1.2(c) and 8.2.2, for various pipe diameters grouped together in steps not greater (i.e. not wider) than those shown in the following table :-

Nominal Φ of pipe (mm)	
Over	Up to and Incl.
- 50 250 450 600 900 1200 1500	50 250 450 600 900 1200 1500 Individually

The unit of measurement (m3 or m) shall be in accordance with the unit stated for particular scheduled item.

Also, “add to clause”:

Payment for sections of pipelines, which are partially complete, will be as follows:

a) Completion of excavations and installation: 60% of scheduled rate.
b) Completion of backfilling and compaction: 95% of scheduled rate.
c) Completion of testing: 100% of scheduled rate.
Less the percentage of retention.

PSDB8.3.2(d) Disposal of Surplus Material (Sub-clause 8.3.2)

The tendered rate shall include for all costs for disposal and placing of surplus material as uncompacted fill at a site within the freehaul distance.

PSDB8.3.2(e) Placing and Compaction of Disposed (Spoil) Material from Excavation

(Sub-clause 8.3.2) Unit: m3

The tenderer shall ensure that disposed material from excavation is placed and compacted to the satisfaction of the on site Engineer.

PSDB8.3.3.4 Overhaul

For LIC Methods, the sub-items of item for Sub-clause 8.3.3.4 shall read as follows:
"Overhaul:
Wheelbarrow hauls Unit m3.m
Tractor and trailer haul Unit m3.
Truck haul Unit m3.km"
Add the following to Sub-clause 8.3.3.4:-

"For LIC Methods, the free haul for transport of backfilling and disposing of surplus material, measured from any point along a trench, shall be the free haul distance in accordance with PSD5.2.5.1 plus the distance from the specified centre line of the trench to the actual top edge of the trench plus, when applicable, the distance by the shortest practicable route from the edge of the trench to the toe of the stockpiled excavated material furthest from the trench. Overhaul shall be measured from the end, or between the end and beginning, as applicable, of the free haul distance(s)."

PSDB8.3.4(c) Working Floor on Trench Bottom

The construction of a working floor as specified under PSDB5.5 will be measured as follows :-
The aggregate shall be measured for payment in terms of item Sub-clause 8.2.3 of SANS 1200 LB.
The filter fabric shall be measured by the square metre (m2) to nett dimensions specified by the Engineer.
The tendered rates for (a) and (b) shall cover the cost of disposing of the displaced material within the free haul distance, the supply and placing of the stone and filter fabric as specified, and the cost of losses as a result of over excavated trench widths and/or bottoms and overlaps and/or formwork if required.

PSDB 8.3.5 (a) Existing Services that Intersect a Pipe Trench

The rate for existing services that intersect a pipe trench shall include the method of excavation necessary to avoid damage to the existing service, all protective measures and supports required to avoid damage, any selected fill required around the existing service and any revisions, delays or disruptions of the programme of the Works, including any matters arising or related thereto. Services which are no longer in use shall not be measured. Only services which are exposed by the trench excavations shall be measured. Informal connections will not be regarded as an existing service.

Excavation around existing services, as determined by the Engineer on Site, shall be deemed to be restricted excavation.

PSDB8.3.5 (b) Existing Services that Adjoin a Pipe Trench

The rate for existing services that adjoin a pipe trench shall include the method of excavation required to avoid damage to the existing service, all protective measures and supports required to avoid damage, any selected fill required around the existing service and any revisions, delays or disruptions of the programme of the Works, including any matters arising or related thereto. Services which are no longer in use shall not be measured.

PSDB 8.3.6.1 Reinstate Road Surfaces Complete with all Courses

The reinstating of all courses and road surface shall be measured and paid together for the theoretical excavation width. The rate shall include the provision and construction of all materials for each course, the repair of adjacent damaged areas and all labour and costs related thereto during the construction and maintenance periods.

PSG: CONCRETE - STRUCTURAL

PSG 2 INTERPRETATIONS

PSG 2.3 Quality

This clause is amended to include:

Set (of concrete cubes). A set of cubes shall consist of 6 cubes of nominal side 150mm of which 3 will be crushed at 7 days after making and the remaining 3 at 28 days.

PSG 3 MATERIALS

PSG 3.2 Cement

Replace the entire clause with the following:

Only Ordinary Portland Cement (OPC) and Pulverised Fuel Ash (PFA) shall be used in all concrete for this contract. No other types of cement shall be permitted.

Pulverised Fuel Ash (PFA) shall comply with the following specifications:

a) PFA shall be obtained from only one power station, from which the PFA has been approved by SANS for used in concrete.
b) All PFA shall comply with requirements of SANS 1466 (1998)

PFA shall be used as partial replacement of the OPC in concrete. A maximum of 33% (by mass) of the total cementitious material in the concrete may be PFA and shall be mixed before delivery on site. The OPC/ PFA mix shall be stored in the same manner as OPC. When stored in silo's the PFA / OPC mix shall require increased silo capacity, more efficient filters and aeration compared to OPC only.

Cement shall not be older than 12 weeks at the time of being used.

PSG3.4 Aggregates

The use of plums in concrete work will not be permitted.

PSG 3.5.1 Approval of Admixtures

Admixtures may be used subject to the following conditions :

a) All information regarding the admixtures to be used shall be provided in terms of Sub-clause G3.5.1.
b) The beneficial results to be expected from the use of the admixture shall be clearly stated.
c) Proof is submitted that these results will be obtained with the particular concrete in the Works under the conditions expected on the Works.
d) The use of the admixture shall not adversely affect the durability or any other property of the concrete.
e) The admixture shall conform with the applicable A.S.T.M. or other relevant specification.
f) The admixture shall be used in strict conformity with the manufacturer's instructions.

PSG 3.5.2 Air-entraining agents

Replace with the following:

Air-entraining agents shall not be used.

PSG3.2.2 Alternative types of Cement - Grout

All grouting must be carried out using a pre-packaged non shrink cement based product which is chloride-fee such as “Dura grout” manufactured by “ABE Construction Chemicals” or equal approved material.

PSG 3.6 Reinforcement

Add the following:

Cover blocks for reinforcement shall be concrete, of at least the same strength as specified for the structure in which it will be used.

PSG 4 PLANT

PSG 4.5.1 Formwork - Design

Formwork shall be provided for all concrete surfaces sloping more than 30^{o} with the horizontal, unless otherwise approved or directed by the Engineer.

Wire connectors through concrete shall not be allowed. All ferrules or other fastening devices shall present a neat, uniform and tidy pattern.

All holes created by the removal of shutter fixing devices shall be thoroughly grouted with sand/cement grout of the same color as the surrounding concrete. The ratio of cement to sand in the grout shall be the same as that used in the concrete. The concrete surface at the holes shall be made flush and neat to the satisfaction of the Engineer. In underground or water retaining structures, the grouting operation shall render the structure watertight.

All exposed corners of concrete structures shall be splayed with 20 mm x 20 mm fillets unless otherwise indicated or directed by the Engineer. No sharp corners will be allowed.

The use of old, buckled, twisted or otherwise damaged steel or timber shutters on off-shutter concrete will not be permitted and all formwork shall be approved by the Engineer before concreting is commenced.

Should the soil conditions on Site not be suitable for the casting of footings and foundations against excavated faces, the Engineer shall instruct the Contractor to utilise rough vertical formwork.

If requested by the Engineer, the Contractor shall submit to the Engineer the design and details of the formwork for approval before any work is commenced.

PSG 4.5.2 Formwork – Finish

Unless otherwise noted formwork is to be in accordance with the following classification:

a) Rough – where in contact with backfill or surface is not exposed;
b) Smooth – where exposed and up to 150mm below paving or ground level

PSG 5 CONSTRUCTION

PSG5.1 Reinforcement

Welding of reinforcement will not be permitted.

PSG5.1.3 Cover over Reinforcement

The exposure condition for the Works shall be “severe” unless otherwise indicated on the Drawings.

PSG5.2 Formwork

The finish to concrete where smooth formwork is specified shall be to Grade I Degree of Accuracy as defined in Clause 6 and shall be rubbed down with carborundum blocks at a time approved by the Engineer. No cement wash shall be allowed on exposed concrete surfaces.

PSG 5.5 Concrete

Concrete used in the Works, shall be strength concrete of the following grades:

Grade	Specified 28 Day Compressive Strength (MPa)	Nominal Aggregate Size (mm)
40/20	40	20
30/20	30	20
25/20	25	20
20/20	20	20
15/20	15	20

The grades of concrete to be utilized in various parts of the Works shall be as indicated on the Drawings or as directed by the Engineer.

All mix proportions for strength concrete shall be subject to the approval of the Engineer, but such approval shall not relieve the Contractor of his responsibilities in terms of the Contract. The proposed mix designs shall be submitted to the Engineer prior to the commencement of concreting operations.

Changes in plant, aggregate or mix proportions shall only be made with the prior approval of the Engineer.

Unless otherwise specifically agreed to by the Engineer in writing, all concrete shall be produced at the site of construction. If the use of ready mixed concrete is allowed, such concrete shall be in accordance with the requirements of the Specifications.

Unless otherwise indicated or directed by the Engineer, all foundation surfaces, excluding surface beds and brick wall foundations, shall be covered with a blinding layer before reinforcement is placed, in accordance with the details shown on the Drawings or as indicated by the Engineer. All foundation surfaces shall be inspected and approved by the Engineer before blinding layers or other concrete is placed. All shuttering and fixed reinforcement must also be inspected and approved by the Engineer before concreting.

At least 48 hours notice is required by the Engineer in respect of all such inspections.

The use of curing compounds shall be subject to the prior approval of the Engineer.

Construction joints shall only be allowed at positions indicated on the Drawings or approved by the Engineer. Where construction joints are unavoidable, suspended slabs shall be stopped off at 45o adjacent to and past columns. Walls shall be stopped off at right angles.

The Contractor shall prepare two trial mixes for each grade of concrete specified in the Works no later than 1 month prior to the commencement of casting of concrete on the Works. The aggregates and plant, as erected and approved on the Site, shall be utilised for this purpose. The Contractor shall make and test six 150 mm concrete cubes for each of the trial mixes. Three cubes of each trial mix shall be tested at 7 days and the remaining three tested at 28 days.

PSG 5.5.1.7 Strength concrete

Add the following

Although the contractor is responsible for the mix design, the following specifications apply to the mix design:

a) Minimum cement: water ratio = 2
b) For class 35/19 concrete the minimum cement content shall be 325kg/m^3
c) Maximum absorption of aggregates is 3%

The permeability of test cylinders (if ordered by the Engineer) shall not be greater than 5 x 10^{-7} mm/second.

PSG 5.5.3 Mixing

PSG 5.5.3.2 Ready mixed concrete

Add the following

Concrete for liquid retaining structures shall be mixed by batching plant.

PSG 5.5.6 Compaction

Add the following:

If re-vibration is instructed by the Engineer, the time lapse between vibration and re-vibration shall be 90 minutes

PSG 5.5.7.4 Joints

Joint filler shall be closed cell polyethylene with a density of 200/m^3. Filled joints shall be accurately formed to the dimensions shown and with the filler material specified on the Drawings. The filler shall be fixed in position to ensure position during or after placing of concrete.

Unfilled joints shall be formed accurately as indicated on the drawings. The concrete face against which the fresh concrete is placed shall be treated in good time with an approved bond breaker.

Sealed joints shall be made watertight over the full length of the joints, with dimensions as indicated on the drawings.

Preparation of joints:

The reaming of joints by sawing or other means shall be undertaken at a stage when edge spalling or raveling can be avoided and shall be subject to the Engineer's approval.

After removal of the temporary filler material or the breaking-out of the excess concrete, the inside faces of the joint

shall be wire-brushed or grit-blasted to remove all laitance and contaminants. Thereafter the joint shall be cleaned and blown out with compressed air to remove all traces of dust. Solvents shall not be used for removing contaminants from concrete and porous surfaces.

Care shall be taken to ensure that primers or adhesives are applied only to surfaces that are absolutely dry and in accordance to manufactures' specifications. The sealant shall be applied within the period during which the primer remains active.
Sealants shall be applied strictly in accordance with the manufacturer's instructions by a person skilled in the use of the particular type of sealant. The trapping of air and the formation of voids in the sealant shall be avoided. The sealant shall be finished to a neat appearance flush with the edges of the concrete or to the specified depth.

Waterstops shall be supplied in unjointed standard production lengths. Site jointing shall be limited to the absolute minimum.

At intersections, transitions and abrupt changes of direction, factory-moulded watertight junction pieces shall be used so that any site jointing can be restricted to simple joints.

When a waterstop with a centre bulb is intersected, the centre bulb shall be continuous throughout the intersection irrespective of the make-up of the intersection.

PVC waterstops shall be manufactured from high-quality virgin material and shall not contain any scrap or reclaimed material. The waterstops shall be light coloured so as to reduce heat absorption when exposed to sunlight.

The waterstops shall be precision moulded or extruded to the required cross-sectional profile, they shall be free from porosity or other imperfections, and shall be provided with eyelets so that they can be securely fixed to prevent displacement during concreting.
All joints shall be butt-jointed hot-welded joints. Where joints cannot be factory made, Site joints shall be made in accordance with the manufacturer's instructions with equipment prescribed or supplied by the manufacturer and approved by the Engineer.

PSG 5.5.7.5 CONSTRUCTION JOINTS IN SLABS

The reinforcement shall be continuous throughout the joint. After placing the first section of concrete, the joint face shall be green-cut within 24 hours after placing of concrete to expose 3mm coarse aggregate. Prior to placing the second section of concrete, the existing concrete shall be saturated with water (min 8 hours) without visible ponding. The fresh concrete shall then be placed directly onto this surface. No wet-to-dry epoxy will be allowed.

No vertical construction joints will be allowed in the walls.

Positions of additional joints required by the contractor must be approved by the Engineer.

All kickers shall be cast monolithic with the base, ensuring that it is properly compacted. The height shall be 75mm.

PSG 5.5 8 Curing and protection

Replace the clause with the following:

All concrete other than site concrete and porous concrete shall be cured by maintaining saturation for a minimum of 10 (ten) days after placement or after stripping formwork. No curing compound will be accepted. Curing methods other than the methods listed below, shall be approved in writing by the Engineer prior to placing of concrete.

i) Ponded water with a minimum depth of 50mm.
ii) Saturated sand with a minimum thickness of 60mm.

For floors, the sand shall be kept moist at all times using an irrigation system. Clean river sand shall be applied

within 24 hours after completing the specified surface finishing and concrete has gained sufficient strength as not to damage the surface. In areas with high temperatures or wind, the surface shall be protected with plastic sheeting until it has reached sufficient strength to receive the sand.

iii) Covering the previously saturated surfaces with approved plastic sheet maintained in contact with the concrete surfaces and with all edges and joints sealed by methods approved by the Engineer. The sheets shall be partially removed on a regular basis and moisture added to ensure continuous saturation. Plastic sheets for curing shall not be dark coloured and all lapping joints shall be taped closed.

iv) Continuously saturated heavy duty sacking or geotextile or other approved absorbent material maintained in contact with the concrete surfaces by fasteners spaced at 1.5m c/c

v) Continuously irrigation or sprinkling of the entire concrete area with a mist spraying system

Sprayers shall be spaced at intervals such that the whole area of concrete is wetted and shall be fastened to the concrete at regular intervals. The system shall be designed with an automatic timing system to ensure continuous saturation during weekends and public holidays.

Periodical hosing or curing compound will not be accepted as a curing method.

For concrete walls, both sides shall be cured using irrigation as described above. Sprayers shall be spaced at such intervals to ensure that the whole concrete face is wetted. Curing shall commence the day after concrete has been cast. If formwork is to remain in position (e.g. to support subsequent lifts), it shall be loosened as soon as the concrete has gained sufficient strength (usually within a day) to allow curing water to thoroughly wet the surfaces of the concrete.

In addition, the Contractor shall also ensure that the concrete shall not be exposed to thermal shocks during the first 28 days after casting and he shall take the necessary, additional precautionary measures to shield the concrete with plastic sheets or hessian during extreme.

PSG 5.5.10 Concrete Surfaces

PSG 5.5.10.2 This clause is amended to include:

Except where otherwise specified or indicated, all exposed unshuttered concrete surfaces shall, immediately after placing of the concrete, be levelled and shall be floated after the surface has set sufficiently. Floating shall be performed in one direction and float marks shall be parallel and of good appearance. Under no circumstances will exposed unshuttered concrete surfaces be allowed to be finished off with a separate cement-sand screed.

Where a wood floated concrete surface is shown on the Drawings or directed by the Engineer, hand floating of the surface shall first be completed and after the hand floated surface has hardened sufficiently, wood floating shall be performed to produce a dense, uniform surface free of any marks.

Where a steel floated concrete surface is shown on the Drawings or directed by the Engineer, hand floating of the surface shall first be completed and after the hand floated surface has hardened sufficiently, power floating shall be performed to produce a dense, uniform surface free of any marks.

‘Unless otherwise noted on the drawings all exposed unformed surfaces and surfaces to receive grout are to be wood float finished.”

“Wood float finish – Degree of Accuracy II – once the unformed surface has been brought to a plane surface it shall be uniformly floated using a wood float and shall be free from trowel marks.”

"Steel float finish – Degree of Accuracy I – where this finish is specified or shown on the drawings the surface shall be treated as for wood float finish above except that when the moisture film has disappeared and the concrete hardened sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be steel troweled under firm pressure to produce a dense smooth uniform surface free from trowel marks."

"Power float finish – Degree of Accuracy I – where this finish is specified or shown on the drawings the surface shall be treated as for steel float finish above except that the screeded surface shall be power floated to produce a high quality dense smooth uniform surface free from float marks."

"Bull nose edge to joints – Degree of Accuracy I – Where this finish is specified a nosing tool shall be applied during and after the finishing of the flat surface. The purpose is to thoroughly compact the edge of the concrete and render it watertight prior to application of the joint sealer."

All exposed concrete surfaces shall be rubbed down with carborundum blocks to a smooth appearance and a uniform colour. No cement wash will be allowed on exposed concrete surfaces.

PSG 5.5.11 WATERTIGHT CONCRETE

Add to Clause 5.5.11 the following:

1. Definition

For purposes of this Contract, all reservoirs, chambers and manholes will be regarded as water retaining structures.

The requirements of the Department of Water Affairs Specification DWS0750 (refer to Section 5) shall apply in addition to SANS 1200G.

2. Construction joints

i) General

Construction joints in the reinforced concrete walls shall consist only of horizontal joints. If under abnormal conditions a vertical construction joint is unavoidable it may only be constructed with the approval of the Engineer.

Construction joints shall only be placed at intervals shown on the drawings or as directed by the Engineer. The exact position of construction joints shall be marked on the formwork in order to obtain truly horizontal joints.

A sealant using an approved PVC water stop (waterbar) shall be placed, as specified, at all construction joints.

ii) Preparation of Surface

Prior to placing any further concrete the joint must be clean, damp and free of laitance. During the period when the concrete has set but is still green all loose material shall be removed, without disturbing the aggregates, by light brushing. Where this is not possible, or if the concrete has already set, the surface film shall be removed by mechanical means appropriate to the degree of hardness of concrete so as to expose the aggregate over the entire surface and leave a sound, irregular surface.

iii) Ferrule Cup Holes

No system leaving holes passing through the walls will be permitted. Ferrules shall be of the permanent sacrificial type.

Holes formed in reinforced concrete walls during the fixing of formwork shall be repaired on the waterside face with an approved epoxy or non-shrink grout. On the dry face the holes left in the concrete shall be repaired with 1:3 cement-sand mortar. All grouting material shall be thoroughly punned in.

PSG 5.5.16 No-fines concrete

No-fines concrete will be classified by the prefix NF followed by the size of aggregate to be used.

When the no-fines concrete will be receiving reinforcement, it will be sealed with a power floated 3:1 sand cement mortar.

Materials shall comply with SABS1200G section 3. The aggregate shall be a single sized aggregate, graded in accordance with SABS 1083.

The volume of aggregate per 50kg of cement for each class of no-fines shall be as follows:

Class	Aggregate per 50kg cement (m^3)
NF38	0.33
NF19	0.30
NF13	0.27

The mix will be such that the grout is smooth and adheres to and completely coats every particle of aggregate. The mix will not contain more than 20 litres of water per 50kg cement. The mix shall be weight batched.

Notwithstanding the preceding specifications, the mix design will be the responsibility of the Contractor.

The void ratio for no-fines concrete shall not be less than 27.5%.

The no-fines concrete shall be placed with a procedure as agreed with the Engineer and shall be placed in the final position within 30min after mixing. It shall be worked sufficiently to ensure that all aggregates adhere to each other, but vibrating and excessive tamping shall be avoided.

No-fines concrete shall be cured by sacking or plastic sheeting for at least 3 days after placing.

PSG6 TOLERANCES

PSG6.1.1 General

The Contractor shall construct all exposed shutter finish concrete surfaces to Degree of Accuracy I. All other Concrete Works shall be constructed to Degree of Accuracy II.

The Contractor shall remedy or remove and replace at his own expense, all concrete work which does not satisfy the prescribed tolerances, as directed or approved by the Engineer.

PSG 7 TESTS

PSG 7.1 FACILITIES AND FREQUENCY OF SAMPLING

PSG 7.1.2 Frequency of Sampling

Clause 7.1.2.1 is amended to include:
"A test result shall be taken as the average of three sample cube strengths."

Clause 7.1.2.2 is amended to include:
"At least one set of samples shall after that be taken from each day's casting and from at least every 50 m³ of concrete of each grade placed or part thereof."

Clause 7.1.2.3 is amended to include:
"A frequency sampling guide is shown below though final testing frequencies will be at the discretion of the Engineer."

i) One set/batch/day or
ii) One set/element/day or
iii) One set/50 m³/day such that sufficient sets are obtained to enable them to be representative of the concrete placed."

PSG 7.1.2.4 This clause is deleted in its entirety.

PSG 7.2 Testing

The Contractor shall be responsible for testing of cubes at approved laboratories for his own construction quality control, at his own expense, and he shall mould and cure the same.

Control tests by the Engineer shall be paid for separately from the Provisional Amount provided for this purpose.

The Engineer shall require six concrete test cubes for each individual concreting operation. Three of these cubes shall be tested at 7 days and three at 28 days.

Should 7 day strengths be obtained at any stage, which indicate, in the opinion of the Engineer, that the specified characteristic strength will not be achieved, the Engineer may stop concreting operations until 28 day strengths of such concrete are available, without compensation for losses or delays.

PSH: STRUCTURAL STEELWORK

PSH 3 MATERIALS-

PSH 3.1 Structural Steel

Add to the Sub-Clause:

All structural steelwork which shall include ladders, safety cages , platforms, supports shall be manufactured from GRADE S355JR grade steel in conformity with EN 1005-2-S355JR, except where shown to the contrary on the Drawings or in the schedule of quantities.

Stainless steel shall be ANSI grade 304 L or, where no welding is required grade 304, except where shown to the contrary on the Drawings or in the schedule of quantities.

Grade 3CR12 corrosion resistant steel shall be used where scheduled or shown on the Drawings. The chemical composition and properties of this steel shall be as set forth in the publication "Fabricating 3CR12 Corrosion Resisting Steel" issued by Middleburg Steel and Alloys (Pty) Ltd.

PSH 5 CONSTRUCTION

PSH 5.1.2 Shop Details

Add to the Sub-Clause:

The Contractor shall prepare his own shop details based on the dimensions and details given on the Drawings and will be required to submit his shop details to the Engineer.

He shall submit the shop details to the Engineer at least 14 days before commencement of fabrication.

PSH 5.7.6 Pipe Clamps and Brackets

Add new Sub-Clause:

Clamps and brackets around pipes are to be constructed in 304SS to the details shown on the Drawings and are to be provided with all necessary bolts for fixing to concrete.

PSH 5.7.7 Headstocks, Spindles and Hand wheels

Add new Sub-Clause:

Headstocks are to be provided where indicated, assembled from 75 mm internal diameter 304SS piping and standard fittings. Each headstock shall be provided with the necessary operating spindle, of the required length (to suit the location of the headstock above the valve), any necessary support brackets and bearings for the spindle, all holding down bolts for fastening to concrete and a hand wheel. The spindle shall be capable of transmitting a torque of at least 150 Nm without damage and shall be corrosion resistant to suit the in-situ working environment.

PSH 6 TOLERANCES

PSH 6.2.2 Accuracy of Erection

Add to the Sub-Clause:

The accuracy of erection shall be the degree of accuracy II as tabulated but amended as follows:

In item e)2) of the table the Degree of Accuracy is given as "± 5" shall be read as "± 3".

PSH 7 TESTING

PSH 7.1 Test Certificates

Delete the part sentence "in terms of the project specification" from the wording of the Sub-Clause and add the words "when so requested by the former" at the end of the sentence.

PSH 8 PAYMENT

PSH 8.3.14 Miscellaneous items (New payment item)

Steel pipe river crossing 40m, detailed DWG to be provided during construction (includes pipe, gabions, bidim, concrete anchor blocks, steel structure etc.).

PSHC : CORROSION PROTECTION OF STRUCTURAL STEEL

PSHC 5.9 Application of Metal Coatings

Add to the Sub-Clause:

The grade of hot dip galvanising (HDG) required shall be that for ISO 1461-1999 heavy duty coatings carried out in accordance with that specification. This shall be applicable to all metalwork where HDG is called for either on the Drawings or in the Schedule of Quantities.

