



Ugu District Municipality

MALANGENI WATER SUPPLY

CONTRACT NO. : UGU-07-1618-2022

CIDB CLASSIFICATION : 6CE OR HIGHER

**CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC
GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA
RESERVOIR, MODIFICATION OF ELECTROMECHANICAL
WORKS AND ADDITIONAL STORAGE**

COMPILED BY :



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ON BEHALF OF :

Ugu District Municipality
P O Box 33
Port Shepstone
4240
Tel: (039) 688 5700
Fax: (039) 682 4820

NAME OF TENDERER: _____

CONTACT PERSON: _____

TELEPHONE N° : _____

FAX N° : _____

ADDRESS : _____

TENDER CLOSING: FRIDAY, 02 SEPTEMBER 2022 AT 12H00

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SUMMARY FOR TENDER OPENING PURPOSES

[To facilitate the reading out of tender parameters at the opening of tenders, the tenderer shall complete this form and submit it with his tender. This form does not replace the Form of Offer, C1.1, which must be completed]

Name of Contractor submitting the tender:

Tender amount (as stated in the Form of Offer): R

Alternative Tender offered?(Yes / No)

If "Yes" state amount: R Alternative Tender No. 1

R Alternative Tender No. 2

R Alternative Tender No. 3

Details of contact person:

Name (Print):

Telephone N°: **Fax N° :**

Cell Phone:

e-mail address :

Is Form of Offer signed by Tenderer and Witnesses?(Yes / No)

SIGNATURE :

(of person authorised to sign the tender)

Note: ***In the event of conflict between the data provided in this summary and that given in the Form of Offer, C1.1, the latter shall prevail.***

T1 – TENDERING PROCEDURE

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T1: THE TENDER

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T1.1 TENDER NOTICE AND INVITATION TO TENDER

T1 – TENDERING PROCEDURE

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T1.1 TENDER NOTICE AND INVITATION TO TENDER



**CIDB CONTRACTOR GRADING
6CE or Higher**

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Contract No.: UGU-07-1618-2022

The Ugu District Municipality invites Bids for the construction of 160/200mm diameter x 2.6km uPVC gravity pipeline from Umzinto WTW to Esperanza Reservoir, Modification of Electromechanical Works And Additional Storage. The minimum specifications are detailed in the Bid Document. It is required that Bidders must have a CIDB registration of 6CE or higher. Joint ventures that satisfy the criteria stated in the Bid data are eligible to Bid.

Bid documents will be available from the Ugu District Municipality, 28 Connor Street, Port Shepstone, 4240 during office hours between 07h30am to 16h00pm from **01 August 2022 until 05 August 2022**. No documents will be distributed at the Bid clarification meeting. A non-refundable document fee of R750,00 payable in cash or by bank guaranteed cheque made out in favour of Ugu District Municipality is required on collection of the Bid documents. The bid will also be advertised on National Treasury's E Tender portal and Ugu District Municipality website and documents can be downloaded from the websites, free of charge.

Queries relating to the technical issues of these documents may be addressed to Mr Sizwe Malinga of Ugu District Municipality on Cell N° 039 682 4190 (8am – 4pm) or email at sizwe.malinga@ugu.gov.za.

A compulsory clarification meeting with representatives of the employer will take place at the Umzinto Water Works (Coordinates: 30° 19'42. 72''(south) and 30° 40'17. 11'' (east)) on **Thursday, 04 August 2022, at 10h00am. ALL COVID19 REGULATIONS WILL BE OBSERVED AT ALL TIMES.**

The closing time for receipt of Bids is not later than **(Friday) 02 September 2022 at 12h00**. Only Bids deposited in the official Bid box by the closing time and date will be accepted.

Bids, completed as prescribed, shall be sealed in an envelope marked **“CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE”** and deposited in the official Bid box in the foyer of Ugu District Municipality at 96 Marine Drive, Phase 2 Building, Oslo Beach.

Ugu District Municipality subscribes to the Preferential Procurement Regulations 2017, pertaining to the Preferential Procurement Policy Framework Act (PPPFA). The Regulation prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

Local Content Minimum Threshold, functionality, Price and Preference will be used for evaluation. The 80/20 preferential point system will be applicable, with 80 points for price and 20 points for B-BBEE Status Level, in terms of revised Preferential Procurement Regulation in effect from 01 April 2017, Gazette Notice No. 40553 dated 20 January 2017.

Minimum points of 60% must be obtained for eligibility. Bids scoring below 60 % will not be evaluated further. The following will form criteria utilised for functionality assessment:

1. Experience of Key Personnel – Site Agent and Foreman
2. Experience of Bidder (Applicable to Past 5 years)
3. Schedule of Plant and Equipment
4. Quality Assurance Plan and Control Procedures
5. Financial Capacity

T1 – TENDERING PROCEDURE

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Preferential Points to be allocated as follows:

B-BBEE Status Level of Contributor	Number of Points (N _p) 80/20 System
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-Compliant Contributor	0

Bidders shall take **note** of the following Bid conditions:

- *Ugu District Municipality does not bind itself to accept the lowest or any Bid.*
- *Bids submitted are to remain valid for **90** days from the closing date for submission of Bids.*

NB: Regulation 44 of Municipal Supply Chain Management Regulations states that the Municipality may not make any award to a person who is in the service of the state.

Dr EMS Ntombela
Acting Municipal Manager
Ugu District Municipality

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T1.2 TENDER DATA

T1 – TENDERING PROCEDURE

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T1.2 TENDER DATA

GENERAL

The Conditions of Tender are the Standard Conditions of Tender as contained in Annex F of SANS 294, the CIDB Standard for Uniformity in Construction Procurement, as printed in Board Notice 136 of 2015 in the Government Gazette No. 38960 of 2015 dated 10 July 2015.

The Standard Conditions of Tender make several references to the Tender Data for details that specifically apply 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 consideration

The Tender Data hereafter shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Each item of Tender Data given below is cross-referenced to the relevant clause in the Standard Conditions of Tender.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender.

F.1.1 Actions

The Employer for this Contract is:

Ugu District Municipality
P O Box 33
PORT SHEPSTONE
4240

Telephone N° : 039 688 5700
Fax N° : 039 682 4820

F.1.2 Tender Documents

(a) **The Tender Document, comprising two volumes,** consists of the following:

VOLUME 1

THE TENDER

T1: Tendering Procedures

- T1.1: Tender Notice and Invitation to Tender
- T1.2: Tender Data

T2: Returnable Documents

- T2.1: List of Returnable Documents
- T2.2: Returnable schedules and documents

THE CONTRACT

Part 1: Agreements and Contract Data

- C1.1: Form of Offer and Acceptance
- C1.2: Confirmation of Receipt
- C1.3: Contract Data
- C1.4: Form of Guarantee

Part 2: Pricing Data

- C2.1: Pricing Instructions
- C2.2: Bill of Quantities

Part 3: Scope of Work

- C3.1: Description of the Works
- C3.2: Engineering
- C3.3: Procurement
- C3.4: Construction
- C3.5: Management
- C3.6: Standard Specifications
- C3.7: Project Specifications (Variations to Standard Specifications)

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C3.8: Particular Specifications

Part 4: Site Information

- C4.1: Geotechnical
- C4.2: Atmospheric/Climatic
- C4.3: Environmental
- C4.4: Locality Plan
- C4.5: Nameboard Drawing

VOLUME 2

THE DRAWINGS

- (b) The tender documents issued by the Employer comprise the documents listed on the contents page.
- (c) “General Conditions of Contract for Construction Works – 3rd Edition 2015” 3rd Print edition issued by the South African Institution of Civil Engineering (Short title “General Conditions of Contract 2015” or “GCC 2015”). This document is obtainable separately, and Tenderers shall obtain their own copies.
- (d) “SANS 1200 – STANDARDISED SPECIFICATION for CIVIL ENGINEERING CONSTRUCTION”. This document is obtainable separately, and Tenderers shall obtain their own copies.
- (e) The Ugu District Municipality's Supply Chain Management Policy in terms of Section III of the Local Government Municipality Finance Management Act (Act N° 56 of 2003).

In addition, Tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations, and standards referred to in this document as they are essential for the Tenderer to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies, and the participation of targeted enterprise and labour.

- The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations 2014 (Government Gazette No 37305 of 7 February 2014, Notice No R84).
- The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Notice No 692 of 9 June 2004 and No 464 of 2 July 2013.
- The Preferential Procurement Policy Framework Act No 5 of 2000, and the Preferential Procurement Policy Framework Act Regulations (2011).
- SANS 1921:2004 – Construction and Management Requirements for Works Contract, Parts 1 to 3.

SANS 1914:2003 - Targeted Construction Procurement, Parts 1 to 6

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F.1.4 Communication and Employer

The Employer's Agent is:

Name : Ugu District Municipality
Address : P.O. Box 33, PORT SHEPSTONE, 4240
Telephone Number : 039 688 5700
Fax : 086 577 2602
E-mail address : sizwe.malinga@ugu.gov.za

All communication between the Tenderer and the Employer shall be addressed to Mr Sizwe Malinga of Ugu District Municipality.

F.2.1 Eligibility

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.

The following tenders who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to submit tenders:

- (a) contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 6CE or Higher class of construction work; and
- (b) Joint ventures are eligible to submit tenders 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 work
 - 3. The combined contractor grading designation calculated in accordance with the Construction Industry Board Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for 6CE or Higher class of construction or a value determined in accordance Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.

F.2.7 Site visit and clarification meeting

The arrangements for the clarification meeting and site inspection, which is compulsory for this tender, are as follows:

Location : Umzinto Water Works (Coordinates: 30° 19'42. 72''(south) and 30° 40'17. 11'' (east))
Date : 04 August 2022
Starting time : 10h00

Tenderers must sign the Attendance Register in the name of the tendering entity. ISSUING OF ADDENDA will be to tenderers appearing on the Attendance Register.

F.2.12 Alternative tender offers

If a tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements, the details of which may be obtained from the Employer's Agent.

Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in

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the development of the pricing proposal.

Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements.

The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs in confirming the acceptability of the detailed design.

F.2.13 Submitting a Tender Offer

F.2.13.3 Tender offers shall be submitted as an original only.

F.2.13.5 Delivery of Tender

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 : Foyer of the Ugu District Municipality

Physical address : 96 Marine Drive, Phase 2 Building, Oslo Beach

Identification details : Contract No.: UGU-07-1618-2022: CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

F.2.15.1 Closing Time

The closing time for submission of Tender Offers is: **Friday, 02 September 2022 at 12h00.**

Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.

F.2.16.1 Tender offer validity

The Tender Offer validity period is **90 days** from the closing time for submission of tenders.

F.2.23 Certificates

The Tenderer is required to submit with his tender:

- (a) Copies of company registration documents.
- (b) An original valid Tax Clearance issued by the South African Revenue Services.
- (c) VAT Registration Certificate.
- (d) Workmen's Compensation Registration Certificate (or Proof of Payment of contributions in terms of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993).

F.3.4 Opening of Tender Submissions

The time and location for opening of tender offers are:

Time : 12h00

Date : 02 September 2022

**Location : Ugu District Municipality
96 Marine Drive, Phase 2 Building, Oslo Beach**

F.3.5 Two-envelope system

The two-envelope system will NOT be followed for this contract.

F.3.11 Evaluation of Tender Offers

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Assessment of functionality or quality will be done separately from the 80/20 and 90/10 principles.

There will be two stages in the evaluation of such bids:

- The first stage will be the assessment of functionality through the use of any rating criteria determined by Ugu District Municipality, wherein the bidders with sufficient experience and technical capacity will be selected to move to the stage. The determination of elimination threshold will depend on the nature of service required and criteria preferred.
- The second stage will be the assessment and evaluation of bidders in terms of 90/10 or 80/20 where the 90 or 80 points shall be used for pricing scores only, and the 10 or 20 used for BEE status only as envisaged by the act.

Only tenderers scoring 60 points or more for the functionality scorecard included in Section N in T2.2.1 will be accepted for evaluation.

The Quality criteria and maximum score in respect of each criteria are as follows:

6. Experience of Key Personnel – Site Agent 20 points
7. Experience of Key Personnel - Foreman 10 points
8. Relevant Experience in the Past 5 years 30 points
9. Schedule of Plant and Equipment 20 points
10. Quality Assurance Plan and Control Procedures 10 points
11. Financial Capacity 10 points
12. Total possible points.....100 points

$$\text{Tenderer's score} = \frac{\text{Tenderer's Points Scored} \times 100}{\text{Total possible points (100)}}$$

Key Criteria Aspect	Basis for Points Allocation	Score	Verification Method
Contractors Personnel (Site Agent)	Site Agent with 10 relevant years' experience and N. Dip Civil Engineering qualification	20	Certified qualification certificates, and CVs of ALL key personnel must be attached and are required to claim any points. CERTIFICATION ON DOCUMENTS MUST NOT BE OLDER THAN 3 MONTHS. CERTIFICATION OF A PREVIOUSLY CERTIFIED DOCUMENT WILL NOT BE ACCEPTED.
	Site Agent with 5-10 years relevant experience with N. Dip Engineering qualification	15	
	Site Agent with 2-5 years relevant experience and N. Dip Civil Engineering qualification	10	
	Site Agent with 1 year relevant experience with N. Dip Engineering qualification	5	
	No response	0	
Contractors Personnel (Forman)	Forman with 5 years relevant experience and Matric Certificate	10	A COPY OF A PREVIOUSLY CERTIFIED DOCUMENT WILL NOT BE ACCEPTED. FAILURE TO CERTIFY WILL RESULT IN ZERO POINTS.
	Forman with 3 years' relevant experience and Matric Certificate	5	
	No response	0	
Company's Relevant Experience in the Past 5 years (Water Pipelines) Schedule of work carried out by Tenderer	5 Completed projects	30	Letter(s) of Award and Completion Certificate Letter of Appointment and Certificate of Completion or Reference Letter of the same project completed must be attached and are required to claim points. POINTS WILL ONLY BE GIVEN FOR EACH PROJECT WERE THE TENDERER HAS SUBMITTED ALL THE REQUIRED DOCUMENTS
	4 Completed projects	24	
	3 Completed projects	18	
	2 Completed projects	12	

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(Reference name and contact details required) NB: Further diligence may be done on subcontracted contracts	1 Completed project	6	
	No response	0	
Schedule of Plant and Equipment	Tenderer to submit proof of ownership or access to the following plant:	20	To claim points tenderers must submit proof of ownership or access to the required plant and equipment which will be verified as follows; i. Logbook in the name of the tenderer issued by the relevant authority if plant is owned; ii. Certified copy of logbook in the name of the financial institution through which the tenderer has bought plant via an instalment sale. iii. Bidder shall provide a letter/Agreement from a registered Plant Hire Company indicating the list of plant to be hired for the duration of this contract. Such letter shall be qualified before the Commissioner of Oaths. Plant Hire will be allocated half-points. The logbooks copy (Certified) of all plant to be leased must be included with tender submission.
	Excavator	8	
	TLB	5	
	Water Tanker	4	
	2 LDV's	3	
Quality Control Plan	GOOD: Quality Control Plan adequately addresses the following; - Resources, - Programme of works showing applicable and sequencing indicating certificate path of construction activities - Required tests	10	Quality Plan i. Indicate Critical Path ii. Indicate applicable Activities FAILURE TO SUBMIT PLAN WILL RESULT IN NO POINTS BEING AWARDED
	ACCEPTABLE: Quality Control Plan addresses all three of the headings above.	10	
	FAIR: Quality Control Plan addresses two of the headings above.	6	
	POOR: Quality Control Plan addresses one of the headings above.	3	
	No submission: Quality Control Plan is not related to the required information or is not submitted.	0	
Financial Capacity	Undoubted for the amount of your enquiry (A)	10	Stamped Rating Letter by bank where account is held. Note: To get full points the rating must be for the contractor's offer.
	Good for tender (B)	8	
	Good for the amount of tender enquiry, if strictly in the way of business (C)	6	
	Fair trade risk for the amount of enquiry (D)	4	
	Tender amount considered too high (E)	1	
	Financial position unknown (F)	0	
Total Score		100	

NB: Bidders are required to submit supporting documents to score full points

Tenderers that score less than 60% of the total score allowed for Functionality will NOT be considered further.

F.3.11.3 Method 2: Financial Offer and Preference

Evaluation of Tender Offers will be by Method 2: Financial Offer and Preferences:

W₁ will be 90 points

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N_P (maximum) will be 10 points

The formula to be used for calculating the value of A shall be Formula 2 Option 1.

F.3.11.8 Scoring preferences

Points for preference will be scored as set out in Returnable Documents T2.2.1 Section O. The tenderer is to complete this Section to claim points for B-BBEE Status Level.

F.3.13 Acceptance of Tender Offer

F.3.13.1 Tender Offers will only be accepted if:

- (a) the tenderer has in his or her possession an original valid Tax Clearance Certificate issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations
- (b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation, by tender closing date;
- (c) the tenderer is not in arrears for more than 3 months with the municipal rates and taxes and municipal services charges;
- (d) the tenderer or any of its directors 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;
- (e) the tenderer has not abused the Employer's Supply Chain Management System;
- (f) has completed the Compulsory Enterprise Questionnaires and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interest of the employer or potentially compromise the tender process;
- (g) the tenderer has fully completed and signed the form of offer;
- (h) the tenderer has completed the schedule of quantities in full. Items against which no price is entered are to be considered as incomplete and will invalidate the tender. Items against which **N/A, left blank or –** is entered are to be considered as incomplete and will invalidate the tender. Items against which NIL or zero (0) is entered are to be considered to be fully prized and the tenderer will provide the items in question as specified at **zero (0) or NIL price**;
- (i) the tenderer has not failed to perform on any previous contract and has been given a written notice to this effect.

F.3.18 Copies of contract

The number of paper copies of the signed contract to be provided by Ugu District Municipality is **one original plus one original copy**.

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T1: THE TENDER

T1.1:	Tender Notice and Invitation to Tender	TP2
T1.2:	Tender Data	TP4

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO
ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

T1.1 TENDER NOTICE AND INVITATION TO TENDER

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

T1.1 TENDER NOTICE AND INVITATION TO TENDER



**CIDB CONTRACTOR GRADING
6CE or Higher**

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Contract No.: UGU-07-1618-2022

The Ugu District Municipality invites Bids for the construction of 160/200mm diameter x 2.6km uPVC gravity pipeline from Umzinto WTW to Esperanza Reservoir, Modification of Electromechanical Works And Additional Storage. The minimum specifications are detailed in the Bid Document. It is required that Bidders must have a CIDB registration of 6CE or higher. Joint ventures that satisfy the criteria stated in the Bid data are eligible to Bid.

Bid documents will be available from the Ugu District Municipality, 28 Connor Street, Port Shepstone, 4240 during office hours between 07h30am to 16h00pm from **01 August 2022 until 05 August 2022**. No documents will be distributed at the Bid clarification meeting. A non-refundable document fee of R750,00 payable in cash or by bank guaranteed cheque made out in favour of Ugu District Municipality is required on collection of the Bid documents. The bid will also be advertised on National Treasury's E Tender portal and Ugu District Municipality website and documents can be downloaded from the websites, free of charge.

Queries relating to the technical issues of these documents may be addressed to Mr Sizwe Malinga of Ugu District Municipality on Cell N° 039 682 4190 (8am – 4pm) or email at sizwe.malinga@ugu.gov.za.

A compulsory clarification meeting with representatives of the employer will take place at the Umzinto Water Works (Coordinates: 30° 19'42. 72''(south) and 30° 40'17. 11'' (east)) on **Thursday, 04 August 2022, at 10h00am. ALL COVID19 REGULATIONS WILL BE OBSERVED AT ALL TIMES.**

The closing time for receipt of Bids is not later than **(Friday) 02 September 2022 at 12h00**. Only Bids deposited in the official Bid box by the closing time and date will be accepted.

Bids, completed as prescribed, shall be sealed in an envelope marked **“CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE”** and deposited in the official Bid box in the foyer of Ugu District Municipality at 96 Marine Drive, Phase 2 Building, Oslo Beach.

Ugu District Municipality subscribes to the Preferential Procurement Regulations 2017, pertaining to the Preferential Procurement Policy Framework Act (PPPFA). The Regulation prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

Local Content Minimum Threshold, functionality, Price and Preference will be used for evaluation. The 80/20 preferential point system will be applicable, with 80 points for price and 20 points for B-BBEE Status Level, in terms of revised Preferential Procurement Regulation in effect from 01 April 2017, Gazette Notice No. 40553 dated 20 January 2017.

Minimum points of 60% must be obtained for eligibility. Bids scoring below 60 % will not be evaluated further. The following will form criteria utilised for functionality assessment:

1. Experience of Key Personnel – Site Agent and Foreman
2. Experience of Bidder (Applicable to Past 5 years)
3. Schedule of Plant and Equipment
4. Quality Assurance Plan and Control Procedures
5. Financial Capacity

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Preferential Points to be allocated as follows:

B-BBEE Status Level of Contributor	Number of Points (N _p) 80/20 System
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-Compliant Contributor	0

Bidders shall take **note** of the following Bid conditions:

- *Ugu District Municipality does not bind itself to accept the lowest or any Bid.*
- *Bids submitted are to remain valid for **90** days from the closing date for submission of Bids.*

NB: Regulation 44 of Municipal Supply Chain Management Regulations states that the Municipality may not make any award to a person who is in the service of the state.

Dr EMS Ntombela
Acting Municipal Manager
Ugu District Municipality

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO
ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

T1.2 TENDER DATA

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

T1.2 TENDER DATA

GENERAL

The Conditions of Tender are the Standard Conditions of Tender as contained in Annex F of SANS 294, the CIDB Standard for Uniformity in Construction Procurement, as printed in Board Notice 136 of 2015 in the Government Gazette No. 38960 of 2015 dated 10 July 2015.

The Standard Conditions of Tender make several references to the Tender Data for details that specifically apply 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 consideration

The Tender Data hereafter shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Each item of Tender Data given below is cross-referenced to the relevant clause in the Standard Conditions of Tender.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender.

F.1.1 Actions

The Employer for this Contract is:

Ugu District Municipality
P O Box 33
PORT SHEPSTONE
4240

Telephone N° : 039 688 5700

Fax N° : 039 682 4820

F.1.2 Tender Documents

(a) **The Tender Document, comprising two volumes, consists of the following:**

VOLUME 1

THE TENDER

T1: Tendering Procedures

T1.1: Tender Notice and Invitation to Tender

T1.2: Tender Data

T2: Returnable Documents

T2.1: List of Returnable Documents

T2.2: Returnable schedules and documents

THE CONTRACT

Part 1: Agreements and Contract Data

C1.1: Form of Offer and Acceptance

C1.2: Confirmation of Receipt

C1.3: Contract Data

C1.4: Form of Guarantee

Part 2: Pricing Data

C2.1: Pricing Instructions

C2.2: Bill of Quantities

Part 3: Scope of Work

C3.1: Description of the Works

C3.2: Engineering

C3.3: Procurement

C3.4: Construction

C3.5: Management

C3.6: Standard Specifications

C3.7: Project Specifications (Variations to Standard Specifications)

T1 – TENDERING PROCEDURE

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CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C3.8: Particular Specifications

Part 4: Site Information

- C4.1: Geotechnical
- C4.2: Atmospheric/Climatic
- C4.3: Environmental
- C4.4: Locality Plan
- C4.5: Nameboard Drawing

VOLUME 2

THE DRAWINGS

- (b) The tender documents issued by the Employer comprise the documents listed on the contents page.
- (c) “General Conditions of Contract for Construction Works – 3rd Edition 2015” 3rd Print edition issued by the South African Institution of Civil Engineering (Short title “General Conditions of Contract 2015” or “GCC 2015”). This document is obtainable separately, and Tenderers shall obtain their own copies.
- (d) “SANS 1200 – STANDARDISED SPECIFICATION for CIVIL ENGINEERING CONSTRUCTION”. This document is obtainable separately, and Tenderers shall obtain their own copies.
- (e) The Ugu District Municipality’s Supply Chain Management Policy in terms of Section III of the Local Government Municipality Finance Management Act (Act N° 56 of 2003).

In addition, Tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations, and standards referred to in this document as they are essential for the Tenderer to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies, and the participation of targeted enterprise and labour.

- The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations 2014 (Government Gazette No 37305 of 7 February 2014, Notice No R84).
- The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Notice No 692 of 9 June 2004 and No 464 of 2 July 2013.
- The Preferential Procurement Policy Framework Act No 5 of 2000, and the Preferential Procurement Policy Framework Act Regulations (2011).
- SANS 1921:2004 – Construction and Management Requirements for Works Contract, Parts 1 to 3.

SANS 1914:2003 - Targeted Construction Procurement, Parts 1 to 6

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

F.1.4 Communication and Employer

The Employer's Agent is:

Name : Ugu District Municipality
Address : P.O. Box 33, PORT SHEPSTONE, 4240
Telephone Number : 039 688 5700
Fax : 086 577 2602
E-mail address : sizwe.malinga@ugu.gov.za

All communication between the Tenderer and the Employer shall be addressed to Mr Sizwe Malinga of Ugu District Municipality.

F.2.1 Eligibility

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.

The following tenders who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to submit tenders:

- (a) contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 6CE or Higher class of construction work; and
- (b) Joint ventures are eligible to submit tenders 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 work
 - 3. The combined contractor grading designation calculated in accordance with the Construction Industry Board Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for 6CE or Higher class of construction or a value determined in accordance Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.

F.2.7 Site visit and clarification meeting

The arrangements for the clarification meeting and site inspection, which is compulsory for this tender, are as follows:

Location : Umzinto Water Works (Coordinates: 30° 19'42. 72''(south) and 30° 40'17. 11'' (east))
Date : 04 August 2022
Starting time : 10h00

Tenderers must sign the Attendance Register in the name of the tendering entity. ISSUING OF ADDENDA will be to tenderers appearing on the Attendance Register.

F.2.12 Alternative tender offers

If a tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements, the details of which may be obtained from the Employer's Agent.

Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

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the development of the pricing proposal.

Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements.

The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs in confirming the acceptability of the detailed design.

F.2.13 Submitting a Tender Offer

F.2.13.3 Tender offers shall be submitted as an original only.

F.2.13.5 Delivery of Tender

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 : Foyer of the Ugu District Municipality

Physical address : 96 Marine Drive, Phase 2 Building, Oslo Beach

Identification details : Contract No.: UGU-07-1618-2022: CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

F.2.15.1 Closing Time

The closing time for submission of Tender Offers is: **Friday, 02 September 2022 at 12h00.**

Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.

F.2.16.1 Tender offer validity

The Tender Offer validity period is 90 **days** from the closing time for submission of tenders.

F.2.23 Certificates

The Tenderer is required to submit with his tender:

- (a) Copies of company registration documents.
- (b) An original valid Tax Clearance issued by the South African Revenue Services.
- (c) VAT Registration Certificate.
- (d) Workmen's Compensation Registration Certificate (or Proof of Payment of contributions in terms of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993).

F.3.4 Opening of Tender Submissions

The time and location for opening of tender offers are:

Time : 12h00

Date : 02 September 2022

**Location : Ugu District Municipality
96 Marine Drive, Phase 2 Building, Oslo Beach**

F.3.5 Two-envelope system

The two-envelope system will NOT be followed for this contract.

F.3.11 Evaluation of Tender Offers

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Assessment of functionality or quality will be done separately from the 80/20 and 90/10 principles.

There will be two stages in the evaluation of such bids:

- The first stage will be the assessment of functionality through the use of any rating criteria determined by Ugu District Municipality, wherein the bidders with sufficient experience and technical capacity will be selected to move to the stage. The determination of elimination threshold will depend on the nature of service required and criteria preferred.
- The second stage will be the assessment and evaluation of bidders in terms of 90/10 or 80/20 where the 90 or 80 points shall be used for pricing scores only, and the 10 or 20 used for BEE status only as envisaged by the act.

Only tenderers scoring 60 points or more for the functionality scorecard included in Section N in T2.2.1 will be accepted for evaluation.

The Quality criteria and maximum score in respect of each criteria are as follows:

6. Experience of Key Personnel – Site Agent	20 points
7. Experience of Key Personnel - Foreman	10 points
8. Relevant Experience in the Past 5 years	30 points
9. Schedule of Plant and Equipment	20 points
10. Quality Assurance Plan and Control Procedures	10 points
11. Financial Capacity	10 points
12. Total possible points.....	100 points

$$\text{Tenderer's score} = \frac{\text{Tenderer's Points Scored} \times 100}{\text{Total possible points (100)}}$$

Key Criteria Aspect	Basis for Points Allocation	Score	Verification Method
Contractors Personnel (Site Agent)	Site Agent with 10 relevant years' experience and N. Dip Civil Engineering qualification	20	Certified qualification certificates, and CVs of ALL key personnel must be attached and are required to claim any points. CERTIFICATION ON DOCUMENTS MUST NOT BE OLDER THAN 3 MONTHS. CERTIFICATION OF A PREVIOUSLY CERTIFIED DOCUMENT WILL NOT BE ACCEPTED.
	Site Agent with 5-10 years relevant experience with N. Dip Engineering qualification	15	
	Site Agent with 2-5 years relevant experience and N. Dip Civil Engineering qualification	10	
	Site Agent with 1 year relevant experience with N. Dip Engineering qualification	5	
	No response	0	
Contractors Personnel (Forman)	Forman with 5 years relevant experience and Matric Certificate	10	A COPY OF A PREVIOUSLY CERTIFIED DOCUMENT WILL NOT BE ACCEPTED. FAILURE TO CERTIFY WILL RESULT IN ZERO POINTS.
	Forman with 3 years' relevant experience and Matric Certificate	5	
	No response	0	
Company's Relevant Experience in the Past 5 years (Water Pipelines) Schedule of work carried out by Tenderer	5 Completed projects	30	Letter(s) of Award and Completion Certificate Letter of Appointment and Certificate of Completion or Reference Letter of the same project completed must be attached and are required to claim points. POINTS WILL ONLY BE GIVEN FOR EACH PROJECT WERE THE TENDERER HAS SUBMITTED ALL THE REQUIRED DOCUMENTS
	4 Completed projects	24	
	3 Completed projects	18	
	2 Completed projects	12	

T1 – TENDERING PROCEDURE

MALANGENI WATER SUPPLY

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(Reference name and contact details required) NB: Further diligence may be done on subcontracted contracts	1 Completed project	6	
	No response	0	
Schedule of Plant and Equipment	Tenderer to submit proof of ownership or access to the following plant:	20	To claim points tenderers must submit proof of ownership or access to the required plant and equipment which will be verified as follows; i. Logbook in the name of the tenderer issued by the relevant authority if plant is owned; ii. Certified copy of logbook in the name of the financial institution through which the tenderer has bought plant via an instalment sale. iii. Bidder shall provide a letter/Agreement from a registered Plant Hire Company indicating the list of plant to be hired for the duration of this contract. Such letter shall be qualified before the Commissioner of Oaths. Plant Hire will be allocated half-points. The logbooks copy (Certified) of all plant to be leased must be included with tender submission.
	Excavator	8	
	TLB	5	
	Water Tanker	4	
	2 LDV's	3	
Quality Control Plan	GOOD: Quality Control Plan adequately addresses the following; - Resources, - Programme of works showing applicable and sequencing indicating certificate path of construction activities - Required tests	10	Quality Plan i. Indicate Critical Path ii. Indicate applicable Activities FAILURE TO SUBMIT PLAN WILL RESULT IN NO POINTS BEING AWARDED
	ACCEPTABLE: Quality Control Plan addresses all three of the headings above.	10	
	FAIR: Quality Control Plan addresses two of the headings above.	6	
	POOR: Quality Control Plan addresses one of the headings above.	3	
	No submission: Quality Control Plan is not related to the required information or is not submitted.	0	
Financial Capacity	Undoubted for the amount of your enquiry (A)	10	Stamped Rating Letter by bank where account is held. Note: To get full points the rating must be for the contractor's offer.
	Good for tender (B)	8	
	Good for the amount of tender enquiry, if strictly in the way of business (C)	6	
	Fair trade risk for the amount of enquiry (D)	4	
	Tender amount considered too high (E)	1	
	Financial position unknown (F)	0	
Total Score		100	

NB: Bidders are required to submit supporting documents to score full points

Tenderers that score less than 60% of the total score allowed for Functionality will NOT be considered further.

F.3.11.3 Method 2: Financial Offer and Preference

Evaluation of Tender Offers will be by Method 2: Financial Offer and Preferences:

W₁ will be 90 points

T1 – TENDERING PROCEDURE

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N_P (maximum) will be 10 points

The formula to be used for calculating the value of A shall be Formula 2 Option 1.

F.3.11.8 Scoring preferences

Points for preference will be scored as set out in Returnable Documents T2.2.1 Section O. The tenderer is to complete this Section to claim points for B-BBEE Status Level.

F.3.13 Acceptance of Tender Offer

F.3.13.1 Tender Offers will only be accepted if:

- (a) the tenderer has in his or her possession an original valid Tax Clearance Certificate issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations
- (b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation, by tender closing date;
- (c) the tenderer is not in arrears for more than 3 months with the municipal rates and taxes and municipal services charges;
- (d) the tenderer or any of its directors 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;
- (e) the tenderer has not abused the Employer's Supply Chain Management System;
- (f) has completed the Compulsory Enterprise Questionnaires and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interest of the employer or potentially compromise the tender process;
- (g) the tenderer has fully completed and signed the form of offer;
- (h) the tenderer has completed the schedule of quantities in full. Items against which no price is entered are to be considered as incomplete and will invalidate the tender. Items against which **N/A, left blank or –** is entered are to be considered as incomplete and will invalidate the tender. Items against which NIL or zero (0) is entered are to be considered to be fully prized and the tenderer will provide the items in question as specified at **zero (0) or NIL price**;
- (i) the tenderer has not failed to perform on any previous contract and has been given a written notice to this effect.

F.3.18 Copies of contract

The number of paper copies of the signed contract to be provided by Ugu District Municipality is **one original plus one original copy**.

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO
WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

THE CONTRACT

C1: AGREEMENTS AND CONTRACT DATA

C2: PRICING DATA

C3: SCOPE OF WORK

C4: SITE INFORMATION

C1: CONTRACT

MALANGENI WATER SUPPLY

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C1: AGREEMENTS AND CONTRACT DATA

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C1.3: Contract Data	C9
C1.4: Adjudicator's Certificates.....	C16
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C1.6: Agreement in Terms of the OHS Act N° 85 of 1993	C25

C1: CONTRACT

MALANGENI WATER SUPPLY

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C1.1: FORM OF OFFER AND ACCEPTANCE

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.1 FORM OF OFFER AND ACCEPTANCE

(Agreement)

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

Contract UGU-07-1618-2022: Construction of 160/200mm Diameter X 2.6KM uPVC Gravity Pipeline From Umzinto WTW to Esperanza Reservoir, Modification of Electromechanical Works And Additional Storage

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, 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 VALUE ADDED TAX IS

.....

.....Rand (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 the Conditions of Contract identified in the Contract Data.

For the Tenderer:

.....
Signature

.....
Name

.....
Capacity

Name and address of *organisation*):

.....
.....
.....

Signature and name of witness:

.....
Signature

.....
Name

.....
Date

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Acceptance

By signing this part of the 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 1 Agreement, and Contract Data, (which include this Agreement)
- Part 2 Pricing Data
- Part 3 Scope of Work
- Part 4 Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto 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, which must be duly signed by the authorised representative(s) of both parties.

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 other 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 fulfill 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 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

.....
Name

.....
Capacity

Name and address of *organisation*):

.....
.....
.....

Signature and name of witness:

.....
Signature

.....
Name

.....
Date

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender,
2. A Tenderer's covering shall not be included in the final contract document. Should any matter in such, letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of, offer and acceptance, the outcome of such agreement shall be recorded here,
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here,
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract,

1. Subject:

Details:

2. Subject:

Details:

By the duly authorised representatives signing this Schedule of Deviations, 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 Tender Schedules, as well as any confirmation, clarification or change 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:

For the Employer

Signature.....

Signature

Name

Name

Capacity

Capacity

Name and address of organisation

Name and address of organisation

.....

.....

.....

.....

.....

.....

Witness Signature.....

Witness Signature.....

Witness Name.....

Witness Name.....

Date.....

Date

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.2: CONFIRMATION OF RECEIPT

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.2: CONFIRMATION OF RECEIPT

The Tenderer, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

The (day) of (month) 20..... (year)

at (place)

For the Contractor:

.....

Signature

.....

Name

.....

Capacity

Signature and name of witness:

.....

Signature

.....

Name

.....

Date

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.3: CONTRACT DATA

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C1: CONTRACT

MALANGENI WATER SUPPLY

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C.1.3 CONTRACT DATA

C1.3.1 PART 1: DATA PROVIDED BY THE EMPLOYER

CONDITIONS OF CONTRACT

The Conditions of Contract are

- the “General Conditions of Contract” as they appear in the commercially-available publication “*General Conditions of Contract for Construction Works, Third Edition (2015)*”, published by the South African Institution of Civil Engineering (SAICE) as the May 2019, 3rd Print edition, hereinafter referred to as GCC 2015, and
- specific data as contained in this Contract Data.

Each party to the Contract shall purchase its own copy of the publication “General Conditions of Contract for Construction Works, Second Edition, 2010” together with all official corrigenda and errata issued up to the Base Date of this Contract. These are available from:

South African Institution of Civil Engineering
Private Bag X200
Halfway House 1685
South Africa
Tel +27 (0)11 805 5947

All of the following Notes apply:

NOTES

Note 1

The GCC 2015 makes several references to the Contract Data. The Contract Data shall take precedence over the GCC 2015 in the interpretation of any ambiguity or inconsistency.

Note 2

Each item of data below is cross-referenced to the clause in the GCC 2015 to which it applies.

Note 3

The documents forming the Contract are to be taken as mutually explanatory of one another.

Note 4

Certain pro-forma forms contained in the GCC 2015 have been adapted for this particular contract. Those pro-forma forms contained in the GCC 2015 do not apply where replaced by similar pro-forma forms and pro-forma agreements in this document.

