O. R. TAMBO DISTRICT MUNICIPALITY

O.R. TAMBO
DISTRICT MUNICIPALITY

PROJECT NUMBER: MIS 316 080 C2

DESCRIPTION: DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS

CONTRACT 3B

MUNICIPAL INFRASTRUCTURE GRANT (MIG)

NOVEMBER 2023

NAME OF TENDERER: _____

TENDER AMOUNT: _____

CSD SUPPLIER NUMBER: _____

CLOSING DATE & TIME: **26 JANUARY 2024 @ 12H00**

Prepared for:
The Municipal Manager
O. R. Tambo District Municipality
Private Bag X6043
MTHATHA
5099

Tel. No. (047) 501 6400

Prepared by:
The Infrastructure Water and Sanitation Services
O. R. Tambo District Municipality
Private Bag C6043
MTHATHA
5099

Tel. No. (047) 501 6425

PLEASE CHECK **x / √**

1. That you have read all the pages of the tender document. ……..

2. That you have completed ALL the forms required to be completed in NON-ERASEABLE INK. …….

3. That your arithmetic calculation in the pricing schedule is correct. ……..

4. That you have attached ALL necessary documentation relating to the Composition of the tendering entity, i.e. ……..

   (a) Company registration documents naming the shareholders and Directors / members of the company, close corporation etc.

   (b) Joint venture agreement, if tendering entity is a joint venture.

5. That the **COMPLETE** tender document is submitted. ……

6. That the **FORM OF OFFER** is completed in full and signed. …….

7. That ALL returnable documents are submitted. ……..….

8. That ALL returnable schedules are completed and signed. ……..…..

9. Ensure that your tender is submitted by **12H00PM** on the closing date of the tender.

O. R. TAMBO DISTRICT MUNICIPALITY

PROJECT NUMBER: MIS 316 080 C2

DUMASI REGIONAL WATER SUPPLY– CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS

- INDEX -

TENDERS ARE HEREBY INVITED FOR:

PROJECT NUMBER: MIS 316 080 C2:

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS

To ensure that your Tender is not exposed to invalidation, documents are to be completed in accordance with the conditions and Tender rules contained in the Tender documents. Supporting documents must be sealed and externally endorsed **PROJECT NUMBER: MIS 316 080 C2: DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS** and be submitted in the open tender box, Ground Floor, O. R. Tambo District Municipality, Nelson Mandela Drive, Myezo Park, Mthatha, Eastern Cape, not later than 12H00pm on **Friday, 26 January 2023.**

The lowest or any Bid will not necessarily be accepted and the O. R. Tambo District Municipality reserves the right not to consider any tender not suitably endorsed or comprehensively completed as well as the right to accept a Tender in whole or part. Tenders will be adjudicated in accordance with the Supply Chain Management Policy of the O. R. Tambo District Municipality.

The following documents must be completed, signed (where applicable) and submitted as a complete set:

Document		**Colour of pages**
Number	**Heading**	
T1.1	Tender Notice and Invitation to Tender	White
T1.2	Tender Data	Pink
T2.1	List of Returnable Documents	Yellow
T2.2	Returnable Documents for tender evaluation purposes	Yellow
C1.1	Form of Offer and Acceptance	White
C1.2	Contract Data	White
C1.3	Operational Health & Safety Specification	White
C1.4	ORTDM Supply Chain Management Policy	White
C2.1	Pricing Instructions	Yellow
C2.2	Activity Schedule	Yellow
C3	Scope of Works	Blue
C4	Site Information	Green
C5	Additional Relevant Documents	White

T1.1 TENDER NOTICE AND INVITATION TO TENDER

Tenders are hereby invited from suitably qualified and experienced contractors who are registered with CIDB for the Municipal Infrastructure Grant under the O. R. Tambo District Municipality.

Project Number	**Name and Description**	**CIDB Grading**
MIS 316 080 C2	Dumasi Regional Water Supply Phase 1 – Construction of Pipeline from Bomvini to Lutsheko and Reservoirs	7CE or higher

A compulsory clarification meeting with representatives of the client will take place at **10H00** on Wednesday, **6TH December 2023** at the Nyandeni Local Municipality: Ngqeleni Municipal Offices, before proceeding to site.

THE MUNICIPALITY WILL NOT REPEAT ANY MATTERS ALREADY COVERED IN THE COMPULSORY BRIEFING MEETING TO THE BIDDERS WHO ARRIVE MORE THAN 10 MINUTES LATE TO THE MEETING, NOR WILL IT ALLOW SUCH BIDDERS TO COMPLETE THE ATTENDANCE REGISTER. ANY BID RECEIVED FROM A BIDDER WHO DID NOT ATTEND THE BRIEFING MEETING AND SIGN THE ATTENDANCE REGISTER WILL NOT BE CONSIDERED.

Bid documents should be downloaded on the e-Tender website (www.etenders.gov.za) alternatively on the O. R. Tambo website (www.ortambodm.gov.za) at no cost.

Bids must be completed in black ink, enclosed in a sealed envelope and clearly marked with the **"Project number, project name and description"**, deposited in the Open Tender Box, Ground Floor, O. R. Tambo District Municipality Building, Nelson Mandela Drive, Myezo Park, Mthatha, Eastern Cape, not later than **12H00pm** on **Friday**, **26 January 2024**.

It must be expressly understood that the Municipality does not accept responsibility for ensuring that bid submissions sent by courier or post, or delivered in any other way, are deposited in the Tender Box. It is therefore preferable for the bidder to ensure that its bid submission is placed in the Tender Box by its own staff or representative(s).

The Municipality reservesthe right not to accept the lowest priced tender or any tender at all, or to accept the whole or part of any tender.

RETURNABLE DOCUMENTS TO BE SUBMITTED WITH THE BID:

- Original or certified copy of BBBEE certificate, or sworn affidavit confirming annual total revenue and level of black ownership if bidder is an Exempted Micro Enterprise (EME) or Qualified Small Enterprise (QSE);
- Certified copies of business registration documents, as issued by CIPC;
- Certified copy of identity documents of directors/shareholders/partners/members, as the case may be.

NB: CERTIFICATION OF DOCUMENTS MUST NOT BE MORE THAN SIX (6) MONTHS FROM DATE CERTIFIED BY COMMISSIONER OF OATHS.

THE BID WILL BE REJECTED IF THE BIDDER FAILS TO:

- Complete fully the bid document or to provide the information requested, or to sign the bid at the appropriate spaces provided or next to errors.
- Fill and properly sign the form of offer.
- Attach proof of registration with CSD.
- Attach joint Venture Agreement or Consortium Agreement signed and initialled on each page (if applicable).
- Attach consolidated company registration documents, bank account, SARS Tax pin, CSD (for JV or Consortium)
- Attach audited annual financial statements of the bidding entity (for projects in excess of R10 million);
- Attach unaudited annual financial statements for close corporations and companies if the public interest score is below 350 in line with the companies act of 2008;
- Attach proof of latest municipal rates and taxes statement **of the bidder and each company director** indicating that rates and taxes are not in arrears for more than 3 months.
- Attach proof of latest municipal water and sanitation charges statement **of the bidder and each company director** indicating that rates and taxes are not in arrears for more than 3 months for bidders who reside in the O. R. Tambo District Municipality area.
- Attach a confirmation of address from a ward councillor where the bidder and company directors operate and reside in a peri-urban area where no rates and taxes and service charges are not billed.
- Attach a copy of a valid lease agreement where the bidder does not own the property they are operating from.
- Proof of registration with Construction Industry Development Board (**CIDB)**

EVALUATION OF BIDS IN TERMS OF THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK REGULATIONS, 2022:

Bids will be evaluated in three stages, namely:

- Stage 1 – Mandatory Requirements
- Stage 2 – Minimum conditions of tender
- Stage 3 – Price and Specific goals

Item	Weight
Stage 2 of Evaluation- Minimum conditions of tender	**100**
• Company Experience with respect to similar projects	60
• Qualifications and Experience of key staff assigned to the contract	40
Stage 3 of Evaluation- Price & Specific goals	**100**
• Specific Goal Points	20
• Price	80

CONDITIONS OF THE TENDER WITH REGARDS TO SUB-CONTRACTING

ITS IS THE CONDITION OF THIS TENDER THAT SUCCESSFUL TNDERER MUST SUBCONTRACT A MINIMUM OF 20% OF THE VALUE OF THE CONTRACT TO THE DESIGNATED GROUPS AS INDICATED IN THE TENDER DOCUMENT

Tenders may only be submitted on tender documentation issued. No late, faxed, e-mailed, or other form of tender will be accepted.

Technical enquiries: Mr. N. Noto, telephone number 047 501 6425 or email:nkosiyabon@ortambodm.gov.za

All Supply Chain Management enquiries may be directed to Mr. S. Hopa, telephone number 047 5016449 or Email: sakhiwoh@ortambodm.org.za during office hours: Monday to Friday 08H00-13H00 and 13H30-16H30.

Enquiries can be made from Monday to Friday between 08H00-13H00 and 13H30-16H30 and such enquiries will not be entertained five days before the tender closes.

Tenders will be evaluated in terms of the Supply Chain Management policy of the O. R. Tambo District Municipality. The Municipality reserves the right to accept the whole or part of any tender or not to consider any tender not suitably endorsed. Joint Ventures and Consortium will only be considered provided they submit consolidated company registration documents, bank account, SARS Tax pin, CSD is prepared for every separate tender. An 80/20 or 90/10 point system shall apply where 80/90 points is allocated for price and 20/10 points allocated for specific goals as follows:

The specific goals allocated points in terms of this tender	**Number of points Allocated on 80/20 system**	**Number of points Allocated on 90/10 system**
The promotion of enterprises located in a specific region (O.R Tambo District): The Tenderer and Directors are based in the ORTDM region and pay their municipal rates and taxes	05	02
Promotion of 51% Black-owned enterprises	05	04
Promotion of 100% Women-owned enterprises	05	02
Promotion of Youth-owned enterprises	05	02

Tenderers must submit copies of all supporting documents necessary to prove conformance with Specific Goal criteria listed above in order to be eligible for Specific Goal points.

Mr. P. B. Mase
Municipal Manager

T1.2 TENDER DATA

T1.2.1 Standard Conditions of Tender

The Standard Conditions of Tender are those contained in the Construction Industry Development Board (CIDB) *Standard for Uniformity in Engineering and Construction Works Contracts (August 2019)* as published in Board Notice 423 of 2019, in Government Gazette No. 42622, on 08 August 2019. (Refer to www.cidb.org.za and/or www.gpwonline.co.za).

The Standard Conditions of Tender Procurement make several references to the Tender Data for details that apply specifically to the Tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of Tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

STANDARD CONDITIONS OF TENDER

Please note that the word "Client" is used in this document and referred to as "Employer" in the Standard Conditions of Tender document.

Clause Number	
F.1	**General**
F.1.1	The Client is: **O. R. Tambo District Municipality** Private Bag X6043 Mthatha, 5099
F.1.2	The Tender documents issued by the Client comprise: **Tender** T1.1 Tender Notice and invitation to tender T1.2 Tender Data T2.1 List of Returnable Documents T2.2 Returnable Documents for tender evaluation purposes T2.3 Returnable Documents to be incorporated into the contract
	Contract **Part 1 : Agreements and Contract data** C1.1 Forms of Offer and Acceptance C1.2 Contract Data C1.3 Occupational health and safety specification C1.4 O. R. Tambo District Municipality's Health and Safety Specification **Part 2 : Pricing Data** C2.1 Pricing Instructions C2.2 Bill of Quantities
	Part 3 : Scope of Works C3.1 Description of the Works C3.2 Engineering C3.3 Procurement C3.4 Construction C3.5 Management C3.6 Annexures (Specification) **Part 4: Site Information** C4 Site information **Part 5: Additional Relevant Documents** **Tender Drawings:** Book of Drawing issued Separately

F1.3	**Interpretation** The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these tender conditions.	
F.1.4	**Communication:** Communication with all stakeholders shall be through the O. R. Tambo Municipality's Engineering Manager. Communications shall be in the English language. The Employer shall not take any responsibility for non-receipt of communications from or by a tenderer.	
	The Employer is **O. R. Tambo District Municipality** Private Bag x 6043 Mthatha, 5099 Tel: (047) 501 6425 Email: nkosiyabon@ortambodm.gov.za Contact person: Mr. N. Noto	The Employer's Agent is: **Lead Consultant** Ziinzane Consultanting Engineers Address: 25 Falcon Street Southernwood, Mthatha Tel: (047) 531 0269 Email: admin@ziinzame.co.za Contact Person : Mr N Ndabankulu **Sub-Consultant** LEKO Engineering Consultants Address: 30 Blakeway Road Mthatha Tel: (047) 531 0037 Email: aubrey@leko.co.za Contact Person : Mr A Katsana
F.1.5	**The employer's right to accept or reject any tender offer**	
F.1.5.1	**Reject or accept** The employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a tenderer for such a cancellation and rejection, but will give written reasons for such action upon written request to do so.	
F.1.6	**Procurement procedures**	
F.1.6.1	A contract will, subject to F.3.13, be concluded with the tenderer who in terms of F.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.	
F.2	**Tenderer's obligations**	
F.2.1.1	**Eligibility** Only those tenders who are registered with CIDB and have in their employ management and supervisory staff satisfying the requirement of the scope of work for labour intensive competencies for supervisory and management staff are eligible to submit tenders.	
F.2.1.2	**CIDB Grading** The required CIDB grading for this project is **7 CE** or Higher.	
F.2.2	**Cost of tendering** Accept that the Employer will not compensate the tenderers for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer satisfy requirements.	
F.2.3	**Check documents** Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.	
F.2.4	**Confidentiality and copyright** Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.	

F.2.5	**Reference documents** Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.	
F2.6	**Acknowledge Addenda** Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension of the closing time stated in the tender data, in order to take the addenda into account.	
F.2.7	The arrangements for a **compulsory clarification meeting** are:	
	Date: Wednesday, 06 December 2023 **Starting time:** 10h00	**Location:** Nyandeni Local Municipality Ngqeleni Municipal Offices, then proceed to site
F.2.8	**Seek clarification** Request clarification of the tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the tender data.	
F2.10	**Pricing the tender**	
F.2.10.1	Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the tender data.	
F.2.10.2	Show VAT payable by the employer separately as an addition to the tendered total of the prices.	
F.2.10.3	Provide rates and prices that are fixed for the duration of the Contract, and not subject to adjustment except as provided for in the conditions of contract identified in the Contract data.	
F.2.10.4	State the rates and prices in South African Rand	
F2.11	**Alterations to documents** Not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.	
F.2.12	**Alternative tender offers** *Delete the contents of* ***Clause F.2.12*** *and replace with the following:* "No alternative offers will be accepted. This includes offering fixed rates in lieu of Contract Price Adjustment and/or changes to the 'as-scheduled' allowance for Contingencies and escalation."	
F.2.13.5	The Client's address for delivery of Tender offers and identification details to be shown on each Tender offer package are:	
	Location of Tender box: Tender Box, Ground Floor, O. R. Tambo District Municipality Building, Nelson Mandela Drive, Myezo Park, Mthatha, Eastern Cape.	
	Physical address: O. R. Tambo House, Nelson Mandela Drive, Mthatha	
F.2.14	**Information and data to be completed in all respects** Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.	
F.2.15	**Closing time** The closing times for submission of Tenders are **12H00pm Friday, 26 January 2024.**	
F.2.15	Telephonic, telegraphic, telex, facsimile or e-mailed Bid offers will **not** be accepted.	
F.2.16	**Tender offer validity** The Tender offer validity period is 90 Days as stated in the tender data.	

F.2.17	**Clarification of tender offer after submission** The tenderer shall provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.
F.2.18	**Provide other material** The tenderer shall, when requested by the Employer to do so, Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.
F2.20	**Submit securities, bonds, policies** Submit to the employer before formation of the contract, certificates of insurance required in terms of the conditions of contract identified in the contract data.
F.2.23	**The tenderer is required to submit with his tender:** (1) a valid Tax Verification Pin issued by the South African Revenue Services; and (2) Certified copy of the original of all the Companies / CC Registration documents. (3) Joint Venture Agreement where applicable in CIDB format (signed and initialed on each page). (4) Proof of registration with CIDB (5) Certified copies of the original green bar-coded ID copies of Members of the companies.
F.3	**The employer's undertakings**
F.3.1	**Respond to requests from the tenderer**
F.3.1.1	Respond to a request for clarification received up to five working days before the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.
F.3.2	**Issue Addenda** If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until seven days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who drew documents.
F.3.4	**Opening of tender submissions**
F.3.4.1	The employer shall open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.
F.3.4.2	Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, preferences claimed and time for completion for the main tender offer only.
F.3.4.3	The Client shall not be obliged to make available the record outlined in F.3.4.2 to any tenderer who fail to attend the tender opening.
F.3.6	**Non-disclosure** The client shall not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.
F.3.7	**Grounds for rejection and disqualification** Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.
F3.9	**Arithmetical errors, omissions and discrepancies**

F.3.9.1	Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.
F.3.9.2	Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 for: a) the gross misplacement of the decimal point in any unit rate; b) omissions made in completing the pricing schedule or bills of quantities; or c) arithmetic errors in: i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or ii) The summation of the prices.
F.3.9.3	Notify the tenderer of all errors or omissions that are identified in the tender offer and invite thetenderer to either confirm the tender offer as tendered or accept the corrected total of prices.
F.3.9.4	Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows: a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected. b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.
F.3.10	**Clarification of a tender offer** Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

F3.11 **Evaluation of tender offers**

Replace the contents of the entire sub-clause with the following:

Tenders will be evaluated in terms of the Supply Chain Management policy of the O. R. Tambo District Municipality. The Municipality reserves the right to accept the whole or part of any tender or not to consider any tender not suitably endorsed. Joint Ventures and Consortium will only be considered provided they submit consolidated company registration documents, bank account, SARS Tax pin, CSD is prepared for every separate tender. The bid will be awarded to the bidder who has scored the highestpoints for price and specific goals combined **BUT** the prerequisite will be to obtain at least **70 points** forquality , which will be explained in Stage 2 below.

B. First stage in evaluation: Mandatory requirements
The bids will be checked to ensure that they comply with the bid rules and all other requirements of the project document. In particular, the following documentation must be completed and/or included within the bid.

- The form of Offer and Acceptance
- Audited financial statements for any tender price over R10million
- Certified company registration documents and ID of members
- Form C: Compulsory Enterprise Questionnaire
- Form D: Certificate of Authority for Signature
- Form E: Amendments, Qualifications and Alternatives
- Form H: Certificate of Good Standing
- Form I: Relevant experience
- Form J: Details of key staff and CVs
- Form M: Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2022

Note:

- All information supporting the above forms such as Curricula Vitae of staff who will work on the project and their functions, details of ownership, relevant experience etc.
- Addenda issued during the bid period, if any.
- The pricing schedule

Failure to supply the required information will compromise the bid

C. Next Stage in Evaluation: Minimum conditions of tender; Price & Specific Goals. The next state in the evaluation process will consist of two stages, as follows:

STAGE 2: MINIMUM CONDITIONS OF TENDER

ITEM	WEIGHT
Minimum conditions of tender (see detailed criteria below)	**100**
• Experience with respect to similar projects	60
• Qualifications and Experience of key staff assigned to the contract	40

Only bidders who score ***70 points or more*** on stage 2 will be evaluated further and therefore eligible for award.

The maximum score shall be **100**, distributed as follows:

Minimum conditions of tender

	Minimum conditions of tender	Maximum tender evaluation points provided
B1.1	**Experience on similar projects**	**60**
	Experience on similar projects: Proven experience in the construction of projects of similar scope and value i.e**.** A bulk water supply pipeline**. Copies of Certificate of Completion MUST be submitted with the bid. No points will be awarded where Certificates of Completion have not been submitted with the Bid. If the value of completed project is not reflected on the certificate, provide contractor's appointment letter or letter from the client with values.**	**60**
	The Contractor has successfully completed at least **Three (3)** projects that satisfies the sub-criteria and provided evidence whose total sum of a value of at least **R70 Million**.	60
	The Contractor has successfully completed at least **Two (2)** projects that satisfies the sub-criteria and provided evidence whose total sum of a value of at least **R60 Million**.	40
	Contractor failed to provide evidence of experience or Has not done any Similar projects	0
B1.2	**Qualifications and Experience of key personnel (NB no key personnel member may be assigned more than one duty on the Contract, i.e. different personnel must be assigned for each of the following key positions) Contracts Manager = Minimum ND Civil Engineering/ NQF level 6, Site Agent = Minimum N6 Civil Engineering and Concrete Foreman = Minimum Grade 12/ N3 Civil Engineering/ building. Bidders must submit CV's/Resume and contactable references.**	**40**
	Contracts Manager, Site Agent, Foreman	
	Favourable previous experience in the Civil Engineering field with a minimum of 5 years; **Contracts Manager** = 20 points, 3-4 years = 16 Points & 1-2 years = 8 points.	20
	Favourable previous experience in the Civil Engineering field with a minimum of 5 years; **Site Agent** = 12 points, 3-4 years = 10 points & 1-2 years = 8 points.	12
	Favourable previous experience on construction sites in the role of Main or Assistant Concrete Foreman on contracts involving in-situ reinforced concrete structures such as reservoirs or other reinforced concrete water retaining structures with aminimum of 5 years; **Concrete Foreman** = 8 points, 3-4 years = 6 points & 1-2 years = 4 points.	8
	Contractor failed to provide evidence of qualification and experience.	0

STAGE 3: EVALUATION FOR PRICE AND SPECIFIC GOALS (80/20)

The procedure for Stage 3 of evaluation of responsive tenders is **Method 2**

a) PRICE 80/90

b) SPECIFIC GOAL POINTS CONTRIBUTION: 20/10

a) Points Awarded for Price (Ps)

A total of 80 points will be awarded to the Tenderer with the lowest balanced price. The **other tenders will be awarded points on the ratio to bench mark price as follows**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

$$Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where
Ps = Points scored for price of bid under consideration
Pt = Rand value of bid under consideration
Pmin = Rand value of lowest acceptable bid

b) Points awarded for Specific Goals Contribution

In terms of Regulation 5 (2) and 6 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the Specific Goal Points contribution in accordance with the table below:

The specific goals allocated points in terms of this tender	**Number of points Allocated on 80/20 system**	**Number of points Allocated on 90/10 system**
The promotion of enterprises located in a specific region (O.R Tambo District): The Tenderer and Directors are based in the ORTDM region and pay their municipal rates and taxes	05	02
Promotion of 51% Black-owned enterprises	05	04
Promotion of 100% Women-owned enterprises	05	02
Promotion of Youth-owned enterprises	05	02

Tenderers must submit copies of all supporting documents necessary to prove conformance withSpecific Goal criteria listed above in order to be eligible for Specific Goal points.

The total calculated points will be rounded to the second decimal place.

F.3.13	**Acceptance of tender offer**
F3.13.1	Accept the tender offer, if in the opinion of the employer, it does not present any unacceptable commercial risk and only if the tenderer: a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement, b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract, c) has the legal capacity to enter into the contract, d) is not insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
	e) complies with the legal requirements, if any, stated in the tender data, and f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.
F3.13.2	Notify the successful tenderer of the employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data, or agreed additional period. Providing the form of offer and acceptance does not contain any qualifying statements, it will constitute the formation of a contract between the employer and the successful tenderer as described in the form of offer and acceptance.
F.3.14	**Notice to unsuccessful tenderers** After the successful tenderer has acknowledged the employer's notice of acceptance, after written request, the employer will notify the tenderers that their tender offers have not been accepted on the O. R. Tambo District Municipality's website: www.ortambodm.gov.za, by listing the successful tender.
F.3.15	**Prepare Contract documents** If necessary, revise documents that shall form part of the Contract and that were issued by the employer as part of the tender documents to take account of: a) addenda issued during the tender period, b) inclusion of some of the returnable documents, c) other revisions agreed between the employer and the successful tenderer, and d) The schedule of deviations attached to the form of offer and acceptance, if any.
F.3.16	**Issue final contract** Prepare and issue the final draft of the contract to the successful tenderer for acceptance as soon as possible after the date of the employer's signing of the form of offer and acceptance (including the schedule of deviations, if any).

T2.1 LIST OF RETURNABLE DOCUMENTS

The Tenderer must complete the following returnable documents:

T2.2 Returnable Documents required for Tender evaluation purposes		
1	Form 2.2.1	General Information of the Tenderer
2	Form 2.2.2	Authority for Signatory
3	Form 2.2.3	Schedule of Previous Experience
4	Form 2.2.4	Schedule of Current Projects
5	Form 2.2.5	Declaration of good standing regarding tax
6	Form 2.2.6	Certificate of Attendance at Site Meeting
7	Form 2.2.7	Proposed Key Personnel
8	Form 2.2.8	Schedule Equipment to be used
9	Form 2.2.9	Schedule of Proposed Sub-Contractors
10	Form 2.2.10	Financial References
11	Form 2.2.11	Municipal Bidding Documents (MBD forms)

T2.3 Returnable Documents that will be incorporated into the contract		
1	Form 2.3.1	Record of Addenda to Tender Documents
2	Form 2.3.2	Procurement Form

T2.2 RETURNABLE DOCUMENTS

RETURNABLE DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Form 2.2.1 General Information of Tenderer
Form 2.2.2 Authority of Signatory
Form 2.2.3 Schedule of Previous Experience
Form 2.2.4 Schedule of Current Projects
Form 2.2.5 Declaration of good standing regarding tax
Form 2.2.6 Registration on the Central Supplier Database
Form 2.2.7 Certificate of Attendance at Site Meeting
Form 2.2.8 Proposed Key Personnel
Form 2.2.9 Schedule of Proposed Sub-consultants
Form 2.2.10 Financial References
Form 2.2.11 Municipal Bidding Documents (MBDs)

FORM 2.2.1 GENERAL INFORMATION OF TENDERER

1. Name of Tenderer: ……

2. Contact details

Address : ……

Tel no : ……

Fax no : ……

Cell no : ……

E-mail address: ……

3. Legal entity: Mark with an X.

Sole proprietor	
Partnership	
Close corporation	
Company (Pty) Ltd	
Joint venture	

In the case of a Joint venture, provide details on joint venture members:

Joint venture member	Type of entity (as defined above)

4. Income tax reference number: ……..
(in case of a joint venture, provide for all joint venture members)

5. Municipal services area where the enterprise is registered: ……..
(in case of a joint venture, provide for all joint venture members)

6. Company / close corporation Registration Number: …….
(in case of a joint venture, provide for all joint venture members)

7. VAT Registration number: ……..
(in case of a joint venture, provide for all joint venture members)

8. CIDB registration number: ……..
(in case of a joint venture, provide for all joint venture members)

ATTACH THE FOLLOWING DOCUMENTS HERETO

1. For Closed Corporations

   Certified copies of CK1 or CK2 as applicable (Founding Statement)

2. For Companies

   Certified copies of Shareholders register

3. ID copies

   Certified ID Copies for members

4. CIDB registration

   Proof of registration with CIDB

5. CSD registration

   Proof of registration with Central Supplier Database

6. For Joint Venture Agreements

   Copy of the Joint Venture Agreement between all the parties, as well as the certified documents in (1), and or (2) and (4) and (4) of each Joint Venture member.

7. Copy of the latest municipal service account where enterprise is registered

8. Director's / Shareholder's Municipal Rates

9. Specific Goal Points Contribution

10. Central Supplier Database Summary Report

FORM 2.2.2 AUTHORITY OF SIGNATORY

Indicate the status of the tenderer by ticking the appropriate box hereunder. The tenderer must complete the certificate set out below for the relevant category.

A Company	B Partnership	C Joint Venture	D Sole Proprietor	E Close Corporation

A. Certificate for Company

I,……., chairperson of the board of directors of ……, hereby confirm that by resolution of the board (copy attached) taken on…….202…., Mr/Mrs…….acting in the capacity of…..... ,was authorised to sign all documents in connection with this tender and any contract resulting from it on behalf of the company.

As witness

1……. .....……

Chairman

2……. .....……..

Date

B. Certificate of Partnership

We, the undersigned, being the key partners in the business trading as …… hereby authorise Mr/Mrs……., acting in the capacity of……to sign all documents in connection with the tender for Contract……and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE: This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.

C. Certificate for Joint Venture

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorise Mr/Mrs……., authorised signatory of the company ....., acting in the capacity of lead partner, to sign all documents in connection with the tender offer for Contract.....and any other contract resulting from it on our behalf.

This authorisation is evidenced by the attached power of attorney signed by legally authorised signatories of all the partners to the Joint Venture.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner CIDB registration no ……		Signature : ..... Name : ..... Designation : .....
CIDB registration no ……		Signature : ..... Name : ..... Designation : .....
CIDB registration no ……		Signature : ..... Name : ..... Designation : .....
CIDB registration no ……		Signature : ..... Name : ..... Designation : .....

A copy of the Joint Venture Agreement showing clearly the percentage contribution of each partner to the Joint Venture shall be appended to this Schedule.

D. Certificate for Sole Proprietor

I, ……., hereby confirm that I am the sole owner of the business trading as……...

As Witness:

1…….. ……
Signature: Sole owner

2……. …….
Date

E. Certificate for Close Corporation

We, the undersigned, being the key members in the business trading as..... hereby authorise Mr/Mrs……

Acting in the capacity of…..... , to sign all documents in connection with the tender for Contract…..... and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE: This certificate is to be complete and signed by all the key members upon whom rests the direction of the affairs of the Close Corporation as a whole

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

FORM 2.2.3 SCHEDULE OF PREVIOUS EXPERIENCE

Provide the following information on relevant previous experience (indicate specifically projects of similar or larger size and/or which is similar with regard to type of work).

Description	Value (R) VAT excluded	Year(s) work executed	Reference		
			Name	Organisation	Tel no

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

FORM 2.2.4 SCHEDULE OF CURRENT PROJECTS

Provide the following information on current relevant projects. **This information is material to the award of the Contract.**

Description	Value (R) VAT excluded	Date Appointed	Reference		
			Name	Organisation	Tel no

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

FORM 2.2.5 DECLARATION OF GOOD STANDING REGARDING TAX

SOUTH AFRICAN REVENUE SERVICES	Tender No: …….. Closing Date: ……

DECLARATION OF GOOD STANDING REGARDING TAX

PARTICULARS

1. Name of Taxpayer/Tenderer: .....

2. Trade Name: .....

3. Identification Number: (If applicable) | | | | | | | | | | | | | |

4. Company / Close Corporation registration number: | | | | | | | | | | |

5. Income Tax reference number: | | | | | | | | | | |

6. VAT registration number: (If applicable) | | | | | | | | | | |

7. PAYE employer's registration number: (If applicable) | | | | | | | | | | |

8. Monetary value of Bid:

DECLARATION

I, ... the undersigned, the above taxpayer/Bidder, hereby declare that my Income Tax, Pay-As-You-Earn (PAYE) and Value-Added-Tax (VAT) obligations of the above-mentioned taxpayer, which include the rendition of returns and payment of the relevant taxes:

(i) Have been satisfied in terms of the relevant Acts; or

(ii) That suitable arrangements have been made with the Receiver of Revenue,….....to satisfy them.*

…….….	……..……	……
SIGNATURE	**CAPACITY**	**DATE**

<u>PLEASE NOTE:*</u> The declaration (ii) cannot be made unless formal arrangements have been made with the Receiver of Revenue with regard to any outstanding revenue/outstanding tax returns.

ATTACH SARS TAX COMPLIANCE PIN:

FORM 2.2.6 REGISTRATION ON THE CENTRAL SUPPLIER DATABASE

Attach proof of registration with the Central Supplier Database. **This information is material to the award of the Contract.**

ATTACH CERTIFIED PROOF OF REGISTRATION ON THE NATIONAL CENTRAL SUPPLIER DATABASE

FORM 2.2.7 CERTIFICATE OF ATTENDANCE AT SITE MEETING

This is to certify that I, ...……(Name)

duly authorised representative of ……...(Tenderer)

Address: ……

Date: ……..

Visited the site on..... in the presence of ……
(date) (Engineer)

I have made myself familiar with the sites and all the local conditions likely to influence the work and the cost thereof.

I further certify that I am satisfied with the description of the work and explanations given by the said Engineer and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

REPRESENTATIVE OF TENDERER

REPRESENTATIVE OF EMPLOYER

FORM 2.2.8 PROPOSED KEY PERSONNEL

The Tenderer shall list below the key personne1 (including first nominee and the second choice alternate), whom he proposes to employ on the project should his Tender be accepted, both at his headquarters and on the Site, to direct and for the execution of the work, together with their CV depicting their experience, positions held, their nationalities and certified qualifications.

No	Name	Qualification	Designation	YEARS WITH CURRENT COMPANY

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

FORM 2.2.9 SCHEDULE OF PROPOSED SUB-CONTRACTORS

NAME OF SUB-CONTRACTOR	FULL DESCRIPTION OF WORK TO BE PERFORMED BY SUB- CONTRACTORS

NB: It is NOT a Condition of Contract that a minimum of 30% of the construction work shall be subcontracted to QSEs and EMEs as contemplated in the 'The Broad-Based Black Economic Empowerment Act (No. 53 of 2003) as amended by B-BBEE Act 46 of 2013 (The Act)'. The Contractor shall take all reasonable and practical measures to support, mentor, train, upskill and supervise such subcontractors as envisaged in the Strategic Objectives of the Amended Construction Sector Code.

Acceptance of this tender shall not be construed as approval of all or any of the listed subcontractors. Should any of the subcontractors not be approved subsequent to acceptance of the tender, this shall in no way invalidatethis tender, and the tendered unit rates for the various items of work shall remain final and binding, even in theevent of a subcontractor not listed above being approved by the Engineer.

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

FORM 2.2.10 FINANCIAL REFERENCES

FINANCIAL STATEMENTS

I/We agree to furnish an audited copy of the latest set of financial statements together with my/our Directors' and Auditors' report for consideration by the Client.

DETAILS OF TENDERERS BANKING INFORMATION

I/We hereby authorise the Client/Engineer to approach all or any of the following banks for the purposes of obtaining a financial reference:

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

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

ATTACH AUDITED FINANCIAL STATEMENTS

FORM 2.2.11 MUNICIPAL BIDDING DOCUMENTS (MBD)

MBD 1

PART A
INVITATION TO BID

BID NUMBER:	**MIS 316 080 C2**	**CLOSING DATE:**	26 JANUARY 2024	**CLOSING TIME:**	12H00
DESCRIPTION:	***DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVNI TO LUTSHEKO AND RESERVOIRS***				

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT:

TENDER BOX, GROUND FLOOR, O. R. TAMBO DISTRICT MUNICIPALITY BUILDING

NELSON MANDELA DRIVE

MYEZO PARK

MTHATHA

EASTERN CAPE

SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	**CODE**		**NUMBER**		
CELLPHONE NUMBER					
FACSIMILE NUMBER	**CODE**		**NUMBER**		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
TAX COMPLIANCE STATUS	**TCS PIN:**			**CSD No:**	
STATEMENT OF RATES AND TAXES OF THE BIDDER	☐ **Yes** ☐ **No**		**STATEMENT OF RATES AND TAXES OF THE COMPANY**	☐ **Yes** ☐ **No**	

[STATEMENT OF RATES AND TAXES OF THE BIDDER AND OF THE COMPANY/ LEASE AGRREEMENT FOR LEASED PROPERTY MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS]

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐ **Yes** ☐ **No** **[IF YES ENCLOSE PROOF]**	**ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?**	☐ **Yes** ☐ **No** **[IF YES, ANSWER PART B:3]**
TOTAL NUMBER OF ITEMS OFFERED		**TOTAL BID PRICE**	**R**
SIGNATURE OF BIDDER	……	**DATE**	
CAPACITY UNDER WHICH THIS BID IS SIGNED			

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT	**SCM DEPARTMENT**	**CONTACT PERSON**	**Mr. N. Noto**
CONTACT PERSON	**Mr. Sakhiwo Hopa**	**TELEPHONE NUMBER**	**047 501 6425**
TELEPHONE NUMBER	**047 501 6449**	**FACSIMILE NUMBER**	**N/A**
FACSIMILE NUMBER	**N/A**	**E-MAIL ADDRESS**	**nkosiyabon@ortambodm.gov.za**
E-MAIL ADDRESS	**sakhiwoh@ortambodm.org.za**		

PART B
TERMS AND CONDITIONS FOR BIDDING

1.	**BID SUBMISSION:**
1.1.	BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2.	**ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED).**
1.3.	THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
2.	**TAX COMPLIANCE REQUIREMENTS**
2.1	BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2	BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3	APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.
2.4	FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.
2.5	BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.6	IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.7	WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
3.	**QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS**
3.1.	IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? ☐ YES ☐ NO
3.2.	DOES THE ENTITY HAVE A BRANCH IN THE RSA? ☐ YES ☐ NO
3.3.	DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? ☐ YES ☐ NO
3.4.	DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? ☐ YES ☐ NO
3.5.	IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? ☐ YES ☐ NO
	IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.
NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER: ……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……

DATE: ……..

MBD 4

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state[1].

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

   3.1 Full Name of bidder or his or her Representative: ……..

   3.2 Identity Number: ……

   3.3 Position occupied in the Company (director, trustee, shareholder[2]):

   …….....

   3.4 Company Registration Number: …….

   3.5 Tax Reference Number: ……..

   3.6 VAT Registration Number: ……

   3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

   3.8 Are you presently in the service of the state?..... **YES / NO**

   3.8.1 If yes, furnish particulars…….....

   ……..

[1] MSCM Regulations: "in the service of the state" means to be –
(a) a member of –
   (i) any municipal council;
   (ii) any provincial legislature; or
   (iii) the national Assembly or the national Council of provinces;

(b) a member of the board of directors of any municipal entity;
(c) an official of any municipality or municipal entity;
(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
(e) a member of the accounting authority of any national or provincial public entity; or
(f) an employee of Parliament or a provincial legislature.

[2] Shareholder" means a person who owns shares in the company and is actively involved in the management of the company orbusiness and exercises control over the company.

3.9 Have you been in the service of the state for the past twelve months? ..... **YES / NO**

3.9.1 If yes, furnish particulars……..……

……

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?. .....**YES / NO**

3.10.1 If yes, furnish particulars ……..

……

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?. .....**YES / NO**

3.11.1 If yes, furnish particulars……

…….....

3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?. .....**YES / NO**

3.12.1 If yes, furnish particulars …….....

……

3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?..... **YES / NO**

3.13.1 If yes, furnish particulars…….....

……

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract?. .....**YES / NO**

3.14.1 If yes, furnish particulars ……

……

4. Full details of directors / trustees / members / shareholders.

Full name	**Identity number**	**State employee number**

…… ……
Signature **Date**

…… ……..
Capacity **Name of Bidder**

MBD 5

DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

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

NO.	QUESTION	ANSWER (TICK WHICH RESPONSE IS APPLICABLE)	
		YES	NO
1.	Are you by law required to prepare annual financial statements?		
1.1	If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the last 3 years.		

NO.	QUESTION	ANSWER (TICK WHICH RESPONSE IS APPLICABLE)	
		YES	NO
2.	Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than 3 months or any other service provider in respect of which payment is overdue for more than 30 days?		
2.1	If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than 3 months or other service provider in respect of which payment is overdue for more than 30 days.		
2.2	If yes, provide details: …….. …….. ……..		

NO.	QUESTION	ANSWER (TICK WHICH RESPONSE IS APPLICABLE)	
		YES	NO
3.	Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?		
3.1	If yes, provide details: …… …… ……..		

NO.	QUESTION	ANSWER (TICK WHICH RESPONSE IS APPLICABLE)	
		YES	NO
4.	Will any portion of the goods of services be sourced from outside the Republic, and if so, what portion, and whether any portion of payment from the municipality is expected to be transferred outside of the Republic?		
4.1	If yes, provide details: …… …… ……		

CERTIFICATION

I, THE UNDERSIGNED (NAME) ……
CERIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

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

…… ……

Signature Date

…… ……

Position Name of Bidder

MBD 6.1

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

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1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

a) Either the 90/10 or 80/20 preference point system will be applicable in this tender. The lowest acceptable tender will be used to determine the accurate system once tenders are received

b) The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80/90
SPECIFIC GOAL POINTS	20/10
Total Points For Price and Specific Goal Points	**100**

1.3 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.4 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state

2. DEFINITIONS

(a) **"tender"** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

(b) **"price"** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

(c) **"rand value"** means the total estimated value of a contract in Rand, calculated at the

time of bid invitation, and includes all applicable taxes;

(d) **"the Act"** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 points is allocated for price on the following basis:

80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \quad \text{or} \quad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

The specific goals allocated points in terms of this tender	**Number of points Allocated on 80/20 system**	**Number of points Allocated on 90/10 system**
The promotion of enterprises located in a specific region (O.R Tambo District): The Tenderer and Directors are based in the ORTDM region and pay their municipal rates and taxes	05	02
Promotion of 51% Black-owned enterprises	05	04
Promotion of 100% Women-owned enterprises	05	02
Promotion of Youth-owned enterprises	05	02

5. DECLARATION WITH REGARD TO COMPANY/FIRM

5.1. Name of company/firm…….

5.2. Company registration number: ……...

5.3. TYPE OF COMPANY/ FIRM

- □ Partnership/Joint Venture / Consortium
- □ One-person business/sole propriety
- □ Close corporation
- □ Public Company
- □ Personal Liability Company
- □ (Pty) Limited
- □ Non-Profit Company
- □ State Owned Company

[TICK APPLICABLE BOX]

5.4. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;

iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

(a) disqualify the person from the tendering process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) Forward the matter for criminal prosecution, if deemed necessary.

……

SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: ……

DATE: ……

ADDRESS: ……

……

……

……

MBD 8

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1 This Municipal Bidding Document must form part of all bids invited.