PSHC 8 MEASUREMENT AND PAYMENT

PSHC 8.1 Principles

PSHC 8.1.1 Units

Add the following to the Sub-Clause:

Separate payment for corrosion protection of structural steel shall only be made when so scheduled in the Schedule of Quantities.

When not so scheduled, the cost of the corrosion protection work shall be deemed to be included in the price tendered for the structural steelwork.

PSL MEDIUM-PRESSURE PIPELINES

PSL1 SCOPE

This specification covers steel pipes, oPVC and accessories with a working pressure (excl. surge) up to 160m. Surge can increase pressures up to 200m for oPVC pipes and 350m for steel pipes.

The following activities of this Section 1200 L shall be carried out using the LIC Methods:

- Handling and transporting of pipes up to the sizes given below.
- Laying (including bedding) of pipes as follows:
  - oPVC : up to 600 Φ for 6 m lengths
  - Steel (all variants) : up to 150 Φ for 6 m lengths
- Bedding of all pipes.
- Casting of anchor blocks.

Building of brick valve and hydrant chambers as well as construction of chambers with pre-cast manhole rings and pre-cast concrete lids with the exception that all pre-cast items shall be obtained from a supplier approved by the Engineer.

PSL2 INTERPRETATIONS

PSL 2.4 Abbreviations (add to clause)

oPVC: These pipes are the most advanced pipes for the conveyance of high pressure water currently available on the market. PVC is essentially an amorphous polymer in which the molecules are located randomly. However, under certain conditions of pressure, temperature and speed, by stretching the material, it is possible to orient the polymer molecules in the same direction as which the material has been stretched. This process modifies the PVC's structure by giving the polymer's molecules a linear orientation.

PSL3 MATERIALS

PSL3.1 General

Materials for this Contract should preferably be obtained from manufacturers who operate an effective quality management system such as that described in SANS 0157 or ISO 9000.

The Contractor shall be fully responsible for transporting pipes, valves, specials and fittings to the point of installation, in good condition. Approved end-caps shall be provided for pipes. All materials such as rubber rings and the like must be protected against direct sunlight. Any material which, in the opinion of the Engineer, is damaged in any way shall be removed from Site without delay.

oPVC pipes shall be stored under cover and shall be suitably stacked and supported to prevent deflection or deformation according to the manufacturer's specifications.

PSL3.2 Watermains

PSL3.2.1 oPVC Pipes and Specials

Bulk pump line shall be oPVC (classes as specified) manufactured to SANS respectively and bearing the relevant SANS mark of approval with the exception of pipes supplied by the Employer.

oPVC pipes shall have spigot and socket mechanical joints, supplied with rubber rings. All bends shall be long radius bends, unless otherwise indicated on the drawings.

PSL3.4 Steel Pipes, Fittings and Specials

Steel pipes greater than 150 mm shall comply with the requirements in accordance with SABS 719 (the specifications on the construction drawings must be used).

Flexible couplings must be used with pipes without flanges. All flanges shall be drilled to match existing flanges or to the table as indicated on the pipe schedules.

All pipes and fittings, casted into water retaining structures, shall be provided with puddle flanges with a minimum thickness of 10 mm for pipes greater than 150 mm diameter and 6 mm for pipes of 150 mm diameter and smaller. The puddle flanges shall also act as an anchor flange. All flanges to pipe connections shall be continuously welded to transmit the full load and for water tightness. These flanges shall be at least 50 mm wide.

Bends will be as specified, refer to Drawings.

PSL3.7.3 oPVC Pipes, Fittings and Specials (new clause)

All oPVC pipes shall comply with the requirements of SABS.

Fittings and specials for uPVC pipes shall be either of oPVC or steel construction and suitable to withstand the working pressure specified for the pipes or at least 1 600 kPa working pressure.

All bends shall be long radius bends, unless otherwise indicated on the Drawings.

PSL3.8.3 Flanges

Flanges shall comply with the requirements of SANS 1123 (as amended) or the specific specifications on the construction drawings. Flanges designed for working pressures of less than 1 600 kPa shall have flat flange faces and those for working pressures equal or greater than 1 600 kPa shall have raised flange faces.

It shall be the responsibility of the Contractor to ensure that flanges on pumps, valves, fittings, specials and pipes to be fitted together, are fully compatible.

Machined surfaces shall be coated with a mixture of white lead and tallow or another approved protective composition before these are affected by rust.

PSL3.8.4 Loose Flanges

Bolts and nuts shall be in accordance with SABS 136 unless otherwise approved by the Engineer.

PSL 3.8.8 Welding

Welding shall be Grade B spiral steel continuously welded pipe. The qualification of welders shall be in accordance with the relevant clauses of the above standards, and specifically SANS 044 Part III and shall be Grade 1 welders. Grade 2 welder shall be permitted only with the Engineer's approval.

The Contractor shall provide evidence, acceptable to the Engineer, that welding procedures and welders have been tested in accordance with the requirements of AWS D1.1.

PSL3.9 Corrosion Protection

PSL3.9.2.2 Steel Pipes of nominal bore over 150mm

Where steel pipes and fittings are treated against corrosion with an epoxy coating (Copon), it should be as specified in SABS 1200L to a minimum thickness of 250 micrometer, inside and outside with the exception of the smaller diameter pipes used for irrigation or potable water which must be treated as set out in PSL3.3.

Where the coating has been damaged, clean relevant areas thoroughly and repair with cold epoxy.

Cement mortar linings shall be applied in accordance with the American Water Works Association Specification C205-80 or as amended except where the Specification C205-80 is at variance with the requirements of this Contract.

PSL3.9.5 Protection of Bolts, Nuts and Washers

Bolts, nuts and washers shall be zinc coated by the hot-dipped process. Bolts, nuts and washers in contact with treated water shall be of Stainless Steel 316.

PSL3.9.6 Corrosive Soil

Delete the existing clause and replace with:
All steel or cast iron fittings and joints shall be treated with a compatible primer, packed with a bitumen-based or tar-based mastic, and wrapped with an approved plastics tape, or protected with scheduled or approved materials. Tape shall be Denso wrapping, 150mm wide.

PSL3.10 Valves

PSL3.10.1 Air Valves

The air release valves shall be suitable for a working pressure as indicated on Drawings and shall have flanged or screwed inlets as specified and shall incorporate an integral shut down valve and shall be of the following types, as specified (refer to Drawings):

Type I: Conventional kinetic double orifice air valves:

These are required for the release of larger volumes of air during the filling of pipelines and the admission of air at low pressure during draining or scouring and for the admission of large quantities of air to prevent the formation of vacuum in flexible wall pipelines during the break of or negative pressure induced by water hammer/separation. A small orifice must be included for the release of entrained air under normal pipeline operation. The large orifice of the valve shall not close dynamically before all the air is discharged from the pipeline.

Type III: Single small orifice air valves:

These are for the release of small volumes of air during operation of the pipeline. It shall be of the cylindrical barrel type incorporating a cylindrical float mechanism and must have either screwed or flanged inlets as specified.

General Requirements

The size of the valve/outlet shall be the diameter of the inlet branch and the air valves shall be mounted on an isolating valve with a pressure rating similar to that of the air valve.

12 mm Cast steel needle valves or chrome plated brass P T F E seated ball valves shall be fitted to drain valve bodies when isolated from the pipeline and for the attachment of pressure gauges to valve bodies.

The pressure rating of these valves shall be the same as for the air valve it is attached to.

Valves shall not exhibit leaks or weeping of liquid past the seal at operating pressure.

Valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such as is normally the case when highly compressed air is suddenly released. The control floats shall not distort when subjected to closed end tests for material strength and soundness, nor shall they be damaged by the possible corrosive effects of the water, not under any condition of frequent operation.

All air valves shall be provided with a separate isolating valve as indicated on the Drawings which is coupled to the air valve in such a manner to allow the removal of the air valve without removing the isolating valve.

All air valves shall be able to operate at the specified working pressures and flange drilling must be in accordance with the specified working pressure on the drawings

All air valves shall be mounted on a steel extension pipe, which varies in length, according to the pipeline depth. For Contract purposes a length of 500 mm shall be assumed.

The double air valves shall be 50, 80, 100 or 150mm, as specified or shown on the Drawings.

PSL3.10.3 Level Control Valves

Level control valves shall be suitable for a working pressure as indicated on Drawings and shall open wide when the water level drops below a specific level and shall gradually close as the water level rises, closing fully at the full supply level. The friction loss in the valve shall not exceed 2 m.

The level control valves shall be of steel construction and shall be protected against corrosion as specified for gate valves.

PSL3.10.4 Non-Return Valves

Non-return valves shall be suitable for a working pressure as indicated on Drawings. All metal components shall be protected against corrosion as specified for gate valves.

PSL 3.10.4 Control valves (pressure reducing / sustaining / relief, rate-of-flow)

The control valves shall be fully automatic, requiring no external power source. The control valves shall have large filter(s) in the control circuit. All pilot valves shall after being set, be sealed with sealing wire and lead seals. All pilot valves shall be permanently marked.

The valve shall be delivered complete a full set of operating instructions and a diagram indicating the control logic.

PSL3.11 Manholes and Surface Boxes

Manholes, surface boxes and the like shall be constructed of the materials as shown on the Drawings and not as shown on the Figures contained in SABS 1200L.

PSL4 PLANT

PSL4.1 Transportation and Storing

The Contractor shall be fully responsible for transporting pipes, valves, specials and fitting to the point of installation, in good condition. Approved end-caps shall be provided for pipes. All materials such as rubber rings and the like must be protected against direct sunlight. Any material which, in the opinion of the Engineer, is damaged in any way shall be removed from Site without delay.

oPVC pipes shall be stored under cover and shall be suitable stacked and supported to prevent deflection or deformation.

PSL5 CONSTRUCTION

PSL5.1.4 Depth and Cover

The depths of pipes below ground level shall be a minimum of 1.0m and as indicated on the Drawings.

PSL5.6 Valve Chambers

Valve chambers shall be constructed in accordance with the details shown on the Drawings and not as shown on the Figures contained in SABS 1200L.

PSL5.7 Manholes

Manholes shall be constructed in accordance with the details shown on the Drawings and not as shown on the Figures contained in SABS 1200L.

PSL7 TESTING

PSL7.2.2 Radiographic Examination

No radiographic examination is required.

PSL7.3.1 Test Pressures

The test section shall be subject to a pressure test, at pressures not less than 75% and not exceeding 100% of the appropriate allowable maximum working pressure for the class of pipes, for the highest and lowest point respectively of the section being tested. This pressure shall be obtained by continuous pumping so as to ensure a gradual increase of pressure until the specified value is obtained.

PSL7.3.4 Final Inspection of Pipelines and other Items of Equipment (new clause)

After the entire piping system has been laid and all parts thereof have been tested to the satisfaction of the Engineer and backfilled, the system will be put into operation and the Contractor shall inspect the same in the presence of the Engineer, to ensure that all valves and other equipment are operating satisfactorily and to check that all pipe supports, brackets and the like are capable of withstanding the loads imposed on them.

Any faults or defects which are detected during this inspection shall be repaired by the Contractor, or where necessary, the defective parts or materials shall be replaced by the Contractor, to the satisfaction of the Engineer, all at the Contractor's expense.

All items of equipment not specifically mentioned in the Specifications, shall be inspected during the commissioning period for proper operation and to verify that these items comply with the requirements of the Specification.

PSL 7.5 Disinfection of Pipes (new clause)

PSL7.5.1 Pipes must be disinfected over the whole length, including couplings, before going into operation. Pipes must be filled with drinking-water, chlorinated to a concentration of 15mg chloride per litre water which must stay in contact with the inside surface of the pipe over a minimum of a 24 hour period. The pipeline must be filled in such a way as to prevent chlorine shock or air being captured inside the pipeline.

PSL7.5.2 The Contractor must give notice to the Engineer of the method of disinfection of pipelines 14 days in advance for acceptance of the method by the Engineer.

PSL7.5.3 The Contractor shall supply all necessary materials, equipment, tools and labour for the disinfection of the pipelines. The Contractor is responsible, at no extra cost, for the emptying of water from the pipelines and disposal of the water in a way as approved by the Engineer.

PSL7.5.4 The Contractor may use the following products as a source of chloride:

a) Chloride of lime with a yield of 33% free chloride per mass according to SABS 295.

b) Calciumhipochloride with a yield of 70% free chloride per mass according to SABS 295.

c) Chlorine gas applied with a chlorinator.

PSL7.5.5 After disinfection, a minimum of 10% (randomly selected and evenly spreaded and to be indicated on Drawings) of the total water ends must be tested by means of an approved water quality test. This test must include a full bacteriological test in accordance with SABS 241 and the test results must be handed over to the Engineer for inclusion thereof with the Contract Documentation. The Contractor will carry all costs pertaining to meaningless tests.

PSL7.5.6 The disinfection of pipes must be carried out in the presence of the Engineer.

PSL8 MEASUREMENT AND PAYMENT

PSL8.2.1 Supply and Installation of Pipes and Couplings

oPVC pipes shall be measured per linear meter for each type, pressure rating and diameter. The rates shall include for the supply, complete with couplings, fittings, corrosion protection, handling cost, inspection, transport and all other requirements in connection herewith.

Flanged pipes shorter than 6 m shall be measured as pipe fittings as specified in Clause PSL8.2.5. All flanges and couplings shall be provided with packings, bolts and nuts and no extra payments will be made for these items.

PSL8.2.10 Temporary Valves, Blank Flanges, etc

No separate payments will be made for the supply or loan of temporary valves, end-caps, blank flanges, or other isolating devices required for the testing of pipe systems and all costs in connection therewith shall be included in the rates for the supply, laying and bedding of the permanent pipes, specials and valves.

PSL8.2.13 Valves and Chambers (Add to Clause)

The tender unit rate shall include the supply and installation of the chamber which will include pipework (as per the pipe schedules and descriptions in the SoQ) earthworks, backfilling, concrete, masonry, reinfrocement, anchor blocks, drainage, ventilators, stepirons, locking devices, gabions, reno mattresses, lifting hooks, cover lids and any other items not mentioned but required for a complete installation in line with drawing 101, 102, 103, 105 and 106.

PSL8.2.16 Connections to Existing Pipelines

A Provisional Amount shall be provided in the Schedule of Quantities for connections to existing pipelines of all diameters.

The material required for the connections shall be measured and paid according to tendered item rates in the Schedule of Quantities and Drawings. Should specific items not be covered, rates for these shall be agreed or alternatively daywork rates shall apply as determined by the Engineer.

PSL8.2.17 Horizontal Drilling

The rate shall include for horizontal drill underneath Kanyamazane Rd2296 (1.5m below road layer works and 20m wide), near the Rietbokloop bridge crossing. The amount should be all inclusive - site establishment, excavation, drilling, installation of sleeve and 400mm oPVC pipe, decommissioning etc.

PSLB BEDDING (PIPES)

PSLB1 SCOPE

The following work in this Section 1200 LB shall be carried out using Labour Intensive Construction (LIC) Methods:

- Selecting material suitable for bedding from excavation.
- Hauling bedding material up to 0,5 km by wheelbarrow.

(Note: The activities which relate to placing and compacting of bedding under and around pipes, ducts and cables are covered under the specification Sections dealing with pipe laying).

PSLB3 MATERIALS

PSLB3.1 Bedding and Selected Fill Blanket (Sub-clauses 3.1 and 3.2)

It is expected that the compatibility factor of material most likely to be available from trench excavations will be less than 0,4. However, although the material may not comply with the grading requirements, sandy soil from trench excavations will be acceptable as bedding layer and selected fill blanket for pipes and ducts.

Imported borrow pit and/or commercial material tests will be required to determine the soil classification. Material that will be used for bedding and fill to be approved by the Engineer based on the outcome. In-situ material will be approved prior to the start (based on Geotechnical Report) and during the project depending on the material conditions found on site.

It is anticipated that for bedding in waterlogged conditions, the coarser sands from trench excavations will have to be selected to be determined by the Engineer.

PSLB3.3 Bedding

All pipes shall be laid on Class C bedding. Laying and compaction of bedding shall be done by labour intensive methods (LIC).

PSLB3.4 Treatment of Excavated Material (Clause LB3.4)

Where excavated material can be rendered suitable for bedding by screening, washing or other treatment and where no suitable material is available within a freehaul distance of 0,5 km from the point of placing, the Engineer may require the Contractor to treat the excavated material to render the same suitable for bedding provided that at least 60% by volume of the material is recovered after treatment. Where otherwise suitable excavated material from a trench is, in the opinion of the Engineer, contaminated due to the Contractor's methods of working, the abovementioned treatment shall be carried out at the Contractor's expense.

PSLB 3.4.1 Bedding Selection (Sub-Clause)

The Contractor will be required to select the coarser sand from trench excavations for bedding under pipes where pipes are to be laid on a trench bed which is in waterlogged conditions, refer to the Schedule of Quantities for further detail.

PSLB4 PLANT

PSLB 4.1.1 Placing and Compacting

Except that the Contractor may use a tractor with trailer or a truck as the case may be to haul bedding material, where it is required that the work is to be carried out using LIC Methods, the Contractor shall use only hand tools such as shovels, wheelbarrows and hand tampers in the placing and compaction of bedding.

PSLB5 CONSTRUCTION

PSLB5.1.2 Details of Bedding

oPVC pipes shall be laid in bedding for flexible pipes as shown on Dwg SANS 1200 LB 3(d) respectively.

PSLB 8 MEASUREMENT AND PAYMENT

PSLB8.1.3 Volume of Bedding Materials

The volume of bedding material will be measured net, excluding the volume occupied by the pipe.

PSLB 8.1.5 Disposal of Displaced Material

For LIC Methods, in the 3rd line “0,5 km” shall read “2,5 m”.

PSLB 8.1.6 Freehaul

For LIC Methods, in the first line “0,5 km” shall read “2,5 m”.

PSLB 8.2.1 Provision of Bedding from Trench Excavation

For work that is required to be carried out using LIC Methods, “0,5 km” shall read “2,5 m” in the 1st and 4th lines.

“add to clause”:

The Contractor is responsible for the treatment of excavated material to ensure the same suitable quality for bedding and/or backfill material is used during construction (measured in accordance with specified theoretical dimensions).

C3.5.3 PARTICULAR CIVIL SPECIFICATIONS – PART 3

In addition to the standardised and project specifications, the following particular specifications shall apply to this contract and are bound in hereafter.

PA PIPELINE VALVES

PARTICULAR SPECIFICATION PA : PIPELINE VALVES FOR WATER SUPPLY APPLICATIONS

PA 1 SCOPE

PA 2 DEFINITIONS

PA 3 REQUIREMENTS
- **3.1 General**
- **3.2 Materials, Workmanship and Construction**
- **3.2.1 Wedge Gate Valves**
- **3.2.2 Resilient Seal Valves**
- **3.2.3 Reflux Valves**
- **3.2.4 Butterfly Valves**
- **3.2.5 Air Valves**
- **3.3 Marking**
- **3.4 End Connections**
- **3.5 Drawings**
- **3.6 Mounting Feet**
- **3.7 Lifting Eyes**
- **3.8 Protection Prior to Installation**

PA 4 TESTING
- **4.1 Test Certificates**
- **4.2 Test Requirements**
- **4.2.1 Gate Valves**
- **4.2.2 Reflux Valves**
- **4.2.3 Butterfly Valves**
- **4.2.4 Air Valves**

PA 5 CORROSION PROTECTION

PA 1 SCOPE

This specification covers the material and constructional requirements for resilient seal, wedge gate, reflux, butterfly, air and scour valves.

PA 2 DEFINITIONS

Single small orifice air valve - A valve capable of releasing small accumulations of air at all pressures throughout the working pressure range of the pipeline.

Single large orifice air valve - A valve capable of admitting or expelling large quantities of air during emptying and filling of the pipeline.

Double orifice air valve - A valve capable of satisfactorily carrying out the functions of both a single small orifice air valve and a single large orifice air valve.

PA 3 REQUIREMENTS

PA 3.1 General

The types, sizes, end connections, pressure ranges and other details of the valves required are detailed on the specification data sheets. Other data sheets are included to permit tenderers to offer variations to the specification to suit their standard products.

PA 3.2 Materials, Workmanship and Construction

PA 3.2.1 Wedge Gate Valves

Wedge Gate valves must comply with SABS 664 or SABS 191 as applicable for waterworks

pattern valves.

Valves must also be provided with the following:

a) Fully enclosed gearing, where necessary to limit the maximum torque to be applied at the hand wheel spindle or cap top to 120 Nm under an unbalanced pressure equal to the maximum working pressure for the classes scheduled;

b) The facility to permit re-packing of the gland whilst the valve is under working pressure.

c) Stainless steel jacking/limiting screws for valves with a nominal bore greater than 600 mm and with metal gates.

PA 3.2.2 Resilient Seal Valves (RSV's)

In addition to the requirements of 3.2.1 above, RSV's shall be provided with the following:

a) Grade 304 stainless or EN57 steel spindles as scheduled.

c) At least two nitrile rubber "O" sealing rings in a corrosion resistant housing, plus one nitrile rubber wiper ring to prevent the ingress of dirt.

PA 3.2.3 Reflux Valves'

Single door reflux valves must be cast iron, spheroidal graphite (SG) iron or cast steel and comply with SABS 144 or SABS 192 as applicable. Unless otherwise scheduled, gunmetal trim shall be provided for cast iron valves and stainless steel trim for cast steel valves.

Valves with a nominal bore greater than 600 mm must be of the double door or multi-door type and may be fitted with an integral bypass. In other respects they must be in accordance with the specifications for the single door type.

A suitable arrow indicating the flow direction through the valve shall be cast onto the body of the valve.

PA 3.2.4 Butterfly Valves

The valves must comply with BS 5155 for tight shut off service for the types, classes and sizes listed in the "specification data sheets" or scheduled.

The basic materials for butterfly valves should be as follows:

<table>
<tr><th colspan="2">Component</th><th>Class PN 10</th><th>Classes PN 16 + PN 25</th><th>Class PN 40</th></tr>
<tr><td rowspan="2">Body, disc hand wheel</td><td>DN 350 to 600</td><td>Cast iron or SG Iron</td><td>S G Iron</td><td rowspan="2">Cast Steel</td></tr>
<tr><td>DN over 600 mm</td><td>S G Iron</td><td>Cast Steel</td></tr>
<tr><td>Seating Ring</td><td>a) Separate
b) Integral</td><td>Gun metal or stainless steel
Hard chrome coated</td><td colspan="2">Stainless steel
Nylon Coated</td></tr>
<tr><td colspan="2">Shaft or stub shafts</td><td colspan="3">Stainless Steel</td></tr>
<tr><td colspan="2">Bearings</td><td colspan="3">Vesconite, PTFE coated or other approved self-lubricating non-metallic material</td></tr>
<tr><td colspan="2">Seal Clamp Rings</td><td>Bronze or stainless steel</td><td>Stainless steel</td><td>Stainless steel</td></tr>
</table>

The bottom of the disc must move in the flow direction when opening. The valve shall be drop tight under the maximum pressure rating condition.

The face to face dimensions shall be as set out in table 6 of BS 5155 in the column headed "double flanged short" for double flanged valves and in the column headed "wafer long" for wafer valves.

A suitable arrow indicating the preferred flow direction through the valve, where such preference is applicable, shall be cast onto the body of the valve.

Unless otherwise scheduled a side mounted manual actuator shall be provided. The actuator shall be a separate unit bolted to the main valve body on the side designated in the data sheets when facing in the normal direction of flow. Water must not leak past the main shaft and enter the actuator. An indicator which shows the extent of opening of the valve disc must be fitted.

The designated power source for the operation of a power operated actuator is given in the data sheets. The actuator shall comply generally with AWWA C 504, and shall be capable of withstanding opening and closing torques at least 30% in excess of those necessary under the maximum working condition using the designated power source.

All actuators, whether power operated or not, shall be supplied complete with horizontal hand wheel at a height that provides for reasonable operation in each situation shown on the drawings. The hand wheel shall comply with the relevant requirements of SABS 664. The hand wheel must be mounted on a vertical shaft and must require not more than 120 Nm of input torque to operate against a maximum unbalanced head equal to the pressure rating of the valve.

All power operated actuators are to be fitted with 'Open' and 'Closed' limit switches and a 4 - 20 mA position transmitter.

PA 3.2.5 Air Valves

The materials and workmanship employed in the manufacture of air valves shall be at least equal to the standard required by SABS 664 for waterworks pattern valves.

PA 3.3 Marking

In addition to the requirement of SABS 144 or SABS regarding marking, all valves must be provided with an identification plate on which the following information shall be indelibly cast or embossed;

a) The item or tag number;

b) The size or nominal bore of the valve;

c) The class or working pressure of the valve.

PA 3.4 End Connections

End connections shall be flanged or screwed as scheduled.

a) **Flanges -** Where flanged connections are specified the dimensions and drilling of the flanges must comply with SABS 1123 except where otherwise scheduled. The front faces of flanges must be flat and normal to the bore of the valve. The back of the flanges, bonnets etc. must be flat and normal to the bore or be spot-faced over an area large enough to freely accommodate the washer and the nut.