CONTRACT-SPECIFIC DATA

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

The following contract-specific data, referring to the General Conditions of Contract, are applicable to this Contract:

Compulsory Data:

Clause	Data
1.1.1.13	The Defects Liability Period is 12 Months which period includes the special non-working days.
1.1.1.14	The time for practical completion is 20 weeks.
1.1.1.15	The name of the Employer is Ugu District Municipality

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Clause	Data														
1.1.1.26/27	The Pricing Strategy of a Re-measurement Contract shall apply														
1.2.1.2	The address of the Employer is: Physical address: 96 Marine Drive OSLO BEACH 4240 Postal address: P O Box 33 PORT SHEPSTONE 4240 Contact numbers: Tel. : 039 688 5700 Fax : 039 682 4820														
1.1.1.16	The name of the Employer's Agent is WNA Consulting (Pty) Ltd, represented by a registered Professional Engineer who will be appointed in writing on or before the Commencement Date.														
1.2.1.2	The address of the Employer's Agent is: Physical address: Office No. 50 South The Tydes SHELLY BEACH 4265 Postal address: P O Box 831 UVONGO 4270 e-mail address : office@wnace.com Contact numbers: Tel : 039 315 0750 Mobile : 082 925 5944 Fax : 086 577 2602														
3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before carrying out any of his functions or duties according to the following Clauses of the General Conditions of Contract: <table border="1"> <thead> <tr> <th>GCC Clause N°</th><th>Description</th></tr> </thead> <tbody> <tr> <td>4.10.1</td><td>Use of Site for Contractor's employees</td></tr> <tr> <td>5.7.3</td><td>Payment for acceleration</td></tr> <tr> <td>5.11.3</td><td>Proceeding with Works after suspension</td></tr> <tr> <td>5.12.4</td><td>Acceleration instead of extension of time</td></tr> <tr> <td>5.13.2</td><td>Reduction in penalty</td></tr> <tr> <td>9.1.5</td><td>Termination of Contract</td></tr> </tbody> </table>	GCC Clause N°	Description	4.10.1	Use of Site for Contractor's employees	5.7.3	Payment for acceleration	5.11.3	Proceeding with Works after suspension	5.12.4	Acceleration instead of extension of time	5.13.2	Reduction in penalty	9.1.5	Termination of Contract
GCC Clause N°	Description														
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5.13.2	Reduction in penalty														
9.1.5	Termination of Contract														

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Clause	Data
5.3.1	The documentation required to be submitted by the Contractor to the Employer's Agent before commencing with the works are: Health and Safety Plan (Refer to Clause 4.3), including: - A signed Agreement between the Employer and the Contractor for the Works to be completed by the Contractor in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act (Act No.85 of 1993) and the Construction Regulations promulgated thereunder (Refer to Clause 4.3) - Proof to the Employer, of payment, that the Contractor has paid all contributions required in terms of the Compensation for Occupational Injuries and Diseases Act, No. 130 of 1993 (Refer to Clause 4.3). Initial programme (Refer to Clause 5.6.1) Security (Refer to Clause 6.2) Insurances (Refer to Clause 8.6)
5.3.2	The time to submit the documentation required before commencement with Works execution is 14 days.
5.4.2	The access and possession of Site shall not be exclusive to the Contractor.
5.8.1	The non-working Days are Saturdays and Sundays The special non-working Days are: Any statutory public holiday in terms of the Public Holidays Act, and, where such a statutory public holiday falls on a Sunday, and the next Monday subsequently becomes a statutory public holiday in terms of the Public Holidays Act, then the relevant Monday will be a special non-working day and the preceding Sunday will be deemed to be a normal non-working day; and any proclaimed statutory day of mourning which is proclaimed as a statutory public holiday and any proclaimed statutory election day which is proclaimed as a statutory public holiday and all annual year-end shutdown periods as recommended by the South African Bargaining Council for the Civil Engineering Industry.
5.13.1	The penalty for failing to complete the Works is R1 000.00 per Day
5.14.1	The Works will not be deemed to have achieved Practical Completion until the Contractor has, inter alia, fully tested and commissioned the Works in the presence of the Employer's Agent and, where applicable, a representative of the Employer.
5.16.3	The latent defect period is 10 years, commencing on the Day after the date of certification of Completion

C1: CONTRACT

MALANGENI WATER SUPPLY

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Clause	Data
6.8.2	The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Factor with the values stated below: The value of the Contract Price Adjustment Factor shall be calculated to 4 decimal places. The value of "x" is 0.15. The values of the coefficients are: a = 0.15 b = 0.20 c = 0.55 d = 0.10 <i>The descriptions of the "L", "P", "M" and "F" indices in the Contract Price Adjustment Schedule shall be replaced with the following, which shall apply to this contract:</i> ' "L" is the "Labour Index" and shall be the Consumer Price Index for the Province in which the Site is located, as stated in the Contract Data, and as published in the Statistical News Release, P0141, Table A "Consumer Price Index: Main indices; Geographic indices" of Statistics South Africa, or as otherwise amended after the Commencement Date by Statistics South Africa to another suitable equivalent index to be applied to the contract and which takes effect on a specific date, subject to written agreement between the Contractor and Employer. The province in which the Site is located shall be KwaZulu Natal, as listed in the Statistical Release P0141, Table A "Consumer Price Index: Main indices; Geographic indices" of Statistics South Africa (which shall apply to the "Labour Index") "P" is the "Construction Equipment Index" and shall be the Producer Price Index applicable to the appropriate Construction Equipment as stated in the Contract Data and as published in the Statistical Release P0151.1, Table 4 "Mining and construction plant and equipment price index" of Statistics South Africa, or as otherwise amended after the Commencement Date by Statistics South Africa to another suitable equivalent index to be applied to the contract and which takes effect on a specific date, subject to written agreement between the Contractor and Employer. The Construction Equipment shall be, as listed in Statistical Release P0151.1, Table 4 "Mining and construction plant and equipment price index" of Statistics South Africa (which shall apply to the "Construction Equipment Index"). "M" is the "Materials Index" and shall be the Producer Price Index applicable to the appropriate materials as stated in the Contract Data and as published in the Statistical Release P0151.1, Table 6 "Civil engineering material price indices" of Statistics South Africa, or as otherwise amended after the Commencement Date by Statistics South Africa to another suitable equivalent index to be applied to the contract and which takes effect on a specific date, subject to written agreement between the Contractor and Employer. "F" is the "Fuel Index" and shall be the Producer Price Index for Diesel as stated in the Contract Data and as published in the Statistical News Release P0142.1, Table 1 of Statistics South Africa, or as otherwise amended after the Commencement Date by Statistics South Africa to another suitable equivalent index to be applied to the contract and which takes effect on a specific date, subject to written agreement between the Contractor and Employer.' Diesel shall be as listed in the Statistical Release P0142.1, Table 1 "PPI for final manufactured goods" of Statistics South Africa (which shall apply to the "Fuel Index"). Only Plant manufactured in South Africa will be subject to cost escalation. The base month is one month prior to tender closing.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%. Proof of ownership is required.
6.10.3	The percentage retention is 10%. The limit of retention money is 5% of the value of the Contract Price.

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MALANGENI WATER SUPPLY

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Clause	Data
8.6.1.1.2	The value of Plant and materials supplied by the Employer to be included in the insurance sum is Nil.
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is 14% of construction costs.
8.6.1.3	The limit of indemnity for liability insurance is R5,000,000.00 for any single claim. The number of claims during the construction and Defects Liability Periods shall be unlimited.
10.5.1	Dispute resolution shall be by standing Adjudication Board.
10.5.3	The number of Adjudication Board Members to be appointed is one.
10.7.1	The determination of disputes shall be by arbitration.

Variations to the General Conditions of Contract applicable to this contract:

1.1.1	Definitions <i>Add the following new sub-clause 1.1.1.35:</i> “ ‘Construction Work Permit’ means a document issued in terms of Regulation 3 of the Construction Regulations 2014.”
3.2.4	Employer's Agent for Health and Safety <i>Replace Clause 3.2.4 with the following:</i> ‘In terms of Clause 1.3.2, all parties to the Contract shall be subject to the relevant requirements of the Construction Regulations 2014 (as amended) of the Occupational Health and Safety Act, Act 85 of 1993 (as amended).’ <i>Add the following at the end of the above new replacement Clause 3.2.4:</i> ‘Where the Employer is obliged to appoint an Employer's Agent for Health and Safety in terms of the Construction Regulations 2014 (as amended) of the Occupational Health and Safety Act (Act 85 of 1993 as amended), and where such Employer's Agent for Health and Safety has complied with the registration requirements of a Construction Health and Safety Agent as a specified category in terms of section 18 (1) (c) of the Project and Construction Management Professions Act (Act 48 of 2000), the applicable clauses of the latest edition of the “Standard Scope Of Services for Construction Health and Safety Agents registered In terms of Section 18(1)(c) of the Project And Construction Management Professions Act (Act No. 48 Of 2000)”, including Clauses: 2.2.5 “STAGE 5 - CONSTRUCTION DOCUMENTATION AND MANAGEMENT”, and 2.2.6 “STAGE 6 - PROJECT CLOSE – OUT”, and 2.2.7 “ADDITIONAL RELATED SERVICES”, as published in “Registration Rules for Construction Health and Safety Agents in Terms of Section 18 (1) (c) of the Project and Construction Management Professions Act, 2000 (Act No. 48 of 2000)” by the South African Council for Construction and Project Management Professionals in terms of the Project and Construction Management Professions Act (Act 48 of 2000 as amended), shall be subject to all communication and other protocols as stipulated by the Employer's Agent, unless otherwise accorded by law.’
5.7.2	Night Work <i>Amend Clause 5.7.2 as follows:</i> <i>Delete the second paragraph and substitute with the following :</i> ‘In such an event, the additional costs incurred, by acceding to the Contractor's request, shall be deducted from the amount payable to the Contractor.’
5.14.5.1	Consequences of Completion <i>Amend Clause 5.14.5.1 as follows:</i> <i>In the second line, substitute the word ‘Guarantor’ with ‘Contractor’.</i>

C1: CONTRACT

MALANGENI WATER SUPPLY

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6.2.1	Performance Guarantee "Expiry Date" means the date of issue of the Certificate of Completion.
6.9.3	Identification of Plant and materials <i>Add the following at the end of Sub-Clause 6.9.3:</i> Storage of Plant In consideration of receiving, from the Employer, payment on account, after the deduction of retention monies, in respect of items of Plant stored at the Contractor's workshop or his suppliers' premises or his other storage facilities, the Contractor shall complete a Certificate of Indemnity subject to the approval of the Employer's Agent. In so doing the Contractor: (a) acknowledges that the items of Plant are the sole property of, and are held on behalf of, the Employer; (b) indemnifies the Employer against any loss or damage whatsoever of or to the said items of Plant whilst in the Contractor's possession or in transit; (c) undertakes to deliver and install, at the site, the said Plant when required by the Employer and/or by the Contractor in accordance with the contractual requirements; (d) undertakes that no payment has been received, in respect of the said items of Plant, from any other source including his/her clients or employers and that the Employer has prior claim to the value of payments so received for same, prior to all others, and/or from any assets of the Contractor's company; and (e) undertakes to act in accordance with such instructions as received from the Employer, through its officers, to protect the interests of the Employer. Payment for Plant stored at the Contractor's workshop or his suppliers' premises or his other storage facilities, shall be at the sole discretion of the Employer's Agent and the Employer's Agent reserves the right to amend the requirements of the standard Certificate of Indemnity should it be deemed necessary or desirable to protect the Employer's interests.
6.10.6	Set-off and delayed payments <i>Amend Clause 6.10.6.2 as follows:</i> <i>Delete the words 'Contractor's Bank' and substitute with the words 'Employer's Bank'</i>
8.3.1	Excepted risks <i>Amend Clause 8.3.1.12 as follows:</i> <i>In the second line, delete the words 'Employer or any of their' and substitute with 'or any of its'.</i>

Additional clauses to the General Conditions of Contract applicable to this contract:

Clause	Data
1.1	Definitions <i>Add the following at the end of Sub-Clause 1.1.1:</i>
1.1.1.34	"Client", as used in the Occupational Health and Safety Act and its Construction Regulations, means Employer.
1.1.1.35	"Principal Contractor", as used in the Occupational Health and Safety Act - Construction Regulations, means Contractor.

C1.3.2 PART 2: DATA PROVIDED BY THE CONTRACTOR

C1: CONTRACT

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The *General Conditions of Contract*, as specified in Part 1, shall be used as a basis for this Data which is required to be completed.

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

Clause	Data
1.1.1.9	The Name of the Contractor is _____
1.2.1.2	The address of the Contractor is: Physical address: _____ _____ _____ _____ _____ Postal address: _____ _____ _____ _____ _____ e-mail address: _____ Contact numbers: Tel: _____ Mobile: _____ Fax: _____

C1: CONTRACT

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Clause	Data														
6.2.1	The security to be provided by the Contractor shall be one of the following: <table> <tr> <th>Type of Security</th><th>Contractor's Choice (Indicate "YES" or "NO")</th></tr> <tr> <td><i>Is Value Added Tax included in the Contract Sum and value of Works for calculating percentages?</i></td><td></td></tr> <tr> <td>Cash deposit of 10 % of the Contract Sum</td><td></td></tr> <tr> <td>Performance Guarantee of 10% of the Contract Sum</td><td></td></tr> <tr> <td>Retention of 10% of the value of Works</td><td></td></tr> <tr> <td>Cash Deposit of 10% of the Contract Sum plus Retention of 10% of the value of Works</td><td></td></tr> <tr> <td>Performance Guarantee of 10% of the Contract Sum plus Retention of 10% of the value of Works</td><td></td></tr> </table>	Type of Security	Contractor's Choice (Indicate "YES" or "NO")	<i>Is Value Added Tax included in the Contract Sum and value of Works for calculating percentages?</i>		Cash deposit of 10 % of the Contract Sum		Performance Guarantee of 10% of the Contract Sum		Retention of 10% of the value of Works		Cash Deposit of 10% of the Contract Sum plus Retention of 10% of the value of Works		Performance Guarantee of 10% of the Contract Sum plus Retention of 10% of the value of Works	
Type of Security	Contractor's Choice (Indicate "YES" or "NO")														
<i>Is Value Added Tax included in the Contract Sum and value of Works for calculating percentages?</i>															
Cash deposit of 10 % of the Contract Sum															
Performance Guarantee of 10% of the Contract Sum															
Retention of 10% of the value of Works															
Cash Deposit of 10% of the Contract Sum plus Retention of 10% of the value of Works															
Performance Guarantee of 10% of the Contract Sum plus Retention of 10% of the value of Works															
6.5.1.2.3	The percentage allowance to cover overhead charges is _____														

Signature.....

Date.....

(of person authorised to sign on behalf of the Tenderer)

C1.3.3 PART 3: CORRIGENDA TO GCC 2015 BY SAICE

All updates, errata, corrections and other amendments to GCC 2015 published or prepared and released to purchasers of the GCC 2015 publication by SAICE, either on their website or otherwise, prior to the base month of this Contract, shall be deemed to form part of GCC 2015.

Each party to the Contract shall purchase its own copy of such updates, errata, corrections and other amendments to GCC 2015.

C1.3.4 PART 4: CORRIGENDA TO GCC 2015 BY THE EMPLOYER

None.

C1: CONTRACT

MALANGENI WATER SUPPLY

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C1.4: ADJUDICATOR'S CERTIFICATES

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MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.4.1 Disclosure Statement

Please note that words in italics within brackets are items which should be stated

Date:

.....

Contract: (Name):

.....

Contractor: (Name)

.....

Employer: (Name)

.....

Employer's Agent: (Name)

.....

Dear Sirs

I am willing and available to serve as standing Adjudication Board Member in the above-mentioned Contract.

In accordance with the General Conditions of Contract for Construction Works' Adjudication Board Rules relating to disclosure statements by selected or nominated persons to the adjudication, I hereby state that:

- I shall act with complete impartiality and know of nothing at this time, which could affect my impartiality.
- I have had no previous involvement with this project.
- I do not have any financial interest in this project.
- I am not currently employed by the Contractor, Employer or Employer's Agent.
- I do not have any financial connections with the Contractor, Employer or Employer's Agent.
- I do not have or have not had a personal relationship with any authoritative member of the Contractor, Employer or the Employer's Agent which could affect my impartiality.
- I undertake to immediately disclose to the parties any changes in the above position which could affect my impartiality or be perceived to affect same.

I further declare that I am experienced in the work which is carried out under the Contract and in interpreting contract documentation.

Name in full:

.....

Signature:

.....

C1: CONTRACT

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C1.4.2 ADJUDICATOR AGREEMENT AND DISCLAIMER Adjudicator Board Member Agreement

This Agreement is entered into between:

Adjudication Board Member:

Name:

Physical address:

.....

.....

Postal address:.....

.....

.....

E-mail address:

Fax Number:.....

Telephone Number:

Mobile Number:

Contractor:

Name:

Physical address:

.....

.....

Postal address:.....

.....

.....

E-mail address:

Fax Number:.....

Telephone Number:

Mobile Number:

Employer:

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MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

Name:

Physical address:

.....

.....

Postal address:.....

.....

.....

E-mail address:

Fax Number:.....

Telephone Number:

Mobile Number:

The Contractor and the Employer will hereinafter be collectively referred to as the Parties.

The Parties entered into a Contract for
which provides that a dispute under or in connection with the General Conditions of Contract for Construction Works, Third Edition (2015) must be referred to standing adjudication.

The undersigned natural person has been appointed to serve as Adjudication Board Member and together with the undersigned Parties agree as follows:

1. The Adjudication Board Member accepts to perform his duties in accordance with the terms of the Contract, the General Conditions of Contract for Construction Works' Adjudication Board Rules and this Agreement.
2. The Adjudicator undertakes to remain independent and impartial of the Contractor, Employer and Employer's Agent for the duration of the Adjudication Board proceedings.
3. The Adjudication Board Member agrees to serve for the duration of the Adjudication Board proceedings.
4. The Parties may at any time, without cause and with immediate effect, jointly terminate this Agreement.
5. Unless the Parties agree, the Adjudication Board Member shall not act as arbitrator or representative of either Party in any subsequent proceedings between the Parties under the Contract. No Party may call the Adjudication Board Member as a witness in any such subsequent proceedings.
6. The standing Adjudication Board's duties shall end upon the Adjudication Board Member(s) receiving notice from the Parties of their joint decision to disband the Adjudication Board.
7. The Adjudication Board Member shall be paid in respect of time spent upon or in connection with the adjudication including time spent traveling:

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- 7.1 A monthly retainer of R..... for months, and/or
- 7.2 A daily fee of R..... based on a hour day, and/or
- 7.3 An hourly fee of R....., and/or
- 7.4 A non-recurrent appointment fee of R..... which shall be accounted for in the final sums payable.

- 8. The Adjudication Board Member's expenses incurred in adjudication work shall be reimbursed at cost

On submission of an invoice for fees and expenses to the Parties, the Parties shall pay the full amount within 28 days of receipt of the invoice. Late payment of such invoice shall attract interest at prime plus 3% points compounded monthly at the prime rate charged by the Adjudication Board Member's bank.

This Agreement is entered into by

Contractor's signature:

Contractor's name:

Place:

Date:

Employer's signature:

Employer's name:

Place:

Date:

Adjudication Board Member's signature:

Adjudication Board Member's name:

Place:

Date:

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C1.5: PERFORMANCE GUARANTEE

C1: CONTRACT

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C1.3 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:

Type of Performance Guarantee: Variable [OR Fixed]

“**Expiry Date**” means:[Insert Date] or any other later date set by Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Works as defined in the Contract.

1. VARIABLE PERFORMANCE GUARANTEE

1.1 Where a Variable Performance Guarantee has been selected, the Guarantor's liability shall be limited during the following periods to diminishing amounts of the Guaranteed Sum as follows:

1.1.1 From and including the date of signing the Performance Guarantee up to and including the date of the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum:

R

(Amount in words)

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- 1.1.2 From the day following the date of the said interim payment certificate 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, whichever occurs first:

R

(Amount in words)

- 1.2 The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum, has been issued and the date on which the Certificate of Completion of the Works has been issued.

2. FIXED PERFORMANCE GUARANTEE

- 2.1 Where a Fixed Performance Guarantee has been selected, the Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
- 2.2. 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.
- 2.3. 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. CONDITIONS APPLICABLE TO VARIABLE AND FIXED PERFORMANCE GUARANTEES

- 3.1. The Guarantor hereby acknowledges that:
- 3.1.1 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;
- 3.1.2 its obligation under this Performance Guarantee is restricted to the payment of money.
- 3.2. Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 3.2.1 to 3.2.3:
- 3.2.1 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 3.2.2;
- 3.2.2 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 3.2.1 and the sum certified has still not been paid;
- 3.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment

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in terms of the Contract of the sum certified in 3.2.

- 3.3. Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, 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:
- 3.3.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 3.3; or
- 3.3.2 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 3.3; and
- 3.3.3 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.
- 3.4. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 3.2 and 3.3 shall not exceed the Guarantor's maximum liability in terms of 1.1 or 2.1.
- 3.5. Where the Guarantor has made payment in terms of 3.3, 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.
- 3.6 Payment by the Guarantor in terms of 3.2 or 3.3 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
- 3.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.
- 3.8 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.
- 3.9 The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
- 3.10 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 1.1.2 or 2.2, 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.
- 3.11 This Performance Guarantee, with the required demand notices in terms of 3.2 or 3.3, shall be regarded as a liquid document for the purposes of obtaining a court order.
- 3.12 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

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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 Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

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C2: PRICING DATA

C2.1: PRICING INSTRUCTIONS

C2.2: BILL OF QUANTITIES

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C2.1 PRICING INSTRUCTIONS

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1.0 GENERAL

The Contractor's attention is drawn to the Conditions of Contract, to the Specification and the Tender Drawings, all of which are to be read in conjunction with the Schedule of Quantities.

2.0 STANDARD SYSTEM

The Schedule of Quantities shall be interpreted in accordance with the method of measurement set out in the Specifications except where variations are implied by the omission of items or by the actual wording of the items in the Schedule of Quantities.

The quantities in the Schedule of Quantities are provisional. The Works as executed will be measured for payment in accordance with the Schedule of Quantities and under the items set forth therein, notwithstanding any custom to the contrary.

In the event of any item to be measured not being reasonably covered by the above Schedule, then the Standard Method of Measurement described in Clause 6.7 of the General Conditions of Contract (2010) shall apply and the appropriate rate shall be negotiated between the Engineer and the Contractor.

3.0 MEASUREMENT

Measurement shall be made of the finished work from the net dimensions or masses indicated in the drawings, and no allowance has been made, or will be made for waste.

4.0 PRICES INCLUSIVE

Prices and rates to be inserted in the Schedule of Quantities are to be the full inclusive value of the Work described under the several items. The items shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, laps, patterns, models and templates, labour, plant, fuel, hiring costs, temporary works, return of packings, safety precautions, overheads, on-costs, establishment charges, profit and all other costs and expenses which may be required in and for the construction of the work described together with all risks, liabilities and obligations arising out of the Conditions of Contract or implied in the Documents on which the Tender is to be based. Where special risks, liabilities and obligations cannot be dealt with as above, then the price thereof is to be separately stated in the item provided for the purpose.

5.0 SPECIFICATIONS AND DESCRIPTIONS

Descriptions in the Schedule of Quantities are abbreviated and all Specification Clauses shall be read and deemed to apply to the items described in this Schedule of Quantities which are to be priced accordingly.

In the event of any Clause in the preceding Specifications being in conflict with any description and/or amplification thereof in the Schedule of Quantities the former shall prevail, and the Project Specification shall take precedence over the General Specification.

Directions and description of work and material given in the Specification are not necessarily repeated in the Schedule of Quantities. Reference is to be made to the Conditions of Contract, Specification and other relevant documents for this information. While references may be given in the Schedule, such references are not necessarily complete.

6.0 COMPLETION OF SCHEDULE OF QUANTITIES

- a) Price or rate shall be entered against each item where provision is made for such pricing in the Schedule of Quantities whether quantities are stated or not and no two or more items can be bracketed together for a single price or rate as this will invalidate the tender. Items against which **N/A, left blank or –** is entered are to be considered as incomplete and will invalidate the tender. Items against which **NIL or zero (0)** is entered are to be considered to be fully priced and the tenderer will provide the items in question as specified at zero (0) or NIL price.

The Schedule of Quantities shall be completed in full in black ink.

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7.0 METHOD OF MEASUREMENT

Quantities have generally been measured in accordance with SABS 1200 Standard Specifications where applicable and where not applicable then generally in accordance with the Sixth Edition (including amendments) of the Standard System of Measuring Builder's Work as issued by the Association of South African Quantity Surveyors unless otherwise stated herein.

7.1 Demolitions

- 7.1.1 All rates shall include for breaking up and removing from Site to a dump selected by the Contractor or delivery of materials to the Employer's Stores on Site where specified.

7.2 Structural Steelwork and Metalwork

- 7.2.1 Structural steel is generally measured in metric tonnes and quantities are generally rounded off to two decimal places.

- 7.2.1.1 Masses of steelwork shall be calculated in accordance with the mass list issued by the South African Institute of Steel Construction – Structural Steel Tables current at enquiry dates and no allowance has or shall be made for rolling margins, binding wire or waste.

- 7.2.1.2 Should the mass of the steel actually used in the Works vary in any way from the above mass list, the variance shall be for the Contractor's account and the listed masses shall be strictly adhered to in all calculations affecting the mass of steel. The Contractor shall allow for rolling margins, a weld, shop bolts, etc., in the rates and not by a percentage addition to the mass.

- 7.2.1.3 All bolts, nuts and washers for site bolting of structural steelwork shall be calculated on the basis of 1,5% of the mass calculation of bolted items and costed at the rates applicable to the respective bolted items. No deduction shall be made for bolt holes and notches on rolled section only.

- 7.2.2 Rates for structural steelwork and metalwork shall include:

- 7.2.2.1 Fabrication, weld metal, all holes, shop bolts, rolling margins and waste, all fittings and connections included in the measured mass, all shims, laminated packs, wedges, comb shims, etc., and for shop preparation and shop painting of all surfaces or hot dip galvanising as required.

- 7.2.2.2 Temporary propping and bracing of steelwork during erection.

- 7.2.2.3 Priming before delivery and touching up primer or touching up galvanising with "Zinc Galv. 6" or other approved cold galvanising compound.

- 7.2.2.4 Rates for angles, frames, sleeves, bolts, inserts and other sundry metalwork shall include for casting into concrete unless otherwise specified.

- 7.2.2.5 Rates for gratings shall include for banding around perimeter.

- 7.2.2.6 Rates for hand and knee rails shall include for closed ends, angles, ramps, stanchions, etc.

7.3 Plumbing and Drainage

- 7.3.1 Rates for pipes shall include if not allowed for in the schedule of quantities:

- 7.3.1.1 Bending pipes, jointing pipes of differing materials, jointing to taps, valves, traps, etc.

- 7.3.1.2 Nipples, sockets, collars, couplets, etc., concerned.

- 7.3.1.3 Supports, clips, saddles, holder bats, etc.

- 7.3.1.4 Fittings for pipes not exceeding 28mm diameter.

- 7.3.1.5 Excavation, selected fills blanket and main fill.

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7.4 Painting

- 7.4.1 Painting to all work, including isolated components, sundry metalwork items, pipes, gutters, etc., shall be measured in m2 unless otherwise described in the items.
- 7.4.2 Painting to structural steel shall be measured in tonnes.
- 7.4.3 Painting to handrails shall be measured to the actual length of hand rail and not individual components.
- 7.4.4 Narrow widths have been measured and added to the quantities for the associated major items.

7.5 Terms Used

In this Schedule of Quantities the following expressions shall have the meanings hereinafter assigned to them unless otherwise described in the items concerned:-

- (i) "ALLOW" Where the word "allow" is used in any item of the Schedule of Quantities the sum entered by the Contractor is at his risk and shall cover all costs and charges in respect of the work referred to during the period of the Contract.
- (ii) "PROVIDE" Where the word "provide" is used and a sum has been inserted by the Engineer to cover the cost of any particular item of work, the sum so entered shall be dealt with in accordance with the provisions of the General Conditions of Contract.
- (iii) "BUDGETARY ALLOWANCE" Where the word "budgetary allowance" is used, the sum inserted by the Engineer to cover the cost of the particular item of work will be omitted during the Contract and the work will be measured in accordance with the procedure set out in the Schedule of Quantities and valued at the rates contained in the priced Schedule of Quantities for similar work.

8.0 APPROVED, DIRECTED OR SELECTED

- 8.1 The words "approved", "directed" or "selected" refer to the approval, direction or selection of the Engineer.

9.0 TRADE NAMES, PROPRIETARY BRANDS, ETC

All materials, fittings, furnishings, etc., specified under a Trade Name, Proprietary Brand or Catalogue Reference, shall be:

- 9.1 Used in strict accordance with the Manufacturer's latest printed instructions.
- 9.2 Either exactly as described or of equal quality, weight or specification and approved by the Engineer.

The Contractor shall first obtain written approval from the Engineer before goods are placed on order from a source of supply other than is specified herein. Such approval shall not be unreasonably withheld.

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10.0 MATERIALS AND WORKMANSHIP

All materials shall be the best of their respective kinds specified and the workmanship shall be the standard defined for the trade tests required for such work and to the approval of the Engineer.

In all cases the materials and workmanship shall be in accordance with the latest edition of the relevant South African Bureau of Standards (SABS) or if not defined therein the British Standard Specification (BSS) or Code of Practice (BSCP) unless otherwise specified.

11.0 PRICING INSTRUCTIONS

11.1 The Conditions of Contract, the Contract Data, the Specifications (including the Project Specifications) and the Drawings shall be read in conjunction with the Bill of Quantities.

11.2 The Bill 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 Bill, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Bill. Clause 8 of each Standardized Specification, and the measurement and payment clause of each Particular Specification, read together with the relevant clauses of the Project Specifications, all set out which ancillary or associated activities are included in the rates for the specified operations

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

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

11.5 The amounts and rates to be inserted in the Bill 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.

11.6 An amount or rate shall be entered against each item in the Bill 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 Bill.

The Tenderer shall also fill in a rate against the items where the words "rate only" appear in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the tendered rates shall apply should work under these items actually be required.

Should the Tenderer group a number of items together and tender one sum for such group of items, the single tendered sum shall apply to that group of items 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.

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

- 11.7 The quantities of work as measured and accepted and certified for payment in accordance with the Conditions of Contract, and not the quantities stated in the Bill of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities certified for payment.
- 11.8 Provisional Sums stated by the Employer's Agent form part of the contract. Tenderers are to ensure that these Provisional Sums are added properly when completing the Bill of Quantities. Tenderers are to note that failure to including the Provisional Sum may lead to disqualification.
- 11.9 For the purposes of this Bill 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 Standardized, Project or Particular Specifications
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 tendered rate of the (same) item
Sum	:	An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units

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

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass	=	kilometre-pass
m ²	=	square metre
m ² -pass	=	square metre-pass
ha	=	hectare
m ³	=	cubic metre
m ³ -km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilonewton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	meganewton
MN-m	=	meganewton-metre
PC Sum	=	Prime Cost Sum
Prov Sum	=	Provisional Sum

Ordering of materials is not to be based on the Bill of Quantities, but only on information issued for construction purposes.

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C2.2: BILL OF QUANTITIES

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SUMMARY OF BILL OF QUANTITIES

Section	Description	Amount R-c
A	Preliminary and General	
B	Earthworks	
C	Pipework	
D	Sundries	
E	Electromechanical Works	
SUBTOTAL 1		
CONTINGENCIES Allow 10% for Contingencies <i>(The provisional sum provided here may only be expended as directed by the Client and may be deducted in whole or in part)</i>		
ESCALATION Allow 5% for Escalation <i>(to be calculated using latest indices)</i>		
SUBTOTAL 2		
VALUE ADDED TAX Add 15 % of Subtotal <i>(Provisional sum based on current rate of VAT)</i>		
SUBTOTAL 4 This amount should be entered in the Form of Offer on Page C4		

UGU DISTRICT MUNICIPALITY:
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SECTION A: PRELIMINARY AND GENERAL

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SABS 1200 AA	SECTION A: PRELIMINARY AND GENERAL				
A.1	PSAA 8.2.1	Fixed - Charge Items (A.1 - A.9)				
A.1.1	8.3.1	Contractual requirements				
	8.3.2	Site establishment	Sum	1		
A.2	8.3.2 (a)	Facilities for the Engineer (SABS 1200 AB):				
A.2.1		Nameboard as shown on Drawing No WN06/P05	Sum	1		
A.2.2	PS 8.1	Furnished office and parking space for Engineer (refer to clause PS 8.1)	Sum	1		
A.2.3		Use of survey equipment	Sum	1		
A.3	8.3.2 (b)	Facilities for the Contractor:				
		Offices, storage sheds, workshops, living accommodation, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, access and plant	Sum	1		
A.4		Dealing with water:				
A.4.1		Generally on site	Sum	1		
A.5	8.3.3	Other fixed charge obligations	Sum	1		
A.6	8.3.4	Remove Engineer's and Contractor's site establishment on completion	Sum	1		
A.7		Allow for accommodation of traffic	Sum	1		
A.8	PE	Health and Safety Requirements:				
A.8.1	PE	Preparation of the contractor's site specific health and safety plan including initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations	Sum	1		
A.8.2		Provision of Personal Protective Equipment (PPE)	Sum	1		
A.8.3		Provision of a full time Construction Health and Safety Officer	Sum	1		
A.8.4	PE	Completing, updating and checking the Project H&S File and handing over to the Client on completion of the works	Sum	1		
A.8.5	PES	Allow for complying fully with the requirements of the project Environmental Management Plan	Sum	1		
A.8.6		Cost of Medical Certificates and medical surveillance	Sum	1		
A.8.7		Provision for First Aid Boxes to GSR requirements	Sum	1		
	PSAA 8.2.2	Time Related Items				
A.11	8.4.1	Contractual requirements	Sum	1		
A.12	8.4.2	Operate and maintain facilities on the site for the duration of construction:				
A.12.1	8.4.2 (a)	Facilities for the Engineer-				
A.12.1.1		Nameboard	Sum	1		
TOTAL CARRIED FORWARD						

UGU DISTRICT MUNICIPALITY:
MALANGENI WATER SUPPLY

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF
ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE
SECTION A: PRELIMINARY AND GENERAL

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
A.12.1.2		Furnished site office & parking	Sum	1		
A.13	8.4.2 (b)	Facilities for the Contractor-				
A.13.1		Contractor's establishment as per Item A.3	Sum	1		
A.14	PSAA 5.3	Dealing with water:				
A.14.1		Generally on the site	Sum	1		
A.14.2		At river or stream crossings	Sum	1		
A.15	8.4.3	Supervision for duration of construction	Sum	1		
A.16	8.4.3	Company and head office overhead costs for the duration of the contract	Sum	1		
A.17	PE	Updating and amending the risk assessments, safe work procedures, the project H&S File, the H&S plan, provision protective clothing and any other H&S matters that the contractor deems necessary	Sum	1		
A.18	PE	Full compliance with all H&S matters during the construction of the works under the contract	Sum	1		
A.19	PES	Full compliance with all requirements of the Environmental Management Plan	Sum	1		
A.20	8.4.3	Other time related obligations	Sum	1		
	8.5	Provisional Sums				
A.20		Relocation of existing services and fences where ordered	Prov. Sum	1	15,000.00	R 15,000.00
A.21		Locating existing services, where ordered by the Engineer	Prov. Sum	1	100,000.00	R 100,000.00
A.22		Compensating landowners for crop damage during construction	Prov. Sum	1	350,000.00	R 350,000.00
A.23		Provision for Environmental audits by ECO	Prov. Sum	1	350,000.00	R 350,000.00
A.24		Inspection of Materials by Inspectors appointed by the Engineer,	Prov. Sum	1	30,000.00	R 30,000.00
A.25		Provision for cell phone costs for Engineer's site staff	Prov. Sum	1	5,000.00	R 5,000.00
A.26		Allow for the appointment of a Community Liaison Officer	Prov. Sum	1	65,000.00	R 65,000.00
A.27		Allow for the appointment of Occupational Health and Safety monitoring staff	Prov. Sum	1	250,000.00	R 250,000.00
A.28		Allow for the appointment of Engineer's technical assistant	Prov. Sum	1	45,000.00	R 45,000.00
A.29		Contractor's Commission on Items A.24 to A.28	%		R 1,210,000.00	
	8.5	Daywork				
A.30		Labour	Prov. Sum	1	15000	R 15,000.00
A.31		Materials	Prov. Sum	1	55000	R 55,000.00
A.32		Plant	Prov. Sum	1	350000	R 350,000.00
TOTAL SECTION A1 CARRIED TO SUMMARY						

UGU DISTRICT MUNICIPALITY:

MALANGENI WATER SUPPLY

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SECTION B: EARTHWORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
B	SABS 1200 DA 1988	SECTION B: EARTHWORKS				
B.1		Site Clearance:				
B.1.1		Clear vegetation and trees of girth up to 1m width along pipeline route	m	2950		
B.2	SABS 1200 DA 1988	Excavation:				
B.2.1	8.3.2	Selective excavation <i>by hand</i> in all materials, backfill, compact or dispose of surplus/unsuitable material, for pipes up to 200 mm diameter for depths				
B.2.1.1		Greater than 0.0m and up to 1.0m	m	200		
B.2.1.2		Greater than 1.0m and up to 1.5m	m	450		
B.2.2		Restricted excavation in all material and stockpile or dispose as ordered for minor structures	m³	75		
B.2.3		Excavate of trial holes 1.0 m x 1.0 m x 1.5 m deep as ordered	No.	50		
B.2.4		EO items B.2.1 to B.2.3 for excavation in (PROV):				
B.2.4.1		Intermediate material	m³	200		
B.2.5		Selective excavation <i>by machine</i> in all materials, backfill, compact or dispose of surplus/unsuitable material, for pipes up to 250 mm diameter for depths				
B.2.5.1		Greater than 0.0m and up to 1.0m	m	200		
B.2.5.2		Greater than 1.0m and up to 1.5m	m	2200		
B.2.5.3		Greater than 1.5m and up to 2.0m	m	100		
B.2.6		Excavate in all materials beyond the limits of pipe trenches for thrust walls, valve chambers, anchor or where ordered by the Engineer				
B.2.6.1		Greater than 0.0m and up to 1.0m	m³	40		
B.2.6.2		Greater than 1.0m and up to 2.0m	m³	40		
B.2.7		Excavate unsuitable material from trenches or as directed and dispose	m³	60		
B.2.8		EO items B.2.5 to B.2.6 for excavation in (PROV):				
B.2.8.1		Intermediate material	m³	500		
B.2.8.2		Hard rock material	m³	95		
B.2.8.3		Hard rock material without the use of explosives (where ordered by the Engineer)	m³	1800		
TOTAL CARRIED FORWARD						

UGU DISTRICT MUNICIPALITY:
MALANGENI WATER SUPPLY
CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF
ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE
SECTION B: EARTHWORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
B.2.8.4	SABS1200 DB	Boulders Class A	m³	200		Rate Only	
B.2.8.5		Boulders Class B	m³	50			
B.2.8.6		Boulders Class C	m³	25			
B.3		Stone Bedding					
B.3.1		Supply and Place stone bedding	m³	20			
B.3.2		Supply and lay geotextile fabric (as Kaymatic U14)	m²	40			
B.4		Gabions and Pitching					
B.4.1		Surface preparation - cavities filled with excavated material	m²	70			
B.4.2		Gabions					
B.4.2.1		2 m x 1 m x 1 m boxes	m³	40			
B.4.2.2		2 m x 2 m x 0.23 m boxes	m³	30			
B.4..3		Geotextile where ordered	m²	100			
B.4.4		Ordinary stone pitching	m²	60			
B5		Imported Backfill Material					
B5.1		8.3.3.1	Imported backfill material from commercial sources	m³			500
B5.2			Imported backfill material from designated borrow pit	m³			890
B6		8.3.3.3	Compaction under roadways	m³			90
B7		Supply and install sack breakers in trenches	No.	150			
B8		Build cross-embankments as specified where ordered	m³	20			
B9		Topsoiling(100mm depth) and grassing to designated areas	m²	300			
B10		Provisional Sum for identified on site	Prov. Sum	1	460000	R 460,000.00	
TOTAL SECTION B CARRIED TO SUMMARY							

UGU DISTRICT MUNICIPALITY:

MALANGENI WATER SUPPLY

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SECTION C: PIPEWORK

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
C.1	SABS 1200 LB 1983	Provision of Bedding:				
C.1.1	8.2.1 PSLB 5.3	Selected from trenches, and/or other excavations without the need for screening or other treatment:				
C.1.1.1		Selected granular material	m³	60		
C.1.1.2		Selected fill material	m³	60		
C.1.2		Selected from trenches, and/or other excavations including the need for screening or other treatment:				
C.1.2.1		Selected granular material	m³	250		
C.1.2.2		Selected fill material	m³	450		
C.1.3		Supply of bedding from commercial sources				
C.1.3.1		Selected granular material	m³	425		
C.1.3.2		Selected fill material	m³	1125		
C.1.4		Selected from designated borrow pit within 5km radius incl. all costs for additional handling and transport				
C.1.4.1		Selected granular material	m³	100		
C.1.4.2		Selected fill material	m³	190		
C.2		Concrete encasing of pipes in trenches in 20/19 concrete	m³	20		
C.3		Pipe Laying				
		Supply, handle, lay and test mPVC pipes with Z lok joints in bedding for flexible pipes (SABS 966-1) in 6m lengths				
C.3.1		110mm Dia uPVC Class 16	m	100		
C.3.2		160mm Dia uPVC Class 16	m	1900		
C.3.3		200mm Dia uPVC Class 16	m	1200		
C.3.3		E.O Item C3.1 to C3.3 for cutting pipe to length to suit on site	No.	80		
C.3.4		Scour Arrangement(Table 2500/3)				
C.3.4.1		160mm x 100mm PE/FL, barrel PE scour tee, 375C/F	No.	6		
C.3.4.2		100 mm dia x 45° FL/PE bend, 250 mm C/F - 2 segments	No.	6		
TOTAL CARRIED FORWARD						

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C.3.4.3		100 mm dia x 2,0 long FL/PE pipe PE threaded (table 2500/3)	No.	6		
C.3.4.4		100mm dia. Screw on boss flange.	No.	6		
C.3.4.5		100 mm dia jet disperser as shown on DRG N° WN06/D01	No.	6		
C.3.5		Air Valve Arrangement(Table 2500/3)				
C.3.5.1		160mm x 100 mm dia PE/FL tee, barrel PE, 375 C/F	No.	6		
C.3.5.2		50 mm dia x 0,4 long D/FL pipe . One flange to suit 100 mm dia pipe the other to suit 50mm dia pipe	No.	6		
C.3.5.3		50mm dia. Screw on boss flange.	No.	6		
		Fittings and Specials (Table 2500/3)				
C.3.6		V J Adaptor Joints/Couplings				
C.3.6.1		160mm diameter V J adaptor joints for connecting 219mm OD PE pipe to Table 1600/3 flange	No.	4		
C.3.6.2		100 mm diameter V J adaptor joints for connecting 114mm OD PE pipe to Table 1600/3 flange	No.	4		
C.3.7		Bends				
C.3.7.1		160mm dia x (1 1/4 - 22½)PE bend, 525 mm C/F - 2 segments	No.	15		
C.3.7.2		160mm dia x (22½ - 45°) PE bend 610mm C/F - 3 segments	No.	12		
C.3.7.3		160mm dia x (45 -90°) PE bend 1250mm C/F - 4 segments	No.	12		
C.3.8		Puddle pipes (Table 2500/3)				
C.3.8.1		160mm dia x 1,2 m long D/Fl puddle pipe with central puddle collar	No.	4		
C.4		Valves				
C.4.1		Supply, handle, lay, joint, test and disinfect valves. Rates to include for all bolts, nuts and gaskets and jointing materials				
C.4.1.1		100 mm diameter wedge gate valve with square cap (SABS approved), class 16		6		
C.4.1.2		160mm diameter wedge gate valve with square cap (SABS approved), class 16	No.	6		
C.4.1.4		50mm dia. flanged double orifice air valves,class 16, (Vent-O-Mat RBX 2501 or similar approved)	No.	6		
C.4.1.5		Pressure Control Valve	No.	2		
TOTAL CARRIED FORWARD TO SUMMARY						

UGU DISTRICT MUNICIPALITY:

MALANGENI WATER SUPPLY

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SECTION D: SUNDRIES

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION D: SUNDRIES				
D.1		Valve Chambers				
D.1.1		Supply materials and construct complete chambers excluding pipework which is scheduled elsewhere				
D.1.1.1		Valve Chamber complete as shown on drawings of overall depth not exceeding 1500mm	No.	6		
D.1.1.2		Extra Over item D.1.1.1 for precast manhole rings as shown on drawings	No.	2		
D.1.1.3		Complete Air Valve Chamber including including for manhole cover, vents and frame and building in pipework. Chamber depth up to 1 500mm	No.	6		
D.1.1.4		Extra Over item D.1.1.3 for additional up to 0.5 m depth beyond 1 500 mm	No.	2		
D.2		Concrete Sleeve Pipe at Road Crossings				
D.2.1		Supply, handle and lay in Class C bedding 600mm dia Class 100D concrete pipes with Ogee joints at road crossings	m	30		
D.2.2		EO Item D.2.1 for bricking up ends including building drains as shown on Drawing No.WN06/D01	No.	4		
D.2.3		Supply and install sleds for pipes inside concrete sleeve as shown on Drawing No.WN06/D01	No.	12		
D.3		Concrete				
D.3.1		Anchor blocks in Grade 20/19 concrete as detailed on Drawing N° WN06/D01 (incl. rough shuttering)	m³	60		
D.4		Marker Posts				
D.4.1		Supply and install marker beacons as shown on Drawing No. WN06/D01 at all horizontal bends on pipeline and where ordered by the Engineer, incl. for painting twice with yellow road marking paint and concrete surround	No.	40		
D.4.2		Supply and install LV, SV and AV marker posts as detailed on Drawing No. WN06/D01 (painted with yellow marking paint) including for concrete surround	No.	12		
D.5		Supply and apply Denso protection to flanges, VJ couplings and VJ adaptor joints:				
D.5.1		160 mm dia.	No.	2		
D.5.2		100 mm dia.	No.	2		
D.5.3		Provisional Sum for Tie-ins	Prov. Sum	1	390000.00	R 390,000.00
D.5.4		Dayworks	Prov. Sum	1	256000	R 256,000.00
D.5.6		Provisional for bulk meters	Prov. Sum	1	300000	R 300,000.00
TOTAL CARRIED FORWARD TO SUMMARY						

UGU DISTRICT MUNICIPALITY:

MALANGENI WATER SUPPLY

CONSTRUCTION OF 160/200mm DIAMETER x 2.6KM uPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SECTION E: DAYWORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
E1		SECTION E: ELECTROMECHANICAL WORKS				
E1.1		Provisional Sum for M&E Work	Prov. Sum	1	3300000.00	R 3,300,000.00
E1.2		Modification of pipework at pumpstation	Prov. Sum	1	490000.00	R 490,000.00
E1.3		Supply and Install Break Pressure Tank	Prov. Sum	1	1000000	R 1,000,000.00
TOTAL CARRIED FORWARD TO SUMMARY						

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022

CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

PART C3: SCOPE OF WORK

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C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

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PART C3: SCOPE OF WORKS

C3.1 STANDARDISED SPECIFICATIONS

The standard specifications on which this contract is based are Standards South Africa's Standardized Specifications for Civil Engineering Construction SABS 1200.

Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SABS 1200 shall form part of this Contract:

AA	1986	:	GENERAL				
AB	1986	:	ENGINEER'S OFFICE				
C	1980	:	SITE CLEARANCE (As amended 1982)				
DA	1988	:	EARTHWORKS (Small Works)				
DB	1989	:	EARTHWORKS (Pipe trenches)				
DK	1984	:	GABIONS AND PITCHING				
DM	1981		EARTHWORKS (Roads and Subgrade)				
GA	1982	:	CONCRETE (Small Works)				
HA	1990	:	STRUCTURAL STEELWORKS				
HC	1988	:	CORROSION PROTECTION FOR STRUCTURAL STEELWORKS				
LD	1982		SEWERS				
LE	1982	:	STORMWATER DRAINAGE				
M	1996	:	ROADS (General)				

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 1921 (2004): Construction and Management Requirements for Works Contracts

- Part 1: General Engineering and Construction Works; and
- Part 2: Accommodation of Traffic on Public Roads Occupied by the Contractor.

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

C3.2 PROJECT SPECIFICATIONS

The project specification is covered in the following sections:

ITEM	DESCRIPTION
	STATUS
	PROJECT SPECIFICATION PORTION 1: GENERAL
PS-1	Project Description
PS-2	Extent of the Works
PS-3	Description of the Site and Access
PS-4	Nature of Ground and Subsoil Conditions
PS-5	Construction and Management Requirements
PS-6	Construction Programme
PS-7	Site Facilities Available
PS-8	Site Facilities Required
PS-9	Existing Services
PS-10	Requirements for Accommodation of Traffic
PS-11	Occupational Health and Safety
PS-12	Adverse Weather Conditions
PS-13	Site Meetings & Reporting
PS-14	Preferential Procurement
	PROJECT SPECIFICATION PORTION 2
PSA	General
PSD	Earthworks
PSDB	Earthworks (Pipe Trenches)
PSG/PSGA	Concrete (Small Works)
PSLB	Bedding (Pipes)
PSLD	Sewers
PSLE	Stormwater Drainage
	PARTICULAR SPECIFICATIONS
PA	Brickwork and Plaster
PB	Carpentry, Joinery and Ironmongery
PC	Painting
PD	Disinfection of Pipelines
PE	The Client's Pre-Construction and Health Plan
PF	Valves
PES	Environmental Specification

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

STATUS

The Project Specification, consisting of two parts, forms an integral part of the contract and supplements the Standard Specifications.

Part A contains a general description of the works, the site and the requirements to be met.

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular 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: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

PROJECT SPECIFICATION : PORTION 1

SABS 1200 PS: GENERAL

PS-1 PROJECT DESCRIPTION

PS-1.1 Employer's Objective

The Ugu District Municipality embarked on supplying portable water to the community of Malangeni through the Malangeni Water Supply. As part of this water scheme project, Ugu District Municipality also identified crucial work which requires urgent attention as per the recommendations of the Esperanza Pump Station Close-out Report.

PS-1.2 Overview of the Works

Under Contract UGU-07-1618-2022 the Employer is inviting tenders for the Construction of 160/200mm diameter x 2.6KM uPVC gravity pipeline from Umzinto WTW to Esperanza Reservoir, modification of electromechanical works and additional storage

PS-2 SCOPE OF WORKS

PS-2.1 EXTENT OF THE WORKS

Under this contract, the successful contractor will be required to undertake the following works:

- Site clearing along pipeline route
- Construct by trenching, bedding and backfilling for 2.6KM uPVC gravity pipeline complete,
- Laying, jointing and testing of all pipes, valves and fittings;
- Disconnection and reconnection onto existing mains;
- Modification of Electro-mechanical works at Esperanza Pump Station
- Construction of additional storage Esperanza Reservoir
- Replacement of roads, curbing, walls, fences and driveways removed during excavation works;
- Testing and disinfection of water mains.

PS-2.2 EXTENT OF THE WORKS

Under this contract, the successful contractor will be required to undertake the following specific work:

- Compensation for Land and Crop for Farmers
- Site clearing
- Trench excavations
- Provision of bedding
- Supply, lay, test and commission 2.6KM uPVC gravity pipeline,
- Install air, scour and isolation valves
- Construct valve chambers
- Backfill using appropriate material and compact.
- Modification of Electro-mechanical works at Esperanza Pump Station
- Construction of additional storage Esperanza Reservoir
- Rehabilitation of areas affected by construction activities

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

PS-3 DESCRIPTION OF THE SITE AND ACCESS

PS-3.1 Access

Malangeni Water Supply project is located approximately 8km due South from Umzinto town.

PS-4 NATURE OF GROUND AND SUBSOIL INVESTIGATIONS

Subsoil geotechnical investigations have not been undertaken on the site.

No responsibility is accepted for any conclusions drawn by Tenderers from the results and information supplied (if any) and Tenderers must satisfy themselves as to the nature of materials to be excavated under this contract. Tenderers are at liberty to excavate any further trial holes or to carry out other investigations to satisfy themselves as to the nature of the ground that will be encountered in carryout the Works, provided that they advise the Engineer of their intention to carry out such further trial hole excavations or other investigations so that the necessary safety requirements can be ensured. Any trial hole excavated in areas close to pedestrian or vehicular traffic shall be barricaded and shall be backfilled immediately after inspection of the soil conditions.

PS-5 ENGINEERING AND DESIGN

PS-5.1 Design Services and Activity Matrix

The following matrix of responsibilities for design of permanent and temporary works will apply:

Activity Work designed by, per design stage	Responsible Party
Concept, feasibility and overall process	Employer
Basic engineering and detail layouts to tender stage	Employer
Final design approved for construction stage	Employer
Temporary works	Contractor
Permanent Works	Contractor
Preparation of as built drawings	Contractor

PS-5.2 Employer's Design

The Employer's design will be for all permanent works and will be detailed in drawings, site instructions the technical specifications to be issued with the tender documents and issued during construction.

PS-5.3 Design Brief

The contractor will be responsible for design of the following (which are all subject to approval by the Engineer):

- Site layouts for the contractor's camp and office accommodation
- Site layouts for the Engineer Representative's temporary office accommodation
- Construction Methodology
- Formwork
- Scaffolding and all staging work
- All other temporary works
- Concrete Mix designs

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The costs of the designs will be deemed to have been included in the scheduled items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

PS-5.4 Drawings

The following drawings will be required to be prepared by the contractor as a minimum:

- Site layouts for the contractor's camp and office accommodation
- Site layouts for the Engineer Representative's temporary office accommodation
- Scaffolding and all staging work

The costs of the designs will be deemed to have been included in the scheduled items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

The tender drawings are applicable to the contractor are detailed in Part C5 of these documents. These drawings have been used for setting up the Bills of Quantities.

PS-5.5 Design Procedures

The contractor will be required to furnish the following designs for approval by the Engineer at the indicated times:

Site layouts of the Contractor's camp and office accommodation – within 14 days from commencement date of the contract and in any case prior to the erection of the contractor's camp and offices

Layouts for the Engineer's representative office – within 14 days from commencement date of the contract and in any case prior to the erection of the Engineer's Representative's temporary office premises.

Formwork design – within 14 days of commencement of work and in any case prior to the construction of permanent reinforced concrete works.

Scaffolding and all staging work – within 14 days of commencement of work and in any case prior to the construction of permanent reinforced concrete works.

Concrete Mix Designs for all classes of concrete as measured in the Schedule of Quantities prior to the placement of any concrete work

The costs of the designs will be deemed to have been included in the scheduled items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

PS-5.6 Interface with other Contractors

The contractor may be required to provide access to other contractors undertaking work as per the parallel contracts. The costs of this interface will be deemed to have been allowed for in the appropriate items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

PS-6 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

PS-6.1 General

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The Contractor is referred to SANS 1921: 2004: Construction and Management Requirements for Works Contracts, Part 1: General Engineering and Construction Works, and Part 2: Accommodation of Traffic on Public Roads. These specifications shall be applicable to the contract under consideration and the Contractor shall comply with all requirements relevant to the project.

Certain aspects however require further attention as described hereafter.

PS-6.2 Quality Assurance (QA) *(Read with SANS 1921 – 1: 2004 clause 4.4)*

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

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

PS-6.3 Management and disposal of water *(Read with SANS 1921-1: 2004 clause 4.6)*

The Contractor shall pay special attention to the management and disposal of water and stormwater on the site. It is essential that all completed works or parts thereof are kept dry and properly drained. Claims for delay and for repair of damage caused to the works as a result of the Contractor's failure to properly manage rain and surface water, will not be considered.

PS-6.4 Disposal of spoil or surplus material *(Read with SANS 192-1: 2004 clause 4.10)*

The Contractor shall dispose all surplus and unsuitable material in legal spoil areas of his own choice. He shall be responsible for all arrangements necessary to obtain such spoil sites.

PS-6.5 Testing *(Read with SANS 1921 – 1 : 2004 clause 4.11)*

PS-6.5.1 Process control

The Contractor shall arrange for all tests required for process control to be done by a laboratory acceptable to and approved by the Engineer.

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

PS-6.5.2 Acceptance control

The process control test results submitted by the Contractor for approval of materials and workmanship may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice. The cost of such additional tests will be covered by a provisional sum provided in the schedule of quantities, but tests that failed to confirm compliance with the specifications, will be for the account of the Contractor.

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PS-6.6 Survey beacons (Read with SANS 1921 - 1 : 2004 clause 4.15)

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as bench-marks, stand boundary pegs and trigonometrical beacons, regardless whether such beacons or pegs were placed before or during the execution of the Contract. If any such beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost.

PS-6.7 Existing Services (Read with SANS 1921 - 1 : 2004 clause 4.17)

The Contractor shall make himself acquainted with the position of all existing services before any excavation or other work likely to affect the existing services is commenced.

The Contractor will be held responsible for any damage to known existing services caused by or arising out of his operations and any damage shall be made good at his own expense. Damage to unknown services shall be repaired as soon as possible and liability shall be determined on site when such damage should occur.

PS-6.8 Management of the environment (Read with SANS 1921 - 1 : 2004 clause 4.19)

The Contractor shall pay special attention to the following:

(a) Natural Vegetation

The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works.

Only those trees and shrubs directly affected by the works and such others as the Engineer may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer.

(b) Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees.

PS-6.9 Overhaul

No payment will be made for overhaul on this contract unless provision is made thereof in specific items.

PS-6.10 Excavations

Due to the depths of sewer lines and their location nets to a water course, the Contractor is to allow in their tendered rates for excavation, for shoring and protection of trenches. No additional payment will be made for protection of excavations for whatever reason.

PS-6.10 Security

The Contractor shall provide security watchmen for the contract as he deems fit at no extra cost for the Employer. The Contractor must ensure that all his employees as well as the employees of his subcontractors are able to identify themselves as members of the construction team.

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PS-7 CONSTRUCTION PROGRAMME

PS-7.1 Preliminary programme

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

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

In determining his construction programme, the contractor should allow for disruptions/stoppages/requirements and intermittent "hold" of work while awaiting Engineer's inspections at the following critical stages:

Stage	Delay
Following setting out of pipelines	1 day
Following preparation of bedding and before pipelaying.	1 day
Following pipelaying	1 day

No additional payments, other than through scheduled items, will be made for these stoppages/disruptions/constraints.

In addition, the contractor is required to establish the Engineer's facilities within 14 days of commencement. Should the contractor fail to provide approved establishment within the stipulated 14 days, the contractor will pay a penalty calculated as follows:

- Mileage of the Engineer's Representative from other offices from the nearest business centre to site and back to office at R3.50/km
- Rented Office space equivalent to that stipulated in this contract at offices in Harding or other place closer to the site

The Employer intends to award this contract for commencement of construction in February 2020.

PS-7.2 Programme in terms of Clause 12 of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to Clause 12 of the General Conditions of Contract, be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the tender shall be used as basis for this programme. The Contractor's attention is also drawn to clause 40.3 of the General Conditions of Contract 2015.

The Employer intends to award construction contracts by January 2010.

PS-8 SITE FACILITIES AVAILABLE

PS-8.1 Contractor's camp site and depot (Read with SANS 1921 - 1 : 2004 clause 4.14)

The Contractor will be permitted to locate his offices, storage facilities, workshops, latrines, etc, on a site approved by the Engineer, in liaison with the community.

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Temporary buildings and fencing are to be neat and presentable and the surrounding areas must at all times be kept in a neat, clean and orderly condition. The Contractor must not cut down or damage any trees nor make any excavation without the written permission of the Engineer and will be required to restore the site to its original condition on completion of the Works.

All buildings and latrines shall be in accordance with the Local Authority and State Health regulations and shall be kept in a clean, sanitary condition to the satisfaction of the Engineer.

PS-8.2 Accommodation of Employees

No employees except for security guards will be allowed to sleep or be accommodated on the site in urban areas.

No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site.

No informal housing or squatting will be allowed.

The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS 8.3 Source of Water Supply

The Contractor shall make his own arrangements for the supply of water for construction purposes. The source of water shall be subject to the approval of the Engineer.

The Water Services Authority in the area is Ugu District Municipality. Should the contractor's source of water be Ugu District Municipality, the contractor will be required to ensure that the water account with Ugu District Municipality is in good standing prior to the issue of completion certificate. The Engineer will withhold any payments until arrears are cleared with Ugu District Municipality.

PS 8.4 Source of Power Supply

The power supply authority is Eskom. The Contractor will be required to make his own arrangements with, and pay all the requisite connection and consumption charges to Eskom for whatever temporary power supplies he may require for his use on the site and his tender will be held to include for all such costs and charges.

PS-9 SITE FACILITIES REQUIRED

PS-9.1 Facilities Required for the Engineer

PS 9.1.1 Temporary/Permanent Offices

The Contractor is to provide a temporary office for use by the Engineer. The offices should be able to accommodate one full time Engineer's Representative and two assistants.

The Engineer's offices are to be equipped with the following as a minimum:

- Three desks each with lockable drawers
- Three high back swivel chairs
- Three visitors chairs
- A facility to store/hang drawings
- An electric refrigerator of at least 200 litres capacity

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The Contractor should also make arrangements for covered facilities to enable the accommodation of approximately 12– 16 people during progress site meetings, to be held fortnightly or monthly.

The facilities are to be provided, to the satisfaction of the Engineer, within 14 days of commencement date. ***The Engineer may withhold certification of the first progress payment until these facilities are provided.***

PS 9.1.2 Laboratory Facilities

The Contractor will not be required to provide a testing laboratory on site for use by the Engineer.

PS 9.1.3 Sanitary Facilities

All latrines shall conform to the requirements of the Local Authority and shall be subject to approval by the Engineer. All sanitary fees and charges due under the Local Authority or State Health Regulations or bylaws shall be paid by the Contractor. Throughout the progress of the contract, all latrines shall be maintained by the Contractor in a clean, sanitary condition to the satisfaction of the Engineer.

PS 9.1.4 Telephone Facilities

The Contractor will not be required to provide a telephone for use by the Engineer. The contractor will however be required cover cellphone costs for the engineer's site staff for airtime valued at R250/week. Appropriate items have been provided in the Schedule of Quantities to cover these costs.

PS 9.1.5 Housing Facilities

The Contractor will not be required to provide housing facilities for the Engineer's staff. However, a provisional sum has been provided in the schedule of quantities for payment through the contract for accommodation for the Engineer's staff.

PS 9.1.6 Parking Facilities

The Contractor will be required to provide two uncovered parking bays for the Engineer.

PS 9.1.7 Engineer's Transport

The Contractor will not be required to provide transport for the Engineer's staff.

PS 9.1.8 Security

The Contractor will be responsible for providing adequate security for the Works and for the site establishment. All costs associated with the provision of security staff shall be borne by the Contractor and should be allowed for in the rates tendered for items in the Schedule of Quantities. No additional payments will be made for security measures taken during the contract period, other than through the schedule items in the Schedule of Quantities.

PS 9.1.9 Contract staff to assist the Engineer

The following staff will be recruited by the contractor to assist the Engineer in carrying out his services:

Description of Staff	Nº Required	Remarks
Environmental Monitoring	1	

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Occupational Health & Safety Monitoring	1	Provisional sum provided for appointment as directed by the Engineer. Personnel directed by and report to Engineer
ISD Consultant	1	
Community Liaison Officer	1	

The required personnel will be identified by the Engineer and report to the Engineer. Provisional Sums and the relevant mark-up Items are provided for in the Schedule of Quantities to cover these costs.

PS 9.1.10 Survey Equipment

The contractor shall provide the following survey equipment, in good condition, for use by the Engineer throughout the duration of the contract:

- A dumpy level
- Measuring tape

An assistant, when required, to assist the Engineer to operate survey equipment, when provided

PS 10. EXISTING SERVICES

PS 10.1 Care, Damage and Protection

Known services will be indicated in the tender and contract documents. The Contractor will be responsible for identifying all services with the relevant Service Providers.

The Contractor shall familiarize himself with all services and expose them at the start of the Contract to verify their position and establish their depths.

No additional payment will be made to the Contractor for identifying and locating services. Therefore the Contractor will have to include the costs thereof in the scheduled items in the Schedule of Quantities.

Any information regarding existing services is given in good faith and without guarantee.

PS 10.2 Blasting

No blasting will be permitted unless the Contractor can satisfy the Engineer that his proposed blasting methods and controls are such that no damage will be caused to the adjoining building structures, pipelines or services. In any event the Engineer will require the Contractor to plan and execute each blast in such a manner as to ensure that no damage will be caused to any structure, pipeline or service. In addition, the Engineer will require vibro-recordings to be taken at no additional cost to the Employer. No blasting is to be carried out in Eskom servitudes or wayleaves unless the Eskom authorities have been advised in writing three weeks prior to blasting. Where blasting is done adjacent to Eskom power lines, the Contractor shall arrange for a representative of Eskom to be present prior to and during any blast.

PS 10.3 Environmental Aspects

The Contractor will be required to plan and undertake his work in a manner that minimises its impact on the natural environment. Trees and other vegetation shall, wherever possible, be left undisturbed. Trees that are marked by the Engineer shall not be damaged and in the event of the Contractor doing so, a penalty will be deducted from monies due to the Contractor.

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Every effort shall be made by the Contractor to prevent pollution of the adjacent areas and river and to reduce the noise, dust and fumes emanating from his construction activities.

PS 10.4 Dealing with Water

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

In drawing up his programme, the tenderer is to take into account the following:

- i) Permissible period of downtime of the existing pipeline to allow the contractor to make the necessary interconnections: 09:00 up to 16:00, i.e. 7 hours, during the day.
- ii) The pipelines must be operational every day except for the period mentioned above.
- iii) The pipelines are currently in use.
- iv) The employer shall be responsible for the operation of all valves and its water supply system.

The Contractor shall not operate any valve unless the Contractor has received from the Engineer prior written permission to do so which permission shall be limited to a specific time and operation in each case unless expressly stated to the contrary in writing by the Engineer.

It shall be the responsibility of the Contractor to give prior written notice timeously (min 2 working days) to the Engineer in every case in which the Contractor may request valve operation or prevention of valve operation by the Employer.

The Employer cannot guarantee watertight closing of valves; it shall be the responsibility of the Contractor to do and provide everything necessary for the timeous, efficient and safe disposal of all water which may leak through closed isolating valves and thence into places from which, in the opinion of the Engineer, the leaking water has to be removed for good reason. (The Engineer shall certify extra payment in respect of the costs of such valve-leakage-water disposal measures as in his opinion could not reasonably have been avoided or reduced.)

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

Where necessary, the Contractor shall construct temporary drainage channels to divert ground water or leakage from non-closing valves and fire hydrants from his excavation and excess water must be pumped out.

No compensation for any variation of the actual conditions during construction from the data given will be considered. Neither will additional compensation be considered for data omitted or inaccurately given.

The rates tendered shall allow for the requirements of this clause and all incidentals.

PS 10.5 Servitudes and Rights of Way

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The Employer will, where necessary, obtain permanent servitudes and rights of way along the road routes indicated on the tender drawings. New servitudes will only be registered after completion of the Works.

PS 10.6 Dealing with Damaged Services

In the event of any service being damaged or accidentally disconnected for any reason, the Contractor shall immediately contact the relevant authority for instruction and shall report the occurrence of the incident. The damage is to be repaired as soon as possible to the approval of the Engineer and the authority. The Contractor will be held responsible for paying all costs incurred by the authority or himself as a result of each such incident, where relevant.

PS 10.7 Accommodation of Traffic

The Contractor shall ensure the safe and expeditious passage of traffic at all times and shall provide all necessary temporary road traffic signs, barricades, flagmen, etc to safeguard the travelling public. Any detours or bypasses constructed by the Contractor shall be adequately signposted, as per the South African Road Traffic Signs Manual, and maintained in such a manner as to provide safe and easy passage of traffic.

The contractor shall also ensure that property owners have access to the properties at all items regardless of pipeline trenches being excavated across driveways.

PS 10.8 Spoil Material

No indiscriminate spoiling of material will be allowed. All surplus or unsuitable material shall be spoiled, levelled and spread in designated areas as directed by the Engineer. All haul will be regarded as freehaul.

PS 10.9 Finishing and Tidying and Defects Liability Period

On no account must rubble and spoil materials, other materials, equipment or unfinished operations be allowed to accumulate in such a manner as to unnecessarily impede the activities of other Contractors or Authorities.

Finishing and tidying must not simply be left until the end of the construction period. The Contractor will be entitled, subject to prior agreement with the Engineer and within reasonable limits, to request that work in a particular area and/or work of a particular discipline, be inspected for partial completion. The specified defects liability period in respect of any specific section of the Works shall commence on the date on which the relevant section is accepted by the Engineer as being completed, i.e. fully commissioned, including finishing and tidying.

On completion of the Contract the Contractor shall ensure that all materials used in the construction of the temporary Site office, workshop and storage yard are removed from Site. Waste materials such as construction debris and soil contaminated with oil and fuel are to be disposed of at the solid waste disposal site used approved by the Engineer. Prior to the handover of the Site to the Employer, the Contractor and the Engineer will conduct a post construction audit to determine if any additional measures that are to be taken. The Completion Certificate will only be issued after this stage.

PS 10.10 Employee Accommodation

(See Subclause 3.2.1 of Section A of Part 2 and Subclause 1.2.1 of Section A of Part 3 of SABS 0120)

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The Contractor shall conform in all respects with the provisions of any Act, Regulations or By-Law of Ugu District Municipality, which may be applicable to employee accommodation. Save for a security guard on active duty, no employees may be housed on Site or the Contractor's campsite after normal working hours.

PS 10.11 Employment of Local Labour

The Employer has determined that 100% of the Contractor's unskilled labour force shall be made up from the local community. A labour sub-committee (of a Project Steering Committee) comprising representatives of the community and other stakeholders will be responsible for the recruitment of all local labour. The Contractor will be required to provide details of the numbers of semi-skilled and unskilled workers he will require, together with their anticipated starting dates. The PSC through its labour sub-committee will then make this labour available to the Contractor.

A minimum of 50% of the local labour shall comprise of women and, where appropriate, disabled labour shall be employed. It is a requirement that tenderers acquaint themselves fully with requirements for registration with Unemployment Insurance Fund.

The Employer requires that the successful contractor registers all labour with the Unemployment Insurance Fund. The local labour rate has been determined at R199.00 per day per labourer or R126.00 per task. The task for excavation by hand has been agreed at 2,4 m³/day (e.g. 0,76 m x 1,0 m x 3,15 m).

During project execution, the successful contractor will be required to provide progress reports indicating to what level these requirements have been met.

PS 10.12 Frequency of Labour Wages Payments

The contractor will be required to pay labour on a fortnightly basis.

PS 10.13 Training and Capacity Building

No training of personnel is required under this contract.

PS-11 REQUIREMENTS FOR ACCOMMODATION OF TRAFFIC

PS-11.1 General

The Contractor will be responsible for the safe and easy passage of public traffic past and on sections of roads of which he has occupation or where work has to be done near traffic.

Accommodation of traffic, where applicable shall comply with SANS 1921-2: 2004: Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor shall obtain this specification from Standards South Africa if accommodation of traffic will be involved on any part of the construction works.

PS-11.2 Basic Requirements

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

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

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

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

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

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

PS-11.3 Traffic Safety Officer

Where warranted by traffic conditions on or near the site, the Contractor shall nominate a suitable member of his staff as traffic safety officer to be responsible for the arrangement and maintenance of all the measures for the accommodation of traffic for the duration of the project. Duties of the traffic safety officer shall be as set out in SANS 1921 Part 2 and shall also be in compliance with the Occupational Health and Safety Act No 85 of 1993 and the Construction Regulations 2003.

PS-11.4 Payment

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

Items that may be considered for payment are specified in SABS 1200 Standardized Specifications and the related project specification.

PS-12 OCCUPATIONAL HEALTH AND SAFETY (*Read with SANS 1921 - 1: 2004 clause 4.14*)

PS-12.1 General statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy 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 assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the OHSA 1993 Construction Regulations 2003 issued on 18 July 2003 by the Department of Labour.

For the purpose of this contract the Contractor is required to confirm his status as mandatary and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of the Occupational Health and Safety Act by executing the Agreement form C1.2.4 included in Section C1: Agreements and Contract Data.

PS-12.2 Health and Safety Specifications and Plans to be submitted at tender stage

(a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification will be included in the tender documents as part of the Project Specifications.

(b) Tenderer's Health and Safety Plan

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

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The successful Tenderer shall, on receipt of notification that he has been awarded the contract, submit without delay his own documented Health and Safety Plan for the execution of the work under the contract. His Health and Safety Plan must at least cover the following:

- (i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;
- (ii) pro-active identification of potential hazards and unsafe working conditions.
- (iii) provision of a safe working environment and equipment.
- (iv) statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 5*);
- (v) monitoring health and safety on the site of works on a regular basis and keeping of records and registers as provided for in the Construction Regulations.
- (vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and
- (vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2003.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs

PS-12.3 Cost of compliance with the OHSA Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

Items that may qualify for remuneration will be specified in the Safety Specifications included or in the Project specifications.

PS-13 ADVERSE WEATHER CONDITIONS

In terms of Clause 42.3 of the General Conditions of Contract, extension of time will be considered for **abnormal rainfall**. The numbers of days per month on which work is expected not to be possible as a result of **normal rainfall**, and for which the Contractor shall make provision in his tendered rates, prices and programme, are listed in Table PS-12.1 hereafter. Only the number of days lost as a result of adverse weather conditions, exceeding the number of days listed in Table PS-12.1, will qualify for consideration of extension of time.

During the execution of the Works, the Engineer's Representative will certify a day lost due to abnormal rainfall and adverse weather conditions only:

- if no work was possible on the relevant working day on any item which is on the critical path according to the latest approved construction programme; or
- if less than 30% of the work force and plant on site could work during that specific working day.

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Extension of time as a result of abnormal rainfall and adverse weather conditions shall be calculated monthly being equal to the number of working days certified by the Engineer's Representative as lost due to rainfall and adverse weather conditions, less the number of days allowed for as in Table PS-13, which could result in a negative figure for certain months. The total extension of time as a result of abnormal climatic conditions for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as nil."

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Table PS-13: Expected N° of Working Days Lost Monthly Due to Normal Rainfall

MONTH	Expected number of working days lost as result of normal rainfall
JANUARY	*5
FEBRUARY	5
MARCH	4
APRIL	1
MAY	1
JUNE	1
JULY	1
AUGUST	1
SEPTEMBER	2
OCTOBER	3
NOVEMBER	4
DECEMBER	5
TOTAL	33 days

(Based on information obtained from the Weather Bureau, Department of Environment Affairs, Margate. The average monthly rainfall figures quoted, are included for information only, and shall not be taken into consideration for calculation of extension of time. The number of working days lost for December and January allows for the builders' holidays from 20 December 2010 to 07 January 2011.)

PS-14 SITE MEETINGS AND REPORTING

The Contractor will be required to attend site meetings organised by the Engineer. In these meetings he (the Contractor) will be required to provide progress reports and other reports to monitor the outputs of the contractor, as may be required from time to time, to be presented in a format prescribed by the Engineer. The frequency of such meetings will be monthly, as a minimum. However the frequency can be reviewed, depending on the progress of the contract.

PS-15 PREFERENTIAL PROCUREMENT

For the purpose of this contract the Contractor shall comply with the preferential procurement statement provided in F.3.11 and T2.2 of the Tender Data.

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PROJECT SPECIFICATION: PORTION 2

AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATIONS

INTRODUCTION

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications 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 standard specifications. The number of a new clause or payment item, which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by PS, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 PSA: GENERAL

PSA-3 MATERIALS

PSA-3.1 Quality

Where there is a standardization mark programme for any material, all such material supplied shall bear the official standardization mark.

Alternative materials or equipment proposed by the Contractor shall be tested. The test, as well as the materials or equipment, shall be approved by the Engineer prior to any such materials or equipment being built into the works and all costs involved in testing shall be deemed to be included in the rates tendered.

PSA-3.3 Applicable Standards for Cement (*Additional Subclause*)

The standard cement specifications SABS 471, SABS 626, SABS 831 and SABS 1466, referred to in clause 3.3, have been withdrawn and are replaced by the new SANS 50197-1 and -2: Common cements, and SANS 50413-1 and -2: Masonry cement. These specifications will be applicable to this contract, and the descriptions and types of cements specified, will be based on the designations as defined in these specifications.

PSA-4. PLANT

PSA-4.2 Contractor's Office, Stores and Services

The Contractor's camp shall be kept neat and clean at all times and all surplus or rejected material shall be removed from the site.

PSA-5 CONSTRUCTION

PSA 5.1 Survey

PS A 5.1.1 Setting Out Of The Works

Substitute the first sentence in A 5.1.1 with the following:

"Setting out of the works is the sole responsibility of the Contractor and shall be done from survey beacons identified by the Engineer. The Contractor shall, within two (2) weeks after the site has been handed over to him, confirm himself that the survey beacons are correct. Any discrepancy shall immediately be reported in writing to the Engineer. Any costs or subsequent costs arising from discrepancies, which had not been reported to the Engineer within the aforementioned period, shall be the sole responsibility of the Contractor. A grid of final terrace levels over the site of the works will be issued to the Contractor at the commencement of the contract and it is the Contractors responsibility to preserve all setting out pegs based on this information as given for the duration of the contract."

PS A 5.4 Protection of Overhead And Underground Services

Add the following paragraph :

"The Contractor shall as soon as possible after handing over of the site, commence with the detection to existing services, continue with it without interruption, and finalise it at least 7 days before excavation starts at that particular section."

PSA-5.8 Ground and access to works

C3: SCOPE OF WORK

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Add the following:

"On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling in all ruts with material similar to the material within the rut and levelling the ground and, where necessary, planting grass and shrubs as may be required. Any boundary fences which have been removed or damaged by his operations and activities shall be repaired and/or reinstated at the Contractor's expense".

PSA-5.9 Accommodation of Traffic *(additional subclause)*

Where construction work has to be carried out on or near public roads, the Contractor shall deal with traffic as specified in SANS 1921-2 (2004): Construction and Management Requirements for Works Contracts, Part 2 : Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor is also referred to Project Specification PS-10.

PSA-8. MEASUREMENT AND PAYMENT

PSA-8.3 Scheduled fixed-charge and value-related items

PSA-8.3.2 Establishment of Facilities on the Site

PSA-8.3.2.1 Facilities for the Engineer

Add the following additional subitems:

(d)	Carports <i>(state number)</i>	Unit : Sum
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The tendered rate shall cover all costs as specified in Subclause 8.3.2.3 of SABS 1200 A (and 5.5 of SABS 1200 AB to provide these facilities as specified in Clauses PSAB-3.2, 3.3 and 4.2. if applicable).

PSA-8.3.2.2 Facilities for Contractor

For this contract the facilities for the Contractor will not be measured and paid for separately as itemised in Subclause 8.3.2.2. The subitems (a) to (j) will be consolidated into one item and payment under item PSA-8.3.2.2 shall be deemed to cover all these subitems.

PSA-8.4 Scheduled time-related items

PSA-8.4.2 Operation and maintenance of Facilities on Site

PSA-8.4.2.1 Facilities for Engineer

Add the following additional subitems:

(e)	Carports	Unit : Sum
(f)	Survey instruments	Unit : Sum

The rates tendered shall cover all costs as specified in Subclause 8.4.2.3 of SABS 1200 A and 5.5 of SABS 1200 AB to operate and maintain these facilities as specified in Clauses PSAB-3.2, 3.3 and 4.2.