2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

3 The bid of any bidder may be rejected if that bidder, or any of its directors have:

a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
b. been convicted for fraud or corruption during the past five years;
c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).

4 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

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

Item	Question	Yes	No
4.4	**Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?**	Yes	No

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

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) .....CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TRUE AND CORRECT.

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

……..... ……..
Signature **Date**

…… ……..
Position **Name of Bidder**

MBD 9

CERTIFICATE OF INDEPENDENT BID DETERMINATION

1 This Municipal Bidding Document (MBD) must form part of all bids[1] invited.

2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).[2] Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.

3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

a. take all reasonable steps to prevent such abuse;

b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and

c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

[1] Includes price quotations, advertised competitive bids, limited bids and proposals.

[2] Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

PROJECT NO.: MIS 316 080 C2

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS

in response to the invitation for the bid made by**:**

O. R. TAMBO DISTRICT MUNICIPALITY

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

I certify, on behalf of**:**_____that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word “competitor” shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

    (a) has been requested to submit a bid in response to this bid invitation;
    (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
    (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

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

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   (a) prices;
   (b) geographical area where product or service will be rendered (market allocation)
   (c) methods, factors or formulas used to calculate prices;
   (d) the intention or decision to submit or not to submit, a bid;
   (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
   (f) bidding with the intention not to win the bid.

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

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

[3] Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

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

…… ……..

Signature Date

…… ……

Position

Name of Bidder

T2.3 RETURNABLE DOCUMENTS

RETURNABLE DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

Form 2.3.1 Record of Addenda to Tender Documents
Form 2.3.2 Procurement Form

FORM 2.3.1 RECORD OF ADDENDA TO TENDER DOCUMENTS

(Addenda received from Engineer for amendments on Tender Documentation)

	Date	**Title or Details**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Name of Tenderer: …… Date: ……

Signature: ……...

Full name of signatory: ……

FORM 2.3.2 PROCUREMENT FORM

Acceptable Tenders will be evaluated using a system that awards points on the basis of Tender price and the meeting of specific goals.

DEFINITIONS

"Acceptable Tender" means any Tender which, in all respects, complies with the conditions of Tender and specifications as set out in the Tender document, including conditions as specified in the Preferential Procurement Policy Framework Act (Act 5 of 2000) and the Supply Chain Management of Council.

"Council" refers to the O. R. TAMBO DISTRICT Municipality.

"Equity ownership" refers to the percentage ownership and control, exercised by individuals within an enterprise and they are involved in the day to day running of the Company.

"HDI equity ownership" refers to the percentage of an enterprise, which is owned by individuals, or in the case of a company, the percentage shares that are owned by individuals meeting the requirements of the definition of a HDI.

"**Historically disadvantaged individuals (HDIs)**" means all South African citizens –

(i) Who had no franchise in national elections prior to the introduction of the 1983 and 1993 constitutions (Referred to as Previously Disadvantaged Individuals (PDIs) in this document)
(ii) Women
(iii) Disabled persons.

"SMME's" (small, medium and micro enterprises) refers to separate and distinct business entities, including co-operative enterprises and NGOs, managed by one owner or more, as defined in the National Small Business (Act 102 of 1996). Refer to the attached addendum for a definition of SMME's for different economic sectors.
Tenders are adjudicated in terms of ORTDM Procurement Policy, and the following framework is provided as a guideline in this regard.

1. Technical adjudication and General Criteria

- Tenders will be adjudicated in terms of inter alia:
- Compliance with Tender conditions
- Technical specifications

If the Tender does not comply with the Tender conditions, the Tender will be rejected. If technical specifications are not met, the Tender may also be rejected.

With regard to the above, certain actions or errors are unacceptable, and warrants **REJECTION OF THE TENDER**, for example:

- A Tax Verification Pin. (**Only valid tax verification pin** must be attached to the Tender document).
- Pages to be completed, removed from the Tender document, and have therefore not been submitted.
- Failure to complete the schedule of quantities as required
- Scratching out without initialing next to the amended rates or information.
- Writing over / painting out rates / the use of tippex or any erasable ink, eg. Pencil.
- Failure to attend compulsory site inspections
- The Tender has not been properly signed by a party having the authority to do so, according to the **Form 2.2.2 – "Authority for Signatory"**
- No authority for signatory submitted.
- Form of Offer not completed.
- Particulars required in respect of the Tender have not been provided – non-compliance of Tender requirements and/or specifications.
- The Tenderer's attempts to influence, or has in fact influenced the evaluation and/or awarding of the contract.
- The Tender has been submitted after the relevant closing date and time
- Each page of the Contract portion of this Tender document (Part C1 – C4) must be initialed by the authorised person in order for the document to constitute a proper Contract between the Employer (ORTDM) and the undersigned.
- If any municipal rates and taxes or municipal service charges owed by that Tenderer or any of its directors to the municipality, or to any other municipality or municipal entity, are in arrears for more than three months.
- If any Tenderer who during the last five years has failed to perform satisfactorily on a previous contract with the municipality or any other organ of state after written notice was given to that Tenderer that performance was unsatisfactory.

2. Size of enterprise and current workload

Evaluation of the Tenderer's position in terms of:

- Previous and expected current annual turnover
- Current contractual obligations
- Capacity to execute the contract

3. Staffing profile

Evaluation of the Tenderer's position in terms of:

- Staff available for this contract being Tendered for
- Qualifications and experience of key staff to be utilised on this contract

4. Financial ability to execute the contract:

Evaluation of the Tenderer's financial ability to execute the contract. Emphasis will be placed on the following:

- Contact the Tender's bank manager to assess the Tenderer's financial ability to execute the contract and the Tenderer hereby grants his consent for this purpose.

5. Good standing with SA Revenue Services

- Determine whether an original tax pin an original valid tax clearance certificate has been submitted.
- The Tenderer must affix a Tax Verification Pin to page T2.2.9 of the Tender document.

6. Penalties

The O. R. Tambo District Municipality will if upon investigation it is found that a preference in terms of the Contract has been obtained on a fraudulent basis, or any specified goals are not attained in theperformance of the contract, on discretion of the Municipal Manager, one or more of the following penaltieswill be imposed:

- Cancel the contract and recover all losses or damages incurred or sustained from the Tenderer.
- Impose a financial penalty of twice the theoretical financial preference associated with the claim, which was made in the Tender.
- Restrict the suppliers, its shareholders and directors on obtaining any business from the O. R. TamboDistrict Municipality for a period of 5 years.

DECLARATION

I/We the undersigned, who warrants that he/she is duly authorised to do so on behalf of the firm, certifies that the items mentioned in part of the foregoing procurement form and returnable documents qualifies/qualify for the preference(s) shown and acknowledge(s) that:

The information furnished is true and correct.

The contractor may be required to furnish documentary proof to the satisfaction of the O. R. Tambo District Municipality that the claims are correct.

If the claims are found to be inflated, the O. R. Tambo District Municipality may, in addition to any other remedy it may have, recover from the contractor all cost, losses or damages incurred or sustained by the O. R. Tambo District Municipality as a result of the award of the Contract and/or cancel the contract and claim any damages which the O. R. Tambo District Municipality may suffer by having to make less favourable arrangements after such cancellation.

Signature of Tenderer

Signed at_____on_____day of_____202___

For the tenderer

WITNESSES:

1. _____

2. _____

PART C1 AGREEMENTS AND CONTRACT DATA

FORM C1.1 FORM OF OFFER AND ACCEPTANCE

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works: **PROJECT NUMBER: MIS 316 080 C2: DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS**

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.

Signature(s) _____

Name(s) _____ _____

Capacity _____

For the tenderer _____
(Name and address of organisation)

Name & Signature
Of Witness

_____ _____
Name Date

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract are contained in:

Part 1 Agreements and Contract Data (which includes this Agreement)
Part 2 Pricing Data
Part 3 Scope of Work
Part 4 Site information
Part 5 Additional Relevant Documentation
Part 6 Contract Drawings

and drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 6 above.

Deviations from and amendments to the documents listed in the Tender Data, including the proposed key personnel 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 bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at or just after the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.
Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five 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.

Signature(s) _____

Name(s) _____

Capacity _____

For the tenderer _____
(Name and address of Organisation)

Name & Signature
Of Witness _____ _____
Name Date

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 letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid becomes 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 _____

3 Subject _____

Details _____

4 Subject _____

Details _____

5 Subject _____

Details _____

6 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:

Signatures (s) _____ _____

Name(s) _____ _____

Capacity _____ _____

_____
(Name and address of Organisation)

Name & Signature
Of Witness _____ Date _____

FOR THE EMPLOYER

Signatures (s) _____ _____

Name(s) _____ _____

Capacity _____ _____

_____
(Name and address of Organisation)

Name & Signature
Of Witness _____ Date _____

FORM C1.2 CONTRACT DATA

PART C1.2 DATA PROVIDED BY THE EMPLOYER

Notes to Tenderer:

1. The Tenderer is not required to complete this data in full.
2. Please read both the General Conditions of Contract for Construction Works, Third Edition, 2015. (GCC 2015) and the relevant parts of its Guidance Notes to understand the implications of this Data which the tenderer is required to complete.
3. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering www.saice.org.za
4. The number of the clause which requires the data is shown in the left-hand column for each statement; however, other clauses may also use the same data
5. Each item of data given below is cross-referenced to the clause in the General Conditions of Contract for Construction Works to which it mainly applies.
6. The General Conditions of Contract for Construction Works make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities, and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.
7. The General Conditions of Contract shall be read in conjunction with the variations, amendments and additions set out in the Contract Data below. Each item of data given below is cross-refenced to the clause in the General Conditions of Contract to which it mainly applies
8. The following contract specific data are applicable to this Contract:

Clause	Statement	Data
	The *conditions of contract* are	The General Conditions of Contract forConstruction Works, Third Edition, 2015. (GCC 2015)
1		**General**
1.1.1.13	*Defects Liability Period* is	**12 months** after the Practical Completion Date
1.1.1.14	*Due Completion Date* is	**As tendered (not to exceed 48 weeks)** from the access date (as described inclause 5.4.1)
1.1.1.15	The *Employer* is	O. R. Tambo District Municipality
1.1.1.16	The *Employer's Agent*	To which this *Contract* relates shall be the delegated individual specified in writing by the Employer within seven days of the commencement date.
1.1.1.17	The *Employer's Agent Representative*	To which this *Contract* relates shall be the delegated individual specified in writing by the Employer's Agent within seven (7) days of the commencement date.
1.1.1.26	The *Pricing Strategy* is	A *re-measurement contract*
1.1.1.29	The *Site is*	All villages within the boundaries of **Dumasi Regional Water Supply Phase 1: Bomvini and Lutsheko** sites. Refer to Part C3.1, Clause PS2.1
1.1.1.30	The *Site Information* is	Specified in Part C4: Site Information of thisdocument

3		**Employer's Agent**
3.2.3	The *Employer's Agent* shall first consult and obtain specific approval from the Employer	from the *delegated* ***Lead Consultant, Ziinzame Consulting Engineers and,*** ***Sub-Consultants are LEKO Engineering Consultants*** prior to executing any of its functions or duties, with respect to following clauses: 1. all the *Employer Agent's* actions as contemplated in Clause 3.3.1 2. all the *Employer Agent's* actions as contemplated in Clause 3.3.4 3. all the *Employer Agent's* actions as contemplated in Clause 5.11.1 4. all the *Employer Agent's* actions as contemplated in Clause 5.12.4 5. all the *Employer Agent's* actions as contemplated in Clause 6.4.1 6. all the *Employer Agent's* actions as contemplated in Clause 6.6.3 7. all the *Employer Agent's* actions as contemplated in Clause 10.1.5 8. all the *Employer Agent's* actions as contemplated in Clause 10.2.3
3.2.4	The *Employer's Agent* for Health and Safety	To which this Contract relates shall be the delegated individual specified in writing by the Employer's Agent within seven days of the commencement date.
3.2.4	The *Employer's Agent* for Social Facilitation	To which this Contract relates shall be the delegated individual specified in writing by the Employer's Agent within seven days of the commencement date.
5		**Time and Related Matters**
5.1.1	The special non-working days set out in the *Contract* are	the following: 1. South African Public Holidays, and 2. Annual builders' holiday traditionally starts on or around 15 December and ends in the second week of January.
5.3.1	The *Engineer's Agent* shall issue an *instruction* to the Contractor to commence with the Work	On approval of the following documentation: 1. Health and Safety Plan 2. OHS Agreement 3. Department of Labour (DoL) notification of construction work 4. Initial Programme 5. Letter of Good Standing 6. Performance Guarantee 7. Insurance for the Works 8. Contractor's Key Personnel Which will be within 07 days after the approval of the Documentation required from the Contractor
5.3.2	The Contractor is to submit the documentation stipulated in clause 5.3.1	Within 7 days of the Commencement Date
5.4.1	Access to and possession to the Site	is granted on the date of the site handover meeting which should occur no later than Seven (07) days after Employer's Agent's instruction to commence carrying out the Works referred to in Clause 5.3.1.

1.1.1.33	The *Works* are	Specified in Part C3: Employer's Works Information of this document
1.2.1	**The *Employer's* delivery address is**	
	Physical Address	O. R. Tambo House Nelson Mandela Drive Mthatha 5100
	Postal Address	Private Bag X 6043 Mthatha 5100
	Email Address	Shall be specified by the *Employer* within Fourteen days of the commencement date.
1.2.1	The *Employer's* Agent's delivery address	**Lead Consultant** Ziinzame Consulting Engineers Address:26 Falcon Street Mthatha Tel: (047) 531 0269 Email: admin@ziinzame.co.za Contact Person : Mr N Ndabankulu **Sub-Consultant** Name: LEKO Engineering Consultants 30 Blakeway Road Mthatha, 5099 Tel: (047) 531 0037 Email: aubreyo@leko.co.za Contact Person : Mr A. Katsana
1.3.2	The law of the contract is the law of	the Republic of South Africa that applies to agreements executed and wholly performed within the Republic of South Africa
1.3.3	The *language of this Contract* is	English

5.8.1	The non-working days set out in the *Contract* are	weekends
	The special non-working days set out in the Contract are	the following: 1. all South African gazetted public holidays, and 2. Annual builders' holiday traditionally starts on or around 15 December and ends in the second week of January. The year-end builders' holiday does not exceed 15 working days in duration
5.12.2.2	Extension of time for practical completion due to abnormal climatic conditions.	Add the following to the end of ***Clause 5.12.2.2***: "Extension of time resulting from abnormal weather will be calculated as per the provisions stated in C3.1: Project Specifications Clause PS 6.9."

5.13.1	The penalty for delay or late completion is	If the Contractor fails by the Due Completion Date to complete the Works, or any specific portion thereof that is identified in the Scope of Works to the extent which entitles him in terms of Clause 5.14.2 to receive a Certificate of Practical Completion for the Works, then the Contractor shall be liable to the Employer for the sum(s) stated below as (a) penalty/ies for every day which shall elapse between the Due Completion Date for the Works or the specific portion of the Works and the actual Date of Practical Completion of the Works or of the specific portion. The penalty for delay shall be **R5 000 or 0.02% of the Contract Value (excluding VAT) per day**; **whichever is the higher value**."
6		**Payment and related matters**
6.2.1	***The performance guarantee*** for liability of the *Contractor* for claims made against the *Contractor* arising out of the *Contractor's* failure to deliver the requested *Works* per the standards, practices, methods and procedures conforming to applicable laws and exercising that degree of skill, care, diligence, prudence and foresight thatwould reasonably and ordinarily be expected from a skilled and experienced person engaged in a similar type ofundertaking under similar circumstance is	***10% of the Contract Price***
6.2.2	The security of ten percent retention of the value of the Works	*Shall be deducted from the Contractor's first* three *payment certificates in equal increments asper the SCM Policy.*
6.8.2	Contract Price Adjustment Factor	is not applicable for this contract
6.10.1.5	The advance payment percentage limit for plant and materials delivered to *Site* but not yet built into the *Permanent Works* is	***80% of the value of the materials***.
6.10.1.5	The advance payment percentage limit for plant and materials not yet supplied to Site	is not applicable for this contract
6.10.3	The percentage retention is	***10% of the value of the Works***
6.10.3	The limit of retention money is	***5%*** *of the value of the Contract Price (Including VAT)*
8		**Risks and related matters**
8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum is	NIL
8.6.1.3	The minimum limit of indemnity for insurance in respect of loss of or property damage (except for the *Works*, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) caused by activity in connection with this *Contract* for any one event is:	R5,000,000
8.6.1 .5	a) The minimum limit of indemnity for insurance in respect of loss of or damage to the Works, Plant and Materials	The replacement cost thereof.

	b) The minimum limit of indemnity for insurance in respect of the death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment inconnection with this *Contract* for any one event is	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the *Contractor's* common-law liabilityfor people falling outside the scope of the Act witha limit of indemnity of not less than R1 000 000 (One Million South African Rand).
10		**Claims and disputes**
10.5.3	The Adjudication Board shall consist of	one (1) member
10.7.1	The determination of disputes shall be by arbitration	
10.7.2	The arbitration procedure is	the latest edition of Rules for the Conduct of Arbitrations published by the Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	Mthatha
	The person who shall choose an arbitrator	the Chairman of the Association of Arbitrators (www.arbitrators.co.za) or its successor body.

PART C1.2.3 DATA PROVIDED BY THE *CONTRACTOR*		
Notes to Tenderer: 9. The Tenderer is required to complete this data in full. 10. Please read both the General Conditions of Contract for Construction Works, Third Edition, 2015. (GCC 2015) and the relevant parts of its Guidance Notes to understand the implications of this Data which the tenderer is required to complete. 11. The number of the clause which requires the data is shown in the left-hand column for each statement; however, other clauses may also use the same data		
CLAUSE	**STATEMENT**	**DATA**
	The *conditions of contract* are	The General Conditions of Contract for Construction Works, Third Edition, 2015. (GCC 2015)
1		**General**
1.1.1.9	*The Contractor* is	_____
1.2.1	The Contractor's delivery address is	
	Physical Address	_____
	Postal Address Email Address	_____ _____ _____
4		**Contractor's General Obligations**
4.4.2	The *Contractor* must Sub-Contract any parts of the Contract.	To which this Contract relates shall be the ***minimum of 20% of the Value of the Works*** that must be Sub-Contracted to a Local SMME or the Designated Groups as agreed during the Procurement of the Sub-Contractors.
4.10.2	Contractor shall provide monthly reports outlining compliance with	Site progress and Employer's CPG and EPWP objectives at intervals specified in Part C3: Employer's Works Information of this document.
4.11.1	*Contractor*'s Competent Employees are:	
	Title	**Construction / Contract Manager**
	Name	
	Qualifications	_____
	Tel No	
	Email	_____

	Title	**Site Agent**
	Name	
	Qualifications	
	Tel No	
	Email	
	Title	**Concrete Foreman**
	Name	
	Qualifications	
	Tel No	
	Email	
	Title	**Safety Officer**
	Name	
	Qualifications	
	Tel No	
	Email	
	SACPMP Registration Number	
4.12.2	*Contractor*'s Superintendence:	The Contractor's ***Site Agent, Site Foreman*** and ***Safety Officer MUST*** be on site at all times when work is being performed. No work may be performed without these persons being on site.

Should the Contractor decide to use other Personnel rather than the one's listed above, must do it in writing, and the proposed Personnel must have the same or very similar Qualifications and experience

Security

6.2.1 The security to be provided by the Contractor shall be one of the following:

	Type of security	**Select (Tick)**
	1. Cash Deposit of 10% of the Contract Sum plus retention of 5% of the value of Works	
	2. Fixed Performance Guarantee of 10% of the Contract Sum plus retention of 5% of the value of Works	

Note A

The **Performance Guarantee** shall be of an Insurance Company listed on the Johannesburg Stock Exchange or owned by such a company, a Registered South African Bank or a recognised government sponsored, provincial or national development agency

Part C1.4 Special Conditions of Contract		
Notes to Tenderer: 1. Particular Conditions of the Contract defines conditions that are specific to a Project. 2. The Particular Conditions of the Contract are used for addition/ omission and change of General Conditions of the Contract. 3. The number of the clause which requires the data is shown in the left-hand column for each statement; however, other clauses may also use the same data		
Clause	**Statement**	**Data**
		Amendment of GCC 2015 Clauses
	Employer's SCM Policy	
	Insertion of additional clause	The parties agree that this contract shall be subject to the Employer's Supply Chain Management Policy ('SCM Policy') that was applicable on the date the bid was advertised. Abuse of the supply chain management system is nopermitted and may result in cancellation of the contract, restriction of the supplier, and/or the exercise by the Employer of any other rights and remedies available to it as described in the SCM Policy
	Ambiguity and discrepancy	
	Insertion of additional wording:	All parts of the Contract should be read together and that their original purpose is to be mutually explanatory. However, if there is a discrepancy between the informationprovided, the order of priority of contract documents is as stated below: 1. the Contract Agreement 2. the Letter of Acceptance (this is the formal acceptanceof the contractor's tender and usually presents the pointin time when Contractual Parties enter the Contract), 3. the Contract Data, 4. the Particular Conditions of the Contract 5. the General Conditions of the Contract, 6. the Specification, 7. the Drawings, and 8. the Schedules and any other document forming part ofthe Contract In the event of a discrepancy or ambiguity, the documentof higher priority takes precedence.
	Assignment	
	Delete wording and replace with thefollowing:	The Employer will, at all times, be entitled to cede its rightsand/or delegate its obligations under this Contract and/or assign this Contract to any financier and/or nominee of anyfinancier of the Employer for purposes of the programme. Any cession and/or delegation and/or assignment by the Employer to any such financier or nominee of any financieris expressly permitted. The Contractor shall, if requested thereto by the Employer and/or any such financier, sign a separate authority giving effect to the aforementioned in such form as the Employer and/or any financier of the Employer may reasonably require

	The Employer will, at all times, be entitled to cede its rights and/or delegate its obligations under this Contract and/or assign this Contract to any financier and/or nominee of any financier of the Employer for purposes of the programme. Any cession and/or delegation and/or assignment by the Employer to any such financier or nominee of any financieris expressly permitted. The Contractor shall, if requested thereto by the Employer and/or any such financier, sign a separate authority giving effect to the aforementioned in such form as the Employer and/or any financier of the Employer may reasonably require
	The Contractor shall not be entitled to cede any of its rights and/or delegate any of its obligations under this *Contract* to any person without the prior written consent of the*Employer*.
Access to and possession of Site	
Insertion of additional wording:	The Employer allows access to, possession and use of each part of the Site to the *Contractor, which* is necessary for the work included in this contract. The *Employer* shall grant access and use of the Site no later than seven days after *Employer's Agent's* instruction to commence with the Works. If the *Employer* does not give the *Contractor* access to, possession and use of the *Site* within seven days of the *Employer's Agent* instruction to commence with the Works, access to, possession and use of the *Site* shall be as the date when *Employer's Agent* instructed the *Contractor* to commence with the Works.
Some reasons for extension of time	
Insertion of additional wording:	No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normalclimatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the eventthat delays to critical activities exceed the number of working dates listed below for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of clause 5.12 The number of days quoted C3.1 Clause PS6.9 shall be regarded as fair_estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weatherprevents or disrupts critical work Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day is experienced. It shall be noted that where the critical path is not affected,no extension of time for abnormal climatic conditions or forany other reason will be considered.
Termination by the Employer Insertion of additional wording	
9.2.1.3.9	Has substantially broken a health or safety regulation.
9.2.1.3.10	Failure to obtain access to Site due to non – compliant documentation as stated in clause 5.3.1
9.2.1.3.11	Has failed to provide or update the required insurances within the prescribed time

9.2.1.4 Where the *Works* are no longer required

9.2.1.5 Where the funding for the *Works* is no longer available

9.2.1.6 An event occurs that stops the Contractor from completing the works by the date shown on the Accepted Programme and is forecast to delay Completion by more than13 weeks

9.2.1.7 The Service Provider becomes insolvent or Liquidated

9.2.1.8 If as a result of Force Majeure, the Service provider is unable to perform part or the whole service for a period of thirty 30 days.

Right of Retention

	The *Contractor* hereby waive and abandons any and all lien and/or any other right of retention that the *Contractor* now has or in future may have, in terms of the Contract, the common law or otherwise, in respect of the works, the Site or any property belonging to the *Employer* and shall under no circumstances be entitled to withhold delivery of the same to the *Employer*. The Contractor warrants that all Subcontractors shall, mutatis mutandis, waive and abandon any suchSubcontractor's lien or any other right of retention, in favour of the *Employer*.
	Joint Ventures
	Suppose the *Contractor* constitutes a joint venture, consortium, or other unincorporated groupingsof two or more persons or organisations. In that case, these persons or organisations are deemedto be jointly and severally liable to the *Employer* for the performance of this *Contract*.
	Unless already notified to the *Employer*, the persons or organisations notify the *Employer's* Agentwithin two weeks of the date of acceptance of the Contract of the key person who has the authorityto bind the *Contractor* on their behalf.
	The *Contractor* does not alter the composition of the joint venture, consortium, or other unincorporated groupings of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.
	Nothing in this Contract shall be deemed to create any joint venture, partnership or principal-agent relationship between the Parties and neither Party shall hold itself out in its advertising or otherwisein any manner which would indicate or imply such relationship with the other Party according to this Contract
	The dissolution of the *Joint Venture* shall be deemed as a separation and that constitutes the Contract to be Terminated. **Illegal or Corrupt Practices**
	Any offer, payment, consideration, or benefit of any kind made by the *Contractor*, which constitutesor could be construed either directly or indirectly as an illegal or corrupt practice, an inducement or reward for the award or in the execution of this *Contract* constitutes grounds for terminating the *Contractor's* obligation to Provide the Works or taking any other action as appropriate against the *Contractor* (including civil or criminal action).
	The Employer may terminate the *Contractor's* obligation to provide the Works if the *Contractor* (or any member of the *Contractor* where the *Contractor* constitutes a joint venture, consortium or other unincorporated groupings of two or more persons or organisations), or a director of any suchentity, is found guilty by a competent court, administrative or regulatory body of participating in illegal or corrupt practices.
SCC4.3	Such practices include, but are not limited to, the making of offers, payments, considerations, or benefits of any kind or otherwise, whether in connection with any procurement process or contractwith the Employer or other people or organisations and including in circumstances where the *Contractor* or any such member is removed from the approved vendor database of the *Employer*as a consequence of such practice.

	Confidentiality
	The *Contractor* does not disclose or make any information arising from or in connection with this *Contract* available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* discloseinformation to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
	Any information communicated by the *Employer* to the *Contractor* in connection with the Contractand any secret and/or confidential information of the *Employer* otherwise acquired by the*Contractor* shall be regarded by the *Contractor* as strictly confidential and shall not, without the prior written consent of the *Employer* in each instance, be published or disclosed to any other party or be used for any purpose whatsoever other than to execute the Works.
	If the *Contractor* is uncertain about whether any such information is confidential, it is to be regardedas such until notified otherwise in writing by the *Employer's Agent*.
	Suppose the Contractor is, at any time, required by law to disclose any such information which is required to be kept confidential. In that case, the *Contractor*, to the extent permitted by law before disclosure, notifies the *Employer* so that an appropriate protective order and/or any other action can be taken if possible, before any disclosure. If such protective order is not, or cannot, be obtained, then the *Contractor* may only disclose that portion of the information which it is requiredto be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment shall be afforded to the information so disclosed.
	The taking of images (whether photographs, video footage or otherwise) of the works or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Employer's Agent*. All rights in and to all such images vests exclusively in the *Employer*.
	The Contractor ensures that all his subcontractors abide by the undertakings in this clause. **Existing Services and Housekeeping**
	The Site may be in continuous operation and, accordingly, the *Contractor* shall assume that existing services and access ways shall be in continuous use and fully operational at all times.
	The Contractor shall be held responsible for repair or making good of existing installations that may be required due to any act or omission of whatever nature by the *Contractor* and for any coststo the *Employer* which may arise, due to the *Contractor* preventing in any manner whatever the normal operation and use of such services and access ways.
	In the execution of the Works, the *Contractor* shall keep the Site reasonably free from all unnecessary obstructions and shall store or dispose of any *Contractor*'s Equipment and surplus materials and without delay clear away and remove from the Site any wreckage, rubbish or temporary works no longer required.
	The *Contractor* must use and/or attend to all areas of the Site which are used by it or under its control from time to time in a safe, professional and responsible manner.
	The Contractor shall be responsible for all areas of the *Site* which are used by it or under its control from the time the area in question is made available to the *Contractor* until the time the *Employer* requires the *Site* to be returned to it or otherwise when the *Contractor* demobilises from the area of the *Site* in question and returns to the *Employer* all of the *Employer's* property.
	The *Contractor* must ensure that all such areas of the *Site* are kept at all times in a safe, clean and hygienic condition and in good working order and repair and the *Contractor* shall promptly repair, at its cost, any damage to the *Site* which is attributable to the *Contractor* or its employeesof sub-contractors, failing which the *Employer* shall be entitled to repair the *Site* and recover the cost of such repairs from the *Contractor*.

	Any damages suffered by the *Employer* as aforesaid shall be paid by the *Contractor* within tenbusiness days or shall be set off against any amounts owing to the *Contractor* by the *Employer*.
	Any damages suffered by the *Community or Resident* as aforesaid shall be paid by the *Contractor* within ten business days or shall be set off against any amounts owing to the *Contractor* by the *Employer*.

The *Contractor* shall not unnecessarily interfere with the operations of the *Employer* or Others atthe *Site*. The *Employer* has the right to refuse access to the *Site* to any of the *Contractor's* employees, representatives and/or subcontractors whom it suspects of being a health and safetyor other risk.

The Contractor shall not have any lien or right of retention in respect of the *Site*, the *works* and/orany other property belonging to the *Employer*.

Indemnity against *Contractor*'s Design

The *Contractor* indemnifies and keeps indemnified the *Employer* against any losses and costs, including legal costs between attorney and client, and all other expenses whatsoever that the *Employer* may incur as a result of any action, proceeding or claim made against the *Employer* arising from the use of a design constituting an infringement of patent rights, design registration, registered trademarks or other exclusive rights in respect thereof. This indemnity does not apply to any infringement which is solely due to the *Contractor* having followed in its entirety instructionsstipulated by the *Employer*.

The *Employer* shall give the *Contractor* prompt notice of any such action, proceeding, claim or threat instituted or made against it or both of them. Promptly after the giving of such notice the

Parties are to consult together about the subject of the notice and the *Employer* may at its option decide to a) permit the Contractor at the *Contractor*'s own expense to conduct any litigation that may ensue and all negotiations for a settlement of such litigation or claim with the proviso that the*Contractor* keeps the *Employer* informed of all steps that are taken and of the outcome; or b) conduct any litigation that may ensue and all negotiations for a settlement, in which event the *Employer* shall act in consultation with the *Contractor* and shall keep the *Contractor* informed of all aspects that are taken and of the outcome.

The *Contractor* hereby cedes and agrees to cede all intellectual property, excluding intellectual property in respect of which the *Contractor* can demonstrate proprietorship prior to the date of signature hereof, but including intellectual property specifically developed by the *Contractor* on behalf of the *Employer* under instruction and payment by the *Employer* and including all current and future technical information relating to the works; technical concepts; know-how; specifications; data; formulae; computer programs; design; patent and / or applications in respectthereof; copyrighted works; memoranda; scripts; reports; manuals; diagrams; drawings; includingengineering drawings; prototypes; drafts in performing the works, whether completed or not and whether accepted, amended or rejected, and the like relating to the works, whether patented or not, and includes all intellectual property relating to the works developed by or on behalf of the *Employer*, to the *Employer*, its successors, assigns or legal representatives locally and / or internationally, together with the right to apply for Letters Patent in respect thereof.

It is further agreed that the *Employer* may apply in its name and its own cost for Letters Patent in respect of such inventions and registration of such designs locally and/or internationally.

The *Contractor* hereby agrees that when requested, he shall without any charges to the *Employer*,but at the latter's expense, sign all papers, take all rightful oaths, and do all acts which may be necessary, desirable or convenient for securing and maintaining patents relating to the works and/or the patent applications in any and all countries and for vesting titled thereto in the *Employer*, its successors, assign or legal representatives and the *Contractor* confirms and agrees that he shall assist the *Employer* to ensure that total and complete cession and transfer of all right, title and interest in the intellectual property takes place.

Time

The *Contractor* acknowledges that time is of the essence to the performance of its obligations in terms of this Contract.

Discovery/Reproduction of Documentation

The *Contractor* hereby authorises the *Employer* to reproduce all documentation made available by the *Contractor* to the *Employer* in connection with this *Contract*. In so far as the *Contractor* hasany copyright protection in the items that are so reproduced by the *Employer*, the *Contractor* hereby grants a right and license to the *Employer* to reproduce the same for the purposes specifiedin this *Contract*. The *Contractor* keeps the *Employer* informed of any threats or claims made against it in respect of infringement of patent or other exclusive rights by virtue of the provision ofthe works.

Damages
The *Employer* shall be entitled, in its sole discretion, to claim and recover from the *Contractor* damages *in lieu of* any penalty agreed upon in terms of this *Contract*.
Accrual
Unless otherwise provided *herein*, rights which accrue to a Party in terms of this *Contract* shall survive its termination.
Commitments and Undertakings
Neither Party shall be bound by any express, tacit or implied term, representation, warranty, promise nor the like not recorded *herein*. This *Contract* supersedes and replaces all prior commitments, undertakings or representations, whether oral or written, between the Parties in respect of the subject matter hereof.

Validity and Enforceability of *Contract*

If any provision of this *Contract* is found to be invalid, unlawful or unenforceable, that provision shall be severable from the remaining provisions of this *Contract*, which shall continue to be validand enforceable.

Strategic Socio-Economic Objectives

	in terms of which the *Contractor* gives unconditional warranties and undertakings committing itself to the promotion of the strategic socio-economic objectives stipulated herein, including, but not limited to, warranties and undertakings to the effect that the Specific Goals information disclosed to the *Employer* in the bid response to the Tender Invitation	
	pursuant to which it was appointed, as supplemented subsequently in writing, is accurate andcomplete and that it shall maintain at least those levels of Specific Goals for the duration of the contract;	
	it shall only subcontract aspects of the Works to Subcontractors with which it has concluded Subcontracts and actively take steps towards achieving the *Employer*'s CPG requirements for theempowerment of Subcontractor/s	
	it shall ensure that the execution of the *Works* and the expenditure of the project costs results inthe achievement of the general socio-economic and empowerment objectives	
	it shall keep detailed records of – its equity ownership and control and, where applicable, that of its duly appointed Subcontractors and/or suppliers. a) its total spends on targeted enterprises used to fulfil its obligations in terms of the *contract*. b) any transformation programmes and/or initiatives relating to skills development and transfer, employment equity and enterprise development of the Subcontractors and Target Individuals;and c) any public benefits and/or job opportunities created according to the fulfilment of its obligationsin terms of the *contract* and provide monthly reports outlining compliance with such objectivesto the *Employer*; **Contractor Obligations**	
	in terms of which the *Contractor* unconditionally warrants and undertakes that, in its performanceof its obligations under the *Contract*, it shall, at all times, -	
	owe a duty of care to the ORTDM and comply with the reasonable directions issued to it by the *Employer*, *Employer's Agent* and/or *Employer's Agent Representative*;	
	not do anything that constitutes, or is reasonably likely to constitute, a corrupt act or that isotherwise intended or is likely to harm the reputation of the ORTDM, the Contract; and	
	Undertake the *Works* in accordance with the standards, practices, methods and procedures conforming to applicable law, and exercising that degree of skill, care, diligence, prudence and foresight that would reasonably and ordinarily be expected from a skilled and experienced personengaged in a similar type of undertaking under similar circumstances.	

FORM OF GUARANTEE

PERFORMANCE GUARANTEE

For use with the General Conditions of Contract for Construction Works, Third Edition, 2015.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

Physical address:.....

"Employer" means: …….. **O. R. TAMBO DISTRICT MUNICIPALITY** ……

"Contractor" means:.....

"Employer's Agent" means: **ZIINZAME CONSULTING ENGINEERS // LEKO ENGINEERING CONSULTANTS**

"Works" means: **DUMASI REGOIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS**

"Site" means: The Site as defined by clause 1.1.1.29 of the General Conditions of Contract, 2015.

"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: **FIXED** *(Insert Variable or Fixed)*

"Expiry Date" means: ..... *(Give date which should not be earlier than the anticipated date of issue of the Certificate of Completion)* or any other later date set by the Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of 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)

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 on which the Performance Guarantee is signed, 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

2.1 The Guarantor hereby acknowledges that:

2.1.1 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

2.1.2 Its obligation under this Performance Guarantee is restricted to the payment of money.

2.2 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:

2.2.1 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;

2.2.2 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;

2.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified 3.2.

2.3 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:

2.3.1 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

2.3.2 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

2.3.3 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.

2.4 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.

2.5 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.

2.6 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.

2.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.

2.8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may consider 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.

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

2.10 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.

2.11 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.

2.12 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 amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

SIGNED AT: .....

GUARANTOR (1)	**SIGNATURE**
DATE	**CAPACITY**
GUARANTOR (2)	**SIGNATURE**
DATE	**CAPACITY**
WITNESS (1)	**SIGNATURE**
WITNESS (2)	**SIGNATURE**

FORM C1.3 SPECIAL CONDITION

Payment for the labour-intensive component of the Works

Payment for works identified in the Scope of Work as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the Scope of Work. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.

Applicable labour laws

The Ministerial Determination, Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice N° R63 of 25 January 2002, as reproduced below, shall apply to works described in the scope of work as being labour intensive and which are undertaken by unskilled or semi-skilled workers.

1 Introduction

1.1 This document contains the standard terms and conditions for workers employed in elementary occupations on a Special Public Works Programme (SPWP). These terms and conditions do NOT apply to persons employed in the supervision and management of a SPWP.

1.2 In this document –

(a) "**Department**" means any department of the State, implementing agent or contractor;

(b) "**Employer**" means any department, implementing agency or contractor that hires workers to work in elementary occupations on a SPWP;

(c) "**Worker**" means any person working in an elementary occupation on a SPWP;

(d) "**Elementary** occupation" means any occupation involving unskilled or semi-skilled work;

(e) "**Management**" means any person employed by a department or implementing agency to administer or execute an SPWP;

(f) "**Task**" means a fixed quantity of work;

(g) "**task-based work**" means work in which a worker is paid a fixed rate for performing a task;

(h) "**task-rated worker**" means a worker paid on the basis of the number of tasks completed;

(i) "**time-rated worker**" means a worker paid on the basis of the length of time worked.

(j) **"Task rate or daily rate**" = ***As per Government Gazette***

2 Terms of Work

2.1 Workers on a SPWP are employed on a temporary basis.
2.2 A worker may NOT be employed for longer than 24 months in any five-year cycle on a SPWP.
2.3 Employment on a SPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance Act 30 of 1966.

3 Normal Hours of Work

3.1 An employer may not set tasks or hours of work that require a worker to work–

(a) More than forty hours in any week
(b) On more than five days in any week; and
(c) For more than eight hours on any day.

3.2 An employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day.

3.3 A task-rated worker may not work more than a total of 55 hours in any week to complete the tasks allocated (based on a 40-hour week) to that worker.

4 Meal Breaks

4.1 A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.

4.2 An employer and worker may agree on longer meal breaks.

4.3 A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.

4.4 A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

5 Special Conditions for Security Guards

5.1 A security guard may work up to 55 hours per week and up to eleven hours per day.

5.2 A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

6 Daily Rest Period

Every worker is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

7 Weekly Rest Period

Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

8 Work on Sundays and Public Holidays

8.1 A worker may only work on a Sunday or public holiday to perform emergency or security work.

8.2 Work on Sundays is paid at the ordinary rate of pay.

8.3 A task-rated worker who works on a public holiday must be paid –

(a) The worker's daily task rate, if the worker works for less than four hours;
(b) Double the worker's daily task rate, if the worker works for more than four hours.

8.4 A time-rated worker who works on a public holiday must be paid –

(a) The worker's daily rate of pay, if the worker works for less than four hours on the public holiday;

(b) Double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday.

9 Sick Leave

9.1 Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.

9.2 A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract.

9.3 A worker may accumulate a maximum of twelve days' sick leave in a year.

9.4 Accumulated sick-leave may not be transferred from one contract to another contract.

9.5 An employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.

9.6 An employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave.

9.7 An employer must pay a worker sick pay on the worker's usual payday.

9.8 Before paying sick-pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is –

(a) Absent from work for more than two consecutive days; or
(b) Absent from work on more than two occasions in any eight-week period.

9.9 A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.

9.10 A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

10 Maternity Leave

10.1 A worker may take up to four consecutive months' unpaid maternity leave.

10.2 A worker is not entitled to any payment or employment-related benefits during maternity leave.

10.3 A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work.

10.4 A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife, or qualified nurse certifies that she is fit to do so.

10.5 A worker may begin maternity leave –

(a) four weeks before the expected date of birth; or
(b) On an earlier date –
  (i) If a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or
  (ii) if agreed to between employer and worker; or

(c) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.

10.6 A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.

10.7 A worker who returns to work after maternity leave has the right to start a new cycle of twenty-four months employment, unless the SPWP on which she was employed has ended.

11 Family responsibility leave

11.1 Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances -

(a) When the employee's child is born;
(b) When the employee's child is sick;
(c) In the event of a death of –
  (i) The employee's spouse or life partner;
  (ii) The employee's parent, adoptive parent, grandparent, child, adopted child, grandchild, or sibling.

12 Statement of Conditions

12.1 An employer must give a worker a statement containing the following details at the start of employment –

(a) The employer's name and address and the name of the SPWP;
(b) The tasks or job that the worker is to perform; and
(c) the period for which the worker is hired or, if this is not certain, the expected duration of the contract;
(d) The worker's rate of pay and how this is to be calculated;
(e) The training that the worker will receive during the SPWP.