Drilled holes for the passage of bolts must be provided where wafer type butterfly valves are scheduled.

Flange gaskets must be CPAF with a minimum thickness of 3 mm. Bolts must comply with SABS 135 or SABS 136. Washers must conform to SABS 1149. All ferrous nuts, bolts and washers must be galvanized to SABS 763.

b) **Screwed ends -** Where screwed ends are specified the valve shall be threaded to BSP.

PA 3.5 Drawings

The supplier shall provide two paper prints of fully dimensioned drawings for each type of valve and actuator when requested by the Engineer.

PA 3.6 Mounting Feet

Valves with a nominal bore of 450 mm or greater must be provided with mounting feet where called for on the specification data sheets.

PA 3.7 Lifting Eyes

A lifting eye at the top of the valve body shall be provided, where the combined mass of the valve bypasses and actuator exceeds 75 kg.

PA 3.8 Protection prior to Installation

Valves shall be temporarily covered and protected against UV radiation at all times prior to installation.

PA 4 TESTING

PA 4.1 Test Certificates

A test certificate shall be provided with each valve wherein it is certified that the valve has been inspected and tested and that it complies with the specification. An independent inspector may be appointed by the Employer to witness the testing; in such case the inspector must also sign the test certificate. The charges made by the independent inspector will be paid by the Employer.

At least three working days written notice must be given of the proposed date and time of the test. In the event that the valve(s) to be tested not being ready the Employer reserves the right to deduct any fruitless inspection costs from moneys due to the Contractor.

PA 4.2 Test Requirements

Hydraulic tests shall be carried out at the factory on each valve as follows:

PA 4.2.1 Gate Valves

In accordance with SABS 664 or SABS 191 (as applicable).

In addition to the test requirements in the applicable SABS specification all valves with a nominal bore greater than 450 mm shall be subjected to an open end gate strength test of 1,5 times the working pressure. Drop tightness in respect of this gate strength test is not required.

PA 4.2.2 Reflux Valves

In accordance with the requirements of SABS 144 or SABS 192 (as applicable) to the following pressures:

a) Body with clack open - 2,0 times class max working pressure

b) Door strength - 2,0 times class max working pressure

c) Seating with doors closed - 1,1 times class max working pressure, under which pressure the seat must be drop tight

The door strength must be capable of withstanding the test pressure applied to the body without damage or distortion.

PA 4.2.3 Butterfly Valves

Each valve is to be tested at the factory in accordance with the requirements of BS 5155.

PA 4.2.4 Air Valves

Each valve is to be tested at the factory as follows:

a) Body test - The valve shall be filled with water and a pressure equivalent to twice the maximum working pressure shall be applied for 5 minutes. There shall be no loss of water from the valve during the test.

b) Low head leak test - Lower the pressure to 20 kPa and maintain the pressure for 5 minutes. There shall be no loss of water from the valve during the test

c) Drop test - One valve taken at random from each batch of ten small orifice and double orifice air valves (or less) shall be subjected to a "drop test". The valve shall be filled with water and pressurised to above the working pressure. While maintaining the pressure at least 200 kPa above the specified working pressure air shall be injected into the inlet of the air valve. Reduce the pressure slowly. The small orifice must open and discharge the air at a pressure not lower than the specified working pressure.

PA 5 CORROSION PROTECTION

The cleaning and corrosion protection of valves must be carried out at the factory prior to despatch to the Site. Non-ferrous metal or stainless steel surfaces must not be painted. The protection to be applied must comply with one internal and one external system from the following alternatives:

System 1 (Epoxy resin paint) - All cast iron surfaces of every valve, other than RSV's, must be prepared for painting to a thoroughly clean condition free of all grease and deleterious matter. Ferrous surfaces must be prepared in accordance with the Swedish Standard SIS 05 5900 to a Sa 3 finish. Surfaces must then be coated with a non-toxic epoxy resin paint to give a total minimum dry film thickness of 250μm to be pinhole free over the entire painted surface.

System 2 (Epoxy powder coating) - Electrostatically applied epoxy powder coating (ESPC), of the fully disassembled valves shall be carried out in accordance with SABS 1217 as may be modified by this specification. All RSV's are to be treated with this system.

All surfaces of the fully dis-assembled valve shall be blast cleaned to Sa 3 of Swedish Standard SIS 05 5900, having an angular profile of 40μm to 60μm.

The coating medium shall be an exterior grade, tinted, non-toxic and non-tainting, suitable for use with potable water and applied strictly in accordance with the manufacturer's instructions in a single application to a minimum film thickness of 300 μm. The coated surface shall be subjected to a standard MEK 50 double rub test. Particular attention shall be given to the thickness and integrity of the coating in the areas where the gate of the RSV is to operate. Low voltage, wet sponge EID detection of pinholes is to be conducted on all surfaces of the valve.

A visual inspection, to be carried out by an experienced observer, shall reveal the finished coating to be smooth and glossy, free from excessive runs, sags, "orange peel" finish, occlusions and other visible defects.

The coating shall be subjected to a "hot water soak" adhesive test at the inspector's discretion, and no more than 15 mm disbandment from the point of the "V" (cut at a 30 degree angle) shall be permitted after immersing in water at 78°C for 48 hours, and testing adhesion after cooling to 25°C. Repairs shall be carried out using an approved repair system. (Hi-Cote" or similar approved).

System 3 (external only) - Apply multi coats of an approved epoxy coal tar paint to give a minimum total dry film thickness of 240μm. The paint shall be applied in accordance with the paint supplier's recommendation.

System 4 (external only) - Apply one coat of zinc chromate primer followed by one coat of undercoat tinted where necessary, and a final coat of best quality gloss enamel. The total dry film thickness of the system must be not less than 200μm.

After erection on site all valves must be cleaned and the paintwork refurbished where necessary to restore the condition to that pertaining at the time of leaving the factory.

C3.6 MANAGEMENT

C3.6.1 MANAGEMENT OF THE WORKS

3.6.1.1 Applicable SANS and SABS Standards

The SANS 1200 Standardised Specifications listed in C3.4. are applicable.

3.6.1.2 Methods and Procedures

The obligations of the Contractor in the terms of the Contract are as set out in the Contract. The obligations are set out and are discussed briefly below:

(a) Normal working hours

Normal working hours shall be an 8 hours shift from 07h00 until 17h00.

Work on other days will only be allowed after written approval has been granted by the Employer's Representative.

(b) Interference with municipal staff and operations

The Contractor shall ensure that none of his staff interfere in any way with any municipal staff member or their functions.

Any person ignoring this shall be removed permanently from site, all at the expense of the Contractor.

(c) Access for other contractors

The Contractor shall provide reasonable access to other Contractors carrying out work on the site from time to time, as and when such access is required. The Contractor is entitled to request reasonable notification of at least 24 hours before access by others is required.

The contractual responsibilities of the Contractor shall remain in full force in spite of the other Contractors having access to the site.

(d) Giving notice of work to be covered up

The Contractor shall give the Employer's Representative at least 24 hours' notice prior to a request for examination of materials or work to be covered up. This request must be made in the request book on site.

Should such a request be made and upon inspection the Employer's Representative found that the works or materials are not yet ready for inspection, the Contractor shall reimburse the Employer's Representative within 30 days of invoice for all expenses incurred as a result.

(e) Sequence of the works

The Contractor shall execute the Works in accordance with the approved programme.

(f) Comply with all requirements of all prevailing legislation relevant to the executive of the contract.

C3.6.2 FORMS FOR CONTRACT ADMINISTRATION

The Contractor shall submit with each monthly statement for payment the following updated returns:

- Project Labour Report
- HDI Contract Participation Expenditure Report
- Targeted Labour Contract Participation Expenditure Report

The formats will be supplied by the client.

The Project Labour Report must include details of all labour (including that of sub-contractors) employed on this contract in the month in question.

C3.6.3 PROGRAMMING AND PLANNING

A bar-chart type construction programme shall be submitted to the Engineer within 14 days from the Commencement Date. The programme shall be updated monthly during the contract period.

In addition to the above, a monthly cash flow forecast shall also be submitted to the Engineer.

C3.6.4 CONTRACTOR'S RESPONSIBILITY IN TERMS OF THE OHS ACT

The Contractor shall be responsible for complying with the Occupational Health and Safety Act, Act 85 of 1993, and specifically the Construction Regulations 2003 issued in terms of Section 43 of the Act (GNR 1010 of 18 July 2003).

C3.6.5 UNAUTHORIZED PERSONS

The Contractor shall keep unauthorized persons from the Work fronts at all times.

C3.6.6 MANAGEMENT MEETINGS

Technical Meetings

Technical meetings / site meetings shall be held monthly on Site and will be called by the Engineer.

The Contractor shall arrange for the Contractor's project manager to attend these meetings.

Specific important notes made in the meeting should be taken down by the contractor and the Contractor shall attend to these items immediately and shall provide feedback to the engineer on the progress with the items.

Community Meetings

Community meetings shall be held as and when required. It is required that the CLO form part of these meetings and attend the technical meetings to give feedback on community issues in the technical meetings.

Health and Safety Meetings

The Contractor is referred to the Health and Safety Specifications.

C3.6.7 ELECTRONIC PAYMENTS

The Contractor shall provide his banking details to enable electronic payments to be made by Silulumanzi.

C3.6.8 WAYLEAVES, PERMISSIONS AND PERMITS

The Contractor shall be responsible for obtaining all of the necessary wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site and shall abide by the safety conditions imposed by such wayleaves, permissions or permits.

The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

C3.6.9 KEY PERSONNEL

The Contractor shall submit an organogram of key personnel (stating position and responsibilities) and a schedule of the same listing contact particulars.

C3.7 HEALTH AND SAFETY

C3.7.1 HEALTH AND SAFETY REQUIREMENTS AND PROCEDURES

Before starting work on site, the Contractor shall present to the Employer's Representative his Health and Safety Plan which includes the COVID-19 plan for approval. He shall also appoint a health and Safety Officer in writing and give a copy of the letter of appointment to the Employer's Representative.

The Health and Safety Specification is attached as Appendix A and must be referred to when compiling the Health and Safety Plan.

(a) Construction Regulations, 2003

The Contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2003 (the regulations) as promulgated in Government Gazette No 25207 and Regulation Gazette No 7721 of 18 July 2003 Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works. Any available amendments to this regulation shall also apply to this Contract.

The proposed type of work, materials to be used and potential hazards likely to be encountered on this Contract are detailed in the Project Specifications, as well as in the Employers' Health and Safety Specifications (regulation 4(1)) of the Construction Regulations 2003.

The Contractor shall in terms of regulation 5(1) provide a comprehensive health and safety plan detailing his proposed compliance with the regulations, for approval by the Employer.

The Contractor shall at all times be responsible for full compliance with the approved plan as well as the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the abovementioned plan or regulations.

Payment items are included in the Schedule of Quantities to cover the Contractor's cost for compliance with the OHS Act and the abovementioned regulations.

(b) COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS), 2020

The Contractor shall be required to comply with the COVID-19 Occupational Health and safety Measures in Workplaces act: COVID-19 (C19 OHS), 2020 for as long as the declaration of a national disaster published in Government Gazette 43096 on 15 March 2020 remain in force. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works or termination of contract.

C3.7.2 PROTECTION OF THE PUBLIC

The site is accessible to the general public. The Contractor shall ensure that all personnel entering the construction site is fully informed about the dangers, dos and don'ts on the site. The Contractor shall ensure that non-construction personnel are protected within the guidelines of the OH&S Regulations.

C3.7.3 BARRICADES AND LIGHTING

All excavations, into which a person may fall, shall be securely barricaded at all times in accordance with the requirements of the applicable OH&S Regulations.

C3.7.4 TRAFFIC CONTROL ON ROADS

The Safety Officer shall take full responsibility for the traffic control in and around the site. The personnel on site shall be fully informed and trained by the Safety Officer regarding the construction traffic and general traffic control.

C3.7.5 MEASURES AGAINST DISEASE AND EPIDEMICS

Necessary measures must be adopted and implement occupational health and safety measures to reduce and eliminate the escalations of infections in workplaces against disease, epidemics and pandemics on site as and when directed by the Department of Labour.

C3.7.6 AIDS AWARENESS

All construction personnel shall be given an Aids Awareness briefing session by the Safety Officer.

C3.7.7 COVID-19 AWARENESS

All construction personnel shall be given a COVID-19 Awareness briefing session by the Safety Officer.

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

PART C4: SITE INFORMATION

PART C4: SITE INFORMATION

GENERAL

This section describes the site at the time of tender to enable the tenderer to price his tender and to decide upon his method of working and programming and risks.

C4.1 SITE LOCATION

The works (Kanyamazane Water Treatmenbt Works) is located approximately 20km East of Nelspruit and is situated on the Southern side of the Kanyamazane township. The works can be reached via the N4 to Komatipoort. From the N4 the secondary roads to the Kanyamazane water treatment works are tarred roads. The works coordinates are as follows:

25º 29' 03.99" S
31º 10' 23.70" E

C4.2 CLIMATIC CONDITION

The site is situated in the Lowveld of Mpumalanga and the climate is sub-tropical with warm summers, mild frost-free winters and high humidity levels. The average maximum temperature in the area is approximately 31^0 C and the average minimum approximately 16^0 C, with extremes of 43^0 C and -2^0 C. The annual mean daily temperature is approximately 21^0 C.

C4.3 INFORMATION ABOUT PIPED AND OTHER SERVICES BELOW THE SURFACE OF THE SITE FOR CONTRACTS INVOLVING GROUND WORKS IN ADDITION TO ANYTHING ABOUT THE PHYSICAL SITE WHICH IMPACTS UPON THE CONTRACT

The Engineer has endeavored to locate all services and sub-surface obstructions likely to be affected by the work from available records and from surveys, these being shown on the drawings.

Although every care has been exercised in the presentation of the available data, the Municipality cannot and does not guarantee the accuracy or completeness of the information shown. Whenever the Contractor deems it necessary to determine the exact location of an existing service or obstruction, he shall, at his own expense, make any examination that he may consider desirable in advance of the work, and the municipality does not accept any liability for loss, damage or delay to the Contractor as a result of the non-location or inaccurate location of services or obstructions.

In the event of damage to existing services, the Contractor shall take such immediate action as is necessary to prevent further damage or danger to life or property and shall immediately notify the Engineer who will issue instructions as to the necessary repairs or protective measures to be taken. The cost thereof shall be borne by the Contractor irrespective of whether the repairs or protective measures were carried out by him or by or on behalf of the service authority or department concerned.

During the course of the Works, all existing services including water mains, sewers and storm water reticulation, electricity transmission and telephone lines, cables, poles and conduits shall be protected, supported and maintained in service to the satisfaction of the service authority or department concerned and the Engineer. The Contractor shall bear all costs in this regard.

Where on account of location or level, existing services have to be permanently altered to accommodate the proposed Works, the Municipality will pay all charges in connection therewith, unless it has already been provided for in the Schedules of Quantities.

Where a number of underground cables are crossed over a distance of 0.5m they shall be regarded as a single crossing.

Hydrants under pressure, water main valve covers and manholes shall be kept unobstructed and accessible at all times.

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

ANNEXURE A: OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

CONTENTS

PARTICULAR SPECIFICATIONS

SECTION OHS: OHSA 1993: HEALTH AND SAFETY SPECIFICATION

OHS 1 SCOPE

This specification covers the health and safety requirements to be met by the Contractor to ensure a continued safe and healthy environment for all workers, employees and subcontractors under his control and for all other persons entering the site of works.

This specification shall be read with the Occupational Health and Safety Act (Act No 85 and amendment Act No 181) 1993, and the corresponding Construction Regulations 2014, and all other safety codes and specifications referred to in the said Construction Regulations **and the COVID-19 Occupational Health and Safety Measures in Workplaces, COVID-19(C19 OHS), 2020**.

In terms of the OHSA Agreement in Section (C1.4) of the Contract document, the status of the Contractor as mandatory to the Employer (client) is that of an employer in his own right, responsible to comply with all provisions of OHSA 1993, the Construction Regulations 2014 and **COVID-19(C19 OHS), 2020**.

This safety specification and the Contractor's own Safety Plan, the Construction Regulations 2014 as well as **COVID-19(C19 OHS), 2020**, shall be displayed on site or made available for inspection by all workers, employees, inspectors and any other persons entering the site of works.

The following are possible risks associated with this project:

Environmental Hazards

- Heat exhaustion
- Sewage spills
- Sunburn
- Insect bites and stings
- Snake bites
- Rodents
- Thunderstorms
- Wind

Construction Hazards

- Construction vehicles and equipment
- Noise
- Dust
- Smoke
- Vibration
- Slippery conditions
- Fire hazards
- Falling objects
- Open foundations, drains, trenches, sumps and manholes, etc.
- Hazardous chemicals, materials and gasses
- High pressure vessels and piping
- High temperature machinery and equipment
- Live electrical equipment and power supplies

- Rotating machinery and equipment
- Oil and chemical spillages
- Working at heights
- Working in confined Spaces
- Working in excavations
- Working near Sewage
- Sharp tools and objects
- Welding, grinding and cutting operations

Additional risks may arise from specific methods of construction selected by the Contractor which are not necessary covered in the above.

OHS 2 DEFINITIONS

For the purpose of this contract the following shall apply:

Employer" where used in the contract documents and in this specification, means the Employer as defined in the General Conditions of Contract and it shall have the exact same meaning as "**client**" as defined in the Construction Regulations 2014. "**Employer**" and "**client**" is therefore interchangeable and shall be read in the context of the relevant document.

(c) "**Contractor**" wherever used in the contract documents and in this specification, shall have the same meaning as "**Contractor**" as defined in the General Conditions of Contract.

In this specification the terms "**principal contractor**" and "**contractor**" are replaced with "**Contractor**" and "**subcontractor**" respectively.

For the purpose of this contract the **Contractor** will, in terms of OHSA 1993, be the mandatory, without derogating from his status as an employer in his own right.

(d) "**Employer's Representative**" where used in this specification, means the Employer's Representative as defined in the General Conditions of Contract. In terms of the Construction Regulations the Employer's Representative may act as agent on behalf of the Employer (the client as defined in the Construction Regulations).

OHS 3 TENDERS

The Contractor shall submit the following with his tender:

(a) a documented Health and Safety Plan as stipulated in Regulation 7 of the Construction Regulations. The Safety Plan must be based on the Construction Regulations 2014 and **COVID-19(C19 OHS), 2020** and will be subject to approval by the Employer;

(b) a declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Construction Regulations 2014;

(c) a declaration to the effect that he made provision in his tender for the cost of the health and safety measures envisaged in the Construction Regulations.

(d) Failure to submit the foregoing with his tender, will lead to the conclusion that the Contractor will not be able to carry out the work under the contract safely in accordance with the Construction Regulations.

OHS 4 NOTIFICATION OF COMMENCEMENT OF CONSTRUCTION WORK

After award of the contract, but before commencement of construction work, the Contractor shall, in terms of Regulation 3, notify the Provincial Director of the Department of Labour in writing if the following work is involved:

(a) the demolition of structures and dismantling of fixed plant of height of 3,0m or more;

(b) the use of explosives;

(c) construction work that will exceed 30 days or 300 person-days;

(e) excavation work deeper than 1,0m; or

(f) working at a height greater than 3,0m above ground or landings.

The notification must be done in the form of the pro forma included under Section T2 (Forms to be Completed by Tenderer) of the tender document.

A copy of the notification form must be kept on site, available for inspection by inspectors, Employer, Employer's Representative, employees and persons on site.

OHS 5 RISK ASSESSMENT

Before commencement of any construction work during the construction period, the Contractor shall have a risk assessment performed and recorded in writing by a competent person. (Refer Regulation 9 of the Construction Regulations 2014).

The risk assessment shall identify and evaluate the risks and hazards that may be expected during the execution of the work under the contract, and it shall include a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards identified.

The risk assessment shall be available on site for inspection by inspectors, Employer, Employer's Representative, subcontractors, employees, trade unions and health and safety committee members, and must be monitored and reviewed periodically by the Contractor.

OHS 6 APPOINTMENT OF EMPLOYEES AND SUBCONTRACTORS

6.1 Health and Safety plan

The Contractor shall appoint his employees and any subcontractors to be employed on the contract, in writing, and he shall provide them with a copy of his documented Health and Safety Plan, or relevant sections thereof. The Contractor shall ensure that all subcontractors and employees are committed to the implementation of his Safety Plan.

6.2 Health and safety induction training

The Contractor shall ensure that all employees under his control, including subcontractors and their employees, undergo a health and safety induction training course by a competent person before commencement of construction work. No visitor or other person shall be allowed or permitted to enter the site of the works unless such person has undergone health and safety training pertaining to hazards prevalent on site.

The Contractor shall ensure that every employee on site shall at all times be in possession of proof of the health and safety induction training issued by a competent person prior to commencement of construction work.

OHS 7 APPOINTMENT OF SAFETY PERSONNEL

7.1 Construction Supervisor

The Contractor shall appoint a full-time **Construction Supervisor** with the duty of supervising the performance of the construction work.

He may also have to appoint one or more competent employees to assist the construction supervisor where justified by the scope and complexity of the works.

7.2 Construction safety officer

Taking into consideration the size of the project and the hazards or dangers that can be expected, the Contractor shall appoint in writing a full-time or part-time **Construction Safety Officer** if so decided by the client. The Safety Officer shall have the necessary competence and resources to perform his duties diligently.

Provision shall be made by the Contractor in his rates, to cover the cost of this dedicated construction safety officer appointed after award of the contract.

7.3 Health and safety representatives

In terms of **Section 17 and 18 of the Act (OHSA 1993)** the Contractor, being the employer in terms of the Act for the execution of the contract, shall appoint a **health and safety representative** whenever he has more than 20 employees in his employment on the site of the works. The health and safety representative must be selected from employees who are employed in a full-time capacity at a specific workplace.

The number of health and safety representatives for a workplace shall be at least one for every 100 employees.

The function of health and safety representative(s) will be to review the effectiveness of health and safety measures, to identify potential hazards and major incidents, to examine causes of incidents (in collaboration with his employer, the Contractor), to investigate complaints by employees relating to health and safety at work, to make representations to the employer (Contractor) or inspector on general matters affecting the health and safety of employees, to inspect the workplace, plant, machinery etc. on a regular base, to participate in consultations with inspectors and to attend meetings of the health and safety committee.

7.4 Health and safety committee

In terms of Sections **17 and 18 of the Act (OHSA 1993)** the Contractor (as employer), shall establish one or more **health and safety committee(s)** where there are two or more health and safety representatives at a workplace. The persons selected by the Contractor to serve on the committee shall be designated in writing.

The function of the health and safety committee shall be to hold meetings at regular intervals, but at least once every three months, to review the health and safety measures on the contract, to discuss incidents related to health and safety with the Contractor and the inspector, and to make recommendations regarding health and safety to the Contractor and to keep record of recommendations and reports made by the committee.

7.5 Competent persons

In accordance with the Construction Regulations the Contractor has to appoint in writing **competent persons** responsible for supervising construction work on each of the following work situations that may be expected on the site of the works.

(a) Risk assessment and induction training as described in Regulation 9 of the Construction Regulations;

(b) Fall protection as described in Regulation 10;

(c) Structures described in Regulation 11;

(d) Temporary works described in Regulation 12;

(e) Excavation described in Regulation 13;

(f) Demolition work described in Regulation 14;

(g) Tunneling as described in Regulation 15;

(h) Scaffolding as described in Regulation 16;

(i) Suspended platforms as described in Regulation 17;

(j) Rope Access Work as described in Regulation 18;

(k) Material hoists as described in Regulation 19;

(l) Bulk mixing plant as described in Regulation 20;

(m) Explosive actuated fastening device as described in Regulation 21;

(n) Cranes as described in Regulation 22;

(o) Construction vehicle and mobile as described in Regulation 23;

(p) Electrical installations and machinery of construction sites as described in Regulation 24;

(q) Use and temporary storage of flammable liquids on construction sites as described in Regulation 25;

(r) Water environments as described in Regulation 26;

(s) Housekeeping and general safeguarding on construction sites as described in Regulation 27;

(t) Stacking and storage on construction sites as described in Regulation 28;

(u) Fire precautions on construction sites as described in Regulation 29, and

(v) Construction employees' facilities as described in Regulation 30.

A competent person may be appointed for more than one part of the construction work with the understanding that the person must be suitably qualified and able to supervise at the same time the construction work on all the work situations for which he has been appointed.

The appointment of competent persons to supervise parts of the construction work does not relieve the Contractor from any of his responsibilities to comply with **all** requirements of the Construction Regulations.

OHS 8 RECORDS AND REGISTERS

In accordance with the Construction Regulations the Contractor is bound to keep records and registers related to health and safety on site for periodic inspection by inspectors, the Employer's Representative, the Employer, trade union officials and subcontractors and employees. The following records and registers must be kept on site and shall be available for inspection at all times.