PSA-8.4.2.2 Facilities for Contractor

Consolidate subitems (a) to (j) of Clause 8.4.2.2 into one item as in PSA-8.3.2.2. Payment under PSA-8.4.2.2 shall be deemed to cover subitems (a) to (j).

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 PSD: EARTHWORKS

PSD-1 EARTHWORKS

The Contractor is referred to SANS 1921 - 5: Earthworks activities which are to be performed by hand

PSD-3 MATERIALS

PSD-3.1 Classification for excavation purposes

PSD-3.1.2 Classes of excavation

The classes of excavation in clause 3.1.2 shall in general apply to all excavations where use is made of conventional methods and plant and equipment.

Where labour-intensive methods applicable to targeted labour are specified, soft excavations shall be defined as follows:

"PSD-3.1.2(a) Soft excavation

Soft excavation for labour-intensive work where excavations are to be carried out by hand methods, shall be excavation in material that can be efficiently removed and loaded with picks, shovels and other hand tools by an average able-bodied person or group of persons. Soft excavation shall include small boulders that can be removed by hand methods.

Soft excavation can be further broken down by introduction of an additional class such as "Soft Excavation Class A", which is excavation defined as soft, but which can only be excavated with difficulty.

The criteria for classifying Soft Excavation Class A shall be as follows:

Granular material: - dense material with high resistance to penetration by the point of a geological pick; several blows are required for removal of material; 7 to 15 blows of the dynamic cone penetrometer are required to penetrate 100 mm; and

Cohesive materials - stiff to very stiff material requiring 6 to 8 blows of the dynamic cone penetrometer to penetrate 100 mm, where:

"stiff" material can be indented by thumbnail; slight indentation produced by pushing a geological pick point into the soil; cannot be moulded by fingers; and where:

"very stiff" material can be indented by thumbnail with difficulty; slight penetration of point produced by blow of geological pick.

Where soft excavation class A material is encountered, it shall be measured and paid for as an extra over soft excavation.

PSD-5 CONSTRUCTION

PSD-5.1 Precautions

PSD-5.1.1 Safety

PSD-5.1.1.2 Safeguarding of excavations

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- **Add the following subparagraph:**

- “(g) The Contractor or his agent or his representative shall **not** require or allow any person to work under unsupported overhanging material or in an excavation which is more than 1,5 m deep, and any excavation which has not been adequately supported or braced if there is a danger of the overhanging material or the sides of the excavation collapsing. The support, shoring or bracing to be designed and constructed by the Contractor, shall be strong and sturdy enough to support the sides of the excavation in question.”

PSD-5.2.2.1 Excavations for general earthworks and for structures

- **Add the following additional subparagraph:**

- “(f) The Contractor shall so plan his cut-to-fill operations that all excavated material is used in the manner that is most appropriate.

The Contractor shall conserve all suitable surplus material and he shall not borrow, spoil or waste any material unnecessarily. If excavated material designated for a particular purpose become contaminated, is incorrectly used or becomes unavailable through injudicious planning of excavation operations, the Contractor shall replace the contaminated material and make good any shortfall with material of quality at least equal to that of the said selected material.

Where selection of excavated material is required, the method of excavation shall be so arranged as to avoid double handling. Wherever possible excavated material shall be placed in its final position without being stockpiled. If stockpiling is unavoidable, materials intended for different uses shall be stockpiled separately

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 PSD: EARTHWORKS (PIPE TRENCHES)

PSDB-5 CONSTRUCTION

PSDB- 5.1 Precautions

PSDB-5.1.5 Trench Excavations (*additional subclause*)

The precautions for excavations as specified in Clause 5.1.1 of Section 1200 D, 1200 DA, and the relevant clauses in PSD and PSDA, shall also apply to all trench excavations.

The Contractor shall take all the steps necessary to ensure that no person is required or allowed to work in a trench or any other unsupported overhanging excavation which is more than 1,5 m deep, and any excavation which has not been adequately supported, shored or braced if there is any danger whatsoever of the sides of the excavation collapsing. The support, shoring or bracing to be designed and constructed by the Contractor, shall be strong and sturdy enough to support the sides of the excavation in question.

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 GA: CONCRETE (SMALL WORKS)

PS GA-3 MATERIALS

PS GA-3.2 Cement

PS GA-3.2.1 Applicable specifications

The standard cement specifications SABS 471, SABS 626, SABS 831, SABS 1466 and SABS 1491, have been withdrawn and are replaced by SANS 50197-1: Common cements, and SANS 50413-1: Masonry cement. These specifications will be applicable to this contract and the descriptions and types of cements, where specified, will be based on the designations as defined in these specifications.

PS GA-5.4.1.4 Prescribed mix concrete

Add the following :

"The structural concrete in this contract shall comply with the following specification.

- The minimum 28 day strength shall be as specified in drawings
- The maximum water/cement ration shall be 0.42
- The minimum cement content shall be 400 kg/m³
- The cement used must be extended with a minimum of 30% Fly Ash or 50% GGBS

A detailed mix design by an approved concrete testing laboratory before any concrete is poured in the works and provision shall be made by the contractor for the cost of the design in his rates.

PS GA-8: MEASUREMENT AND PAYMENT

PS GA-8.1 Measurement and rates

PS GA-8.1.2 Reinforcement

Replace subclause 8.1.2.2 with the following:

PSGA-8.1.2.2 Mild steel and high tensile steel will be measured by mass for the diameters or range of diameters as scheduled.

Welded mesh will be scheduled separately for each type and mass per square metre of mesh."

Replace subclause 8.1.2.3 with the following:

"PSGA-8.1.2.3 The unit rate for steel bars shall cover the cost of supply, cutting, bending, placing in position, and fixing of the reinforcing and supporting steel scheduled. The rate shall also include the provision of all spacer devices and binding wire, as well as the cost of tests in terms of SANS 920.

The unit rate for welded mesh shall cover the supply, cutting and placing of mesh, as well as the cost of all waste due to laps."

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 LB: BEDDING (PIPES)

PS LB 3.3 BEDDING

Add the following to LB 3.3:

All pipes shall be classified as rigid pipes and shall be laid on a Class C bedding except sub soil drainage, which shall be classified as flexible pipes.

PS LB 5 CONSTRUCTION

PS LB 5.1 General

PS LB 5.1.4 Compacting

Substitute "90 % of mod AASHTO" in LB 5.1.4 with "93 % of mod AASHTO (100 % for sand)".

PS LB 8 MEASUREMENT AND PAYMENT

PS LB 8.2 Scheduled Items

PS LB 8.2.2.4 From stockpile (provisional)

- a) Selected granular material Unit : m³
- b) Selected fill material Unit : m³

The rate shall cover the cost of obtaining, handling and transport regardless the distance, of the required bedding material from the stockpile, the delivery thereof at positions that are spaced along the trench in such a way as suits the working method of the Contractor, as well as the removal of material displaced by this importation within the free-haul distance.

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 LD: SEWERS

PSLD 2.3 DEFINITIONS

Add to the Sub-Clause:

Normal Blasting

The method which an experienced blaster employs when carrying out general blasting of hard rock material in trenches.

Close Proximity Blasting

The method which an experienced blaster employs when carrying out blasting of hard rock close to adjacent service or structures requiring additional but smaller charges in order to break up the hard rock without damaging the adjacent services or structures.

PSLD 3 MATERIALS

PSLD 3.1.1 **Vitrified Clay Pipes**

Delete Sub-Clause 3.1.1.2 and substitute:

Vitrified clay sewer pipes shall be plain ended " Vitro" (or equal) pipes having a crushing strength of at least 45Kn/m. The joints of pipes of 100mm and 150mm diameter shall comprise natural rubber rings within polypropylene couplings.

PSLD 3.1.3 **FC Pipes**

The FC pipes and fittings comply with the applicable requirements for Series 4 pipes as set out in SABS 819.

The FC pipes and couplings shall be bitumen dipped.

PSLD 3.4 **Bedding**

Bedding of sewers shall be for flexible pipes (SABS 1200 LB) or concrete encased.

PSLD 3.5.2 **Precast Concrete Manhole Sections**

Add the following end of the Sub-Clause:

Joints between all wall sections and under roof slab shall be primed and sealed with a plasticized butyl rubber compound ("Bltjoint Putty" by ABE or similar approved) complete with one layer of 200mm wide compatible PVC tape and primer (similar or equal to the "Corro Clad" system supplied by Denso South Africa (Pty) Ltd) to be supplied and applied circumferentially to the outside of each wall section joint.

PSLD 3.5.6 **Mortar**

Delete the sub-clause and substitute the following:

Mortar for brickwork and, where so ordered by the Engineer, for external plasterwork to manholes shall be composed of one part of cement to three parts of clean pit sand. Mortar for the internal plasterwork to manholes where ordered and to the benching within manholes shall be composed of one part of cement to three parts of sand.

PSLD 3.5.8 **Manhole Covers and Frames**

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Add to the first paragraph of the Sub-Clause:

After installation all exposed portions of the CI cover and frame shall be thorough cleaned and painted with two coats of approved epoxy tar, particular attention being paid to the painting of the underside of the covers and frames.

Precast concrete manhole cover slabs, adaptor slabs and lids shall comply with the applicable requirements of SABS 1294 and to the details shown on the drawings. The precast concrete cover slab shall be so designed as to withstand a point load in the centre, as specified in Clause 8.7 of SABS 1294, of 50 kN for light duty covers and 100Kn for heavy duty covers. The lifting lugs shall be made of 6mm dia grade 316 stainless steel rod. The openings and undersides of all covers and slabs be coated with two coats of "Proofex 3".

PSLD 4 PLANT

PSLD 4.1 Pipe Handling and Rigging Equipments

Add to the Sub-Clause

The Contractor will be responsible for clearing the areas required for pipe storage which shall include the removal of rock, stones and all combustible material. He shall also be responsible for maintaining the area in a clean and tidy condition for the duration of the Contract.

Upon delivery of the pipes, fittings, specials and valves, these will be inspected jointly by the Engineer's Representative and the Contractor. Any pipes, etc found to be damaged shall be returned to the factory for repair or replacement; in which case the costs of additional transport, repair or replacement shall be borne by the Contractor. The Contractor will be held fully responsible for the care and safety of all pipes and fittings, etc on site and shall bear the cost of all renewals which may be necessary to make good losses, damages or breakages. Furthermore, he shall fully responsible for handling and re-loading material at the storage areas and for transporting and offloading of all such materials to their correct places along the pipeline route.

PSLD 5 CONSTRUCTION

PSLD 5.4 Connections to Manholes

Add the following paragraph to the sub-clause:

The rates tendered for the construction of manholes are to include for whatever additional costs there may be over and above the tendered rates for the supply, lay, joint, bed and test pipelines, for the supply and fixing the short lengths of pipes entering and leaving manholes.

PSLD 5.6.1 General

The underside of all manhole roofs and edges of the access opening therein and precast concrete covers and lids shall be painted with two coats of "Proofex 3" as supplied by Fosroc (Pty) Ltd, P.O. Box 477, New Germany, 3620, or similar approved rubberized bitumen coating so as to protect the concrete from the effects of sewage gases.

The tendered rates for manholes shall include for this work.

PSLD 5.6.5 Precast Concrete Manholes

In the first sentence, delete "Delete LD-5" and substitute with "with drawings"

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PSLD 5.7 Concrete Casing to Pipes

Add to the sub-clause:

Concrete casing is to be of 20/19 grade concrete with a minimum thickness of 100 mm below, above top and on each side of the pipe as and where ordered by the Engineer.

PSLD 5.9.3 Recording Location

Delete the last sentence and substitute

The records shall be handed to the Engineer, in a form acceptable to the Engineer, at the time when the Contractor claims payment for the relevant work.

PSLD 6 TOLERANCES

PSLD 6.2 Overall Centre-line Control and Manhole Locations

In second line delete "+-300mm" and substitute "+-150mm"

PSLD 6.3 Manhole Invert-levels

In second line read "+- 25mm" for "+-50mm"

PSLD 7 TESTING

PSLD 7.1.4 Sub Clause

Delete the Sub-Clause and substitute the following:

The sewer, and the house connections along its length, shall be tested simultaneously between manholes or chambers, as applicable. The house connections and the section of the sewer under test shall be suitably "plugged" at the open ends using plugs or stoppers which have been braced adequately.

PSLD 7.2.2 Water Test

The Water Test will not be acceptable under this Contract.

PSLD 7.2.6 Watertightness Testing of Manholes

Wherever ordered in writing by the Engineer that a manhole is to be tested, it is to be tested in his presence or in the presence of his authorized representative, in the following manner.

All sewer inlets and outlets to and from the manhole shall be closed with expanding plugs or other apparatus. Water is then to be introduced into the manhole up to a level 25mm below the underside of the roof slab. The water level is to be maintained for not less than one hour or such longer periods as may be necessary to accurately record the rate of leakage, if any. Careful and accurate records shall be kept at frequent and regular intervals of the variation in the level of the water in the manhole and of the quantity of the water added so that the rate of leakage may be properly determined. In the event of the rate of leakage, if any, exceeding 1.25l/h/m of depth of manhole, or in the event of any weakness, defect or fracture or visible signs of leakage occurring in the manhole under test, the Engineer shall have the right to order the test to be discontinued and the Contractor shall thereupon, at his own expense, search for and rectify any weakness or defect in the manhole under test, such work or rectification to consist of repair or replacement or both. The manhole shall thereafter be refilled with

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water and retested in the manner specified. This process shall be repeated until a satisfactory test is obtained.

The Contractor will be paid once only for the hydraulic testing of any given manhole at the rate per manhole to be quoted by him in the Schedule of Quantities. The Contractor's prices for the hydraulic testing of manholes shall include for all arrangements for the supply of water for testing the cost of water used in testing where the water is not obtained free of cost from the Employer for all work of rectification for retesting and for all labour required to carry out the specified tests.

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

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PSLD 8 MEASUREMENT AND PAYMENT

PSLD 8.2.5 Inspection Chambers

Delete the first and second lines and substitute the following:

Separate items will be scheduled for manholes, backdrops and inspection chambers, etc of each type and of each depth (measured from top of cover to invert) in increments of 1.0m for the first one metre thereafter in increments of 0.5m. The rate shall cover the cost of dealing with any excavation (in all materials, including backfilling and the disposal of surplus materials).

PSLD 8.2.6 Erf Connections

Add at end of Sub-Clause:

“or servitude boundary”

PSLD 8.2.11 Connection to Existing Sewers

The tendered sum is to include for breaking into the existing sewer manholes, dealing with the flow, caulking in the new pipe and for breaking out and reforming benching as required, making the manholes watertight.

PSLD 8.2.13 Intermediate and Hard Rock Excavation (New Sub-Clause)

Insert new Sub-Clause as follows:

8.2.13 Extra over item 'Manholes' above for

- a) Intermediate excavation Unit : m³
- b) Hard rock excavation by **normal blasting** or other methods as selected by the contractor (see PSLD 2.3) Unit : m³
- c) Hard rock excavation by **close proximity blasting** (see PSLD 2.3) Unit : m³
- d) Boulder excavation Class A Unit : m³

Separate items will not be provided for depth increments. Volumes will be computed from the plan area of either the intermediate or hard rock material, excluding the plan area of the specified pipe trench, which is within the area occupied by the manhole plus a side allowance of 600mm and the depth from the top of either the intermediate or hard rock material to the bottom of the same material or to the underside of the Manhole base slab, whichever is the lesser.

THE RATES SHALL COVER THE ADDITIONAL COST OF THE EXCAVATION AND HANDLING OF THE MORE DIFFICULT MATERIAL AND THE DISPOSAL OF MATERIAL

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PROJECT SPECIFICATION: PORTION 2

SABS 1200 LE: STORMWATER DRAINAGE

PS LE 3 MATERIALS

PS LE 3.1.1 Material for Subsoil Drainage

PS LE 3.1.1.1 Pipes

Pipes for subsoil drainage shall be uPVC pipes complying with the requirements of SABS 791, but shall be perforated or slotted.

The size of perforations in perforated pipes shall in all cases be 8 mm in diameter $\pm 1,5$ mm and the number of perforations per metre shall be not less than 26 for 110 mm pipes and 52 for 160 mm pipes. Perforations shall be spaced in two rows for 110 mm pipes and in three rows for 160 mm pipes.

Slotted pipes shall have a slot width of 8 mm $\pm 1,5$ mm. The arrangement of slots shall be subject to the Engineer's approval, but the total slot area shall be not less than that presented for perforations.

Pipes without slots or perforations required for conveying ground water from the subsoil drainage proper to the point of discharge, shall be uPVC pipes as specified above.

PS LE 3.1.1.2 Crushed-stone

Crushed-stone in subsoil drains shall be 19 mm single-sized stone complying with the grading requirements of stone for concrete in SABS 1083.

PS LE 3.1.1.3 Geotextile Blanket

The geotextile blanket around subsoil drains shall comply with the requirements of PS DK 3.1.4 in all respects.

PS LE 3.1.1.4 Sand

Sand obtained from approved commercial sources shall be clean, hard and durable and shall comply with the following grading requirements:

D15 : 0,2 mm to 0,4 mm

D85 : 1,2 mm to 4,7 mm

PS LE 5 CONSTRUCTION

PS LE 5.1 Trench Bottom

PS LE 5.1.3 Unsuitable Founding Conditions

Substitute "90 % of MAASHTO maximum density" in LE 5.1.3 with "90 % of MAASHTO maximum density (100 % for sand)".

PS LE8.2 BEDDING AND LAYING

PS LE 8.2.14 Supply And Install Subsurface Drains According To Drawings Unit : m

The length shall be measured on the centre line of the completed subsurface drain.

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The rate shall cover the cost of supplying, transporting, off-loading and installing all materials as well as for cutting, wasting, overlapping and installing of the materials where applicable.

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PARTICULAR SPECIFICATION: PA

BRICKWORK AND PLASTER

PA1 SCOPE

PA1.1 This specification covers the general requirements for buildings and other masonry structures, including plastering.

PA2 INTERPRETATION

PA2.1 Other relevant Standards/Specification

This specification should be read together with SABS 1200 AA.

PA2.2 Applicable Edition of Standards

Each standard specification referred to in this specification shall be deemed to be the latest edition, applicable on the tender closing date.

PA2.3 Definitions and Symbols

For purposes of this specification, the definitions and symbols given in the National Building Regulations and Building Standards Act, 1977 (referred to further on in this specifications as "Building Act"), where applicable, shall apply. (Definitions: pages 5 to 14, Symbols : page 23.)

PA3 MATERIALS

PA3.1 Cement

Cement shall conform to the requirements of SABS 471.

PS3.2 Lime

Lime shall be of approved manufacture, well burnt and of uniform quality conforming with SABS 523.

PA3.3 Sand

Sand to be used for mortar and plaster shall comply with the requirements of SABS 1090.

PA3.4 Clay Bricks

Clay bricks must conform to SABS 227. A sample of bricks to be used for construction must be given to Engineer for approval before construction bricks are delivered to site.

The contractor will be required to carry out necessary tests and provide certificates for compliance of the bricks with SABS 227. The cost of these tests will be deemed part of the scheduled rates and no additional payment will be made therefore.

Best quality engineering bricks shall be used for all foundation and concealed situations.

PA3.5 Damp-Proofing

C3: SCOPE OF WORK

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Material used as a dampproof course shall conform to the requirements contained either in SABS 248 or in SABS 952. Type FV fibre-felt sheets or Type C polyethylene sheets shall be supplied under the contract.

PA3.6 Fibre Cement Sheets

Fibre cement flat sheets, minimum 15 mm thick, shall comply with the requirements of SABS 685.

PA3.7 Storage

PS3.7.1 Cement and Lime

Cement and lime stored on the site shall be properly protected against moisture to the satisfaction of the engineer.

PA4 CONSTRUCTION

PA4.1 Brickwork

Brickwork shall be well and regularly bonded, with no false headers and none but whole bricks except where legitimately required as closers. All bricks must be thoroughly dampened before laying and each brick is to be laid with full joints and pressed into its bed so as to squeeze out superfluous mortar and give a finished joint not exceeding 8 mm thick in the case of the face work or 13 mm thick in the case of plastered walls or work not exposed to view. All joints, both horizontal and vertical, notwithstanding any grade custom to the contrary, are to be filled solid with mortar for their full width and depth, each course being flushed with mortar, worked well down into all vertical joints before the succeeding course is laid. Horizontal joints and vertical joints of face work shall be pointed flush in manholes and catchpits, but shall be pointed and finished with a tooled recessed joint elsewhere. Plastered walls shall have the joints raked out to a depth not less than 13 mm and not more than 20 mm, and subsequently refilled with mortar of the same proportions as the original bedding mortar. In no circumstances may joints be so formed as to expose any perforation in the units.

Wire ties, where required, shall be stainless steel and are to be installed at 5 per square metre.

PA4.2 Mortar

The mix proportions for the mortar are given below:

Portland cement	50 kg
Lime	0-40 l
Sand*	200 l max.

* measured loose and damp

PA4.3 Plastering

Plaster shall be of the same proportions as the bedding mortar. Any other plaster mixes will be subject to the approval of the Engineer.

PA4.4 Dampproof Courses

The areas to be covered by dampproof courses are indicated on the drawings. Dampproof shall be laid on a surface which shall not contain any sharp objects which may perforate the membrane. The full width of the wall and the whole area under the floor is to be covered by the membrane and shall overlap by not less than 100 mm under

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the floor, and by not less than 150 mm under the wall. All joints shall be effectively sealed. Where shown on the drawing, the dampproof course is to be stepped up one course of brickwork in the inner skin. Proper returns are to be made at all doorframes.

PA4.5 Window Sills

Windowsills shall be formed as shown on the drawings and as hereafter described:

Dampproof sheeting shall be provided one brick course below the sill and shall be turned upwards and terminate behind the window frame to provide an efficient weather-tight seal.

All external sills and some internal sills, where shown, shall be formed in quarry tiles and other internal sills where shown are to be of fibre cement sheet minimum thickness 15 mm to SABS 685 with approximately 20 mm projection beyond the finished face of the walls.

External sills shall be laid to a 20° weathered slope while internal sills shall be laid horizontal.

All tiles shall be bedded in 3:1 cement mortar and neatly pointed.

PA4.6 Lintels with Brickwork Reinforcement

Lintels over doors, windows and openings, where ordered by the Engineer, shall be reinforced with four layers of BRC brickforce, or approved equal. The latter reinforcement shall extend a minimum of 450 mm beyond any opening. All joints in the six courses of brickwork above the opening shall be fully flushed with cement mortar. Shoring to soffits of lintels shall be left in position for at least 14 days after building the lintel and the brickwork shall be kept damp with wet bags for the whole of this period.

PA4.7 Wall Vents

Ventilator openings shall be formed through walls where indicated and shall be provided with double brick terracotta louvred air bricks (fitted with plastic insect screens) both externally and internally (where scheduled) set flush into the work and neatly pointed. Internal wall vents are to be of an approved plaster of paris type where scheduled.

PA4.8 Building in Frames, etc

Door and window frames are to be set up, built into position, bedded and pointed in cement mortar, with any necessary cutting to brickwork, fitting and making good, as the brickwork is built up. In the case of doorframes, wrought iron right angled cramps are to be fixed to doorframes and built into brickwork at every eighth course.

Where pipes, frames, brackets or other such parts pass through or have to be set into brickwork, the bricks shall be carefully cut and fitted to maintain regularity of courses and uniformity of joints, the shaped bricks being embedded and pointed to conform with the surrounding brickwork. Where such parts have to be set into position after brickwork is built, holes shall be left wherever possible, in preference to cutting out bricks, and the work shall be subsequently made good in the manner described.

PA4.9 Floor Finishes

PA4.9.1 Granolithic Floor Screed

Granolithic shall consist of one part cement, one part sand and two parts 5 mm stone chips and oxide where required, thoroughly mixed as for concrete and placed in a layer

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not less than 20 mm thick, levelled or graded and trowelled to a smooth uniform surface. To ensure proper bond, the concrete surface to be covered shall be clean, roughened by chipping, flushed with water and coated with cement grout just before placing of the granolithic layer. Granolithic finish is to be steel floated with V joints in squares of 1,20 m to 1,80 m, the joints extending for the full depth of the granolithic. Joints are not required in the granolithic screed where it is to be overlaid by tiles or carpeting.

PA4.10 Chasing Walls

Where indicated by the electrical contractor, the construction contractor shall chase brickwork and concrete work to accommodate electrical conduit - such chasing shall precede plastering or rendering and on no account shall plastering or rendering be commenced until the electrical tubing has been installed. No horizontal or diagonal chases shall be permitted.

Elsewhere, electrical conduit shall either be cast into concrete or shall be run on the surface afterwards as may be directed by the Engineer.

PA4.11 Weather

In any period of interruption caused by inclement weather, and at the completion of each day's bricklaying, freshly laid brickwork should be protected.

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PARTICULAR SPECIFICATION: PB

CARPENTRY, JOINERY AND IRONMONGERY WORK

PB1 SCOPE

PB1.1 This specification covers the general requirements for carpentry, joinery and ironmongery work for civil engineering projects and the methods by which the finished work is to be measured for the purpose of payment.

PB2 INTERPRETATION

PB2.1 Other Standards/Specification

This specification is to be read with SABS 1200 AA .

PB2.2 Applicable Edition of Standards

Each standard specification referred to in this specification shall be deemed to be the latest edition, at the closing date of tenders for this contract.

PB3 MATERIALS

PB3.1 Timber

Roof timber forming a permanent part of the work shall conform to the requirements of the relevant standard specifications SABS 563, SABS 653, SABS 876, SABS 1089 or SABS 1245.

All timber other than that used for temporary works or shuttering shall be treated as specified in SABS 1288 and SABS 05, and allowed to dry thoroughly before being used.

PB3.2 Fibre Cement Sheets

Fibre cement flat and corrugated sheets shall comply with the requirements of SABS 685. The flat sheets shall be minimum 15 mm thick.

PB3.3 Hardware

Locks, hinges and other hardware shall be provided to doors; all ironmongery and fixings shall be chromium plated on brass except where otherwise specified.

PB3.3.1 Hinges

Hardwood doors in hardwood frames are to be provided with brass butt hinges as scheduled with three hinges per leaf.

PB3.3.2 Door Locks and Furniture

External door to be fitted with a night latch (to be supplied by the Employer) and a Henderson No 463 bow handle, secured with brass bolts passing through the door with nuts on the inside.

PB3.3.3 Cabin Hooks

One 200 mm brass cabin hook complete with eyes to be fitted to each door including for hardwood block plugged to walls or post as scheduled.

PB4 MEASUREMENT AND PAYMENT

C3: SCOPE OF WORK

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- PB4.1** The work will be measured and paid for in accordance with the units and rates scheduled.
- PB4.2** The tendered rates for doors are to include for the manufacture, fitting hanging and protective painting thereof.
- PB4.3** The tendered rates for ironmongery shall include for the supplying and fitting complete with non-corrosive screws and/or bolts.

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PARTICULAR SPECIFICATION: PC

PAINTING

PC1 SCOPE

PC1.1 This specification covers the general requirements for painting, including methods of preparation of materials to be painted, cleaning, priming, undercoating and finishing, and also methods by which the finished work will be measured and paid for.

PC2 INTERPRETATION

PC2.1 Supporting Specification

This specification must be read together with SABS 1200 AA

PC2.2 Applicable Edition of Standards

Each standard specification referred to in this specification shall be deemed to be the latest edition at the tender closing date.

PC3 MATERIALS

PC3.1 Emulsion Paints for Exterior Use

Emulsion paints for exterior use shall comply with SABS 634.

PC3.2 Calcium Plumbate Primer

Calcium plumbate primer shall comply with SABS 912.

PC3.3 Undercoats for Paints

Undercoats for air-drying protective and decorative paints shall comply with SABS 681.

PC3.4 Structural Steel Paints

Structural steel paints shall comply with SABS 684.

PC3.5 Colours of Paints

Specification for colours of paints shall comply with CKS 279.

C3: SCOPE OF WORK

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PARTICULAR SPECIFICATION: PD

DISINFECTION OF PIPELINES

PD 1 INTRODUCTION

The price for testing and disinfecting pipelines and fittings is included in the scheduled items for supply and installation.

On completion of construction, after pressure testing and prior to commissioning the pipeline is to be disinfected by the contractor in accordance with this specification.

PD 1.1 Scope of the Code of Practice

This Code of Practice relates to the disinfection of parts used for the disinfection of complete installations.

It includes the requirements for bacteriological sampling and dosage of disinfectants, dose rates of disinfectants, disposal of chlorinated water and quality standards for bacteriological samples.

PD 1.2 Definitions

Within this document the term HYPOCHLORITE SOLUTION means a commercial solution of sodium hypochlorite containing 10% to 15% of available chlorine. Also, 10% HYPOCHLORITE SOLUTION means hypochlorite solution diluted one part in ten which thus has approximately 1% of available chlorine.

Within this document AVAILABLE CHLORINE and all chlorine concentrations means FREE CHLORINE available to the water environment for its disinfection.

'Water Supply Personnel' means any employee or contract or casual labour whose work includes, even temporarily, the performance of work concerned with partially or fully treated water and sources of underground water and who must possess a current certificate of medical suitability signed on behalf of the Authority.

PD 1.3 Hygiene

Only 'Water Supply Personnel' may undertake the procedures laid out in this Code of Practice.

PD 1.4 Safety

This Code of Practice does not cover the safety aspects of the construction or maintenance of installations or apparatus or of disinfection procedures.

Remember always that chlorinating agents are strongly corrosive so protect EYES AND HANDS especially.

PD 2 GENERAL REQUIREMENTS FOR DISINFECTION OF POTABLE WATER APPARATUS

PD 2.1 Components and Equipment

Clean all pipework components, equipment and tools used for repair and remove all grease or scale from components and equipment before use or assembly.

Where full chlorination and bacteriological testing is impractical, then disinfect all materials, components and equipment which could transmit contamination. Use a solution containing 1% of available chlorine (e.g. 10% chloros or other commercial hypochlorite solution or 2% solution of bleaching powder. Contact time must exceed 20 minutes. Rinse or flush the equipment with mains water to prevent excessive corrosion.

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PD 2.2 Completed Installations

Ensure that all water used for disinfection purposes has a free chlorine residual of at least 20 mg/ℓ. Refer to section PD 4 and Tables 1 and 2 for volumes or dose rates.

During chlorination the pipeline shall be kept full of water.

Whenever possible keep the installation at normal operating pressure or greater during the contact period.

PD 2.3 Portable Test Equipment

Portable test equipment which may be used in contact with potable water must be kept clean. Any equipment which is in uncertain condition or which is contaminated must be cleaned and disinfected before use.

PD 3 MAINS

PD 3.1 New Mains

PD 3.1.1 Introduction

Do not connect any new main into supply until the water from designated sampling points, having stood in the main for at least 20 hours, has met the criteria specified herein.

New mains are laid with the intention of ensuring as far as possible, the exclusion of debris and contamination, but presume at the disinfection stage that debris and contamination does exist and that this debris is resistant to disinfection, e.g. compacted soil or detritus in joints.

The disinfection procedures, which should follow pressure testing, include:

- (a) swabbing and flushing of the main
- (b) soaking of the main for a minimum period of **20 hours**, using a minimum concentration of **20 mg/ℓ** of available chlorine in mains water.
- (c) removal of excess chlorine by flushing the main

PD 3.1.2 Pressure Testing

Only use potable quality mains water for pressure testing new mains. Pressure testing normally follows the construction of each section of the pipeline but precedes final connection to supply. Do not rely on a single sluice valve to isolate the new main from the supply network, while the main is under pressure until disinfection and approval are complete.

PD 3.1.3 Swabbing and flushing

Swab all new mains after pressure testing and prior to disinfection.

After insertion of a soft foam swab, which has been soaked in 10% hypochlorite solution, recharge the pipeline at a rate less than 50 mm per second (3 m per minute) to ensure that the swab is not moved.

Open the inlet valve fully and drive the swab along the pipeline, at a velocity less than 0,5 m per second (30 m per minute), by controlling the valve at the discharge end.

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When the swab reaches the discharge end of the pipeline, flush the main for at least 5 minutes to remove all excess chlorine and discoloured or dirty water. Where possible open inlet and outlet valves as fully as possible.

If the swab removes excessive amounts of debris then re-swab the main.

PD 3.1.4 Chlorination

Chlorinate all new mains to a minimum of 20 mg/ℓ available chlorine and leave to soak for a minimum of 20 hours, prior to flushing with mains water to a chlorine residual equal to that of the background level in the incoming mains water.

Tables in PD 4 show the required minimum dose rates and volumes.

To chlorinate sections of distribution main, less than about 50 m long not exceeding 150 mm in diameter, use a soft swab which has been soaked in 10% hypochlorite solution and proceed as follows:-

- Pour 1 litre of hypochlorite solution for each 1 m³ of pipeline, into the end of the pipe upstream of the final connection.
- Insert the swab into the end of the upstream pipe to retain the hypochlorite solution.
- Make the final connection.
- Drive the swab past the final connection and along the pipeline, but do not allow the swab to travel at a speed greater than 0,3 metres per second (20 m per minute).
- Remove the swab and flush the main for 25 minutes.
- Close up the main prior to soaking and sampling in accordance with section PB 3.1.6.

The volume of hypochlorite needed for 50 m of pipeline is:-

50 mm - 100 mℓ,	75 mm - 200 mℓ,	100 mm - 500 mℓ,
150 mm - 900 mℓ,	200 mm - 1600 mℓ,	250 mm - 2500 mℓ.

Take all necessary care with the disposal of chlorinated water; follow the procedure laid out in PB 5.

PD 3.1.5 Sampling for Bacteriological Analysis

Once all pressure testing, swabbing and chlorination is complete, fill the main with clean mains water free from excessive chlorine.

Flush all hydrants, washouts and other outlets until the water is clean and free from excessive chlorine. Shut the valves and leave the main to soak for a minimum period of 20 hours.

First check with the laboratory staff of the Ugu District Municipality to determine a suitable time for collection of samples and delivery of them to the laboratory for analysis.

Then pressurise the main and take samples for bacteriological analysis in accordance with the procedure given in section PB 3.1.6. Take these samples from sampling points agreed with the Resident Engineer.

Deliver all samples to the laboratory as soon as possible. Analysis must start within six hours but store the samples in a refrigerator if the delay between taking the sample and the start of analysis is likely to exceed four hours.

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Then isolate and leave the main until the results of analysis are available. In the event that the samples fail, flush the main and re-sample after a further soak period of at least 20 hours.

Repeat the above process until disinfection criteria have been satisfied.

The costs of all necessary testing are to be borne by the Contractor.

PD 3.1.6 Sampling Points

Sample points should consist of a ferrule connection, with a short length of polythene piping terminating in a ½" BSP gate valve or manual air valve. Protect this sampling outlet by suitable boxing. Attach a sampling standpipe to the gate valve, disinfect the apparatus with hypochlorite solution and then flame the bib tap outlet on the standpipe. Flush out all traces of hypochlorite, check that the residual chlorine level is not greater than the normal level in the incoming mains water.

At scour points and air valves, flush out all trace of hypochlorite, check that the residual chlorine level is not greater than the normal level in the incoming mains water, then take samples.

PD 3.1.7 Temporary Cross Connections and Final Connections

Where a temporary cross connection supplies mains water to the new main, before making the final connection complete the disinfection procedure of the new main as set out above.

When the new main has been proved bacteriologically satisfactory the cross connection may be removed and isolated after suitable disinfection.

PD 4 DOSAGE OF CHLORINATING AGENTS

PD 4.1 Sodium Hypochlorite Solution

Bulk supplies of sodium hypochlorite solution (Chloros for instance), are supplied at 10 to 15% available chlorine. This fraction declines progressively as the hypochlorite decays to chloride, chlorate and oxygen. Assume in practice that there is only 10% available chlorine.

Assuming 10% available chlorine, and using mains water having a zero chlorine demand, then the following values give estimates of the dilutions required.

- 10% hypochlorite solution (1 part hypochlorite solution in 10 parts solution) contains 10,000 mg available chlorine per litre of 10 kg available chlorine per cubic metre.
- 20 mg available chlorine per litre is equivalent to 200 ml of hypochlorite solution per cubic metre of water.
- 0,5 mg available chlorine per litre is equivalent to 5 ml of hypochlorite solution per cubic metre of water.

PD 4.2 Chlorine Gas

Chlorine gas, dosed into water by weight, is likely to be about 98% available chlorine. Therefore a direct measurement gives a reasonable estimate.

- Disinfection of replacement parts with chlorine gas is not a practicable possibility.
- 20 mg Chlorine gas (by weight) per litre for disinfection of complete installation is equivalent to 20 grams per cubic metre.

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- 0,5 mg Chlorine gas (by weight) per litre of water is equivalent to 0,5 grams per cubic metre.

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PD 4.3 Bleaching powder, granules and tablets

Bleaching powders, granules or tablets based on Calcium hypochlorite contains 50% to 70% of available chlorine by weight. These materials must be stored under dry conditions. During storage some available chlorine is lost. Follow the manufacturers instructions particularly concerning the shelf life of the material and dose rate of the tablets.

For calculation purposes presume a maximum value of 50% available chlorine i.e. 1 gm of powder, granules etc in 1 litre of water provides 500 mg per litre available chlorine.

PD 4.4 Dose rates

Tables 1 and 2 provide estimates of the minimum dose rates of sodium hypochlorite solution, chlorine gas or bleaching powder, tablets or granules to achieve available chlorine levels of 20 mg per litre when dilute with mains water which has a zero chlorine demand.

Table 1 - dosage for 1,000 m of pipeline to give 20 mg available chlorine per litre

Pipe Diameter	Volume of 1000 m of pipeline	Weight of bleaching powder granules or tablets to give 20 mg/ℓ	Weight of chlorine to give 20 mg/ℓ	Volume of hypochlorite solution to give 20 mg/ℓ
mm	m ³	gm	gm	litres
50	1,9	80	40	0,4
75	4,4	180	90	0,8
100	7,9	320	160	1,5
150	17,7	700	350	3,5
200	31,4	1,260	630	6,2
250	49,1	2,000	980	9,7
300	70,7	2,800	1400	14,0
350	96,2	3,800	1900	19,0
400	125,6	5,000	2500	24,6
500	196,3	7,800	3900	38,4
600	282,6	11,200	5600	55,4

Table 2 - dose rates for 20 mg available chlorine per litre

Flow rate in pipeline*		Hypochlorite solution injection rate for 20 mg/ℓ		Chlorine injection rate for 20 mg/ℓ
litres/sec	m ³ /hr	litres/hr	mℓ/sec	gm/hour
1	3,6	0,7	0,2	72
2	7,2	1,4	0,4	144
3	10,8	2,2	0,6	216
4	14,4	2,9	0,8	288
5	18,0	3,6	1,0	360
6	21,6	4,3	1,2	430
7	25,2	5,0	1,4	500
8	28,8	5,8	1,6	576
9	32,4	6,5	1,8	650

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* For flows greater than 9 litres/sec the dose rates can be calculated by multiplying by an appropriate factor of 10 e.g.