12.2 An employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.

12.3 An employer must supply each worker with a copy of these conditions of employment.

13 Keeping Records

13.1 Every employer must keep a written record of at least the following –

(a) The worker's name and position;
(b) In the case of a task-rated worker, the number of tasks completed by the worker;
(c) In the case of a time-rated worker, the time worked by the worker;
(d) Payments made to each worker.

13.2 The employer must keep this record for a period of at least three years after the completion of the SPWP.

14 Payment

14.1 An employer must pay all wages at least monthly in cash or by cheque or into a bank account.

14.2 A task-rated worker will only be paid for tasks that have been completed.

14.3 An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the contractor having submitted an invoice to the employer.

14.4 A time-rated worker will be paid at the end of each month.

14.5 Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

14.6 Payment in cash or by cheque must take place –
(a) At the workplace or at a place agreed to by the worker;
(b) during the worker's working hours or within fifteen minutes of the start or finish of work;
(c) In a sealed envelope which becomes the property of the worker.

14.7 An employer must give a worker the following information in writing –

(a) The period for which payment is made;
(b) The numbers of tasks completed or hours worked;
(c) The worker's earnings;
(d) Any money deducted from the payment;
(e) The actual amount paid to the worker.

14.8 If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it.

14.9 If a worker's employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment.

15 Deductions

15.1 An employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.

15.2 An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.

15.3 An employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order, or arbitration award concerned.

15.4 An employer may not require or allow a worker to –

(a) Repay any payment except an overpayment previously made by the employer by mistake;
(b) State that the worker received a greater amount of money than the employer actually paid to the worker; or
(c) Pay the employer or any other person for having been employed.

16 Health and Safety

16.1 Employers must take all reasonable steps to ensure that the working environment is healthy and safe.

16.2 A worker must –

(a) Work in a way that does not endanger his/her health and safety or that of any other person;
(b) Obey any health and safety instruction;
(c) Obey all health and safety rules of the SPWP;
(d) Use any personal protective equipment or clothing issued by the employer;
(e) Report any accident, near-miss incident, or dangerous behaviour by another person to theiremployer or manager.

17 Compensation for Injuries and Diseases

17.1 It is the responsibility of the employers (other than a contractor) to arrange for all persons employed on a SPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

17.2 A worker must report any work-related injury or occupational disease to their employer or manager.

17.3 The employer must report the accident or disease to the Compensation Commissioner.

17.4 An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

18 Termination

18.1 The employer may terminate the employment of a worker for good cause after following a fair procedure.

18.2 A worker will not receive severance pay on termination.

18.3 A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement.

18.4 A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

18.5 A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

19 Certificate of Service

19.1 On termination of employment, a worker is entitled to a certificate stating –

(a) The worker's full name;
(b) The name and address of the employer;
(c) The SPWP on which the worker worked;
(d) The work performed by the worker;
(e) Any training received by the worker as part of the SPWP;
(f) The period for which the worker worked on the SPWP;
(g) Any other information agreed on by the employer and worker

MONTHLY REPORTING

The successful bidder will be expected to assist with monthly reporting. These will include progress reports, labour reports, etc, submitted to the Project Manager on the dates to be stipulated.

FORM C1.4 HEALTH AND SAFETY AGREEMENT

HEALTH AND SAFETY SPECIFICATION

THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993
CONSTRUCTION REGULATIONS 2003

SECTION 1

1. INTRODUCTION

This document was construed in order to comply with the provisions of the **OCCUPATIONAL HEALTH AND SAFETY ACT NO 85 OF 1993, CONSTRUCTION REGULATIONS 2014 and COVID-19** Occupational Health and Safety Measures in Workplace 2020**.**

Definitions of words are those described in the Act and the Construction Regulations of 2003.

This document formulates the specification of the O. R. Tambo District Municipality in terms of the above act and forms part of the constitution of the organisation.

This document forms part of the employment contract of all employees and is as such accepted in writing by each employee. It also forms part of the agreement between the O. R. Tambo District Municipality and all service providers.

No clause in this document shall be amended in any contract document construed by agents, designers or anyone else except so ordered or sanctioned by the O. R. Tambo District Municipality in writing.

SCHEDULE

1.1 Definitions

1. In these Policy any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned and, unless the context otherwise indicates—

"Agent" means any person who acts as a representative for a client in the managing the overall construction work.

"**angle of repose**" means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on a surface, rather than sliding or crumbling away;

*"***Batch plant***" means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purposes of using the mixed product for construction work***;**

"**Client"** *means O. R. Tambo District Municipality***;**

"competent person" in relation to construction work, means any person having the knowledge, training and experience specific to the work or task being performed: Provided that where appropriate qualifications and training are registered in terms of the provisions of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995), these qualifications and training shall be deemed to be the required qualifications and training;

"Construction work" means any work in connection with—

(a) The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or 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, the making of an excavation, piling, or any similar type of work;

*"**construction vehicle**" means a vehicle used for means of conveyance for transporting persons or material or both such persons and material, as the case may be, both on and off the construction site for the purposes of performing construction work;*

*"**Contractor**" mean an employer, as defined in section 1 of the Act, who performs construction work and includes principal contractors;*

*"**Design**" in relation to any structure includes drawings, calculations, design details and specifications;*

*"**Designer**" means any person who—*

(a) prepares a design;

(b) checks and approves a design;

(c) arranges for any person at work under his control (including an employee of his, where he is the employer) to prepare a design, as well as;

(d) Architects and engineers contributing to, or having overall responsibility for the design;

(e) Build services engineers designing details for fixed plant;

(f) Surveyors specifying articles or drawing up specifications;

(g) Contractors carrying out design work as part of a design and build project;

(h) Temporary works engineer designing formwork and false work; and

(i) Interior designers, shop-fitters and landscape architects.

*"**ergonomics**" means the application of scientific information concerning humans to the design of objects, systems and the environment for human use in order to optimise human well-being and overall system performance;*

"Excavation work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

"**explosive powered tool**" means a tool that is activated by an explosive charge and that is used for driving bolts, nails and similar objects for the purpose of providing fixing**;**

"fall prevention equipment" means equipment used to prevent persons from falling from an elevated position, including personal equipment, body harness, body belts, lanyards, lifelines or physical equipment, guardrails, screens, barricades, anchorages or similar equipment;

"fall arrest equipment" means equipment used to arrest the person in a fall from an elevated position, including personal equipment, body harness, lanyards, deceleration devices, lifelines or similar equipment, but excludes body belts;

"**fall protection plan**" means a documented plan, of all risks relating to working from an elevated position, considering the nature of work undertaken, and setting out the procedures and methods to be applied in order to eliminate the risk;

"Hazard identification" means the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed;

"Health and safety file" means a file, or other record in permanent form, containing the information required as contemplated in these regulations;

"Health and safety plan" means a documented plan which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified;

"Health and safety specification" means a documented specification of all health and safety requirements pertaining to the associated works on a construction site, so as to ensure the health and safety of persons;

"material hoist" means a hoist used to lower or raise material and equipment, and includes cantilevered platform hoists, mobile hoists, friction drive hoists, scaffold hoists, rack and pinion hoists and combination hoists;

"Medical certificate of fitness" means a certificate valid for one year issued by an occupational health practitioner, issued in terms of these regulations, whom shall be registered with the Health Professions Council of South Africa;

"**Method statement**" means a written document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in any risk assessment;

"Mobile plant" *means machinery, appliances or other similar devices that is able to move independently, for the purpose of performing construction work on the construction site;*

"National Building Regulations" means the National Building Regulations made under section 17(1) of the National Building Regulations and Building Standards Act, 1977 (Act No.103 of 1977), and published under Government Notice No. R.1081 of 10 June 1988, as amended;

"Person day" means one individual carrying out construction work on a construction site for one normal working shift;

"**principal contractor**" means an employer, as defined in section 1 of the Act who performs construction work and is appointed by the client to be in overall control and management of a part of or the whole of a construction site**;**

"professional engineer or professional certificated engineer" means any person holding registration as either a Professional Engineer or Professional Certificated Engineer under the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional technologist" means any person holding registration as a Professional Technologist under the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations under the Act;

"risk assessment" means a programme to determine any risk associated with any hazard at a construction site , in order to identify the steps needed to be taken to remove, reduce or control such hazard;

"Roof apex height" means the dimensional height in metres measured from the lowest ground level abutting any part of a building to the highest point of the roof;

"SABS 085" means the South African Bureau of Standards' Code of Practice entitled "The Design, Erection, Use and Inspection of Access Scaffolding";

"SABS 0400" means the South African Bureau of Standards, Code of Practice for the application of the National Building Regulations;

"SABS EN 1808" means the South African Bureau of Standards' Standard Specification entitled: "Safety requirements on suspended access equipment – Design calculations, stability criteria, construction-tests";

"SABS 1903" means the South African Bureau of Standards' Standard Front-end Specification entitled: "Safety requirements on suspended access equipment – Design calculations, stability criteria, construction-tests";

"Scaffold" means any temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"shoring" means a structure such as a hydraulic, mechanical or timber/steel shoring system that supports the sides of an excavation and which is intended to prevent the cave-in or the collapse of the sides of an excavation, and "shoring system" has a corresponding meaning;

"Structure" means—

(a) any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, batching plants, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;

(b) any formwork, false work, scaffold or other structure designed or used to provide support or means of access during construction work; or

(c) any fixed plant in respect of work which includes the installation, commissioning, decommissioning or dismantling and where any such work involves a risk of a person falling two metres or more;

"Suspended platform" means a working platform suspended from supports by means of one or more separate ropes from each support;

"The Act" means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

"Tunnelling" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral

HEALTH AND SAFETY SPECIFICATION

THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993
CONSTRUCTION REGULATIONS 2003

SECTION 2: DESIGNERS

1. All wording shall have the meaning as defined by the H&S Regulations 2003.

2. This specification is in terms of the H&S act 1993 and the regulations of 2003.

3. All work performed and procedures followed by designers shall be done according to the H&S regulations of 2003.

4. The client is aware of the fact that the appointment of a designer does not implicate that the designer becomes the agent of the client for the particular project. The appointment of an agent is done separately in writing and should be accepted by the designer as such.

5. The client is ultimately responsible for all safety issues regarding the project for which a designer is appointed and cannot contract out of his obligations in terms of the law.

6. The client shall not employ a designer should he have reasonable doubts that the designer is not able to execute work in a safe manner.

7. All designers shall have adequate insurance cover to indemnify the client for their acts and omissions in terms of professional conduct the H&S act in particular to indemnify the client against penalties imposed for acts or omissions. The client is aware of the fact that additional insurance over and above PI insurance is necessary to have himself indemnified by the designers for acts and omissions in terms of the H&S regulations. The professional indemnity insurance has a "negligent acts and omissions" wording only and therefore additional insurance is necessary to cover the client against penalties imposed in terms of the regulations.

8. Designers shall not accept work from the client if they are not capable of executing such work professionally and if such work cannot be executed in a safe manner, according to the provisions of the H&S regulations.

9. Designers shall execute all designs in terms of the relevant SABS and other acceptable codes and procedures and shall place great emphasis on safety issues including the maintenance procedures after inaugurations of such systems or projects.

10. Ergonomic parameters shall have high priority in all designs.

HEALTH AND SAFETY SPECIFICATION

THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993
CONSTRUCTION REGULATIONS 2003

SECTION 3: PRINCIPAL CONTRACTORS (P C)

1. All work by the P C shall be done in compliance with the provisions of the H&S regulations.
2. The Employer recognises the right of each employee to work safely in a healthy environment under decent human conditions. Each employee has the right to return home safely and healthy to his home and family after each day's work.
3. Work shall not be done at the expense of human safety or health.
4. Work shall be executed under humane conditions, especially with reference to hours and H&S issues in mind.
5. The P C shall appoint a fulltime H&S Manager should he have more than 50 employees on site.
6. The PC shall conduct monthly safety meetings on site. All foremen, gang leaders and other employees shall participate and all incidents with relation to unsafe practices shall be discussed. Minutes of such meetings shall be kept in the H&S file.
7. Foremen and gang leaders shall, under the supervision of the H&S manager, conduct meetings with all staff and people under their direct supervision on a frequent basis. Minutes of such meetings shall be kept in the H&S file.
8. New personnel (temporary or full time employees) shall attend safety induction courses under the supervision of the H&S manager.
9. The P C shall install and maintain a box in which proposals for improvement of H&S procedures could be placed. All such proposals shall be considered, recorded and placed in the H&S file.
10. An adequate first aid facility shall be placed maintained on site and shall be adequately indicated by means of signs. All personnel shall be made aware of its existence and only trained first aid assistants shall be authorized to treat injuries.
11. The P C shall see that work is only executed by people trained for the particular task.
12. All safety equipment shall be SABS approved and under no circumstance shall any safety equipment be non-certified homemade equipment. Specifications and order details shall be kept in the H&S file.
13. Workers and personnel shall be attending safety courses on a regular basis and all information regarding such training shall be kept in the H&S file.
14. All employees shall be trained in safe working procedures and shall be trained on safety consciousness in particular. Employees in position of leadership shall be trained through accredited training processes in H&S matters.
15. The contractor shall prepare and maintain a safety plan for the particular project and shall train his personnel to work according to such plan.
16. Personnel and workers will be made aware of any natural hazards existing on site. They will also be made aware of items defined by the designer in his risk assessment.
17. No horseplay between employees will be tolerated on site. Neither will aggressive or threatening behaviour by anybody be allowed.
18. Workers shall wear appropriate protective clothing for the applicable task which shall include special safety equipment like protective eyewear, gloves, boots, ear protection, etc. Workers shall be issued with these items and copy of such issuing shall be kept in the H&S file.
19. Workers shall not be allowed to wear loose clothes and footwear.
20. Workers shall have the opportunity and right to prescribed rest, eating and toilet breaks.
21. Workers on nightshift shall be protected against inclement weather and shall have access to adequate food and drinks.

22. In cases where work is executed in remote or in security restricted areas, the P C will make provision for food to be supplied to his employees.

23. Potable water shall be made available free of charge to all workers on site.

24. Adequate toilet and washing facilities shall be made available to workers.

25. In the event of chemicals being present or used on site, the P C will allow for adequate shower facilities on site. All chemicals shall be stored according to specification and shall be clearly identified and marked in prescribed containers.

26. Workers under instruction to execute inherently unsafe procedures shall report such incidences to the H&S manager, designer of client immediately.

27. Unauthorised or unlawful instructions from foremen, gang leaders or colleagues shall be reported by the H&S manager immediately.

28. The P C shall stop his contractors if they work unsafely.

29. All specialist work shall be executed by registered artisans only.

30. Workers shall not be required to lift equipment or material heavier than 25kg or carry a load of more than 50 kg for more than 10 metres.

31. Workers shall not be exposed to conditions of heat where the temperature is above 40° Celsius and the humidity more than 75%. Likewise will personnel not be exposed to temperatures lower than –5° Celsius? Should the designer and the P C decide that the work is urgent; workers will be issued with proper protective clothing.

32. All workers shall have access to a shaded eating and resting place on site.

33. Workers executing tasks in rivers, trenches and other natural or artificial water ways shall be made aware of the hazard of flash floods and special precautions shall be made by the P C to implement an effective flood warning system.

34. Workers executing tasks in manholes for sewer or stormwater systems, shall be made aware of the existence of hazardous gasses in closed areas and shall be issued with gas masks in any event, even after tests conducted by the H&S manager has proven that no gasses are existent. Only specialists shall work in gas filled chambers.

35. Personnel executing work during rainy weather or under other wet conditions shall be equipped with proper gumboots and proper rain suits.

36. No personnel will be allowed to work in water unless gumboots are worn. Should the water be deeper than 300mm watertight suits shall be worn.

37. All ladders shall be fixed against scaffolding or other permanent structures.

38. Welding on site shall only be done by trained personnel behind adequate eye protecting shields and all welders shall wear proper protective gear.

39. Personnel operating grinders, saws or any other hand tools of similar description shall be equipped with the necessary eyewear and ear protection.

40. All personnel working under potentially dusty conditions shall wear nose and mouth filters.

41. Workers operating rock drilling equipment shall wear ear, nose and eye protection.

42. All scaffolding will comply with the H&S regulations.

43. Blasting will be done by specialists under the regulations of the Explosives Act.

44. Workers shall wear protective clothing when exposed to chemicals like cement, lime, detergents, tar, fumes, etc. Should work be executed in the presence of such material, adequate protective clothing and equipment shall be issued after permission is granted by the H&S manager.

45. Workers will not be allowed to make open fires on any part of the site unless it is made in designated areas approved by the H&S manager.

46. Fuel storage will only be allowed on certified areas on site.

47. Workers and other personnel will be trained for fire procedures and will practise such fire drill on a regular basis.

48. Assembly areas for emergency evacuations will be indicated by adequate signage.

49. The P C will have an attendance register for the purposes of identifying people before, during and after potential hazardous situations.

50. All transport supplied by the P C shall be on road worthy vehicles only and all transport shall be conducted in terms of the transport act.

51. Drivers of vehicles shall be responsible for the roadworthiness of vehicles and will report any dysfunctional vehicles to the P C.

52. All drivers will be responsible to handle vehicles in such a way to comply with the transport act.

53. Passengers of vehicles shall report any unsafe conduct to the P C immediately. Such report shall be forwarded to the H&S manager and shall be investigated. Copy of such procedure shall be entered into the H&S file.

54. Only trained personnel shall be permitted and required to operate construction machinery. All such machinery shall be maintained in a safe working condition.

55. All vehicles operating on site shall have audible warning signals if driven backwards.

56. No vehicle shall be kept on site if it is leaking oil or other substances.

57. No vehicle or equipment shall be operated on site if it produces noise above 90 decibel measured within a distance of 10,0 m from the unit.

58. Equipment producing serious dusty conditions shall only be operated under the supervision of the P C and the H&S manager with the necessary protection to workers.

59. All excavations on site shall be adequately protected and not only indicated.

60. Exploratory excavation to reveal services shall be done in a specific way.

- All areas to be explored shall first be inspected by the landowner or local authority.
- Position of services identified shall then be verified by opening by hand, not by machine.
- Particular care shall be taken not to damage these services.
- Electrical services are inherently dangerous and shall be opened by skilled people only.
- These excavations shall not be left open without supervision. If necessary the excavation shall be backfilled temporarily with approved material until the specified modifications to the services can be made.

61. Access to excavations shall only be by means of ladders or stairs with handrails.

62. All refuse, unsafe material, potential hazardous material and rubbish shall be placed in designated areas to be removed on a regular basis.

63. Rainwater shall be contained in trenches or pipes in such a way that it will not cause contamination of material in these refuse areas.

64. All electrical sources or cables or overhead power lines should be regarded as live at all times and all workers on site shall be made aware of its existence during H&S meetings and as many times as necessary.

65. Adequate signage shall be used on site to indicate

- Non smoking areas on site
- Safety exits / Emergency exits from buildings under construction
- Stairs (temporary and permanent works)
- Toilets

- Fire fighting equipment
- Workmen busy with equipment overhead
- Fire assembly points
- Fire escapes
- Areas where members of the public are not allowed.
- First aid room

66. All visitors to the site shall be granted permission to the site only upon application through a predetermined procedure and records of these visitors shall be kept in the H&S file. Visitors shall attend safety induction training before entering the site. Areas out of bounds to all visitors shall be indicated clearly by means of adequate signs.

67. Work performed in public servitudes like the construction of streets or roads shall be done according to the specifications of the local or national authority and adequate signage shall be implemented.

68. People complaining about their health or people displaying symptoms of illness or disease, shall be allowed to go to the first aid facility or to visit a doctor or a clinic. Permission shall not be withheld unreasonably. In remote areas the P C is required to have reasonable ways of transporting people to a doctor or clinic whether the person is ill or injured on site.

69. Personnel must be informed about the location of the nearest doctor or clinic for casualty purposes and the P C shall provide such transport for injured workers and injured members of the public (within the limits of the site) free of charge.

70 A principal contractor who intends to carry out any construction work shall—

(a) before carrying out that work, notify the provincial director in writing of the construction work if it includes—

(i) The demolition of a structure exceeding a height of 3 metres; or

(ii) The use of explosives to perform construction work; or

(iii) The dismantling of fixed plant at a height greater than 3m.

(b) before carrying out that work, notify the provincial director in writing when the construction work—

(i) Exceeds 30 days or will involve more than 300 person days of construction work; and

(ii) Includes excavation work deeper than 1m; or

(iii) Includes working at a height greater than 3 metres above ground or a landing.

(2) The notification to the provincial director must be done on the form similar to Annexure A to this Policy.

(3) A principal contractor shall ensure that a copy of the completed form is kept on site for inspection by an inspector, client, client's agent or employee.

O. R. TAMBO DISTRICT MUNICIPALITY

HEALTH AND SAFETY SPECIFICATION
THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993
CONSTRUCTION REGULATIONS 2003

SECTION 4: CLIENT

(1) A client shall be responsible for the following in order to ensure compliance with the provisions of the Act:

(a) to prepare a documented health and safety specification for the construction work, and provide any principal contractor who is making a bid or appointed to perform construction work for the client with the same;

(b) To promptly provide the principal contractor and his or her agent with any information which might affect the health and safety of any person at work carrying out construction work;

(c) To appoint each principal contractor in writing for the project or part thereof on a construction site;

(d) To take reasonable steps to ensure that each principal contractor's health and safety plan is implemented and maintained on the construction site: Provided that the steps taken, shall include periodic audits at intervals mutually agreed upon between the client and principal contractor, but at least once every month;

(e) to stop any contractor from executing construction work which is not in accordance with the principal contractor's health and safety plan for the site or which poses to be a threat to thehealth and safety of persons;

(f) to ensure that where changes are brought about, sufficient health and safety information and appropriate resources are made available to the principal contractor to execute the work safely;

(g) to ensure that every principal contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to work commencing on site; and

(h) To ensure that potential principal contractors submitting tenders, have made provision for the cost of health and safety measures during the construction process.

(2) A client shall discuss and negotiate with the principal contractor the contents of the health and safety plan and thereafter finally approve the health and safety plan for implementation.

(3) A client shall ensure that a copy of the principal contractor's health and safety plan is available on request to an employee, inspector or contractor.

(4) (4) O. R. Tambo District Municipality shall not appoint a principal contractor to perform construction work, unless O. R. Tambo District Municipality is reasonably satisfied that the principal contractor that he or she intends to appoint has the necessary competencies and resources to carry out the work safely.

(5) A client may appoint an agent in writing to act as his or her representative and where such an appointment is made, the responsibilities as are imposed by these regulations upon a client, shall as far as reasonably practicable apply to the person so appointed.

(6) No client shall appoint any person as his agent, unless the client is reasonably satisfied that the person he or she intends to appoint has the necessary competencies and resources to perform the duties imposed on a client by these regulations.

ANNEXURE A

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993
Regulation 3 of the Construction Regulations, 2003

NOTIFICATION OF CONSTRUCTION WORK

1.(a) Name and postal address of principal contractor:

_____

(b) Name and tel. no of principal contractor's contact person:

_____

2. Principal contractor's compensation registration number:

_____

3.(a) Name and postal address of client:

_____

(b) Name and tel. no. of client's contact person or agent:

_____

4.(a) Name and postal address of designer(s) for the project:

_____

(b) Name and tel. no. of designer(s) contact person:

_____

5. Name and telephone number of principal contractor's construction supervisor on site appointed in termsof regulation 6.(1).

_____

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 6.(2).

_____

7. Exact physical address of the construction site or site office:

_____

8. Nature of the construction work:

_____

_____

_____

9. Expected commencement date:

_____

10. Expected completion date:

_____

11. Estimated maximum number of persons on the construction site.

_____

12. Planned number of contractors on the construction site accountable to principal contractor:

    _____

13. Name(s) of contractors already chosen.

    _____

    _____

    _____

_____ _____
Principal Contractor Date

_____ _____
Client Date

- **THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR** PRIOR TO COMMENCEMENT **OF WORK ON SITE.**
- ALL PRINCIPAL CONTRACTORS **THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.**

GUIDELINES FOR CONTRACT ADMINISTRATION

O.R. TAMBO
DISTRICT MUNICIPALITY

O. R. TAMBO DISTRICT MUNICIPALITY

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993

SECTION 1 AND 2

1. PURPOSE OF THIS DOCUMENT

This document describes the procedures to be followed in the execution of Engineering Projects for O. R. Tambo District Municipality.

The role of all parties to the development project is described.

The document is in terms of the Construction Regulation 2003 of the Health and Safety Act 1993.

2. BACKGROUND

The Minister of Labour has on 18 July 2003 under section 43 of the Occupational Health and Safety Act 1993 (Act No. 85 of 1993) published new regulations in the Government Gazette 7721, Vol. 456. They have immediate effect and are applicable to the Construction Environment.

These regulations inter alia identify the different role players and their responsibilities, particularly the role of the client, the contractor and that of the designer.

The Construction Regulations endeavour to ensure that:

i) Hazards or potential hazards to a healthy working environment are identified.

ii) These hazards or potential hazards are removed or minimised.

iii) Employers and Workers are made aware of the value of safe working procedures and train themselves to work safely in potential hazardous environments or under potentially unsafe conditions.

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993
SECTION 3

3. THE CLIENT

In terms of the law the client is ultimately responsible for all acts and omissions as far as health and safety is concerned on site. It should be noted that the client will be held legally responsible for every trespass of the regulations, not the designer or the contractor. The law makes provision for fines to be levied and unless the client has been indemnified by the designer or the contractor, such fines will have to be paid by the client.

Clients cannot contract out of their statutory obligations except where the law allows for it. Therefore any liability imposed upon them for statutory non-compliance, cannot be passed on to designers (consultants) or contractors.

In particular the client's responsibilities are defined as follows:

.1	To prepare a health and safety (H&S) specification for the work. This should cover the spectrum of activities handled by the client as part of his normal duties.	Clause 4(1)(a)
.2	To provide a risk assessment to the principal contractor.	Clause 4(1)(b)
.3	To appoint the principal contractor in writing.	Clause 4(1)(c)
.4	To ensure that the H&S plan is implemented.	Clause 4(1)(d)
.5	To stop any contractor executing work in an unsafe manner.	Clause 4(1)(e)
.6	To provide additional H&S information to the contractor should changes be made to the work?	Clause 4(1)(f)
.7	To ensure that the principal contractor is registered and in good standing with the workmen's compensation fund.	Clause 4(1)(h)
.8	To make sure tenderers have made provision in their offers for H&S measures.	Clause 4(1)(h)
.9	To discuss and approve the H&S plan with the principal contractor.	Clause 4(2)
.10	To keep a copy of the H&S plan of the principal contractor.	Clause 4(3)
.11	To not employ a contractor unless the client is reasonably satisfied that the principal contractor who is earmarked for an appointment has the necessary skills, competencies and resources to carry out the work safely.	Clause 4(4)
.12	The client can appoint an agent to handle his duties. The client can obviously also delegate some of his duties but this does not make the person responsible for such particular responsibilities as agent. The client should make sure whether such responsibilities are not already part of the designer in terms of the regulations clause 9(2).	Clause 4(5)
.13	The client shall only appoint someone as his agent if he is reasonably satisfied that such person can handle such responsibilities.	Clause 4(6)

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993

SECTION 4

4. THE DESIGNER

The regulations do not use names like engineer, architect, etc. Instead the term designer has been introduced. The responsibilities of the designer are given in a sub-paragraph under the obligations of the Principal Contractor.

4.1	The regulations has a comprehensive definition of the designer and this includes:	Definitions "designer"
a)	A person preparing a design.	Definitions "structure"
b)	A person checking a design.	
c)	A firm preparing a design.	
d)	An architect or engineer contributing to or having responsibility for a design.	
e)	A building services engineer designing details of fixed plant (scaffolding or cranes).	
f)	A surveyor specifying articles or drawing up specification (Quantity Surveyor).	
g)	A contractor in design & build contract.	
h)	A contractor designing temporary work.	
i)	A interior designer, shop fitter and landscape architect.	
	The regulation also talks of "an engineer designing a structure". "Structure" is a wide concept and is given in paragraph 3.2.5.1(a) underneath.	
4.2	The designer does not automatically through an appointment become the agent of the client in terms of the regulations unless he is appointed in writing to that effect and he accepts such appointment in writing.	Clause 4(5)
4.3	The SAACE model agreement between the client and Engineer has a different meaning of the word "agent". According to the model agreement of SAACE the Engineer acts as the "agent" of the client in a conventional contractual context. "Agent" in terms of the Health & Safety regulations has a totally different meaning.	
4.4	It can be derived from the regulations that the client can appoint a designer to perform certain tasks of the client on his behalf. This still does not mean that these designers become his agent in terms of clause 4(5).	Clause 4(5)
4.5	The regulations are fairly quiet regarding the functions and responsibilities of the designer except when designing of a structure. It is again assumed that the client will identify certain functions to be done by the designer on his behalf.	

4.5.1	"Structure" in terms of the regulations means:	Definitions
(a)	• any building • steel or reinforced concrete structure • railway line • railway siding • bridge • waterworks • reservoir • pipe or pipeline • cable • sewer • sewage works • fixed vessels • road • drainage works • earthworks • dam • wall • mast • tower • tower crane • batching plants • pylon • surface and underground tanks • earth retaining structure or any structure designed to preserve or alter any natural feature and any other similar structure.	
(b)	Any formwork, false work, scaffold or other structure designed or used to provide support or access during construction (structural engineering sector).	
(c)	Fixed plant to prevent people from falling 2 meters or more.	
4.5.2	The designer is in fact regarded as a person delivering designs only and unless his role is defined by the client, his role is quite limited.	Clause 9(2)
4.5.3	The designer should inform the client and the principal contractor about anticipated dangers relating to the construction work. <u>This is in fact a Risk Assessment.</u>	Clause 9(2)(b)
4.5.4	The designer (in the structural engineering context) shall further furnish to the contractor in writing:	Clause 9(2)
i)	A geo-technical report.	
ii)	The loading of the structure.	
iii)	The method and sequence of the construction process.	
iv)	He should exclude inherently dangerous methods of construction in his design.	
v)	The maintenance of the structure shall be through safe procedures.	
vi)	He should carry out inspections.	
vii)	And stop the contractor from executing work dangerously.	
viii)	A final inspection is necessary to ensure safety of the structure.	
ix)	Great emphasis should be given to the ergonomic design of the structure.	
x)	The engineer should also give input in the design of temporary work e.g. scaffolding.	Clause 10(c)

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993

SECTION 5

5. THE PRINCIPAL CONTRACTOR (P C) AND CONTRACTOR

The responsibilities of these parties are comprehensively stipulated in the regulations.

5.1	In general it can be seen that the responsibilities of the PC (Principal Contractor) towards his contractors is Mutatis Mutandis to the responsibilities of the Client towards the PC.	
5.2	The PC is responsible for the collecting of these contractors' safety plans and to hold them to it.	Clause 5(1) and (2)
i)	He should also stop his contractors should they work unsafely.	Clause 5(3)(d)
ii)	He should appoint safety officers should the size of the work warrant it.	Clause 6(6)
iii)	He should cause a risk assessment to be executed by a competent person.	Clause 7(1)
iv)	Visitors to his site should undergo induction pertaining to H&S issues.	Clause 7(8)
v)	He shall see to his employees induction and H&S training.	Clause 7(7)
vi)	The employees of the PC and his contractors shall wear visible proof of their induction training.	Clause 7(9)(a)
5.3	The regulations also covers the detail of:	
	• Fall protection	Clause 8
	• Structures (under this heading the responsibilities of the designer of a structure is found)	Clause 9
	• Formwork and support work	Clause 10
	• Excavation work	Clause 11
	• Demolition work	Clause 12
	• Tunnelling	Clause 13
	• Scaffolding	Clause 14
	• Suspended platforms	Clause 15
	• Boatswain's chairs	Clause 16
	• Material hoists	Clause 17
	• Batch plants	Clause 18
	• Explosive powered tools	Clause 19
	• Cranes	Clause 20
	• Construction vehicles and mobile plant	Clause 21
	• Electrical installation and machinery on construction sites	
	• Use and storage of flammable liquids on construction sites	
	• Water environment	Clause 22
	• Housekeeping on construction sites	Clause 23
	• Stacking and storage on construction sites	Clause 24
	• Fire precautions on construction sites	Clause 25
	• Construction welfare facilities	Clause 26
		Clause 27

GUIDELINES FOR CONTRACT ADMINISTRATION
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HEALTH & SAFETY ACT 1993

SECTION 6

6. APPOINTMENT OF THE DESIGNER

Clause 4(5)

6.1 The client appoints the consultant or designer as agent only for the particular project and also for the duration of the project.

6.2 It is further important to distinguish between "agent" in terms of the SAACE model agreement between client and engineer and "agent" in terms of the H&S regulations.

6.3 The responsibilities and duties of a designer in the H&S context are those that are dictated by law and/or those respectively given to him by the client, except when he is a structural engineer and designs a "structure" in which case clause 9(2) applies automatically.

6.4 The client should only add to the responsibilities of the designer those which is not automatically in his hand in terms of clause 9(1) of the regulations.

6.5 The following duties are not regarded as normal work of the designer of a "structure" and will therefore require an additional appointment.

.1	To ensure the H&S plan of the PC is implemented on site.	Clause 4(1)(d)
.2	To ensure that changes to the design are also incorporated in the H&S plan.	Clause 4(1)(e)
.3	To ensure that the principal contractor is registered and in good standing with the workmens' compensation fund.	Clause 4(1)(f)
.4	To see that the contractor registers the site as a construction site at the Department of Labour.	Clause 4(1)(g)
.5	To discuss with the contractor the H&S plan and then recommend to the client the approval thereof.	Clause 4(2)
.6	To keep a copy of the H&S plan of the contractor in his possession and see that a copy is forwarded to the client.	Clause 4(4)
.7	Control the following on site:	
	a) To see that the principal contractor keeps the H&S file up to date and that it is given to the client upon completion of the contract.	Clause 5(7)
	b) To see that the principal contractor keeps a data base of all contractors involved with the project.	Clause 5(9)
	c) To see that the principal contractor appoints one or more construction supervisors.	
	d) To see that this person is dedicated to the particular project only.	Clause 6(4)
	e) To receive from the contractor his risk assessment and keep a copy of that for his and the clients records.	Clause 7(1)

GUIDELINES FOR CONTRACT ADMINISTRATION
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SECTION 7

7. THE ROLE OF THE CLIENT

7.1	The client shall still prepare the H&S specification in terms of clause 4(1)(a) for its global activities. The H&S specification for the particular project is assigned to the designer.	Clause 4(1)(a)
7.2	The client shall approve of the H&S plan of the contractor, but on the recommendation of the consultant/ designer.	Clause 4(2)
7.3	The client employs the Principal Contractor.	Clause 4(1)(c)
7.4	The client can appoint an agent in which case all the responsibilities of the agent in the regulations are transferred to the agent.	Clause 4(5)
7.5	The client should only appoint an agent should he have made reasonably sure that the agent can handle the responsibility.	Clause 4(6)
7.6	The client shall not appoint a contractor if he is not reasonably sure that the contractor can execute such work in a safe manner.	Clause 4(4)

GUIDELINES FOR CONTRACT ADMINISTRATION
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SECTION 8

8. THE ROLE OF THE PRINCIPAL CONTRACTOR

The principal contractor should execute the following duties:

.1	Provide a health and safety plan.	5(1)
.2	See that his contractors comply with the regulations.	5(2)
.3	He should discuss the particular H&S plan.	5(5)
.4	He should have his H&S plan available.	5(6)
.5	He should have an H&S file available on site and hand it over to the client upon completion.	5(7)
.6	He should not employ contractors who are not capable.	5(10)
.7	He should have full time supervision on site.	6(1) to 6(8)
.8	He should produce a risk assessment of the work.	7(1)
.9	He should train his employees.	7(4)
.10	He should introduce induction training on site.	7(7)/ 7(8)
.11	All physical aspects of the regulations as in terms of the regulations.	

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
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SECTION 9

9. THE PROCEDURE

9.1	The Client decides to execute work and appoints a designer to administer the work.	
9.2	The scope of works and the exact duties of the designer are identified and given to him in writing. The designer should affect insurance by which the client is indemnified (by the designer) for acts and omissions of the designer. This type of insurance does not form part of the normal PI insurance provided by the designer. The designer prepares a contract document and ensures that this document states clearly the following:	
.1	A risk assessment of the project and the H&S specification of the client.	
.2	All relevant information to enable the pricing of the contract.	9(2)(a)
.3	Items in the bill to enable the tenderer to price for the risk including insurance indemnifying the client. The document should state whether a full time safety officer is required on site.	9(2)(b)
.4	(i) Geotechnical information (ii) Loading of the structure – in other words all relevant technical data taking the definition of "structure" into account. (iii) The method and sequence of the process. This should identify the priorities of the client.	9(2)(c)(i) to (iii)
.5	Inherently dangerous procedures should be avoided in the design.	9(2)(d)
.6	The maintenance of the structure should be considered also so that this aspect would be safe and ergonomic too.	9(2)(e)
9.3	The tenderers then respond by each giving a H&S plan based on the risk assessment of the designer.	
9.4	The client then chooses the contractor according to his procurement policy (taking into account his ability to do the work safely) and appoints him in writing via the designer.	
9.5	The chosen principal contractor then affects a detailed risk assessment and a risk management plan, based on the H&S specification.	

9.7	Once on site the principal contractor should register the site by means of the prescribed form and have it approved by the client/designer.	
9.8	He should open and then maintain his H&S file through the duration of the contract.	
9.9	He should then further adhere to the provisions of the H&S regulations.	
9.10	He should hand over the H&S file (recommend to do that with the designer's as-built drawings).	
9.11	The designer should stop the work if he has reason to belief that the contractor is executing work in an unsafe manner.	
9.12	Likewise should the principal contractor stop the work of his contractor(s) should he have reason to belief that such contractor is not working safely.	

O. R. TAMBO DISTRICT MUNICIPALITY

GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993

SECTION 10

10. CONTRACT DOCUMENTATION

The contract documentation needs to emphasize the following points in order to comply with the Health and Safety Act 1993 and the Construction Regulations 2003.

A. In the Specification section

1. Health and Safety Specification

The Client shall issue the Designer with his Health and Safety specification and it shall be included as such in the document.

Should the Designer be of the opinion that variations and additions be made to the specification, due to the nature of the particular project, he shall forward the proposed variation or addition to the NDM who will authorize this in writing.

2. Risk Assessment

This can form part of the contract specifications.

It is necessary to identify to the contractor:

i) The situation on site as it is with all the potential hazards and dangers involved.

ii) The nature of the work and the situations that the average contractor would encounter during the execution of the work. The nature of the work and the expected risks should be described in particular as well as the method and the sequence of the work.

iii) The basic safety precautions that he should take.

iv) The Safety and Health specification of the client.

v) To allow sufficient items in the bill of quantities for the tenderer to price for the specified H&S precautions.

3. Insurance

The contractor shall affect insurance indemnifying the client against penalties levied upon the client due to the acts or omissions of the contractor in failing to comply with the provisions of the H&S regulations 2003.

The contractor shall prove to the Engineer that such insurance has been affected and maintained during the construction.

B. The Tender Rules

The tender rules shall contain a clause requiring the contractor to submit a H&S plan based on the risk assessment given in the contract document. It should also state that the client is bound by law not to appoint a contractor should he be reasonably sure that the contractor would not be able to execute the work safely should he be appointed.

The following example is recommended.

Compliance with the Regulations of the H&S Act 2003

Tenderers are required to study the published risk assessment and provide Annexure Y his Health and Safety Plan. Generic document will be disregarded. Such H&S plan should give details regarding the tenderers intention of dealing with the risks.

Failure to submit such H&S plan will result in disqualification of the tender.

Tenderers are informed that the client is bound by law not to accept a tender should he be reasonable sure that the tenderer will not be able to execute the work safely.

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GUIDELINES FOR CONTRACT ADMINISTRATION
IN TERMS OF THE CONSTRUCTION REGULATIONS 2003
HEALTH & SAFETY ACT 1993

SECTION 11

11. CONCLUSION

The Construction Regulations 2003 was long overdue in the South African Civil Engineering Construction Industry. Role players will now be forced to implement them and an awareness of safe working environments will be cultivated.

Clients might initially detect a contemptuous attitude particularly from contractors and even designers or consultants. This should not deter clients since acts and omissions from these parties will bring clients in confrontation with the law.

Contract cost will certainly escalate due to the additional specifications but this should be weighed against the value of human lives improved and saved.

The construction industry, particularly the Civil Engineering Sector, will have to accept and embrace these regulations and then seriously look at its productivity to kerb the cost of the implementation process.

1.0 SCOPE

This part of the specification has the objective to assist principal contractors entering into contracts with The Employer that they comply with the Occupational Health and Safety (OH&S) Act, No 85 of 1993.Compliance with this document does not absolve the principal contractor from complying with minimum legal requirements, and the principal contractor remains responsible for the health and safety of his employees and those of his Mandataries. Principal and other contractors should therefore insist that this part of the specification from part of any contract that he may have with other contractors and/or suppliers.

This section covers the development of a health and safety specification that addresses all aspects of occupational health and safety as affected by this contract. It provides the requirements that the principal contractors and other contractors shall comply with in order to reduce the risks associated with this contract that may lead to incidents causing injury and/or ill health.

2.0 GENERAL OCCUPATIONAL HEALTH AND SAFETY PROVISIONS

2.1 Hazard Identification and Risk Assessment (Construction Regulation 7)

2.1.1 Risk Assessments

Paragraph 4 contains a generic list of risk assessment headings that have been identified by The Employer as possibly applicable to this contract. It is, by no means, exhaustive and is offered as assistance to contractors intending to bid.