(a) A copy of the OHSA 1993 Construction Regulations 2014;

(b) A copy of this Health and Safety Specification;

(c) A copy of the Contractor's Health and Safety Plan (Regulation 7);

(d) A copy of the Notification of Construction Work (Regulation 4);

(e) A health and safety file in terms of Regulation 5(1)(b) with inputs by the Construction Safety Officer (Regulation 7(1));

(f) A copy of the risk assessment described in Regulation 9;

(g) A full protection plan and the corresponding records of evaluation and training of employees working from elevated positions as described in Regulation 10;

(h) Drawings pertaining to the design of structures (Regulation 11(1)(c)) and formwork and support work structures (Regulation 12) must be kept on site;

(i) Pronouncement of the safety of excavations must be recorded in a register to be kept on site (Regulation 13);

(j) A copy of the certificate of the system design for suspended platforms (Regulation 17(2)(b));

(k) A notice must be affixed around the base towers of material hoists to indicate the maximum mass load, which may be carried at any one time by material hoists (Regulation 19(5));

(l) Maintenance records of material hoists and inspection results must be kept in a record book to be kept on site (Regulation 19(8));

(m) A record of any repairs to or maintenance of a batch plant must be kept on site (Regulations 20(8));

(n) A warning notice must be displayed in a conspicuous manner when and wherever an explosive powered tool is used (Regulation 19(2));

(o) A register for recording of findings by the competent person appointed to inspect construction vehicles and mobile plant (Regulation 23(1)(k)).

(p) COVID-19 daily symptom screening for all works or visitors at the time they report for work or site

OHS 9 CONTRACTORS RESPONSIBILITIES

For this contract the Contractor will be the mandatory of the Employer (Client), as defined in the Act (OHSA 1993), which means that the Contractor has the status of employer in his own right in respect of the contract. The Contractor is therefore responsible for all the duties and obligations of an employer as set out in the Act (OHSA 1993) and the Construction Regulations 2014.

Before commencement of work under the contract, the Contractor shall enter into an agreement with the Employer (Client) to confirm his status as mandatory (employer) for the contract under consideration.

The Contractor's duties and responsibilities are clearly set out in the Construction Regulations 2014 and are not repeated in detail but some important aspects are highlighted hereafter, without relieving the Contractor of any of his duties and responsibilities in terms of the Construction Regulations.

(a) Contractor's position in relation to the Employer (Client) (Regulation 5)

In accordance with Section 4 of the Regulations, the Contractor shall liaise closely with the Employer or the Employer's Representative on behalf of the Employer, to ensure that all requirements of the Act and the Regulations are met and complied with.

(b) The Principal Contractor and Contractor (Regulation 7)

The Contractor is in terms of the definition in Regulation 1 the equivalent of Principle Contractor as defined in the Construction Regulations, and he shall comply with all the provisions of Regulation 7.

Any subcontractors employed by the Contractor must be appointed in writing, setting out the terms of the appointment in respect of health and safety. An independent subcontractor shall however provide and demonstrate to the Contractor a suitable, acceptable and sufficiently documented health and safety plan before commencement of the subcontract. In the absence of such a health and safety plan the subcontractor shall undertake in writing that he will comply with the Contractor's safety plan, the health and safety specifications of the Employer and the Construction Regulations 2014.

(c) Supervision of construction work (Regulation 8)

The Contractor shall appoint the safety and other personnel and employees as required in terms of Regulation 7 and as set out in OHS 7 above. Appointment of those personnel and employees does not relieve the Contractor from any of the obligations under Regulation 7.

(d) Risk assessment (Regulation 9)

The Contractor shall have the risk assessment made as set out in paragraph 7 above before commencement of the work and it must be available on site for inspection at all times. The Contractor shall consult with the health and safety committee or health and safety representative(s) etc. on a regular basis to ensure that all employees, including subcontractors under his control, are informed and trained by a competent person regarding health hazards and related work procedures.

No subcontractor, employee or visitor shall be allowed to enter the site of works without prior health and safety induction training, all as specified in Regulation 7.

(e) Fall protection (Regulation 10)

Fall protection, if applicable to this contract shall comply in all respects with Regulation 8 of the Construction Regulations.

(f) Structures (Regulation 11)

The Contractor will be liable for all claims arising from collapse or failure of structures if he failed to comply with all the specifications, project specifications and drawings related to the structures, unless it can be proved that such collapse or failure can be attributed to faulty design or insufficient design standards on which the specifications and the drawings are based.
In addition, the Contractor shall comply with all aspects of Regulation 11 of the Construction Regulations.

(g) Temporary works (Regulation 12)

The Contractor will be responsible for the adequate design of all formwork and support structures by a competent person.
All drawings pertaining to formwork shall be kept on site and all equipment and materials used in formwork, shall be carefully examined and checked for suitability by a competent person.

The provisions of Regulation 12 of the Construction Regulations shall be followed in every detail.

(h) Excavation work (Regulation 13)

It is essential that the Contractor shall follow the instructions and precautions in the Standard Specifications and Project Specifications as well as the provisions of the Construction Regulations to the letter as unsafe excavations can be a major hazard on any construction site. The Contractor shall therefore ensure that all excavation work is carried out under the supervision of a competent person, that inspections are carried out by a Professional Employer's Representative or Technologist, and that all work is done in such a manner that no hazards are created by unsafe excavations and working conditions.

Supervision by a competent person will not relieve the Contractor from any of his duties and responsibilities under Regulation 13 of the Construction Regulations.

(i) Demolition work (Regulation 14)

Whenever demolition work is included in a contract, the Contractor shall comply with all the requirements of Regulation 14 of the Construction Regulations. The fact that a competent person has to be appointed by the Contractor does not relieve the Contractor from any of his responsibilities in respect of safety of demolition work.

(j) Tunneling (Regulation 15)

The Contractor shall comply with Regulation 15 wherever tunneling of any kind is involved.

(k) Scaffolding (Regulation 16)

The Contractor shall ensure that all the provisions of Regulation 16 of the Construction Regulations are complied with. [Note: Reference in the Regulations to "Section 44 of the Act" should read "Section 43 of the Act"].

(l) Suspended platforms (Regulation 17)

Wherever suspended platforms will be necessary on any contract, the Contractor shall ensure that copies of the system design issued by a Professional Employer's Representative are submitted to the Employer's Representative for inspection and approval. The Contractor shall appoint competent persons as supervisors and competent scaffold erectors, operators and inspectors and ensure that all work related to suspended platforms are done in accordance with Regulation 17 of the Construction Regulations.

(m) Rope Access Work (Regulation 18)

Where rope access work is required on the construction site, the Contractor shall comply with Regulation 18.

(n) Material Hoists (Regulation 19)

Wherever applicable, the Contractor shall comply with the provisions of Regulation 19 to the letter.

(o) Batch plants (Regulation 20)

Wherever applicable, the Contractor shall ensure that all lifting machines, lifting tackle, conveyors, etc. used in the operation of a batch plant shall comply with, and that all operators, supervisors and employees are strictly held to the provisions of Regulation
20. The Contractor shall ensure that the General Safety Regulations (2003), the Driven Machinery Regulations (Government Notice R295 of 26/2/1988) and the Electrical Installation Regulations (Government Notice R2271 of 11/10/1995) are adhered to by all involved.

In terms of the Regulations, records of repairs and maintenance shall be kept on site.

(p) Explosive powered tools (Regulation 21)

The Contractor shall ensure that, wherever explosive-powered tools are required to be used, all safety provisions of Regulation 21 are complied with.

It is especially important that warning notices are displayed and that the issue and return of cartridges and spent cartridges be recorded in a register to be kept on site.

(q) Cranes (Regulation 22)

Wherever the use of tower cranes becomes necessary, the provisions of Regulation 20 shall be complied with.

(r) Construction vehicles and mobile plant (Regulation 23)

The Contractor shall ensure that all construction vehicles and plant are in good working condition and safe for use, and that they are used in accordance with their design and intended use. The vehicles and plant shall only be operated by workers or operators who have received appropriate training, all in accordance with all the requirements of Regulation 23.

All vehicles and plant must be inspected on a daily basis, prior to use, by a competent person and the findings must be recorded in a register to be kept on site.

(s) Electrical installation and machinery on construction sites (Regulation 24)

The Contractor shall comply with the Electrical Installation Regulations (Government Notice R2920 of 23 November 1992) and the Electrical Machinery Regulations (Government Notice R1953 of 12 August 1993). Before commencement of construction, the Contractor shall take adequate steps to ascertain the presence of, and guard against dangers and hazards due to electrical cables and apparatus under, over or on the site.

All temporary electrical installations on the site shall be under the control of a competent person, without relieving the Contractor of his responsibility for the health and safety of all workers and persons on site in terms of Regulation 24.

(t) Use of temporary storage of flammable liquids on construction sites (Regulation 25)

The Contractor shall comply with the provisions of the General Safety Regulations (2003) and all the provisions of Regulation 25 of the Construction Regulations to ensure a safe and hazard-free environment to all workers and other persons on site.

(u) Water environments (Regulation 26)

Where construction work is done over or in close proximity to water, the provisions of Regulation 26 shall apply.

(v) Housekeeping on Construction sites (Regulation 27)

Housekeeping on all construction sites shall be in accordance with the provisions of the environment Regulations for workplaces (Government Notice R2281 of 16 November 1987) and all the provisions of Regulation 27 of the Construction Regulations.

(w) Stacking and storage on construction sites (Regulation 28)

The provisions for the stacking of articles contained in the General Safety Regulations (2003) as well as all the provisions Regulation 28 of the Construction Regulations shall apply.

(x) Fire precautions on construction sites (Regulation 29)

The provisions of the Environmental Regulations for Workplaces (Government Notice R2281 of 16 November 1987) shall apply.

In addition, the necessary precautions shall be taken to prevent the incidence of fires, to provide adequate and sufficient fire protection equipment, sirens, escape routes etc. all in accordance with Regulation 29 of the Construction Regulations.

(y) Construction employees' facilities (Regulation 30)

The Contractor shall comply with the construction site provisions as in the Facilities Regulations (2004), the provisions of Regulation 30 of the Construction Regulations and **the COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS), 2020.**

(z) Non-compliance with the Construction Regulations 2014

The foregoing is a summary of parts of the Construction Regulations applicable to all construction projects.

The Contractor, as employer for the execution of the contract, shall ensure that all provisions of the Construction Regulations and **the COVID-19 Measures in Workplaces** applicable to the contract under consideration are complied with to the letter.

Should the Contractor fail to comply with the provisions of the Regulations 3 to 30 as listed in Regulation 33 **and COVID-19 (C19 OHS),2020,** he will be guilty of an offence and will be liable, upon conviction, to the fines or imprisonment as set out in Regulation 33.

***The Contractor is advised in his own interest to make a careful study of the Act, the Construction Regulations and the COVID-19 (C19 OHS),2020 as ignorance of the Act and the Regulations will not be accepted in any proceedings related to non-conformance to the Act and the Regulations*.**

OHS 10 MEASUREMENT AND PAYMENT

10.1 Principles

It is a condition of this contract that Contractors, who submit tenders for this contract, shall make provision in their tenders for the cost of all health and safety measures during the construction process. All associated activities and expenditure are deemed to be included in the Contractor's tendered rates and prices.

(a) Safety personnel

The Construction Supervisor, the Construction Safety Officer, Health and Safety Representatives, Health and Safety Committee and Competent Persons referred to in clauses 7.1 to 7.5 shall be members of the Contractor's personnel, and no additional payment will be made for the appointment of such safety personnel.

(b) Records and Registers

The keeping of health and safety-related records and registers as described in paragraph 8 is regarded as a normal duty of the Contractor for which no additional payment will be considered, and which is deemed to be included in the Contractor's tendered rates and prices.

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT NO 85 OF 1993

THIS AGREEMENT is made between.....

(hereinafter called the EMPLOYER of the one part, herein represented by:

……
……
……
……

in his capacity as:

……..

AND:

(hereinafter called the CONTRACTOR) of the other part, herein represented by

……
……
……
……

in his capacity as:

…….. duly authorised to sign on behalf of the Contractor.

WHEREAS the CONTRACTOR is the Mandatory of the EMPLOYER in consequence of an agreement between the CONTRACTOR and the EMPLOYER in respect of

CONTRACT:.....

AND WHEREAS the EMPLOYER and the CONTRACTOR have agreed to enter into an agreement in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act No 85 of 1993, as amended by OHSA Amendment Act No 181/1993 (hereinafter referred to as the ACT);

NOW THEREFORE the parties agree as follows:

1. **The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the CONTRACTOR with all relevant provisions of the ACT and the regulations promulgated in terms thereof.**

2. The CONTRACTOR undertakes to fully comply with all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations: Provided that should the EMPLOYER have prescribed certain arrangements and procedures that same shall be observed and adhered to by the CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.

3. The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the ACT and Regulations, and the CONTRACTOR expressly absolves the EMPLOYER and the Employer's CONSULTING EMPLOYER'S REPRESENTATIVES from being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures in respect of the work included in the contract.

4. The CONTRACTOR agrees that any duly authorized officials of the EMPLOYER shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with his undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

5. The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

Thus signed at..... for and on behalf of the **CONTRACTOR**

on this the …… day of ……..……..…… 20……

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESSES: 1. .....

2. .....

Thus signed at ..... for and on behalf of the **EMPLOYER** on this

the …….. day of ……..…… 20……

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESSES: 1. .....

2. .....

CONTRACTOR'S HEALTH AND SAFETY DECLARATION

In terms of Clause 4(4) of the OHSA 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Employer is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2014.

To that effect a person duly authorised by the tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.

2. I hereby declare that my company has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.

3. I propose to achieve compliance with the Regulations by one of the following:

(a) From my own competent resources as detailed in 4(a) hereafter:..... ***Yes / No**

(b) From my own resources still to be appointed or trained until competency is achieved, as detailed in 4(b) hereafter:..... ***Yes / No**

(c) From outside sources by appointment of competent specialist subcontractors as detailed in 4(c) hereafter:..... ***Yes / No**

(***** = *delete whatever is not applicable*)

4. Details of resources I propose:

(Note: Competent resources shall include safety personnel such as a construction supervisor and construction safety officer as defined in Regulation 8, and competent persons as defined in Regulations 9-29, (all or individual regulations) as applicable to this contract)

(a) Details of the competent and qualified key persons from my company's own resources, who will form part of the contract team:

NAMES OF COMPETENT PERSONS	POSITIONS TO BE FILLED BY COMPETENT PERSONS

(b) Details of training of persons from my company's own resources (or to be hired) who still have to be trained to achieve the necessary competency:

(i) By whom will training be provided? .....

(ii) When will training be undertaken? .....

(iii) List the positions to be filled by persons to be trained or hired: .....

.....

.....

(c) Details of competent resources to be appointed as subcontractors if competent persons cannot be supplied from own company:

Name of proposed subcontractor: .....

Qualifications or details of competency of the subcontractor: .....

5. I hereby undertake, if my tender is accepted, to provide, before commencement of the works under the contract, a suitable and sufficiently documented Health and Safety Plan in accordance with Regulation 7(1) of the Construction Regulations, which plan shall be subject to approval by the Employer.

6. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, the Employer's Representative, visitors, and officials and inspectors of the Department of Labour.

7. I hereby confirm that adequate provision has been made in my tendered rates and prices in the schedule of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, and that I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations (Regulation 33) for failure on the Contractor's part to comply with the provisions of the Act and the Regulations.

8. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2014, and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.

SIGNATURE: ..... DATE: .....…….....

(of person authorised to sign on behalf of the Tenderer)

PRO FORMA NOTIFICATION FORM IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993, CONSTRUCTION REGULATIONS 2014

[This form must be completed and forwarded, prior to commencement of work on site, by all Contractors that qualify in terms of Regulation 3 of the Construction Regulations 2014, to the office of the Department of Labour]

NOTIFICATION OF CONSTRUCTION WORK

1. (a) Name and postal address of principal contractor.

   (b) Name and tel. pf principal contractor's contact person:

   ---

2. Principal contactor's compensation registration number:

   ---

3. (a) Name and postal address of client :

   (b) Name and tel. no of clients contact person or agent:

   ---

4 (a) Name and postal address of designer (s) for the project:

   (b) ---

5. Name and telephone number of principal contractor's sub- ordinate supervisor on site appointed in terms of Regulation 8 (1).

   ---

6. Name /s of principal contractor's sub- ordinate supervisor on sire appointed in terms of Regulation 8 (2)

   ---

7. Exact physical address of the construction site or site office:

   ---

8. Nature of the construction work:

---

9. Expected commencement date:

---

10. Expected completion date:

---

11. Estimated maximum number of persons on the construction site.

Total:_____ Male:_____ Female_____

12. Planned number of contractors on the construction:

---

13. Name (s) of contractors already selected.

Principal Contractor	Date
Client's Agent (where applicable)	Date
Client	Date

ANNEXURE B: ENVIRONMENTAL MANAGEMENT PLAN

KEY TERMS AND ABBREVIATIONS

Affected environment:	Those parts of the socio-economic and biophysical environment impacted on by the development.
CEMP:	Construction Environmental Management Plan: a plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide all phases of the implementation of the development and include all site works.
Construction camp:	Construction camp refers to all site offices, staff accommodation, container sites, workshops and testing facilities.
CoM:	City of Mbombela
ECO:	Environmental Control Officer: a qualified, independent environmental Consultant. The person responsible for ensuring that the requirements of the EMP are implemented.
Environment:	The biosphere in which people and other organisms live. It consists of renewable and non-renewable natural resources, natural ecosystems and habitats; and ecosystems, habitats and spatial surroundings modified or constructed by people, including urbanized areas, rural landscapes and places of cultural significance.
Environmental Awareness Course:	An environmental education course for the Contractor's Management staff and labor force, which informs them of the requirements of the CEMP. The ECO must present and co-ordinate courses
Engineer:	A person who represents the client and is responsible for the technical and contractual development
Fines:	Penalties, which can be imposed on the contractor and/or his subcontractors in the event of a contravention of this EMP.
Method Statement:	Document that describes the scope of the intended work in a step-by-step in order for the PM and ECO to understand the contractors intentions.
Project Manager:	The person responsible for ensuring that on-site activities are undertaken in accordance with the requirements of the EMP.
SAHRA:	The South African Heritage Resources Agency
Site:	The 'site' refers to the cadastral entity (-ies) awarded to the Contractor and any other area reasonably required by the Contractor to undertake the construction activities in order to fulfill the contract.

1 INTRODUCTION

1.1 Background

The City of Mbombela through Silulumanzi as the implementing agent wants to improve the water supply to Kanyamazane and the Southern Nskasi areas.

The focus of the CoM is the construction / refurbishment of the Kanyamazane Water Treatment Works (KWTW), pump line from KWTW to Tekwane South Reservoir, pump station and pump line from Tekwane East reservoir to new central high level reservoir and central high level reservoir, internal water reticulation and distribution of water from the new reservoir and the upgrading of components in the Southern Nsikazi Water scheme to improve the overall water supply to the areas.

However, the proposed project for this tender will only include the first phase, which consists of a pump line from the KWTW to Tekwane South Reservoir.

This document serves as the Construction Environmental Management Plan (CEMP) for the scope of works.

The proponent intends to act responsibly and meet environmental obligations.

1.2 Terms of Reference

The purpose of the CEMP is defined in the Integrated Environmental Management (IEM) Guideline Series (DEA, 1992) as: “A plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of the proposal”.

This CEMP serves as a baseline information document and provides guidance for preventing or mitigating environmental impacts that may result as part of the construction phase of the project. It is intended for use by the Environmental Control Officer, the Principal Agents for civil and building works respectively, the various Contractors and sub contractors appointed to the project, the Local Authority and the Project Development Team as a whole. The objectives of this CEMP are thus:

- to include all components of the development;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with the construction of the development;
- to monitor and audit the performance of construction personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible construction personnel.

An Environmental Control Officer (ECO) is required on site during the construction phase to ensure that the requirements of the CEMP are implemented.

2 ENVIRONMENTAL POLICY AND LEGISLATION

2.1 Contractual Agreement

This EMP is to be an annexure to the Tender documentation as a commitment from the contractors regarding all their activities and to make them aware of their environmental responsibilities. Failure by any of the contractors' or sub-contractors' employees to adhere to the document will be considered cause for the offending employees to be potentially removed from the site, and/or that the damage be repaired at the cost of the contractor. The Project Manager (PM), under advisement of the ECO, may recommend the removal of equipment causing continual environmental damage.

The CEMP is a legally binding agreement between the client, ECO and the contractors. It is therefore important to ensure that the actions specified by the EMP are enforced through integration of the EMP into the tender and other project related documents for the project as a set of environmental specifications. Copies of this EMP shall be made available to the ER, the Contractor and the ECO. A copy of the document must be available on site at all times.
The PM, under advisement of the ECO, may recommend that the contractors suspend part or all of the works if they fail to comply with the specifications set out in the EMP and method statements supplied by themselves or other responsible parties. The suspension shall be enforced until such time as the offending procedure or equipment is corrected. No extension of time will be granted for such delays and all costs will be borne by the contractors.

A policy statement is now presented, together with a list of the most important pieces of legislation pertaining to this project.

2.2 Environmental Policy Statement

The policy statement that follows is formulated specifically to support this construction phase EMP for the developments. All construction personnel will be required to commit themselves to this policy.

- Adherence to the requirements of the CEMP for the project;
- Management of all construction and associated activities so as to minimise the risk of pollution of ground and surface water, the air and the soil;
- Management of all construction and associated activities so as to minimise the nuisance and disruption to people resident in, working in or commuting through the area;
- Adherence to the environmental legislation relevant to the location and nature of the work being conducted; and
- Compliance with the monitoring and auditing programmes contained in the CEMP, to ensure its accountable and transparent implementation.

2.3 Environmental Legislation

Cognisance will be taken of, but is not limited to, the following pieces of legislation during the construction phase of the project components.

- Atmospheric Pollution Prevention Act (45 of 1965)
- National Environmental Management Act (107 of 1998)
- Hazardous Substances Act (15 of 1973) and Health Act (63 of 1977)
- National Heritage Resources Act (25 of 1999)
- National Water Act (36 of 1998)
- Occupational Health and Safety Act (85 of 1993)
- NEM Waste Act, 2008 (Act 59 of 2008)

3 ORGANISATIONAL STRUCTURE

It is essential that an organisational structure is established early in the construction phase of the project and that all parties concerned accept the structure. This identifies the responsibilities and the authority of the proponent, design team, Project Manager (PM), consulting engineers and the numerous contractors and sub-contractors. The relationship between the PM, the engineers and the contractors' site agents are key links in the structure.

The organisational structure also clarifies the channels to direct instructions and provides the means of interaction between the various groups involved. Good communication is a prerequisite of maintaining the organisational structure and is vital to the smooth operation of the project.

3.1 Responsibility Linkage

Essentially, the responsibility for the application of the construction phase EMP for the project begins with the proponent who will devolve the responsibility to the designated PM to assume this task within his or her portfolio.

The ECO will then ensure that the requirements of the CEMP are implemented by monitoring and auditing the performance of the PM in achieving the requirements, while also providing strategic support and advice. In practice, on-site responsibility would typically lie with an engineer tasked with particular components of the project. The ECO may at times communicate directly with the engineer, but always with recourse to the PM.

3.2 Role of the Project Manager (PM)

The PM is responsible for ensuring that on-site activities are undertaken in accordance with the requirements of the CEMP. The PM will thus need to ensure that:

Method statements requested by the ECO are provided.

Corrective action is implemented as required.

Appropriate records and information regarding compliance with the CEMP requirements are maintained and made available to the ECO;

- All site instructions are copied to the ECO; and
- Instructions as required by the ECO are issued to the relevant contractor.

3.3 Role of the Environmental Control Officer (ECO)

The ECO is responsible for ensuring that the requirements of the CEMP are upheld and is to be employed by the Project Proponent for the duration of the project. The ECO should have appropriate qualifications and training and experience in the implementation of environmental management specifications. The ECO provides feedback to the Project Manager regarding all environmental matters. Contractors are answerable to the ECO (or Project Manager, depending on contractual arrangements) for non-compliance with the requirements stated in the EMP.

More specifically, the ECO shall:

Request, review and approve method statements from the Contractor and Sub-contractors prior to any construction commencing.
Undertake weekly inspections at the outset of the project and, thereafter, regular inspections (on average once or twice per week) of the construction site in order to check for compliance with method statements as well as specifications outlined in this document. This should also involve completion of a weekly checklist, which will also serve as site records.
Ensure that the Contractor and his Subcontractors and his employees have received the appropriate environmental awareness training before commencing site establishment/ set up.
Meet with the Contractor to discuss the implementation of and non-conformances with this document in Site meetings. These meetings will serve to re-affirm overall policy for the project, method statements as well as discuss weekly checklists.
Identify appropriate corrective action if non-compliance occurs or unforeseen environmental issues arise that require environmental management action.
Keep a register of major incidents (spills, injuries, complaints, legal transgressions, etc.) and other documentation related to the CEMP.
Report to the Project Manager any problems (or complaints) related to conformance with this document which cannot first be resolved in co-operation with the Contractor and/or his Subcontractors.
Assist in finding environmentally acceptable solutions to construction problems.
Identify and make minor amendments to the CEMP where appropriate.
The ECO shall have the authority to issue penalties (via the PM) for non-compliance with the CEMP
Issuing of site instructions to the Contractor for corrective actions required.
Conducting regular audits to ensure that the system for implementing the EMP is operating effectively. Reports/audits should be sent to the client's E&HRM Branch as well as to contractors on a monthly basis.