186 litres/sec = 100 + n 80+ 6 litres/sec
hypochlorite solution = 70+ 58 + 4.3 = 132,3 litres/hr

PD 5 DISPOSAL OF CHLORINATED WATER

PD 5.1 Introduction

When the pipeline has passed all disinfection criteria it must be drained without causing hazard.

PD 5.2 Methods of Disposal

PD 5.2.1 Overland

Explore the possibility of soaking away disinfection water on adjacent land in rural situation.

PD 5.2.2 Foul sewers

Where disinfection water is discharged into a combined or foul sewer, no de-chlorination is normally necessary but in the former case take care that the rate of discharge of disinfection or flushing water avoids operation of storm sewage overflows and/or the creation of a hazardous atmosphere within the sewer.

PD 5.2.3 Watercourses

In rural areas where disinfection water is discharged to watercourses, either directly or through surface water drains, do not permit a free chlorine concentration in the receiving stream in excess of 0,1 mg/l about 50 metres downstream of the point of discharge. If the discharge is into a ditch, which is not a spawning ground or a nursery or a fishing stream, take advantage of that ditch to mop up chlorine provided that in a significant stream the earlier mentioned limit is not exceeded. In these circumstances use flush water to dilute the chlorinated water whenever possible. Avoid discharge of disinfection water to the head of a watercourse because this area is probably a spawning ground.

PD 5.2.4 Disposal of large volumes

When disposing of large volumes of disinfection water from very long lengths of new main, or in any cases of doubt, consult through the Resident Engineer, the laboratory staff of the Employer.

PD 5.3 De-chlorination

There is no objection to the use of thiosulphate or sulphur dioxide as de-chlorination agents. In some cases, at least partial de-chlorination may be achieved by discharge over land. In all cases consult the Resident Engineer.

PD 6 QUALITY STANDARDS AND REPORTING PROCEDURES

PD 6.1 New Mains

PD 6.1.1 Bacteriological Standards

No coliform organisms shall be detected in 100 ml's of the sample.

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The increase in the yeast agar plate count when compared with that of the incoming water shall generally be less than 50 and never more than 150 colonies per ml when incubated at 37°C for 24 hours.

PD 6.1.2 Procedure for Unsatisfactory Samples

Whenever even one E.Coli, or 5 or more coliforms per 100 ml are detected, re-chlorinate the main or serve reservoir. When E.Coli are not detected but the total coliform count is less than 5 per 100 ml flush and re-sample the main.

PD 6.1.3 Physical Standard

If the sample is unusually coloured, turbid or frothy flush the main until acceptable. If this condition is severe, re-sample the main but do not put into service until the samples have passed the required standards.

PD 6.2 Reporting Procedure

Records of disinfection are to be handed to the Resident Engineer.

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PARTICULAR SPECIFICATION: PE

THE CLIENT'S PRE-CONSTRUCTION AND HEALTH PLAN

PE1 INTRODUCTION

PE1.1 Purpose and Scope

This document describes the procedure upon which the COMPANY shall comply with the requirements set out in the client's Health and Safety Specification.

This document defines the Management System that is implemented by the COMPANY for the management of Health and Safety on the project, which includes ensuring subcontractor compliance with the same standards.

The aim of this document is to present the safety aspects that will be controlled and managed on the project.

PE1.2 Reference Documents

- Occupational Health and Safety Act, (Act No. 85 of 1993)
- Compensation for Occupational Injury and Diseases Act.
- Client Health and Safety Specification.
- Construction Regulations 2003.
- The Construction Kit. (CD)

PE1.3 Definitions

The following definitions will apply to the Safety Management Plan, acronyms given hereunder shall apply:

Construction / Building Work (as defined by the Occupational Health and Safety Act: Construction Regulations 2003):

Means any work in connection with –

- a) The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or an addition to a building or any similar structure;
- b) The installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling;
- c) The construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
- d) The moving of earth, clearing of land or making of an excavation or work on any similar type of work.

Hazard Identification and Risk Assessment and Risk Control (HRA):

Means a documented plan, which identifies hazards, assesses the risks and detailing the control measures and safe working procedures, which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

Site

Means the area in the possession of the Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Contractor, and approved for such use by

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the Engineer and/or client.

The Act

Means, unless the context indicates otherwise, the Occupational Health and Safety Act, 1993 (ACT NO. 85 of 1993) and Regulations promulgated there under. **(OHSA)**

Hazard

Means a source of or exposure to danger (source which may cause injury or damage to persons, or property)

Risk

Means the probability or likelihood that a hazard can result in injury or damage.

Contractor's Responsible Person / s

Means any person appointed in writing by the Contractor to supervise construction or building work. The appointment shall be as required by the OHSA which shall stipulate health and safety responsibilities, area of responsibility and the proposed duration of the project.

Hazardous Chemical Substance (HCS)

Means any toxic, harmful, corrosive, irritant or asphyxiant substance, or a mixture or substances for which an occupational exposure limit is prescribed, or an occupational exposure limit is not prescribed, but which creates a hazard to health.

Construction Plant (TEM)

Encompasses all types of plant including but not limiting to, cranes, piling frames, boring machines, excavators, dewatering equipment and road vehicles with or without lifting equipment.

Contractor

Means "subcontractor".

Health and Safety Program

Encompasses the The COMPANY safety planning spreadsheet.

Health and Safety Plan (HSP)

The content of this document which will be made available on site for inspection by an inspector, Technical Officer, Agent, subcontractor, employee, registered employee organisation, health and safety representative, or member of the health and safety committee.

Health and Safety File

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Describes the safety file holding all records on health and safety for the project, which shall be available at all, times for evaluation, and copy of which will be forwarded to the client upon completion of the project.

PE1.4 Responsibilities

(a) Notification of Intention to Commence Construction Work

The Provincial Director of the Department of Labour shall be notified by the appointed safety consultant to the COMPANY, immediately upon receipt of the Letter of Acceptance of project commencement in accordance with the following requirements:

- The demolition of a structure exceeding a height of 3 meters; or
- The use of explosives to perform construction work; or
- The dismantling of fixed plant at a height greater than 3 meters; or
- The work exceeds 30 days or will involve more than 300 person days of construction work; and
- Includes excavation work deeper than 1 meter; or
- Includes working at a height greater than 3 meters above ground or a landing.

A copy of the notification letter to the Provincial Director shall be forwarded to client for their records and shall be made available to an Inspector, Project Engineer or employee.

(b) Assignment of Contractor's Responsible Persons to Supervise Health and Safety on Site

The Contracts Manager and Site Agent shall ensure copies of all the appointment letters of the responsible persons appointed on site will be made available to the client and that all legal appointments shall be conducted in accordance with the requirements set out in the **OHSA** and Client specifications.

The above shall also be imposed upon all subcontractors.

(c) Safety Officer Appointment

A part-time Health and Safety consultant shall be appointed upon commencement of the project.

The safety officers shall be tasked with monthly inspections of the site, the results of which shall be forwarded to the client or his appointed representative.

(d) Risk Assessment Competent Person

The Project Manager shall appoint a competent person in writing at commencement of the project to control the risk assessment process on site. A copy of the risk assessment appointment is attached with duties and responsibilities defined.

(Annexure E)

(e) Competency for Contractor's Responsible Persons

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The Project Manager acknowledges that all management personnel (responsible for health and safety) shall undergo a half-day Health and Safety Management Course, which is to be arranged and conducted by the appointed safety consultant prior to commencement of activities on site.

(f) Health and Safety Representatives

At least one (1) Health and Safety Representative shall be nominated, elected and trained to carry out his / her functions in his / her area of responsibility. This will include areas where less than fifty (50) employees are engaged in activity. Employees elected shall be designated in writing for a specific area and period of time.

The designated persons shall conduct monthly inspections within their area of responsibility, the records shall be kept for auditing and that deviations recorded are reported to the responsible supervisor within the designated persons area so that appropriate action can be taken.

The designated person/s shall be permitted to participate in the Health and Safety Committee Meetings.

PE1.5 Objectives and targets

- Compliance with the COMPANY Health and Safety Policy.
- Everyone is responsible for organising accident prevention at his or her own level on site.
- Safety training is important.
- Prevention.
- Working safely ensures your job.
- The COMPANY management commits itself to the objectives and targets.
- Disabling Injury Frequency Rate (DIFR) of 2.0 or less.
- 90% compliance on monthly Health and Safety Audits.
- Compliance with the legal requirements set out in the Occupational Health and Safety Act, Act 85 of 1993, (OHSA) and Regulations.
- Compliance with the Client's Safety Specification for Construction.

PE1.6 Planning and Procedure

The procedures to be used for the project are to be in accordance with the Safety Manual in use in the COMPANY under the guidance of the appointed safety consultant.

The sub-headings covered under the Safety Manual are as follows:

- Administration
- Appointments
- Safety Committees
- Registers, checklists and permits
- Incident Management
- Emergency Planning
- Contractors
- Risk Assessments
- Audits
- Hazardous substance control
- Training
- Mining Requirements
- Roads Requirements
- Planning

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PE1.6 Implementation of the Occupational Health and Safety Specification

The COMPANY is committed to implementing client specific safety specification on the project and is committed see that this forms an integral part of the project. It is our intention to make this specification part of other Contractors and Suppliers operating procedures.

PE1.7 Application of the Health and Safety Specification

(g) **Compensation of Occupational Injuries and Diseases Act, Act No. 130 of 1993 (COIDA)**

The letter of good standing will be available on site for reference purposes as proof of good standing.

The COMPANY shall ensure all Contractors also comply with the above requirements defined in the COIDA.

(h) **Occupational Health and Safety Policy**

The COMPANY Health and Safety Policy is attached for reference purposes.
(Annexure A)

(i) **Hazard Identification Risk Assessment**

The Contract Manager shall ensure the Site Agent shall prior to the commencement of any construction work perform Hazard Identification, and the assessed risks shall form part of the health and safety plan applied on site.

A copy of the HRA shall be made available for viewing to the client.

The Site Agent shall ensure that all HRA's conducted will be conveyed to all personnel and contractors through the site training program and that these training sessions will be presented by the competent person regarding the hazard and related work procedures before any work commences.

The HRA Team that will be established will comprise members as follows:

- Health and Safety Representative(s),
- Health and Safety Committee Member(s)
- Management Representative / Site Agent

Attached in the form of **Annexure C and D**, the Hazardous Task Identification and (HTI) and format of the Risk Assessment (RA) is included.

Method statements form part of the Risk Process and will conducted in accordance with the Risk Process described above.

Based on the activities carried out on all projects Hazard Investigation and Risk Assessments (HRA's) will be done. Examples of which are:

- Site Establishment
- Demolition works
- Excavation
- Concrete works
- Lifting operations

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- Hand held tools
- Motorised Equipment

(j) Health and Safety Committee

The Project shall convene a health and safety committee meeting monthly. All members required to be in attendance shall be notified of such meeting by means of a formal agenda.

The Site Agent shall ensure an attendance register and minutes are kept for auditing purposes, and that a copy of the minutes be circulated to all members in attendance well before convening the next meeting and within 7 days, a copy of the minutes will be forwarded to the project engineer.

Members of the committee shall include the following and are not limited to:

- Safety Consultant. (When available)
- Contractor's site representative. (Supervisory level)
- Contractor's site representatives. (Operating level)
- Project Engineer nominated representative. (Co-opted status)

(k) Health and Safety Training

Training of personnel is a legal requirement and a necessity and is acknowledged as such. The Training Planning Matrix shall be provided upon request.

Induction Training

Induction training shall be attended with the Client as well as the The COMPANY Induction program requirements and records of attendance kept to prove the same.

The COMPANY Induction format is attached for reference purposes.
(Annexure E)

Awareness Training

Weekly awareness training shall be conducted using the The COMPANY Toolbox Talk documents, which shall be conducted by the site supervisors. **(Annexure F)**

Competency

Training identified through the Risk Assessment Process and conducted through this process shall be kept on file as proof of competency and training. (This may include operators)

First Aid and Health & Safety Representative Training

All safety representatives elected and designated, including first aiders, shall be trained should they not already be in possession of a valid certificate of training proving competence.

General Record Keeping

The Site Agent shall ensure that all the Health and Safety records, required by both the Occupational Health and Safety Act, 85 of 1993 and Regulations are kept for reference purposes and auditing.

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Further to the requirements set out above, the Site Agent will also maintain records that may be defined through the risk assessment process, for auditing purposes.

In accordance with the requirements set out in the Construction Regulations 2003 and the requirement set out in Client Specification the Site Agent shall ensure that a copy of all Health and Safety records generated during the course of construction, be handed over to the Project Engineer upon completion of construction.

Statistics

The Site Agent shall ensure injury and incident records (Near Hits, First Aid, Medical cases, Disabling Lost Time Incidents), training etc. referred to above are kept on site. All documents shall be made available to the client for inspection including the Department of Labour's Inspectors as required by the Occupational Health and Safety Act, 85 of 1993.

The statistics formula as listed below shall be adhered to.

DIFR (Disabling Injury Frequency Rate)	$\frac{\text{DI's} \times 1\,000\,000}{\text{Man-hours}}$
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DISR (Disabling Injury Severity Rate)	$\frac{\text{Days Lost} \times 1\,000}{\text{Manhours}}$
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General Inspection, Monitoring and Reporting

The COMPANY shall comply with the requirements set out by the client. We have attached a safety management plan upon which the dates of inspections and training and awareness will be entered, conducted and monitored.

The COMPANY shall keep all records of inspections and investigations undertaken during the contract for the specified legal period as defined in the OHSA and Regulations.

Internal Audits

Internal audits shall be conducted a minimum once per month by the project engineer, as well as the appointed safety consultant.

The Results shall be tabled and discussed at the Health and Safety Committee meetings.

The Audits to be conducted by the appointed safety consultant shall be conducted on the audit schedule attached as per **Annexure G**.

Records of the audits shall be forwarded to the Project Engineer and shall be filed on site for reference purposes.

(l) Incentives

No incentive scheme is being identified unless required by the client.

(m) Penalties

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Non-compliance with the client safety specifications can result in work stoppages and possible expulsion from site until the problem has been remedied including costs.

(n) **Emergency Procedures**

The Site Agent shall make available to the Project Engineer a detailed Emergency Plan to tie into the evacuation plan already in place on the client's premises.

First Aid Box and Contents

The Site Agent shall ensure that all working areas are adequately provided with first aid attendants whether there are fifty (50) employees or less engaged on the contract. The First Aid attendant shall be trained in accordance with the requirements set out in the OHSA with recognised and accredited service providers as defined above.

Proof of training attended (certificate) shall be attached to the written acceptance of appointment. It will be the first aid attendant's responsibility to ensure the contents of the first aid boxes are monitored and inspections recorded on the contents of the first aid box register.

The first aid box shall be adequately stocked by The COMPANY at all times and will be accessible to all.

Accident and Incident Reporting and Investigation

Should accident investigation need to be conducted, the Project Manager shall appoint a competent person in writing to conduct the said investigation. The procedure to be followed will be in accordance with the OHSA requirement on the Annexure 1 – Recording and Investigation of Incident form.

The Site Agent shall ensure that the results of all investigations are communicated to the employees engaged through incident recall and prescribed meetings. The Site Agent shall ensure that the investigations are kept for record purposes in accordance with the prescribed requirements set out in the OHSA and the company specific procedures.

Should there be an incident, the Project Engineer shall be notified within 48-hours if required by the client, of the occurrence. It is acknowledged that the client reserves the right to participate in all investigations into accidents or incidents.

Hazards and Potentially Hazardous Situations

The Site Agent shall ensure that all other contractors or contractors are warned of hazardous or potentially hazardous situations, which may prevent them from effectively performing their duties, which includes the placement of adequate warning signs.

(o) **Personal Protective Equipment and Clothing**

The COMPANY shall comply with OHSA requirements to provide PPE.

The Site Agent shall through the Risk Assessment process identify the specific PPE needs per activity and then issue the PPE accordingly. (Reference to the OHSA General Safety Regulation 2 – Employer to provide Personal Protective Equipment)

Should PPE be lost or stolen, then the employee will be issued with a new set of PPE.

Should PPE be worn out or damaged, the user shall return the worn or damaged PPE and will be issued with a replacement set. Training in the use of this shall be provided.

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Overalls and hardhats shall be identifiable. (Principal Contractor different from the contractors)

PPE shall be provided to visitors as well.

(p) Safety Signage

The Site Agent in conjunction with the appointed safety consultant shall assess the Health and Safety Signage requirement in conjunction with the Risk Assessments conducted and will place the signage at strategic positions on the site works.

The COMPANY shall also maintain the signage to ensure its effectiveness at all times and under all conditions. Signage, which cannot be repaired, shall be replaced.

(q) Permits

- The COMPANY shall ensure that access to site works is restricted to construction personnel.
- All attempts will be made to restrict spectator access.
- Access to the site shall be by the Project Engineers (Clients) authorisation on the prescribed form. (Permits and ID cards shall be issued by the client)
- Special permits for hot work and isolation permits shall be applied for to the Project Engineer prior to commencing with the activity.

(r) Contractors and Suppliers

The Site Agent shall enter into an Agreement with Mandatary in terms of Section 37(2) of the Occupational Health and Safety Act, 85 of 1993, with all contractors appointed by The COMPANY is entered into.

The Contracts Manager will ensure the contractors are issued with the Client Safety Specification where reasonably practicable including any the COMPANY contractor pack for the project, should they not be contained in the Client Safety Specification.

The COMPANY shall assist and ensure the contractors engaged comply with all of these requirements and adhere to the requirements set out in the OHSA. Contractors will be stopped from working in the event of unsafe conditions and activities being observed.

All contractors shall be covered by the COMPANY Safety Plan and will be issued the same.

(s) Health and Safety in Practice

Excavations

The Site Agent shall ensure that all activities involving excavations, shoring, dewatering or drainage, a safe working procedure is submitted to the project engineer for approval prior to work commencing. Excavation work exceeding the specified depth as stipulated in the OHSA regulations, shall comply with the following requirements:

- a) The excavations are inspected before the shift starts, after heavy rain (inclement weather) and after any major condition which may effect the excavations stability and the findings are to be recorded and kept;
- b) All excavations regardless of the depth shall be adequately barricaded to prevent persons falling into the excavation;
- c) The safe working procedure shall be communicated to all employees who may be effected by the work; and

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- d) The safe working procedures shall be enforced and maintained by the appointed excavation supervisor at all times.
- e) For high-risk activities, all personnel working in the excavation shall be attached by means of a lifeline.
- f) Material excavated shall be removed from the point of excavation.
- g) Ensure stability of adjoining structures.

Demolition

No demolition work is being envisaged on this project.

Explosives and Blasting

No blasting activities are envisaged on this project.

Stacking of Materials and Housekeeping

The Site Agent shall ensure that all stacking will be supervised by a person competent to supervise over the activities, and that clearly defined and allocated storage areas are provided for and identified, and that materials being stored within this area are stacked in accordance with sound stacking principles of sort-by-sort, access to be maintained, level surface, and the height will not exceed three times the base width.

Housekeeping shall be maintained in accordance with the client requirements at all times.

(t) Hazardous Chemical Substances

The Site Agent shall ensure the necessary training and information regarding the use and storage of HCS is provided, and that the use and storage of HCS is carried out as prescribed by the HCS Regulations.

Furthermore, the Site Agent shall ensure that all chemicals brought to site have a Material Safety Data Sheet (MSDS) and the users are made aware of the Occupational hazards and precautions that need to be taken when using the chemical.

The First Aider shall be made aware of the MSDS and how to treat HCS incidents appropriately. Access to all HCS records shall be afforded to the project engineer at all times.

Fuel / Diesel

- Bulk storage areas shall be demarcated, secured and sign posted with the relevant warning pictograms.
- Bulk storage areas shall be bunded.
- Re-fuelling shall be conducted in designated re-fuelling areas only.
- Spill-kits shall be available at all times in these designated areas.
- The surface of the bunded areas and walls shall be of impermeable material.
- The bunded area shall be sloped towards a collection pit.

Asbestos

No asbestos is to be used on this Project.

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(u) Plant and Machinery

Construction Plant

- All plant shall comply with the OHS Act requirements in relation to operation and maintenance thereof.
- Service and maintenance of the vehicles shall be of a high standard at all times.
- All plant shall subject to design be fitted with back-up alarms and audible indicating devices.
- The COMPANY shall ensure that all construction plants moving parts are adequately protected.
- Pre-start inspections shall be conducted on all motorised equipment daily, deviations of such inspections shall be recorded.
- Construction plant identified for use shall be operated by a trained and authorised operator.
- All construction plant shall be operated under the direct supervision of a person competent to identify potential hazards in the work he is conducting.
- Work involving the use of construction plant shall be conducted in accordance with an approved Risk Assessment.
- The Site Agent shall ensure all operators are equipped with the necessary PPE namely; safety shoes, overall, safety glasses, and gloves.
- Plant shall be fitted with an extinguisher where practicable.
- Washing shall be conducted in the designated washing areas.

The COMPANY shall ensure the all equipment moving to and from site is adequately secured, and that all contractors abide by this requirement.

Transport of Personnel

- Safe vehicular transport shall be provided for personnel working on the project to the workplace, which shall include proper seating, side restraints and cover.
- No personnel shall be permitted to travel on any plant or equipment on the site works.
- Road safety principles shall be adhered to on and off site.

Vessels under Pressure (VuP) or Gas Bottles

The COMPANY shall ensure they comply at all times with the requirements of Vessels under Pressure Regulations, with specific reference to the following:

- Ensuring all Equipment owned and hired-in Vessels under pressure, comply with the 36-month pressure vessel inspection, and a certificate of testing is available on site.
- Ensuring that all personnel who shall use this equipment are competent and trained.
- Ensuring the users of this equipment are issued with the required PPE.
- Ensuring the area is adequately identified as a noise area and warnings are posted.
- Ensuring daily pre-start inspections are carried out on all the equipment and the findings recorded.
- Ensuring the correct fire prevention and fighting equipment is available at all times.
- Noise levels where possible shall be kept within reasonable operating norms.

Fire Equipment

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The Site Agent shall ensure the following all fire equipment to be used on site comply with the following:

- Extinguishers shall be placed in positions to ensure fast and easy access is maintained at all times.
- Placement of all extinguishers shall be depicted with the required pictograms.
- Extinguishers shall be serviced once annually, and after discharge or visible signs of depressurisation.
- The Site Agent shall ensure all employees are adequately trained in the safe use of the extinguishers.
- The Site Agent shall ensure a person is appointed to inspect the extinguishers on a monthly basis and the results of which are to be entered into a register designed for that purpose.

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

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Hired Plant and Machinery

The Site Agent shall ensure the following criteria is adhered to when considering hired plant and machinery:

- Only approved hire companies shall supply equipment to the site.
- Hired plant shall be checked for safety compliance prior to being accepted for use on site.
- Should hired equipment be accompanied by an operator, The COMPANY shall ensure that the operators competency be verified and the operator undergo an induction training session.
- The Site Agent shall ensure the operators of hired plant attend weekly toolbox talks in conjunction with The COMPANY site personnel.
- The Site Agent shall ensure that all operators are equipped with the required PPE before commencing work on site.

Scaffolding / Working at heights / Fall Protection

Work involving scaffolding and work at heights shall comply with the requirements set out in the Construction regulations 2003 pertaining to these activities with reference to the SABS 085 code of practice.

Fall protection planning shall be done in conjunction with the risk assessment process.

All scaffold shall be erected under the control of a person trained and appointed to conduct such scaffold erection.

Falsework / Formwork for Structures

Work involving scaffolding and work at heights shall comply with the requirements set out in the Construction regulations 2003 pertaining to these activities with reference to the SABS 085 code of practice.

Lifting Machinery and Tackle

The Site Agent shall ensure that the use of Lifting Machinery and Tackle is done in accordance with the requirements of the Regulations, which include but is not limited to the following:

- Lifting machinery and tackle to be used on site shall be marked with the Maximum Mass Load (MML), which is the safe limit in which the equipment may be used.
- Inspections on Lifting Machines and Lifting Tackle shall be inspected once per month on the register provided and the findings recorded.
- Daily pre-start checks shall also be conducted on all Lifting Machinery and Tackle.
- Records shall be kept of all lifting machinery and tackle inspections and Load Tests.
- Load tests shall be conducted a minimum of once per annum, and a certificate of compliance shall be kept on record.
- A valid logbook shall be maintained for all lifting machinery, which will comply with a minimum six-monthly service and maintenance.
- Lifting machinery shall be operated under supervision at all times with a trained banksman who shall inspect all tackle before each lift.
- All lifting equipment operators shall be trained once every two years and a copy of such training shall be attached to the appointment, which is to be made on site.
- The Operators shall be tested for medical fitness.

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Ladders and Ladder Work

The following requirements shall be complied with regarding Ladders and Ladder work:

- Ladders shall be clearly numbered, and inspected on the register provided.
- A competent person shall be identified and appointed as the ladder inspector.
- Where aluminium ladders cannot be used, then wooden ladders shall be straight grained, unpainted to allow for proper inspection of the grain for cracking.
- Ladders shall be secured at the top and chocked at the base to prevent slipping.
- Where chocking of the base is not possible, then the user shall ensure that the ladder is held in position by another employee when ascending the ladder.
- Ladders shall be inspected a minimum once per month by the person appointed as the ladder inspector.
- Proper storage shall be provided for all ladders when not in use.

General Machinery

In accordance with General Machinery Regulation 2(1), The COMPANY shall:

- Ensure a competent person be appointed as defined in the above clause from the Occupational Health and Safety Act, 85 of 1993 and Regulations, to service and maintain all machinery in use on site.
- The COMPANY shall appoint additional competent persons to assist the competent person mentioned above in accordance with General Machinery Regulation 2(7)(a), as and when required.
- The COMPANY shall ensure that records are maintained of all services conducted.

Lighting and Power

The Site Agent shall ensure lighting circuits and power circuits are fitted with suitable earth leakage systems in accordance with the client, which will include the following activities:

- Earth leakage system will be tested monthly.
- Malfunctions shall be repaired immediately or replaced.
- Lighting shall be so positioned as not to interfere with construction activities.

Portable Electrical Tools / Explosive Power Tools

The Site Agent shall ensure the following procedure is adhered to regarding Portable Electrical Tools and Explosive Powered tools:

- Minimum compliance with legislation.
- Only competent persons shall be permitted to conduct routine and monthly inspections on the equipment.
- Persons competent to inspect the equipment shall be appointed in writing.
- Persons who are trained to operate such equipment shall be appointed and shall be the only authorised person to operate the equipment.
- The Site Agent shall ensure operation of the equipment is in accordance with the approved Risk Assessment and Safe Working Procedure set out.

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- All users shall undergo regular awareness training to ensure compliance.
- The Site Agent shall ensure the required PPE and clothing is provided and maintained.

(v) Public Health and Safety

In the interests of public safety, The COMPANY shall ensure that all persons who may be affected by the work being conducted on site are informed and kept aware of the dangers, which may arise from the work being conducted on site.

This awareness shall be in the form of posters and inductions for visitors to site and warning signs.

(w) Night Work

Night work shall only be conducted upon approval of the project engineer, with the same safety standard being applied for these activities as with day work activities.

(x) Facilities for Safe Keeping / eating areas

The COMPANY shall ensure that adequate facility is provided for the personnel on site. The area shall be provide the following:

- Sufficient seating;
- Seating under cover;
- Protected change room;
- Toilets.
- Hand wash facility.
- Potable water.

No food preparation shall be conducted on site and designated eating areas will be made to allow adequate seating.

Waste bins shall be strategically placed and cleared regularly.

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ANNEXURE A (Safety Policy)

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ANNEXURE B (HTI)

HAZARDOUS TASK IDENTIFICATION (HTI)												
Ser no:	INFORMATION REQUIRED	DETAILS							SIGNATURE		Key Table	
1	Name of contract:										0=	NONE
2	Date prepared:										1=	LOW
3	Prepared by:										2=	MEDIUM
4	Name of person approving:										3=	HIGH
Risk Assessment (RA) Code	LIST OF ALL STANDARD TASKS	What is the future potential that this task can cause further....								Total Score Yes = 3 / No = 0	Rating 0 - 7 Low risk, 8 - 17 Med risk, 18 -24 High risk	Doc Required RA - Risk assessment, MST - Method statement
		Is it a new or unusual task?	Is it a dangerous task?	Personal injury	Health risk	Impact on the environment	Property damage	Fire	Has the task caused previous injury / loss?			
RA-1	Site clearing - manual labour & small tools	1	1	1	1	1	1	1	0	7	LOW RISK	MST
RA-2	Site clearing - using mechanical means									0	LOW RISK	MST
RA-3	Site establishment - FSM erection / dismantling									0	LOW RISK	MST
RA-4	Site establishment - Container store / office offload									0	LOW RISK	MST
RA-5	Excavations - using manual labour									0	LOW RISK	MST
RA-6	Excavations using motorised plan									0	LOW RISK	MST
RA-7	Excavations - working inside < 1.5 metres									0	LOW RISK	MST
RA-8	Excavations - working inside > 1.5 metres									0	LOW RISK	MST
RA-9	Batching plants - erection / dismantle									0	LOW RISK	MST
RA-10	Batching plants - general working and operation									0	LOW RISK	MST
RA-11	Concrete mixing - using manual labour									0	LOW RISK	MST
RA-12	Concrete mixing - using mechanical means									0	LOW RISK	MST
RA-13	Concrete pours - using lifting machinery (Cranes etc)									0	LOW RISK	MST
RA-14	Concrete pours - using motorised plant (dumpers etc)									0	LOW RISK	MST
RA-15	Concrete pours - using mechanical pump									0	LOW RISK	MST
RA-16	Lifting Equipment - Tower crane erection / dismantle									0	LOW RISK	MST
RA-17	Lifting Equipment - Tower crane operation									0	LOW RISK	MST
RA-18	Lifting Equipment - Mobile crane operation									0	LOW RISK	MST
RA-19	Lifting Equipment - Telescopic handler operation									0	LOW RISK	MST
RA-20	Lifting Equipment - Forklift operation									0	LOW RISK	MST
RA-21	Lifting Equipment - using lifting tackle									0	LOW RISK	MST
RA-22	Formwork - general erection / dismantling									0	LOW RISK	MST
RA-23	Formwork - lifting and placing large panels									0	LOW RISK	MST
RA-24	Formwork - work on support decks									0	LOW RISK	MST
RA-25	Scaffolding - erect / dismantle small scaffolds < 2 m									0	LOW RISK	MST
RA-26	Scaffolding - erect / dismantle large scaffolds > 2 m									0	LOW RISK	MST
RA-27	Scaffolding - use of mobile scaffolds									0	LOW RISK	MST
RA-28	Scaffolding - dismantling of scaffolding									0	LOW RISK	MST
RA-29	Demolition - using small electric breakers									0	LOW RISK	MST
RA-30	Demolition - using compressed air breakers									0	LOW RISK	MST
RA-31	Demolition - using motorised mechanical means									0	LOW RISK	MST
RA-31	Demolition - using explosives / blasting operations									0	LOW RISK	MST
RA-33	Trades - Brickwork operations									0	LOW RISK	MST
RA-34	Trades - Plastering operations									0	LOW RISK	MST
RA-35	Trades - Painting operations									0	LOW RISK	MST
RA-36	Trades - Ceiling operations									0	LOW RISK	MST
RA-37	Trades - Roofing installations									0	LOW RISK	MST
RA-38	Trades - glazing installations									0	LOW RISK	MST
RA-39	Trades - Tiling operations									0	LOW RISK	MST
RA-40	Trades - carpentry (Doors / windows)									0	LOW RISK	MST
RA-41	Trades - Metal work (Doors / windows)									0	LOW RISK	MST
RA-42	Trades - Steel erection									0	LOW RISK	MST
RA-43	Trades - plumbing									0	LOW RISK	MST



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RISK ASSESSMENT

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ANNEXURE D (Safety Induction)

SAFETY INDUCTION		
OHS Act 85 of 1993 Sections 8 & 14		
Requirements:		
Every employer is required to take all reasonable measures to ensure that the requirements of the OHS Act, and regulations are observed. The general duties of employees are to carry out lawful instructions and to obey the Company's safety rules and procedures prepared in accordance with the provisions of the Act and Regulations. For this process to begin and to be formalized it is necessary for all employees to be formally inducted into the safety procedures and the completion thereof, formally acknowledged by both employer and employee.		
ITEM COVERED	DONE YES/NO	REMARKS
Explain Company Policy / Site Safety Rules Provide copies of same		
Explain Section 14 of the Act		
Explain the use of Personal protective Equipment and procedures. Re: Issuing and maintenance		
Explain the meaning of symbolic signs		
Explain the procedure in the event of injury		
Explain the use of facilities and toilets		
Explain the danger of moving machinery. (DUMPER, MIXER, SKILLSAW, GRINDER Etc.)		
Explain the danger of hazardous substances (PETROL, DIESEL, OIL, GAS, PAINT Etc.)		
Explain specific Job Duties and Requirements		
Introduce : Supervisor, safety Representatives, First Aider		
<i>This confirms that the above named acknowledges that he/she has been instructed in the safety items listed above and has received the necessary protective clothing / equipment to use in the performance of his/her work.</i>		
<u>INDUCTION OFFICER / TRAINER</u>		
Signature	Designation	Date
<u>ACCEPTANCE</u>		
I, _____ hereby acknowledge receipt of and accept and understand the requirements of this induction.		
Signature	Designation	Date
		

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ANNEXURE F (Audit Schedule)

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PARTICULAR SPECIFICATION PF

VALVES

PF 1 GATE VALVES

Gate Valves shall bear the official mark of SABS and be SABS approved. They shall comply with SABS 664 for waterworks pattern valves of the types, classes and sizes listed in the Schedule of Quantities and shall be provided with the following :

	Description	Specification
1	Flanges	Double flanged, to be in accordance with and drilled off-centre to SABS 1123, Table 1600, 2500 or 4000 as scheduled.
2	Spindles	Non rising, bronze or stainless steel with spindle nut either bronze or gunmetal
3	Handwheels	Direction of rotation for opening valves shall be clockwise when viewed from the top and appropriate wording must be embossed at the top indicating direction of "close" and "open" with arrow heads
4	Tests	Valves to be subjected to "closed end" and "open end" pressure tests to one and half times the working pressure. Valve body shall be tested to twice working pressure. Under all the tests, no leakage to occur
5	Paint	As in PF4
6	Other	• Type B gunmetal trim • Valves should permit repacking of the gland whilst valve is under pressure • Factory test certificates to be provided with each valve • Rates in the schedule of quantities to include requirements to comply with specification

PF 2 REFLUX VALVES

Reflux valves shall, except where otherwise specified, be double flanged single door swing type and shall be fitted with gun metal seats and bronze hinge and clack pins. In the case of reflux valves to be mounted horizontally, the design shall be such that the gate rests against the seat in the absence of flow or of differential pressure, without the aid of springs or external counterweights. Reflux valves shall comply with the requirements of SABS 144 for working pressures as required for each application, but not less than 1600 kPa working pressure.

PF 3 AIR VALVES

PF 3.1 General

The materials and workmanship employed in the manufacture of air valves shall be of a similar standard to that set out in SABS 664 for waterworks pattern gate valves and they shall be provided with individual test certificates for each valve from the manufacturer; all valves are to be inspected, and the hydraulic tests witnessed, by an Inspector to be appointed by the Engineer, and the tendered rates for the valves shall include for making arrangements for independent inspections. The Inspectors' fee and recoverable expenses will be for the account of the Employer, fees and expenses arising from abortive or repeat visits due to non-compliance with the specified requirements will be for the Contractor's account and will be deducted from amounts due to the Contractor.

PF 3.2 Types of Air Valves

Air Valves shall be standard types (epoxy coated flanges; stainless steel sleeve, bolts, nuts, studs etc), of the double orifice type, and shall be equal or similar to the "Vent-O-Mat" (RBX series: 50 mm dia valves: 050 RBXc2511; 80 mm valves: 080 RBXc1601) type in which a small orifice, manufactured from Grade 316 stainless steel and having a minimum orifice size of 2,0

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mm diameter, shall be capable of releasing accumulations of air at all pressures throughout the specified working pressure range and shall be drop-tight at 0,5 Bar. The large orifice shall be suitable for admitting or expelling large quantities of air during emptying and filling of the pipeline. The opening of the valve (to atmosphere) shall be enclosed by a stainless steel mesh which has been fixed into the valve body to prevent the entry of small insects or vermin into the valve.

All welding of stainless steel shall be carried out in workshops dedicated to the fabrication of stainless steel products. Care shall be taken that the correct welding rods and approved welding procedures have been used for each application, and the Engineer shall have the right to request a certificate from the manufacturer in which the weld procedures used for the manufacture of valves supplied are stated.

All welds and weld beads, internal and external, shall be smoothed down by grinding and buffing. All stainless steel shall be pickled and passivated before the valve is assembled and tested.

PF 3.3 Testing

Each air valve is to be subjected to the following tests at the factory :

- (a) First, fill the valve with water and apply the factory test pressure through the inlet of the valve. Under this condition there shall be no weeping from any part of the valve.
- (b) Second, drain the valve and refill the valve with water and apply the maximum working pressure through the inlet of the valve and maintain for at least five minutes. Under this condition there shall be no loss of water from the valve.
- (c) Third, gradually reduce the pressure applied under (b) above to atmospheric pressure, empty the valve and refill slowly expelling the air through the valve until it is full of water. Raise the pressure to the minimum working pressure, maintain that pressure for at least five minutes and again there shall be no loss of water from the valve.
- (d) Fourth, maintain the minimum working pressure applied in (c) above, isolate the water inlet and introduce small amounts of compressed air into the valve without lowering the pressure in the valve. The lower float shall drop away from the upper float when sufficient air has accumulated in the valve. As soon as the accumulated air in the valve has discharged through the small orifice, the valve shall again close to a watertight condition. This process shall be repeated for at least five different pressures which are equally spaced between the specified minimum and maximum operating pressures, and the valve shall close automatically when all the air has escaped without any dribbling and shall have a drop-tight shut-off.

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PF 3.4 Table of Particular Requirements for Air Valves

Scheduled Items			
Nominal diameter (mm)	80	80	25/50
Class	40	25	16
Flange Size and Rating	SABS 1123 Table 4000	SABS 1123 Table 2500	SABS 1123 Table 1600
Flange Drilling	SABS 1123 Table 4000	SABS 1123 Table 2500	SABS 1123 Table 1600
Factory Test Pressure (metres head of water)	800	500	320
Field Test Pressure (metres head of water)	as for pipeline	as for pipeline	as for pipeline
Working Pressure (metres head of water) :			
(a) Maximum	400	250	160
(b) Minimum	10	10	10

PF 4 PAINTING OF VALVES

PF 4.1 The cleaning and painting of valves as specified hereunder is to be carried out at the factory prior to despatch to site.

PF 4.2 All cast iron surfaces of every valve shall be prepared for painting to a thoroughly clean condition free of all grease and deleterious matter. Steel surfaces shall be prepared in accordance with Swedish Standard SIS 05 5900 for a Sa 2.5 finish.

PF 4.3 Internal surfaces shall then be treated with two coats of Copon Hicote 151E or other approved non-toxic epoxy resin paint to give a total minimum dry film thickness of 160 micrometres; both coats being applied within 48 hours of commencement of painting.

PF 4.4 External surfaces shall, immediately after cleaning, be treated with one of the following alternative paint systems :

(a) System 1 - for valves situated in underground chambers or exposed conditions.