2.1.2 Development of Risk Assessment

Every principal contractor performing construction work shall, before the commencement of any construction work or work associated with the aforesaid construction work and during such work, cause a risk assessment to be performed by a competent person, appointed in writing, and the risk assessment shall form part of the OH&S plan and be implemented and maintained as contemplated in Construction Regulation 5(1).

The risk assessment shall include at least:

- *the identification of the risks and hazards to which persons may be exposed*
- *the analysis and evaluation of the risks and hazards identifies*
- *a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified.*
- *a monitoring plan and*
- *a review plan*

Based on the risk assessment, the principal contractor shall develop set site-specific OH&S rules that shall be applied to regulate the OH&S aspects of the construction. The risk assessment, together with the site-specific OH&S rules shall be submitted to The Employer before construction on site commences.

Despite the risk assessment listed in paragraph4, the principal contractor shall conduct a baseline risk assessment and the aforesaid listed risk assessment shall be incorporated into the baseline risk assessment. The baseline assessment shall further include the standard working procedures and the applicable method statements based on the risk assessments.

All variations to the scope of work shall similarly be subjected to a risk assessment process.

2.1.3 Review of Risk Assessment

The principal contractor shall review the hazard identification, risk assessments and standard working procedures at each production planning and progress report meetings as the contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes. The principal contractor shall provide The Employer, other contractors and all other concerned parties with copies of any changes, alterations oramendments as contemplated in paragraph 2.1.3.

2.2 Legal Requirements

A principal contractor shall, as minimum, comply with:

The Occupational Health and Safety Act and Regulations (Act 85 of 1993), an up to date copy of which shall be available on site at all times.

The Compensation or Occupational Injuries and Diseases Act (Act 130 of 1993), an up to date copy of which shall be available on site at all times.

Where work is being carried out on a "mine", the contractor shall comply with the Mines Health and Safety Act and Regulations (Act 29 of 1960) and any other OH&S requirements that the mine may specify. An up-to-date copy ofthe Mine's Health and Safety Act and Regulations shall be available on site at all times.

2.3 Structure and Responsibilities

It is a requirement that the principal contractor, when he appoints contractors (Sub-contractors) in terms of Construction Regulations 5(3), 5(5), 5(10), and 5(12) includes in his agreement with such contractors the following:

- *OH& S Act (85 of 1993), Section 37(2) agreement: "Agreement with Mandatory"*
- *OH&S Act (85 of 1993), Section 16(2) appointee/s as detailed in his / her/ their respective appointment forms.*

2.2.3 Further (Specific) Supervision Responsibilities for OH & S

The contractor shall appoint designated competent employees and/or other competent persons as required by the Act and Regulations. Below is a generic list of identified appointments and may be used to select the appropriate appointments for this contract. The contractor shall note it is a generic list only and is intended for use as a guideline.

Ref. Section/ Regulation in OHS Act	
Batch Plant Supervisor	*(Construction Regulation 6(1)*
Construction Vehicles/ Mobile Plant/ Machinery Supervisor	*(Construction Regulation 21)*
Demolition Supervisor	*(Construction Regulation 12)*
Drivers/Operators of Construction Vehicles/ Plant	*(Construction Regulation 21)*
Electrical Installation and Appliances Inspector	*(Construction Regulation 22)*
Emergency/Security/Fire Control	*(Construction Regulation 27)*
Excavation Supervisor	*(Construction Regulation 11)*
Explosive powered Tool Supervisor	*(Construction Regulation 19)*
Fall Protection Supervisor	*(Construction Regulation 8)*
First Aider	*(Construction Regulation 3)*
Fire Equipment Inspector	*(Construction Regulation 27)*
Formwork & Support work Supervisor	*(Construction Regulation 10)*
Hazardous Chemical Substances Supervisor	*(HCS Regulations)*
Incident Investigator	*(General Admin Regulation 29)*
Ladder Inspector	*(General Safety Regulation 13A)*
Lifting Equipment Inspector	*(Construction Regulation 20)*
Material Hoist Inspector	*(Construction Regulation 17)*
OH&S Committee	*(OH&S Section 19)*
OH&S Officer	*(Construction Regulation 6(6)*
OH&S Representatives	*(OHS Act Section 17)*
Person Responsible for Machinery	*(General Machinery Regulation 2)*
Scaffolding Supervisor	*(Construction Regulation 14)*
Stacking & Storage Supervisor	*(Construction Regulation 26)*
Structures Supervisor	*(Construction Regulation 9)*
Suspended Platform Supervisor	*(Construction Regulation 15)*
Tunneling under Pressure Supervisor	*(Construction Regulation 13)*
Vessel under Pressure Supervisor	*(Vessel under Pressure Regulations)*
Working on/next to Water Supervisor	*(Construction Regulation 24)*
Welding Supervisor	*(General Safety Regulation 9)*

In addition, The Employer requires that a Traffic Safety Officer be appointed (see COLTO Section 1500). The above appointments shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made. This information shall be communicated and agreed with the appointees. Notice of appointments shall be submitted to The Employer. All changes shall also be communicated to the Employer.

The principal contractor or shall, furthermore, provide The Employer with an organogram of all contractors that he/she has appointed or intends to appoint and keep this list updated and prominently displayed on site.
Where necessary, or when instructed by an inspector of the Department of Labour, the principal contractor shall appoint a component safety officer.

2.3.3 Designation of OH&S Representatives (Section 17 of the OH&S Act)

Where the principal contractor employs more than 20 persons (including the employees of other contractors (sub-contractors) he has to appoint one OH&S representatives for every 5 employees or part thereof. General Administrative Regulation 6 requires that the appointment or election and subsequent designation of the OH&S representatives be conducted in consultation with employee representatives or employees. (Section 17 of the Act and General Administrative Regulation 6 & 7). OH&S representatives shall be designated in writing and the designation shall include the area of responsibility of the person and term of the designation.

2.3.4 Duties and Functions of the OH&S representatives (Section 18 of the OH&S Act)

The principal contractor shall ensure that the designated OH&S representatives conduct continuous monitoring and regular inspections of their respective areas of responsibility using a checklist and report thereon to the principal contractor. OH&S representatives shall be included in accident or incident investigations. OH&S representatives shall attend all OH&S committee meetings.

2.3.5 Appointment: of OH&S Committee (Section 19 and 20 of the OH&S Act)

The principal contractor shall establish an OH&S committee, which shall meet as specified in the Regulations.

2.4 *Administrative Controls and the Occupational Health & Safety File*

2.4.1 *The OH&S File (Construction Regulation 5(7)*

As required by the Construction Regulation 5(7), the principal contractor and other contractors shall each keep an OH&S file on site. The following list is not exhaustive and shall only be used as a guide:

- *Notification of construction work (Construction Regulation 3)*
- *Latest copy of OH&S Act (General Administrative Regulation 4)*
- *Proof of registration and good standing with COID Insurer (Construction Regulation 4(g)*
- *OH&S plan agreed with the client including the underpinning risk assessment/s and method statements(Construction Regulation 5(1)*
- *Copies of OH&S committee and other relevant minutes*
- *Designs/Drawings (Construction Regulation 5(8)*
- *A list of contractors (sub-contractors) including copies of the agreements between the parties and the type of work being done by each contractor (Construction Regulation 9)*
- *Appointment/designation forms as per paragraphs 2.1.1 and 2.1.2*
- *Registered as follows:*
  - *Accident/incident register (Annexure 1 of the General Administrative Regulations)*
  - *OH&S representatives' inspection register*
  - *Asbestos demolition and stripping register*
  - *Batch plant inspections*
  - *Construction vehicles and mobile plant inspections by controller*
  - *Daily inspection of vehicles, plant and other equipment by the operator/driver/user*
  - *Demolition inspection register*
  - *Designer's inspection of structures record*
  - *Electrical installations, equipment and appliances including portable electrical tools)*
  - *Excavations inspector*
  - *Explosive powered tool inspection, maintenance, issue and returns register (incl. Cartridges and nails*
  - *Fall protection inspection register*
  - *First aid box contents*
  - *Fine equipment inspection and maintenance*
  - *Formwork and support work inspections*
  - *Hazardous chemical substances record*
  - *Ladder inspections*
  - *Lifting equipment register*
  - *Materials hoist inspection register*
  - *Machinery safety inspection register (incl. Machine guards, lock-outs etc.)*
  - *Scaffolding inspections*
  - *Stacking and storage inspection*
  - *Inspection of structures*
  - *Inspection of suspended platforms*
  - *Inspection of tunnelling operations*
  - *Inspection of vessels under pressure*
  - *Welding equipment inspections*
  - *Inspection of work conducted near water*
  - *All other applicable records including traffic safety officer reports.*

The Employer will conduct an audit on the OH&S file of the principal constructor from time-to time.

2.5 Notification of Construction Work (Construction Regulation 3)

The principal constructor shall, where the contract meets the requirements laid down in Construction work and use the form (Annexure A in the Construction Regulations) for the purpose. A copy shall be kept on the OH&S file and a copy shall be forwarded to The Employer for record keeping purposes.

2.6 Training and Competence

The contents of all training required by the Act and Regulations shall be included in the principal contractor's OH&S plan. The principal contractor shall be responsible for ensuring that all relevant training is undertaken.

Only accredited service providers shall be used for OH&S training. The principal contractor shall ensure that his and other contractor's personnel appointed are competent and that all training required to do the work safely and without risk to health, has been completed before work commences. The principal contractor shall ensure that follow-up and refresher training is conducted as the contract progresses and the work situation changes. Records of all training must be kept on the OH&D file for auditing purposes.

2.7 Consultations, Communication and Liaison

OH&S liaison between the client, the principal contractor, the other contractors, the designer and other concerned parties will be through the OH&S committee as contemplated in paragraph 2.3.5.In addition to the above, communication may be directly to the client or his appointed agent, verbally or in writing, as and when the need arises.

Consultation with the workforce on OH&S matters will be through their supervisions, OH&S representatives and the OH&S committee. The principal contractor shall be responsible for the dissemination of all relevant OH&S information to the other contractors e.g. design changes agreed with the client and the designer, instructions by the client and/or/his/her agent, exchange of information between contractors, the reporting of hazardous/dangerous conditions/situations etc. The principal contractor's most senior manager on site shall be required to attend all OH&S meetings.

2.8 Checking Reporting and Corrective Actions

2.8.1 Monthly Audit by Client (Construction Regulation 4(1) (d)

The Employer will conduct monthly audits to comply with Construction Regulation 4(1)(d) to ensure that the principal contractor has implemented and is maintaining the agreed and approved OH&S plan.

2.8.2 Other Audits and Inspections by The Employer

The Employer reserves the right to conduct other hoc audits and inspections as deemed necessary. This will include site safety walks.

2.8.3 Contractor's Audits and Inspections

The principal contractor is to conduct his own monthly internal audits to verify compliances with his own OH&S management system as well as this specification.

2.8.4 Inspections by OH&S Representatives and other Appointees

OH&S representatives shall conduct weekly inspections of their areas of responsibility and report thereon to their foreman or supervisor whilst other appointees shall conduct inspections and report thereon as specified in their appointments e.g. vehicle and machinery drivers, operators and users must conduct daily inspections before start-up.

2.8.5 Recording and Review of Inspection Results

All the results of the above mentioned inspections shall be in writing at OH&S committee meetings, endorsed by the chairman of the meeting and placed on the OH&S File.

2.9 Accidents and Incident Investigation (General Administrative Regulation 9)

The principal contractor shall be responsible for the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to be referred for medical treatment by a doctor, hospital or clinic. The results of the investigations shall be entered into an accident/incident register listed in paragraph2.4.1

The principal contractor shall be responsible for the investigation of all minor and non-injury incidents as described in Section24 (1) (b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.

2.10 Reporting

The principal contractor shall provide the Employer with copies of all statutory reports required in terms of the Act within 7 days of the incident occurring.

3.0 OPERATIONAL CONTROL

3.1 Operational Procedures

Each construction activity shall be assessed by the principal contractor so as to identify operational procedures that will mitigate against the occurrence of an incident during the execution of each activity. This specification requires the principal contractor:

- *to be conversant with Regulations 8 to 29 (inclusive)*
- *to comply with their provisions*
- *to include them in his OH&S plan where relevant*

3.2 Emergency Procedure

Simultaneous with the identification of operational procedures (per paragraph 3.1 above), the principal contractor shall similarly identify and formulate emergency procedures in the event an incident does occur. The emergency procedures thus identified shall also be included in the principal contractor's OH&S plan.

3.3 Personal & Other Protective Equipment (Section 8/ 15/ 23 of the OH&S Act)

The contractor shall identify the hazards in the workplace and deal with them. He must either remove them or, where impracticable, take steps to protect workers and make it possible for them to work safely and without risk to health under the hazardous conditions.

Personal protective equipment (PPE) should, however, be the last resort and there should always first be an attempt to apply engineering and other solutions to mitigating hazardous situations before the issuing of PPE is considered.

Where it is not possible to create an absolutely safe and healthy workplace the contractor shall inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the contractor maintain the said equipment, that he instructs and trains the employeesin the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse to use/wear the equipment prescribed by the employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition/s for which the equipment was prescribed but an alternative solution has to be found that may include relocating or discharging the employee.

The principal contractor shall include in his OH&S plan the PPE he intends issuing to his employees for use during construction and the sanctions he intends to apply in cases of non-conformance by his employees. Conformance to the wearing of PPE shall be discussed at the weekly inspection meetings.

3.4 Other Regulations

Wherever in the Construction Regulations or this specification there is reference to other regulations (e.g. Construction Regulation 22: Electrical and Machinery on Construction Sites) the principal contractor shall be conversant with and shall comply with these regulations.

3.5 Public Health and Safety (Section 9 of the OH&S Act)

The principal contractor shall be responsible for ensuring that non-employees affected by the construction work are aware of the dangers likely to arise from said construction work as well as the precautionary measures to be observed to avoid or minimize those dangers. This includes:

- *Non-employees entering the site for whatever reason*
- *The surrounding community*
- *Passers by to the site*

4.0 PROJECT/S SPECIC REQUIREMENTS

4.1 List of Risk Assessments

- *Clearing and Grubbing of the areas/site*
- *Site establishment including:*
  - Offices
  - Secure/safe storage foe materials and equipment
  - Ablutions
  - Sheltered eating area
  - Maintenance workshop
  - Vehicle access to the site
- *Dealing with existing structures*
- *Location of existing services*
- *Installation and maintenance of temporary construction electrical supply, lightning and equipment*
- *Adjacent land uses/surrounding property exposures*
- *Boundary and access control/public liability exposures (NB: the employer is also responsible for the OH&S of the non-employees affected by his/her work activities)*
- *Health risks arising from neighbouring as well as own activities and from the environment e.g. threats by dogs, bees, snakes and lightning etc.*
- *Exposure to noise*
- *Exposure to vibration*
- *Protection against dehydration and heat exhaustion*
- *Protection from wet and cold conditions*
- *Dealing with HIV/AIDS and other diseases*
- *Use of portable electrical equipment including*
  - Angle grinder
  - Electrical drilling machine
  - Still saw
- *Excavation including*
  - Ground/soil conditions
  - Trenching
  - Shoring
  - Drainage of trench
- *Welding including*
  - Arc welding
  - Gas welding
  - Flame cutting
  - Flame cutting
  - Use of LP gas torches and appliances

- *Loading and offloading of truck*
- *Aggregate/sand and other materials delivery*
- *Manual and mechanical handling*
- *Lifting and powering operators*
- *Driving and operation of construction vehicles and mobile plant including.*
  - Trenching machine
- Use and storage of flammable liquids and other hazardous substances
- Layering and bedding
- Installation of pipes in pipelines
- Backfilling trenches
- Protection against flooding
- Gabion work
- Use of explosive
- Protection form overhead power lines
- As discovered by the principal contractor's hazard identification exercise
- As discovered from any inspection and audits conducted by the client of by the principal contractor or any other contractor on site
- As discovered from any accident/incident investigation

FORM C1.5 SUPPLY CHAIN MANAGEMENT POLICY

Please refer to O. R. Tambo District Municipality's Procurement Policy.

C2 PRICING DATA

C2.1 Bill Of Quantities

FORM C2.1 PRICING INSTRUCTIONS

1. Measurement and payment for Bill A (Preliminary & General) & Bill B (Civil Works) shall be in accordance with the relevant provisions of Clause 8 of each of the SANS 1200 Specifications for Civil Engineering Construction referred to in the Scope of Work.

2. Measurement and payment for Bill C (Building Works) & Bill D (Electrical Installation Works) shall be in accordance with the relevant Particular Specifications for building works and electrical installation work respectively.

3. The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

%	=	per cent	m^2.pass	=	square metre-pass
h	=	hour	m^3	=	cubic metre
ha	=	hectare	m^3.km	=	cubic metre-kilometre
kg	=	kilogram	MN	=	meganewton
k□	=	kilolitre	MN.m	=	meganewton-metre
km	=	kilometre	MPa	=	megapascal
km-pass	=	kilometre-pass	No.	=	number
kPa	=	kiloposcal	Prov sum	=	Provisional sum
kW	=	kilowatt	P C sum	=	Prime Cost sum
□	=	litre	sum	=	lump sum
m	=	metre	t	=	ton (1 000 kg)
mm	=	millimetre	W/day	=	Work day
m^2	=	square metre			

4. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

5. The prices and rates to be inserted in the Bill of Quantities are to be the full inclusive prices for the work described under the items. Such prices and rates shall cover all costs and expenses that may be required in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices shall be used as a basis for assessment of payment for additional work that may have to be carried out.

6. It will be assumed that prices included in the Bill of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to **www.sabs.co.za** or **www.iso.org** for information on standards).

7. Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered for such items.

8. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bill of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.

9. The quantities set out in the Bill of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.

10. Reasonable compensation will be received where no pay item appears in respect of work required in the Bills of Quantities in terms of the Contract and which is not covered in any other pay item.

11. The short descriptions of the items of payment given in the Bill of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.

12. Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the SANS 1200 Standardised Specifications.

13. If there is a discrepancy in description of items between the Bill of Quantities and the Drawings, the Bill of Quantities Description shall be used.

C2.1. Bill of Quantities

CONTRACT: ORTDM SCMU
DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 1 PRELIMINARY AND GENERAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.1	SANS 1200 A8.3	**FIXED-CHARGE ITEMS**				
1.1.1	8.3.1	Contractual Requirements	Sum	1		
	8.3.2	Establish Facilities on the Site :				
	8.3.2.1	1) Facilities for Engineer (SANS 1200 AB)				
1.1.2	PSAB 3.2/ PSAB 5.2	a) Furnished office and meeting room	Sum	1		
1.1.3	PSAB 5.5	b) Survey assistant	Sum	1		
1.1.4	PSAB 5.6	c) Survey equipment	Sum	1		
1.1.5		d) All other specified facilities (incl wifi internet connection and printer)	Sum	1		
	8.3.2.2	2) Facilities for Contractor				
1.1.6		a) Offices and storage sheds	Sum	1		
1.1.7		b) Workshops	Sum	1		
1.1.8		c) Laboratories	Sum	1		
1.1.9		d) Living accommodation	Sum	1		
1.1.10		e) Tools and equipment	Sum	1		
1.1.11		f) Water supplies, electric power and communications	Sum	1		
1.1.12		g) Dealing with water (Subclause 5.5)	Sum	1		
1.1.13		h) Access (Subclause 5.8)	Sum	1		
1.1.14		i) Plant	Sum	1		
1.1.15	8.3.3	General Responsibilities and other fixed charge obligations (including making allowance for effects and payments taking up to 60 days from date of invoice)	Sum	1		
1.1.16	8.3.4	Remove Engineer's and Contractor's Site establishment on completion	Sum	1		
1.1.17	PSA 8.10	Fixed charges associated with complying with Health and Safety Requirements:				
1.1.18		a) Preparation of risk assessments, safe work procedures, the project H&S File, the H&S Plan, medicals for all workers, the provision of PPE and protective clothing, and all other fixed charge H&S matters that fulfill OHS Act 85 of 1993 and construction regulation 2014 requirements	Sum	1		
1.1.18		b) Completing and checking the Project H&S File and handing over the Client on completion of the works and exit medicals for all workers	Sum	1		
1.1.20		c) Provision of HIV/Aids Awareness plan and all necessary fixed charge items to achieve compliance with SANS 1921 Part 6 HIV/Aids Awareness	Sum	1		
1.1.21	PSA 8.11	Fixed charges associated with complying with the Environmental Management Plan	Sum	1		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 1 PRELIMINARY AND GENERAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
1.2	8.4	**TIME-RELATED ITEMS**				
1.2.1	8.4.1	Contractual Requirements	Sum	1		
	8.4.2	Operate and maintain facilities on the Site for the duration of the construction, except where otherwise stated:				
	8.4.2.1	1) Facilities for Engineer for duration of construction (SANS 1200 AB)				
1.2.2		a) Furnished office and meeting room	Sum	1		
1.2.3		b) Survey assistant	Sum	1		
1.2.4		c) Survey equipment	Sum	1		
1.2.5		d) All other specified facilities (incl wifi internet connection and printer)	Sum	1		
	8.4.2.2	2) Facilities for Contractor for duration of construction, except where otherwise stated				
1.2.6		a) Offices and storage sheds	Sum	1		
1.2.7		b) Workshops	Sum	1		
1.2.8		c) Living accommodation	Sum	1		
1.2.9		d) Laboratories	Sum	1		
1.2.10		e) Tools and equipment	Sum	1		
1.2.11		f) Dealing with water (Subclause 5.5)	Sum	1		
1.2.12		g) Access (Subclause 5.8)	Sum	1		
1.2.13		h) Plant	Sum	1		
1.2.14	8.4.3	Supervision for duration of construction	Sum	1		
1.2.15	8.4.4	Company and head office overhead costs for the duration of the contract	Sum	1		
1.2.16	PSA 8.3.3	General Responsibilities and other time-related obligations (including making allowance for effects and payments taking up to 60 days from date of invoice)	Sum	1		
		Time-related charges associated with complying with Health and Safety Requirements:				
1.2.17		a) Updating and amending the risk assessments, safe work procedures, the project H&S File, the H&S Plan,medicals for all workers, the provision of PPE and protective clothing and all other H&S matters that fulfill OHS Act 85 of 1993 and construction regulation 2014 requirements	Sum	1		
1.2.18		b) Full compliance with all H&S matters during the construction of the works under the Contract	Sum	1		
1.2.19		c) Compliance with SANS 1921 Part 6 HIV/Aids Awareness plan during the contract	Sum	1		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 1 PRELIMINARY AND GENERAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
1.2.20	PSA 8.4.7	Time-related charges associated with complying with the Environmental Management Plan	Sum	1		
1.2.21	PSA 8.4.8	Supervision of Subcontractor	Sum	1		
1.3	8.8	**TEMPORARY WORKS**				
1.3.1	8.8.2	a) Deal with traffic and maintain road (or accommodation of traffic)	Sum	1		
1.3.2	PSA 8.8.7	b) Contractor to provide "Construction Record" Information	Sum	1		
TOTAL FOR SECTION 1 CARRIED FORWARD TO SUMMARY						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 2 DAYWORKS, PROVISIONAL SUMS AND PRIME COST ITEMS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
2.1	SANS 1200A	**DAYWORKS**				
	8.7	LABOUR				
2.1.1		a) Team leader / charge hand	hr	50		Rate only
2.1.2		b) Artisan	hr	50		Rate only
2.1.3		c) Skilled	hr	100		Rate only
2.1.4		d) Semi-skilled	hr	200		Rate only
2.1.5		e) Unskilled	hr	200		Rate only
		MATERIAL				
2.1.6		a) For materials used in execution of dayworks as agreed with engineer	Prov, Sum	1	50 000,00	50 000,00
2.1.7		b) Percentage adjustment to item 2.1.6 for materials	%	50 000,00	10%	5 000,00
		PLANT				
2.1.8		a) For plant used in execution of dayworks as agreed with engineer	Prov, Sum	1	50 000,00	50 000,00
2.1.9		b) Percentage adjustment to item 2.1.8 for plant	%	50 000,00	10%	5 000,00
2.2	PSA 8.5	**SUMS STATED PROVISIONALLY BY ENGINEER (Subclause 8.1.2.1 (d))**				
		COMMUNITY PARTICIPATION				
2.2.1		a) Employment of CLO for the duration of the contract (R8000 pm)	Prov. Sum	1	112 000,00	112 000,00
2.2.2		b) Overheads, charges and profit on 2.2.1 above	%	112 000	10%	11 200,00
2.2.3		c) Employment of PSC for duration of contract (4 No. at R500 pm each)	Prov. Sum	1	28 000,00	28 000,00
2.2.4		d) Overheads, charges and profit on 2.2.3 above	%	28 000	10%	2 800,00
		ENGINEER'S REQUIREMENTS				
2.2.5		a) Additional Tests required by Engineer	Prov. Sum	1	60 000,00	60 000,00
2.2.6		b) Overheads, charges and profit on 2.2.5 above	%	60 000,00	10%	6 000,00
2.2.7		c) Equipment for the Engineer (allowance for complete set of dumpy level)	Prov. Sum	1	50 000,00	50 000,00
2.2.8		d) Overheads, Charges and Profit on item 2.2.7 above	%	50 000,00	10%	5 000,00
2.2.9		e) Cellphone allowance for the Engineer for the duration of the contract (R1000 pm).	Prov. Sum	1	12 000,00	12 000,00
2.2.10		f) Overheads, Charges and Profit on item 2.2.10 above	%	12 000,00	10,0%	1 200,00
2.2.11		g) Transportation (including fuel) for the Engineer for the duration of the contract (R8350 pm).	Prov. Sum	1	100 200,00	100 200,00
2.2.12		h) Overheads, Charges and Profit on item 2.2.11 above	%	100 200,00	10%	10 020,00
2.2.13		i) Accomodation for the Engineer for the duration of the contract (R4000 pm).	Prov. Sum	1	48 000,00	48 000,00
2.2.14		j) Overheads, Charges and Profit on item 2.2.13 above	%	48 000,00	10%	4 800,00
2.2.15		k) Allow for supervision by the Engineer's Site Representative for the duration of the Contract	Prov. Sum	1	360 000,00	360 000,00
2.2.16		l) Overheads, Charges and Profit on item 2.2.15 above	%	360 000,00	10,0%	36 000,00
		TOPOGRAPHICAL SURVEY				
2.2.17		a) Allowance for additional survey	Prov. Sum	1	30 000,00	30 000,00
2.2.18		b) Overheads, charges and profit on 2.2.17 above	%	30 000,00	10%	3 000,00
		EXISTING SERVICES				
2.2.19		a) Allowance for connection to existing services	Prov. Sum	1	250 000,00	250 000,00
2.2.20		b) Overheads, charges and profit on 2.2.19 above	%	250 000,00	10%	25 000,00
CARRIED FORWARD						**1 265 220,00**

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 2 DAYWORKS, PROVISIONAL SUMS AND PRIME COST ITEMS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				1 265 220,00
		SPECIALIST				
2.2.21		a) Allowance for lightning protection at Reservoir	Prov. Sum	1	50 000,00	50 000,00
2.2.22		b) Overheads, charges and profit on 2.2.21 above	%	50 000,00	10%	5 000,00
		OCCUPATIONAL HEALTH AND SAFETY				
2.2.23		a) Allowance for HIV awareness and training	Prov. Sum	1	10 000,00	10 000,00
2.2.24		b) Overheads, charges and profit on 2.2.23 above	%	10 000,00	10%	1 000,00
2.2.25		c) Cost of Employer's Occupational Health and Safety representative (R18000pm)	Prov. Sum	1	216 000,00	216 000,00
2.2.26		d) Overheads, charges and profit on 2.2.25 above	%	216 000,00	10%	21 600,00
		ENVIRONMENTAL				
2.2.27		a) Cost of Environmental Compliance Officer (R18000 pm)	Prov. Sum	1	216 000,00	216 000,00
2.2.28		b) Overheads, charges and profit on 2.2.27 above	%	216 000,00	10%	21 600,00
		INSTITUTIONAL SOCIAL DEVELOPMENT				
2.2.29		a) Allowance for ISD consultant at R25000 per month	Prov. Sum	1	300 000,00	300 000,00
2.2.30		b) Overheads, Charges and Profit on item 2.2.29 above	%	300 000	10%	30 000,00
		TRAINING				
2.2.31		a) Allowance for training on targeted labour	Prov. Sum	1	150 000,00	150 000,00
2.2.32		b) Overheads, charges and profit on 2.2.31 above	%	150 000,00	10%	15 000,00
2.2.33		c) Transportation and accomodation of workers for training where it is not possible to undertake in close proximity	Prov. Sum	1	10 000,00	10 000,00
2.2.34		d) Overheads, charges and profit on 2.2.33 above	%	10 000,00	10%	1 000,00
2.2.35		e) Allowance for Civil Engineering Student / Trainee	Prov. Sum	1	66 000,00	66 000,00
2.2.36		Overheads, Charges and Profit on item 2.2.35 above	%	66 000,00	10%	6 600,00
2.2.37		f) Allowance for additional investigations as instructed by Engineer on existing reticulation	Prov. Sum	1	250 000,00	250 000,00
2.2.38		g) Overheads, charges and profit on 2.2.37 above	%	250 000,00	10%	25 000,00
		STREAM CROSSING				
2.2.39		Allowance for culvert outlet or inlet crossing	Prov. Sum	1	50 000,00	50 000,00
2.2.40		Overheads, charges and profit on 2.2.39 above	%	50 000,00	10%	5 000,00
		COMPENSATION				
2.2.41		a) Purchase and deliver compensation items (bags of fertilezer or cement, etc.) to affected residents as directed by the Engineer	Prov. Sum	1	10 000,00	10 000,00
2.2.42		b) Overheads, Charges and Profit on item 2.2.41 above	%	10 000,00	10%	1 000,00
2.3	PSA 8.6	**PRIME COST ITEMS**				
2.3.1		a) Additional Acceptance control testing as may be required by the Engineer (Note that the Contractor's tendered rates are to include for all Quality Control testing required to achieve compliance with the specifications and that this scheduled item is to cover only the Engineer's additional testing that the Engineer may require)	PC Sum	1	50 000,00	50 000,00
2.3.2		b) Overheads, Charges and Profit on item 2.3.1 above	%	50 000	10%	5 000,00
2.3.3		c) Allowance for Eskom connection	Prov Sum	1	300 000,00	300 000,00
2.3.4		d) Overheads, Charges and Profit on item 2.3.3 above	%	300000	10%	30 000,00
TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY						3 111 020,00

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 3 GRAVITY MAIN FROM EXISTING 1Ml BOMVINI RESERVOIR TO NEW 200Kl LUTSHEKO RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1	SANS 1200 DB	**SITE CLEARANCE**				
3.1.1	8.3.1(a)	Clear vegetation along the pipeline route (working strip of up 3m width)	km	13		
3.1.2	8.3.1(b)	Clear trees of girth over 1 m and up to 2 m	No.	5		
3.1.3	PSC 8.2.4	Reclear surfaces (provisional) (where ordered by Engineer)	m	200		
3.1.4	PSC 8.3	Take down existing fences and re-erect existing fences	m	300		
3.2		**DEMARCATION FENCING**				
3.2.1	PSC 8.5	Demarcation of construction corridor each side (1m high poles painted white, at 15m intervals. Measured by length of pipeline)	m	13 000		
3.2.2		Supply and install demarcation fence on both sides of the working area during construction and remove on completion of works (backfilling). Fence is to comprise Bonnox 4 x 4 mesh fencing (maximum opening not exceeding 100mm) Bonnox pattern 1972/4, with straining posts, straining wires, stays, etc as required. Plastic warning tape is to be wound zig-zag top wire to bottom wire along full length and warning signs in English and isiXhosa in appropriate locations. Rate includes for provision and control of gates for construction access purposes as and where required. Rate to include for surveillance of fencing integrity on a daily basis and repair on same-day basis.	m	7 000		
3.2.3		Extra over 3.2.2 for fixing suitably robust plastic square mesh on demarcation fence in occupied areas to act as a childproof barrier	m	1 000		
3.3	SANS 1200 DB	**EXCAVATION (PIPE TRENCHES)**				
	8.3.2(a) PSDB8.1	Excavate in all materials for trenches backfill, compact, and dispose of surplus/unsuitable material, for pipes:				
		a) 75 mm diam. for total trench depth: Exceeding but not exceeding				
3.3.1		0,0 m 1,0 m	m	1 460		
3.3.2		1,0 m 2,0 m	m	5 840		
		b) 110 mm diameter up to 160 mm diameter. for total trench depth: Exceeding but not exceeding				
3.3.3		0,0 m 1,0 m	m	300		
3.3.4		1,0 m 2,0 m	m	5 400		
	8.3.2(b) PSDB8.2	Extra-over items 3.3.1 to 3.3.2 incl. for (prov):				
3.3.5		a) Intermediate excavation	m^3	100		
3.3.6		b) Hard rock excavation	m^3	60		
3.3.7	8.3.2(c)	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m^3	300		
3.4	8.3.3	**EXCAVATION. ANCILLARIES**				
3.4.1	8.3.3.1(c)	Import subbase material from commercial sources for backfilling of trenches across roadways (Prov)	m^3	50		
3.4.2	8.3.3.3	Compaction under roadways to 93% of Mod AASHTO maximum density (Prov)	m^3	50		
3.4.3	SANS 1200DB 8.3.6.1	Reinstate surface of gravel roads (Prov)	m^2	200		
	8.3.3.1	Make up deficiency in backfill material (Provisional)				
3.4.4		a) From other necessary excavations on site	m^3	50		
3.4.5		b) By importation from designated borrow pits	m^3	50		
3.4.6		c) By importation from commercial or off-site sources selected by the Contractor	m^3	100		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 3 GRAVITY MAIN FROM EXISTING 1Ml BOMVINI RESERVOIR TO NEW 200Kl LUTSHEKO RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.5	8.3.3.4	**OVERHAUL**				
3.5.1		a) Limited overhaul (provisional)	m³	310		
3.5.2		b) Long overhaul (provisional)	m³.km	1 550		
3.6	8.3.4	**PARTICULAR ITEMS**				
		Shore trench opposite structure or service				
3.6.1		(i) Existing houses and toilet structures	m	200		
3.7		**EXISTING SERVICES**				
	8.3.5	a) Services that intersect a trench				
3.7.1		(i) House or standpipe water connections	No.	30		
3.7.2		(ii) Water mains irrespective of pipe diameter.	No.	60		
	8.3.5	b) Services that adjoin a trench				
3.7.3		(i) Water mains irrespective of pipe diameter.	m	7000		
3.8		**FINISHINGS**				
	8.3.6	Reinstate road surfaces				
3.8.1		a) Complete with all courses except surfacing	m²	450		
3.8.2		b) Gravel surfaced	m²	450		
3.9	SANS 1200 L	**MEDIUM PRESSURE PIPELINES**				
	8.2.1	Supply, lay, bed, test and disinfect on flexible pipe bedding, complete with couplings (Conforming with SANS 966: 2004 in 6m lengths each fitted at one end with a Z-LOK coupling mechanical joint):				
		a) 75 mm diameter. mPVC				
3.9.1		(i) Class 12	m	5 260		
3.9.2		(ii) Class 16	m	2 200		
		b) 110 mm diameter				
3.9.3		(i) Class 12	m	10		
		c) 160 mm diameter				
3.9.4		(i) Class 12	m	5 530		
	8.2.2	Extra-over 3.9.1 to 3.9.4 for the Supplying, Laying and Bedding of Specials Complete with Couplings				
		a) mPVC Double Socketed Bends Class12				
3.9.5		(i) 75mm diam. 11,25 deg.	No.	4		
3.9.6		(ii) 75mm diam. 22,5 deg.	No.	5		
3.9.7		(iii) 75mm diam. 45 deg.	No.	3		
3.9.8		(iv) 75mm diam 90 deg.	No.	3		
		b) mPVC Double Socketed Bends Class16				
3.9.9		(i) 75mm diam. 11,25 deg.	No.	4		
3.9.10		(ii) 75mm diam. 22,5 deg.	No.	4		
3.9.11		(iii) 75mm diam. 45 deg.	No.	4		
3.9.12		(iv) 75mm diam 90 deg.	No.	2		
		c) mPVC Double Socketed Bends Class 12				
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 3 GRAVITY MAIN FROM EXISTING 1Ml BOMVINI RESERVOIR TO NEW 200Kl LUTSHEKO RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.9.13		(i) 160mm diam. 11,25 deg.	No.	10		
3.9.14		(ii) 160mm diam. 22,5 deg.	No.	7		
3.9.15		(iii) 160mm diam. 45 deg.	No.	8		
3.9.16		(iv) 160mm diam 90 deg.	No.	4		
		d) Reducing Tees (cast iron):				
3.9.17		(i) 110mm diameter X 75mm diameter reducing tee	No	2		
3.9.18		(ii) 160mm diameter X 110mm diameter reducing tee	No	1		
		e) Unequal Tees (cast iron):				
3.9.19		(i) 160mm diameter X 110mm diameter reducing tee	No	1		
		f) Equal Tees (cast iron):				
3.9.20		(i) 160mm diameter X 160mm diameter reducing tee	No	1		
3.10	8.2.3	**VALVES**				
		a) Isolating Valve assembly complete as per detail on Drawing No. PRJ 040-CT3B-T143 (excluding chambers)				
3.10.1		i) For 160 mm Ø ND, PN16	No.	2		
3.10.2		ii) For 110 mm Ø ND, PN16	No.	1		
3.10.3		iii) For 75 mm Ø ND, PN16	No.	2		
		b) Scour Valve assembly complete as per detail on Drawing No. PRJ 040-CT3B-T142 (excluding chambers)				
3.10.4		(i) 80 mm Ø ND off 160 mm Ø OD mPVC pipe, PN 16	No.	9		
3.10.5		(ii) 80 mm Ø ND off 75 mm Ø OD mPVC pipe, PN 16	No.	9		
		c) Air Valve assembly complete as per detail on Drawing No. PRJ 040-CT3B-T141 (excluding chambers)				
3.10.6		(i) 25 mm Ø ND, PN 16	No.	18		
3.10.7		(ii) 50 mm Ø ND, PN 16	No.	10		
3.11		**ANCILLARIES**				
	8.2.11	Anchor/Thrust blocks and pedestals as per Drawing No PRJ 040-CT3B-T140				
3.11.1		a) Concrete Grade 25MPa / 19mm (including all material and formwork)	m^3	60		
CARRIED FORWARD						