3.4 Role of the Contractor

The role of the Contractor is as follows:

- The Contractor shall ensure that all employees, sub-contractors, suppliers, etc. are fully aware of the environmental issues and requirements detailed in this CEMP;
- The Contractor shall liaise closely with the ECO and PM and will ensure that works on site are conducted in an environmentally sensitive manner in accordance with this CEMP;
- The Contractor is to have a copy of the CEMP on site and be familiar with its contents; and

- In conjunction with the ECO, the Contractor must ensure that all employees (permanent and temporary) and all sub-contractors that work on the site for longer than two days, receive Environmental Awareness Training within one week of being on site.

4 ENVIRONMENTAL SPECIFICATIONS

4.1 Site Camp Establishment

The Contractor's Camp and Materials Storage Area shall be located in consultation with the ECO. The Contractor is required to fence off or visually screen the site camp.

No site staff other than security personnel shall be housed on site. The Contractor shall provide water and/or washing facilities at the camp site for personnel.

The Contractors Camp and Materials Storage Area shall be kept neat and tidy and free of litter. The Contractor is to ensure that the site camp complies with the Occupational Health and Safety Act (first aid and fire fighting equipment, display of emergency numbers etc.).

4.2 Demarcation of Eating Areas

Eating areas shall be restricted to the site offices and contractors' camp. If employees are to eat elsewhere on the site, the contractors shall, in consultation with the ECO, designate places for eating in the working areas, and shall provide adequate water for washing, toilets and refuse bins at all these places, which should be cleaned on a daily basis.

4.3 Environmental Education

According to the National Environmental Management Act (107 of 1998), any costs incurred to remedy environmental damage shall be borne by the person responsible for that damage, it is therefore critical that the contractors read and understand the requirements of this document. It is a requirement of the act that everyone takes reasonable measures to ensure that they do not pollute the environment.

The information presented at the course shall be communicated by the Contractor to the rest of the employees on the site, to any new employees coming onto site after the initial training course and to his / her suppliers. The presentation shall be conducted, as far as is possible, in the employees' language of choice. As a minimum, training shall include:

- Explanation of the importance of complying with the Construction EMP;
- Discussion of the potential environmental impacts of construction activities;
- Employees' roles and responsibilities, including emergency preparedness;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this Construction EMP and its specification (no-go areas, etc.); and
- Explanation of the management structure of individuals responsible for matters pertaining to the Construction EMP.

Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner. Training is fundamental to the successful implementation of the CEMP. All personnel whose work may result in an impact on the environment must receive appropriate training in the environmental procedures to be followed. In this regard, the following must be fulfilled:

- All personnel working on the construction site must attend environmental awareness training workshops conducted by the ECO. The purpose of these workshops is to provide staff with the information they require to enable them to meet the requirements of the CEMP.
  The ECO may call upon the services of a specialist environmental education translator should this be required. Contractors and all their staff must attend and failure to do so will not exempt them and/or their employees from environmental compliance.
- Contractors shall make allowance for site staff to attend an initial environmental awareness training workshop of approximately one hour. In addition, contractors shall ensure that all new staff and sub-contractors attend environmental awareness training workshops within five working days of commencement of work on site.
- All personnel involved in day-to-day activities that could have an impact on the environment must be given on-the-job training in the procedures to be followed. Contractors must ensure that this is done and seek the support of the ECO where the contractor and his or her staff are not familiar with the procedures to be followed.
- Contractors shall keep a register of all personnel attending the environmental awareness training workshops and the on-the-job training detailed above and copy this to the ECO.
- All new staff and sub-contractors that start work during the course of the contract must attend the training workshops conducted by the ECO.
- All staff must be trained in emergency response procedures through the conducting of dry runs of emergency situations. Records of emergency response training must be maintained and must include an attendance list for each training session. These records must be made available for audit purposes.
- Environmental awareness posters to be made available by ECO are to be displayed on site. Environmental ‘do’s and don’ts’ must be clearly illustrated.
  The posters shall use pictures to convey the intended message and any explanatory text will be in isiXhosa, English and Afrikaans.

Failure to attend environmental awareness training will not exempt any contractor and/or employees from compliance with the EMP. The Contractor shall keep records of all environmental training sessions, including names of attendees, dates of their attendance and the information presented to them.

4.4 Defining No-go and Working Areas

It is important that activities are conducted within a limited area to facilitate control and to avoid impacts on the areas adjacent to the developable area. Working areas are defined as those areas required by the Contractor to undertake the development. The Contractor shall ensure that all plant, labour and materials remain within the boundaries of the working areas. Access must be restricted to development footprints only, with no disturbance of areas outside the development footprints allowed.

All areas outside the perimeter of the site shall be considered as no-go areas. No areas outside the working areas may be cleared, damaged, excavated or leveled.

4.5 Working Hours

The Contractor may only work during normal working hours (07h00 to 18h00 on weekdays and 08h00 to 13h00 on Saturdays). If the Contractor needs to work outside of working hours as stipulated in the appropriate legislation, the ECO and the Project Manager/Engineer are to be notified in advance. NOTE that written approval from the Local Authority needs to be obtained for any work that is to be undertaken outside of normal working hours.

4.6 Soil Erosion

Soil erosion should be avoided by not exposing large areas of the substrate simultaneously. Areas that are not to be developed and which are particularly sensitive to erosion should be demarcated with danger tape and be considered as no-go areas. All construction vehicles should only use designated routes on site. Should erosion occur as a result of non-adherence to the above recommendations, or where it impacts on the surroundings, appropriate rehabilitation will be required.

4.7 Batching and Mixing Areas

Cement powder has a high pH. Spillage of dry cement powder and concrete slurry will affect both soil and water pH adversely. Careless handling of cement products resulting in spillage could have serious detrimental effects on the surrounding environment. The following mitigation measures are to be implemented in order to minimise environmental impact:

- Responsibly used ready-mix concrete and cement is preferred to site batched mixes.
- Cement contaminated equipment is to be washed so that contaminated water does not enter stormwater, groundwater and/or drainage lines. Contaminated water must either be removed from site or, with the approval of the ECO and the Local Authority, be disposed of into the local sewage system. Where possible, contaminated water should be recycled back into the batching process.
- Cement must be mixed on mixing trays that prevent runoff and spillage. No mixing will be allowed directly on the ground's surface.
- Locations for mixing areas in the site camp are to be approved by the Project Manager/Engineer and the ECO. Used cement bags are to be stored in a wind and rainproof container for disposal. Used bags are to be removed from site on a regular basis and under no circumstances burned as a method of disposal.
- Excess or spilled cement and concrete are to be removed to an approved Municipal waste site.
- Contaminated soil resulting from a cement or concrete spill is to be removed or rehabilitated at the cost of the Contractor and to the satisfaction of the Project Manager/Engineer and the ECO.

4.8 Equipment Servicing and Cleaning

All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil, groundwater, surface water and/or storm water by fuels, oils and hydraulic fluids.

4.9 Fuel and Hazardous Materials Storage

Contractors shall identify fuels and hazardous substances to be stored on the site and shall ensure that they know the effects of these substances on their staff and the environment. A copy of a fuels and hazardous substance inventory shall be supplied to the ECO by the contractors.

Contractors shall ensure that the quantities of fuels and chemicals on site are appropriate to the requirements and are stored and handled so as to avoid the risk of spillage. All fuels, oils and chemicals shall be confined to specific and secured area, approved by the ECO. These materials shall be stored in an area with a concrete or other impervious base, which is adequately bunded. The volume of the bund shall be two times the volume of the containers stored. Gas and fuel should not be stored in the same storage area, and any generators used on the site should also be placed on a bunded surface.

In the event that fuels, oils and other hazardous fluids are to be stored on site and approval of fuel storage must be given by the ECO and Project Manager/Engineer (refer to the SABS bulk and small volume fuel storage guidelines as available from the local Fire Fighting Authorities).

In addition, the following must be implemented:

- All fuel stores must be equipped with a fire extinguisher;
- No vehicle servicing may take place on the site. Servicing of equipment that uses hydrocarbon fuels, oils, lubricants and other hazardous chemicals may only take place in the site camp under conditions approved by the ECO and the Project Manager/Engineer;
- A suitable leak proof container is to be used for the storage of oiled equipment. This container is to be removed from site and the contents disposed of at an approved waste site as required;
- Fuels and oils must be stored in tanks or drums with lids that remain firmly shut and shielded from the elements. Safety and fire prevention precautions must be strictly adhered to (ref SABS fuel storage standards);
- All fuels are to be stored within a lined demarcated area in the Site Camp. No refuelling is to take place outside of this demarcated area unless authorised by the ECO. Note that filling machinery in the field (on site) from canisters should be cleared with the ECO and both a “no leak” funnel / pump and one of the above mentioned absorption products must be on hand in the event of such refuelling taking place;
- All fuel, oil or hydraulic fluid spills are to be reported to the Project Manager/ Engineer and ECO immediately so that appropriate clean-up measures can be implemented.

4.10 Solid Waste Management

The Contractor is responsible for the establishment of a waste control system that is acceptable to the Project Manager/Engineer and the ECO. This system is to be presented to the ECO in the form of a Method Statement prior to the commencement of works. For the purposes of this CEMP, waste includes all debris, refuse, hazardous waste, construction litter and asphalt (tar) waste.

Refuse collected from the working areas must be stored in a water- and animal- proof enclosure at the designated site camp. Refuse is to be removed from the site camp at least once a week by the Contractor or an appointed refuse removal agent (or approved local waste removal system). Refuse must be disposed of at an approved waste disposal site.

Petroleum, chemical, harmful and hazardous waste is to be stored in an enclosed and bunded area. The location of such bund sites is to be approved by the Project Manager/Engineer and the ECO. This waste will be disposed of at a hazardous waste disposal site as approved by the Local Authority. Storage and disposal etc. is also controlled through other relevant legislation that must be compiled with e.g. the Occupational Health & Safety Act.

The Contractor will ensure that waste and surplus food, food packaging and other waste is not deposited by employees anywhere on the site except in refuse bins for removal on a daily basis by the Contractor to the central point in the site camp. Refuse bins shall be watertight, wind-proof and scavenger-proof, and shall be placed at regular intervals throughout the site. The ECO will approve the design of the bins. Refuse collected from the site shall be stored in an appropriate closed and weatherproof container and removed once a week. Refuse shall be separated into suitable categories and re-cycled. Construction debris such as scrap metal shall be collected in a skip container and disposed of at an approved dumpsite. Refuse may not be burnt or buried on the site, or in the vicinity. Contractors shall identify a permitted refuse disposal site for various categories of waste and provide documentary proof to the PM and ECO of the type and volume of waste to be disposed of there. The Contractors shall provide workers to clean up the site on a daily basis and the general cleanliness of the site shall form part of the site inspections undertaken by the ECO.

4.11 Water Pollution Prevention

The Contractor shall prevent pollution of surface or underground water and shall comply with the Water Act, 36 of 1998, and any other national, provincial and local legislation regarding the prevention of water pollution, including the pollution of groundwater.

The Contractor must ensure that all reasonable precautions are taken to prevent the pollution of the ground and water resources as a result of site activities. Ground contamination may hinder or prevent the re-establishment of natural vegetation. The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site. In addition, the Contractor shall ensure that no oil, petrol, diesel, etc is discharged onto the ground.

Pumps and all machinery requiring oil, diesel etc. that are to remain in one position shall be placed on drip trays. The drip trays shall be emptied regularly and the contaminated water disposed of off site at a facility capable of handling such wastewater. Drip trays shall be cleaned before any possible rain events that may result in the drip trays overflowing, and before long week ends and holidays.

Stormwater and/or groundwater may accumulate on site during the construction period and there is the potential for this water to be contaminated as a result of construction procedures. The Contractor shall ensure that this water does not become contaminated. Contaminated water (eg cement washings or waste water from ablution etc) shall be collected in a conservancy tank, removed from the site and disposed of in a manner approved by the ECO.

4.12 Stormwater Control

Contractors shall take reasonable measures to prevent erosion resulting from a diversion, restriction or increase in the flow of stormwater caused by the presence of their works, operations and activities, all to the satisfaction of the ECO. Any stormwater collected in bunded areas containing oils, fuels, chemicals or other potentially polluting substances shall be pumped out of the bund, collected in a suitable container and removed from the site for disposal as per the CoM stormwater-pollution by law. Ground water and stormwater in excavated areas shall be filtered through settlement ponds and filters before being discharged/ pumped into the stormwater system.

Contractors shall provide adequate control measures to prevent stormwater damage and erosion during construction. Control measures should include the control by sumps and adequate pumping of water ingress into trenches below the water table. Stormwater should also be directed into attenuation ponds wherever possible. All methods of stormwater control during the construction phase are to be agreed and approved by the PM and ECO. Berms and existing stormwater drainage systems shall be used to prevent surface run-off from entering site excavations.

4.13 Ablution Facilities

The Contractor shall provide the necessary ablution facilities for all his personnel. The primary ablution facility will be connected directly into the existing sewer system. Chemical toilets shall be used in all other areas of the site where necessary. A minimum of one toilet per 15 persons shall be provided. The toilets shall be secured to prevent them from blowing over, and shall be provided with an external closing mechanism to prevent toilet paper from being blown out. Toilet paper shall be provided in all toilets. Toilets shall be cleaned and serviced regularly by a reputable toilet-servicing company appointed by the Contractor. Toilets shall be emptied before long weekends and builders' holidays.

Toilets shall be locked after working hours. The Contractor shall ensure that chemicals and/or waste from toilet-cleaning operations are not spilled on the ground at any time. All spills shall be cleared up immediately.

4.14 Water Resource Management

Water is a scarce resource in the Western Cape and water shall be conserved wherever possible. The Contractor shall not waste water (eg water areas excessively etc). All leaking water pipes are to be repaired or replaced immediately.

The Contractor shall provide all drinking water and water for construction purposes. The location of taps should be convenient to the workers and should be indicated on the site management plan. Water shall not be used unnecessarily.

4.15 Dust Control

The Contractor will be solely responsible for the control of dust and for any claims against the proponent for damages resulting from dust. All activities that generate dust (cutting, drilling, crushing and demolition operations) will be kept moist with water. If possible non-potable water should be used for dust mitigation.

Soil stockpiles shall be located in sheltered areas where they are not exposed to the erosive effects of the wind. Also, sand will be covered with shade cloth if not used for more than 24 hours. To control dust from the batching operation, water shall be spayed on the materials at regular intervals. Excavation, handling and transport of erodible materials shall be avoided under high wind conditions. During high wind conditions, the PM and ECO shall evaluate the situation and make a recommendation as to whether dust-damping measures are adequate, or whether work should cease altogether until wind speeds drop to acceptable levels.

4.16 Noise Control

Noise generation during construction could create disturbance and a nuisance for people working, resident in and commuting through the area. Contractors shall thus restrict working hours for construction activities to: **07h00-18h00 on weekdays** (excluding public holidays); and **08h00-13h00 on Saturdays** (excluding public holidays). No work is to be done on Sundays.

However, any deviation from the working hours needs to be pre-approved by the Client in consultation with the ECO. If contractors wish to work outside of these hours, this must be with the agreement of the PM, ECO and the building regulations. The ECO is, however, to be fully informed of any complaints received regarding noise levels during the construction period.

4.17 Fire Prevention

No fires will be allowed on the site. **No smoking** will be permitted on the site except for within a designated area in the site camp.
Suitable fire fighting equipment must be readily available in this area.

The contractor will be requested to remove any person from the site who is found lighting a fire or smoking outside of the designated smoking area.

Fires for heating, cooking or disposal of any material will not be permitted. Suitable fire fighting equipment must be readily available. The Contractor will be liable for all costs incurred by organisations called to extinguish any fires started by any person(s) under their control. In such an event, the Contractor will be liable for all costs incurred to remediate burnt areas on the site and areas to which the fire has spread.

The Contractor must ensure that the contact details of the nearest Fire Department are displayed on site (together with other emergency services) and that all persons involved with the project know the location of these numbers on site.

4.18 Pollution Prevention and Remediation

The Contractor must ensure that all reasonable precautions are taken to prevent the pollution of the ground and water resources as a result of site activities.

Pollution could result from the release, accidental or otherwise, of contaminated runoff from construction camps, discharge of contaminated construction water, chemicals, oils, fuels, sewage, run off from stockpiles, solid waste, litter, etc.

The first activity to be undertaken once a spill occurs is to terminate the source of the spill and contain the polluted area. All fuel, oil or hydraulic fluid spills are to be reported to the Project Manager/ Engineer and ECO forthwith so that appropriate clean-up measures can be implemented.

The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site. Sufficient quantities of suitable hydrocarbon absorbent or remediation materials must be present on site at all times. Absorbent “spill-mop-up” products need to be on hand – Enretech, Spillsorb or Drizit type products should be investigated for these purposes.

4.19 Provision of Water

Contractors shall be responsible for providing construction water, water required for dust control, drinking and washing water. Contractors shall also be responsible for providing washing facilities for all staff.

Wastewater from washing facilities shall be discharged into the existing sewage system, or removed from the site by the contractor or by other means, should the existing services be unavailable. Such alternative means shall be submitted to the ECO for approval.

4.20 Cleanliness of Public Roads

Contractors shall ensure that construction vehicles are not overloaded so as not to spill construction or excavated material onto the public roads in proximity. Contractors shall provide a washing system for cleaning the wheels of vehicles moving off-site, and shall ensure that this is utilised as required. Filtering of ground-water seeping into excavated areas prior to leaving (or being pumped from) site will help keep roads clean.

4.21 Traffic Control

Traffic control and safety shall be done in accordance with the South African Traffic Safety Manual, with the relevant signs, flagmen, barriers, etc being provided at the various access points. Traffic control shall be done in co-operation with local traffic officials. All laws and regulations applicable on the public road system are enforceable on the construction site.

Due to the activities involved in the construction phase, trucks and other related vehicles will be using the roads leading to the site. These vehicles will need to be roadworthy and abide by the speed limits. The Contractor should ensure that additional construction vehicles do not produce excess noise and that generation of dust is kept to a minimum. Contractors must ensure that their vehicles are road-worthy and that loads are properly secured.

4.22 Safety on Site

Contractors shall follow the guidelines of the Occupational Health and Safety Act (85 of 1993).

The wearing of hard hats by -

- All persons entering the site;
- All persons within 10m of any situation where any form of lifting or hoisting equipment is being used; and
- Any personnel working in any other situation where the possibility of head injury is present, e.g. an area where overhead work is taking place.

The wearing of gloves by personnel -

- Handling heavy materials;
- Carrying out maintenance activities within a crusher;
- Engaged in welding or gas cutting activities; and
- Handling materials/equipment with unfinished steel edges.

The wearing of approved safety shoes or safety boots by -

- All persons entering the construction site or workshop, storage and depot areas.

The wearing of safety goggles by -

- Persons operating equipment under dusty conditions;
- Persons engaged in cutting or welding activities; and
- Persons engaged in grinding activities.

The wearing of hearing protection by -

- All persons engaged in rock drilling activities (>85 decibel):
- All crushing operators; and
- Any persons entering into high noise areas (>85 decibel).

These areas should be appropriately marked using a standard National Occupational Safety Association (NOSA) pictogram.

The wearing of safety belts by -

- Any person carrying out work 2m above ground level, unless it is being carried out from a safe and protected work platform; and
- All heavy equipment operators.

4.23 Protection of Flora and Fauna

Except where construction activities will be undertaken, flora shall not be removed, damaged or disturbed. It must be noted that all identified conservation worthy trees must be retained.

Where animals do not move off the site as of their own accord and are in the way of the works or pose a threat to site staff e.g. venomous snakes, the ECO shall be contacted immediately to assist in the relocation of these animals with the appropriate approval from the Cape Nature. The ECO shall also instruct the workers that no snakes or lizards are to be killed or harmed on site. No domestic pets are permitted on Site.

4.24 Temporary Site Closure

If the Site is closed for a period exceeding one week, a checklist procedure shall be carried out by the Contractor in consultation with the ECO. Contractor's Safety Officers (in terms of the Occupational Health and Safety Act) are to check site and report to the Engineer in terms of:

- Fuels / flammables / hazardous materials stores safe and secure/locked.
- Ensure fuel stores as low in volume as possible. No leaks.
- Bund/s empty
- Fire extinguisher serviced and accessible.
- Secure area from accidental damage e.g. vehicle collision.
- All trenches and manholes secured.
- Fencing and barriers in place per the Occupational Health and Safety Act
- Notice boards applicable and secured.
- Emergency and Management contact details displayed.
- Security persons briefed and have facility for contact.
- Night hazards checked e.g. reflectors, lighting, traffic signage.
- Fire hazards identified – local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.

- Pipe stockpile wedged / secured.
- Inspection schedule and log by security or contracts staff.
- Wind and dust mitigation in place e.g. straw, brush packs, irrigation.
- Slopes and stockpiles at stable angle.
- Water contamination and pollution
- Fuels hazardous stores secure.
- Cement and materials stores secured
- Toilets empty and secured
- Refuse bins empty and secured (lids)
- Bunding clean and treated e.g. Spill Sorb or Enretech #1 powder
- Drip trays empty & secure (where possible)
- Structures vulnerable to high winds secure.

The Contractor is to ensure that all temporary closure requirements are met before leaving the site.

4.25 Protection of Archeological and Paleontological Remains

Archaeological sites are protected by the National Heritage Resources Act (No 25 of 1999). According to the Act, it is an offence to disturb, destroy or remove from its original site any archaeological material, or excavate any such site without permission from SAHRA.

If any archaeological or paleontological artefacts and / or human burials or remains are uncovered during earthworks, work in the vicinity of the find shall cease immediately. The Contractor shall immediately notify the RE, who shall contact the South African Heritage Resources Agency (SAHRA and the local police (in the case of human burials or remains). The Contractor will be required to abide by the specifications as set out by SAHRA or the heritage specialist appointed to investigate the find or burial.

If any human remains are discovered, they must be treated with respect and the South African Heritage Resources Agency (SAHRA) must be notified immediately. An archaeologist may be required to remove the remains at the expense of the Developer -

4.26 Security

Although largely an operational issue, security of the site will need to be maintained during construction. The Contractor will be responsible for the security of its personnel, construction camps and equipment. No personnel will be permitted to live on the site. Security personnel present after hours must be provided with the necessary cooking, heating and ablution facilities. Security lighting should not result in a nuisance for neighbouring properties.

4.27 Surrounding Land Use and Community Relations

Cognisance must be taken of the proximity of residential areas. General disturbance should be kept to a minimum.

The Contractor shall be responsible for responding to third party or public queries and/or complaints relating to operations.

The Contractor shall notify the ECO and the Engineer of any complaints lodged. The Contractor shall be responsible for maintaining a Complaints Register to record complaints received and action taken. This register will be made available to the ECO, the Engineer and the local authority / CoM Environmental.

5 METHOD STATEMENTS

5.1 Contractors Requirements

Specified contractors shall provide method statements for approval by the PM and ECO prior to work commencing on aspects of the project deemed or identified to be of potential risk to the environment, when called upon to do so by the PM. In addition, method statements from contractors may be required by the relevant authorities or the ECO for specific sensitive actions. These include:

- Contractor's camp establishment including bulk fuel storage, toilet facilities and waste management;
- Stormwater management (plan of how stormwater and ground-water is going to be handled on site, example, seeping into excavated areas);
- Pollution prevention (location, layout, preparation and operation of all wash areas, including vehicle wash, paint washing and clearing);
- Windblown sand and dust control measures;
- Batching plant activities (location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete including the management of runoff water from such areas);
- Noise control;
- Storage, handling and management of hazardous material;
- Demarcation of no-go areas;
- Solid waste management (solid waste control, stockpiling of excavated material and removal of waste from Site);
- Traffic management; and
- Any other information deemed necessary by the ECO.

A method statement is a living document that allows for modifications to be negotiated between the contractors and the PM, as circumstances dictate. All method statements will form part of the CEMP documentation and are subject to all terms and conditions contained in the CEMP.

Note that a method statement is a point of departure for understanding the nature of the intended actions to be carried out and allows for all parties to review and understand the procedures to be followed in order to minimise risk of harm to the environment. Changes to, and adaptations of, method statements can be implemented with the prior consent of all parties.

A method statement describes the scope of the intended work in a step-by-step description in order for the PM and ECO to understand the contractors intentions. This will enable them to assist in devising any mitigation measures, which would minimise environmental impact during these tasks.

For each instance where it is requested that a contractor submit a method statement to the satisfaction of the PM and ECO, the format should clearly indicate the following:

What - a brief description of the work to be undertaken;
How - a detailed description of the process of work, methods and materials;
Where - a description/sketch map of the locality of work (if applicable); and
When - the sequencing of actions with due commencement dates and completion date estimates.

All method statements are to be to the satisfaction of the PM, the ECO and the local authority / CoM Environmental and Heritage Resource Management.

5.2 Structural/Civil Engineers Contract Requirements

This specification entails structural/civil engineer's statements regarding excavations, trees etc; and contextual specific fully dimensioned diagrams relating to the construction plan.

6 SITE CLEAN UP AND REHABILITATION

6.1 Site Clean Up

The Contractor shall ensure that all temporary structures, equipment, materials, wastes and facilities used are removed upon completion of the contract. The site clean up must be to the satisfaction of the local authority / CoM Environmental and Heritage Resource Management, Project Manager/Engineer and the ECO. A site closure checklist will only be given once site has been closed.