Apply three coats of an approved epoxy coal tar paint to give a minimum total dry film thickness of 240 micrometres; all three coats being applied within 72 hours of commencing the first coat.

(b) System 2 - for valves situated in pump stations etc.

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 shall be not less than 200 micrometres.

PF 4.5 Non-ferrous metal or stainless steel surfaces shall not be painted.

PF 4.6 After erection on site all valves shall be cleaned and the paint work refurbished where necessary to restore the condition to that at the time of leaving the factory.

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PF 5 PAYMENT

The prices quoted for all valves are to include for independent factory testing of valves, which test will be witnessed by Inspectors appointed by the Engineer.

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PARTICULAR SPECIFICATION: PES

ENVIRONMENTAL SPECIFICATION

PS EMP ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan and specifications are included under this section and must be adhered to in all respects.

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming. The following specifications must be adhered to in all respects:

PS EMP1

No natural vegetation, trees or crops may be damaged by the Contractor without the written approval of the Engineer. The Contractor must keep the site neat and free of refuse, etc. to prevent possible damage to crops or livestock.

The Contractor's construction activities shall be performed by methods that will prevent the entrance of, or accidental spillage of solid matter, debris, contaminants and other pollutants and wastes into streams and water-courses. Any dewatering for earthworks or structure foundations adjacent to or encroaching on streams or water-courses shall be conducted in a manner to prevent muddy or contaminated water from entering streams or water-courses by means of the construction of intercepting and bypassing ditches, barriers, ponds and other approved means.

Construction activities shall be performed in a manner to keep dust nuisance to a minimum by means of the application of sufficient water or other efficient measures wherever and as often as may prove necessary.

The cost for complying with the requirements regarding protection of the environment specified above shall be included in the rates tendered in the Schedule of Quantities for the various items of work and no additional payment will be made in this regard. The Engineer will be entitled to retain an amount of money, should a dispute between property owners and the Contractor arise. The balance of this money will be released as soon as the dispute is resolved. Should any of the above mentioned items not be complied with, the Engineer reserves the right to appoint another Contractor to rectify these matters. Costs for this work will be deducted from the payment of the Contractor for this Contract.

In order to reduce and control the release of airborne pollutants the Contractor shall ensure that:

- No fires are lit on Site to dispose of waste or for cooking.
- All loose material that could be blown about or into neighbouring properties by wind is secured.
- The spraying of formwork oils, paints and other toxic substances is limited to the application area.

PS EMP2

The Site Agent shall ensure that his team, including sub-contractors, comply with the environmental management requirements of this Contract.

PS EMP3

The Contractor may be required to submit a Construction Method Statement at the Site handover. Activities having an effect on the environment must be addressed in this Construction Method Statement. A list of possible activities is included below.

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Possible activities having an effect on the Environment:

1. Collection, storage and disposal of solid waste
2. Collection, storage and disposal of liquid waste
3. Protection of indigenous plant species
4. Protection of natural water sources from liquid and solid wastes
5. Control of noise and dust
6. Security on site
7. Control of veld fires
8. Temporary storage of spoil, disposal of excess spoil and unsuitable materials and the importation of earthworks materials
9. Site clearance prior to construction
10. Felling of trees
11. Habitat restoration
12. Site reinstatement, removal of site offices and final site clearance

PS EMP4

In the event that the Contractor fails to comply with the Environmental Management Specifications, included in the Contract Documents, the following penalties will be imposed per incident:-

Unauthorised damage or removal of trees	R 2 500,00
Failure to keep soil types separate during excavation and backfilling	R 1 000,00
Failure to provide adequate portable chemical toilets	R 500,00
Failure to comply with solid waste disposal requirements	R 1 000,00
Failure to clean up litter at the end of each working day	R 1 000,00
Failure to comply with dust prevention requirements	R 1 500,00
Failure of Contractor and/or materials supplier to cover vehicle	R 500,00
Failure to comply with noise, light or air pollution requirements	R 500,00
Spillage of hazardous substances	R 1 000,00

The Engineer will notify the Contractor of a breach of specification and supply a time period within which remedial action will need to be carried out. Should the time period elapse then the penalty will be imposed and the sum deducted from the following month's certificate.

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At the time of tender the Contractor shall nominate two people who will be responsible for ensuring that the Contractor's team and sub-contractors comply with the environmental management requirements of this contract. While the positions are only part time, these staff members will be called upon from time to time to deal with any events that are not in compliance with the specifications.

C3: SCOPE OF WORK

MALANGENI WATER SUPPLY

CONTRACT NO.: UGU-07-1618-2022: CONSTRUCTION OF 160/200MM DIAMETER X 2.6KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR , MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE

SECTION A: SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

A.1 Access to Site	A.1.1 Routing	Monitor	Frequency									
Sound environmental principles must be followed whilst establishing access to the site. As much as possible, use should be made of the existing roads instead of creating new ones.	a) The contractor must take into account any limitations identified and recommendations made during the environmental duties when deciding on an access route to construction site.	Engineer (E)/ Environmental Control Officer (ECO)	Prior to moving onto site.									
	b) The location of all underground services and servitudes must be identified and confirmed.	E	Prior to moving onto site.									
	c) Choice of access routes should take into account minimum disturbance to residents and businesses neighboring the site.	Engineer (E)/ Environmental Control Officer (ECO)	Prior to moving onto site									
	A.1.2 Haulage Roads											
	a) All roads for construction access must be planned and approved by the Engineer and ECO ahead of construction activities. They should not be created on an ad-hoc basis.	N/A Use Existing access roads	N/A									
	b) Roads must follow natural contours to reduce stormwater erosion.	N/A	N/A									
	c) Roads must have as little cut and fill as possible.	N/A	N/A									
	d) Road widths and the radii of curves are to be reduced.	N/A	N/A									
	e) No trees/shrubs/groundwater may be removed or vegetation stripped without the prior permission of the Engineer/ECO.	E	Prior to moving onto site.									
	f) Agreed turning areas for haulage vehicles are to be formalized and used by the Contractor. No turning maneuvers other than at the designated places shall be permitted.	E/ECO	During construction period									
	g) Contractors shall construct formal drainage on all temporary haulage roads in the form of side drains and mitre drains to prevent erosion and point source discharge of run-off.	E	Prior to moving onto site.									
	h) Scour check walls must be constructed in the side drains as follows:	N/A	N/A									
	<table><tr><td>Gradient of Road</td><td>Scour Check Spacing</td></tr><tr><td><4%</td><td>Not required</td></tr><tr><td>5%</td><td>20m</td></tr><tr><td>8%</td><td>10m</td></tr><tr><td>10%</td><td>5m</td></tr></table>	Gradient of Road	Scour Check Spacing	<4%	Not required	5%	20m	8%	10m	10%	5m	
Gradient of Road	Scour Check Spacing											
<4%	Not required											
5%	20m											
8%	10m											
10%	5m											
i) Scour checks can be constructed from rocks available onsite or using driven wooden pegs. Smaller rocks must be placed on the invert of side drain upstream and downstream of the scour checks.	E	N/A										
j) Haulage roads must allow for the natural flow of water		N/A										
k) All stream/rivers crossing and temporary bridges shall be built to the Engineer's approval.	N/A	N/A										

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	A.1.3 Survey Points a) Roads or trails that are cut to provide temporary access for survey work must be minimized. b) Marking of survey points must be done with the Engineer's approval. c) Vegetation clearing must be kept to a minimum during survey operations	Monitor N/A N/A N/A	Frequency N/A N/A N/A
A.2. Setting up Construction Camp Careful planning of the construction camp can ensure that time and costs associated with environmental management and rehabilitation are reduced	A.2.1 Layout a) Choice of site for the Contractor's camp requires the Engineer's permission and must take into account location of local residents and /or ecologically sensitive areas, including flood zones and slip/unstable zones. A site plan must be submitted to the Engineer for approval. b) The construction camp may not be situated on a floodplain or on slopes greater than 1:3. c) If the Contactor chooses to locate the campsite on private land, he must get prior written permission from both the Engineer and the landowner. d) In most cases, on-site accommodation will not be required. The construction camp can thus be comprised of: - Site office - Ablution facilities - Designated first aid areas - Eating areas - Staff lockers and showers (where water and waterborne are available) - Storage areas - Batching plant (if required) - Refueling areas (if required) - Maintenance areas (if required) - Crushers (if required) e) Cut and fill must be avoided where possible during the set up of the construction camp. f) The size of the construction camp should be minimized (especially where natural vegetation or grassland has had to be cleared for its construction). g) Adequate parking must be provided for site staff and visitors. h) The constructor must attend to drainage of the campsite to avoid standing water/or sheet erosion. A.2.2 Ablutions a) Temporary chemical toilets must be provided by a company that has been approved by the Engineer. The toilets must be available for all site staff, both at the campsite, and on the site agreed by the Engineer. Toilets should be no closer than 50m from any of the two natural watercourses. b) The construction of "long drop" toilets is forbidden.	E/ECO E/ECO E E E E/ECO E ECO ECO ECO	During surveys and preliminary investigations and prior to moving onto side. During surveys and preliminary investigations. During surveys and preliminary investigations. During site setup During site setup. During site setup. During site setup. On a weekly basis. During site setup. Ongoing

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	c) Under no circumstances may open areas or the surrounding bush used as a toilet facility. A.2.3 Provision for Camp Waste Disposal a) Bins and / or skips shall be provided at convenient intervals for disposal of waste within the construction camp. b) Bins should have liner bags for efficient control and safe disposal of waste. c) Recycling and the provision of separate waste receptacles for different types of waste should be encouraged.	Monitor ECO ECO ECO ECO	Frequency Ongoing. During site set-up and ongoing. Ongoing. During site set-up and ongoing.
A.3. Establishing Storage Access Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully.	A.3.1 General Substances and Materials a) Choice of location for storage areas must take into account prevailing winds, distance to water bodies and general on-site topography. b) Storage areas must be designated, demarcated and fenced if necessary. c) Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by children/animal etc. d) Fire prevention facilities must be present at all storage facilities. e) If electrical equipment for substations is stored on site a firebreak will be around the storage area. f) Burning of fire breaks is to be carefully planned and managed with the assistance of the nearest Fire Department A.3.2 Hazardous Substances and Materials a) Definition of hazardous substances/materials are those that are potentially: poisonous, flammable, carcinogenic or toxic. b) Some examples of hazardous substances/materials: - Diesel, petroleum oil, bituminous products - Cement - Solvent based paints - Lubricants - Explosives - Drilling fluids - Pesticides, herbicides - LPG c) Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available. MSDSs should additionally include information on ecological impacts and measures to minimize negative environment impacts during accidental release or escapes.	Monitor ECO ECO ECO ECO N/A N/A E/ECO Monitor	Frequency During site set-up. During site set-up. During site set-up. During site set-up. N/A N/A Ongoing Frequency

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	d) Hazardous storage and refueling areas must be bunded with an impermeable liner to protect groundwater quality. The Contractor shall submit a method statement to the Engineer for approval. e) Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected. f) Storage areas containing hazardous substances/ materials must be clearly signed. g) It is very important tha the proximity of houses, schools etc is taken into account when deciding on storage areas for hazardous substances. h) Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area. i) Staff dealing with these materials/substances must be aware of their potential impacts and follow the appropriate safety measures. j) Contractors shall submit a method statement and plans for the storage of hazardous materials and emergency procedures.	E/ECO E ECO E ECO ECO ECO	During site set-up. During site set-up. During site set-up. During surveys and preliminary investigations. When moving onto site or as the relevant materials arrive onsite. During staff induction and ongoing as necessary. Prior to establishment of storage area.
A.4. Materials Management Sourcing Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation.	A.4.1 Sources of Materials a) Contractors shall prepare a source statement indicating the sources of all material (including topsoil, sands, natural gravel, crushed stone, asphalt, clay liners etc), and submit these to the Engineer for approval prior to commencement of any work. b) Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation. c) Where materials are borrowed (mined), proof must be provided of authorization to utilize these material from the landowner /mineral rights owner and the Department of Mineral and Energy.	Monitor E/ECO ECO ECO	Frequency On award of contract On receipt of natural materials. On receipt of borrowed materials.
A.5 Education of Site Staff on General an Environmental Conduct These points need to be mde clear to all staff on site before the project begins.	A.5.1 Environmental Education and Awareness Ensure that all site personnel have a basic level of environmental awareness training. The Contractor must submit a proposal fro this training to the ECO for approval. Topics covered include: - What is meant by “environment”. - Why the environment needs to be protected and conserved.	Monitor ECO	Frequency During staff induction and ongoing. Frequency

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	- How construction activities can impact on the environment. - What can be done to mitigate against such impacts. - Awareness of emergency and spills response provisions. - Social responsibility during construction e.g. being considerate to local residents It is the Contractor's responsibility to provide the site foreman with no less than 1 hour's environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff. a) Translators are to be used where necessary. b) The Engineer/ environmental control officer should be on hand to explain more difficult/ technical issues and to answer questions. c) The use of pictures and real-life examples is encouraged as these tend to be more easily remembered. d) Use should be made of environmental awareness posters on site. e) Construction workers should be made aware that they are not to make excessive noise (e.g. Shouting / hooting) when site is near commercial residential areas. f) The need for a "clean site" policy also needs to be explained to the construction workers. <u>A.5.2 Workers Conduct on Site</u> A general regard to the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules: a) No alcohol/drugs to be present on site. b) No firearms allowed onsite or in vehicles transporting staff to/ from site, (unless used by security personnel). c) Prevent excessive noise. d) Prevent unsocial behaviour. e) Bringing pets onto the site is forbidden. f) No harvesting of firewood from the site or from the areas adjacent to it.	ECO ECO ECO ECO ECO ECO ECO ECO ECO	Prior to moving onto site. Ongoing. Ongoing. Ongoing. Ongoing. During staff induction, followed by ongoing monitoring. Induction, ongoing monitoring. During staff induction, followed by ongoing monitoring.
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	g) Construction staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives. (e.g. fires for cooking; the use of surroundings bush as a toilet facility are forbidden). h) Trespassing on private /commercial properties adjoining the site is forbidden. i) Driving under the influence of alcohol is prohibited. j) Other than pre-approved security staff, no workers shall be permitted to live on site.		
A.6. Dust/ AIR Pollution Establishment of the camp site, and related temporary works can reduce air quality	a) Vehicles traveling along the access roads must adhere to speed limits to avoid creating excessive dust. b) Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust. c) The Contractor must make alternative arrangements (other than fires) for cooking and /or heating requirements. LPG gas cookers may be used provided that all safety regulations are followed.	Monitor ECO ECO E	Frequency Ongoing. Ongoing- more frequently during dry and wind conditions. Ongoing.
A.7. Soil Erosion The description of vegetation during preliminary activities on site greatly increases the risk of erosion.	a) The time that stripped areas are left open to exposure should be minimized wherever possible. Care should be taken to ensure that lead times are not excessive. b) Wind screening and stormwater control should be undertaken to prevent soil loss from the site. c) Procedures that are in place to conserve topsoil during the construction phase of the project are to be applied to the set up phase i.e. topsoil is to be conserved while providing access to the site and setting up the camp.	Monitor E E ECO	Frequency During surveys and preliminary investigations. During site set-up. During site set-up.
A.8. Stormwater Serious financial and environmental impacts can be caused by unmanaged stormwater	a) To prevent stormwater damage, the increase on stormwater run-off resulting from construction activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossing (sitting and return period etc.) b) During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Engineer. (e.g. due to demolition work). c) Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.	E E ECO	During surveys and preliminary investigations. During site set-up. During site set-up.

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A.9. Water Quality Incorrect disposal of substances and materials and polluted run-off can have serious negative affects on groundwater quality.	a) Storage areas that contain hazardous substances must be bunded with an approved impermeable liner. b) Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity. c) A designated, bunded area is to be set aside for vehicles washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site or as directed by the Engineer. d) Provision should be made during site set up for all polluted run off to be treated to the Engineer's approval before discharged into the stormwater system (This will be required for the duration of the project).	Monitor E E/ECO E/ECO E/ECO	Frequency During site set-up. During site set-up and as often as possible on an ongoing basis. During site set-up. During site set-up, to be monitored weekly.
A.10. Conservation of the Natural Environment The wetland and Indigenous forest in the project area require particular attention	A.10.1 Fauna and Flora a) No indigenous vegetation/trees may be cleared/removed without prior permission from the ECO. b) The forest and wetland in the area need to be protected. The ECO must mark limits around the forest and wetland before the Contractor any work in the vicinity of the forest. c) Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material). d) Disturbance to birds, animals and reptiles and their habitats should be minimized wherever possible. A.10.2 Sensitive Habitats A thirty-meter buffer zone (or a suitable width) from the edges of the wetland should be determined by a wetland ecologist and demarcated by the contractor. No development activity is to occur within the buffer zone. Temporary bonnox type fencing should be used and should be moved in phases as the construction progresses from one area to the next.	Monitor N/A E/ECO ECO E/ECO N/A	Frequency N/A. During site set-up. Ongoing in campsite, haulage areas. During surveys and preliminary investigations and ongoing. N/A`.
A.11. Set up of Waste Management Procedures	a) The excavation and use of rubbish pits on site is forbidden. b) Burning of waste is forbidden. c) A fenced area must be allocated for waste sorting an disposal.	ECO ECO ECO ECO	Ongoing. Ongoing. During site set-up.

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	d) Individual skips for different types of waste (e.g. "household" type refuse, building rubble, etc) should be provided.		During site set-up.
A.12. Social impacts – Visual & Noise It is important to take notice of the needs and wishes of those living or working adjacent to the site. Failure to do so can cause disruption to work and increase costs in the form of delays.	A.12.1 Public Participation a) During the set up phase of the project, the Contractor needs to make contact with those people that are Interested or Affected by the development (I&AP's). b) These people will usually have been identified by the environmental consultant that was assigned to the project. If this wasn't the case, the I&AP's can be identified as those who either: - Live close to the site - Work close by to the site - Will have their services /infrastructure affected by the project - Have a general interest in the project - The Councilor for the ward in which the construction is taking place	Monitor	Frequency
		E	Prior to moving onto site.
		ECO	Prior to moving onto site
	A.12.2. Noise Impact		
	a) Construction vehicles are to be fitted with standard silencers prior to the beginning of construction.	ECO	Prior to moving onto site.
	b) Equipment that is fitted with noise reduction facilities (e.g. Side flaps, silencers etc) will be used as per operating instructions and maintained properly during site operations.	ECO	Ongoing.
	A.12.3 Visual Impacts		
	a) Storage facilities, elevated tanks and other temporary structures onsite should be located such that they have as little impact on local residents as possible.	E/ECO	During surveys and preliminary investigations and site set-up.
	b) In areas where the visual environment is particularly important (e.g. along commercial/ tourism routes), the site may require screening in the form of shade cloth or other suitable materials prior to the beginning of construction.	E/ECO	During surveys and preliminary investigations and site set-up.
	c) Special attention should given to the screening of highly reflective materials on site.	ECO	During site set-up.
A.13. Cultural Environment	Prior to the commencement of construction, all staff need to know what possible archaeological or historical objects of value may look like, and to notify the Engineer / Contractor should such an item be uncovered	ECO	During site set-up and ongoing.

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A.14. Security and Safety		Monitor	Frequency
	A.14.1 Fencing		
	a) Securing the site in order to reduce the opportunity of criminal activity in the locality of the construction site.	E	During site set-up.
	b) The sites should be fenced and manned to control the access of people.	E	During site set-up.
	c) Potential hazardous areas such as trenches are to be demarcated and clearly marked.	ECO	During site set-up.
	A.14.2 Lighting		
	Lighting on site is to be set out to provide maximum security and to enable easier policing of the site, without creating a visual nuisance to local resident or businesses.	E/ECO	During site set-up.
	A.14.3 Risks Associated with Material on Site		
	a) Material stockpiles or stacks, such as, pipes must be stable and well secured to avoid collapse and possible injury to site/ local residents.	ECO	Ongoing.
	b) Flammable materials should be stored as far as possible from adjacent residents/b businesses.	ECO	Ongoing.
	c) Fire fighting equipment should be present onsite at all times as per OHSA.	ECO	Ongoing.
	d) Obstruction to drivers' line of site due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners.	ECO	Ongoing.
	e) No materials are to be stored in unstable or high risk areas such as in floodplains or on steep slopes.	ECO	Ongoing.
	f) All I&AP's should be notified in advance of any known potential risks associated with the construction site and the activities on it.	ECO	24hrs prior to the activity in question
	Examples of these are: - Stinging of power lines - Blasting - Earthworks/earthmoving machinery on steep slopes above houses/infrastructure - Risk to residences along haulage roads/ access routes		

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SECITON B: MANAGEMENT OF CONTRUCTION ACTIVITIES AND WORKFORCE

B.1. Access to Site	B.1.1 <u>Haulage Roads</u> a) Contactors shall ensure that all side an mitre drains and scour check walls on access and haul roads are functioning properly and are well maintained. B.1.2 Maintenance of Access a) Contractor should ensure that access roads are maintained in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop. b) If necessary, staff must be employed to clean surfaced roads adjacent tot construction sites where materials have been split. c) Unnecessary compaction of soils by heavy vehicles must be avoided; construction vehicles must be restricted to demarcated access, haulage routes and turning areas. d) Cognisance of vehicles weight/ dimensions must be taken when using access constructed our of certain materials. E.g. paved surface/ cobbler entranceways.	Monitor E E ECO ECO E	Frequency Weekly and after heavy rains Weekly inspection. When necessary. Ongoing. Ongoing.
B.2. Maintenance of Construction Camp	B.2.1 <u>Surfaces</u> a) The Contractor must monitor and manage drainage of the camp site. To avoid soil erosion. b) Run-off from the campsite must not discharge into neighbours' properties. B.2.2 Ablution a) Chemical toilets are to be maintained in a clean state and should be moved to ensure that they adequately service the work areas. b) The Contractor is to ensure that open areas or the surrounding bush are not being used as a toilet facility. B.2.3 Camp Waste Disposal a) The Contractor shall ensure that all litter is collected from the work and camp areas daily. b) Bins and/or skips should be emptied regularly and waste should be disposed of at a registered landfill site. Waybills	Monitor E E ECO ECO ECO ECO	Frequency Ongoing. Ongoing. Weekly inspection. Weekly inspection. Ongoing. Weekly.

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	for all such disposals are to be kept by the Contractor for review by the Engineer /ECO. c) A registered chemical waste company is to be used to remove waste from chemical toilet on site. B.2.4 Eating Areas a) Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness. b) All litter throughout the site should be picked up and placed in the bins provided. B.2.5 Housekeeping a) The Contractor shall ensure that his camp and working areas are kept clean and tidy at all times	ECO Monitor ECO ECO E/ECO	Ongoing. Frequency Daily Daily. Weekly monitoring
B.3. Staff Conduct	B.3.1 Environmental Education and Awareness a) The Contractor must monitor the performance of construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and /or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. B.3.2 Worker Conduct on Site a) The rules explained in the worker conduct section (see section A.5.2 of this EMP), must be followed at all times.	Monitor E/ECO ECO	Frequency Ongoing monitoring. Ongoing.
B.4. Dust/ Air Pollution Main causes of air pollution are dust from vehicle movements and stockpiles, vehicle emissions and fires	a) Vehicles traveling to and from the construction site must adhere to speed limits so as to avoid producing excessive dust. b) A speed limit of 30km/hr must be adhered to on all dirt roads. c) Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust. d) Where dust is unavoidable in residential or commercial areas, screening will be required utilizing wooden supports and shade cloth.	Monitor E E E E ECO	Frequency Ongoing. Ongoing. Ongoing. As directed by Engineer. Ongoing.

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	e) Vehicles and machinery are to be kept in good working order and to, meet manufactured specification for safety, fuel consumption etc. f) Should excessive emissions be observed, the Contractor is to have the equipments seen to as soon as possible. g) No fires are allowed on site except for burning of firebreak. h) Stockpiles may cause dust and so must be managed in by the guidelines in Materials Management in section B.9.1	E E E	As directed by the Engineer. Ongoing Ongoing.
B. 5 Soil Erosion	B.5.1 Topsoil Stripping and Stockpiling Once an area has been cleared of vegetation, the top layer (nominally 150mm) of soil should be removed and stockpiled in a designated area. B.5.2 Exposed Surfaces The full length of the works shall not be stripped of vegetation prior to commencing other activities. The time that stripped areas are exposed shall be minimized wherever possible. a) Top-soiling and revegetation shall commence immediately after the completion of an activity and at an agreed distance behind any particular work front. b) Stormwater control (See B6) and wind screening should be undertaken to prevent soil loss from the site. c) Side tipping of spoil and excavated materials shall not be permitted – all spoil material shall be disposed of as directed by the Engineer. d) Battering of all banks shall be such that cut and fill embankments are no steeper than previous natural slopes unless otherwise permitted by the Engineer. Cut and fill embankments steeper than previous ground levels shall be re-vegetated immediately on completion of trimming or shall be protected against erosion using bioengineered stabilization measures. Deep-rooted vegetation such as Vetiver grass is effective to stabilize steeper embankments,	Monitor ECO E/ECO ECO E E ECO	Frequency Ongoing. Ongoing. As each activity is completed. Ongoing. Ongoing. As the cut and fill activity is completed.
	e) All embankments, unless otherwise directed by the Engineer, shall be protected by an off drain to prevent from cascading down the face the embankment and causing erosion.	Monitor E	Frequency Immediately after the creating of the embankment/ stripping of vegetation.

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B.6. Stormwater Measures in this section are aimed at reducing the erosive potential of stormwater	B.6.1 General Principles: a) The Contractor shall not in any way modify nor damage the banks or bed of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless required as part of the construction project specification. Where such disturbance is unavoidable, modification of water bodies should be kept to a minimum in terms of: - Removal of riparian vegetation - Opening up of the stream channel b) Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water pathways over the site. i.e.: these materials must not be placed in stormwater channels, drainage lines or rivers. c) There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. d) The use of high velocity stormwater pipelines should be avoided in favor of open, high friction, semi-permeable channels wherever feasible e) A number of smaller stormwater outfall points should be constructed rather than a few large outfall points. f) Stormwater outfalls should be designed to reduce flow velocity and avoid stream-bank and soil erosion.	Monitor ECO E E/ECO E/ECO E/ECO E/ECO	Frequency Ongoing. Monitoring throughout the duration of the project. Monthly checking As directed by Engineer As directed by Engineer
	B.6.2 Stormwater Detention Ponds a) Detention ponds should be vegetated either with wetland vegetation or grass from the Revegetation Specification. The detention ponds must not block the water flow, but should encourage spreading of the flow over wider areas to reduce velocity and encouraged infiltration. b) Peak stormwater discharge from the site/area should not be increased with development of the site/area. Stormwater should be detained on site through the use of stormwater detention ponds wherever possible. A series of detention ponds may be required where flow volumes are high. B6.3 Unchanneled Flow a) During construction unchanneled flow must be controlled to avoid erosion. Where large areas of soil are left exposed, rows of straw/hay or bundles of cut vegetation should be dug into the soil in contours to slow surface wash and capture eroded soil. The spacing between rows will be dependant on slope.	Monitor ECO E/ECO E/ECO	Frequency On completion of detention ponds As directed by Engineer and ongoing monitoring As surfaces become exposed

C3: SCOPE OF WORK

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	b) Where surface run-off is contracted (e.g. along exposed roadways/tracks), flow should be slowed by contouring with hay bales or bundled vegetation generated during site clearance operation. If the area must be used for construction vehicles, berms may be used instead. The berms must at least 30cm high and well compacted. The berms should channel concentrated flow into detention ponds or areas protected with hay bales for flow reduction and sediments capture.	Monitor E/ECO	Frequency Ongoing
B.7. Water Quality Soil erosion and sediment is detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.	a) Mixing /decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site. b) Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site. c) Care must be taken to ensure that run-off from vehicle or plant washing does not enter the groundwater. Wash water must be passed through a three-chamber SOG trap prior to being discharged as effluent to a regular municipal sewer. d) Site staff not be permitted to use any stream, river, other open water body or natural water source adjacent to or within the designated site for the construction or related activities. Municipal water (or another source approved by the Engineer) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting etc. e) Emergency contact numbers in should be listed and openly displayed in order to speedily deal with spillages and contamination of aquatic environments should it occur.	Monitor ECO ECO ECO ECO E/ECO	Frequency Regular monitoring. Regular monitoring. Regular monitoring Regular monitoring. As the need arises
B.8. Conservation of Natural Environment The patch of forests specifically identified in the EMP should be avoided altogether.	<u>B.8.1 Fauna and Flora</u> As the work front progresses the Contractor is to check that any vegetation clearing has the prior permission of the ECO. a) Only trees that have NOT been marked beforehand are to be removed. b) Gathering of firewood, fruit, medicinal plants, crops, or any other natural material on site or in areas adjacent to the site is prohibited.	Monitor E N/A ECO	Frequency Ongoing. N/A Ongoing.

C3: SCOPE OF WORK

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The buffer needs to be upheld at all cost.	c) The hunting of birds and animals on site and in surrounding areas is forbidden.	ECO	Ongoing.
	d) Snares and traps on site and in surrounding areas are forbidden.	ECO	Ongoing
	e) Immediate revegetation of stripped areas and removal of aliens by weeding must take place. This significantly reduces the amount of time and money that must be spent on alien plant management during rehabilitation.	ECO	Ongoing.
	f) Alien vegetation encroachment onto the site as a result of construction activities must be controlled during construction.	ECO	Twice – monthly monitoring.
	g) Where possible, cleared indigenous vegetation should be kept in a nursery for use at a later stage in the rehabilitation process.	Monitor N/A	Frequency N/A
B.9. Materials Management	<u>B.9.1 Stockpile Management</u>	Monitor	Frequency
	a) Stockpiles should not be situated such that they obstruct natural water pathways.	E/ECO	Location as directed by the Engineer.
	b) Stockpiles should not exceed 2m in height unless otherwise permitted by the Engineer.	E	
	c) If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.	ECO	As this becomes necessary.
	d) Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.	ECO	Monthly monitoring
	<u>9.2 Handling of Hazardous Materials</u>		
	a) All concrete mixing must take place on a designated, impermeable surface.	ECO	Ongoing monitoring.
	b) No vehicles transporting concrete to the site may be washed on site.	ECO	Ongoing monitoring.
	c) No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site.	ECO	Monthly
	d) Lime and other powders must not be mixed during excessively windy conditions.	ECO	

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	e) All substances required for vehicle maintenance and repair must be in sealed containers until they can be disposed or /removed from the site. f) Hazardous substances / material are to be transported in sealed containers or bags. g) Spraying of herbicides/ pesticides should not take place under windy conditions and must comply with OHSA specs and other chemical handling laws h) The emergency numbers should be consulted should any accident /spillages of hazardous substances and /or materials take place. The Contractor is to outline a method statement for the dealing of accidents /spillages of hazardous materials. This statement must be handed to the Engineer as well as to DWAF should the incident occur near to a body of water.	ECO E/ECO ECO ECO	Ongoing monitoring. Ongoing monitoring. Ongoing monitoring Ongoing monitoring
B.10. Waste Management Definition: "Refuse" refers to all construction waste (such as rubble, asphalt milling, cement, bags, waste cement, timber, cans, other containers, wire and nails) household and office waste	B.10.1 On-Site Waste Management a) Refuse must be placed in the designated skips/ bins, which must be regularly emptied. These should remain within demarcated areas and should be designed to prevent reuse from being blown out by wind. b) In addition to the waste facilities within the construction camp, provision must be made for waste receptacles to be placed at intervals along the work front. c) Littering on site is forbidden and the site shall be cleared of litter at the end of each working day. d) Recycling is to be encouraged by providing separate receptacles for different types of waste and making sure that staff are of their uses. 10.2 Waste disposal Non-hazardous Waste All waste must be removed from the site and transported to a landfill site which must be identified prior to commencement of work. a) Waybills proving disposal at each shall be provided from the Engineer's inspection. b) Construction rubble shall be disposed off in pre-agreed, demarcated spoil dumps that have been approved by the Engineer, or at disposal sites. c) Waste from chemical toilets should be disposed of regularly and in a responsible and in a responsible manner	Monitor ECO ECO ECO ECO ECO E/ECO ECO ECO	Frequency Ongoing monitoring Ongoing monitoring Ongoing monitoring Ongoing monitoring. Checked at each site meeting. Ongoing monitoring Monitored weekly and at the start of builders' holidays. Ongoing

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	by a registered waste contractor. Care must be taken to avoid contamination of soils and water, pollution and nuisance to adjoining areas. Hazardous Waste a) Hazardous waste disposal must be carried out by an approved waste Contractor. Waybills for this should be provided. b) A sump (earth or other) must be created for concrete waste. This is to be de-slugged regularly and the cement waste is to be removed to a tip site as approved by the engineer and ECO.	E/ECO ECO	During establishment and ongoing Ongoing
B.11. Social Impacts Regular communication between the Contractor and Interested and Affected Parties (I&AP's) is important for the duration of the contract	<u>B.11.1 Disruption of Infrastructure and Services</u> a) Contractor's activities and movement of staff to be restricted to designated construction areas. b) Should the construction staff be approached by members of the public or other stakeholders, they should assist them in locating the Engineer or Contractor, or provide a number on which they may contact the Engineer or Contractor. c) The conduct of the construction staff when dealing with the public or other stakeholder shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from site by the Engineer. d) Disruption of access for local residents must be minimized and must have the Engineer's permission. e) The Contractor is to inform neighbours in writing of disruptive activities at least 24 hours beforehand. This can take place by way of leaflets placed in the postboxes giving the Engineer and Contractor's details or other methods approved by the Engineer. <u>B.11.2 Visual Impacts</u> a) Lighting on the construction site should be pointed downwards and away from oncoming traffic and nearby houses. b) The site must be kept clean to minimize the visual impact of the site c) If screening is being used, this must be moved and re-erected as the work front progresses.	Monitor E E/ECO E E E/ECO ECO ECO ECO	Frequency Ongoing. Ongoing. Ongoing. Ongoing. At least 24 hrs prior to the activity taking place. Ongoing. Ongoing- weekly monitoring. Ongoing.

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	B.11.3 Noise a) Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbours. b) Notice of particularly noisy activities must be given to residents/ businesses adjacent to the construction site. Example of these include: - Noise generated by jackhammers - Blasting - Drilling - Dewatering pumps c) Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract.	ECO E/ECO E/ECO	Ongoing. At least 24 hrs prior to the activity taking place.
	<u>B.11.4 Communication with Interested and Affected Parties (I&AP's)</u> a) The Engineer and Contractor are responsible for ongoing communication with those people that are interested in /affected by the project. b) A complaint register should be housed at the site office. This should be in carbon copy format, with numbered pages. The Contractor must account for any missing pages. This register is to be tabled during monthly site meetings. c) I&AP's need to be made aware of the existence of the complaints book and the methods of communication available to them. d) Queries and complaints are to be handled by: - Documenting details of such communications - Submitting these for inclusion in complaints register. - Brining issues to Engineer's attention immediately - Taking remedial action as per Engineer's instruction e) Selected staff are to be made available for formal consultation with I&AP's in order to: - Explain construction process - Answer questions	Monitor E/ECO ECO E/ECO ECO ECO	Frequency Monthly Monthly Ongoing. Ongoing Ongoing on a monthly basis and when required
B12. Cultural Environment	a) Possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery, remains, fossils etc.		

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	b) Should something of this nature be uncovered, the Research and Professional Services Division of AMAFA should be contacted and work should be stopped immediately. AMAFA's head office is in Ulundi and their office in Pietermaritzburg will address any queries within KZN. The facilitator should be contacted on telephone no. 033-3946543, fax 033-3426097.	E/ECO	As required.
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C3: SCOPE OF WORK

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SECTION C: POST CONSTRUCTION ACTIVITIES

C.1. Construction Camp		Monitor	Frequency
	a) All structures comprising the construction camp are to be removed from site.	E	Project completion
	b) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint etc. and these should be cleaned up.	E	Project completion
	c) All hardened surfaces within the construction camp area should be ripped, all imported material removed, and the area shall be top-soiled as regressed using the guidelines set out in the revegetation specification that form part of this document.	E	Project completion
	d) The Contractor must arrange the cancellation of all temporary services.	E	Project completion
C.2 Vegetation			
	a) All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation.	E	Project completion
	b) Open areas are to be re-planted	E	Project completion
	c) All vegetation that has been cleared during construction is to be removed from site or used as much as per the revegetation specification, (except for seeding alien vegetation).	E	Project completion
	d) The Contractor is to water and maintain all planted vegetation until the end of the defects liability period and is to submit a method statement regarding this to the Engineer.	E	Project completion
C.3 Land Rehabilitation			
	a) All surfaces hardened due to construction activities are to be ripped and imported materials thereon removed.	ECO	Project completion
	b) All rubble is to be removed from the site to and approved disposal site or approved by the Engineer. Burying of rubble onsite is prohibited.	ECO	Project completion
	c) The site is to be cleared of all litter.	ECO	Project completion
	d) Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the Engineer.	ECO	Project completion
	e) All embankments are to be trimmed, shaped and replanted to the satisfaction of the Engineer.	E/ECO	Project completion
	f) Borrow pits are to be closed and rehabilitated in accordance with the DME-approved management plan for each borrow pit. The Contractor shall liaise with the Engineer regarding these requirements.	E	Project completion

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	g) The Contractor is to check that all watercourses are free from building rubble, spoil materials and waste materials.	ECO	Project completion.
C.4 Material and Infrastructure	a) Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.	Monitor E	Frequency Project completion
	b) All residual stockpiles must be removed to spoil or spread onsite as directed by the Engineer.	E	Project completion
	c) All leftover building materials must be returned to spoil or spread on site as directed by the Engineer.	ECO	Project completion
	d) The Contractor must repair any damage that the construction works has caused to neighbouring properties.	E	Project completion
C.5 General	a) The Engineer, ECO and the Contractor need to approve all remediation activities and to ensure that the site has been restored to a condition approved by the Engineer.	E/ECO	On completion of the construction & maintenance phases
	b) Temporary roads must be closed and access across these blocked.	E/ECO	On completion of construction
	c) Access or haulage roads that were built across watercourses must be rehabilitated by removing temporary bridges and any other materials placed in / or near to watercourses. Revegetation of banks or streambeds must be as necessary to stabilize these and must be approved by the Engineer.	E/ECO	On completion of construction
	d) All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Engineer.	E/ECO	On completion of construction

C3: SCOPE OF WORK

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SECTION D: CONCLUSIONS AND RECOMMENDATIONS

The sensitive environment along the pipe line route is the patch of indigenous forest located at the start area of the project. This forest need to be avoided by all means. Other construction impacts are minimal and of low significance. Should the EMP be adequately implemented, potential impacts could be further reduced. The concluding recommendations are:

- Contractors need to follow the environmental management plan;
- The development need to benefit the community in a tangible manner, and therefore, attempts need to be made to integrate community needs and aspirations into the implementation processes of the development;
- The contractor need to show concerns for health in general and the health safety of the employees in particular;
- Where appropriate, the contractor must use local labour as much as possible;
- In terms of the National Environmental Management Act 107 of 1989 every body is required to take reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner;
- Further more in terms of the Nation Environmental Management Act 107 of 1998 the cost of repair for any environmental damage shall be borne by the person responsible for the damage.