CONTRACT: ORTDM SCMU
DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 3 GRAVITY MAIN FROM EXISTING 1Ml BOMVINI RESERVOIR TO NEW 200Kl LUTSHEKO RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.12	8.2.13	**VALVE CHAMBERS AND MANHOLES:**				
3.12.1	8.2.14	Isolating Valve Chamber complete as per detail on Drawing No. PRJ 040-CT3B-T143	No.	5		
3.12.2		Scour Valve Chambers complete as per detail on Drawing No. PRJ 040-CT3B-T142	No.	18		
3.12.3	PSL...	Air Valve Chambers complete as per detail on Drawing No. PRJ 040-CT3B-T141	No.	28		
3.13	SANS 1200DK	**GABIONS**				
	PSDK 8.1	EROSION PROTECTION				
3.13.1	8.2.1	Surface preparation for bedding of gabions	m²	120		
	8.2.2	1) Supply, lay and fill galvanised reno mattresses to protect scour outlets. (Prov)				
3.13.2		a) 6m x 2m x 0,3m	m³	36		
3.13.3	8.2.4	b) Supply and lay geotextile backing behind new reno mattresses where necessary (Prov)	m²	180		
3.14		**PIPE MARKERS**				
3.14.1	PSL 8.2.16	Supply and install pipeline markers as per detail on Drawing No.PRJ 040-CT3B-T145	No.	58		
3.14.2	PSL 8.2.17	Supply and install valve markers as per detail on Drawing No.PRJ 040-CT3B-T145	No.	51		
3.15	**SANS 1200 LB**	**BEDDING**				
		PROVISION OF BEDDING				
		1) Available from trench within 0,5 km (Subclause 3.4.1)				
3.15.1	8.2.1	a) Selected granular material	m³	1 630		
3.15.2		b) Selected fill material	m³	4 650		
	8.2.2.2	2) Imported from Borrow pits (Provisional)				
3.15.3		a) Selected granular material	m³	270		
3.15.4		b) Selected fill material	m³	550		
	8.2.2.3	3) From commercial sources (Provisional)				
3.15.5		a) Selected granular material	m³	820		
3.15.6		b) Selected fill material	m³	300		
TOTAL FOR SECTION 3 CARRIED FORWARD TO SUMMARY						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
4.1	**SANS 1200D**	**EARTHWORKS**				
		Site Clearance and Removal of Topsoil				
4.1.1	8.3.1	Prepare Reservoir Site	ha	0,25		
4.1.2	8.3.2	Remove topsoil to nominal depth of 150 mm and stockpile or dispose	m²	2500		
4.1.3		Transport and dispose of materials to suitable dumping site in vicinity	m³.km	250		
4.2	**SANS 1200D 8.3.2**	**EXCAVATION**				
		Bulk excavation down to approved founding level				
4.2.1	8.3.2(a) PSDA	Excavate in all materials to Reservoir founding level (1000mm below blinding), stockpile (within 0.2km) and maintain for backfill and dispose of remainder to approved spoil site (including shaping to be free-draining and with embankment slopes shallower than 1:3 and compacting)	m³	900		
	8.3.2(b)	Extra-over item 4.2.1 for excavation in:				
4.2.2		Intermediate material	m³	150		
4.2.3		Hard rock material	m³	360		
4.3	**8.3.4**	**IMPORT MATERIAL**				
		1) Layer works to backfill over-excavation of unsuitable material (including supply, mix and place under reservoir):				
4.3.1		a) Supply G7 natural gravel, place and compact in 150mm layers under reservoir (Prov) compacted to 95% mod AASHTO density	m³	110		
4.3.2		b) Supply G5 subbase, place and compact in 200mm layers under reservoir (Prov) stabilised with 3% ordinary portland cement (to create C4 material as directed by the Engineer) compacted to 98% mod AASHTO density	m³	300		
4.3.3		c) Supply G2 crusher run, place and compact in max 200mm layers under reservoir (Prov) compacted to 100% mod AASHTO density	m³	150		
		2) Material imported from commercial source				
4.3.4		a) Import approved 25 mm stone chips (reflective quatzite) from commercial source, stockpile and place by hand on reservoir roof	m³	60		
4.4		**FINISHINGS**				
4.4.1	8.3.10	Topsoiling	m²	1 000		
4.4.2	8.3.11	Grassing or other vegetation cover	m²	1 000		
4.5	**SANS 1200DA**	**RESTRICTED EXCAVATION**				
	8.3.2(a)	1) Excavate in all materials to spoil for:				
4.5.1		a) Underdrain system excavated in G2 base	m³	100		
4.5.2		b) Inlet / Outet pipe blocks	m³	100		
4.5.3	PSDA4.4	c) Other restricted excavation for chambers etc	m³	100		
4.5.4	PSDA4.4	d) Excavate and trim to lines and levels under reservoir	m³	100		
	8.3.3(b)	2) Extra over items 4.5.1 to 4.5.4 for restricted excavation in:				
4.5.5		a) Intermediate material	m³	20		
4.5.6		b) Hard rock material	m³	10		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.6	**SANS 1200DB**	**PIPE EXCAVATIONS**				
4.6.1	8.3.2 PSDB 8.1.4 PSDB 8.3.3.4	Excavate in all material for trenches backfill and dispose of surplus and unsuitable material. Rate to include for all temporary works including trimming, shoring and dewatering where necessary.	m³	100		
	8.3.2	Extra over item 4.6.1 for excavation in:				
4.6.2		a) Intermediate material	m³	30		
4.6.3		b) Hard rock (Prov)	m³	50		
4.7	**SANS 1200 G**	**FORMWORK**				
	8.2.1	1) Rough vertical to degree of accuracy III to:				
4.7.1		a) Footings to walls (curved)	m²	50		
4.7.2		b) Walls outside below ground level (curved)	m²	150		
4.7.3		c) Sump and encasement to pipes	m²	30		
4.7.4		d) Manholes	m²	40		
	8.2.2	2) Smooth vertical to degree of accuracy II to:				
4.7.5		Walls inside and outside above ground level (curved)	m²	300		
4.7.6		Column bases	m²	30		
4.7.7		Footing at expansion joint	m²	20		
4.7.8		Circular Columns	m²	40		
4.7.9		Roof slab and upstand	m²	20		
4.7.10		Sump	m²	20		
4.7.11		Manhole cover slab	m²	5		
4.7.12		Manholes	m²	50		
4.7.13		Buttresses sides including receses for stressing anchors (extra over to walls)	m²	100		
	8.2.2	3) Smooth horizontal to degree of accuracy II to:				
4.7.14		Roof soffit	m²	350		
4.7.15		Manholes	m²	20		
	8.2.6	Box-outs for pipe specials to be installed then grouted in place:				
		1) Box-out in reservoir wall to accommodate:				
4.7.16		a) DN110 inlet pipe	No.	1		
4.7.17		b) DN150 scour pipe	No.	1		
4.7.18		c) DN200 outlet pipe	No.	1		
4.7.19		d) DN200 overflow pipe	No.	1		
		2) Box-out in chamber wall to accommodate:				
4.7.20		a) DN150 scour pipe	No.	1		
4.7.21		b) DN200 outlet pipe	No.	2		
4.7.22		c) DN200 overflow pipe	No.	1		
4.7.23		d) DN110 drainage pipe	No.	7		
		3) Box-out in reservoir roof to accommodate:				
4.7.24		a) DN100 holes for sampling equipment	No.	1		
4.7.25		b) DN100 holes for air vent	No.	4		
4.7.26		c) DN110 roof drainage outlets	No.	18		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.8	8.1.2	**REINFORCEMENT**				
		Mild steel bars				
4.8.1	8.1.2.2	R8: Basic price	t	2		
	8.1.2.3	Extra-over 4.8.1 (Provisional quantities and subject to Special Conditions of Contract) for bars of diameter				
4.8.2		a) R10	t	1		
	8.3.1	High-tensile steel bars				
4.8.3		a) Y10	t	10		
4.8.4		b) Y12	t	28		
4.8.5		c) Y16	t	5		
4.8.6		d) Y20	t	5		
	8.3.2	High-tensile welded mesh reinforcement				
4.8.7		a) Type reference #245	m²	50		
4.8.8		b) Type reference #193	m²	60		
4.9	8.1.3	**CONCRETE WORKS**				
	8.4.2	No-fines concrete under floor and to fill voids	m³	170		
	8.4.2	Blinding Layer (Grade 15/19 MPa)				
4.9.1		50 mm minimum thickness	m²	30		
	8.4.3	Strength concrete: 35MPa/19 mm watertight concrete with an approved crystalline waterproofing concrete additive				
4.9.2		a) Walls above footing	m³	110		
4.9.3		b) Footings to walls	m³	60		
4.9.4		c) Floor slabs	m³	100		
4.9.5		d) Roof slab & upstand	m³	110		
4.9.6		e) Columns with bases	m³	10		
4.9.7		f) Encasement to inlet / outlet / overflow / scour pipes	m³	30		
4.9.8		g) Inlet & outlet chambers as per drawings	m³	25		
		Strength concrete: 15 MPa/19mm				
4.9.9		Minimum thickness 75 mm blinding layer to chambers and encasements	m³	10		
4.9.10		Mass concrete including splash aprons from roof overflow and filling under reservoir footings (where ordered by the Engineer)	m³	100		
	8.4.3	Strength concrete: 25 MPa/19mm				
4.9.11		25MPa/19mm concrete to benching	m³	10		
4.9.12		Crystalline Waterproofing Additive e.g. XYPEX Amix C-500 NF or similar approved in Strength Concrete: 35MPa/19 mm watertight concrete complete including product supplier technical guidance, quality control and product mixing log sheets	kg	2800		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.10	8.4.4	**UNFORMED SURFACE FINISHES**				
		Wood-floated finish (to degree of accuracy II)				
4.10.1		a) Top of reservoir wall footing (outside)	m²	40		
4.10.2		b) Reservoir roof	m²	320		
4.10.3		c) Invert to reservoir sump	m²	5		
4.10.4		d) Top of upstand	m²	10		
		Steel-floated finish (to degree of accuracy II)				
4.10.5		Top of reservoir Wall	m²	20		
4.10.6		Top Reservoir Floor Slab & Footing inside	m²	320		
4.10.7		Top of column Bases	m²	20		
4.11	8.5	**JOINTS**				
4.11.1	PSG 3.11.2	1) Expansion Joints in reservoir floor against wall footing (as per drawings) measured by the total lengths of expansion joints complete with: **(350 mm wide x 2mm thick hypalon bandage, 2mm aluminium strip with 50mm wide backing bondage breaker, 250mm rearguard waterstop as per detail on drawings and Closed cell Polyethylene 100kg/m or 30mm closed cell high density void former)**	m	70		
4.11.2		2) Contraction joints in reservoir floor (as per drawings) measured by the total lengths of contraction joints complete with: **(200mm wide x 2 mm thick hypalon bandage or similar approved and 250mm rearguard waterstop with centre bulb)**	m	100		
4.11.3		3) Construction joints in reservoir walls (as per drawings) measured by the total lengths of construction joints complete with: **(150mm wide by 1.6mm thick mild steel strips, hot dip galvanized GI waterstop and 150mm wide Lanko Bandage or similar approved)**	m	190		
4.11.4		4) Isolation Joints in reservoir (as per drawings) measured by the total lengths of isolation joints complete with: (10mm Jointex or softboard and 10x10mm polysulphide sealant to SANS 1077)	m	100		
4.12		**MISCELLANEOUS CONCRETE ITEMS**				
4.12.1		500 micron plastic bond breaker over no-fines concrete under reservoir floor	m²	400		
4.12.2		Neoprene (Kilcher or similar approved) Teflon sliding bearing type 3T50/75	m	70		
4.12.3		Polyurethane seal between reservoir roof and walls	m	70		
4.12.4		Precast 220x70 deep x790 long saddleback Deranco coping (or similar approved) to reservoir roof complete installation including casting shuttering and placing on mortar.	m	70		
4.12.5		Concrete planks to reservoir over outlet manhole to reservoir.	No	2		
4.12.6		Cast in situ standard 1000mm wide v-channelling around reservoir perimeter on 200gm/m^2 needle punched geotextile around resevoir perimeter as per drawings	m	80		
4.12.7		200gm/m2 needle punched geotextile (1m width)	m²	80		
4.12.8		Cleaning and sterilizing reservoir and associated pipework	Sum	1		
CARRIED FORWARD						

CONTRACT: ORTDM SCMU
DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.12.9		Reservoir Watertightnes test including reservoir roof	Sum	1		
4.12.10		Supply and install "Pulltrude" type fibreglass 25 deep 36x36 grating panel 650x1000mm	No	1		
4.12.11		110mm dia galvanised outlets, cut from a 110mm dia pipe with metal guaze vermin proof (GALVANISED AFTER FABRICATION) as per detail on the drawings (300mm long)	No	18		
		Manhole items				
4.12.12		Concrete cover slab without manhole,including lifting hooks and air vents.	No	1		
4.12.13		Concrete cover slab complete with manhole frame cast in, including lifting hooks and air vents. Note payment of cast iron manhole frame and cover paid seperately	No	1		
4.12.14		Manhole cover (to SANS 558) type 9E with frame	No	2		
4.13	**SANS 1200 HA 8.3.1**	**STRUCTURAL STEELWORK**				
		Supply, fabricate, deliver and install steelwork,to the finishes/coatings specified in the specification and on drawings				
	8.3.3	Access ladders without cage stainless steel grade 306L				
4.13.1		External 3.5m high ladder to reservoir as per Drawing No. PRJ 040-CT3B-T133. Stainless steel grade 316L	No.	1		
4.13.1		Internal 3.6m high ladder to reservoir as per Drawing No. PRJ 040-CT3B-T133. Stainless steel grade 316L	No.	1		
4.13.2		2m high GMS ladder to inlet & outlet chambers as per drawings	No.	2		
		Reservoir and Chambers' roof elements				
4.13.3		50mm diameter sleeved holes in reservoir roof for level control and telemetry equipment as shown on the drawings.	No	1		
4.13.4		100mm diameter sleeved holes in reservoir roof for sampling equipment (As required).	No	1		
4.13.5		Supply and install GMS manhole locking bar for type 9E (reservoir roof) as per drawing details	No	1		
4.13.6		Supply and install 600x600 GMS hinged manhole cover and frame to chambers as per standard detail drawing complete.	No	2		
		Air Vents				
4.13.7		GMS DN100 reservoir ventilators as per detail on drawings	No	4		
		Wall-Brackets for inlet pipe as per drawings				
4.13.8		100x100x10mm thick end plate welded to 50mm dia pipe fixed to concrete with 3 No. M12 s/s bolts	No	8		
4.13.9		1 No. M20 stainless steel bolt grade 8.8	No	16		
4.13.10		1 No. M16 s/s bolt	No	16		
4.13.11		50mm dia pipe 8mm wall thickness	No	8		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 4 NEW 1MI TSHASABANTU CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.14	**SANS 1200L 8.2.5**	**INLET, OUTLET, SCOUR AND OVERFLOW SPECIALS AND FITTINGS, OVERFLOW AND SCOUR DRAINAGE PIPELINES**				
	PSL 8.2.1	Supply, handle, install and commission complete with couplings and GMS nuts and bolts and corrosion protection (all bolted connections to coated with Tectile mastic and bandaged with petrolatum saturated textile (Denso or equivalent)				
		OVERFLOW AND SCOUR DRAINAGE PIPELINES				
4.14.1		160mm diameter uPVC Class 34 Heavy Duty Sewer Drainage Pipe	m	25		
4.14.2		Construct headwall complete as shown on drawings	No	1		
		SPECIALS AND FITTINGS				
		All pipework to be eproxy coated and lined galavanised mild steel, 4mm wall thickness.				
		Inlet Fittings				
4.14.3		**P14** : DN90 Rilsan coated and lined mild steel puddle pie, flanged PN16 both ends. Pipe barrel to be 600mm F/F with puddde flange 300mm from plain end.	No.	1		
4.14.4		**P15** : DN90 Epoxy coated and lined mild steel 90° short radius bend, flanged PN16 both ends, 1620mm C/F and 150mm C/F	No.	1		
4.14.5		**P16** : DN90 epoxy coated and lined mild steel 45° short radius bend, flanged PN16 each end, flanged PN16 both ends, length to suite	No.	1		
4.14.6		**P17**: DN90 x DN75 epoxy coated and lined mild steel concentric reducer flanged each end 600mm long, PN16.	No.	1		
4.14.7		DN90 GMS pipe 600mm flanged one end.	No.	1		
4.14.8		DN90 Amanziflow Projects design diaphragm valve.	No.	1		
		Outlet Fittings				
4.14.9		**P1** : DN200 epoxy coated and lined mild steel short radius 90° bend. Flanged, PN16 one end and DN450 bellmouth the other. 1100mm c/bellmouth and 2400mm C/F	No.	1		
4.14.10		**P2** : DN200 PN16 flanged double off-set butterfly valve with gearbox and handle wheel	No.	1		
4.14.11		**P3** : DN200 VJ or similar Engineer aproved flange adaptor for steel pipe	No.	1		
4.14.12		**P4** : DN200 Epoxy coated and lined mild steel pipe flanged PN16 one end and plain-ended the other with DN100 flanged PN10 branch. Pipe barrel to be 1800mm F/pain end. Branch to located 500mm C/plan-end and extending 350m C/F	No.	1		
4.14.13		**P5** : DN100 RS Gate valve flanged PN10 with non-rising spindle and handwheel	No.	1		
4.14.14		**P6** : DN100 Multi-orifice anti-shock air valve	No.	1		
4.14.15		**P7** : DN200 x DN160 Expoxy coated and lined mild steel reducer flanged PN16 both ends	No.	1		
4.14.16		**P8** : DN160 mPVC PN16 flange adaptor to suit spigot and socket mPVC pipe,	No.	1		
4.14.17		DN160 mPVC PN16 end cap	No.	1		
		Overflow Fittings				
4.14.18		**P9** : DN160 Epoxy coated and lined mild steel , buttressed flanged PN16 one end and DN350 bellmouth with 4 No. anti-vortex baffles the other end, 2125mm flanged to bellmouth	No.	1		
4.14.19		**P10** : DN160 Epoxy coated and lined mild steel with 90° bend and buttressed flanged PN16 one end and plain ended on the other. 900mm C/F and 2400mm C/plain end	No.	1		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B

SECTION: 4 **NEW 1Ml TSHASABANTU CONCRETE RESERVOIR**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
		Scour Fittings				
4.14.20		**P11** : DN150 Epoxy coated and lined short radius 90°bend flanged PN10 one end and DN250 bellmouth on the other. 850mm C/Bellmouth and 8300mm C/F.	No.	1		
4.14.21		**P12** : DN150 PN10 clockwise closing non-rising spindle flanged wedge gate valve to SANS 664.	No.	1		
4.14.22		**P13** : DN150 Rilsan coated and lined mild steel short radius 90° bend. Flanged PN10 one end and plain ended the other end	No.	1		
4.15		**BEDDING** (scour pipelines)				
	1200LB	Provision of bedding from available sources on site				
4.15.1	8.2.1 PSL 8.2.1	Selected granular material	m³	30		
4.15.2		Selected fill material	m³	300		
	8.2.2	Supply only of bedding by importation (provisional) from commercial sources				
4.15.3	PSL 8.2.2	Selected granular material	m³	100		
4.15.4		Selected fill material	m³	160		
4.16	PSL 8.2.6	**SUBSOIL DRAINAGE** (Reservoir)				
		Supply and lay (as detailed on drawing):				
4.16.1		Sand compacted to 100% Mod AASHTO	m³	50		
4.16.2		19mm crushed stone to reservoir perimeter	m³	100		
4.16.3		200gr/m² needle punched geofabric to subsurface drains (bidim)	m²	1 100		
4.16.4		110mm diameter Class 4 slotted drainage pipe complete with all fittings. i.e. elbows, endcaps and tee connections to suit details on the drawings	m	300		
4.16.5		25mm proprietary drainage void former using premoulded HDPE or Similar Approved	m²	350		
TOTAL FOR SECTION 4 CARRIED FORWARD TO SUMMARY						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.1	**SANS 1200D**	**EARTHWORKS**				
		Site Clearance and Removal of Topsoil				
5.1.1	8.3.1	Prepare Reservoir Site	ha	0,10		
5.1.2	8.3.2	Remove topsoil to nominal depth of 150 mm and stockpile or dispose	m²	60		
5.1.3		Transport and dispose of materials to suitable dumping site in vicinity	m³.km	15		
5.2	**SANS 1200D 8.3.2**	**EXCAVATION**				
		Bulk excavation down to approved founding level				
5.2.1	8.3.2(a) PSDA	Excavate in all materials to Reservoir founding level (1000mm below blinding), stockpile (within 0.2km) and maintain for backfill and dispose of remainder to approved spoil site (including shaping to be free-draining and with embankment slopes shallower than 1:3 and compacting)	m³	500		
	8.3.2(b)	Extra-over item 5.2.1 for excavation in:				
5.2.1		Intermediate material	m³	100		
5.2.2		Hard rock material	m³	50		
5.3	**8.3.4**	**IMPORT MATERIAL**				
		1) Layer works to backfill over-excavation of unsuitable material (including supply, mix and place under reservoir):				
5.3.1		a) Supply G7 natural gravel, place and compact in 150mm layers under reservoir (Prov) compacted to 95% mod AASHTO density	m³	5		
5.3.2		b) Supply G5 subbase, place and compact in 150mm layers under reservoir (Prov) stabilised with 3% ordinary portland cement (to create C4 material as directed by the Engineer) compacted to 98% mod AASHTO density	m³	5		
5.3.3		c) Supply G2 crusher run, place and compact in max 150mm layers under reservoir (Prov) compacted to 100% mod AASHTO density	m³	5		
		2) Material imported from commercial source				
5.3.4		a) Import approved 25 mm stone chips (reflective quatzite) from commercial source, stockpile and place by hand on reservoir roof	m³	5		
5.4		**FINISHINGS**				
5.4.1	8.3.10	Topsoiling	m²	1 000		
5.4.2	8.3.11	Grassing or other vegetation cover	m²	1 000		
5.5	**SANS 1200DA**	**RESTRICTED EXCAVATION**				
	8.3.2(a)	1) Excavate in all materials to spoil for:				
5.5.1		a) Underdrain system excavated in G2 base	m³	5		
5.5.2		b) Inlet / Outet pipe blocks	m³	5		
5.5.3	PSDA4.4	c) Other restricted excavation for chambers etc	m³	5		
5.5.4	PSDA4.4	d) Excavate and trim to lines and levels under reservoir	m³	5		
	8.3.3(b)	2) Extra over items 5.5.2 to 5.5.4 for restricted excavation in:				
5.5.5		a) Intermediate material	m³	2		
5.5.6		b) Hard rock material	m³	1		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.6	**SANS 1200DB**	**PIPE EXCAVATIONS**				
5.6.1	8.3.2 PSDB 8.1.4 PSDB 8.3.3.4	Excavate in all material for trenches backfill and dispose of surplus and unsuitable material. Rate to include for all temporary works including trimming, shoring and dewatering where necessary.	m³	10		
	8.3.2	Extra over item 5.6.1 for excavation in:				
5.6.2		a) Intermediate material	m³	5		
5.6.3		b) Hard rock (Prov)	m³	5		
5.7	**SANS 1200 G**	**FORMWORK**				
	8.2.1	1) Rough vertical to degree of accuracy III to:				
5.7.1		a) Footings to walls (curved)	m²	10		
5.7.2		b) Walls outside below ground level (curved)	m²	40		
5.7.3		c) Sump and encasement to pipes	m²	12		
5.7.4		d) Manholes	m²	5		
	8.2.2	2) Smooth vertical to degree of accuracy II to:				
5.7.5		Walls inside and outside above ground level (curved)	m²	200		
5.7.6		Column bases	m²	5		
5.7.7		Footing at expansion joint	m²	10		
5.7.8		Circular Columns	m²	12		
5.7.9		Roof slab and upstand	m²	15		
5.7.10		Sump	m²	20		
5.7.11		Manhole cover slab	m²	10		
5.7.12		Manholes	m²	5		
5.7.13		Buttresses sides including receses for stressing anchors (extra over to walls)	m²	100		
	8.2.2	3) Smooth horizontal to degree of accuracy II to:				
5.7.14		Roof soffit	m²	125		
5.7.15		Manholes	m²	20		
	8.2.6	Box-outs for pipe specials to be installed then grouted in place:				
		1) Box-out in reservoir wall to accommodate:				
5.7.16		a) DN90 inlet pipe	No.	1		
5.7.17		b) DN150 scour pipe	No.	1		
5.7.18		c) DN200 outlet pipe	No.	1		
5.7.19		d) DN160 overflow pipe	No.	1		
		2) Box-out in chamber wall to accommodate:				
5.7.20		a) DN150 scour pipe	No.	1		
5.7.21		b) DN200 outlet pipe	No.	2		
5.7.22		c) DN160 overflow pipe	No.	1		
5.7.23		d) DN110 drainage pipe	No.	7		
		3) Box-out in reservoir roof to accommodate:				
5.7.24		a) DN100 holes for sampling equipment	No.	1		
5.7.25		b) DN100 holes for air vent	No.	4		
5.7.26		c) DN110 roof drainage outlets	No.	8		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.8	8.1.2	**REINFORCEMENT**				
		Mild steel bars				
5.8.1	8.1.2.2	R8: Basic price	t	0,11		
	8.1.2.3	Extra-over 5.8.1 (Provisional quantities and subject to Special Conditions of Contract) for bars of diameter				
5.8.2		a) R10	t	0,05		
	8.3.1	High-tensile steel bars				
5..8.3		a) Y10	t	5,00		
5..8.4		b) Y12	t	0,14		
5..8.5		c) Y16	t	0,46		
5..8.6		d) Y20	t	0,05		
	8.3.2	High-tensile welded mesh reinforcement				
5.8..7		a) Type reference #245	m²	5		
5.8..8		b) Type reference #193	m²	10		
5.9	8.1.3	**CONCRETE WORKS**				
	8.4.2	No-fines concrete under floor and to fill voids	m³	10		
	8.4.2	Blinding Layer (Grade 15/19 MPa)				
5.9.1		50 mm minimum thickness	m²	130		
	8.4.3	Strength concrete: 35MPa/19 mm watertight concrete with an approved crystalline waterproofing concrete additive				
5.9.2		a) Walls above footing	m³	25		
5.9.3		b) Footings to walls	m³	10		
5.9.4		c) Floor slabs	m³	20		
5.9.5		d) Roof slab & upstand	m³	30		
5.9.6		e) Columns with bases	m³	5		
5.9.7		f) Encasement to inlet / outlet / overflow / scour pipes	m³	30		
5.9.8		g) Inlet & outlet chambersas per Drawings	m³	2		
		Strength concrete: 15 MPa/19mm				
5.9.9		Minimum thickness 75 mm blinding layer to chambers and encasements	m³	5		
5.9.10		Mass concrete including splash aprons from roof overflow and filling under reservoir footings (where ordered by the Engineer)	m³	10		
	8.4.3	Strength concrete: 25 MPa/19mm				
5.9.11		25MPa/19mm concrete to benching	m³	5		
5.9.12		Crystalline Waterproofing Additive e.g. XYPEX Amix C-500 NF or similar approved in Strength Concrete: 35MPa/19 mm watertight concrete complete including product supplier technical guidance, quality control and product mixing log sheets	kg	2800		
CARRIED FORWARD						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.10	8.4.4	**UNFORMED SURFACE FINISHES**				
		Wood-floated finish (to degree of accuracy II)				
5.10.1		a) Top of reservoir wall footing (outside)	m²	10		
5.10.2		b) Reservoir roof	m²	125		
5.10.3		c) Invert to reservoir sump	m²	5		
5.10.4		d) Top of upstand	m²	10		
		Steel-floated finish (to degree of accuracy II)				
5.10.5		Top of reservoir Wall	m²	8		
5.10.6		Top Reservoir Floor Slab & Footing inside	m²	110		
5.10.7		Top of column Bases	m²	10		
5.11	8.5	**JOINTS**				
5.11.1	PSG 3.11.2	1) Expansion Joints in reservoir floor against wall footing (as per drawings) measured by the total lengths of expansion joints complete with: **(350 mm wide x 2mm thick hypalon bandage, 2mm aluminium strip with 50mm wide backing bondage breaker, 250mm rearguard waterstop as per detail on drawings and Closed cell Polyethylene 100kg/m or 30mm closed cell high density void former)**	m	35		
5.11.2		2) Contraction joints in reservoir floor (as per drawings) measured by the total lengths of contraction joints complete with: **(200mm wide x 2 mm thick hypalon bandage or similar approved and 250mm rearguard waterstop with centre bulb)**	m	40		
5.11.3		3) Construction joints in reservoir walls (as per drawings) measured by the total lengths of construction joints complete with: **(150mm wide by 1.6mm thick mild steel strips, hot dip galvanized GI waterstop and 150mm wide Lanko Bandage or similar approved)**	m	80		
5.11.4		4) Isolation Joints in reservoir (as per drawings) measured by the total lengths of isolation joints complete with: (10mm Jointex or softboard and 10x10mm polysulphide sealant to SANS 1077)	m	40		
5.12		**MISCELLANEOUS CONCRETE ITEMS**				
5.12.1		500 micron plastic bond breaker over no-fines concrete under reservoir floor	m²	125		
5.12.2		Neoprene (Kilcher or similar approved) Teflon sliding bearing type 3T50/75	m	40		
5.12.3		Polyurethane seal between reservoir roof and walls	m	40		
5.12.4		Precast 220x70 deep x790 long saddleback Deranco coping (or similar approved) to reservoir roof complete installation including casting shuttering and placing on mortar.	m	40		
5.12.5		Concrete planks to reservoir over outlet manhole to reservoir.	No	2		
5.12.6		Cast in situ standard 1000mm wide v-channelling around reservoir perimeter on 200gm/m^2 needle punched geotextile around resevoir perimeter as per drawings	m	46		
5.12.7		200gm/m2 needle punched geotextile (1m width)	m²	46		
5.12.8		Cleaning and sterilizing reservoir and associated pipework	Sum	1		
CARRIED FORWARD						0,00

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.12.9		Reservoir Watertightnes test including reservoir roof	Sum	1		
5.12.10		Supply and install "Pulltrude" type fibreglass 25 deep 36x36 grating panel 650x1000mm	No	1		
5.12.11		110mm dia galvanised outlets, cut from a 110mm dia pipe with metal guaze vermin proof (GALVANISED AFTER FABRICATION) as per detail on the drawings (300mm long)	No	4		
		Manhole items				
5.12.12		Concrete cover slab without manhole,including lifting hooks and air vents.	No	1		
5.12.13		Concrete cover slab complete with manhole frame cast in, including lifting hooks and air vents. Note payment of cast iron manhole frame and cover paid seperately	No	1		
5.12.14		Manhole cover (to SANS 558) type 9E with frame	No	2		
5.13	**SANS 1200 HA 8.3.1**	**STRUCTURAL STEELWORK**				
		Supply, fabricate, deliver and install steelwork,to the finishes/coatings specified in the specification and on drawings				
	8.3.3	Access ladders without cage stainless steel grade 306L				
5.13.1		Internal 2.5m high ladder to reservoir as per Drawing No. PRJ 040-CT3B-T123. Stainless steel grade 316L	No.	1		
5.13.2		2m high GMS ladder to inlet & outlet chambers as per drawings	No.	2		
		Reservoir and Chambers' roof elements				
5.13.3		50mm diameter sleeved holes in reservoir roof for level control and telemetry equipment as shown on the drawings.	No	1		
5.13.4		100mm diameter sleeved holes in reservoir roof for sampling equipment (As required).	No	1		
5.13.5		Supply and install GMS manhole locking bar for type 9E (reservoir roof) as per drawing details	No	1		
5.13.6		Supply and install 600x600 GMS hinged manhole cover and frame to chambers as per standard detail drawing complete.	No	2		
		Air Vents				
5.13.7		GMS DN100 reservoir ventilators as per detail on drawings	No	4		
		Wall-Brackets for inlet pipe as per drawings				
5.13.8		100x100x10mm thick end plate welded to 50mm dia pipe fixed to concrete with 3 No. M12 s/s bolts	No	3		
5.13.9		1 No. M20 stainless steel bolt grade 8.8	No	6		
5.13.10		1 No. M16 s/s bolt	No	6		
5.13.11		50mm dia pipe 8mm wall thickness	No	6		
CARRIED FORWARD						0,00

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B

SECTION: 5 NEW 200KI LUTSHEKO CONCRETE RESERVOIR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.14.18		**P9** : DN160 Epoxy coated and lined mild steel , buttressed flanged PN16 one end and DN350 bellmouth with 4 No. anti-vortex baffles the other end, 2125mm flanged to bellmouth	No.	1		
5.14.19		**P10** : DN160 Epoxy coated and lined mild steel with 90° bend and buttressed flanged PN16 one end and plain ended on the other. 900mm C/F and 2400mm C/plain end	No.	1		
		Scour Fittings				
5.14.20		**P11** : DN150 Epoxy coated and lined short radius 90°bend flanged PN10 one end and DN250 bellmouth on the other. 850mm C/Bellmouth and 8300mm C/F.	No.	1		
5.14.21		**P12** : DN150 PN10 clockwise closing non-rising spindle flanged wedge gate valve to SANS 664.	No.	1		
5.14.22		**P13** : DN150 Rilsan coated and lined mild steel short radius 90° bend. Flanged PN10 one end and plain ended the other end	No.	1		
5.15		**BEDDING** (scour pipelines)				
	1200LB	Provision of bedding from available sources on site				
5.15.1	8.2.1 PSL 8.2.1	Selected granular material	m³	10		
5.15.2		Selected fill material	m³	70		
	8.2.2	Supply only of bedding by importation (provisional) from commercial sources				
5.15.3	PSL 8.2.2	Selected granular material	m³	15		
5.15.4		Selected fill material	m³	25		
5.16	PSL 8.2.6	**SUBSOIL DRAINAGE** (Reservoir)				
		Supply and lay (as detailed on drawing):				
5.16.1		Sand compacted to 100% Mod AASHTO	m³	30		
5.16.2		19mm crushed stone to reservoir perimeter	m³	45		
5.16.3		200gr/m² needle punched geofabric to subsurface drains (bidim)	m²	750		
5.16.4		110mm diameter Class 4 slotted drainage pipe complete with all fittings. i.e. elbows, endcaps and tee connections to suit details on the drawings	m	200		
5.16.5		25mm proprietary drainage void former using premoulded HDPE or Similar Approved	m²	200		
TOTAL FOR SECTION 5 CARRIED FORWARD TO SUMMARY						

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 6 SITING, DRILLING, TEST AND EQUIPPING OF BOREHOLES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
6.1		**BOREHOLE INVESTIGATIONS**				
6.1.1		a) Hydrogeological Investigations- cost to include, inter alia, feasibility assessments, siting of production boreholes sites and WULA/Borehole Registration.	Prov. Sum	1	40 000,00	40 000,00
6.1.2		b) Overheads, Charges and Profit on item 6.1.1 above	%	40 000,00	10%	4 000,00
6.1.3		c) Topographical Surveys and As-built Drawings	Prov. Sum	1	80 000,00	80 000,00
6.1.4		d) Overheads, Charges and Profit on item 6.1.3 above	%	80 000,00	10%	8 000,00
6.1.5		e) Construct 1 No. Production Boreholes, costs to include borehole drilling, pump testing, water quality testing, installation of 5m^3/hr filtration systems if required, 20m perimeter concrete palisade fencing with single gate access, and all related valves, sensors, gauges, interconnecting pipework, lightning protection and related appurtenances required for the production borehole. Cost to cover 3 potential borehole drills per each production borehole site, pump testing and water quality tests per site over the **3** sites. In instances where the borehole sustainable yield is less than 0.5l/s for the limiting allocation of 3 borehole drills per village, one of the boreholes will be equipped with a handpump. Cost to also include the provision and equipping of all necessary mechanical and electrical equipment. Rate to include the provision of 3 hard copies of O&M Manual. (**Note: A Separate BoQ, itemising and quantifying items provided under this Sum shall be issued before construction is commenced with and shall form the final basis for payment).**	Prov. Sum	1	1 200 000,00	1 200 000,00
6.1.6		f) Overheads, Charges and Profit on item 6.1.5 above	%	1 200 000,00	10%	120 000,00
6.2		**SUPPLY AND INSTALLATION OF GENERATOR**				
6.2.1		a) Supply and install generator and accessories to run Borehole pump system **(Note: Specification of Generator will be issued by Engineer)**	Prov. Sum	1	450 000,00	450 000,00
6.2.2		b) Overheads, Charges and Profit on item 6.2.1 above	%	450 000,00		
6.3		**SUPPLY AND CONSTRUCTION OF PUMPING MAIN**				
6.3.1		a) Design, supply and construct 90 mm diameter 16 bar class mPVC pipes for pumping main, air valves, scour valves and related appurtenances for the production borehole sites **(Note: A Separate BoQ, itemising and quantifying items provided under this Sum shall be issued before construction is commenced with and shall form the final basis for payment)**	Prov. Sum	1	380 000,00	380 000,00
6.3.2		b) Overheads, Charges and Profit on item 6.3.1 above	%	380 000,00	10%	38 000,00
6.4		**SUPPLY AND CONSTRUCTION OF PIPELINES**				
6.4.1		a) Design, supply and construct reticulation using 12 bar class mPVC pipes for the water reticulation network, communal standpipes, valves, meters and related appurtenances for the production borehole sites (**Note: A Separate BoQ, itemising and quantifying items provided under this Sum shall be issued before construction is commenced with and shall form the final basis for payment)**	Prov. Sum	1	3 000 000,00	3 000 000,00
6.4.2		b) Overheads, Charges and Profit on item 6.4.1 above	%	3 000 000,00	10%	300 000,00
6.5		**INSTALLATION OF HAND PUMPS**				
6.5.1		Supply and install hand pumps (Mono head T5 and T7)	Sum	1		Rate Only
TOTAL FOR SECTION 6 CARRIED FORWARD TO SUMMARY						5 620 000,00

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO: CONTRACT 3B
SECTION: 7 ALLOWANCE FOR LOCAL SMME'S

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
7.1		**SCOPE OF SMME'S**				
7.1.1		*a) Works to be executed by local appointed SMME's to include Boreholes Pumps House, 90mm Water Reticulation, Standpipes, Scours Valves, Chambers, Manholes, Ablutions , Fencing , Pipemarkers, including provision of Site Security. (* ***Note: A Separate BoQ, itemising and quantifying items provided under this Sum shall be issued before construction is commenced with and shall form the final basis for payment)***	Prov. Sum	1	7 700 000,00	7 700 000,00
7.1.2		b) Overheads, Charges and Profit on item 7.1.1 above	%	7 700 000,00	10%	770 000,00
TOTAL FOR SECTION 7 CARRIED FORWARD TO SUMMARY						

Summary of Bill of Quantities

CONTRACT: **BILL OF QUANTITIES**

BILL:

DUMASI CONTRACT 3B - SUMMARY PAGE

SECTION	DESCRIPTION	AMOUNT R
1	PRELIMINARY AND GENERAL	
2	DAYWORKS, PROVISIONAL SUMS AND PRIME COST ITEMS	
3	GRAVITY MAIN FROM EXISTING 1Ml BOMVINI RESERVOIR TO NEW 200Kl LUTSHEKO RESERVOIR	
4	NEW 1Ml TSHASABANTU CONCRETE RESERVOIR	
5	NEW 200Kl MNGAZANA CONCRETE RESERVOIR	
6	SITING, DRILLING, TEST AND EQUIPPING OF BOREHOLES	
7	ALLOWANCE FOR LOCAL SMME'S	
	NET TOTAL OF TENDER	
	ADD CONTINGENCIES 10% OF NET TOTAL	
	TENDER AMOUNT	
	ALLOWANCE FOR VAT AT 15.00%	
	TOTAL TENDER SUM	

TIME FOR COMPLETION OF CONTRACT: AS STATED IN THE FORM OF OFFER

SIGNED BY/ON BEHALF OF TENDERER

NAME	SIGNATURE	DATE

COMPANY STAMP

Declaration

(In respect of completeness of Tender)

O. R. TAMBO DISTRICT MUNICIPALITY
NELSON MANDELA DRIVE
MYEZO PARK
MTHATHA
5100

I/we, the undersigned, do hereby declare that these are the properly priced Bill of Quantities forming Part C2.1 of this Contract Document in consecutive order upon which my/our tender for the **PROJECT NUMBER: MIS 316 080 C2: DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF BULK PIPELINE FROM BOMVINI TO LUTSHEKO AND RESERVOIRS** has been based.

SIGNED BY/ON BEHALF OF TENDERER

NAME	**SIGNATURE**	**DATE**

Part C3: Scope of Work

O. R. TAMBO DISTRICT MUNICIPALITY

CONTRACT NO: MIS 316 080 C2

DUMASI REGIONAL WATER SUPPLY PHASE 1 – CONSTRUCTION OF 12.9KM BULK WATER SUPPLY, 1ML RESERVOIR AND 200KL RESERVOIR FROM BOMVINI TO LUTSHEKO: CONTRACT 3B

Status

Should any requirement or provision in the parts of the Scope of Work conflict with any requirement of any Specification(s) forming part of this contract or any drawings, the order of precedence, unless otherwise specified, is:

- Drawings
- Project Specifications (including amendments to standard and particular specifications)
- Bill of Quantities
- Particular Specifications
- Standard Specifications.

The above notwithstanding, any discrepancy shall be brought to the attention of the Engineer for clarification.

C3.1. Description of the Works

C3.1.1 Employer's Objectives

The Employer's objectives are to deliver public infrastructure using labour-optimised methods where possible. The intention is to provide a potable water supply to the Contract 3B section of the Dumasi Regional Bulk Water Scheme Phase 1.

The employer is keen in awarding the contract as soon as possible. The award of contract will commence with the acceptance of the Notification of Award by the successful bidder.

Based on the specific goals, the Employer is aiming to promote enterprises located in Eastern Cape Province and in O. R. Tambo District in particular.

C3.1.2 Overview of the Works

Contract 3B section of the Dumasi Regional Bulk Water Scheme Phase 1 is to receive water from the two (2) existing Bomvini Reservoirs. Areas to be supplied by this section are Magamnye, Tshasabantu, Mghaphetshu, Jovu and Lutsheko. Although these areas have the existing water infrastructure, the proposed project s to complement the existing, since it connected to the reliable water source.

Works to be constructed under this contract are shown on the drawings and described in the project specification. The Works may be briefly described as comprising the following:

- Expose the existing 200mm diameter reservoir outlet and connect new 160mm diameter mPVC to new 1ML Tshabantu Reservoir.
- General site clearance and removal of topsoil to stockpile
- Excavating, bedding, laying, backfilling and testing of proposed 160mm, 110mm and 75mm mPVC pipeline
- Construction of scour and air valves.
- Exposing of existing services along the pipeline route and replace other services that might be deemed necessary
- Construction of a new 200kl concrete reservoir on existing Lutsheko Reservoir site
- Supply and installations of fittings, specials and bends using pipes supplied by the Contractor.
- Fencing of the reservoir and break pressure tank sites.
- Install pipe markers along pipeline route and make good rehabilitation of construction corridor
- Construct new access road to Mngazana Reservoirs.
- Connecting the new reservoir to the existing inlet pipeline
- Borehole investigations including borehole drilling, pump testing and installation of filtration system
- Construction of borehole pump house
- Design, supply and construct reticulation using 12 bar class mPVC pipes for the water reticulation network, communal standpipes, valves, meters and related appurtenances for the production borehole sites.
- Supply and install generator and accessories to run Borehole pump system
- Occupational, Health and Safety compliance
- Environmental compliance and management including site rehabilitation.