6.2 Rehabilitation

If deemed necessary by the Project Manager/Engineer, the ECO or the local authority / CoM Environmental and Heritage Resource Management, the contractor may have to employ a suitably qualified person to rehabilitate areas damaged during construction activities on site.

In the event of damage occurring to the environment due to the irresponsible actions of the Contractor, (including non-compliance with the EMP), rehabilitation may be required as decided upon by the ECO, the ECO and the Project Manager/Engineer. The completed rehabilitation is to be to the satisfaction of the Project Manager/Engineer, the ECO and the local authority / CoM Environmental and Heritage Resource Management.

On completion of construction, the Contractor shall ensure that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during construction are removed with minimal damage to the surrounding area. The Contractor shall clean and clear the site to the satisfaction of the ECO.

The cost of such rehabilitation will be for the Contractor’s account and no extension of time will be granted.

7 COMMUNICATION AND SITE INSPECTIONS

7.1 Site Meetings

Regular site meetings must be held for the duration of the construction period. Provision must be made in the agenda of each site meeting for Environmental Management issues to be discussed to facilitate the transfer of information and to update all parties on the environmental compliance aspects of the project as a whole. The ECO should present a summary report on environmental issues at such meetings.

These meetings are to be attended by the ECO, Project Manager or Engineers representative, Contractor and a representative of each of the sub-contractors working on site at the time.

At such meetings environmental queries must be resolved, agreed actions planned with dates of the actions and compliance / non-compliance by the Contractor to be noted. If required, penalties and remedial actions must also be tabled and planned. The frequency of meetings may be altered by the ECO, based on the nature of the works taking place on site at any time, and the level of compliance with the EMP by the Contractors.

Issues relating to complaints or comments received from the public shall also be discussed at these meetings. Minutes of the meetings shall be prepared by the RE and copied to all attendees, including the local authority / CoM Environmental and Heritage Resource Management before the next meeting.

7.2 Site Inspection

A site inspection programme will be implemented and will comprise:

- Visual inspections of site activities by the ECO shall initially be on a weekly basis for the duration of the establishment of the site camp, hoarding off of trees and hedges, structures, no-go areas, etc.; and
- Review of records and documentation to reconcile these with the construction programme.

Records shall be maintained during the construction phase to enable compliance with the CEMP specifications to be demonstrated. These will typically comprise a daily log of activities that record waste management (documentary proof of type, volume, disposal and transport), fuels and chemicals management (deliveries, spills etc.) and other environmental issues such as adverse weather (wind, rain) and surface water run-off.

SILULUMANZI ON BEHALF OF THE CITY OF MBOMBELA

DEPARTMENT NAME: ENGINEERING

CONTRACT NO: KAW-MG-201

MIG/MP/2180/22/23: CITY OF MBOMBELA LOCAL MUNICIPALITY: KANYAMANZANE BULK WATER SUPPLY – DEVELOPMENT OF KANYAMANZANE CENTRAL HIGH-LEVEL ZONE

ANNEXURE C: DRAWINGS FOR TENDER PURPOSES

LOCALITY PLAN

SCALE : NTS

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	19/07/2022

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	19/07/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

LOCALITY PLAN

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	001	A

PROPOSED PIPELINE LAYOUT

SCALE : NTS

LEGEND:

- NEW PROPOSED PIPELINE
- EXISTING WATER INFRASTRUCTURE
- ALTERNATIVE ROUTE TBC

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR INTERNAL PURPOSES	NJ	13/03/2023
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCM
SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

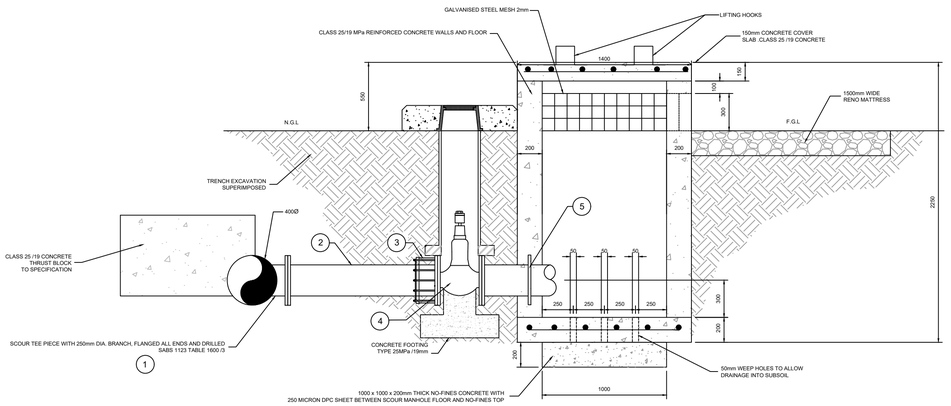
PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION
KANYAMAZANE

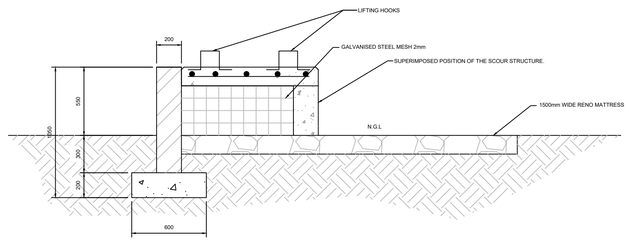
DRAWING INFORMATION

DRAWING TITLE
PROPOSED PIPELINE LAYOUT

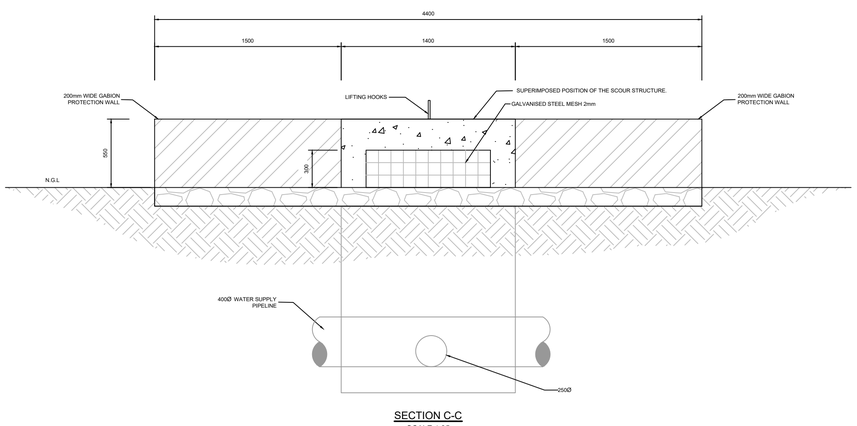
PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	002	B



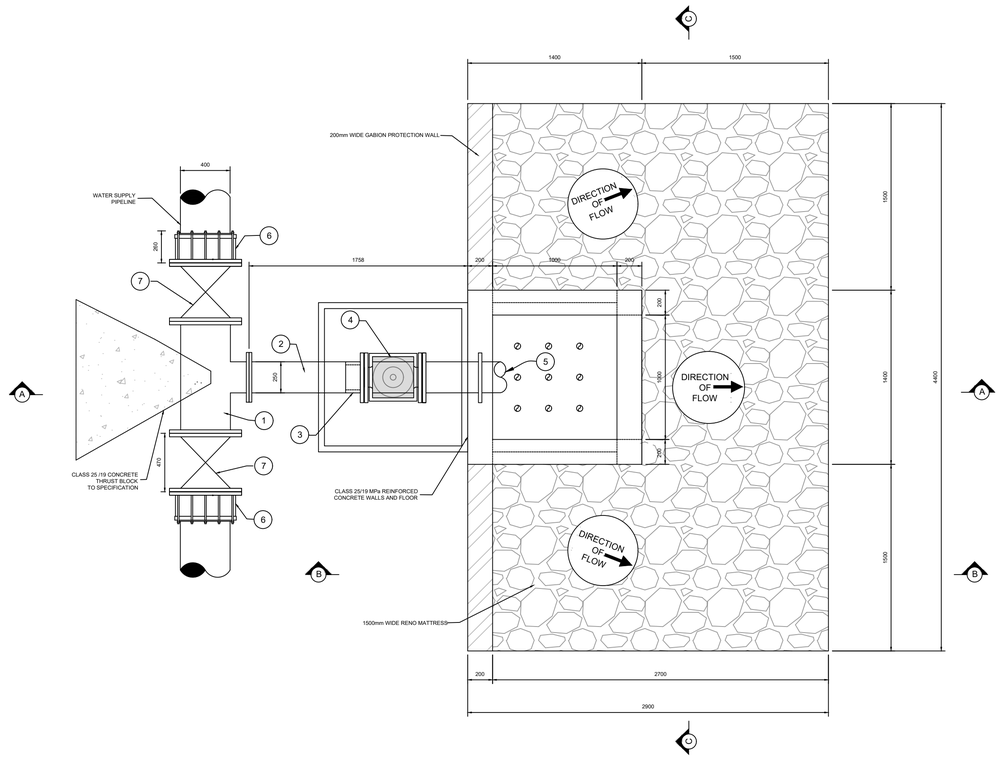
SECTION A-A. SCOUR VALVE ASSEMBLY
SCALE 1:25



SECTION B-B
SCALE 1:25



SECTION C-C
SCALE 1:25



LAYOUT: SCOUR VALVE ASSEMBLY
SCALE 1:25

PIPE SCHEDULE :		
No.	FITTING	QTY
①	400Ø STEEL SCOUR TEE PIECE WITH 250Ø BRANCH, FLANGED ALL 3 ENDS	x 1
②	250Ø - 1,400mm LONG STEEL PIPE PIECE, FLANGED ONE END ONLY, OTHER END PLAIN	x 1
③	250Ø VJ FLANGE ADAPTOR (PN25)	x 1
④	250Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 1
⑤	250Ø - 600mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY, PUDDLE FLANGE = 450mm FROM FLANGE FACE	x 1
⑥	400Ø VJ FLANGE ADAPTOR (PN 25)	x 2
⑦	400Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN 25)	x 2

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200ø = HEAVY DUTY STEEL 2500kPA
- INTERNAL/EXTERNAL COATING = GALVANISED PROTECTIVE COATING FOR PIPES AND SPECIALS.
- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	21/06/2022
B	ADDED NOTES	RB	15/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	21/06/2022

PROJECT INFORMATION

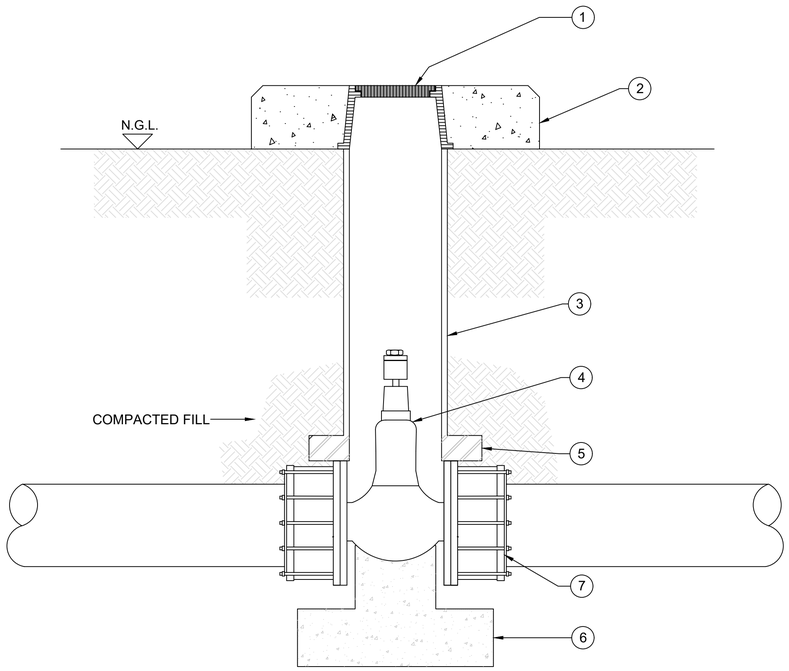
PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE
ISOLATION AND SCOUR VALVE TYPICAL DETAIL

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	101	B



ISOLATION VALVE

SCALE 1:10

PIPE SCHEDULE :		
No.	FITTING	QTY
①	PLASTIC VALVE BOX COVER (TO BE PAINTED BLUE).	x 1
②	CONCRETE SURROUND 500x500x300 TYPE 20MPa /mm	x 1
③	uPVC PIPE CUT TO SUIT	x 1
④	RSV GATE VALVE WITH NON-RISING SPINDLE (PN16/25)	x 1
⑤	2 LAYERS BRICKS AGAINST VALVE BODY ON COMPACTED FILL	x 2
⑥	CONCRETE FOOTING TYPE 20MPa/19mm	x 1
⑦	VJ FLANGE ADAPTOR (PN16/25)	x 2

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200ø = HEAVY DUTY STEEL 2500kPA
- INTERNAL/EXTERNAL COATING = GALVANISED PROTECTIVE COATING FOR PIPES AND SPECIALS.
- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	21/06/2022
B	ADDED NOTES	RB	15/03/2023

CLIENT:

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A SAWW Company

Tel : 013 752 6839

CONSULTANT

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CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	21/06/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

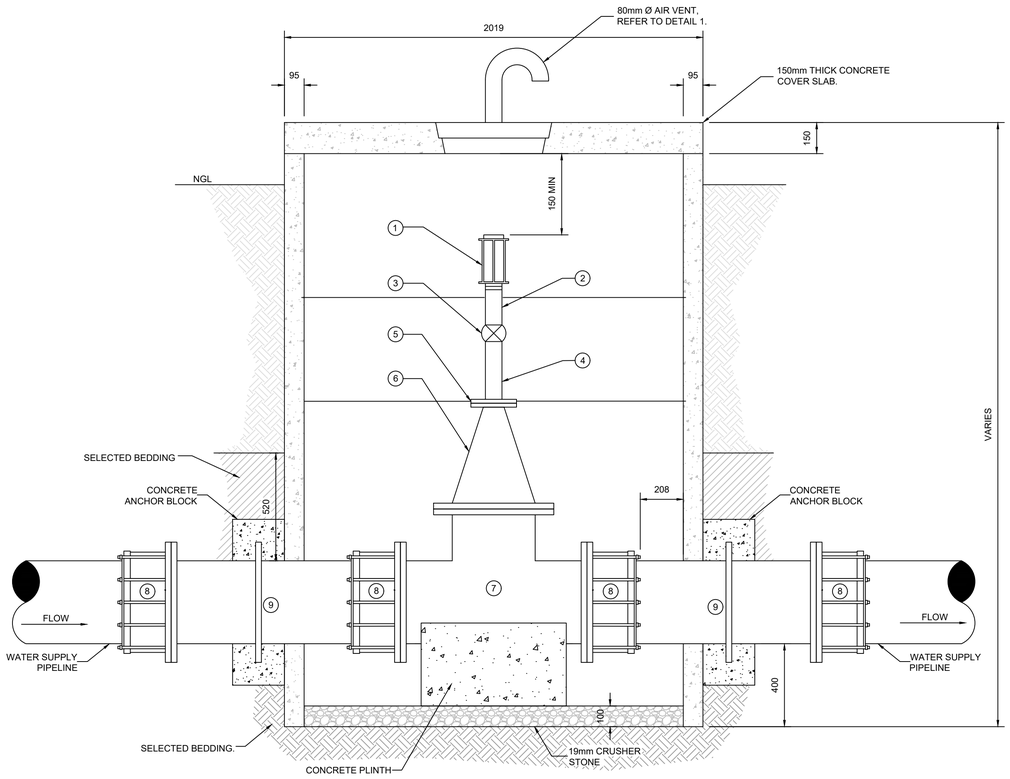
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

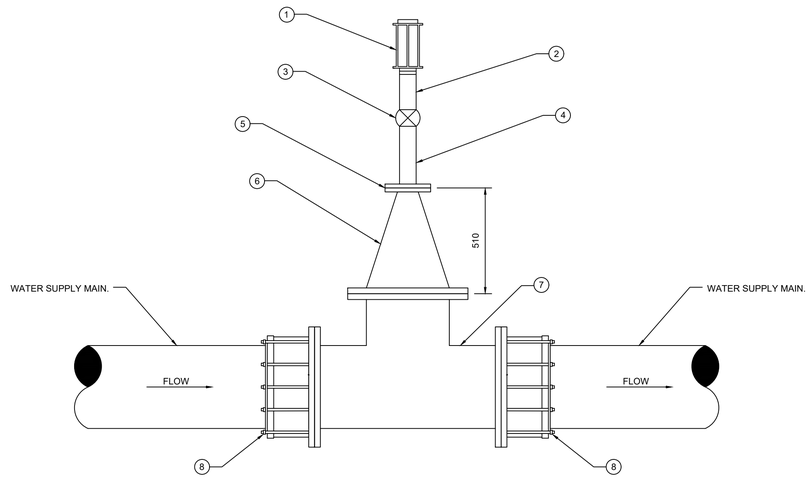
TYPICAL ISOLATING VALVE DETAIL

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	102	B



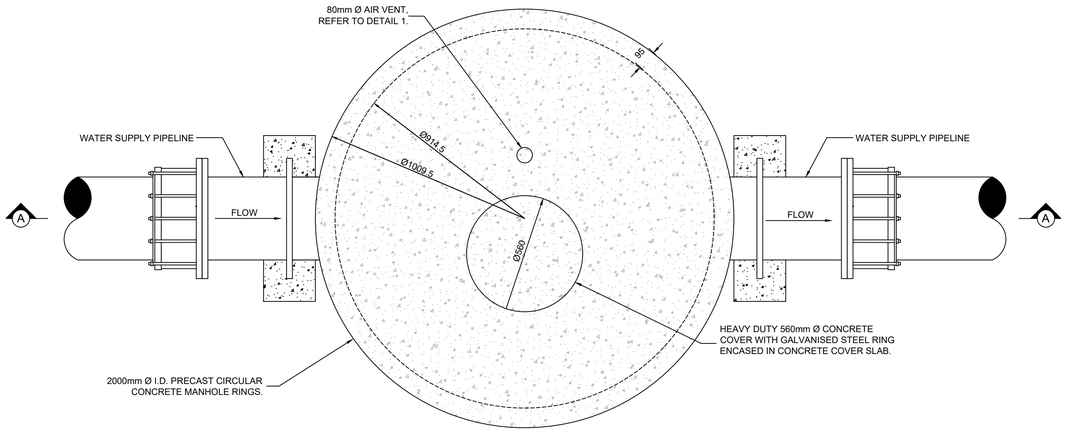
AIR VALVE CHAMBER: SECTION A - A

SCALE 1:15



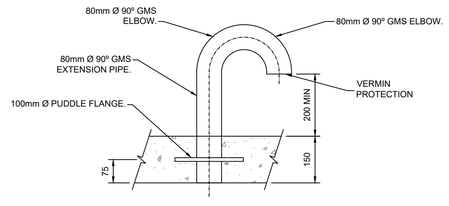
TYPICAL AIR VALVE INSTALLATION ONTO ABOVE GROUND PIPELINE

SCALE 1:15



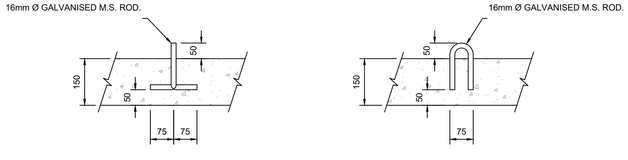
AIR VALVE CHAMBER PLAN VIEW

SCALE 1:15



DETAIL 1: AIR VENT DETAIL

NOT TO SCALE



FRONT ELEVATION

SIDE ELEVATION

DETAIL 2: LIFTING HOOK DETAIL

NOT TO SCALE

PIPE SCHEDULE :		
No.	FITTING	QTY
①	50/80/100/150mm DOUBLE ACTING AIR RELEASE VALVE ASSEMBLY, VAG OR SIMILAR APPROVED (PN25)	x 1
②	50/80/100/150mm EXTENSION PIECE, 200mm LONG (MALE THREADED BOTH ENDS)	x 1
③	50/80/100/150mm BRASS FULL WAY GATE VALVE (FEMALE THREADED PN25).	x 1
④	50/80/100/150mm EXTENSION PIECE, 300mm LONG, (MALE THREADED BOTH ENDS).	x 1
⑤	REDUCING FLANGE	x 1
⑥	400Ø TO 200Ø STEEL FLANGED REDUCER (510mm)	x 1
⑦	400Ø STEEL EQUAL TEE-PIECE, FLANGED	x 1
⑧	VJ FLANGE ADAPTOR (PN25)	x 4
⑨	400Ø - 1080mm LONG STEEL PIPE PIECE, FLANGED BOTH ENDS	x 2

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200ø = HEAVY DUTY STEEL 2500kPA
- INTERNAL/EXTERNAL COATING = GALVANISED PROTECTIVE COATING FOR PIPES AND SPECIALS.
- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	21/06/2022
B	FOR TENDER PURPOSES	RB	08/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	21/06/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

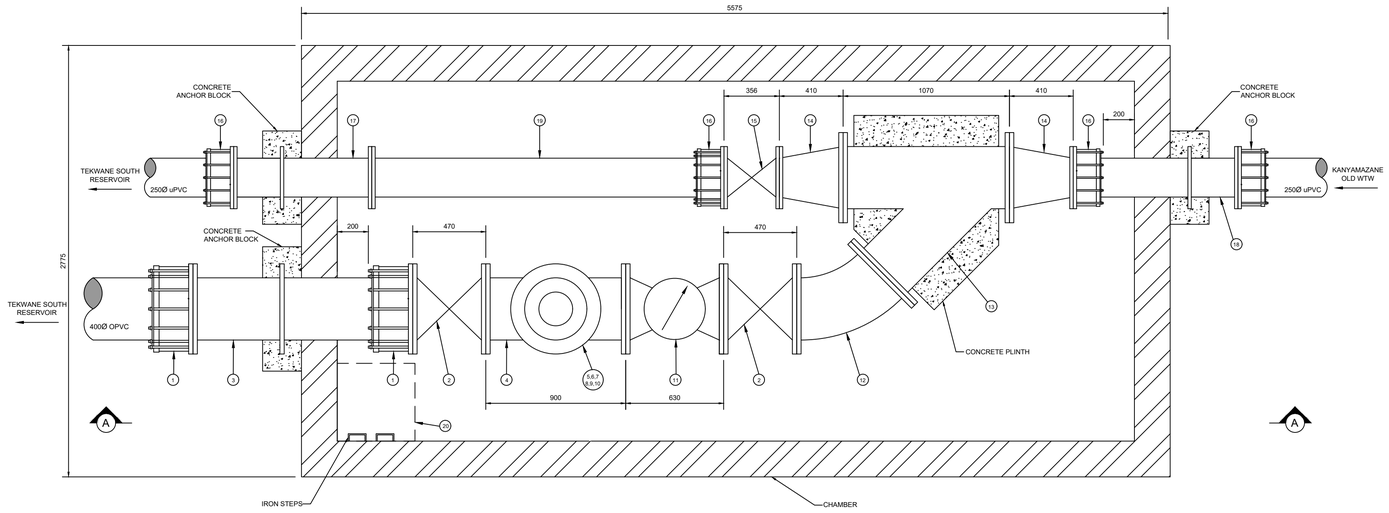
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