C4: SITE INFORMATION

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C4: SITE INFORMATION

- C4.1: GEOTECHNICAL**
- C4.2: ATMOSPHERIC/CLIMATIC**
- C4.3: ENVIRONMENTAL**
- C4.4: LOCALITY PLAN**
- C4.5: NAMEBOARD DRAWING**
- C4.6: STANDARD DRAWINGS**

C4: SITE INFORMATION

MALANGENI WATER SUPPLY
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C4: SITE INFORMATION

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C4: SITE INFORMATION

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C4.1 GEOTECHNICAL

Tenderers must satisfy themselves as to the nature of materials to be excavated under this contract.

No responsibility is accepted for any conclusions drawn by Tenderers from the results and information supplied (if any) and Tenderers must satisfy themselves as to the nature of materials to be excavated under this contract. Tenderers are at liberty to excavate any trial holes or to carry out other investigations to satisfy themselves as to the nature of the ground that will be encountered in carrying out the Works, provided that they advise the Engineer of their intention to carry out such further trial hole excavations or other investigations so that the necessary safety requirements can be ensured. Any trial hole excavated in areas close to pedestrian or vehicular traffic shall be barricaded and shall be backfilled immediately after inspection of the soil conditions.

The Tenderer shall be fully liable for any claims for losses, damage or injuries whatsoever arising out of, or as a consequence of, carrying out trial hole excavations for the purpose of his tender. Furthermore, the Engineer's authority for the carrying out of any exploratory excavations is subject to the Tenderer indemnifying the Employer and the Engineer against any such claims.

C4: SITE INFORMATION

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C4.2 ATMOSPHERIC / CLIMATIC

Extension of time will be considered for abnormal rainfall. The numbers of days per month on which work is expected not to be possible as a result of normal rainfall, and for which the Contractor shall make provision in his tendered rates, prices and programme, are listed in Table C4.2.1 hereafter. Only the number of days lost as a result of adverse weather conditions, exceeding the number of days listed in Table C4.2.1, will qualify for consideration of extension of time.

Table C4.2.1: Expected Number of Working Days Lost per Month due to Normal Rainfall

Month	Expected number of working days lost as result of normal rainfall
January	5
February	5
March	4
April	1
May	1
June	1
July	1
August	1
September	2
October	3
November	4
December	5
TOTAL	33 days

(The number of working days lost for December and January exclude the rain days for the builders' holidays from 16 December to 02 January.)

During the execution of the Works, the Engineer's Representative will certify a day lost due to abnormal rainfall and adverse weather conditions only:

- if no work was possible on the relevant working day on any item which is on the critical path according to the latest approved construction programme; or
- if less than 30% of the work force and plant on site could work during that specific working day.

Extension of time as a result of abnormal rainfall and adverse weather conditions shall be calculated monthly being equal to the number of working days certified by the Engineer's Representative as lost due to rainfall and adverse weather conditions, less the number of days allowed for as in Table C4.2.1, which could result in a negative figure for certain months. The total extension of time as a result of abnormal climatic conditions, for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as nil.

C4: SITE INFORMATION

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C4.3 ENVIRONMENTAL

The Contractor will be responsible for environmental control on site during construction and the maintenance period. The construction activities will be monitored by an independent environmental specialist.

A copy of the Environmental Management Plan is included in the following pages-

C4: SITE INFORMATION

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C4.4 LOCALITY PLAN

C4: SITE INFORMATION

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C4.5 NAMEBOARD DRAWING

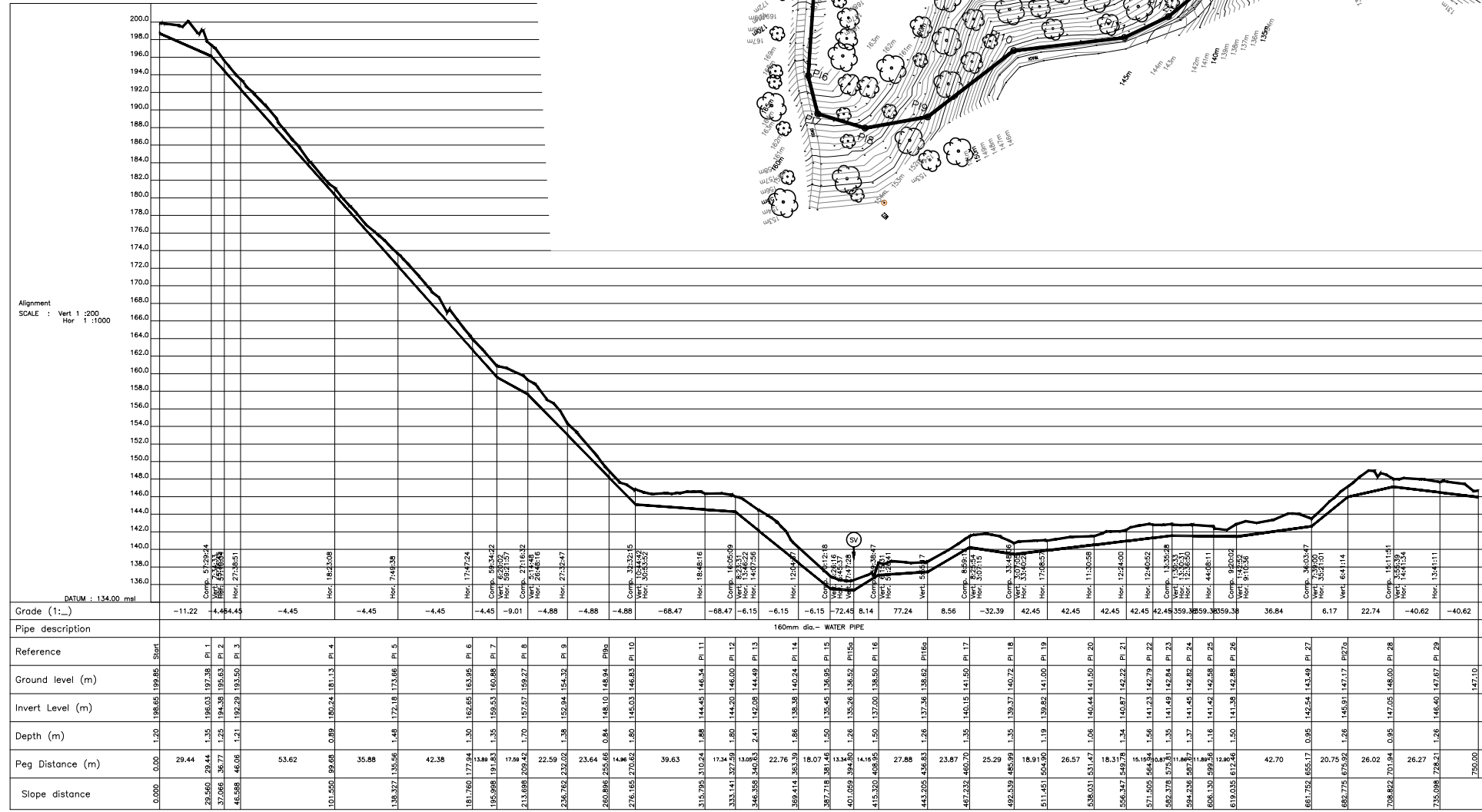
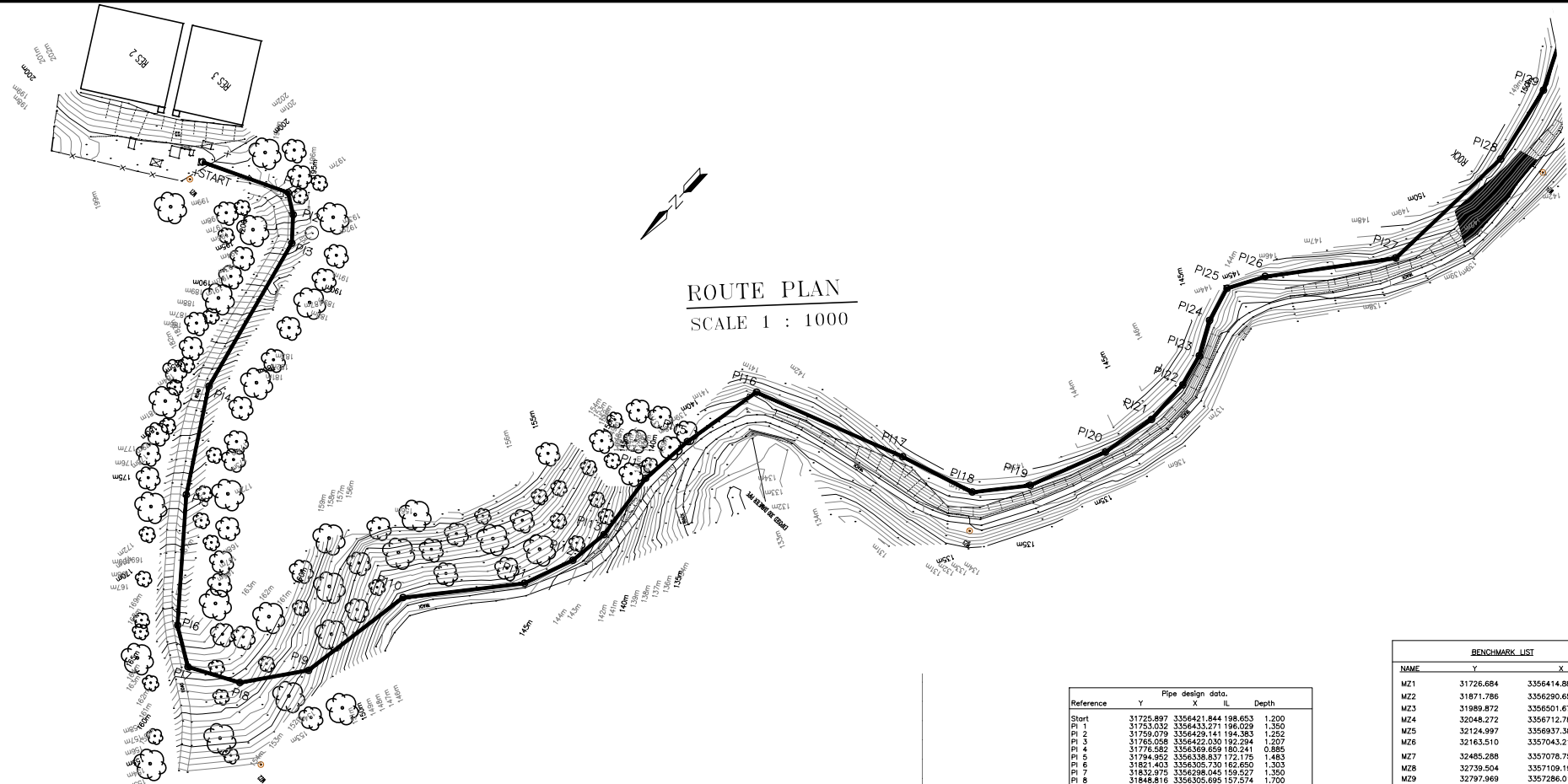
C4: SITE INFORMATION

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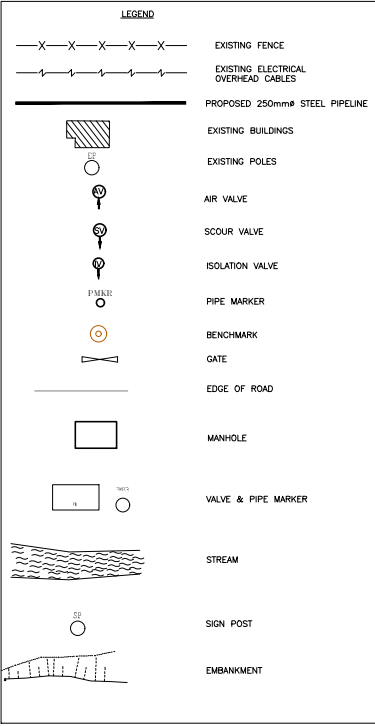
C4.6 STANDARD DRAWINGS

Drawing N°	Description
WN06/04-P01	Project Plan
WN06/04-D01 (1 of 3)	Standard Details
WN06/04-D01 (2 of 3)	Standard Details
WN06/04-D01 (3 of 3)	Standard Details
WN06/04-D03	Name Board
WN06/04-D04	Long Section Drawings



Pipe design data.				
Reference	Y	X	IL	Depth
Start	31725.897	3356421.844	198.653	1.200
PI 1	31725.032	3356433.271	198.029	1.350
PI 2	31759.079	3356429.141	194.383	1.252
PI 3	31765.058	3356422.030	192.294	1.207
PI 4	31776.582	3356369.659	180.241	0.885
PI 5	31794.952	3356338.637	172.175	1.483
PI 6	31821.403	3356305.730	162.650	1.303
PI 7	31832.975	3356298.049	159.527	1.350
PI 8	31848.816	3356305.695	157.574	1.700
PI 9	31862.544	3356323.640	152.944	1.379
PI 10	31866.598	3356346.932	148.098	0.840
PI 11	31869.162	3356361.669	145.033	1.800
PI 12	31893.039	3356391.680	144.454	1.885
PI 13	31901.526	3356407.765	144.201	1.800
PI 14	31903.385	3356420.678	142.081	2.412
PI 15	31901.029	3356443.313	138.384	1.855
PI 16	31902.961	3356461.277	135.446	1.500
PI 17	31905.711	3356474.330	135.264	1.260
PI 18	31908.626	3356488.181	137.002	1.500
PI 19	31935.046	3356497.101	137.363	1.260
PI 20	31957.657	3356504.736	140.151	1.350
PI 21	31982.027	3356511.512	139.370	1.350
PI 22	31994.378	3356525.828	139.815	1.186
PI 23	32005.033	3356550.169	140.441	1.058
PI 24	32008.879	3356568.072	140.873	1.342
PI 25	32008.806	3356583.143	141.430	1.558
PI 26	32008.368	3356593.819	141.486	1.350
PI 27	32001.081	3356604.434	141.453	1.371
PI 28	31998.235	3356615.982	141.420	1.164
PI 29	32004.743	3356627.125	141.384	1.500
PI 30	32031.882	3356660.094	142.543	0.951
PI 31	32033.369	3356680.783	145.004	1.260
PI 32	32035.234	3356706.748	147.050	0.951
PI 33	32030.410	3356732.569	146.404	1.263

BENCHMARK LIST			
NAME	Y	X	Z
MZ1	31726.684	3356414.888	199.950
MZ2	31871.786	3356290.656	152.843
MZ3	31989.872	3356501.677	137.399
MZ4	32048.272	3356712.786	142.181
MZ5	32124.997	3356937.382	147.460
MZ6	32163.510	3357043.211	171.694
MZ7	32485.288	3357078.754	154.906
MZ8	32739.504	3357109.190	179.609
MZ9	32797.969	3357286.010	154.827
MZ10	32927.959	3357411.573	127.925

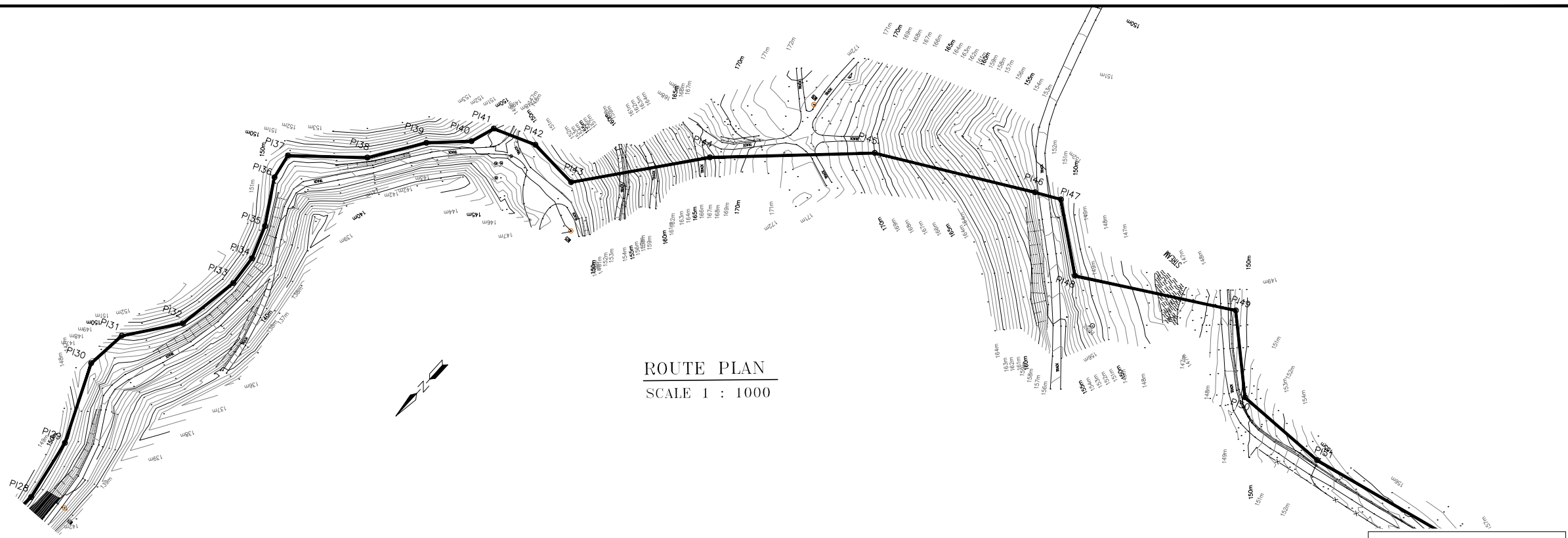


Pipe lengths (m)			
Reference	Horiz.	Slope	
Start	29.443	29.560	
PI 1	7.345	7.345	
PI 2	9.291	9.291	
PI 3	53.623	54.961	
PI 4	35.882	36.777	
PI 5	42.376	43.433	
PI 6	13.892	14.338	
PI 7	17.592	17.700	
PI 8	22.594	23.584	
PI 9	23.642	24.134	
PI 10	14.958	15.269	
PI 11	39.626	39.630	
PI 12	17.343	17.345	
PI 13	13.047	13.218	
PI 14	27.747	23.025	
PI 15	18.068	18.304	
PI 16	13.340	13.341	
PI 17	14.154	14.261	
PI 18	27.883	27.885	
PI 19	23.805	24.027	
PI 20	25.295	25.307	
PI 21	18.906	18.911	
PI 22	26.573	26.580	
PI 23	18.311	18.316	
PI 24	15.153	15.157	
PI 25	10.870	10.873	
PI 26	11.858	11.858	
PI 27	11.894	11.894	
PI 28	12.904	12.904	
PI 29	20.702	20.711	
PI 30	20.752	21.223	
PI 31	26.022	26.047	
PI 32	26.268	26.276	
PI 33	34.467	34.477	

LONGITUDINAL SECTION - CH000 to CH750

SCALE : Vert 1 : 320
Hor 1 : 1600

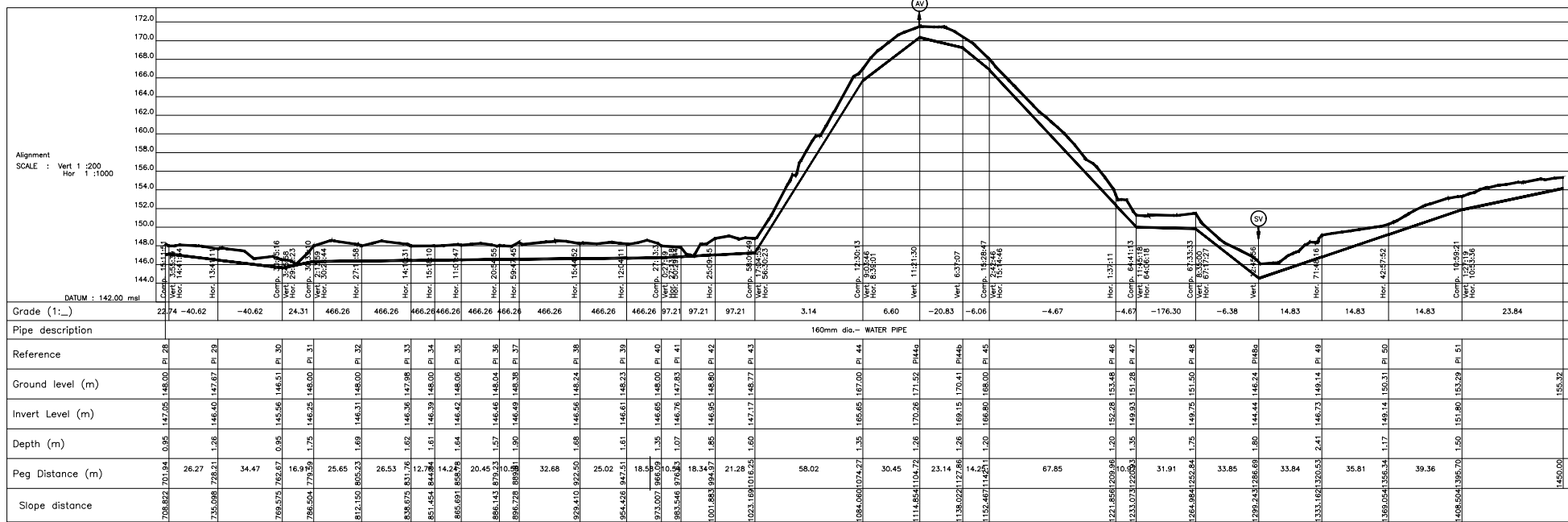
DESIGNED N.E. MALISHE		DRAWN N.E. MALISHE		CHECKED W.M. NDWALANE (PR TECH ENG REG. No. 2019300455)		PROJ. ENG. N.E. MALISHE (PR TECH ENG REG. No. 2020300683)	
REVISIONS		DATE		CHKD		APPRV	
ONLY REVISIONS MARKED THUS ARE VALID							
No.		REFERENCE DRAWINGS					
DESIGNED N.E. MALISHE		DRAWN N.E. MALISHE		CHECKED W.M. NDWALANE (PR TECH ENG REG. No. 2019300455)		PROJ. ENG. N.E. MALISHE (PR TECH ENG REG. No. 2020300683)	
TEL: (039) 3150 750 FAX: (086) 5772 602 E-mail: office@wnace.co.za		Office No. 50 South The Tydes Shelly Beach 4265		APPROVED : _____ N.E. MALISHE (PR TECH ENG REG. No. 2020300683)		APPROVED : _____	
PROJECT/DRAWING TITLE UGU DISTRICT MUNICIPALITY CONSTRUCTION OF 160/200mm Ø uPVC PIPELINE FROM UMZINTO WTW TO ESPERANZA RESERVOIR		LONG SECTION DRAWINGS		ALT. DWG. No. SHT. No. 1 OF 3		CONTRACT No. PROJECT No. WN07/05	
DRAWING No. WN06/05/02-D01		REVISION 0		ORIGINAL SCALE AS SHOWN ON A1			



ROUTE PLAN

SCALE 1 : 1000

BENCHMARK LIST			
NAME	Y	X	Z
M21	31726.684	3356414.888	199.950
M22	31871.786	3356200.656	152.843
M23	31989.872	3356501.677	137.399
M24	32048.722	3356712.786	142.181
M25	32124.997	3356937.382	147.480
M26	32163.510	3357043.321	171.694
M27	32465.288	3357078.754	154.906
M28	32739.504	3357109.190	179.609
M29	32797.969	3357286.010	154.827
M210	32927.959	3357411.573	127.925

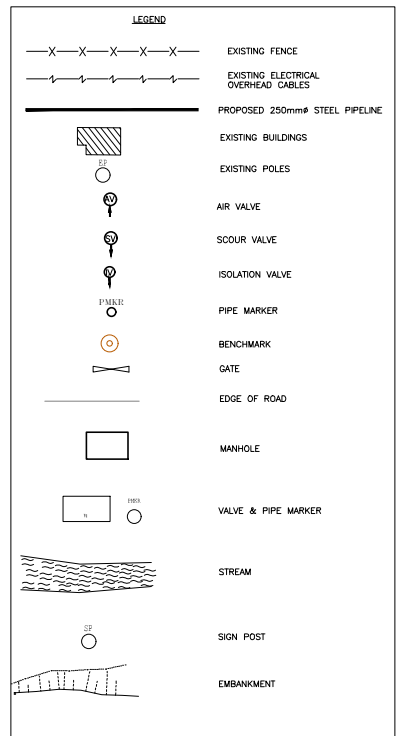


LONGITUDINAL SECTION - CH700 to CH1450

```
SCALE : Vert 1 : 320
      : Hor 1 : 1600
```

Reference	Pipe design data			Depth
	Y	X	IL	
P1	3203.25	3356.762	147.050	0.951
P2	3203.040	3356.767	148.404	0.263
P3	3203.040	3356.767	148.404	0.263
P4	3201.785	3356.783	145.251	1.750
P5	3201.785	3356.783	145.251	1.750
P6	3203.075	3356.877	146.363	1.615
P7	3203.075	3356.877	146.363	1.615
P8	3203.350	3356.840	148.390	1.811
P9	3203.350	3356.840	148.390	1.811
P10	3202.180	3356.817	145.465	1.574
P11	3202.180	3356.817	145.465	1.574
P12	3202.416	3356.830	145.657	1.679
P13	3202.416	3356.830	145.657	1.679
P14	3202.696	3356.891	145.651	1.615
P15	3202.696	3356.891	145.651	1.615
P16	3203.735	3356.946	148.375	1.068
P17	3203.735	3356.946	148.375	1.068
P18	3211.504	3356.952	147.716	1.607
P19	3211.504	3356.952	147.716	1.607
P20	3216.850	3357.019	150.762	2.260
P21	3216.850	3357.019	150.762	2.260
P22	3219.484	3357.035	150.151	1.908
P23	3219.484	3357.035	150.151	1.908
P24	3225.644	3357.078	152.527	2.078
P25	3225.644	3357.078	152.527	2.078
P26	3228.222	3357.063	149.750	1.750
P27	3228.222	3357.063	149.750	1.750
P28	3234.645	3357.098	151.727	2.049
P29	3234.645	3357.098	151.727	2.049
P30	3237.824	3357.042	148.741	1.173
P31	3237.824	3357.042	148.741	1.173

Reference		Pipe lengths (m)	Horiz.	Slope
Pi 28	- Pi 29	26.268	26.276	
Pi 30	- Pi 31	34.467	34.477	
Pi 32	- Pi 33	16.929	16.939	
Pi 31	- Pi 32	25.646	25.646	
Pi 33	- Pi 34	26.626	26.625	
Pi 34	- Pi 35	12.779	12.779	
Pi 35	- Pi 36	14.237	14.237	
Pi 36	- Pi 37	10.452	10.452	
Pi 37	- Pi 38	10.585	10.585	
Pi 38	- Pi 39	38.633	38.633	
Pi 39	- Pi 40	25.015	25.015	
Pi 40	- Pi 41	18.562	18.562	
Pi 41	- Pi 42	10.538	10.539	
Pi 42	- Pi 43	18.337	18.338	
Pi 43	- Pi 44	21.085	21.085	
Pi 44	- Pi 45	58.018	60.891	
Pi 45	- Pi 46	30.795	30.795	
Pi44a	- Pi44b	14.444	23.168	
Pi 46	- Pi 47	67.853	69.990	
Pi 47	- Pi 48	13.989	11.217	
Pi 48	- Pi 49	31.011	31.011	
Pi 49	- Pi 50	34.259	34.259	
Pi 50	- Pi 51	33.918	33.918	
Pi 51	- Pi 52	35.811	35.803	
Pi 52	- Pi 53	39.692	39.692	
Pi 53	- Pi 54	114.213	114.214	



ORIGINAL SCALE

AS SHOWN ON A1

ALT. DWG. No.	CONTRACT No.
SHT. No. 2 OF 3	PROJECT No. WN07/05

DRAWING No.
REVISION

WN06/05/02-D01


DESIGNED	N.E. MALISHE
DRAWN	N.E. MALISHE
CHECKED	W..M. NDWALANE (PR TECH ENG REG. No. 2019300455)
PROJ. ENG.	N.E. MALISHE (PR TECH ENG REG. No. 2020300683)

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APPROVED : _____
N.E. MALISHE
(PR TECH ENG REG. No. 2020300683)



Office No. 50 South
The Tydes
Shelly Beach
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APPROVED : _____

PROJECT/DRAWING TITLE

UGU DISTRICT MUNICIPALITY

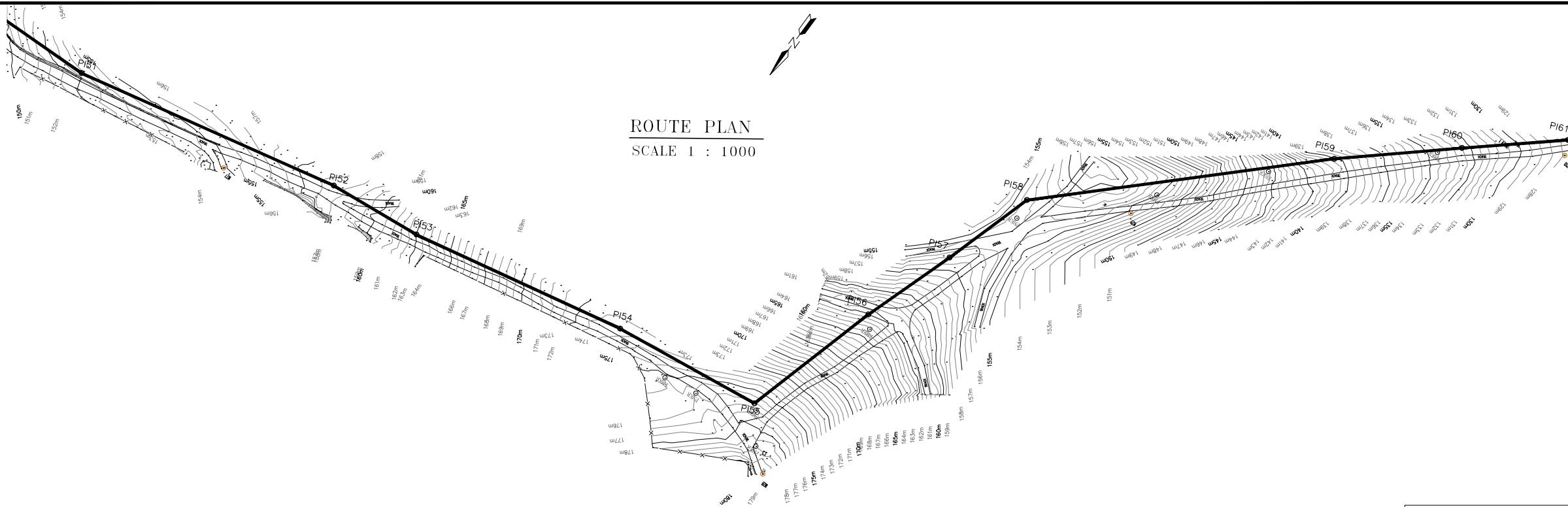
CONSTRUCTION OF 160/200mm ϕ uPVC PIPELINE FROM
UMZINTO WTW TO ESPERANZA RESERVOIR

LONG SECTION DRAWINGS

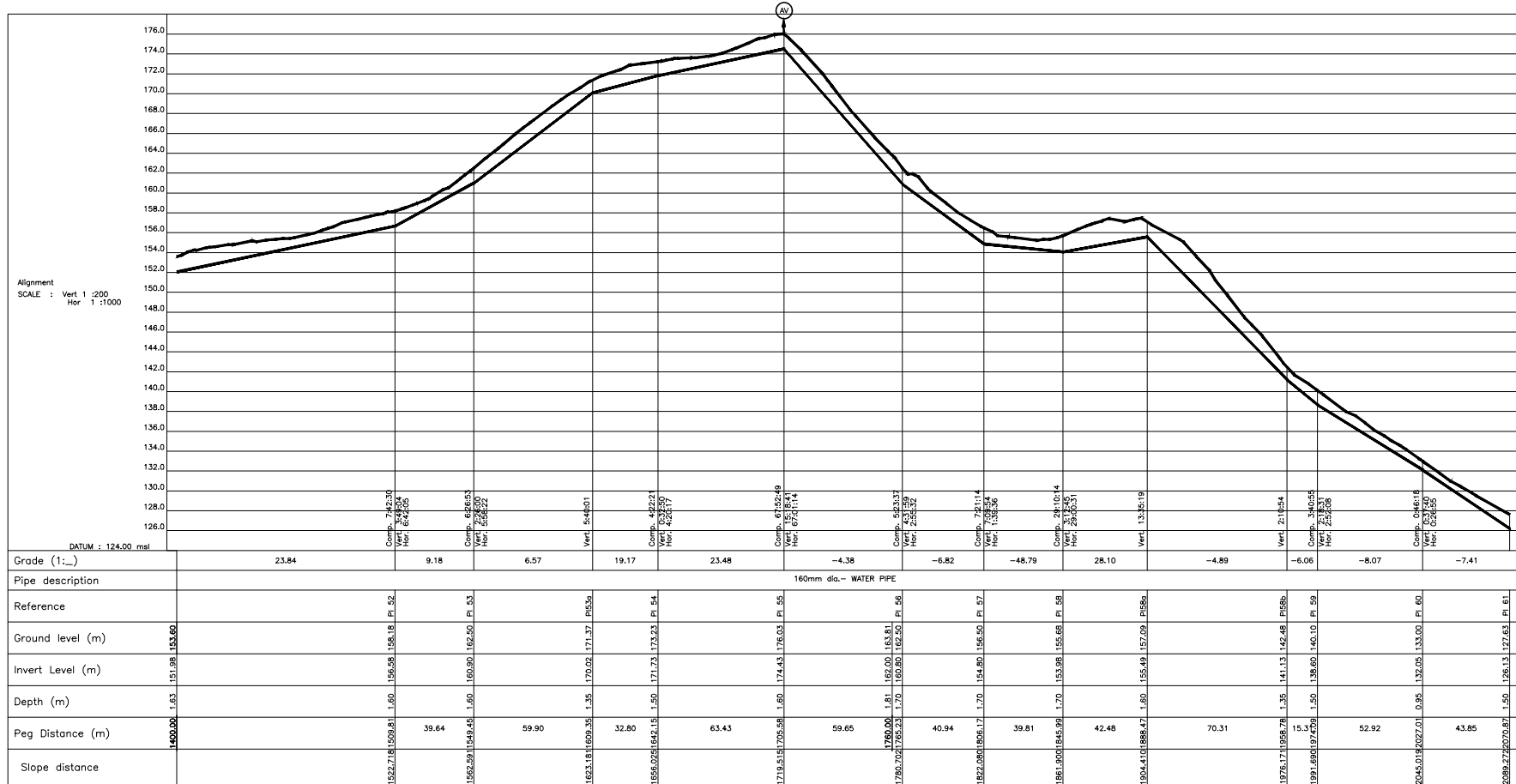
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ROUTE PLAN

SCALE 1 : 1000

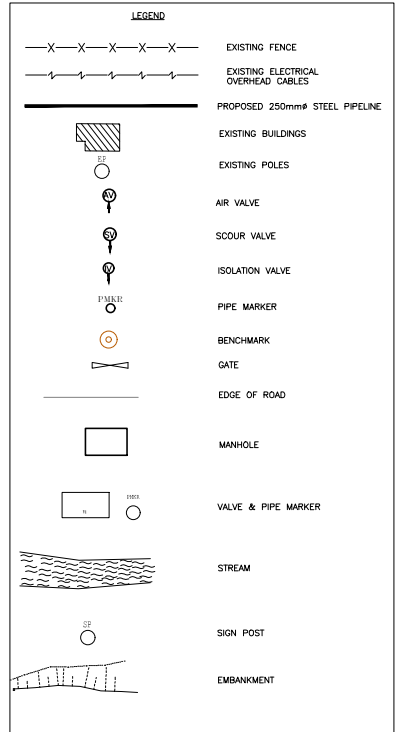


BENCHMARK LIST			
NAME	Y	X	Z
MZ1	31726.684	3356414.888	199.950
MZ2	31871.786	3356290.656	152.843
MZ3	31989.872	3356501.677	137.399
MZ4	32048.272	3356712.786	142.181
MZ5	32124.997	3356937.382	147.480
MZ6	32163.510	3357043.211	171.694
MZ7	32485.288	3357078.754	154.906
MZ8	32739.504	3357109.190	179.609
MZ9	32787.969	3357286.010	154.827
MZ10	32927.959	3357411.573	127.925



Reference	Y	Pipe design data.	Depth
PI 52	32526.282	3357099.921	158.582
PI 53	32585.725	3357103.847	160.902
PI 54	32624.390	3357115.949	170.018
PI 55	32696.514	3357122.578	171.729
PI 56	32719.430	3357130.656	174.431
PI 57	32735.532	3357138.091	180.800
PI 58	32748.581	3357226.896	154.799
PI 59	32760.171	3357264.983	153.983
PI 60	32790.898	3357294.529	155.495
PI 61	32841.218	3357343.426	141.126
PI 62	32852.220	3357354.075	138.600
PI 63	32892.044	3357368.933	132.045
PI 64	32925.268	3357417.559	128.125

Reference	Pipe lengths (m)	Slope
PI 52	1.35	39.639
PI 53	1.35	59.900
PI 54	1.35	62.800
PI 55	1.35	63.433
PI 56	1.35	63.490
PI 57	1.35	63.490
PI 58	1.35	63.490
PI 59	1.35	63.490
PI 60	1.35	63.490
PI 61	1.35	63.490



LONGITUDINAL SECTION - CH1400 to CH2070.87

SCALE : Vert 1 : 300
Hor 1 : 1000

No.	REFERENCE DRAWINGS

REVISIONS	DATE	CHKD	APPRV
ONLY REVISIONS MARKED THUS ARE VALID			

DESIGNED	N.E. MALISHE
DRAWN	N.E. MALISHE
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PROJ. ENG.	N.E. MALISHE (PR TECH ENG REG. No. 2020300683)

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Shelly Beach
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PROJECT/DRAWING TITLE

UGU DISTRICT MUNICIPALITY

CONSTRUCTION OF 160/200mm ϕ uPVC PIPELINE FROM
UMZINTO WTW TO ESPERANZA RESERVOIR

LONG SECTION DRAWINGS

ORIGINAL SCALE

AS SHOWN ON A1

ALT. DWG. No.

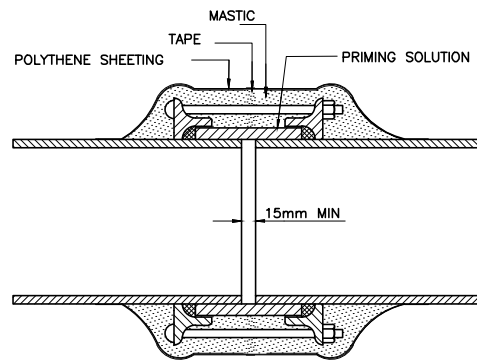
CONTRACT No.