C3.1.3 Extent of the Works

The work to be carried out by the Contractor under this Contract comprises mainly of the following sections:

a) General Works

- Establishment of Contractor on Site.
- Clear grub and topsoil strip to stockpile for latter reuse.
- Basic skills training.
- Contractor's de-establishment.

b) Pipework's

- Supply, excavation, bed, lay, test and backfilling of portable water pipelines, including all required fittings.
- The pipe description to be supplied and laid are:
  - 5504.10m of 160mm diameter mPVC CL12 to SABS 966-2
  - 27.m of 110mm diameter mPVC CL12 to SABS 966-2
  - 7426m of 75mm diameter mPVC CL12 to SABS 966-2
- Supply, excavation, bed, lay, test and backfilling of inlet connection pipe to the existing reservoirs
- Construct outlet pipe of 200mm diameter mPVC from new 1Ml Tshasabantu Reservoir
- Construct outlet pipe of 160mm diameter mPVC from new 200kl Lutsheko Reservoir
- Supply and install pipeline markers, valve markers.
- Construction of valve chambers and assemblies
- Construction of chambers :
  - Class 16 of DN25 Air Valves x 18 No.
  - Class 16 of DN50 Air Valves x 10 No.
  - Class 16 of DN80 Scour Valves x 18 No.
  - Class 16 of Isolation Valves x 5 No.
- Construct anchor blocks to concrete Grade 25MPa / 19mm (including all material and formwork)

c) 1Ml Tshisabantu Concrete Reservoir

- Clearing of the new reservoir site and establishing the foundation platform.
- Construction of 1Ml concrete reservoir
- Construction of GMS inlet and outlet pipes, with all necessary fittings and chambers
- Supply and installation of 130m fence for the reservoirs site
- Construction of gravel access to reservoirs

d) 200kl Lutsheko Concrete Reservoir

- Clearing of the new reservoir site and establishing the foundation platform.
- Construction of 200kl concrete reservoir
- Construction of GMS inlet and outlet pipes, with all necessary fittings and chambers
- Supply and installation of 130m fence for the reservoirs site
- Construction of gravel access to reservoirs.

e) Borehole Investigations

- Hydrogeological Investigations- cost to include, inter alia, feasibility assessments, siting of production boreholes sites and WULA/Borehole Registration.
- Construct 1 No. Production Boreholes, costs to include borehole drilling, pump testing, water quality testing, installation of $5m^3$/hr filtration systems if required,
- Construction of borehole pump house
- Supply and install generator and accessories to run Borehole pump system
- 20m perimeter concrete palisade fencing with single gate access, and all related valves, sensors, gauges, interconnecting pipework, lightning protection and related appurtenances required for the production borehole.
- Design, supply and construct 90 mm diameter 16 bar class mPVC pipes for pumping main, air valves, scour valves and related appurtenances for the production borehole sites
- Supply and install hand pumps (Mono head T5 and T7)

C3.1.4 Location of the Works

The project is located approximately 26km South East of Mthatha CBD and is situated in the Nyandeni Local Municipality within the jurisdiction of the O. R. Tambo District Municipality in the province of the Eastern Cape. The approximate central coordinates of the project area are as follows and the Locality Plan is attached in Annexure A:

- Latitude: 31° 38' 22.47"S
- Longitude: 28° 58' 54.54"E

C3.1.5 Description of Site and Access

The project located approximately 4km on the northern side of Ngqeleni Town, in Ward 21 of Nyandeni Local Municipality. The area receives approximately 550mm to 650mm annual during the summer seasons.

The site accessible via R61 from Mthatha Town to Libode.

- Travel for approximately 7km and take the first exit.
- Then turn right to DR 08030 towards Nqgeleni Town and travel approximately 16km and turn left to existing gravel road to Bomvini Village
- Bomvini Village is approximately 3km from tarred road (DR 08030).

C3.1.6 Temporary Works

The Contractor will be responsible for all Temporary works necessary to undertake this project. The areas where temporary works are anticipated but not limited to, are along the existing services. All areas where temporary works are undertaken are to be rehabilitated to their natural state on completion of the project.

C3.1.7 Construction Programme

The programme of construction shall be submitted to the Engineer within the time stipulated in these documents. The programme shall clearly show all activities related to the works and shall indicate which activities are on the critical path.

In compiling the programme the Contractor shall take into account the following:

- The requirements and effects of employing labour intensive construction methods.
- The lead-time for training of local labour.
- The accommodation and safeguarding of public access and traffic
- Establishment and de-establishment times.
- Time to obtain all permits and way-leaves.
- Appointment of Community Liaison Officer (CLO).
- All public and Contractor close down periods.
- All other activities required in terms of this document.

If during the course of the contract, the execution of the work deviates in any manner from the programme, the Contractor shall, on instruction by the Engineer, within one week of such instruction submit a revised programme. Should such a revision be as a result of the Contractor falling behind with his work, the programme shall clearly show the steps to be taken in order to rectify the situation so as to enable the contract to be completed within the stipulated contract period. Positive steps to increase production through increased resources, or the more efficient usage of existing resources shall accompany such a programme. The tender programme shall however be used

C3.2. Engineering

C3.2.1 Design Services and Activity Matrix

Responsibilities for design and related documentation are as follows:

• Concept, feasibility and overall process	Employer
• Basic engineering and detail layouts to tender stage	Employer's Agent
• Final design to construction stage	Employer's Agent
• Temporary works	Contractor
• Preparation of record drawings	Contractor

a) The Employer's Agent's is responsible for the design of the permanent Works as reflected in the Contract Documents unless otherwise stated.

b) The Contractor is responsible for the design of the temporary Works and their compatibility with the permanent Works.

c) The Contractor shall supply all details necessary to assist the Engineer in the compilation of the as-built drawings

C3.2.2 Employer's Design

The extent of the Employer's Agent's design is shown on the layout plans.

C3.2.3 Design Brief

The Contractor will be responsible for design of all temporary works and all construction methods, all shoring and lateral support that may be required. The Contractor will also be responsible for the preparation of method statements before commencing with construction.

C3.2.4 Drawings

The drawings issued to Tenderers as part of the Tender Document must be regarded as provisional and preliminary for the Tenderer's benefit to generally assess the scope of the work. The drawings are issued separately in a book of drawings.

The work shall be carried out in accordance with the latest available revision of the drawings to be issued by the Engineer for construction. At commencement of contract, the Engineer shall deliver to the Contractor two sets copies of the construction drawings and any instructions required for the commencement of the works.

From time to time thereafter during the progress of the works, the Engineer may issue further drawings or revisions for construction purposes as may be necessary for adequate construction and completion of the works and defects correction.

The Contractor will be required to mark up one complete set of prints of the construction drawings with as-built information and submit these to the Employer's Agent at the end of construction, prior to issue of the Certificate of Practical Completion.

The drawings issued separately for tender purposes are listed in the Annexure C3.7.4.

C3.3. Procurement

C3.3.1 Preferential Procurement Procedures

C3.3.1.1 Requirements

All works to be completed in this contract shall be executed in accordance to the O. R. Tambo District Municipality's preferential procurement policies and procedures.

C3.3.1.2 Resource Standard Pertaining to Targeted Procurement

Preferential procurement will be applied as per O. R. Tambo District Municipality's preference policy together with the following:

- SANS 1914-4:2002 Targeted Construction Procurement Part 1 – Participation of Targeted Enterprises and Targeted Labour (local resources)

C3.3.2 Subcontracting

C3.3.2.1 Scope of Mandatory Subcontract Works

No work may be sub-contracted to another party unless approval is given by the ORTDM in writing. The Contractor is to submit to the ORTDM in writing a request for appointment of a particular sub-contractor. Accompanying this request is to be the full detail of the sub-contractor, including:

- Previous experience
- Work which will be sub-contracted to him/her
- Approximate value of the work to be sub-contracted

C3.3.2.2 Preferred Subcontractors / Suppliers

As per clause **C3.3.2.1**.

C3.3.2.3 Subcontracting Procedures

A formal tender process will be followed to appoint the Subcontractor which will be facilitated by the Employer, Employer's Agent and Main Contractor.

All subcontractors appointed under **C3.3.2.1** above shall be:

- Registered with the CIDB
- Allocated work within the category and value limits designated by their CIDB grading
- Be in good standing with the Department of Labour
- Registered on the Central Supplier Database.

Proof of the above is to be provided to the Employer's Agent before appointment of the subcontractor.

C3.3.2.4 Attendance on Subcontractors

Not applicable for this Contract

C3.4. Construction

C3.4.1 Works Specifications

C3.4.1.1 Applicable SANS 2001 Standards

The following SANS 1200 Standardized Specifications for civil engineering construction are applicable:

- SANS 1200 A GENERAL
- SANS 1200 AB ENGINEER'S OFFICE
- SANS 1200 C SITE CLEARANCE
- SANS 1200 D EARTHWORKS
- SANS 1200 DB EARTHWORKS (PIPE TRENCHES)
- SANS 1200 DK GABIONS
- SANS 1200 G CONCRETE
- SANS 1200 L MEDIUM PRESSURE PIPELINES
- SANS 1200 LB BEDDING (PIPES)
- SANS 1200 LD SEWERS
- SANS 1200 LE STORMWATER DRAINAGE
- SANS 1200 ME SUBBASE
- SANS 1200 MF BASE

The term "project specification" must be replaced by "scope of works" wherever it appears in these standardized specifications. The above list is not deemed exhaustive, and other specifications listed or referenced in the document may be applicable as required. Where SABS specifications are referenced, the corresponding SANS document and applicable clauses shall apply.

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;
Part 2: Accommodation of Traffic on Public Roads Occupied by the Contractor;
Part 4: Third-party management requirements for works contracts;
Part 5: Earthworks activities which are to be performed by hand; and
Part 6: HIV/AIDS Awareness

C3.4.1.2 Applicable National and International Standards

All works to be executed in accordance to the South African National Standards.

C3.4.1.3 Particular Specifications (Annex C3.6)

Refer to the *Variations and Additions to the Standard SANS 1200 Specifications: General, Civil and Structural Works* in Annex C3.6.

- OHS HEALTH AND SAFETY SPECIFICATION
- PE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
- LIC GENERIC LABOUR-INTENSIVE SPECIFICATION

C3.4.2 Plant and Materials

C3.4.2.1 Plant and Materials Supplied by the Employer

No plant or materials will be supplied by the Employer.

C3.4.2.2 Materials, Samples and Shop Drawings

The Contractor is required to provide proof of compliance with the materials specification, as well as to provide samples of materials and finishes.

Unless otherwise instructed in writing by the Employer's Agent, all proprietary materials are to be used, mixed, applied, fixed etc. strictly in accordance with the manufacturer's recommendations.

Materials are to be ordered timeously to meet the construction programme. Extension of time for non-availability of materials will only be considered subject to the Contractor satisfying the Employer's Agent of timeous ordering thereof.

C3.4.3 Construction Equipment

C3.4.3.1 Requirements for Equipment

All equipment must comply with the requirements as stipulated in the Environmental regulations and specifications and contained in the Occupational Health and Safety Act.

All construction plant and equipment used on this contract shall be in good working order, well maintained, of adequate size and fit for purpose. No plant or equipment that leaks oil, fuel or hydraulic fluids may be used on site.

Any plant or equipment that, in the opinion of the Employer's Agent, is not of adequate size or fit for use shall be removed from the site and replaced with acceptable plant and equipment, all at the Contractor's cost.

C3.4.3.2 Equipment Provided by the Employer

No equipment shall be provided to the Contractor by the Employer.

C3.4.4 Existing Services

C3.4.4.1 Known Services

The positions of all known existing services will be pointed out to the Contractor on site.

The Contractor shall take all necessary steps to ascertain the location of existing services before commencing any section of the works. Prior to the commencement of work in any area the Contractor shall carefully excavate to locate and mark the positions of all existing underground services affected by the works. He shall take all necessary precautions to protect any existing works whatsoever against damage which may arise and shall bear the full cost of the repairs to any damage caused as a result of his operations on site. Any damage to a service shall immediately be reported to the responsible authority and to the Engineer. The Contractor must liaise with all relevant authorities to satisfy himself that all existing services have been located.

C3.4.4.2 Treatment of Existing Services

The Contractor shall ensure that none of the existing services are damaged during the implementation of this Contract.

Existing services are to be kept live as far as practically possible. The need may arise for services such as electricity and water to be turned off for a short period of time due to construction in close proximity to these services. In this event the Contractor is to contact the relevant authorities well in advance of his programmed construction date in the affected areas so as not to incur any delays.

C3.4.4.3 Use of Detection Equipment for the Location of Underground Services

The Contractor may use detection equipment to locate underground services prior to exposing such by hand. The costs for the use of this equipment are deemed to be included in the tendered rates.

C3.4.4.4 Damage To Services

The Contractor shall exercise care in the vicinity of existing services, and shall take all necessary measures to protect such services. Repairs to existing services damaged by the Contractor shall be for his own account.

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.

C3.4.4.5 Reinstatement of Services and Structures Damaged During Construction

In the event of a service being damaged, the Contractor shall immediately notify the authority concerned, as well as the Employer's Agent. Where the authority concerned elects to effect the repair, the Contractor shall co-operate with and allow such authority reasonable access and sufficient space and time to effect the repair.

C3.4.5 Site Establishment

C3.4.5.1 Services and Facilities Provided by the Employer

The O. R. Tambo District Municipality is the Water Supply Authority.

No services or facilities will be provided by the Employer. The Contractor is to provide his own services and facilities, and to make allowance for the cost thereof in Section 1 of the Schedule of Quantities.

C3.4.5.2 Facilities Provided by the Contractor

a) The Contractor's camp site

The Contractor shall be as required to fulfil his obligations under the contract. If the Employer can make any specific site available to the Contractor, such site will be pointed out to the Contractor by the Employer. The Contractor may, if he prefers to have a site camp and storage yard location other than that identified by the Employer, suggest an alternative location to the Employer, subject to approval by the Employer

b) Accommodation of Employees

The Contractor shall make his own arrangements to accommodate his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

c) Power Supply, Water, and Other Services

The Contractor shall make his own arrangements concerning the supply of electricity power, water and all other services. No direct payment will be made for the provision of these services. The cost thereof shall be deemed included in the rates and amount tendered for the various items of work for which these services are required or in the Contractors Preliminary and General items.

d) Excrement disposal

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, to the satisfaction of the Engineer and the responsible health authorities in the area of the Site.

The Contractor shall further comply with any other requirements in this regard as may be stated in the Contract.

No separate payment will be made to the Contractor in respect of discharging his obligations in terms of this subclause and the costs thereof shall be deemed to be included within the Contractor's bidded Preliminary and General Items.

C3.4.5.3 Storage And Laboratory Facilities

The Contractor is to provide the facilities indicated in the Schedule of Quantities. Storage areas are to be contained within the Contractor's designated, fenced off construction camp(s).

C3.4.5.4 Other Facilities and Services

The Contractor is responsible for the provision of all necessary temporary facilities which are not provided by the Employer, including power, water, telecommunications, security services, medical, fire protection, sanitation and toilets and solid waste disposal.

The Contractor shall make his own provisions for the collection, storage and disposal of all construction waste (i.e. whether it be in the camp or on the construction site); all in conformance with the Environmental Management Plan and with approval of the Employer's Agent, the Local Authority and the Environmental Officer. Payment for the clearing, loading, transport, dumping fees and any other requirement or costs incurred shall be included in the scheduled rates.

The Contractor shall provide suitable and adequate portable chemical latrines for his employees and his sub-contractors. Latrines shall be maintained by the Contractor in a clean and sanitary condition to the Employer's Agent's satisfaction. The use of latrines shall be enforced and fouling of the site will not be tolerated.

The Contractor shall be permitted to house Key Personnel only within the construction camp site(s). At the commencement of the Contract, the Contractor shall inform the Employer's Agent of his intentions regarding

the housing of Key Personnel on site, and he shall thereafter ensure that such accommodation is kept neat, hygienic, and properly controlled at all times. At any stage of the Contract, should the Employer's Agent be of the opinion that the housing of Key Personnel within the construction camp(s) is causing disturbance, or inconvenience to the land owner or nearby residents, the authority granted in this clause for the housing of Key Personnel within the construction camp(s) bay be withdrawn, either partially or entirely.

The Contractor is to comply with all requirements contained in law or local bylaws, as well as any other requirements set by the local authority.

C3.4.5.5 Vehicles and Equipment

The Contractor shall, for purposes of this contract, provide suitable site offices, telephonic facilities and survey and testing equipment in accordance to the Variation to Standard and Particular Specifications PSAB 3.2.

C3.4.5.6 Advertising Rights

The Contractor shall not publish, or cause to be published, any papers, articles or information relating to this project, nor permit any advertising mentioning the subject of this Contract, nor display, or permit to be displayed, any advertisements on the Site, or elsewhere, in connection with this Contract, without the prior permission, in writing, of the Employer. The Contractor shall be responsible for the observance of this Clause by his employees and by his Sub-Contractors.

C3.4.5.7 Notice Boards

The Contractor is to provide notice boards as indicated in the Schedule of Quantities, the layout of which is to match the template issued in the Tender Document.

The boards are to be erected at locations approved by the Employer's Agent. The Employer's Agent reserves the right (at no cost to the Employer) to have any sign, notice or advertisement moved to another location, or to have such removed from the site entirely, should such signs, notices or advertisements prove in any way unsatisfactory, or an inconvenience or danger to the general public.

These boards are to be maintained for the duration of the Contract. Any damage to the boards shall be repaired within fourteen (14) days of a written instruction issued by the Employer's Agent.

The notice boards and supporting structures are to be removed fourteen (14) days prior to the issue of the Final Approval Certificate.

C3.4.6 Site Usage

Access to site shall be limited to the Contractor and his personnel. The Contractor shall be responsible for the control of unauthorized entry to the site and shall inform the Employer's Agent of any breach of such rules. The site shall be managed and used for its intended purpose. The Contractor is required to keep a visitors log and ensure full compliance with site safety standards.

Access shall also be provided for subcontractors, inspections and testing by personnel acting on behalf of the Employer.

Access to the public shall be strictly prohibited

C3.4.7 Security

The Contractor may be exposed to criminal actions, including theft and vandalism, and shall make all his own necessary security arrangements for the duration of the Contract.

The Contractor shall be responsible for taking all reasonable measures to ensure that effective access control and integrity of the site perimeter fence is maintained for the full duration of construction.

C3.4.8 Permits and Way Leaves

While the Engineer is responsible for obtaining all the necessary wayleaves, permissions and permits applicable to working near any existing services or other infrastructure on Site, the Contractor is responsible for abiding by the safety and other conditions imposed by such wayleaves, permissions and permits.

The Contractor shall ensure that all wayleaves, permissions and permits (furnished by the Engineer) are kept on site and are available for inspection by the relevant services authorities on demand.

C3.4.9 Alterations, Additions, Extensions and Modifications to Existing Works

The Contractor is to satisfy himself as to the dimensional accuracy, alignment, levels and setting out of existing structures or components thereof to ensure compatibility with the proposed works. Any concerns are to be raised timeously with the Employer's Agent.

C3.4.10 Inspection of Adjoining Properties

Where the works encroach or adjoin public and private property with the potential to cause damage to existing structures and properties, the Contractor is to inspect properties with the presence of property owners and representatives of local authorities.

Photographic records and written permissions are to be obtained prior to commencing with the works and said records supplied to the Engineer or Engineer's Representative.

C3.4.11 Water for Construction Purposes

The Contractor is responsible for procuring, transporting, storing, distributing and applying the water needed for construction purposes. The Contractor shall make allowance for his own temporary water storage on site to suit his own requirements.

Regarding water for filling and testing the reservoir, the Contractor make his/her arrangement. Should it be necessary to drain and re-fill the reservoir in the event of a leak, the water shall be returned to the adjacent reservoir at a rate compatible with the local consumption from that reservoir. Any additional water (beyond any volume returned) required to re-fill the reservoir for re-testing shall be at the Contractor's expense.

C3.4.12 Survey Control and Setting Out of the Works

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as benchmarks, 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, the Contractor shall have them replaced by a registered land surveyor at his own cost.

The Contractor shall be responsible for all setting out to line and level. Survey control will be provided to the contractor at the start of the contract. The contractor shall satisfy himself with the accuracy thereof and immediately bring any discrepancies to the attention of the Engineer.

C3.4.13 Workmanship and Quality Control

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced Site Agents, Foremen, Surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

The cost of supervision and process control, including testing and mix designs carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the Employer's Agent for examination and measurement, the Contractor shall furnish the Employer's Agent with the results of the relevant tests, mix designs, measurements and levels to demonstrate the achievement of compliance with the Specifications.

C3.4.14 Workmanship and Quality Control

C3.4.14.1 Supporting Documents

The Contractor will be required to provide a detailed labour forecast of the numbers of each category of worker which he intends to employ or utilise in the execution of the Works, together with the definition of the particular tasks on which it is intended that they will be engaged and the periods during which they will be so engaged.

C3.4.14.2 Monthly Reporting

It is a specific requirement of this Contract that the Contractor shall collect and record all relevant information for the completion of monthly and bi-annual labour, progress and cashflow reports (using Employer-issued templates) and submit these by due date every month to the Engineer without fail. The labour template follows the standard Expanded Public Works reporting.

C3.4.14.3 Prevention of accidents to local residents; especially children

Particular care must be taken to proactively eliminate (as far as realistically possible) the risk of local individuals of all ages gaining access to construction areas during and outside working hours and coming to harm (In particular, drowning and falling into open excavations). As part of this risk mitigation / elimination, the Contractor shall employ and post a 24/7 guard at the access gate and shall hold regular meetings with the social facilitator and local community leadership to discuss issues arising regarding safety of local residents.

C3.5. Management

C3.5.1 Management of the Works

C3.5.1.1 Applicable SANS 1921 Standards

- SANS 1921-1:2004 Part 1 General Engineering and Construction Works
- SANS 1921-2:2004 Part 2 Accommodation of Traffic on Public Roads Occupied by the Contractor
- SANS 1921-3:2004 Part 3 Structural Steelwork
- SANS 1921-4:2004 Part 4 Third-party Management Support in Works Contracts
- SANS 1921-5:2004 Part 5 Earthworks Activities which are to be Performed by Hand
- SANS 1921-6:2004 Part 6 HIV/AIDS Awareness

C3.5.1.2 Particular Specifications (C3.6 - Annexes)

Refer to **C3.6** – Annexures for particular (purpose written) specifications.

C3.5.1.3 Planning and Programming

The Contractor shall submit a detailed programme within fourteen (14) days of the acceptance of the tender as stipulated in the General Conditions of Contract 2015.

The Contract period shall include all Saturdays, Sundays, non-working days (public holidays), special non-working days, as well as an allowance for anticipated inclement weather (as per Clause 5.12.2.2: Extension of Time) during normal working hours. The programme shall be agreed between the Employer and the Contractor prior to the implementation of the construction works.

The programme shall be updated monthly, for discussion at the monthly progress (site) meeting, to indicate planned versus actual progress.

The Contractor shall review his progress each month and should progress lag behind the latest accepted programme, by more than 2 weeks, he shall submit a revised programme and method statement of how he proposes to make up the lost time. If, in the opinion of the Employer's Agent, such revised programme will not make up the lost time, the Employer's Agent shall have the right to request the Contractor to reorganize his work in a manner which will ensure an acceptable programme. Claims for additional payment to meet any costs incurred due to such reorganisation will not be accepted.

Should the Contractor wish to work outside normal working hours (as defined in the Contract Data) for any reason, he shall first seek permission to do so from the Employer's Agent. Attending to emergency situations or making-safe the Works are exempt from requiring prior approval, but notification shall still be sent to the Employer's Agent.

Site handover and commencement of execution of the Contract will only take place once all the necessary documentation (details given in Contract Data) has been submitted and approved. Before any site work is undertaken, an introductory meeting with the local community has to be held. The latter is arranged by the Employer's Agent.

C3.5.1.4 Programme Format and Content

Programmes shall be submitted in Microsoft Project format in hardcopy and softcopy. The Contractor is to provide the detailed programme such that it is legible.

The programme of construction shall be submitted to the Engineer within the time period stipulated in these documents. The programme shall clearly show all activities related to the works and shall indicate which activities are on the critical path.

In compiling the programme the Contractor shall take into account the following:

- Based on the tendered Time for Completion, the Due Completion Date for Practical Completion is calculated from the date of Site Handover and Instruction to Commence with the Works.
- Site handover and commencement of execution of the Contract will only take place once all the necessary documentation (details given in Contract Data) has been submitted and approved and Construction Permit from Department of Labour obtained. Before any site work is undertaken, an introductory meeting with the local community has to be held. The latter is arranged by the Employer's Agent.
- The time required to order and deliver the required pipes, fittings and pipe specials.
- The lead-time for training of local labour.
- Establishment and de-establishment times.

- Appointment of Community Liaison Officer (CLO).
- All public and Contractor close down periods.
- At least **30 calendar days** shall be allowed for filling the reservoir for testing.
- All other activities required in terms of this document.

The Contractor's programme shall show:

a) The various activities, related to a time scale, for each element of the Works, including those of Subcontractors, in sufficient detail to be able to assess construction progress.
b) Water testing
c) Critical path activities and their dependencies,
d) Key dates in respect of information to be provided by the Employer's Agent and/or other

C3.5.1.5 Methods And Procedures

Where requested in writing by the Employer's Agent, the Contractor shall submit Method Statements for constructing specific aspects of the Works. Such work shall not be started until the Contractor receives approval of the Method Statement in writing from the Employer's Agent.

C3.5.1.6 Quality Plans and Control

The Contractor is required to have in place, and follow, an approved Quality Assurance System for the execution of this Contract. To this end, the Contractor shall submit his proposed Quality Management Plan (QMP) to the Employer's Agent for approval along with his up-front documentation required before the commencement of the Works. The QMP shall include the Contractor's proposed Quality Control Plan (QCP) which shows how conformance to the QMP is to be documented.

In addition to this, the Contractor is required to follow the Employer's Agent's Site Quality Control procedures which entails the following:

- Contractor's submission of Request for Inspection of Work;
- Employer's Agent's signing-off of 'hold points' at each stage of the work (thereby authorising the Contractor to proceed with the next stage of the work).

This may take several iterations should the Employer's Agent require further work before signing-off. Work may not proceed on the next stage until the previous stage has been signed-off.

Claims for particular items of completed work for each interim Payment Certificate will not be certified for payment where the required sign-offs have not been obtained.

No claims for extension of time, nor any other form of compensation, will be entertained for delays in receiving the Employer's Agent sign-offs on 'hold points' where, in the opinion of the Employer's Agent, insufficient notice has been given to inspect and approve the Works. The default notice required is 48 hours.

The Contractor shall submit copies of all his conformance documentation to the Employer's Agent on a monthly basis and proof of recent calibration of all measuring devices that are to be used.

C3.5.1.7 Environment

The Contractor shall comply with the Construction Environmental Management Plan. The Environmental Control Officer shall liaise directly with the Contractor on general environmental matters. Where such matters affect construction works, the Environmental Control Officer will be required to address such concerns with the Employer's Agent.

The Contractor shall plan the work in such manner that wind-blown dust is kept to a minimum. Earthworks shall commence immediately after a section is cleared and approved. The Contractor will have a water truck or other means of dust suppression on standby for spraying the cleared areas. The cost of this process will be deemed to have been included in the clearing and excavation rates entered in the Schedule of Quantities.

Burning of any materials on site will not be allowed.

The Contractor is required to progressively and systematically finish and tidy the work as it proceeds. This will be monitored against the latest approved programme. The Employer's Agent shall have the right to not certify full payment of particular scheduled items where such items are largely complete, but finishing and tidying is deemed still outstanding.

Under no circumstances shall spoil, rubble, materials or equipment be allowed to unnecessarily accumulate on Site. If, in the opinion of the Employer's Agent, this is occurring, the Employer's Agent shall have the right to

make an allowance for the estimated cost of rectifying the above by reducing particular measured quantities from claims being processed for payment.

C3.5.1.8 Other Contractors On Site

There are no other Contractors on Site.

C3.5.1.9 Recording of Weather

The Contractor is to provide and correctly install a rain gauge and maximum/minimum thermometer at the construction camp. The Contractor shall record and keep a record of the daily rainfall and maximum/minimum temperatures, and supply the data to the Employer's Agent on a daily basis. Readings are to be recorded daily at 08:00 unless otherwise agreed to by the Employer's Agent.

C3.5.1.10 Extension of Time Resulting from Abnormal Weather

Extension of time will not be considered for normal adverse weather conditions. For abnormal rainfall or saturated conditions will be calculated as follows:

- The Contractor shall, in his programme, allow for the expected number of working days on which work on critical path activities could be delayed – as given in the Schedule below.
- Extension of time will be calculated for each calendar month or part thereof over the full period for the completion of the Work, plus any approved extension thereof, as follows:
  - A delay caused by abnormal weather conditions will only be accepted for extension of time if, in the opinion of the Employer's Agent, it delays an item or items which lie on the critical path determined by the Contractor's approved programme (irrespective of actual rainfall).
  - An extension of time will be granted for the number of days, as approved, on which adverse weather conditions delay critical path activities, less the anticipated number of days given in the Schedule below.
  - The net extension of time determined for each month, which may be negative, shall accumulate algebraically to determine the net number days for extension of time due to abnormal weather conditions, but a negative total at the end of the Completion Period will not be taken into account.
  - Where a portion of a month is involved, a pro rata number of days shall be calculated.

The anticipated number of working days on which work on critical path activities will be delayed as a result of adverse weather conditions are as follows:

Month	Days	Month	Days
January	3	July	0
February	3	August	1
March	4	September	2
April	2	October	2
May	1	November	3
June	0	December	3

C3.5.1.11 Format of Communications

All requests for information or requests for inspections are to be recorded in writing.

All instructions are to be issued in writing as a Site Instruction.

C3.5.1.12 Key Personnel

The Contractor is to compile and submit to the Employer's Agent a schedule of Key Personnel, including titles, names, designations and contact numbers of such personnel. This document is to be updated immediately in the event of any changes.

C3.5.1.13 Management Meetings

Formal project meetings will be held on site in the Employer's Agent's office (or similar suitable office). Representatives of the Employer, Employer's Agent and Contractor will be required to attend. The representatives are to have the necessary authority in respect of aspects such as planning and health and safety. The Contracts Manager and Construction Manager (Site Agent) are required to attend all such meetings.

The Contractor shall attend the following meetings during the Contract:

a) Monthly site meetings, on Site or as called by the Employer's Agent, from the commencement of the Works until the issue of the Practical Completion Certificate (or where necessary as determined by the Employer's Agent).
b) Monthly technical meetings called by the Employer's Agent (or where necessary as determined by the Employer's Agent).
c) Meetings during the Defects Notification Period called by the Employer's Agent (only if warranted)
d) The following reports shall be submitted by the Contractor before the monthly Site Meetings:
    - Progress Report
    - Plant and Labour returns
    - Updated Programme vs Baseline Programme
    - Updated cashflow projection.

The cost of these requirements shall be included in the rates tendered for Time Related Items.

C3.5.1.14 Forms for Contract Administration

The Employer's Agent's Representative will have a full set of contract administration forms for use on site. This includes forms for recording test results, claims, inspections and the like. The Contractor may use such as a basis for his documentation should he not have adequate similar templates.

C3.5.1.15 Electronic Payments

The Employer will make payments by electronic means only.

C3.5.1.16 Daily Records

The Contractor is required to keep daily records of resources (people and construction equipment) as well as of work performed on the site. A signed copy of the previous day's record must be provided to the Employer's Agent on a daily basis.

Information relating to construction equipment shall be recorded in the Daily Site Diary. In addition, the Contractor shall deliver to the Employer's Agent, on a monthly basis, a detailed schedule of construction equipment present on the site for that month. Full particulars are to be recorded, identifying each piece of equipment, including whether the equipment is in working order or out-of-order. This schedule is to be submitted by the first day of the month following the month to be reported.

C3.5.1.17 Bonds And Guarantees

Bonds and guarantees are to be submitted to the Employer from whom they can be collected once they are released, in accordance with the contract.

C3.5.1.18 Payment Certificates

Measurements for interim and final certificates must be agreed with the Employer's Agent prior to the issuing of a Tax Invoice by the Contractor.

The Contractor is to provide all invoices, vouchers and receipts in respect of payments made by him in connection with provisional or prime cost items when he requires payment for such.

The Contractor is to provide all invoices or receipts in respect of materials purchased and delivered to the site when he requires payment for such. Invoices or receipts are to clearly identify the material, the unit rate thereof, and the quantity/number purchased.

It is a specific requirement of this Contract that the Contractor shall collect and record all relevant information for the completion of end-of-month documentation to be submitted with each payment claim. The Payment Certificate (prepared by the Employer's Agent) will not be accepted by the Employer unless accompanied by the following:

- Local Labour Schedule (in EPWP format; ie giving employee names, IDs, gender, age group and disability status if applicable)

- Monthly Progress Report (from Site Meeting).

C3.5.1.19 Proof of Compliance with the Law

The Contractor shall insure his employees against accident in terms of the Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993), as amended. A Letter of Good Standing with the Compensation Fund, as issued by the Department of Labour, must be submitted as part of the Tender.

Where the Letter of Good Standing expires during the contract period, the Contractor will be required to submit new, valid documentation. Failing to do so will result in work being stopped.

C3.5.1.20 Insurance Provided by the Employer

No insurance will be provided by the Employer.

C3.5.2 Health and Safety

C3.5.2.1 Health and Safety Requirements and Procedures

The Contractor is to comply in all respects with the Occupational Health and Safety Act (Act 85 of 1993), as amended, as well as with the Construction Regulations 2014, the Electrical Machinery Regulations, and the Employer's OH&S Particular Specification given in Part C3.6.

The Health and Safety Officer appointed by the Employer shall liaise directly with the Contractor on safety matters but shall be required to channel safety matters affecting construction work through the Employer's Agent.

With reference to the Baseline Risk Assessment given in the Employer's OH&S Particular Specification, the Contractor shall take special care of the following during construction:

Flooding of trenches or excavations
Possibility of collapse of excavations in sandy soils
Protection of deep excavations and adjacent structures
Protection of existing services
Accommodation of traffic and pedestrians
Proper storage and stacking of materials
Good housekeeping and site tidiness
Provision of welfare facilities
Dust control

The Baseline Risk Assessment provided is not necessarily fully comprehensive and the Contractor is responsible for carrying out his own Baseline Risk Assessment.

The Contractor's Health and Safety plan is to be approved and the Contractor's Safety Officer is to be appointed prior to the commencement of any construction activities. It is specifically noted that the person officially appointed as the Contractor's Safety Officer shall be properly qualified and experienced and be based full-time at the site while activities are taking place.

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

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the complete Act. Particular attention however needs to be made to the Construction Regulations of the Act and this specification as applicable to this Contract.

C3.5.2.2 Protection of the Public

The Contractor shall at all times ensure that his operations do not endanger any member of the public.

No excavation may left open during the builder's holiday. Excavations left open over other non-working days shall be adequately safeguarded at all times.

C3.5.2.3 Barricades and Lighting

The Contractor is responsible for the safety of the site and shall provide all necessary watching, barricading and lighting. This is especially significant at excavations.

C3.5.2.4 Traffic Control on Roads

The Contractor shall accommodate any pedestrian traffic on the walkways and road past the site, as well as vehicular traffic in the roads.

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.

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.

C3.5.2.5 Measures Against Disease and Epidemics

Not applicable to this contract.

C3.5.2.6 Aids Awareness

The Contractor shall provide HIV/AIDS awareness training to staff employed during the construction project. A provisional amount has been allowed for in the Bill of Quantities to cover the Contractor's cost for compliance for this item.

C3.5.3 Community Participation

C3.5.3.1 Project Steering Committee

The establishment of Project Steering Committee (PSC) shall be through Institutional and Social Development facilitator (ISD).

A Provisional Sum allowance has been made for the short-term employment of PSC members in accordance with the following:

a) Candidates for the PSC will be selected from the local community meeting.
b) The PSC will have 5 members from the community
c) Remuneration for the PSC member will be R500 allowance per month for the period of employment.

The Steering Committee provides support, guidance and oversight of progress. The PSC will liaise with the Project Manager in performing the following activities:

- Providing input to the development of the project, including the evaluation strategy
- Providing advice on the budget
- Defining and helping to achieve the project outcomes
- Identifying the priorities in the project – where the most energy should be directed
- Identifying potential risks
- Monitoring risks
- Monitoring timelines
- Monitoring the quality of the project as it develops
- Providing advice (and sometimes making decisions) about changes to the project as it develops.

The Steering Committee provides support, guidance and oversight of progress. Members do not usually work on the project themselves. Generally, the Project Manager, and other members of the Project Team, actually do the work implementing the project.

The Project Manager will normally attend meetings of the Steering Committee to report on progress and answer any questions raised by members. It's useful to have an additional person (such someone else working on the project or an administrative staff member) attend to assist the Project Manager by recording the minutes and decisions of the meeting.

Role of individual members of the PSC.

Individual Steering Committee members are not directly responsible for managing project activities, but provide support and guidance for those who do. So, individually, Steering Committee members should:

- Understand the aim, strategy and intended outcomes of the project
- Appreciate the significance of the project for their own organisation and clients

- Be genuinely interested in the project and the outcomes that are intended
- Be an advocate for the project by doing what they can to promote its outputs
- Have a broad understanding of project management issues.

C3.5.3.2 Community Liaison Officer

The employment of local labour shall be through a Community Liaison Officer (CLO).

A Provisional Sum allowance has been made for the short-term employment of CLO in accordance with the following Terms of Reference (ToR):

d) Candidates for the CLO will be selected by the local leadership.
e) The accepted CLO will responsible for liaising with a Project Steering Committee (PSC) for each area.
f) The CLO is to be appointed for the period of on-site activity, plus a period of 14 days prior to this period.
g) Remuneration for the CLO will be R 8 000 wages plus R300 cell phone allowance per month for the period of employment.

The CLO will liaise with the Contractor in performing the following activities:

Organise and assist the contractor in explaining to all workers the labour-based construction model
Ensure labourers understand their task and the principles behind task work
Ensure labourers are informed of their conditions of temporary employment
Attend all site meetings and briefing for work procedures
Keep written record of interviews and community liaison which should be summarised and included in the monthly progress reports
Collect monthly welfare reports and submit to social facilitators
Ensure that contractor's workers are paid what is due to them and in time
Assist in the recruitment of labour
Promote and maintain sound relations with community stakeholders and other role players
Screen the supplied labour by the community through Project Steering Committees to ensure compliance with the agreed upon recruitment policy and the government's labour employment targets
Inform local labour about their conditions of temporary employment, to ensure their timeous availability and inform them timeously when they would be relieved, where the rotation of labour is applicable
Keep the labour register of labour and manage records of project local labourers and be able to provide reports on employment statistics
Consult on all decisions regarding local problems and any matters of importance that, in any way will be of relevance to the Contract.
To be on site on a daily basis
To register concerns / perceptions and raise them in the PSC meetings
Attend site and PSC meetings to present monthly report on the local community labour involvement and site matters
Identify possible labour dispute and any disciplinary matter and advise the site agent / foreman and assist in the resolution, where necessary must call for the assistance of the Social Consultant for the resolution of the conflicts
Assist the contractor in preparing records of project employees. Assist the contractor in making task measurements and the records thereof
Monitor the production of individual task workers and arrange replacement of those workers who fail to produce a reasonable task output
Attend disciplinary proceedings to ensure that hearings are fair and reasonable
Communicate daily with the contractor to determine additional labour requirements with regard to numbers and skills and pass this to the PSC
Attend weekly meetings with the contractor and make a weekly written report which shall be a prerequisite to being paid.

The CLO will liaise with the Social Facilitators in performing the following activities:

- Assist in convening of workshops
- Disseminate information to PSC members
- Articulate implementing agency policies to PSC members
- Communicate labour requirements
- Attend induction training programmes for workers and induct labourers
- Submit monthly welfare reports to the social facilitators PSC
- Communicate labour and skills requirements to the PSC
- Assist in the recruitment and engagement of work force
- Verify labour records and ensure all engaged qualify as per the Contract requirements
- Investigate and report all labour dispute matters to the PSC, advise site agent on resolution.

The community is represented by a PSC. All liaisons with the community and the committees are the responsibility of the Social Facilitator in conjunction with the O. R. Tambo District Municipality, the Employer and the Project

Steering Committee. The Contractor will be required to liaise through them for any matters pertaining to the community.

C3.5.3.3 Employment of the Local Community Members

The employer's objectives are to deliver public infrastructure using labour intensive methods. It is the intention that this contract should make maximum use of the local labour force that is presently under-unemployed. The Contractor is to limit the import of labour to skilled personnel only. Semi-skilled and unskilled labour is to be sourced from the local community where possible.

It is a requirement that, at least, all unskilled labour taken-on by the Main Contractor and his sub-Contractors are sourced from the immediate local community (but extending to the local Ward where necessary) and that such employment is arranged through the CLO and PSC.

Employment of all temporary labour, whether employed directly or through a Subcontractor, shall comply in all respects with the National Government Department of Labour's regulations; including the minimum wage applicable to construction work in the Eastern Cape or O.R. Tambo District Municipality.

Labour-intensive works comprise the activities described in SANS 1921-5, Earthworks activities which are to be performed by hand, and its associated specification data. Such works shall be constructed using local workers who are temporarily employed in terms of this Scope of Work.

C3.5.3.4 Training of Local Targeted Labour Group

Contractors having a CIDB contractor grading designation of 7CE and higher shall only engage supervisory and management staff in labour intensive works who have either completed, or for the period 1 April 2004 to 30 June 2006, are registered for training towards, the skills programme outlined in Table 1.

The managing principal of the contractor, namely, a sole proprietor, the senior partner, the managing director or managing member of a close corporation, as relevant, having a contractor grading designation of 1CE, 2CE, 3CE and 4CE shall have personally completed, or for the period 1 April 2004 to 30 June 2006 be registered on a skills programme for the NQF level 2.

All other site supervisory staff in the employ of such contractors must have completed, or for the period 1 April 2004 to 30 June 2006 be registered on a skills programme for, the NQF level 2 unit standards or NQF level 4 unit standards.

Table 1: Skills programme for supervisory and management staff

Personnel	NQF level	Unit standard titles	Skills programme description
Team Leader / Supervisor	***2***	Apply Labour-Intensive Construction Systems and Techniques to Work Activities	This unit standard must be completed, **and**
		Use Labour-Intensive Construction Methods to Construct and Maintain Roads and Stormwater Drainage	any one of these 3 unit standards
		Use Labour-Intensive Construction Methods to Construct and Maintain Water and Sanitation Services	
		Use Labour-Intensive Construction Methods to Construct, Repair and Maintain Structures	
Foreman / supervisor	***4***	Implement Labour-Intensive Construction Systems and Techniques	This unit standard must be completed, **and**
		Use Labour-Intensive Construction Methods to Construct and Maintain	any one of these 3 unit standards
		Roads and Stormwater Drainage Use Labour-Intensive	

		Construction Methods to Construct and Maintain	
		Water and Sanitation Services Use Labour-Intensive Construction Methods to Construct, Repair and Maintain Structures	
Site Agent / Manager (i.e. the contractor's most senior representative that is resident on the site)	***5***	Manage Labour-Intensive Construction Processes	Skills Programme against this single unit standard

C3.5.3.5 Certificate of Service

An employee shall, upon termination of his services, be entitled to a Certificate of Service showing the full names of his employer (i.e. the Contractor) and the employee, the type of work done by the employee, the date of commencement, a record of training received and the date of termination of his services.