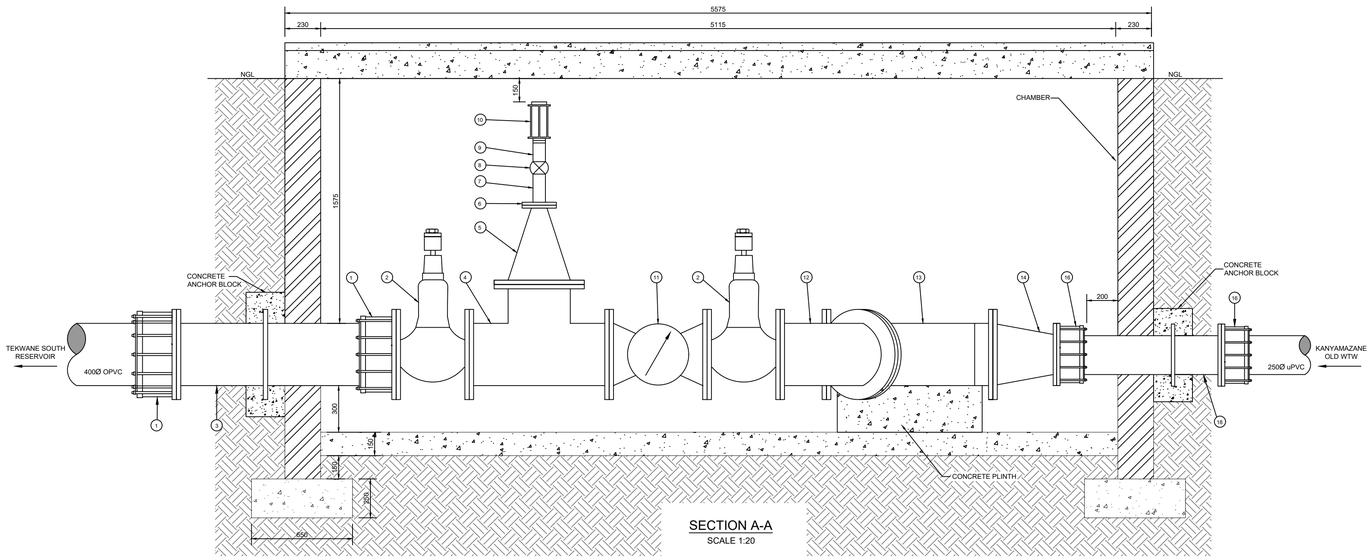
AIR VALVE CHAMBERS TYPICAL DETAIL

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	103	B



CONNECTION DETAIL 1

SCALE 1:20



SECTION A-A

SCALE 1:20

PIPE SCHEDULE :		
No.	FITTING	QTY
①	400Ø VJ FLANGE ADAPTOR (PN 25)	x 2
②	400Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 2
③	400Ø - 1385mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
④	400Ø EQUAL TEE PIECE, FLANGED ALL 3 ENDS	x 1
⑤	400Ø TO 200Ø STEEL FLANGED REDUCER (510mm)	x 1
⑥	REDUCING FLANGE	x 1
⑦	80mm EXTENSION PIECE, 200mm LONG, (MALE THREADED BOTH ENDS).	x 1
⑧	80mm BRASS FULL WAY GATE VALVE (FEMALE THREADED).	x 1
⑨	80mm EXTENSION PIECE, 200mm LONG, (MALE THREADED BOTH ENDS).	x 1
⑩	80Ø DOUBLE ACTING AIR RELEASE VALVE ASSEMBLY, VAG OR SIMILAR APPROVED (PN25)	x 1
⑪	WATER METER SENSUS TO FIT 400Ø STEEL PIPE	x 1
⑫	400Ø 45 DEGREE MEDIUM BEND FLANGED BOTH ENDS	x 1
⑬	400Ø LATERAL TEE PIECE, FLANGED ALL 3 ENDS	x 1
⑭	400Ø TO 250Ø CONCENTRIC STEEL REDUCER FLANGED BOTH ENDS (410mm)	x 2
⑮	250Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 1
⑯	250Ø VJ FLANGE ADAPTOR (PN25)	x 4
⑰	250Ø - 890mm LONG STEEL PUDDLE PIPE PIECE, FLANGED BOTH ENDS	x 1
⑱	250Ø - 1040mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
⑲	250Ø - 2245mm LONG STEEL PIPE PIECE, FLANGED ONE END ONLY	x 1
⑳	500 x 500mm CONCRETE COVER WITH GALVANISED STEEL RING ENCASED IN CONCRETE COVER SLAB.	x 1

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200ø = HEAVY DUTY STEEL 2500kPA
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- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	22/06/2022
B	FOR TENDER PURPOSES	RB	08/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	22/06/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

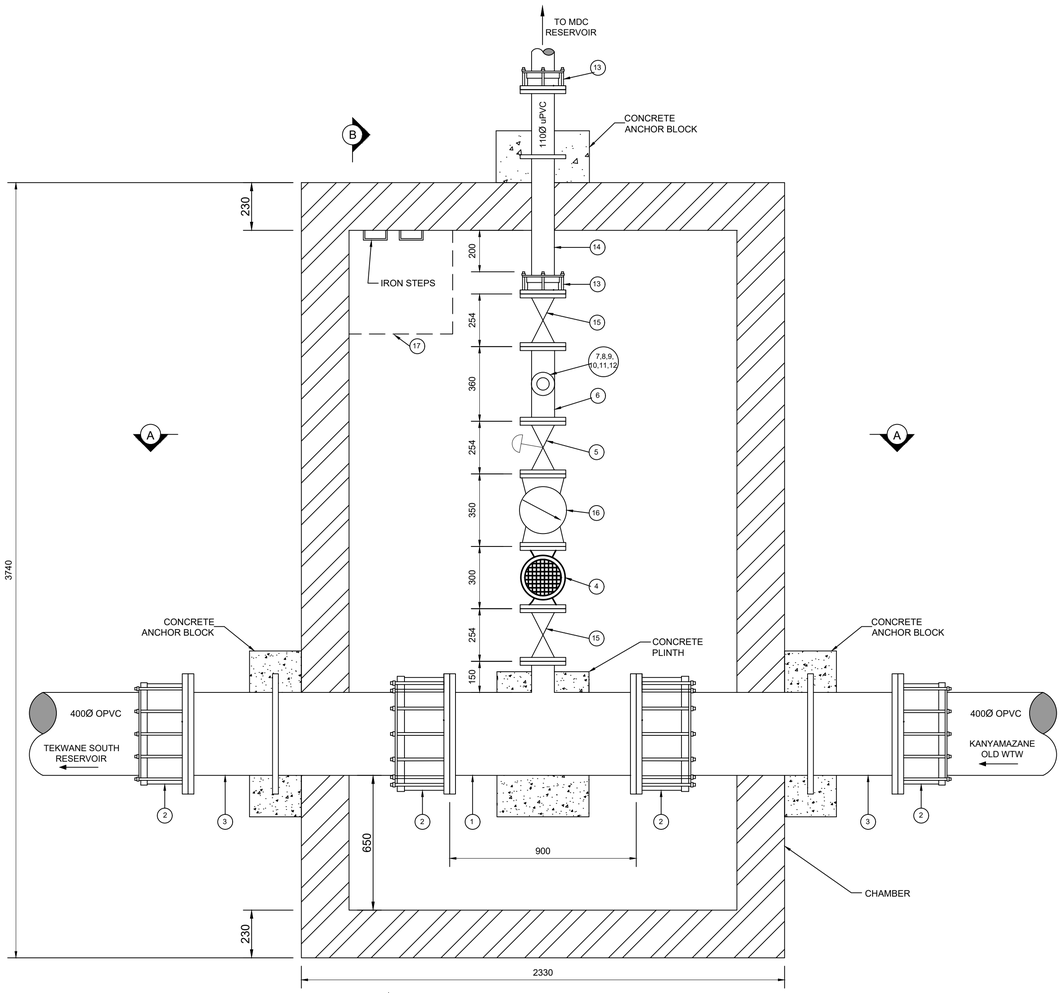
KANYAMAZANE

DRAWING INFORMATION

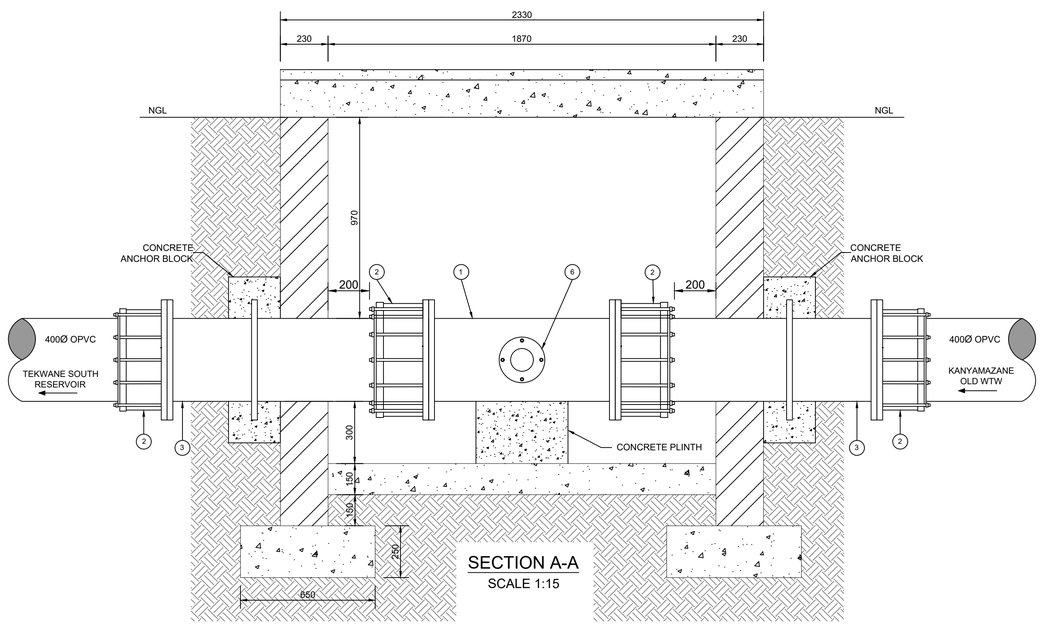
DRAWING TITLE

PUMP STATION CONNECTION DETAIL 1

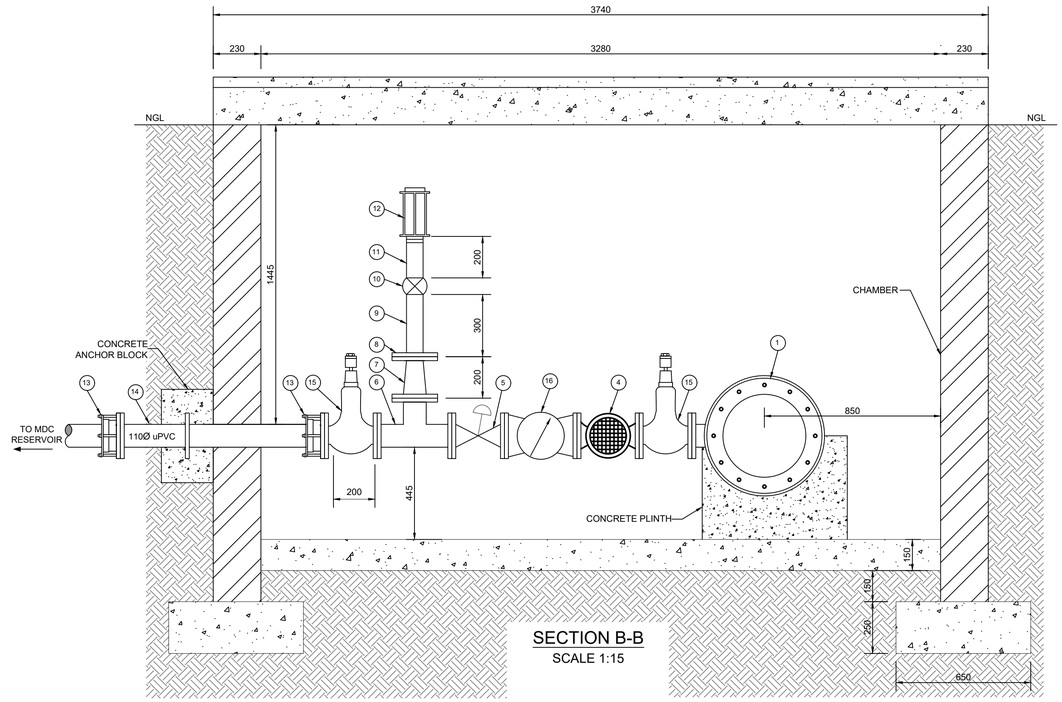
PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	104	B



CONNECTION DETAIL 2
SCALE 1:15



SECTION A-A
SCALE 1:15



SECTION B-B
SCALE 1:15

PIPE SCHEDULE :		
No.	FITTING	QTY
1	400Ø STEEL TEE PIECE WITH 100Ø BRANCH, FLANGED ALL 3 ENDS	x 1
2	400Ø VJ FLANGE ADAPTER (PN25)	x 4
3	400Ø - 1235mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 2
4	SENSUS STRAINER TO FIT 100Ø STEEL PIPE	x 1
5	BERMAD SERIES 700 PRESSURE REDUCING & FLOW CONTROL VALVE, COMPLETE WITH CONTROL PILOT AND PRESSURE GAUGES (PN25)	x 1
6	100Ø EQUAL STEEL TEE PIECE, FLANGED ALL 3 ENDS	x 1
7	100Ø TO 80Ø STEEL FLANGED REDUCER (200mm)	x 1
8	REDUCING FLANGE	x 1
9	50Ø EXTENSION PIECE, 300mm LONG, (MALE THREADED BOTH ENDS).	x 1
10	50Ø BRASS FULL WAY GATE VALVE (FEMALE THREADED).	x 1
11	50Ø EXTENSION PIECE, 200mm LONG, (MALE THREADED BOTH ENDS).	x 1
12	50Ø DOUBLE ACTING AIR RELEASE VALVE ASSEMBLY, VAG OR SIMILAR APPROVED. PN 25	x 1
13	100Ø VJ FLANGE ADAPTER (PN25)	x 2
14	100Ø - 918mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY, PUDDLE FLANGE = 350mm FROM FLANGE FACE	x 1
15	100Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 2
16	WATER METER SENSUS TO FIT 100Ø STEEL PIPE	x 1
17	500 x 500mm CONCRETE COVER WITH GALVANISED STEEL RING ENCASED IN CONCRETE COVER SLAB.	x 1

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200ø = HEAVY DUTY STEEL 2500kPA
- INTERNAL/EXTERNAL COATING = GALVANISED PROTECTIVE COATING FOR PIPES AND SPECIALS.
- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	22/06/2022
B	FOR TENDER PURPOSES	RB	08/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	22/06/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

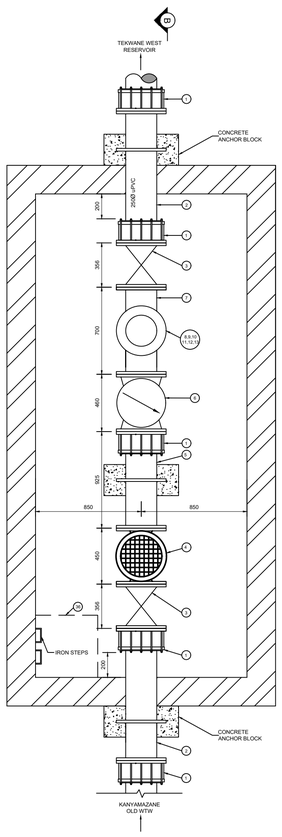
KANYAMAZANE

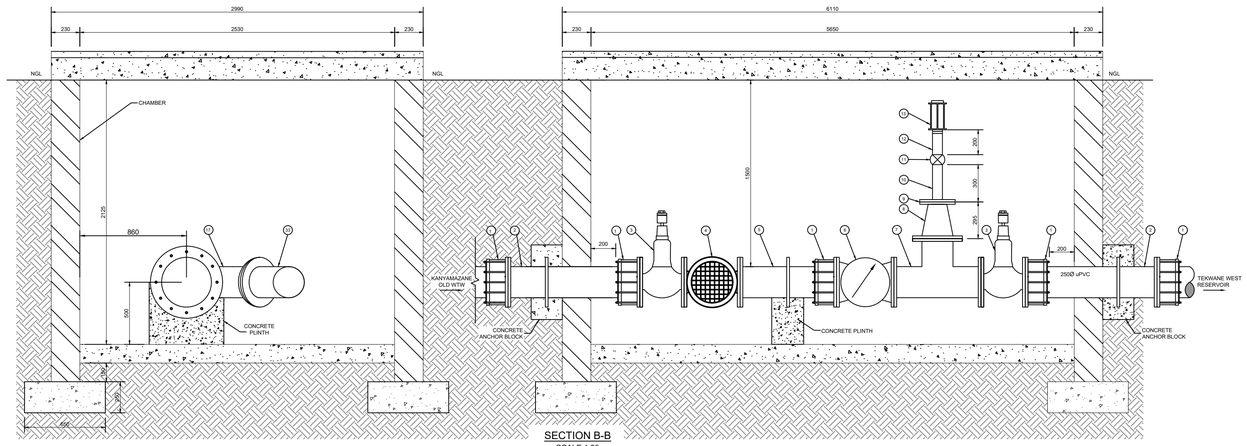
DRAWING INFORMATION

DRAWING TITLE

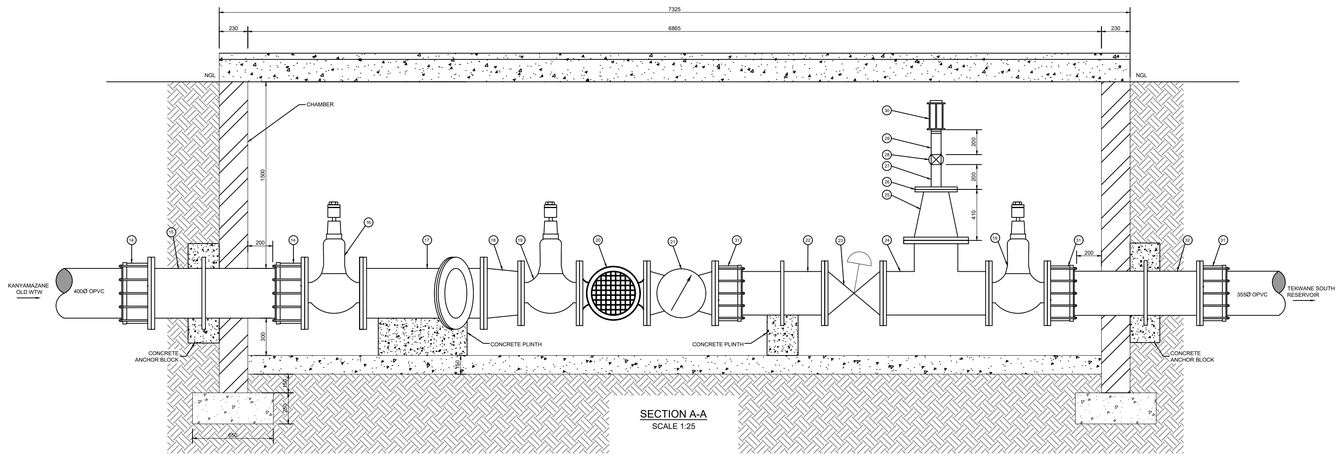
MDC RESERVOIR CONNECTION DETAIL 2

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	105	B

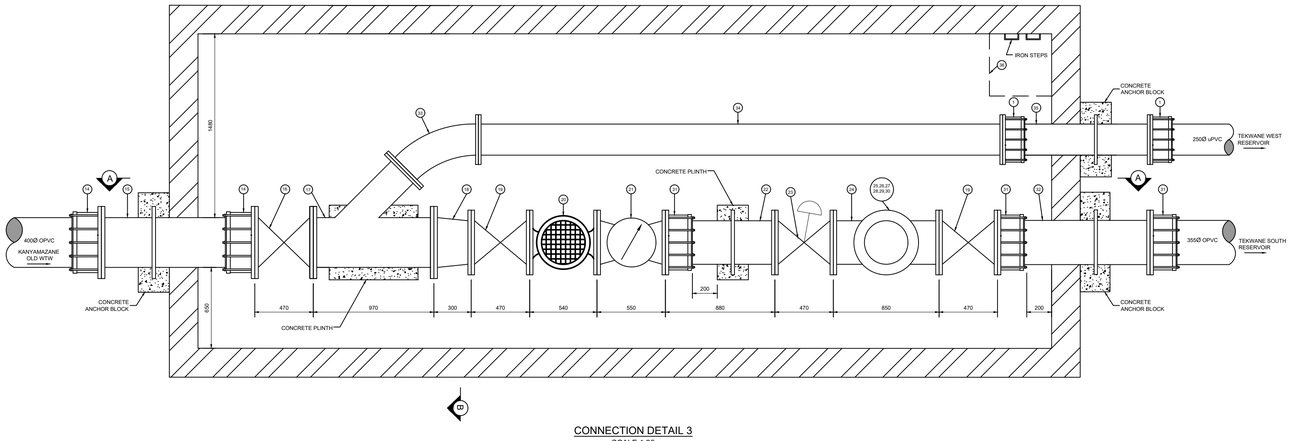




SECTION B-B
SCALE 1:25



SECTION A-A
SCALE 1:25



CONNECTION DETAIL 3
SCALE 1:25

PIPE SCHEDULE :		
No.	FITTING	QTY
1	250Ø VJ FLANGE ADAPTER (PN25)	x 7
2	250Ø - 1040mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 3
3	250Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 2
4	250Ø SENSUS STRAINER TO FIT	x 1
5	250Ø - 754mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
6	WATER METER SENSUS TO FIT 250Ø STEEL PIPE	x 1
7	250Ø EQUAL STEEL TEE PIECE, FLANGED ALL 3 ENDS	x 1
8	250Ø TO 80Ø STEEL FLANGED REDUCER (440mm)	x 1
9	REDUCING FLANGE	x 1
10	80Ø EXTENSION PIECE, 300mm LONG, (MALE THREADED BOTH ENDS).	x 1
11	80Ø BRASS FULL WAY GATE VALVE (FEMALE THREADED).	x 1
12	80Ø EXTENSION PIECE, 200mm LONG, (MALE THREADED BOTH ENDS).	x 1
13	80Ø DOUBLE ACTING AIR RELEASE VALVE ASSEMBLY, VAG OR SIMILAR APPROVED PN 25	x 1
14	400Ø VJ FLANGE ADAPTER (PN25)	x 2
15	400Ø - 1205mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
16	400Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 1
17	400Ø STEEL LATERAL TEE PIECE WITH 250Ø BRANCH, FLANGED ALL 3 ENDS	x 1
18	400Ø TO 350Ø CONCENTRIC STEEL REDUCING PIPE (300mm)	x 1

PIPE SCHEDULE :		
No.	FITTING	QTY
19	350Ø RSV GATE VALVE WITH NON-RISING SPINDLE (PN25)	x 2
20	350Ø SENSUS STRAINER TO FIT	x 1
21	WATER METER SENSUS TO FIT 350Ø STEEL PIPE	x 1
22	350Ø - 880mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY, PUDDLE FLANGE = 300mm FROM FLANGE FACE	x 1
23	BERMAD SERIES 700 PRESSURE REDUCING & FLOW CONTROL VALVE, COMPLETE WITH CONTROL PILOT AND PRESSURE GAUGES (PN25)	x 1
24	350Ø EQUAL STEEL TEE PIECE, FLANGED ALL 3 ENDS	x 1
25	350Ø TO 200Ø STEEL FLANGED REDUCER (410mm)	x 1
26	REDUCING FLANGE	x 1
27	80Ø EXTENSION PIECE, 300mm LONG, (MALE THREADED BOTH ENDS).	x 1
28	80Ø BRASS FULL WAY GATE VALVE (FEMALE THREADED).	x 1
29	80Ø EXTENSION PIECE, 200mm LONG, (MALE THREADED BOTH ENDS).	x 1
30	80Ø DOUBLE ACTING AIR RELEASE VALVE ASSEMBLY, VAG OR SIMILAR APPROVED. PN 25	x 1
31	350Ø VJ FLANGE ADAPTER (PN25)	x 3
32	350Ø - 1200mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
33	250Ø - 45° BEND STEEL PIPE PIECE	x 1
34	250Ø - 4215mm LONG STEEL PIPE PIECE, FLANGED BOTH ENDS	x 1
35	250Ø - 1165mm LONG STEEL PUDDLE PIPE PIECE, FLANGED ONE END ONLY	x 1
36	500 x 500mm CONCRETE COVER WITH GALVANISED STEEL RING ENCASED IN CONCRETE COVER SLAB.	x 2

NOTES:

- ALL FLANGES IN LINE WITH SANS1123 TABLE 2500/3
- STEEL PIPES = GRADE B 4.5mm (SABS 719)
- STEEL PIPES LESS THAN 200Ø = HEAVY DUTY STEEL 2500kPA
- INTERNAL/EXTERNAL COATING = GALVANISED PROTECTIVE COATING FOR PIPES AND SPECIALS.
- ALL OTHER VALVES AND FITTINGS TO BE FUSION BONDED EPOXY COATED
- WATER LOGGED CONDITIONS - CONCRETE CHAMBER
- NO WATER LOGGED CONDITIONS - BRICKWORK CHAMBER

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	22/06/2022
B	FOR TENDER PURPOSES	RB	09/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	23/06/2022

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

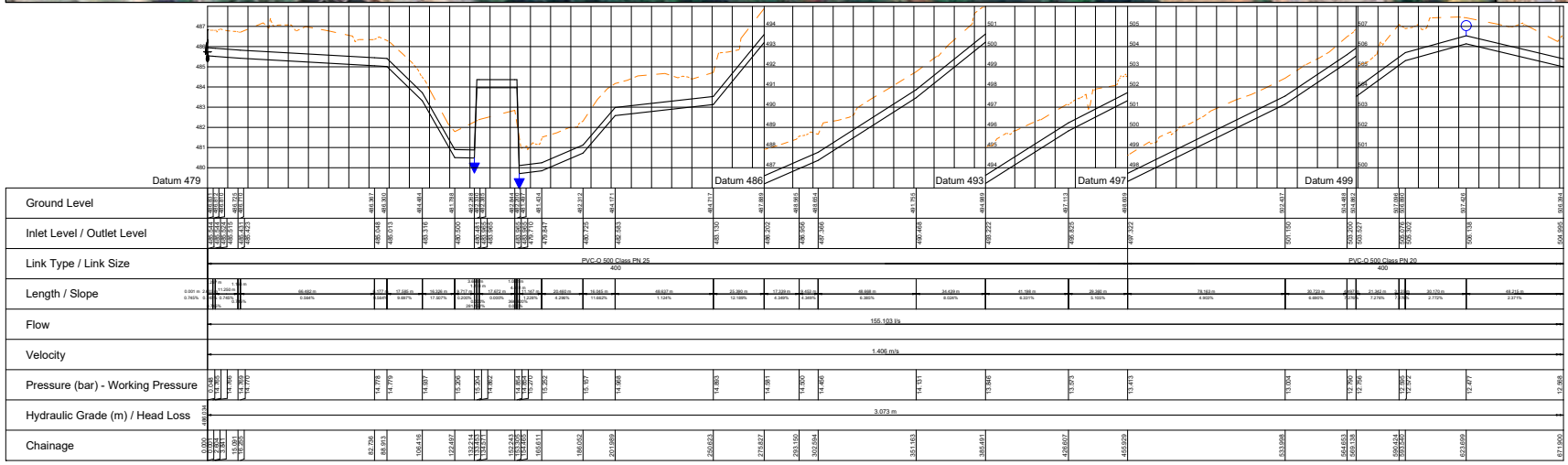
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