SHT. No. 3 OF 3

PROJECT No.
WN07/05

DRAWING No.
WN06/05/02-D01

REVISION



TYPICAL SECTION THROUGH COUPLING

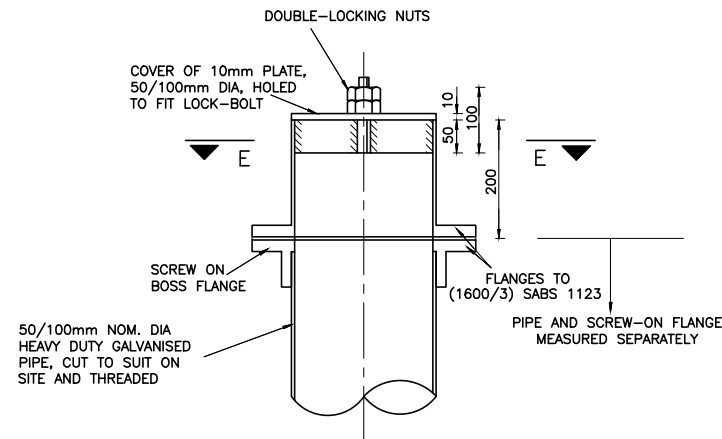
MASTIC PROTECTION TO FLANGED JOINTS, FLEXIBLE COUPLINGS AND FLANGE ADAPTORS TO BE AS SUPPLIED BY DENSO PRODUCTS OR SIMILAR APPROVED.

NOTE:

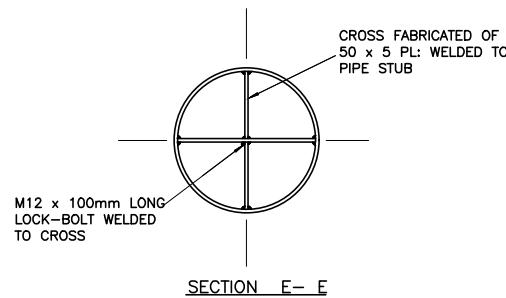
- 1.APPLICATION TO BE IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.
- 2.MASTIC TO BE APPLIED AS SHOWN ABOVE AND MOULDED TO CONTOUR OF FLANGED JOINT/COUPLING ENSURING ALL AIR IS EXPELLED.
- 3.MASTIC TAPE TO OVERLAP 75mm CIRCUMFERENTIALLY.
- 4.POLYTHENE SHEETING TO OVERLAP BITUMEN WRAPPING ON PIPES EITHER SIDE OF JOINT BY 100mm AND SECURED USING DUCT TAPE.

DETAILS OF MASTIC PROTECTION TO FLANGED JOINTS AND FLEXIBLE COUPLINGS

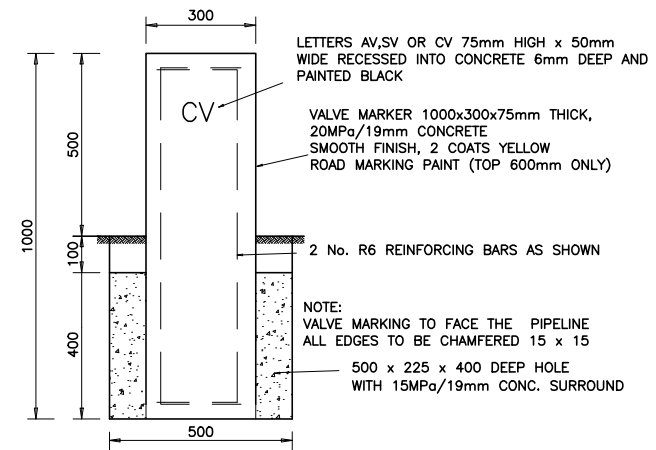
(TO BE READ IN CONJUNCTION WITH PROJECT SPECIFICATION)



LONGITUDINAL SECTION THROUGH DISPERSER

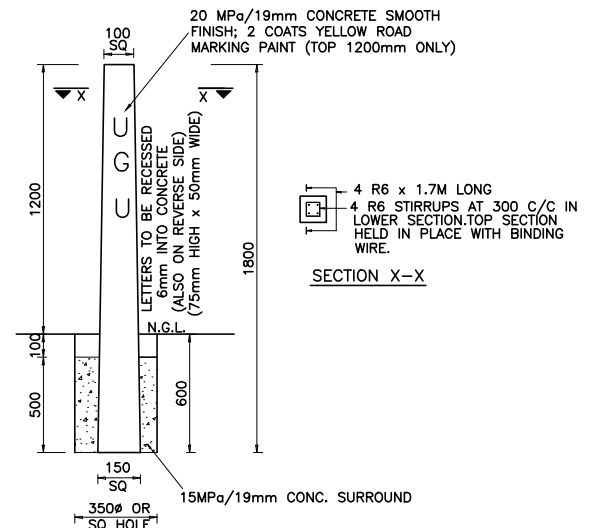


SECTION E-E



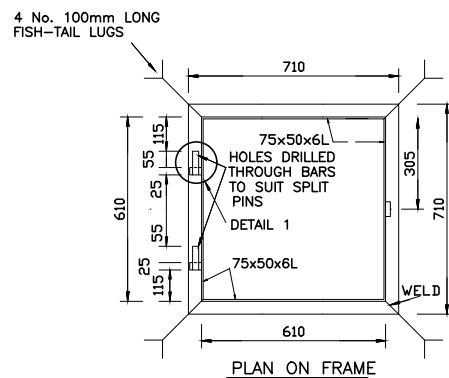
TYPICAL VALVE MARKER

(PRE-CAST CONCRETE)
N.T.S.

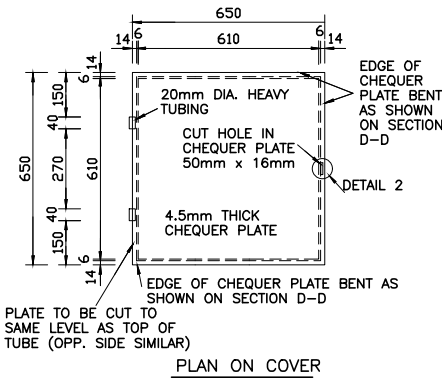


DETAIL OF PIPELINE MARKER

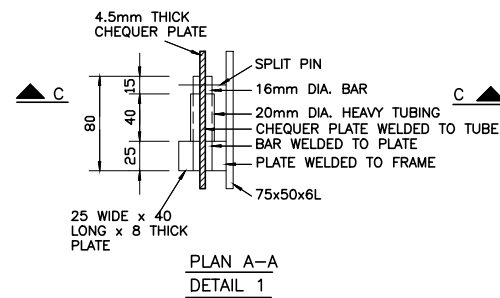
(PRECAST CONCRETE)
N.T.S.



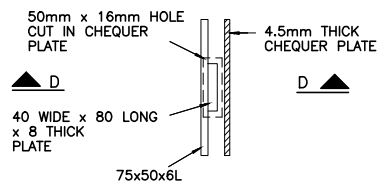
PLAN ON FRAME



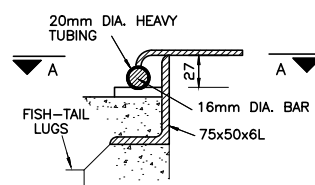
PLAN ON COVER



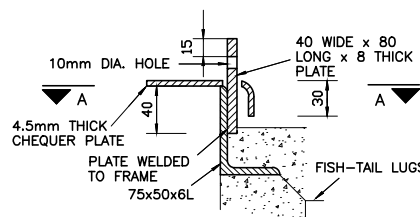
PLAN A-A
DETAIL 1



PLAN A-A
DETAIL 2



SECTION C-C



SECTION D-D

DETAILS OF 610mm SQUARE GALVANISED MANHOLE COVER AND FRAME

ORIGINAL SCALE
AS SHOWN (ON A1)

CONTRACT No.

SHT. No. 1 OF 3 PROJECT No.
WN06/05

DRAWING No.
WN06/05/01-D01

REVISION
1

DESIGNED	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
DRAWN	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
CHECKED	W.M. NOWALANE (PR TECH ENG. REG. No. 2019300455)
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APPROVED :
N.E. MALISHE
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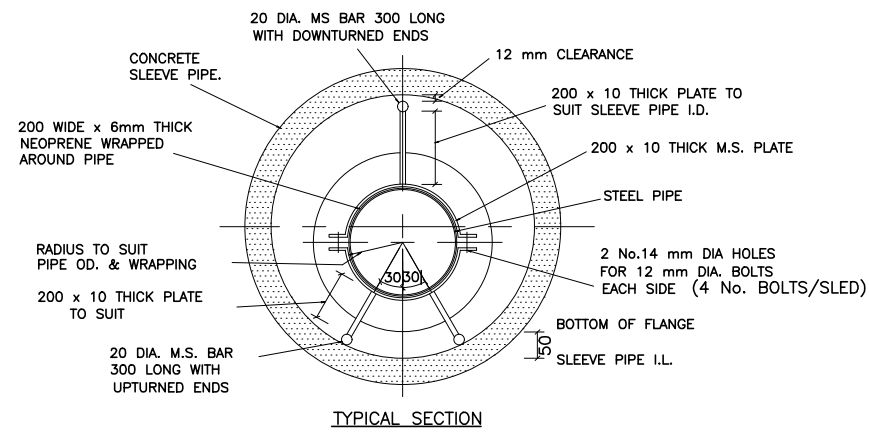
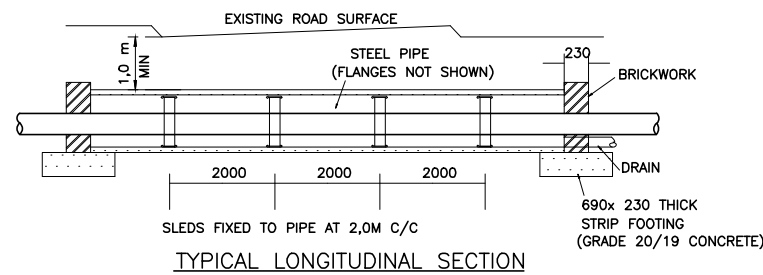


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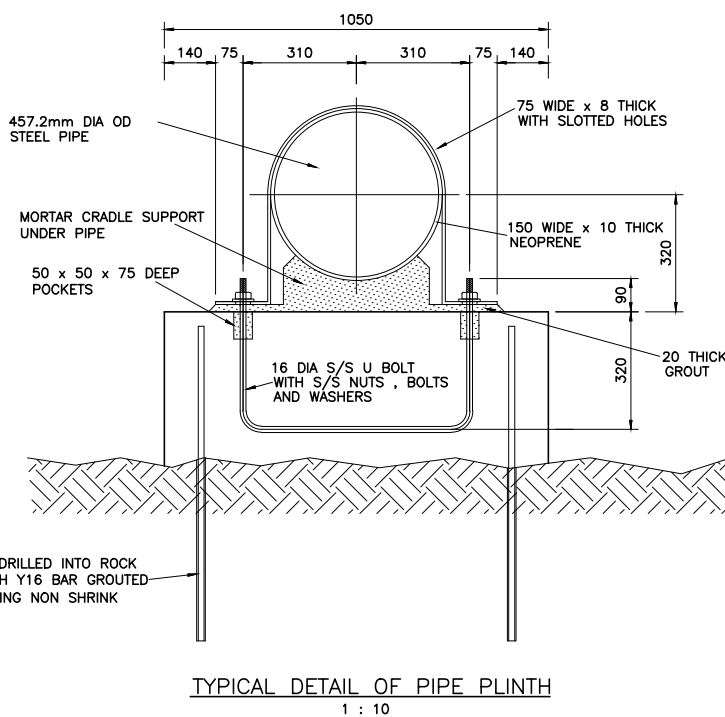
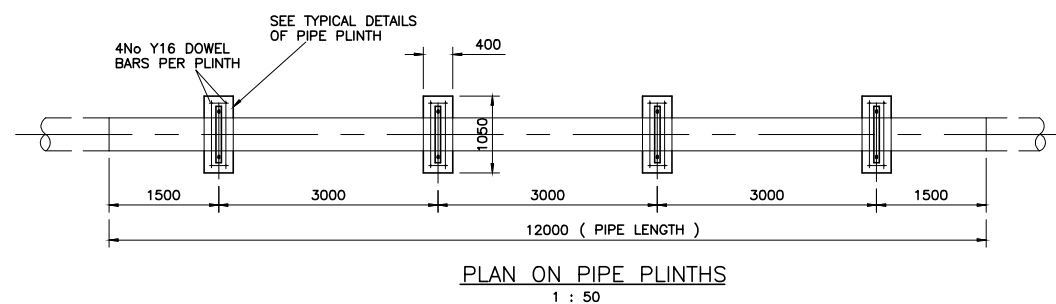
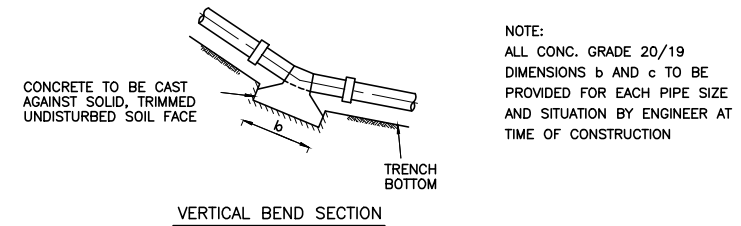
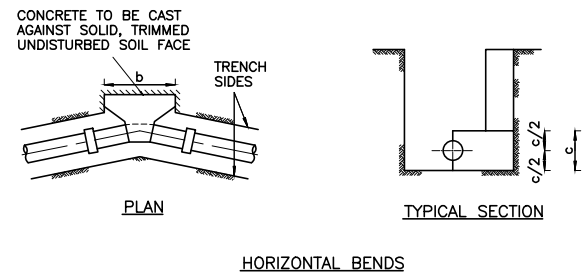
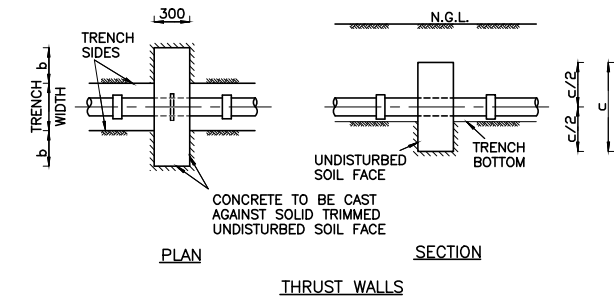
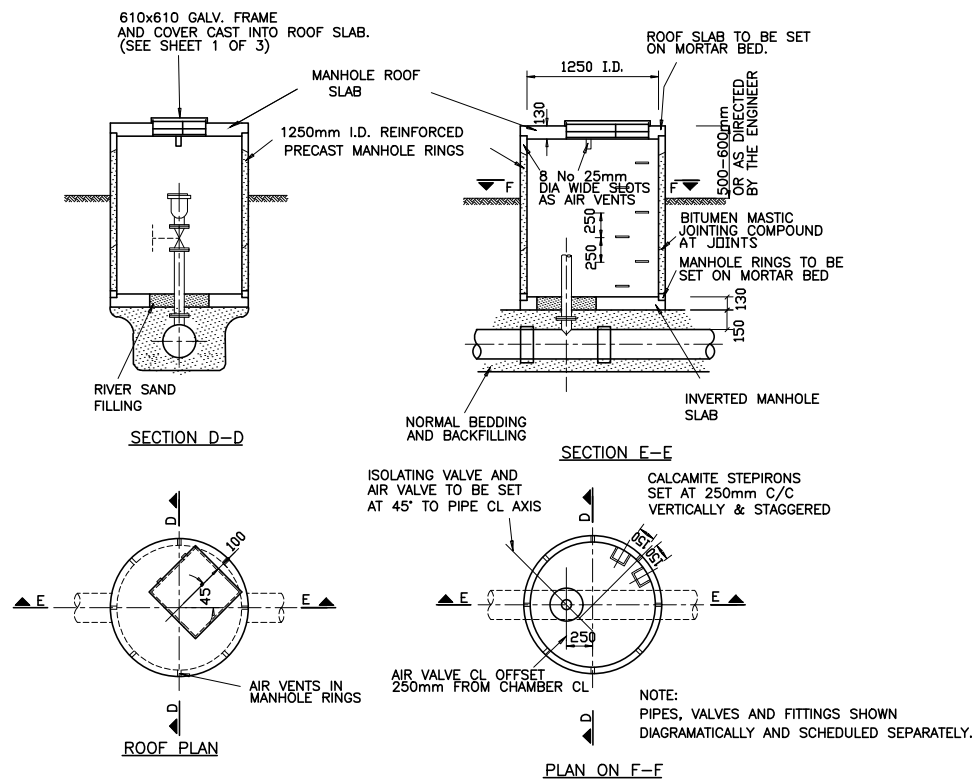
PROJECT/DRAWING TITLE
UGU DISTRICT MUNICIPALITY
CONSTRUCTION OF 160/200MM DIAMETER X 1.5KM UPVC
GRAVITY PIPELINE FROM UMZINTO WTW TO OFF-TAKE,
MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL
STORAGE

STANDARD DETAILS

DRG. No.	REFERENCE DRAWINGS	0	REVISIONS	DATE
----------	--------------------	---	-----------	------



DETAILS OF SLEEVED PIPE CROSSING AND SLEDs (FOR USE WITH FLANGED STEEL PIPES)



DRG. No.	REFERENCE DRAWINGS	REVISIONS	DATE

DESIGNED	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
DRAWN	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
CHECKED	W.M. NDWALANE (PR TECH ENG. REG. No. 2019300455)
PROJ. ENG.	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)

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Office No.50 South
The Vines
Shady Beach
4265

APPROVED: N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)

APPROVED: _____

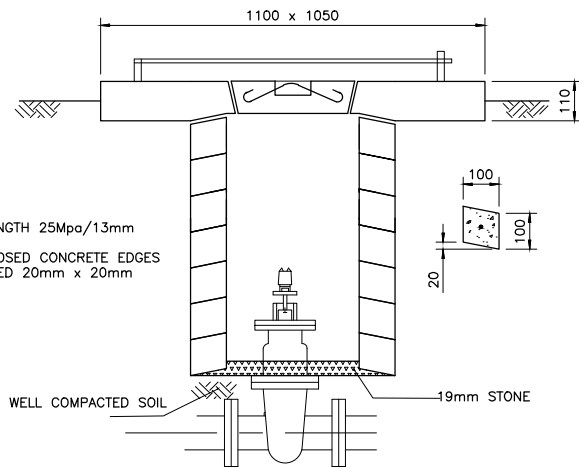
PROJECT/DRAWING TITLE

UGU DISTRICT MUNICIPALITY

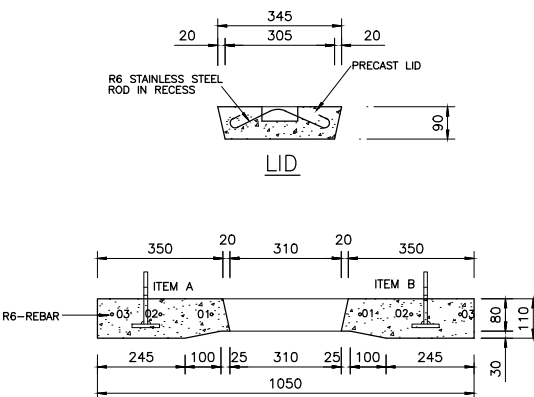
CONSTRUCTION OF 160/200MM DIAMETER X 1.5KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO OFF-TAKE, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE.

STANDARD DETAILS

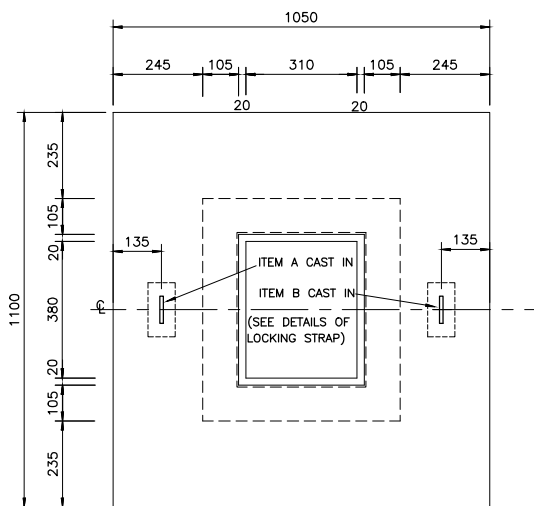
ORIGINAL SCALE	
AS SHOWN (ON A1)	
CONTRACT No.	
SHT. No. 2 OF 3	PROJECT No. WN06/05
DRAWING No. WN06/05/01-D01	REVISION 1



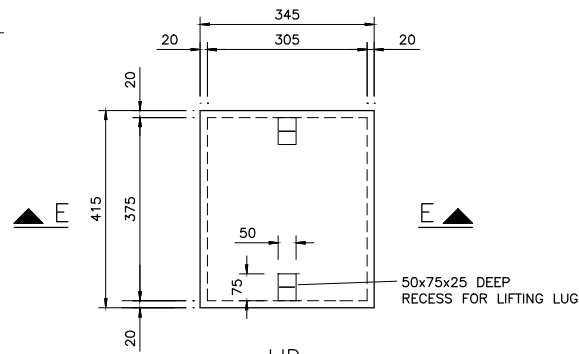
TYPICAL DETAIL OF MANHOLE
USING SPACER RINGS
1:10



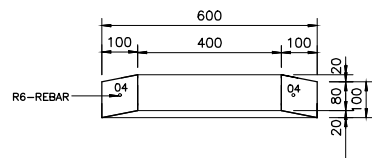
COVER
SECTION E-E
1 : 10



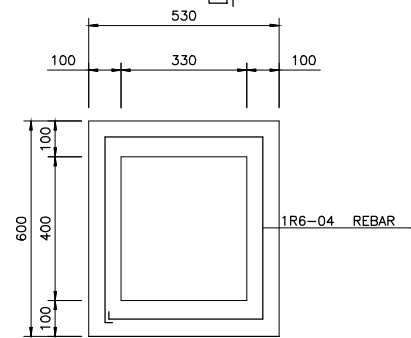
PLAN OF COVER
CONCRETE LAYOUT
1 : 10



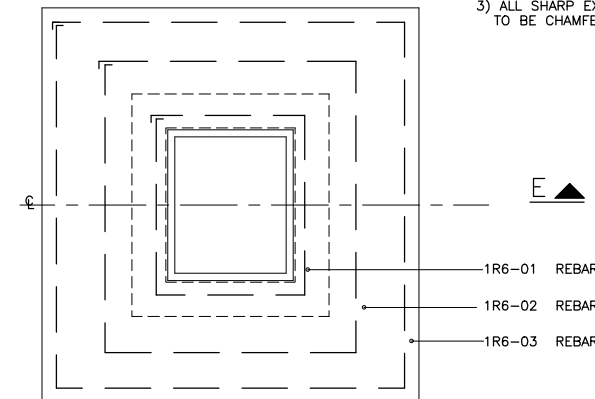
LID
PLAN ON PRECAST LID
1 : 10



SECTION D-D
1 : 10

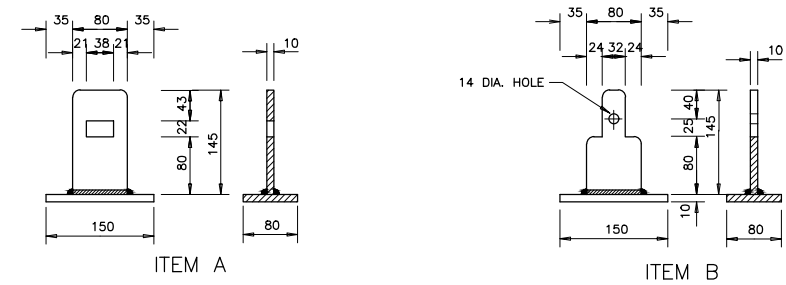


TYPICAL DETAIL OF MANHOLE
SPACER RING
1 : 10



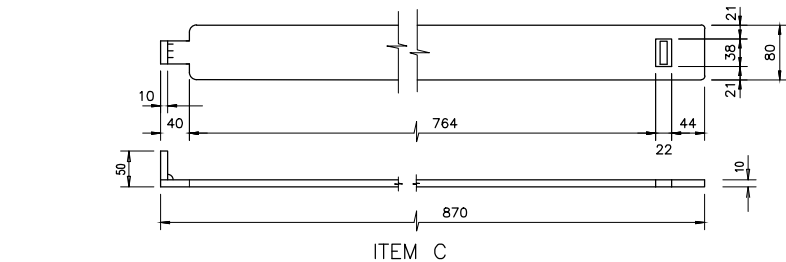
PLAN OF COVER
REINFORCEMENT LAYOUT
1 : 10

NOTES:
1.) CONCRETE STRENGTH 25Mpa /13mm
2) SMOOTH FINISH
3) ALL SHARP EXPOSED CONCRETE EDGES
TO BE CHAMFERED 20mm x 20mm

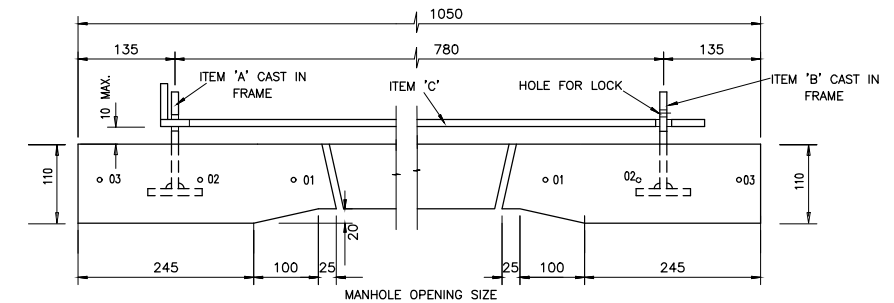


ITEM A

ITEM B



ITEM C



ASSEMBLY DETAIL

- ✱ THESE UNITS TO BE PROVIDED FOR MANHOLES AND WHEREVER ELSE ORDERED BY ENGINEER
- ✱ ALL COMPONENTS TO BE MILD STEEL HOT DIPPED GALVANISED
- ✱ 14mm DIA. HOLE IN ITEM B TO SUIT DISCUS 0370. PADLOCK
- ✱ ASSEMBLY TO BE PLACED CENTRALLY ACROSS MANHOLE / OPENING.
- ✱ ALL CORNERS TO BE RADIUS TO 10mm RADIUS AS SHOWN

DETAILS OF LOCKING STRAP

1 : 5

SCHEDULE OF REINFORCING (PER ITEM)

ITEM	BAR MARK	DIAMETER	SHAPE CODE	DIMENSIONS			MASS
				A	B	TOTAL LENGTH	
FRAME (1 N°)	01	R6	60	500	420	2050	
	02	R6	60	800	700	3200	
	03	R6	60	1010	970	4150	
SPACER RING (1 N°)	04	R6	60	450	520	2150	

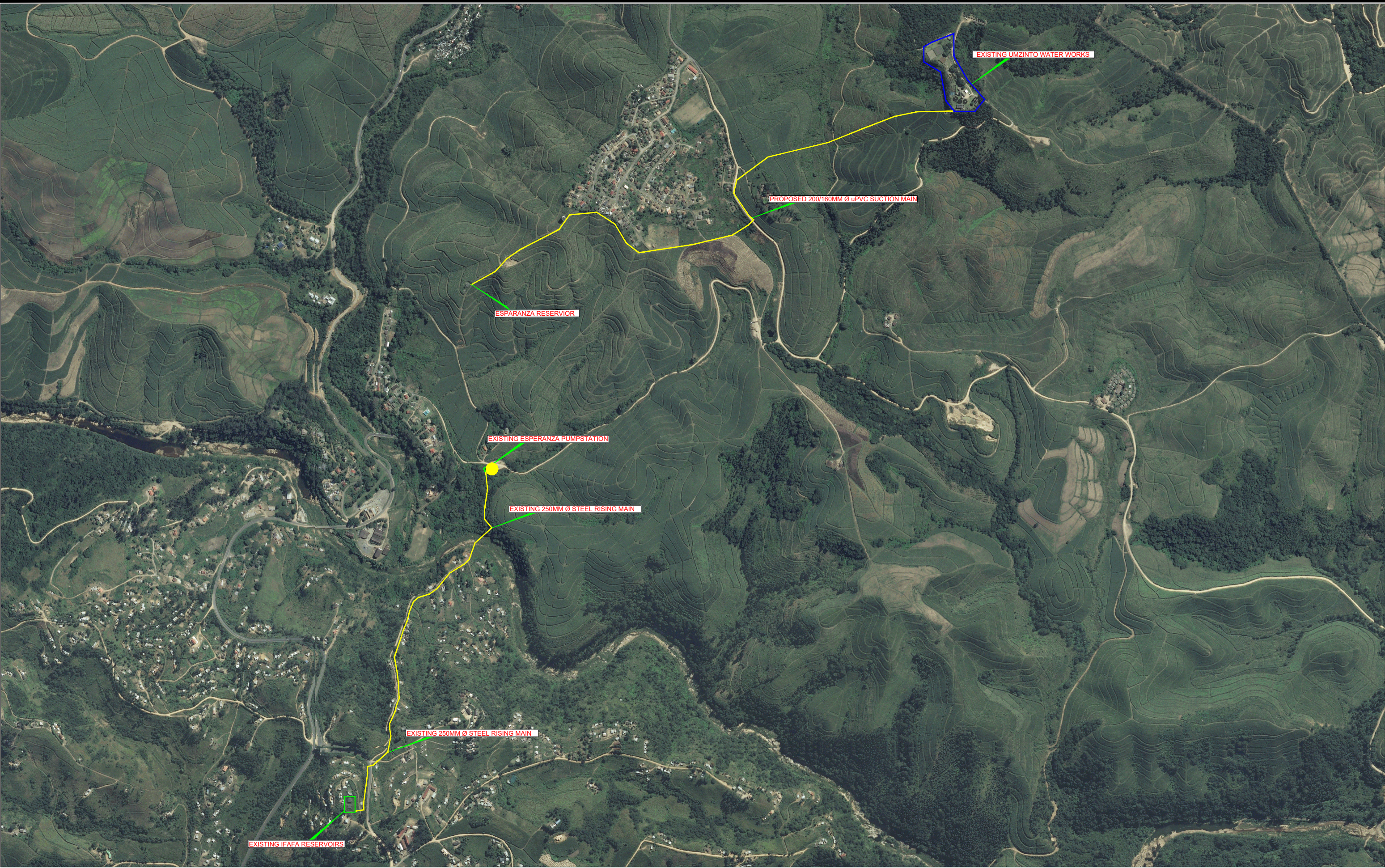
DRG. No.	REFERENCE DRAWINGS	0	ISSUED FOR CONSTRUCTION	15/10/2020	DATE
DESIGNED	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)	DRAWN	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)	CHECKED	W.M. NDWALANE (PR TECH ENG. REG. No. 2019300455)
PROJ. ENG.	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)				

TEL: (039) 3150 750 FAX: (086) 5772 602 E-mail: office@wnaco.co.za	Office No.50 South The Tydes Shelly Beach 4205	APPROVED : N.E. MALISHE (PR TECH ENG REG. No. 2020300683)
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APPROVED : N.E. MALISHE (PR TECH ENG REG. No. 2020300683)	APPROVED : N.E. MALISHE (PR TECH ENG REG. No. 2020300683)
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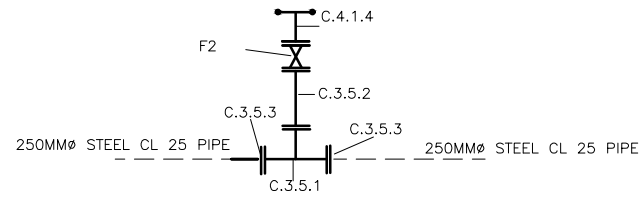
PROJECT/DRAWING TITLE	UGU DISTRICT MUNICIPALITY CONSTRUCTION OF 160/200MM DIAMETER X 1.5KM UPVC GRAVITY PIPELINE FROM UMZINTO WTW TO OFF-TAKE, MODIFICATION OF ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE
STANDARD DETAILS	

ORIGINAL SCALE AS SHOWN (ON A1)	CONTRACT No.
SHT. No. 3 OF 3	PROJECT No. WN06/05
DRAWING No. WN06/05/01-D01	REVISION 1



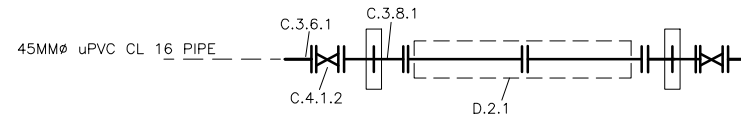
				DESIGNED N.E. MALISHE (PR. TECH. ENG. REG. No. 2020300683)		WNA CONSULTING ENGINEERS Office No. Smith the Yards Pretoria 4260 TEL: (011) 3120 878 FAX: (084) 5772 402 E-mail: office@wanance.com		Ugu District Municipality		PROJECT/DRAWING TITLE		ORIGINAL SCALE	
DRAWN N.E. MALISHE (PR. TECH. ENG. REG. No. 2020300683)		UGU DISTRICT MUNICIPALITY MALANGENI AUGMENTATION SCHEME		AS SHOWN (ON A1)									
CHECKED W.M. NDWALANE (PR. TECH. ENG. REG. No. 2010300455)		PROJECT No.		CONTRACT No.									
PROJ. ENG. N.E. MALISHE (PR. TECH. ENG. REG. No. 2020300683)		DRAWING No.		REVISION									
0		DATE		1		WN07/05-P01		1					
REFERENCE DRAWINGS		REVISIONS		PROJECT PLAN									

AIR VALVE



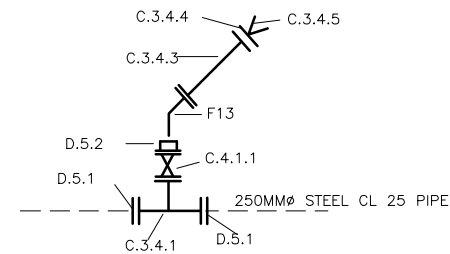
ITEM No	No. OFF	DESCRIPTION
C.4.1.4	4	50mm DIA. AIR VALVE
F2	4	50mm DIA. VALVE
C.3.5.2	4	50mm dia x 0.4 long D/FL pipe . One flange to suit 100 mm dia pipe the other to suit 50mm dia pipe
C.3.5.1	4	250mm x 100 mm dia PE/FL tee, barrel PE, 375 C/F
C.3.5.3	2	50mm dia. Screw on boss flange.

POINT N° 2
DISTRICT ROAD CROSSING



ITEM No	No. OFF	DESCRIPTION
D.2.1	1	900mm DIA CONCRETE SLEEVE PIPE
C.4.1.2	2	250mm DIA GATE VALVE
C.3.8.1	2	250mm DIA. D/FL PUDDLE PIPE
C.3.6.1	2	250mm DIA. FLANGE ADAPTORS

SCOUR VALVE



ITEM No	No. OFF	DESCRIPTION
C.3.4.5	2	100mm DIA. JET DISPERSER
C.3.4.4	2	100mm DIA. SCREW ON FLANGE
C.3.4.3	2	100mm DIA. x 2.0 LONG FL/PE PIPE
D.5.2	2	100mm DIA. VJ ADAPTOR
C.3.4.2	2	100mm DIA. x 45° FL/PE STEEL BEND
C.4.1.1	2	100mm DIA. VALVE
C.3.4.1	2	450mm DIA. x 100mm SCOUR TEE
D.5.1	2	450mm DIA. FLANGE ADAPTORS

ORIGINAL SCALE	
AS SHOWN (ON A1)	
	CONTRACT No.
SHT. No.	OF
	PROJECT No. WNO8
DRAWING No.	
REVISION 	

[illegible]

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OFFICE NO.50 SOUTH
 THE TIMES
 4285 BEACH
 4285

APPROVED : _____
 N.E. MALISSE
 (PW) TECH. ENG. NO. 2020300683

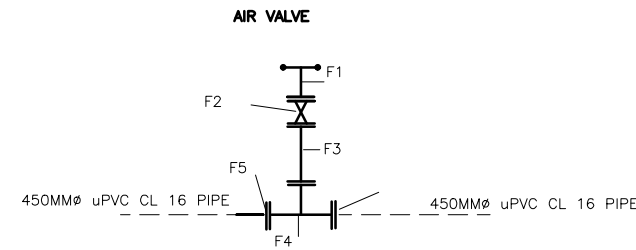

Ugu District Municipality

APPROVED : _____

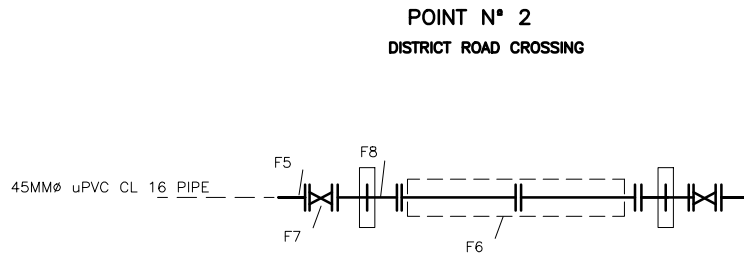
PROJECT/DRAWING TITLE

UGU DISTRICT MUNICIPALITY

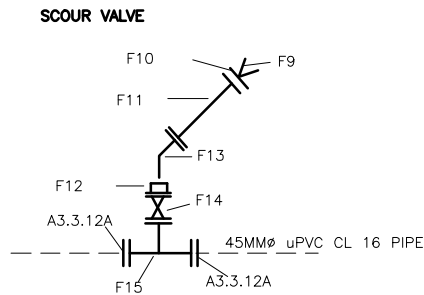
CONSTRUCTION OF 160/200MM DIAMETER X 1.5KM UPVC GRAVITY
PIPELINE FROM EMZINTO WWT OF -TAKE MODIFICATION OF
ELECTROMECHANICAL WORKS AND ADDITIONAL STORAGE
POINT SKETCH



ITEM No	No. OFF	DESCRIPTION
F1	1	50mm DIA. AIR VALVE
F2	1	50mm DIA. VALVE
F3	1	50mm Dia x 0.4m long D/FL Pipe, One side to suit 150mm the other to suit 50mm dia pipe
F4	1	450 x 100 TEE, BARREL BRANCH FLANGED
F5	2	450mm DIA FLANGE ADAPTORS



ITEM No	No. OFF	DESCRIPTION
F6	1	900mm DIA CONCRETE SLEEVE PIPE
F7	2	450mm DIA GATE VALVE
F8	2	450mm DIA. D/FL PUDDLE PIPE
F5	2	450mm DIA. FLANGE ADAPTORS



ITEM No	No. OFF	DESCRIPTION
F9	1	100mm DIA. JET DISPERSER
F10	1	100mm DIA. SCREW ON FLANGE
F11	1	100mm DIA x 2000mm LONG FL/PE PIPE
F12	1	100mm DIA. VJ ADAPTOR
F13	1	100mm DIA. x 45° FL/PE STEEL BEND
F14	1	100mm DIA. VALVE
F15	1	450mm DIA. x 100mm SCOUR TEE
F5	2	450mm DIA. FLANGE ADAPTORS

ORIGINAL SCALE
AS SHOWN (ON A1)

CONTRACT No.

SHT. No. OF PROJECT No.
WN08

DRAWING No.

REVISION

0

DESIGNED	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
DRAWN	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)
CHECKED	W.M. NDWALANE (PR TECH ENG. REG. No. 2019300455)
PROJ. ENG.	N.E. MALISHE (PR TECH ENG. REG. No. 2020300683)

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OFFICE NO.50 SOUTH
THE TYDES
SHELLY BEACH
4265



APPROVED : _____

PROJECT/DRAWING TITLE

**UGU DISTRICT MUNICIPALITY
CONSTRUCTION OF 250MMØ STEEL PIPE FROM ESPERANZA PUMP
STATION TO RESERVOIR**

POINT SKETCH

DRG. No. REFERENCE DRAWINGS

0

REVISIONS

DATE