C3.6. Annexes

Page

Annex C3.6.1 Variations and Additions to Requirements of Standardised SANS 1200 Specifications: General, Civil and Structural Works

PSA GENERAL (SANS 1200A)

PSA 2 INTERPRETATIONS

PSA 2.2 Applicable Edition of Standards

Add at the beginning of the first sentence of Sub-clause 2.2:

"Unless a specific edition is specified (see the List of Applicable Specifications),"

PSA 2.3 Definitions

"Task" - a quantified activity or operation

"Daily task" - a task that is required to be completed within a given time

"Task work" - work paid by the completed task or job

"Daily rate" - the remuneration of a day's work regardless of output

"Daily wage" - see daily rate

"Task rate" - the remuneration for a completed task

"Daily task rate" - the remuneration for a completed daily task

PSA 3 MATERIALS

PSA 3.1 Quality

Add the following to this Clause:

Where a material to be used in this Contract is specified to comply with the requirements of an SABS Standard Specification, and such material is available with the official SABS mark, the material used shall bear the official mark.

The Contractor shall submit in good time, before any construction commences, to the Employer's Agent on site, samples of all materials intended to be incorporated into the works. The samples shall be accompanied by results of tests undertaken by an approved independent laboratory on the samples in question on behalf of the Contractor and at his cost, before consideration by the Employer's Agent

The Employer's Agent, during construction, will take independent samples from stockpiles of proposed construction materials on site and from the completed works. Approval will not be granted for samples delivered by the Contractor directly to the Employer's Agent's office. The Contractor shall be responsible for the cost of all failures on test samples and control testing.

All pipes, fittings and materials used in the Works, must bear the official standardisation mark of Standards South Africa where applicable. The mark on a pipe shall be visible from above after the pipe is laid.

Rubber articles, including pipe insertion or joint rings shall be stored in a suitable shed and kept away from sunlight, oil or grease.

Large items not normally stored in a building shall be neatly stacked or laid out on suitable cleared areas on the Site. Grass or vegetation shall not be allowed to grow long in the storage areas and the material shall be kept free of dust and mud and shall be protected from stormwater. Pipes shall be handled and stacked in accordance with the manufacturer's recommendations, special care being taken to avoid stacking to excessive heights and placing over hard objects. PVC pipes shall be protected from direct sunlight by suitable covers.

Every precaution shall be taken to keep cement dry and prevent access of moisture to it from the time it leaves the place of manufacture until it is required for use on the Site. Cement is to be used on a first in/first out basis. Bags of cement which show any degree of hydration and setting shall be removed from the site of the Works and replaced at the Contractor's own expense. Any cement older than six weeks is to be removed from site.

Materials shall be handled with proper care at all times. Under no circumstances may materials be dropped from vehicles. Large pipes or large plant shall be lifted or lowered only by means of suitable hoisting equipment.

Where propriety materials are specified it is to indicate the quality or type of materials or articles required, and where the terms "or other approved" or "or approved equivalent" are used in connection with proprietary materials or articles, the Contractor is to supply with their tender the name of the manufacturer and supporting documentation that show that the materials or articles comply with the relevant specifications. It is understood that the approval shall be at the sole discretion of the Employer and the Employer's Agent.

Irrespective of any approval granted by the Employer's Agent or the Employer, the Contractor shall be deemed responsible for quality of all materials used for construction and their specified performance.

PSA 4 CONSTRUCTION EQUIPMENT

PSA 4.2 Contractor's Offices, Stores and Services

After the second paragraph add the following:

The suitable first aid services required in terms of Sub-clause 4.2 shall include, inter alia, a First Aid cabinet fully equipped and maintained with at least the minimum contents as listed in Regulation 3 of the General Safety Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), to deal with accidents and ailments which are likely to occur during the construction period.

PSA 5 CONSTRUCTION

PSA 5.1.1 Setting Out of the Works

Add the following to this Clause:

The Contractor shall be fully responsible for the setting out of the works, and where labour intensive work is specified, for the setting out of the daily construction tasks.

The Contractor, within two (2) weeks after the site has been handed over to him, is to ascertain the correctness of all pegs and bench marks. Any discrepancy shall immediately be reported in writing to the Employer's Agent. Any costs or subsequent costs arising from discrepancies which had not been reported to the Employer's Agent, within the aforementioned period, shall be the sole responsibility of the Contractor.

Tender drawings shall not be used for construction purposes.

PSA 5.2 Watching, Barricading, Lighting and Traffic Crossings

Add the following to this Clause:

The Contractor shall employ competent watchmen to guard the Works both by day and night.

From the time any portion of the Works commences, until the Completion of the Works and the issue of the Certificate of Completion of the Works, the Contractor shall be responsible for protecting the property of the Employer and all persons having business on the Site from anything dangerous or likely to cause damage or injury. The Contractor shall take all practical precautions to avoid nuisance or inconvenience to the owners or occupiers of properties near to the Site and to the public generally whilst carrying out the Works and shall at all times keep the Site clean and in a safe and satisfactory condition.

Temporary traffic signs shall be erected when work is being done within and adjacent to roadways. The number and layout of the traffic signs shall comply with the Site Manual entitled "Safety at Roadworks in Urban Areas", as published by the Department of Transport

The Contractor shall control all access to the site, for authorised persons only, and shall ensure that the approved conditions of the Health and Safety Management Plan are adhered to.

PSA 5.4 Protection of Overhead and Underground Services

Add the following to this Clause:

Before construction of the Works, or any phase of the Works, the Contractor shall contact all relevant parties and authority officials to establish the existence of existing services on site. The Contractor shall be responsible for obtaining all necessary wayleaves. No claims shall be lodged by the Contractor for delays in obtaining such wayleaves or permits.

PSA 5.7 Safety

Add the following to this Clause:
Compliance with
1) OHS Act and Regulations and
2) Construction Environmental Management Plan (CEMP)

Lump sums are provided in the Bill of Quantities to cover the contractor's cost for compliance with the requirements of the Construction Environmental Management Plan and the Occupational Health and Safety Act, 1993, the Construction Regulations, 2014 and the Health and Safety Specification respectively.

In addition, Sums are included under Time Related Items in the Preliminary and General Section of the Schedule of Quantities. The lump sums shall include full compensation for the provision of the necessary site official, the training, PPE, plans, audits, assessments, administration, etc. and all other costs required for compliance. Fines issued for non-compliance will be deducted from these Provisional Sums, but are not limited to the value of the Provisional Sum stated.

Add the following clauses:

PSA 5.10 Record Drawing Information

As the Works are progressing, the Contractor shall mark on a special set of drawings, all as-built details and submit them to the Employer's Agent's Representative for approval. No extra payment shall be made for preparation of these as-built plans.

All valves, chambers and the like shall be co-ordinated together with their invert and cover/ground levels on the as-built drawings.

The Certificate of Completion shall only be issued once all the as-built information has been received and verified by the Employer's Agent.

PSA 5.11 Clearance of Site on Completion

The Contractor shall obtain, from each property owner directly affected by the Works, a certificate to the effect that the property owner is satisfied with the standard of reinstatement of any fences, boundary walls or structures, compensation paid for loss or damage to stock, crops or property, material spoiled on their properties or any other condition affecting their properties as a result of the operations of the Contractor. The Contractor shall further obtain a Clearance Certificate from each authority whose services have been affected during the construction of the Works.

All such certificates must be lodged with the Employer's Agent before the Certificate of Completion will be issued.

PSA 5.12 Project Reporting

The following forms are required to be completed and submitted monthly with the payment certificate to the Employer's Agent:

- Progress Report
- Labour Report

Templates will be provided to the successful tenderer.

The following data is to be submitted monthly, at the site meeting, to the Employer's Agent:

- Updated programme
- List of Plant and Labour on Site
- Rainfall records

PSA 6 TOLERANCES

PSA 6.2 Degree of Accuracy

Add the following to this Clause:

Degree of Accuracy II shall apply, except in the case of the reservoir walls (both internal and external) and roof, where Accuracy I is required.

PSA 7 TESTING

PSA 7.1 Testing Principles

Add the following to this Clause:

When giving notice, the Contractor shall provide the Employer's Agent with the results of the check testing indicating that the work is to specification. The Employer's Agent shall be given 48 hours' notice of when testing or inspections are required.

The Employer's Agent may from time to time carry out his own check tests on the work performed by the Contractor. Should such check tests show that the Contractor's control testing be such that the quality of the Contractor's work can be called into question, then the Employer's Agent may order further check tests to be carried out on work already completed. All costs associated with such check tests shall be for the Contractor's account, as also the costs of any other check test whose results to not comply with the specification.

Failure by the Contractor to notify the Employer's Agent or to provide the required information or, where specified, to perform the required test, will be grounds to exempt the Employer from payment for the associated work and for all subsequent work which would be affected by the failure of the Work to be tested.

The Employer's Agent will be under no obligation to the Contractor to perform the tests. If the Employer's Agent elects not to perform a particular test after notification by the Contractor, the Contractor will be issued with a written instruction to proceed with the relevant works without the acceptance test being performed.

Nothing contained in this clause will relieve the Contractor of any responsibilities under the specification or in any way limit the tests, which the Employer's Agent may call for or perform in terms of the specification. The Contractor shall make due allowance for testing procedures in his construction programme.

Where the Employer's Agent is called to witness certain control tests, such as the pressure testing of a pipeline, and the results of such tests do not comply with the specifications, then the Employer reserves the right to recover costs for the Employer's Agent's presence at the unsuccessful test from the Contractor.

PSA 7.2 Approved Laboratories

Add the following to this clause:

Acceptance testing shall be done by a laboratory selected by the Employer's Agent. The Employer's Agent requires twenty-four hours' notice from the Contractor in order to perform the relevant acceptance test.

All acceptance testing by the Employer's Agent shall be paid for by the Contractor. The costs of such tests which meet the specification requirements will be reimbursed to the Contractor in the monthly payment certificate. This payment shall consist of a billed amount plus the tendered mark-up. A Provisional Sum has been provided in the Schedule of Quantities to allow for the cost of such testing.

The Contractor shall make due allowance for testing procedures in the construction programme.

PSA 8 MEASUREMENT AND PAYMENT

PSA 8.2.1 Fixed-charge and Value-related Items

Add the following to this Clause:

The fixed charge items will include all costs associated with dealing with compulsory sub-contracts.

PSA 8.2.2 Time-related Items

Replace the contents of this clause with the following:

Payment for time-related items will be effected as follows only after payment for the relevant fixed-charge item has been made : Subject to the provision of 8.2.3 and 8.2.4 payment will be made monthly in equal amounts, calculated by dividing the sum tendered for the item by the tendered contract period in months, multiplied by the months completed, provided always that the total of the monthly amounts so paid for the item is not out of proportion to the value of the progress of the works as a whole.

PSA 8.4.1 Contractual Requirements

Add the following to this Clause:

The Contractor shall tender rates in the Schedule of Quantities to cover his time-related establishment costs. The amount tendered and paid shall be full compensation to the Contractor for:

i) The maintenance of his whole organization as established for this Contract.

ii) The maintenance of all insurances, indemnities and guarantees required in terms of the Conditions of Contract or Tender where applicable.

iii) Compliance with all general conditions and requirements which are not specifically measured elsewhere for payment in these Contract Documents.

Payment of the lump sum shall be made monthly in compliance with the method laid down in Sub-clause 8.2.2.

The Contractor will not be paid Time-Related Preliminary and General Charges for any Special Non-Working Days, which shall be deemed to have been allowed for in his rates.

PSA 8.4.2.2 Facilities for the Contractor

Add the following to this Clause:

Facilities for the Contractor shall include all the costs of providing water for construction other than the water required for water tightness testing of water retaining structures.

The costs for providing security against theft and vandalism will be included in the rates tendered for Contractor facilities. No separate payment will be made for the provision of security.

PSA 8.5 Sums Stated Provisionally by Employer's Agent

Replace the penultimate sentence of Sub-clause 8.5 to read:

"The percentage rate for (b) (2) above shall cover the Contractor's overheads, charges and profit on the work covered by the sums provisionally stated for (b) (1) above. Payment will be made on the basis of the sums actually paid for such work, exclusive of VAT."

PSA 8.5.1 Community Liaison Officer

A provisional sum is included to allow for the salary of a person working full time as the Community Liaison Officer (CLO). The Contractor shall ensure that the salary and other expenses due are paid timeously in accordance with the payment dates of his own staff.

A separate item for overheads, charges and profit on the above item is applicable.

PSA 8.6 Prime Cost Items

Replace the penultimate sentence of Sub-Clause 8.6 to read:

"The percentage rate for (b) shall cover the Contractor's overheads, charges for taking delivery and profit on the supply of materials or goods covered by the sums stated in (a) above. Payment will be made on the basis of the sums actually paid for such materials or goods, exclusive of VAT."

PSA 8.7 Dayworks

Add the following to this Clause:

The rates submitted by the Tenderer in the relevant schedule of the Contract shall be applicable.

Provisional items for Dayworks are scheduled as follows:

a) Labour at hourly rates for skilled, semi-skilled and unskilled labourers.
b) Purchase cost of Material with a percentage allowance on the net cost for delivery to Site and all Contractors charges.
c) The Contractor's own construction equipment as a Provisional Sum. Where not listed in the Bill of Quantities, rates shall be agreed with the Engineer before such work is put in hand.

Tendered unit rates or unit rates that are agreed in terms of Sub-clause 6.5.1.3 of the General Conditions of Contract for the Contractor's own construction equipment used for Dayworks shall cover the full cost of the use of such construction equipment and shall, in addition, cover the cost of operators, consumable stores, fuel and maintenance.

The Contractor will be paid the actual net cost of construction equipment hired by him for Dayworks and in addition will be paid a percentage allowance on the net cost of such hire, which allowance will cover the Contractor's own overhead costs and profit.

PSA 8.8.4 Existing Services

The tendered rate shall further cover the cost of backfilling the excavation with selected material compacted to 90% Mod. AASHTO density, keeping the excavation safe, and taking care that the services are not damaged in any way. The rate shall include for all negotiations with the authorities, notification to all affected parties and any other requirement to protect and complete the work.

Add the following clauses:

PSA 8.9 Survey Control and Setting out of Works …….....Unit: sum

Before commencement of work, the Contractor is to liaise with the Employer's Agent to establish exactly the status of all survey pegs. If any pegs are missing, he shall immediately inform the Employer's Agent in writing.

On completion of the Contract the pegs that have been unavoidably disturbed will be replaced by the Employer. Pegs which have, in the opinion of the Employer's Agent, been disturbed due to the negligence of the Contractor will be replaced by a registered Land Surveyor at the Contractor's cost.

PSA 8.10 Compliance with OHS Act and Regulations ……Unit: sum

The tendered sum shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and Regulations (including the Construction Regulations 2014), Health and Safety Officer/s, medical examinations, accommodation, transport, communication implements, consultations, meetings and any other thing necessary for the completion of the aspect, at all times, for the full duration of the Contract. The successful tenderer shall provide the Employer's Agent with a complete breakdown of this tendered sum.

This sum will be paid to the Contractor, in equal monthly amounts, subject to proper and accepted compliance.

PSA 8.11 Compliance with Environmental Requirements……..Unit: sum

The tendered sum shall include full compensation to the Contractor for compliance with all the environmental requirements.

This sum will be paid to the Contractor, in equal monthly amounts, subject to proper and accepted compliance.

PSA 8.12 Alterations to Existing Services

Temporary and permanent alterations made to existing services by the Contractor upon instruction of the Employer's Agent will be measured and paid under this item. Payment for works so ordered will be made on the basis of sums actually paid for materials, construction equipment and labour, exclusive of VAT.

PSA 8.13 Miscellaneous Items

An item which refers to this clause will be measured in the unit scheduled.

The sum or rate for such item shall cover the cost of all materials, labour and construction equipment required to execute and complete the work, as specified, as described in the Schedule of Quantities or shown on the drawings.

PSA 8.14 Allowance for Late Payments

The tendered rates for Fixed P&Gs item "General Responsibilities and other fixed charge obligations" shall be deemed to include an allowance for mitigating the negative effects of payments taking up to 60 days (from date of Payment Certificate Invoice delivered to the Employer).

This is in recognition of the fact that no cessions for up-front payment of materials to suppliers will be granted by the Employer and that the Contractor's cash flow planning needs to allow for the difference in time between such up-front purchases and late receipt of payments.

PSAB EMPLOYER'S AGENT'S OFFICE (SANS 1200AB)

PSAB 3 MATERIALS

PSAB 3.1 Nameboards

Add the following:-

Employer's nameboards shall be erected within one (1) month of the commencement of construction and shall be placed where ordered by the Employer's Agent. Any damage to these boards shall be repaired within 14 days of a written instruction received from the Employer's Agent. For details of the board refer to the Standard Drawings contained in this document.

Two Contractor's nameboards shall be erected in the area of the Works, at positions approved by the Employer's Agent, who may at any time order their removal if any objections are received.

The boards shall be manufactured from materials specified in Clause 3.1 of SANS 1200 AB.

All nameboards shall be removed 14 days prior to the date of the Final Approval Certificate.

PSAB 3.2 Office Building (s)

Delete the first sentence and substitute the following:

The Contractor shall supply and furnish two air-conditioned "Kwikjack" (6 m x 3 m) offices, (one for the use of the Engineer and his/her staff and one for the Employers' inspectors) and one air-conditioned "Kwikjack" (9 m x 3.4 m) conference facility for conducting meetings.

Add to the Sub-clause:

In addition to the furnishings listed under sub-items (a) to (i), the following shall be provided and properly maintained:

(j) electrical installation to include a light and two 15A plug points plus two adequately sized air conditioning units (for heating and cooling) for each unit
(k) one refrigerator of at least 100 litre capacity
(l) one kettle of at least 2 litre capacity
(m) one tea set comprising six cups and saucers, six teaspoons, one teapot, one sugar bowl and one milk jug
(n) covered parking for four vehicles
(o) un-covered parking space for two vehicles
(p) two "Barhold" or similar wall mounted racks each with 6 clamps suitable for hanging A0 sized drawings
(q) one large meeting table
(r) ten additional chairs

The Contractor shall supply one (1) lockable toilet for the exclusive use of the Employer's Agent's staff.

PSAB 4 CONSTRUCTION EQUIPMENT

PSAB 4.1 Telephone

Delete the Sub-Clause and substitute the following:

The Contractor will be required to supply the Engineer's Site Staff with pre-paid air-time to the value of R1000.00 each per month for their mobile phones as soon as the Contract commences.

Add the following new Clauses:

PSAB 4.2 Covered Parking Bay

The Contractor shall also supply and maintain four corrugated iron (or similar approved) covered carports with closed sides and gravelled floor for the sole use of the Employers Agents Representative and the Employer.

PSAB 4.3 All other specified facilities

The Contractor will be required to supply the Engineer's Representative and Site Staff with the following:

i) Wi-Fi Internet Connection
ii) Access to a photocopier and associated consumables
iii) One vehicle.

One vehicle shall be provided by the Contractor for the sole use of the Assistant Residential Engineer for the full duration of construction (up to issue of the Completion Certificate). The vehicle shall conform to the following:

- Not older than 5 years from date of 1st registration
- Not more than 80 000km on the odometer on hand-over
- 2 or 4 wheel drive bakkie or SUV
- Engine capacity of at least 1500cc
- Diesel engine
- Current roadworthy certificate (not less than 1 month old at time of handover)
- Full comprehensive insurance
- Hired or Contractor-owned
- Garage card to be provided for refuelling.

The Contractor shall be responsible for all servicing, maintenance, repairs, payment of any policy excesses in the event of an insurance claim and washing it at least 2x per month. The Contractor shall also be responsible for providing a temporary alternative equivalent vehicle should the provided vehicle be not available for use for a period longer than 48h. Although the site staff members to whom the vehicles are allocated are not allowed to use it for personal travel outside Mthatha, said members may need to use the vehicles for attending to other work-related needs approved by the Engineer. The vehicle will revert to the Contractor upon issue of the Certificate of Completion or date as mutually agreed.

PSAB 5 CONSTRUCTION

PSAB 5.2 Engineer's Office (Refer SANS 1921-1 Clause 4.14)

Add to the Sub-clause:

The toilet facilities provided for the sole use of the Engineer or his representative(s), the Employer's inspectors, CLO and PSC shall be maintained in a hygienic and sanitary condition and shall be removed on completion of the Works. The facilities provided shall conform to the local health authority's requirements as applicable and the Contractor shall pay all sanitary fees and charges.

PSAB 5.5 Survey Assistants

Delete the first sentence and substitute the following:

The Contractor shall make available to the Engineer two suitably educated labourers for use on and about the site on survey and other work directed by the Engineer at all reasonable times.

Add the following new clauses:

PSAB 5.6 Survey Equipment

Add new Sub-clause:

The Contractor shall provide the following survey equipment on the Site from the commencement to the completion of the Works:

- One automatic reading Engineer's level plus tripod
- One levelling staff (5 m long, 1 cm graduations)
- One staff angle bubble
- One metal change-point for levelling
- One separate plumb-bob
- One spirit level (one metre long)
- One hammer (2 kg) with steel or wooden pegs as necessary
- One 50 m steel or glass fibre tape
- One 5, 0 m (or longer) retractable steel tape.

The equipment may be shared by arrangement between the Contractor and the Engineer or his representative on Site. The Contractor shall keep the equipment continuously insured against any loss, damage, or breakage and he shall indemnify the Engineer and the Employer against any claims in this regard. Upon completion of the Works the survey equipment as listed above shall revert to the Contractor.

The Contractor shall maintain the equipment in good working order and keep it clean until the completion of the Works.

PSAB 5.7 Site Instruction Books

The Engineer shall supply a site instruction book for specific use on the Site. All instructions given by the Engineer's Representative must be confirmed and countersigned by the Engineer. The instruction shall be countersigned by the Contractor before implementation.

The Contractor shall supply a triplicate book for site correspondence and inspection requests to the Engineer's Representative. Reasonable notice shall be allowed prior to inspections. All inspections requests and approval/disapproval thereof shall be recorded by the Site staff in writing. All requests must be signed and dated by the Engineer's Representative before implementation.

The Contractor in conjunction with the Engineer must ensure that a suitable site quality record system is put in place to record that each section, or work item, complies with the relative works specification.

PSAB 8 MEASUREMENT AND PAYMENT

PSAB 8.1 Scheduled Items

Delete the 1st sentence and substitute the following:

Items will be scheduled in terms of Sub-Clauses 8.3.2 and 8.4.2 of SANS1200 A.

PSAB 8.2.1 Fixed and Time-related Charges

Delete the 1st sentence and substitute the following:

The terms of Sub-Clause 8.2 of SANS 1200 A shall apply.

Add the following clauses:

PSAB 8.2.2 Furnished Office and Meeting Room

The Contractor shall supply, erect, maintain and service for the sole use of the Engineer's staff facilities as defined in PSAB 3.2 and PSAB5.2.

Payment will be made for the supply and erection of the above facilities under the provided fixed rate.

Payment will be made for the maintaining the above facilities in a suitable condition under the provided time related rate.

PSAB 8.2.3 Telephone

The Contractor shall provide air time as defined in Clause 4.1, as amended.

Payment will be made for supplying 3 x R1000 monthly pre-paid airtime and data for the mobile telephone under the time related rate. The cost of making the airtime available shall be included in the tendered monthly rate rather than as a percentage mark-up (which would otherwise require invoices as proof of payment).

PSAB 8.2.4 Nameboards

The Contractor shall supply and erect nameboards in accordance with SANS 1200AB Clause 3.1.Payment will be made for the supply and erection of the nameboards under the provided fixed rate.

Payment will be made for maintaining the nameboards in a suitable condition under the relevant time related rate.

PSAB 8.2.5 Survey Assistants

Payment will be made for the employment of the survey assistants specified in Clause PSAB 5.5 under the provided fixed rate on verification of their availability by the Engineer. Should the survey assistants be removed from site during the course of the Contract then any payments made for the survey assistants will be reversed in the next interim payment certificate.

Payment will be made for the monthly cost of the survey assistants under the provided time related rate for as long as they are required to be available to assist the Engineer or his representatives.

PSAB 8.2.6 Survey Equipment

Payment will be made for the supply of the equipment specified in Clause PSAB 5.6 under the provided time-related rate on verification by the Engineer that the equipment specified is on site. No payment will be made if any of the items listed are not available to the Engineer.

The time-related rate is deemed to include maintaining the above equipment in a suitable condition.

PSAB 8.2.7 Covered Parking Bay

Payment will be made for the supply and installation of covered parking bay specified in Clause PSAB 4.2 under the provided fixed rate on verification by the Engineer that the parking bay specified is erected on site. Should the parking bays be removed from site during the course of the contract then any payments made for the supply of this equipment will be reversed in the next interim payment certificate.

Payment will be made for the maintaining of the above parking bays in a suitable condition under the provided time related rate.

PSAB 8.2.8 All other specified facilities for the Engineer

A fixed P&G lump-sum item will be measured for payment for all items specified in PSAB 4.3. This shall include up-front and fixed costs associated with the provision of the vehicles at the commencement of construction. Similarly a time-related P&G lump-sum item will be measured for payment for all time-related costs associated with providing the items in PSAB4.3 including the on-going provision of the vehicles over the tendered construction period. A further km-based rate is included to cover all distance travelled related costs. The vehicle logbooks shall be signed-off by the site staff members and Contractor on an agreed date every month immediately prior to submitting the monthly pay claim to the Engineer.

The cost of providing and maintaining all other facilities for the Engineer's Site Staff (such as cell phone airtime, access to WiFi and photocopying facilities) shall be included in the relevant fixed and time-related scheduled rates.

PSAB 8.2.3 Survey Equipment

Payment will be made for the supply of the equipment specified under the fixed P&G rate on verification by the Employer's Agent that the equipment specified is on site. Should any of this equipment be removed from site during the course of the contract then any payments made for the supply of this equipment will be reversed.

Payment will be made for maintaining the survey equipment in a suitable condition under the time-related P&G rate.

PSC SITE CLEARANCE (SANS 1200C)

PSC 3 MATERIALS

PSC 3.1 Disposal of Material

Add the following:

Unless otherwise ordered by the Employer's Agent, the Contractor shall dispose of material resulting from clearing and demolition operations at a site to be determined by the Contractor. Such a site shall have the approval of the Employer's Agent, the Local Authority and the Environmental Control Officer.

PSC 5 CONSTRUCTION

PSC 5.3 Clearing

Add the following new Sub-Clauses:

PSC 5.3.1 Restoration of Fences onto Servitude Boundary (Sub-Clause 5.3.1)

Where existing fencing is encroaching on the pipeline servitude, such fencing shall be removed prior to construction and re-erected to a condition no worse than that pertaining prior to the removal, on the formal cadastral boundary all as indicated on the respective land plans. For the period that the fence or wall is dismantled and not yet re-erected, the Contractor shall erect, at the end of each day's operations, a temporary fence to close the gap in the existing fence or wall and shall maintain security adequate to prevent use of the temporary fence as a point of access by unauthorised persons.

PSC 5.3.2 Temporary Fencing Closures (Sub-Clause 5.3.2)

Where the pipeline route crosses an existing fence or wall, a section of fencing or wall not exceeding 10,0 m in length may be removed temporarily during construction and thereafter reinstated to a condition no worse than the original condition as soon as the pipeline has been installed and backfilled in the immediate vicinity of the crossing. For the period while the existing fence or wall is dismantled, the Contractor shall erect, at the end of each day's operations, a temporary fence to close the gap in the existing fence or wall and shall maintain security adequate to prevent use of the temporary fence as a point of access by unauthorised persons.

PSC 5.3.3 Demarcation Fencing (Sub-Clause 5.3.3)

Demarcation of the pipeline construction servitude will be by means of wooden stakes. These stakes will be at least 1m high, painted white and placed at least every 15m on either side of the linear feature, in all areas where works are occurring. The stakes shall be moved as required as the project progresses

The Contractor shall also supply, install and maintain temporary fencing on both sides of the working area (servitude) and around the perimeter of all agreed additional working areas during construction for prevention of unauthorised access and shall remove on completion of the works. The fencing shall comprise 2m high Bonnox 4 x 4 Mesh fencing, Bonnox pattern 1972/4, with straining posts and straining wires as required and according to supplier's directions and with mesh spacing not exceeding 100mm in both the vertical and horizontal directions. Chevron tape shall be interwoven in a zig zag pattern from the top to the bottom of the fence thereby clearly marking off the working area.

Gates shall be provided by the Contractor at all points as required for construction access purposes. The Contractor shall be held responsible for the control of access at these gates at all times as well as to the worksite during removal and re-erection of fencing. No other opening in the fence shall be permitted and the Contractor shall be responsible for monitoring the fencing on a daily basis and repairing any such opening within the same day that it is detected. Notices in two official languages

(English and isiXhosa) shall be attached to the fence where appropriate to indicate that the site is for personnel employed on the Contract only and that unauthorised entry is forbidden.

PSC 5.8 Demolition of Structures

Add the following new Sub-Clauses:

PSC 5.8.1 Removal and Re-Erection of Structures

Where the Contractor is directed to dismantle structures to facilitate construction and thereafter to re-erect the same structures, the structure shall be erected at the same location, or such other location as may be required by the owner within the same property, using the same or similar materials as those set aside when removing the structure. The acceptance of the work by the Engineer and certification for payment shall be subject to the Contractor submitting to the Engineer documentary evidence of the owner's satisfaction that the re-erected structure the over-riding consideration being that it shall be in a condition no worse than that pertaining prior to its removal.

The tendered rates shall include for the provision of a detailed photographic and written record of the structures before dismantling commences and following re-erection.

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.1 Restoration of Fences to Servitude Boundary (New Sub-Clause)

Separate payment will be made for dealing with fences in the manner specified in PSC 5.3.1 above as scheduled (if not scheduled, such activities will be measured under Dayworks).

PSC 8.2 Temporary Fencing Closures (New Sub-Clause)

Separate payment will be made for dealing with fences in the manner specified in PSC 5.3.2 above including re-instatement as scheduled.

PSC 8.3 Removal and Re-Erection of Structures (New Sub-Clause)

Separate payment will be made for removing and re-erecting structures in the manner specified in PSC 5.8.1 above as scheduled and including for the costs of photographic and written records.

PSC 8.4 Demolition of Building Structures (New Sub-Clause)

Separate payment will be made for demolishing structures in the manner specified in PSC 5.8.2 above as scheduled and including for the cost of removal of rubble to an approved spoil site, backfilling any excavations and compacting to 90% mod AASHTO and shaping the ground level in line with the natural terrain.

PSC 8.5 Demarcation Fencing (New Sub-Clause)

Payment will be made per linear metre of temporary fencing installed in the manner specified in PSC 5.3.3 above, and the rate shall include for maintaining such fencing in good condition, including daily surveillance and repair, throughout the duration of construction and removal on completion of the works.

PSD EARTHWORKS (SANS 1200D)

PSD1 SCOPE (CLAUSE 1.1)

Where it is required that the earthworks be carried out using labour intensive methods, the first sentence shall read "This specification covers earthworks carried out by hand, or where so permitted in terms of the Project Specification, by restricted plant usage."

PSD2 DEFINITIONS (CLAUSE 2.3)

Where it is required that earthworks be carried out using labour intensive methods, the definition "restricted excavation" shall read "An excavation required to be carried out using only hand tools, or where so permitted in terms of the Project Specification, with restricted plant usage."

PSD 3 MATERIALS

PSD 3.1.2 Classes of Excavation

Replace Sub-clauses 3.1.2 (a), (b) and (c) with the following:

All material encountered in any excavations for any purpose including restricted excavations will be classified as follows:

1) Excavation in all materials,
2) Extra-over excavation in all materials for excavation in hard rock by one of three means: blasting, excavator-mounted hydraulic breaker and splitting using expansive chemical grouts. The method to be employed for excavation in hard rock shall be as agreed with the Employer's Agent on Site.

Other earthworks

Non-plastic sandy material from excavations shall be used in the following order:

1) As selected granular material for pipe bedding.
2) As blanket and backfill to pipe trenches.
3) As backfill to structures.
4) As spoil stockpiled in selected areas indicated by the Employer's Agent.

The Contractor shall employ selective methods of excavation in order to preserve uncontaminated topsoil and material suitable for backfill, embankments, pipe bedding and selected granular material.

PSD5 CONSTRUCTION

PSD5.1 Disposal of surplus material (Clauses 5.1.4.3 and 5.2.2.3)

All surplus material not required for backfilling shall be disposed of at disused borrow pits or other suitable sites to be located by the Contractor. All such sites shall require the approval of the Engineer and the local community. No additional payment will be made for the transportation of such material.

PSD 5.1.1.2 Safeguarding of Excavations

Replace Clause 5.1.1.2 (b) with the following:

Deep vertical faces of excavations could collapse during construction causing injury or death; hence the Contractor must either:-

1) provide a shoring system, designed by the Contractor and signed off by a suitably qualified Professional Engineer, OR
2) reduce the slope of excavations to the safe angle as determined by a suitably qualified Professional Geotechnical Engineer employed by the Contractor.

PSD 5.1.3 Stormwater and Groundwater

Add the following to this Clause:

The Contractor shall provide, operate and maintain sufficient pumping equipment, pipes and other equipment on site as may be necessary to dispose of stormwater and groundwater for the proper execution of the Works.

PSD 5.1.4.1 Dust nuisance

Add the following to this Clause:

The Contractor is responsible for dust control and is liable for all claims that may result from dust nuisance on all parts of the site and surrounding areas at all times, from the date of handing over of the Site, to the completion date of the Contract.

The Contractor shall plan the Works accordingly and shall use sufficient water or other methods to keep the level of dust to a minimum. This shall be done in consultation with the Employer's Agent and to the Employer's Agent's approval. The Contractor must make allowance for the above in the rates tendered for excavation.

PSD 5.1.4.3 Excavated Material not to Endanger or Interfere

Add the following to this Clause:

All surplus material and unsuitable material not required for backfilling shall be disposed of at suitable sites to be located by the Contractor. All such sites shall require the approval of the Employer's Agent, the Local Authority, the Environmental Control Officer and local community. No additional payment will be made for the transportation of such material.

Dumping shall proceed in an orderly manner with coarse material placed at the bottom and covered with finer material, where possible. Upon completion of dumping, the material shall be shaped to provide free-draining surfaces and shall be finished off to the satisfaction of the Employer's Agent.

PSD5.2 Transport for earthworks (Clause 5.2.5)

Notwithstanding the contents of clauses 5.2.5.1 and 5.2.5.2, the transport of all earthworks, whether for imported or excavated material, shall be included in the tendered rates for the scheduled items, and no payment will be made for overhaul.

PSD 5.2.2.1. (c) Excavation for General Earthworks and for Structures

Add the following to this Clause:

The Contractor shall excavate to the net outlines of the structures plus an allowance for work space. Vertical concrete walls shall not be cast against excavated surfaces, except in the case of concrete encasement to pipes and footings for brick walls.

PSD 5.2.2.1. (e) Excavation for General Earthworks and for Structures

Add the following to this Clause:

The Contractor shall inform the Employer's Agent, in writing, at least 14 days before commencing any work which will result in a change in the topography of the site, whether such work is for the permanent works or for temporary works which the Contractor intends to execute for his own convenience. Thereupon, before commencing the work, the Contractor shall take cross-sections of the original ground profiles or another approved method to determine the ground profiles of the entire area to be worked. In addition all rock and/or foundation levels shall be recorded as the work proceeds.

The information so obtained shall be permanently recorded on a drawing or drawings which shall each be signed by both the Contractor and the Employer's Agent. The Contractor shall then provide the Employer's Agent with a reproducible copy of each drawing to serve as a permanent record both for the purpose of determining the quantities of excavation and earthworks carried out in the construction of the permanent works and the extent to which temporary works shall be removed or temporary excavations shall be refilled upon completion of the Works.

Where the Contractor excavates to dimensions in excess of those shown on the drawings or ordered by the Employer's Agent or if the material in the bottom of an excavation is loosened before concrete has been cast, or if there is any over-excavation, or any loose or disturbed soil, it shall be removed and the over-excavation shall be replaced by mass concrete of prescribed mix Grade 15/20 mm.

Where blinding, mass or structural concrete is to be cast or where precast elements are to be placed on surfaces established by restricted excavation, the Contractor shall, in the case of rock surfaces, over excavate to 100 mm below the bottom of the structure and use mass concrete Grade 15/20 mm to bring the level to the bottom of the blinding.

Excavations to final level, ready to receive a blinding layer or concrete footing, shall be completed not less than 24 hours before such layer or footing is cast.

The Contractor shall arrange for the inspection by the Employer's Agent of all surfaces immediately before casting concrete.

PSD 5.2.3.1 Embankments

Add the following to this Clause:

The areas over which earth fills are to be constructed shall, after site clearance and removal of 150mm topsoil, be ripped to a depth of 150 mm and compacted to 90% of Mod AASHTO density.

Should the topsoil layer be in excess of 150mm the Contractor is to notify the Employer's Agent in writing and request a directive as to how to proceed.

The Contractor shall plan his operations and particularly his cut and fill operations in such a manner that all cut material may be used to the best advantage of the Employer. This would mean that no material shall be unnecessarily spoiled.

The Contractor shall therefore not spoil any materials without the Employer's Agent's approval and without satisfying the Employer's Agent that this is necessary and that the most economical method of constructing the works is proposed.

Where filling is required on ground slopes greater than 1:10 the Contractor shall submit proposals for benching for approval by the Employer's Agent.

Fill in shall be compacted to the densities specified in Sub-clause 5.2.3.1.

PSD 5.2.3.2 (a) General Backfilling

Add the following to this Clause:

Backfill measured under the various items in the Schedule of Quantities shall be compacted to a density as stipulated in the scheduled item.

Material for backfilling around structures must be selected so that no clay, boulders or rock is used for backfilling within 300 mm of the structure.

PSD 5.2.4.2 Topsoiling

Add the following to this Clause:

Topsoil shall not be stockpiled higher than 2,0 m. Care shall be exercised to prevent the compaction of topsoil in any way especially by vehicles travelling over such material.

Topsoil shall be placed as directed in Sub-clause 5.2.4.2 on the faces of cut slopes and embankments and other flatter areas, as shown on the drawings or ordered by the Employer's Agent, to a nominal thickness of 100 mm after light compaction. The cut and embankment surface shall be raked or lightly scarified before laying of the topsoil to assist with adhesion between the surfaces.

PSD5.3 Extra-over payment for excavation classification

No extra over payment will be made for excavation in material classified in terms of Subclause 3.1.2 as intermediate excavation and boulder excavation. The tendered rate for excavation in all materials will include for the cost of this excavation. Rock quantities are to be measured and agreed with the Engineer prior to backfilling. In the event that backfilling has taken place before rock quantities have been agreed with the Engineer then no rock payment will be made.

PSD6 EXCAVATION OF HARD ROCK BY MEANS OF EXPLOSIVES AND WITHOUT EXPLOSIVES

The Contractor shall not use explosives within 8m of any pipeline or within 12m of any building. Should the Contractor elect to excavate hard rock within 16m of any major watermain or within 24m of any building without the use of explosives, the Engineer will approve the payment at the tendered rates for the excavation of hard rock without the use of explosives. The application of this ruling will not relieve the Contractor of his responsibilities in accordance with Subclause 5.1.1.3 or otherwise in terms of the Contract.

PSD8 MEASUREMENT AND PAYMENT

PSD8.1 Restricted excavation (Subclause 8.1.3)

The provision of working space (see Subclause 8.3.5) will not be measured for payment. Notwithstanding the provisions of Subclause 8.1.3, the Contractor shall make his own allowance for the excavation of any working space required for formwork or other purposes. The rates for restricted excavation shall also cover the costs of providing working space. All restricted excavation will be measured to the net dimensions of concrete floor slabs or other dimensions ordered by the Engineer.

PSD8.2 Extra-over payment for excavation classification

No extra-over payment will be made for excavation in material classified in terms of Subclause 3.1.2 as intermediate excavation and boulder excavation Class A and Class B. The tendered rate for excavation in all materials shall include for the cost of such excavation. Rock quantities are to be measured and agreed with the Engineer prior to covering else no payment.

PSDB EARTHWORKS (PIPE TRENCHES) (SANS 1200DB)

PSDB 5 CONSTRUCTION

PSDB5.1 Selection of materials (Clause 3.7)

Notwithstanding Subclause 3.7, in terms of which the Contractor has a choice regarding methods of selection, the Contractor is required to use selective methods of excavation. The Contractor shall selectively remove and keep separate the sandy material from unsuitable material and place it adjacent to the trench for reuse as backfill, selected fill, selected granular material or for other use as ordered by the Engineer.

Material which, in terms of Subclause 6.2 of SANS 1200 D or Subclause 6.1 or SANS 1200 LB, is too wet fro immediate use in the trench (but which is otherwise suitable) will not be regarded as “unsuitable” material and, if so sordered by the Engineer, the Contractor shall spread such material in a suitable area until it has dried sufficiently for later use. Should the material which is replaced in the trench become too wet again, due to the fact that the Contractor made insufficient provision for the handling and removal of groundwater in accordance with Subclause 5.5 of SANS 1200 A, the Contractor shall replace the material at his own cost with material which is, in the opinion of the Engineer, suitable.

When preparing his programme and construction methods, the Contractor shall make allowance for selective excavation and the handling and drying out of material which is too wet for immediate use.

PSDB5.2 Maximum length of open trench excavation

In the open veld the Contractor shall limit the length of trenches open, at any time, to a maximum of 300m per pipelaying team.

PSDB5.3 Disposal of material (Clauses 5.6.3 and 5.6.4)

Unsuitable or surplus material from trench excavations shall be disposed of as specified in clause PSD4.