TEKWANE SOUTH RESERVOIR T-OFF CONNECTION DETAIL 3

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	106	B



HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

LEGEND:

	PROPOSED PIPELINE
	EXISTING PIPELINE
	ELECTRICAL POLE
	MANHOLES
	VALVES
	ELECTRICAL POWERLINE
	LIGHT POLE
SP	ROAD SIGN
	TELEPHONE POLE

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TECHNICAL REVIEWS	NJ	21/03/2023
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT:

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

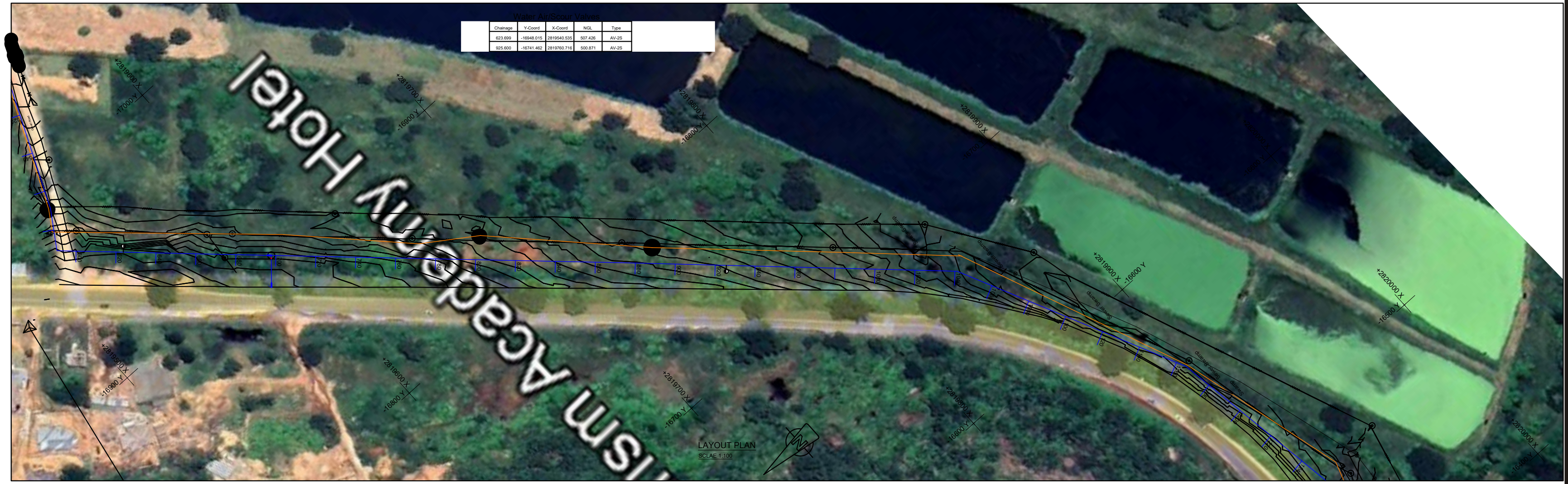
PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION
KANYAMAZANE

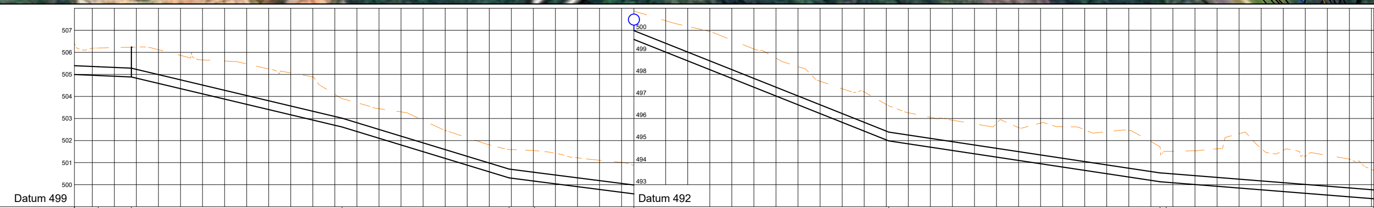
DRAWING INFORMATION

DRAWING TITLE
LONGSECTION 1

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	201	B



Chainage	Y-Coord	X-Coord	NGL	Type
623.699	-16948.015	2819540.535	507.426	AV-2S
925.600	-16741.462	2819760.716	500.871	AV-2S



Ground Level	506.394	506.194	506.231	503.902	501.594	501.544	500.871	496.572	494.723	494.436	493.650
Inlet Level / Outlet Level	504.995	504.948	504.881	502.615	500.306	500.159	499.584	494.984	493.134	493.124	492.363
Link Type / Link Size	PVC-O 500 Class PN 20 400										
Length / Slope	10.770 m 0.444%	15.076 m 0.444%	95.526 m 2.372%	75.804 m 3.047%	11.515 m 1.277%	45.075 m 1.277%	115.675 m 3.980%	122.969 m 1.505%	1.190 m 0.795%	95.765 m 0.795%	
Flow	155.103 l/s	154.270 l/s									
Velocity	1.406 m/s	1.398 m/s									
Pressure (bar)	12.568	12.568 12.568	12.568 12.568	12.750 12.750	12.944 12.944	12.953 12.953	12.991 12.991	13.393 13.393	13.522 13.523	13.523	13.557
Hydraulic Grade (m) / Head Loss	3.073 m	633.073	4.324 m								
Chainage	671.900	682.670	697.746	793.246	869.014	880.529	925.600	1041.183	1164.138	1165.328	1261.090

HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

LEGEND:

	PROPOSED PIPELINE
	EXISTING PIPELINE
	ELECTRICAL POLE
	MANHOLES
	VALVES
	ELECTRICAL POWERLINE
	LIGHT POLE
SP	ROAD SIGN
	TELEPHONE POLE

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	23/06/2022
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company
Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

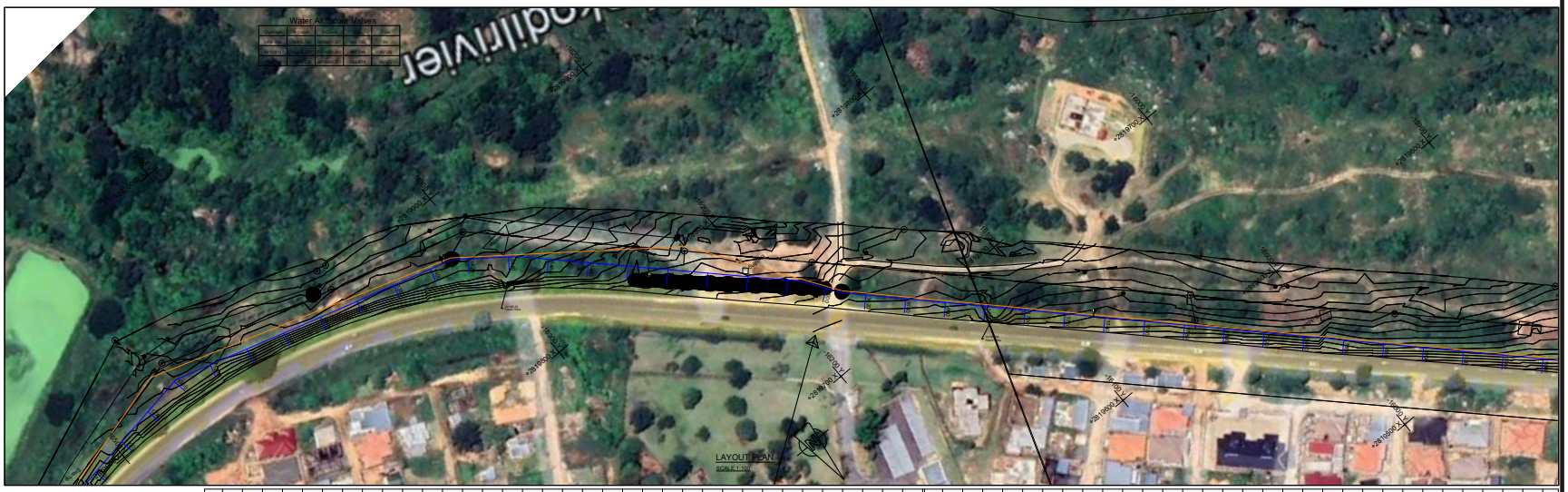
PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

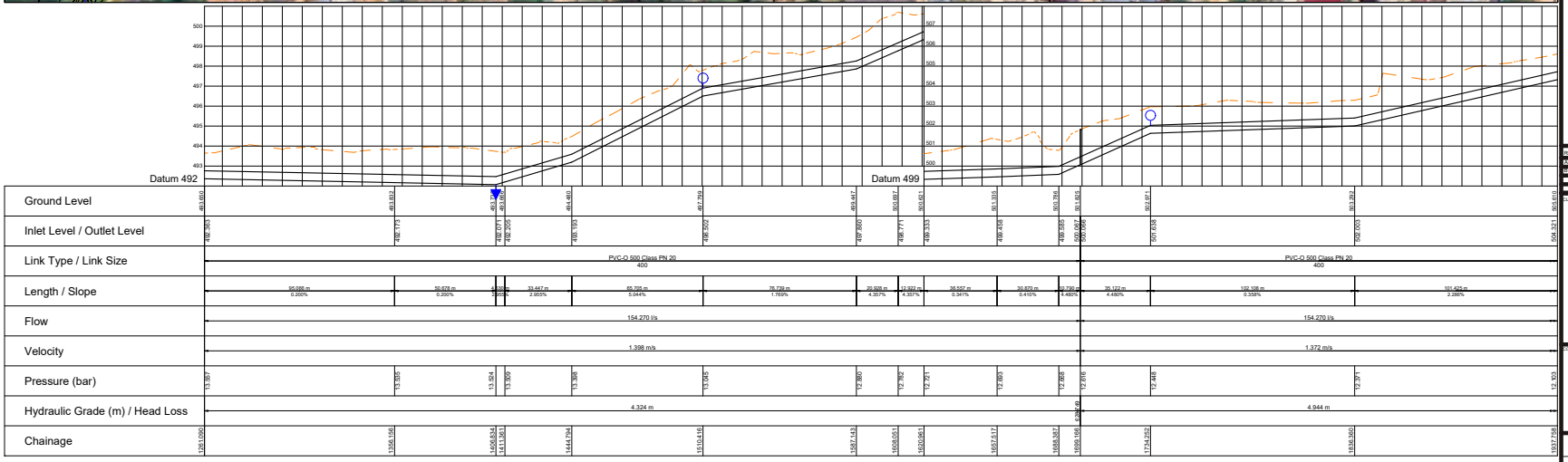
LOCATION
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE
LONGSECTION 2

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	202	B





HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

LEGEND:

	PROPOSED PIPELINE
	EXISTING PIPELINE
	ELECTRICAL POLE
	MANHOLES
	VALVES
	ELECTRICAL POWERLINE
	LIGHT POLE
SP	ROAD SIGN
	TELEPHONE POLE

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	30/03/2023
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

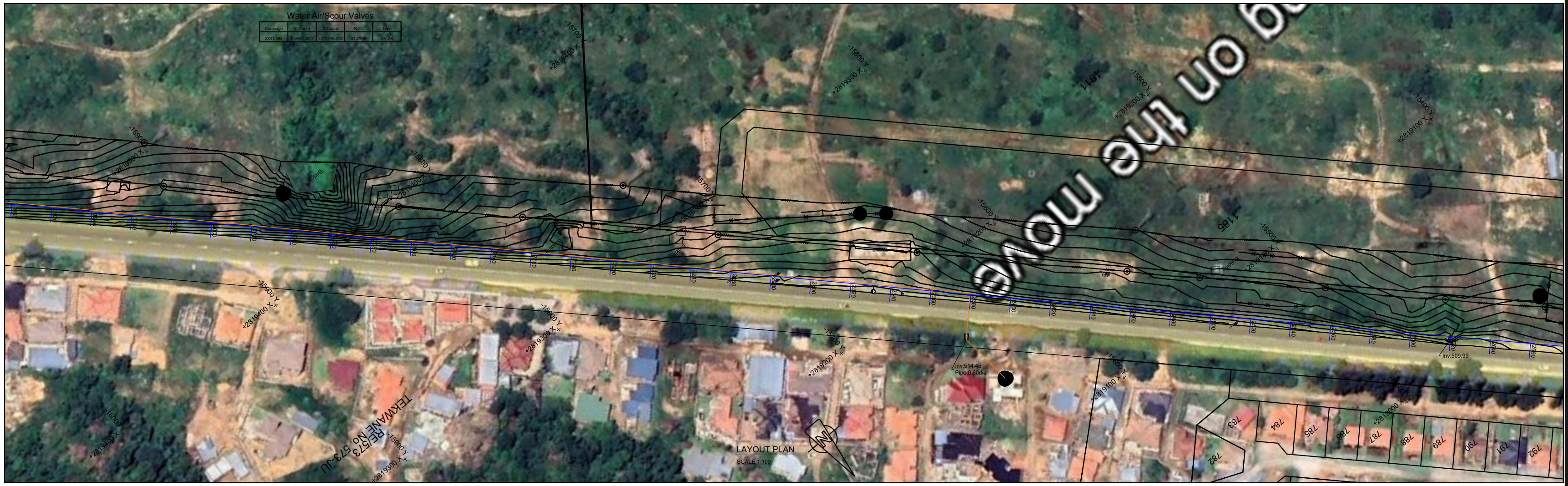
PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

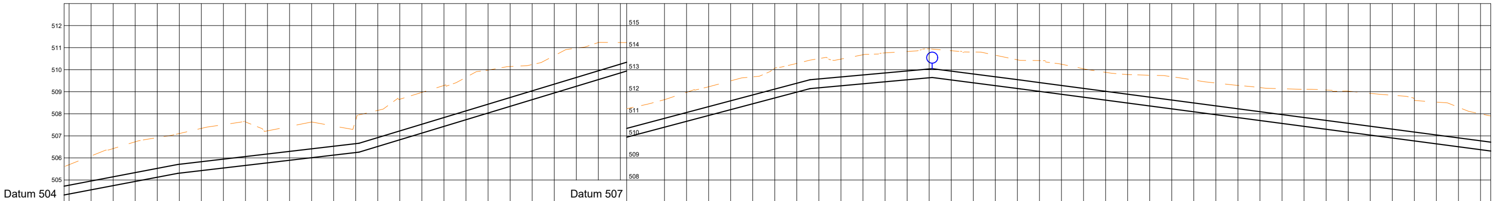
LOCATION
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE
LONGSECTION 3

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	203	B





Ground Level	505.610	507.091	507.953	511.229	513.433	513.935	513.422	513.417	510.903
Inlet Level / Outlet Level	504.321	505.302	506.264	509.939	512.144	512.645	512.133	512.023	509.314
Pressure (bar)	12.103	11.986 / 11.986	11.858 / 11.858	11.449 / 11.449	11.199 / 11.199	11.128 / 11.128	11.162 / 11.162	11.169 / 11.169	11.352
Chainage	1937.758	1989.289	2071.472	2192.864	2275.983	2331.384	2371.260	2379.588	2584.666

Length / Slope	51.541 m 1.903%	82.188 m 1.170%	121.448 m 3.028%	83.148 m 2.652%	55.403 m 0.905%	39.879 m 1.284%	8.329 m 1.321%	205.096 m 1.321%

Link Type / Link Size	PVC-O 500 Class PN 20 400
Flow	154.270 l/s
Velocity	1.372 m/s
Hydraulic Grade (m) / Head Loss	4.944 m

HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

LEGEND:

	PROPOSED PIPELINE
	EXISTING PIPELINE
	ELECTRICAL POLE
	MANHOLES
	VALVES
	ELECTRICAL POWERLINE
	LIGHT POLE
SP	ROAD SIGN
	TELEPHONE POLE

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	23/06/2022
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

LONGSECTION 4

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	204	B

LEGEND:

(blue line)	PROPOSED PIPELINE
(orange line)	EXISTING PIPELINE
(symbol)	ELECTRICAL POLE
(symbol)	MANHOLES
(symbol)	VALVES
(symbol)	ELECTRICAL POWERLINE
(symbol)	LIGHT POLE
SP	ROAD SIGN
(symbol)	TELEPHONE POLE

Ground Level	510.903, 510.202, 508.995, 508.797, 508.730, 505.892, 505.571, 505.061, 506.235, 506.160, 506.160, 505.779, 505.988, 505.873, 506.077, 506.164, 506.396, 506.667, 507.028, 507.308, 508.269, 508.172, 509.064, 510.077, 510.169, 510.876, 511.360, 512.793, 512.817, 513.451, 513.770, 513.876, 514.013, 514.285, 514.691, 514.867, 515.002, 515.806, 515.798, 516.978, 517.361, 517.810, 518.067
Inlet Level / Outlet Level	509.314, 508.613, 507.406, 507.199, 507.141, 504.603, 504.093, 503.772, 504.285, 504.285, 504.289, 504.289, 504.304, 504.321, 504.328, 504.477, 504.679, 504.851, 505.054, 505.503, 505.780, 506.550, 506.626, 507.517, 508.632, 508.675, 509.331, 509.607, 511.247, 511.277, 511.730, 512.084, 512.330, 512.621, 512.763, 513.146, 513.322, 513.456, 514.232, 514.252, 515.432, 515.903, 516.264
Link Type / Link Size	PVC-O 500 Class PN 16 / 400; PVC-O 500 Class PN 20 / 355
Length / Slope	102.664 m 0.683%; 44.084 m 2.740%; 7.960 m 2.591%; 2.268 m 2.591%; 81.060 m 3.132%; 29.998 m 1.699%; 18.911 m 1.699%; 29.404 m 1.745%; 1.832 m 0.219%; 0.002 m 0.146%; 5.891 m 0.219%; 7.347 m 0.232%; 2.970 m 0.232%; 9.291 m 1.600%; 12.678 m 1.600%; 10.691 m 1.600%; 5.612 m 3.621%; 12.428 m 3.621%; 7.638 m 3.621%; 21.293 m 3.621%; 2.100 m 3.621%; 15.703 m 5.682%; 19.649 m 5.682%; 2.098 m 2.045%; 32.098 m 2.045%; 6.676 m 4.137%; 39.695 m 4.137%; 1.316 m 2.266%; 19.974 m 2.266%; 15.621 m 2.266%; 10.883 m 2.266%; 14.137 m 2.059%; 6.897 m 2.059%; 18.594 m 2.059%; 13.894 m 1.266%; 1.365 m 9.894%; 10.866 m 7.154%; 0.286 m 7.154%; 17.198 m 6.879%; 5.665 m 8.341%; 4.346 m 8.341%; 2.841 m 8.504%
Flow	154.270 l/s; 88.200 l/s
Velocity	1.372 m/s; 0.995 m/s
Pressure (bar)	11.352, 11.380, 11.480, 11.497, 11.502, 11.718, 11.756, 11.780, 11.717, 7.628, 7.628, 7.625, 7.622, 7.620, 7.603, 7.580, 7.561, 7.539, 7.492, 7.463, 7.382, 7.374, 7.283, 7.169, 7.164, 7.092, 7.063, 6.892, 6.889, 6.839, 6.801, 6.774, 6.742, 6.726, 6.684, 6.663, 6.649, 6.571, 6.569, 6.449, 6.401, 6.340
Hydraulic Grade (m) / Head Loss	4.944 m; 623.806; 1.508 m
Chainage	2584.666, 2687.328, 2731.395, 2739.353, 2741.621, 2822.641, 2852.635, 2871.543, 2900.943, 2902.775, 2902.777, 2909.667, 2917.014, 2919.985, 2929.275, 2941.951, 2952.641, 2958.249, 2970.669, 2978.302, 2999.581, 3001.680, 3017.358, 3036.975, 3039.073, 3071.164, 3077.834, 3117.495, 3118.811, 3138.780, 3154.397, 3165.277, 3179.411, 3186.306, 3204.896, 3218.789, 3220.148, 3230.987, 3231.272, 3248.429, 3254.075, 3258.405, 3261.236

HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	23/06/2022
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCM

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

PROJECT DESCRIPTION

NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION

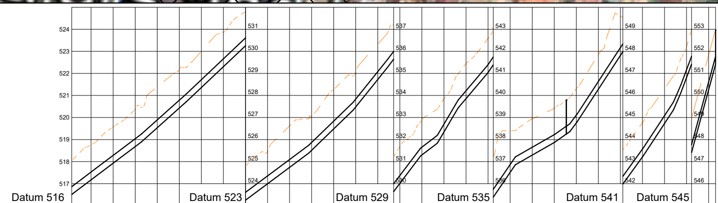
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE

LONGSECTION 5

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	205	B



Ground Level	518.067 518.115 518.547 518.878 519.495 519.663 520.345 520.452 520.449 521.913 522.248 522.253 524.795 524.800 526.589 526.938 528.361 528.876 530.817 531.205 532.638 532.802 533.372 533.452 534.977 536.573 537.111 538.402 538.417 539.421 539.435 539.794 539.796 539.901 540.305 540.366 543.738 543.526 544.804 545.460 546.886 547.152 547.676 548.198 548.962 552.958
Inlet Level / Outlet Level	516.505 516.570 516.889 517.325 517.834 518.017 518.661 518.899 518.903 520.108 520.604 520.708 523.249 523.255 524.719 525.392 526.577 527.331 529.272 529.640 531.064 531.257 531.827 531.927 533.432 535.028 535.386 536.856 536.866 537.875 [illegible] 538.249 538.250 538.355 538.758 538.820 541.447 541.980 543.258 543.830 545.340 545.682 546.129 546.798 547.415 551.412
Link Type / Link Size	PVC-O 500 Class PN 20 355 ; PVC-O 500 Class PN 16 355
Length / Slope	5.807 m 7.536% ; 6.773 m 7.536% ; 8.583 m 7.536% ; 13.507 m 8.957% ; 27.000 m 9.455% ; 19.711 m 7.449% ; 9.063 m 7.449% ; 12.293 m 9.683% ; 7.819 m 9.683% ; 15.732 m 12.434% ; 10.857 m 13.231% ; 7.554 m 7.570% ; 9.033 m 16.896% ; 13.588 m 11.844% ; 10.117 m 14.687% ; 17.663 m 5.722% ; 17.348 m 15.318% ; 9.312 m 13.859% ; 10.080 m 15.182% ; 11.589 m 36.738%
Flow	88.200 l/s ; 88.200 l/s
Velocity	0.995 m/s ; 0.986 m/s
Pressure (bar)	6.340 6.334 6.301 6.257 6.205 6.187 6.122 6.097 6.097 5.975 5.925 5.915 5.659 5.658 5.510 5.442 5.322 5.247 5.052 5.016 4.873 4.854 4.796 4.786 4.636 4.476 4.441 4.294 4.293 4.190 4.189 4.152 4.152 4.141 4.101 4.094 3.833 3.779 3.652 3.595 3.444 3.410 3.366 3.300 3.239 2.844
Hydraulic Grade (m) / Head Loss	1.508 m ; 580.596 ; 0.174 m ; 580.422
Chainage	3261.236 3261.996 3266.233 3272.024 3278.777 3281.206 3289.744 3292.908 3292.959 3306.412 3311.945 3313.106 3339.987 3340.074 3359.730 3368.768 3381.004 3388.786 3404.399 3407.180 3417.943 3419.401 3426.933 3427.525 3436.431 3449.905 3452.347 3462.356 3462.530 3480.165 3480.313 3485.485 3485.513 3487.012 3490.032 3490.497 3507.645 3511.125 3520.348 3524.112 3534.058 3535.534 3537.460 3539.971 3542.289 3553.167

HORIZONTAL SCALE: 1000
VERTICAL SCALE :100

LEGEND:

Symbol	Description
	PROPOSED PIPELINE
	EXISTING PIPELINE
	ELECTRICAL POLE
	MANHOLES
	VALVES
	ELECTRICAL POWERLINE
	LIGHT POLE
SP	ROAD SIGN
	TELEPHONE POLE

REVISION	DESCRIPTION	INITIALS	DATE
A	FOR TENDER PURPOSES	RB	23/06/2022
B	FOR TENDER PURPOSES	NJ	30/03/2023

CLIENT:

silulumanzi
A SAWW Company

Tel : 013 752 6839

CONSULTANT

SKCMasakhizwe Engineers (Pty) Ltd
CONSULTING ENGINEERS TO BUILD THE NATION
Tel : 013 591 2560

Drawn by	Checked by	Date
RB	NJ	30/03/2023

PROJECT INFORMATION

PROJECT DESCRIPTION
NEW BULK PIPELINE FROM KANYAMAZANE OLD WTW TO TEKWANE SOUTH RESERVOIR

LOCATION
KANYAMAZANE

DRAWING INFORMATION

DRAWING TITLE
LONGSECTION 6

PROJECT NUMBER	DRAWING NUMBER	REVISION
N1315	206	B