PSDB5.4 Transport for earthworks (Clause 5.6.8)

Notwithstanding the contents of clause 5.6.8, the transport of all earthworks, whether for imported or excavated material, shall be included in the tendered rates for the scheduled items, and no payment will be made for overhaul.

PSDB5.4 Extra-over payment for excavation classification

Unsuitable or surplus material from trench excavations shall be disposed of as specified in clause PSD4.

PSDB7 TESTING (CLAUSE 7)

The Contractor shall carry out process control checks on the compaction of the backfill of trenches across roadways. The frequency of testing shall be such that at least one test shall be carried out for each road crossing and for every lift of backfill material starting from 300mm above the crown of the pipe. The costs of testing shall be deemed to be included in the rates for backfilling of trenches across roadways.

The contents of clause 7.1 shall only apply to trenches in areas not subject to traffic loading.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB8.1 Excavation (Subclause 8.3.2)

The rates for excavation of trenches shall cover all costs of:

i) the work listed in Subclause 8.3.2(A) of SANS 1200 DB, irrespective of the method of excavation used,
ii) limitation in length of open trench,
iii) barricading and lighting,
iv) hand and machine excavation
v) selection as specified in PSDB
vi) safeguarding and accommodation of traffic and maintenance of accesses as specified in PSA
vii) the classification of material shall be as per PSD5.3

Excavation in hard rock will be measured for payment "extra-over" the rates for soft excavation.

PSDB8.2 Extra over payment for disposal of unsuitable material beyond the freehaul distance

The rate shall cover the cost of additional haulage, beyond 1km, of the unsuitable material to an approved site. The rate shall include for all handling and tidying up and distance measured will be in one direction only. The quantity shall be calculated by multiplying the material by the distance (km).

PSDK GABIONS AND PITCHING (SANS 1200DK)

PSDK1 MATERIALS (CLAUSE 3.1)

PSDK1.2 Quality (Clause 3.1.1.1)

The stone shall be clean, hard, unweathered and free from fissures and flaking. It shall have a relative density of 2.65 and should pass the requirements of the standard specification in terms of size, durability and finish.

PSDK1.2 Size (Clause 3.1.1.2)

No stone shall be of a size such that it will pass through a ring of diameter 88mm.

No stone shall be of a size:

- exceeding 250mm, and at least 85% of the stones shall be of a size equal to or exceeding 120mm, in the case of gabion boxes, and,
- exceeding 150mm, and at least 85% of the stones and shall be of a size equal to or exceeding 100mm, in the case of mattresses.

PSDK1.3 Gabion Cages (Clause 3.1.3)

Gabion boxes shall consist of double twisted, hexagonal wire mesh of nominal 80mm mesh, with 4,4mm o/d frame wire and 2,7mm o/d mesh wire. Complete with partitions at 1m centres. All wire to be mild steel to SANS 1580 - 2010, zinc coated by hot-dip galvanising to SANS 675 – 2009.

Mattresses shall consist of double twisted, hexagonal wire mesh of nominal 80mm mesh, with 4,0mm o/d frame and 2,5mm o/d mesh wire. Complete with partitions at 1m centres. All wire to be mild steel to SANS 1580 – 2010, zinc coated by hot dip galvanising to SANS 675 – 2009.

PSDK1.4 Geotextile (Clause 3.1.4)

The geotextile liner shall be Bidim U34 or similar approved.

PSDK8 MEASUREMENT AND PAYMENT

PSDK8.1 Gabions (Sublause 8.2.1 and 8.2.2)

Box and mattress gabions will be measured by volume.

The materials used shall comply with clauses PSDK1.1, PSDK 1.2 and PSDK 1.3 above.

PSG CONCRETE (STRUCTURAL) (SANS 1200G)

PSG 2 INTERPRETATIONS

PSG 2.4.2 Strength concrete

Add the following to this Sub-clause:

With the exception of mixes weaker than 15 MPa, all concrete for the Works shall be considered to be strength concrete.

Unless otherwise specified on the drawings or in the Schedule of Quantities, all structural concrete shall be Grade 35 MPa/19mm.

PSG 3 MATERIALS

PSG 3.2 Cement

Add the following to this Sub-clause:

CEM I 42.5 as specified in SANS 50197-1 common cements, a 75% CEM I 42.5 and 25% PFA blend or 50% slagment and 50% CEM I shall be used as specified in the relevant sections of SANS 1491 and SANS 50197-1. Any variations to these are subject to the Employer's Agent's approval.

For non-structural concrete CEM I 32.5 is acceptable.

PSG 3.2.3 Storage of Cement

Add the following to this Sub-clause:

Cement shall be used in the order in which it is received (first in, first out basis). Cement kept in storage for longer than 6 weeks shall be removed from site and not used in the Works. Any cement that shows signs of hydration, such as the formation of lumps, which cannot easily be crumbled to powder between the fingers, may not be used and is to be immediately removed from site.

PSG 3.3 Water

Replace the contents of this clause with the following:

Only potable quality water from an approved source may be used for mixing concrete. Water from a river or stream may only be used for curing.

PSG 3.4 Aggregates

PSG 3.4.1 Applicable Specification

Add the following to this Sub-clause:

The maximum aggregate size shall be 25 mm. Any aggregate may be used provided the free sodium alkali content in the concrete mix does not cause an alkali-aggregate reaction.

Coarse aggregate may be obtained from the nearest available commercial sources, and shall be subject to the Employer's Agent's approval.

Fine aggregate may be obtained from local sources subject to testing of its suitability by an approved laboratory and approval by the Employer's Agent.

Aggregates shall be tested periodically for reactivity, the costs of which shall be deemed included in the rate tendered for concrete. A design mix will have to be made and the results submitted to the Employer's Agent for approval before construction begins.

At least one month before commencement of concrete work the Contractor shall supply at his own cost certificates from an approved laboratory indicating that the aggregates comply with the specifications.

After approval, these samples shall be taken as standard for the agreed aggregates to be used in the Works. If at any time during the course of the Contract the Employer's Agent considers that there has been any deviation from the approved standard the Contractor shall submit further tested samples of material to the Employer's Agent for approval.

Aggregates for grouting

Notwithstanding the requirements of Sub-clause 3.4.1, the grading of the fine aggregate (sand) and coarse aggregate (stone or pea gravel) to be used for grouting shall conform to the grading given in Tables 1 and 2 respectively, below.

TABLE 1 - SAND	
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,75	95 - 100
1,18	45 - 65
0,3	5 - 15
0,15	0 - 5

TABLE 2 - STONE OR PEA GRAVEL	
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,74	95 - 100
2,36	0 - 5

Dolomitic Aggregate

Coarse and fine dolomitic aggregate shall be used where required in terms of PSLD 3.2.2 Dolomitic aggregate. When tested in accordance with the method specified in Appendix C of SANS 677, not more than 25% by mass of the dolomitic aggregate shall be insoluble in hydrochloric acid.

PSG 3.5 Admixtures

Add the following Sub-clause:

PSG 3.5.3 Pulverized Fly Ash (PFA)

PSG 3.5.3.1 General

Concrete containing a percentage of PFA shall be termed PFA concrete. PFA shall conform to the requirement of SANS 1491-2.

All concrete used shall be PFA concrete unless otherwise shown on the drawings or ordered by the Employer's Agent.

PFA concrete shall conform to the requirements of SANS 1200 G for concrete and the additional requirements specified below.

PSG 3.5.3.2 Source and Quality

Fly Ash shall be procured from an approved source and shall be of a consistent quality conforming to SANS 1491-2. In particular it shall be tested for and shall conform to the following:

a) the loss on ignition shall not exceed 5%
b) the percentage by mass retained on 45 micron screen shall not exceed 12.5%

PSG 3.5.3.3 Cementitious Material

The cementitious material used for PFA concrete shall consist of a mixture of between 75% and 80% by mass of ordinary Portland cement and of between 25% and 20% by mass of PFA.

Add the following Clauses:

PSG 3.9 Granolithic Screed

Granolithic screed shall consist of:

Cement 1 part by mass
Sand 1,25 parts by mass
Coarse aggregate 2 parts by mass

The coarse aggregate shall consist of granite or other approved chips which shall pass a 10 mm sieve and be retained on a 5 mm sieve.

The cement/water ratio of the mix shall be at least 2,0.

PSG 3.10 Bond breaker

The bond breaker between the top of the blinding layer or dry packed mortar screed and the underside of the floor slab of the reservoir shall be either a double coat of a spray grade bitumen emulsion complying with SANS 309 applied at a rate of 1,0 ℓ/m2 of net bitumen or a 250 micrometre polythene sheet complying with SANS 952, Type D.

Where bitumen-impregnated resilient fibreboard is specified, it shall comply with American Federal Specification HH-F-341a for Type 1, Class B.

PSG 3.11 Materials for movement joints

PSG 3.11.1 General

The various jointing materials, the manufacturers of the materials and the methods of application shall be as approved by the Employer's Agent. Materials shall be stored and protected to avoid damage, degradation, distortion or contamination.

The joint materials shall be resistant to ultraviolet light and to biological degradation.

PSG 3.9.2 Waterstops

Waterstops shall be of approved manufacture and of the pattern and the material and widths scheduled and specified as shown on the drawings. They shall conform to Specifications CKS 388 or 389, for natural rubber or PVC respectively, and have the appropriate physical properties as set out below:

	PVC	Rubber
Tensile strength (@25ºC)	12,2 MPa	20,7 MPa
Elongation at break (@25ºC)	250%	500%
Hardness BS degrees (IRHD 25ºC)	-	60 to 65º
Softness (BS)	28 to 52º	-

All intersections between waterstops shall be prepared by mitring and welding/vulcanising intersection pieces in the factory in accordance with the manufacturer's instructions and to approval of the Employer's Agent. Only straight lengths of waterstop may be field-welded, using the appropriate jigs and tools.

Where required, waterstops shall have eyelets so that they may be tied securely to the adjacent reinforcement. "Rearguard"-type waterstops shall have flanges or cleats that grip effectively.

PSG 3.11.3 Fillers

Closed cell expanded polyethylene fillers shall comply with the following:

Property	**Unit**	**Value Test Method**
Density	kg/m^3 110	DIN 53420
Compression Stress at compression strains		
of 10%	kPa 175	DIN 53577
25%	kPa 210	DIN 53577
50%	kPa 340	DIN 53577
Compression set after 24 hours recovery	% 14	
Tensile Strength	kPa 680	DIN 53571

Property	Unit	Value Test Method
Elongation at Break	% 49	DIN 53571
Max. water absorption after 24 hours by volume	% 0,1	ASTM C-177

Fillers shall be pre-cut to suit the application with a tear-out strip for forming the specified recess for the sealant. If so required the filler shall be glued into position with an approved epoxy glue.

PSG 3.11.4 Bond Breakers, Primers and Sealants

The bond breaker (if specified) shall be self-adhesive PVC tape (or equal, approved material) with a width the same as the joint recess into which it is to be applied.

The primer, if required for the sealant, shall be fully compatible with the sealing compound that is to be used.

The elastomeric sealant shall be either a two-component polysulphide liquid polymer base complying with the requirements of SANS 110 or a polyethylene-based polyurethane "pouring grade" for horizontal or near horizontal joints or "gun grade" for vertical/overhead joints and joints steeper than 1 in 10 to the horizontal. All elastomeric sealants shall comply with BS 4254 Type A1 and shall have a movement tolerance of 25%.

PSG 3.12 Precast paving slabs

The paving slabs shall comply with the requirements of SANS 541, shall be as scheduled and with patterned surface, or equal approved. Samples of the types which the Contractor proposes to use shall be submitted for approval prior to construction.

PSG 4 CONSTRUCTION EQUIPMENT

PSG 4.3 Mixing Construction Equipment

PSG 4.3.1 General Requirement for Mixing Construction Equipment

Add the following to this Sub-clause:

Stand-by mixers of adequate capacity and with an independent power unit shall be maintained on site for immediate use in the event of breakdown of the regular mixers.

PSG 4.4 Vibrators

Add the following to this Sub-clause:

Stand-by vibrators of adequate capacity and with an independent power unit shall be maintained on site for immediate use in the event of breakdown of the regular vibrators. Vibrators for in-situ concrete shall be of the internal or immersion type.

PSG 4.5 Formwork

PSG 4.5.3 Ties

Add the following to this Sub-clause:

The use of sleeves for formwork ties through the walls of water retaining structures will not be permitted. Ties, when cast in, shall have some form of positive anchorage to prevent any rotation when loosening formwork and some form of water bar to restrict seepage along the tie.

For watertight concrete structures the shutters shall be fastened using an approved imbedded fastening system. Open ferrules will not be permitted in the reservoir.

Add the following Clause:

PSG 4.6 Water-bath

A temperature-controlled water-bath with a capacity to cure fifty shall be provided on site. The water-bath shall be located under cover.

PSG 5 CONSTRUCTION

PSG 5.1.2 Fixing

Add the following to this Sub-clause:

Fixing of reinforcing bars by welding and heating of bars will not be permitted.

Fixing blocks for the attachment of fixtures may be embedded in concrete provided that the strength or any other desirable feature (such as appearance of the member) is not, in the opinion of the Employer's Agent, impaired thereby.

Supports shall be approved precast concrete blocks properly shaped to maintain position, or proprietary supports of an approved type. Concrete blocks shall be adequately cured as specified. Wooden supports shall not be used nor shall bars be placed in succeeding layers of fresh concrete nor shall bars be adjusted during the placing of concrete. Tie-wire shall point away from the nearest formwork face.

Where clips, stools and other supports are not shown on the drawings and are structurally not required, the Contractor shall provide those supports he deems necessary to ensure the correct positioning of the reinforcement, to the satisfaction of the Employer's Agent. The cost of such steel, labour, and other fixing materials shall be inclusive in the rate for the scheduled reinforcement and no additional payment shall be made.

PSG 5.1.3 Cover

Amend Sub-clause 5.1.3(a) as follows:

Replace the words "bar or stirrup" to read "bar, secondary reinforcement, tie, stirrup, tying-wire knots or wire ends".

Add the following to this Clause:

Tying wire may not encroach on the specified minimum cover by more than a single strand thickness.

PSG 5.2.1 Classification of Finishes

Add the following to this Sub-clause:

Rough formwork to Degree of Accuracy III may be used on the outside faces where concrete is more than 500mm below final ground level.

Smooth formwork to Degree of Accuracy II will be used elsewhere.

Where specified special finishes shall be to Degree of Accuracy I.

All honeycombing shall be repaired by cutting back to sound concrete and patching with a suitable epoxy mix to the approval of the Engineer.

Concrete for manholes shall be finished with a steel float or against a steel shutter which has been cleaned and oiled before use.

PSG 5.2.2 Preparation of Formwork

Add the following to this Sub-clause:

All exposed external angles in concrete work shall have 20 mm x 20 mm chamfers unless otherwise specified or ordered, but the top edge of a slab that is to receive an applied finish shall not be chamfered.

PSG 5.5.1 Concrete (Quality)

Add the following to this clause:

35 MPa concrete with the minimum and maximum cement contents of 325 kg/m3 and 450 kg/m3 respectively shall be used. For concrete containing extenders the maximum cement content shall be 450 kg/m3. The water to cement ratio shall not exceed 0.50. All concrete mix designs shall be approved by the Engineer in advance.

The mix design and casting procedure shall be approved by the Engineer prior to casting.

All Water Retaining structures and all manholes shall be constructed using watertight concrete. The Contractor shall abide by all conditions set out in sub-clause 5.5.11 as amended of SABS 1200 G, and pay particular attention to this aspect of the works. All watertight concrete shall include an approved crystalline waterproofing additive in accordance with Clause PSG 5.5.1.1 at a dosage rate per cubic metre as recommended by the supplier.

Cubes shall be taken on all pours in accordance with SABS 1200 G. Payment shall be included in the rate tendered for the supply of concrete. No payment shall be made for concrete pours on which no cube tests have been performed. A single cube test comprises the mean crushing strength of 3 cubes taken from the same batch of concrete and cubes must be taken at the frequency specified SANS 1200 G

The concrete shall be tested for water sorptivity, oxygen permeability, chloride conductivity, depth of cover and shrinkage; the details of the tests are given on the specification.

PSG 5.5.1.1 Crystalline Waterproofing Additive

Furnishing of all labour, materials, services and equipment necessary for the supply and installation of crystalline waterproofing additive to concrete structures as indicated on the drawings and as specified herein. The crystalline waterproofing material shall be added to concrete during the mixing cycle, and shall be used in above and below grade walls and slabs including liquid retaining structures where enhanced chemical resistance is required.

The concrete waterproofing system shall be of the crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the set concrete. The system shall cause the set concrete to become sealed against the penetration of liquids from any direction, and shall protect the concrete from deterioration due to harsh environmental conditions.

Prior to installation of waterproofing, the Contractor shall conduct a meeting with the Engineer's representative, concrete supplier, concrete placer and waterproofing manufacturer's representative to verify and review the project requirements for waterproofing as well as the manufacturer's product data including application instructions.

After this meeting, the Contractor obtain approval to install the crystalline waterproofing additive in writing from the product manufacturer, which written approval shall be given to the Engineer's representative. This requirement shall not absolve the Contractor of his/her obligations in accordance with the contract and project requirements.

The admixture shall be added to the concrete mix at the time of batching. The Contractor shall obtain a completely homogeneous mixture by thoroughly blending the admixture with the concrete mix.

Procedures for mixing shall be as follows:

1. Ready Mix Plant – Dry Batching Operation

Add admixture powder to drum of ready-mix truck, then add 60% to 70% of the required water along with 136kg to 227 kg of aggregate. Mix the materials for 2 to 3 minutes to ensure that the Admix is distributed evenly throughout the mix water. Add the balance of the materials to the ready-mix truck and mix in accordance with standard batch practices.

2. Ready Mix Plant – Central Mix Operation

Mix admixture with water to form a very thin slurry (e.g. 6.75kg to 9 kg of powder mixed with 13.6 litres of water). Pour the required amount of material into the drum for ready-mix truck. The aggregate, cement and water should be batched and mixed in the plant in accordance with the standard practices (taking into account the quality of the water that has already been placed in the ready-mix truck). Pour the concrete into the truck and mix for at least 5 minutes to ensure even distribution of the admixture throughout the concrete.

3. Precast Batch Plant – Pan Type Mixer

Add admixture to the rock and sand, then mix thoroughly for 2 to 3 minutes before adding the cement and water. The total concrete mass should be blended using standard practices.

The Contractor shall keep site pour logs for inspection by the Engineer's representative at any normal working time. Such pour logs shall contain site information during the pouring of concrete including metod of pouring, temperature, wind, chane of rain, humidity, cloud cover, curing, location of pour, period of pouring e.t.c

PSG 5.5.1.4 Chloride Content

Add the following to this Sub-clause:

Efflorescence will not be acceptable on any exposed concrete surface.

PSG 5.5.1.5 Durability

Add the following to this Sub-clause:

The water/cement ratio, as specified in Table 5, but shall not exceed 0.5.

PSG 5.5.1.6 Prescribed Mix Concrete

Add the following to this Sub-clause:

Notwithstanding the requirements of Sub-clause 5.5.1.6, samples of aggregates will not be made available by the Employer's Agent. The Contractor shall supply aggregates from commercial sources located by him, complying with the requirements of Sub-clause 3.4.1, as amended, for the production of prescribed mix concrete.

"No-fines" concrete:

A nominal aggregate size of 19 mm shall be used in the manufacture of "no-fines" concrete.

No-fines concrete shall be laid under where specified and shall consist of coarse aggregate, cement and water only. No fine aggregate shall be used. Sandwiching or layering of pours will not be permitted. The Contractor shall cast to the profile depth in one pour.

The mixing of the cement and water paste shall have the consistency of paint capable of coating each coarse aggregate particle uniformly and sufficiently to form a small fillet at all the contact points of each stone in the aggregate.

Between 24 and 48 hours after the no fines layer has been laid it shall be covered with 1:4 cement: sand mortar layer 20 mm thick. The mix shall be comparatively dry to ensure that it does not penetrate and block the cavities in the no fines concrete. The surface shall be steel floated to form a plane surface.

The mortar skim shall be cured in the same manner as concrete for a period of not less than 2 days. Payment shall be per cubic metre of no-fines concrete placed. The rate shall include compaction and skimming to the approval of the Engineer.

PSG 5.5.1.7 Strength Concrete

Add the following to this Sub-clause:

Unless otherwise specified on the drawings or in the Schedule of Quantities, all structural concrete shall be Grade 35 MPa watertight concrete.

The concrete mix design for strength concrete must be prepared in an approved laboratory and the results of actual test mixes must be submitted for approval together with 7-day and 28-day strength test results. Special attention is drawn to the fact that the concrete mix must provide a very dense and impervious concrete.

The Contractor shall submit details of the proposed concrete aggregates and design mix to the Engineer for approval, after which he shall be required to make a trial mix and obtain cube test results to validate the proposed mix. Only after receipt of satisfactory cube test results, the Contractor shall

be permitted to use the mix in the construction of water retaining structures. The cost of designing and proving the proposed concrete mix shall be deemed to be included in the tendered rates.

The Engineer may call for revised mix designs at any stage during the Contract.

Where blinding layers are specified, the concrete shall be grade 15 MPa/19 placed and finished off to the final level.

In order to facilitate or increase the workability of concrete in the fresh/plastic state, to ensure watertightness without increasing the water/cement ratio, the Engineer may approve the use of an additive.

The workability of concrete shall be assessed by means of the slump test. The slump shall be between 75 ± 25mm.

Curing

Curing shall be done using a curing compound to the Engineer's approval and frequency or, in addition to water curing, well-secured plastic sheeting, shall be used. Water curing alone shall not be permitted. Where the Contractor fails to cure for a minimum of 7 days, no payment shall be made for the relevant pour of concrete.

PSG 5.5.2 Batching

Add the following to this Sub-clause:

Batching of all strength concrete shall be by mass. Prescribed concrete may be batched by volume. Batching shall not be done by wheelbarrow.

All concrete shall be mechanically mixed.

Stand-by mixers of adequate capacity and with an independent power unit shall be maintained on site for immediate use in the event of breakdown of the regular mixers failure of the power supply.

PSG 5.5.3 Mixing

Add the following to this Sub-clause:

All concrete shall be mechanically mixed.

PSG 5.5.3.2 Ready-mixed concrete

Replace this Sub-clause with the following:

Concrete from a central concrete production facility other than on the construction site will be permitted if the facility is within a 40 km radius of the site and, apart from test results in terms of Sub-clauses 7.3.1, 7.3.2 and/or 7.3.3, test results obtained by such a production facility as part of its quality control system will be accepted for evaluation in terms of Sub-clause 7.3.4, provided the cubes are stored and cured on site.

PSG 5.5.5 Placing

Add the following Sub-clause:

PSG 5.5.5.10 Casting of Concrete in Excavation

Structural concrete shall not be cast directly against the side of any excavation without the use of formwork unless prior approval has been obtained in writing from the Employer's Agent.

Concrete used in pipe trenches for encasement and for the thrust/anchor blocks may be cast directly against the side of the excavation.

After vibration, the concrete shall be spaded in corners, in angles and against forms to release air bubbles which may have been trapped in these positions.

PSG 5.5.7 Construction Joints

Add the following to these Sub-clauses:

PSG 5.5.7.1 General

The edge of joints, exposed to view in the finished structure, shall be formed with suitable beads to provide a straight edge true to line and level.

All joints, other than expansion, contraction and other movement joints shall be treated as follows:

As soon as practical, but not before 15 hours after placing, the construction joint surface shall be prepared to receive fresh concrete. This preparation, as specified in Sub-clauses 5.5.7.3(a) to (d), shall be such as to remove all laitance or inert and strengthless material which may have formed and the specified chipping or sand blasting shall be such as to produce a roughened surface all over.

When concreting is interrupted concrete surfaces shall be protected from the sun as specified in Sub-clause 5.5.8(d) or by means of hessian kept damp until concreting is resumed.

All construction joints shall be dealt with as specified in Sub-clause 5.5.7.3, as amended.

Unless construction joints between designated joints shown on the drawings are authorized by the Employer's Agent in writing, concrete in floors, walls and roofs shall be cast continuously between the designated joints shown on the drawings.

PSG 5.5.7.2 Formed Joints (generally vertical or near vertical)

Formed joints will be considered to be designated joints as defined in Sub-clause 2.4.3. (The forming of a straight edge to a construction joint as specified in PSG 5.5.7.1, as amended, General does not constitute a formed joint).

Each joint shall be formed as shown on the drawings, complete with shear key rebates, waffle formwork, V-feature, waterstops, "Flexcell" or equal, approved joint filler, dowel bars and their PVC tubes, etc. as indicated.

PSG 5.5.7.3 Non-designated Joints

Any non-designated joints shall be identical to designated joints, as shown on the drawings, which would be used in similar positions and shall perform the same function.

Add the following Sub-clauses:

PSG 5.5.7.4 Joints between Footings or Floors and Walls or Columns

Construction joints between foundations, footings or floors and walls, columns or piers connected to them, shall not be made flush with the supporting surface, but shall be made at a distance above the footing or floor shown as on the drawings or approved by the Employer's Agent. The "kicker" shall be cast as an integral part of the foundation, footing or floor.

PSG 5.5.7.5 Construction Joints in Circular Reservoirs

(a) Construction Joints in Walls or Footings

Construction joints may only be placed where shown on the drawings or to the approval of the Engineer. Vertical joints in the walls of the reservoir are permitted only in the pre-stressed reservoir. These joints shall only be permitted radially on each side of stressing buttresses. No vertical joints shall be permitted in the reinforced concrete reservoir.

The entire contact surface along the joint in the concrete already cast shall be chipped or water jetted to expose the coarse aggregate to 5 mm beyond the surrounding matrix. Care shall be taken to ensure that the concrete structure is not damaged and that all loose material is removed. The surface must be thoroughly cleaned and wetted before casting against the joint.

All construction joints in the reservoir walls and footing shall be cast with water stops. Water stops shall be galvanised iron or 2 mm thick HDPE strips, as per detail drawings. No construction joints will be permitted in the floor.

Payment shall be per linear meter. The rate shall include supply and casting in of the water stop as per detail drawings.

(b) Construction Joints in Roof Slabs

Construction joints in the roof slab are permitted. The position of these joints shall be approved by the Employer's Agent.

These joints shall be cast against a vertical shutter leaving a 15 mm deep by 20 mm wide recess which is sealed with a one part poly-sulphide sealer on completion. The sealer used and method of application shall be to the Employer's Agent's approval.

No water stops are required; however, the completed roof shall be tested for water tightness in accordance with Sub-clause PSG 7.2.5(b), as amended. No additional payment shall be made for these joints.

(c) Expansion and Contraction Joints

Expansion and contraction joints shall be constructed as detailed on drawings using PVC or rubber water stops. Water stops extruded from recycled material shall not be permitted.

Prior to bandaging, concrete surfaces shall be scabbled with a mechanical scabbler and water jetted with a 200 bar water jet. All joints shall be butt jointed and patched over.

The waterproofing bandage shall comprise the following :

A 2 mm thick modified polyolefin (FPO) waterproofing or thermoplastic elastomer bandage bonded to the concrete with widths as indicated on the drawings (typically 350 mm wide for expansion joints and 250 mm wide for contraction joints)

The bandage shall be applied by coating the concrete and underside of the bandage with an epoxy adhesive. The stainless steel strip is first positioned over the joint and the bandage with epoxy adhesive placed over the stainless steel strip. All trapped air shall be eliminated by hand rolling the bandage until the epoxy is fully cured.

Of particular concern is the quality of the bandaging of the wall-to-floor sliding joint where poor quality issues have been experienced in the past.

The following quality items are to be considered in the successful application of any bandage:

- Proper preparation of concrete substrate onto which the adhesive epoxy is applied. It is essential that any concrete surface defects such as chips and cracks by blows from scaffolding etc., honey-combing, blow-holes, weak spots from weathered aggregate stone or mudball in concrete sand etc are identified and properly repaired with an epoxy repair mortar beforehand. Each and every square-centimetre of concrete surface should be examined visually and mechanically by tapping / scratching and confirmed and signed-off to be full-strength, non-porous, laitance and dust and grease free immediately prior to application.

- All other work inside the reservoir MUST BE COMPLETE before bandaging begins in order to minimise the risk of the bandage being mechanically damaged by unskilled workmen still needing to work inside the reservoir.

- The technique and tools used to hot-air weld laps in the bandage are critical. The jointing of the bandage must not be done in-situ. It must be done in advance of the end of the bandage being reached where the end can be laid down on a clean, hard surface and, after heating using a thermostatically-controlled air gun designed for the purpose, the connecting strip properly compressed down on it by the right type of roller then the bond examined and tested before continuing with the bedding of the bandage into the adhesive. The technique involves 3 stages of welding rather than all done in one go.

- The work must be continuously supervised by an experienced technically-competent individual who fully understands the product, has all the correct materials and tools to hand, and understands what is critical and what is not in achieving a 'correct-first-time' application that will last the 50 year design life of the reservoir.

The application of the bandage shall be carried out strictly in accordance with the methodology and using the tools and materials as defined by the supplier and is to be executed by an approved subcontractor who has been

certified by the supplier for installation of the specific type of bandage proposed. The supplier of the bandage shall also be fully engaged and involved in the installation process.

Payment shall be per linear meter. The rate shall cover all costs for the supply and application of water stops and bandaging.

PSG 5.5.7.6 Application of Primers and Adhesives

The concrete to which the primer or adhesive is to be applied shall be dry and shall be cleaned of all dust, grit, grease, surface laitance and foreign matter by compressed air and/or water, solvents, or other suitable approved means. The Contractor shall provide on Site an approved moisture meter to measure the degree of dryness of the joint. This meter shall be made available to the Engineer for testing. The joint shall be approved for the application of the primer and adhesive if the moisture content of the concrete is less than or equal to 5%. It may be necessary to dry the concrete surfaces locally to reduce the moisture content to 5% or less.

PSG 5.5.7.7 Contraction and expansion joints

Contraction and expansion joints shall be formed true to line in smooth formwork.

All surfaces shall be thoroughly cleaned of all accretions of concrete or other foreign matter by scraping or other approved means.

Particular care shall be taken to compact the concrete around waterstops, edges, etc.

Rebates for seals shall be formed to required dimensions and lines, or cut true to line and size after floating the surface and before the final set of the cement has taken place. All rebates, etc., shall be adequately protected against damage until the completion of the work; accidental damage which in the opinion of the Engineer will impair the performance or appearance of the joint shall be made good by reconstructing the work as directed by the Engineer. Rebates for seals shall be grit blasted or wire brushed on all faces to remove surface laitance and thoroughly cleaned with soft brushes and/or compressed air jets, and, if necessary, dried by blow-lamp or other approved means before priming.

PSG 5.5.7.8 Installation of Waterstops in Joints

Waterstops shall be held in the formwork so as to prevent air pockets forming underneath them. Special precautions shall be taken, to the approval of the Employer's Agent, to ensure that all flexible waterstops are in perfect contact with well compacted void-free concrete.

PSG 5.5.7.9 Installation of Joint Filler in Expansion Joints

Joints in the filler shall be neatly butted so as to exclude mortar from the joint. Edges of filler strip against waterstops, concrete, formwork, projections, etc., shall also be closely fitted to exclude mortar, so that there is no resistance (other than the compression of the filler) to the expansion movement for which the joint is designed.

Joint filler shall be fixed to the first cast of concrete with an approved adhesive and as directed by the Engineer.

PSG 5.5.7.10 Application of Joint Seals

Rebates shall be cleaned as required by PSG 5.5.7.6 Application of primers and adhesives and shall be inspected and approved by the Engineer's Representative before filling.

Joint sealants and primers shall be applied strictly in accordance with the manufacturer's instructions. Flow and non-slumping grades shall be used for horizontal and vertical joints respectively.

Immediately after the compound is applied the joint shall be protected against damage until completion of the Contract.

PSG 5.5.8 Curing and Protection

Add the following to this Sub-clause:

PSG 5.5.8.1 Horizontal surfaces

Surfaces of the concrete shall be treated with a curing compound complying with Sub-clause PSG 5.5.8.3 Post-Crystallization (Concentrate & Modified) slurry coat and curing.

PSG 5.5.8.2 Formed surfaces

In order to improve the effectiveness of the crystallization treatment, the specified minimum time for the removal of the formwork shall be three days. All surfaces shall be pressure cleaned in accordance to the product manufacturer's requirement.

PSG 5.5.8.3 Post-Crystallization (Concentrate & Modified) slurry coat and curing

The Concrete surfaces to receive a concentrate slurry coat treatment shall have an open capillary system to provide 'tooth and suction', and shall be free from scale, excess form oil, laitance, curing compounds and foreign matter.

Surfaces shall be smooth and uncovered from excess form oil, laitance and foreign matter. The concrete should be lightly water blasted to remove such material for surface preparation.

Concrete surfaces must be thoroughly saturated with clean water prior to application in order to ensure the growth of the crystalline formation deep within the pores of the concrete. Wetting to be done must be at least 1hr before application. If concrete surface dries out before application, it must be re-wetted.

The concentrate slurry is applied at a coverage rate of 1kg/m² using a semi-stiff nylon bristle block brush – work slurry well into the surface, filling surface pores and hairline cracks. The coating must be uniformly applied at approximately 1.25 mm thickness. The second modified slurry coat with the same application rate must be applied within 48 hours of the first coat. Light pre-watering between coats may be required when drying out signs appear. Detail coating applications shall be confirmed by the manufacturing.

Cure by spray for minimum of 3 days must be established once the final coat has been applied. Protect from rainfall, puddling of water, wind & frost for at least 48 hours after application. When plastic sheeting is used as protection allowance must be made for the coating to breathe.

PSG 5.5.8.4 Curing for normal concrete surfaces

The use of membrane curing compounds will be allowed on vertical faces or steeply inclined faces (i.e. steeper than 45o to the horizontal) of cast in situ members of the structures subject to the Contractor producing sufficient, satisfactory cube crushing strength test results where the crushing strength of cubes which have been cured with the proposed curing membrane and left exposed to the elements are compared with those of an equal number of water cured cubes. The crushing strength of cubes cured with the proposed membrane shall be at least 85% of the crushing strength of the water cured cubes.

Before any membrane curing compound is used, each batch shall be tested on a trial surface to ensure that it forms a satisfactory membrane, and any compound which is unsatisfactory in the opinion of the Engineer, shall be rejected. Curing membranes will be disallowed if permanent discolouration of the concrete takes place. Surfaces where curing membranes are used shall be treated in such a manner that the final concrete texture and colour blends in with the rest of the concrete work. Furthermore, the Engineer shall, at his discretion, require the Contractor immediately to adopt an effective alternative means of curing any area of the structure to which a membrane has been applied which, in the opinion of the Engineer, is unsatisfactory. The curing compound used shall be to the approval of the Engineer. Wax based curing compounds will not be permitted.

The curing compound shall be applied immediately as formwork is progressively stripped or, in the case of unformed surfaces, when the concrete has taken its initial set. It shall preferably be applied by spraying and the rate of application shall be strictly in accordance with the manufacturer's recommendations. A method of monitoring the area to which curing compound has been applied and the application rate shall be as approved by the Engineer and rigidly applied by the Contractor.

Surfaces of joint rebates, where elastomeric sealant is to be applied, shall be protected from contamination by curing compound by the use of masking tape.

PSG 5.5.9 Adverse Weather Condition

Replace the contents of Sub-clause 5.5.9.2 with the following:

No placing of concrete shall take place if the ambient temperature exceeds 32ºC, or is likely to rise to above 32ºC during the casting period or within eight hours after casting is completed.

If concrete is to be cast during times of high ambient temperature or hot drying winds, the Contractor shall be responsible for taking the necessary steps to keep the placement temperature as low as possible. Such steps include the spraying of the coarse aggregate with water, the painting of silos with a reflecting aluminium paint, the insulation of tanks and pipelines, and the protection of concrete ingredients against the direct rays of the sun. The area of the pour shall be shaded before and during concreting and the concrete shall be shaded from the time of mixing until eight hours after placing.

Windbreaks shall be erected if necessary.

PSG 5.5.10 Concrete Surfaces

Replace the contents of this Clause with the following:

PSG 5.5.10.1 Screeded finish

After placing and compacting the concrete on a top (unformed) surface shall be struck off with a template to the designated grades and tamped with a tamping board to compact the surface thoroughly and to bring mortar to the surface, leaving the surface slightly ridged but generally at the required elevation. No mortar shall be added, and noticeable surface irregularities caused by the displacement of coarse aggregate shall be made good by re-screeding after the interfering aggregate has been removed or tamped.

PSG 5.5.10.2 Wood-floated finish

Where wood-floating is ordered or scheduled, the surface shall first be given a finish as specified in Sub-clause PSG 5.10.1, as amended, Screeded finish and, after the concrete has hardened sufficiently, it shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screeding marks.

PSG 5.5.10.3 Steel-floated finish

Where steel-floating is specified or scheduled, the surface shall be treated as specified in Sub-clause PSG 5.10.1, as amended, Screeded finish except that, when the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be steel-trowelled under firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

PSG 5.5.10.4 Granolithic screeds

PSG 5.5.10.4.1 General

Before placing any granolithic screeds the base concrete shall be chipped to expose the aggregate over 100% of the area to be screeded and soaked with water for at least 24 hours.

The base concrete shall be thoroughly cleaned by scrubbing and all standing water removed after soaking. A 1:2 cement/sand grout shall then be brushed into the prepared surface followed by the granolithic screed before the grout sets. The granolithic screed shall be of the driest feasible consistency with a slump not exceeding 50 mm and shall be formed true to profile and shape as required and shown on drawings. Before placing granolithic screed against an adjacent band of granolithic screed the edge of the latter shall be prepared by chipping back to firm material, wire brushing and brushing with grout as for the base concrete.

Granolithic screed shall be compacted to remove all air and shall be screeded and finished with a steel trowel to Degree of Accuracy 1.

The trowelling shall be carried out in the following stages:

a) First - as soon as the granolithic screed has been compacted and screeded.
b) Second - after 2 hours to close the surface and remove laitance.
c) Third - after a further 4 hours.

The time intervals are estimated as appropriate to normal temperature conditions and shall be varied by the Contractor to ensure a smooth dense finish.

Granolithic screed shall be cured as specified in Sub-clause 5.5.8(b), as amended, but shall additionally be protected from direct sunlight and drying winds as it is being placed.

All screeding necessary to accommodate mechanical equipment shall be done under the equipment supplier's supervision and in strict accordance with his instructions. It shall be commenced as soon as the equipment supplier gives notice on completion of erection and shall be finished expeditiously.

PSG 5.5.10.4.2 Screed to floor (Where Specified)

Where screed is specified it shall be approximately 50 mm thickness is required to each floor.
The screed shall be formed from granolithic concrete as specified in Sub-clause PSG 5.5.10.4 Granolithic screed. The screed shall be applied after the mechanical equipment has been erected by the mechanical plant contractor and shall be laid in alternate concentric rings not greater than 2,00 m in width. A period of 24 hours shall elapse before the intervening rings are laid.

The Contractor shall supply and fit a plywood template to the clarifier mechanism to act as a guide in determining the finished screed level. He shall not use the template to physically form the screed surface nor shall he place an excessive load on the scraper mechanism.

The Contractor shall only operate the scraper mechanism in strict accordance with the instructions of the manufacturer and the Engineer, and he shall make good any damage resulting from the use of the machinery.

Granolithic concrete shall be placed in position for a distance of approximately 3,0 m in front of the template and consolidated and roughly trimmed to level. The surface of the screed shall then be trimmed off to the level of the template which shall be moved as required by hand operation of the mechanism.

The trimmed surface shall be steel float finished and the edges of the ring left in a rough vertical condition to provide a key for the adjoining ring.

The preparation of the base concrete shall be done in accordance with Sub-clause PSG 5.5.10.1, as amended, Screeded finish. Before placing granolithic concrete against an adjacent band of granolithic concrete the edge of the latter shall be prepared by chipping back to firm material, wire brushing, and brushing with grout as for the base concrete.

Concrete to manholes shall be watertight concrete.

PSG 5.5.11 Watertight Concrete

Add the following to this Sub-clause:

The water-tightness of the reservoir and concrete chambers shall be tested as indicated below:

On completion of a water retaining structure it shall be cleaned and shall be filled with water at an approved rate. After allowing a period of absorption of 3 days, the depth of water shall be recorded and the water allowed to stand for a further 7 days during which the total permissible drop in water level after allowing for evaporation should not exceed 10 mm.

In the event of any leakage or dampness being evident at any stage of the filling or testing or in the event of the Engineer considering the final degree of water-tightness to be unsatisfactory, the Contractor when ordered by the Engineer shall discontinue such filling or testing and shall, at his own expense, immediately take approved steps to rectify the leakage and to make the work thoroughly sound to the complete satisfaction of the Engineer. All such rectification work shall be continued assiduously until a satisfactory test is obtained, which shall prove to the Engineer that water-tightness has been obtained.

If required by the Engineer, the structure shall be retested before the expiry of the Defects Liability Period.

The floors, walls and roofs of all water retaining structures shall be considered to be watertight concrete structures.

The Works will not be certified complete until the structure has been proved by testing to be watertight to the satisfaction of the Engineer.

The cost of the above tests will be deemed to be included if the rates for the relative concrete to be provided by the contractor.

PSG 5.5.14 Defects

Add the following to this Sub-clause:

All defects shall be repaired as soon as possible after the formwork has been removed and the Engineer has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Engineer for his approval before any work is carried out. The Engineer may prohibit the further placing of concrete in the particular area concerned until he is satisfied that the repair has been satisfactorily executed.

Add the following sub-clauses:

PSG 5.5.16 Casting Pipes and Specials in Concrete

Where the pipe or special is supplied by others the Contractor shall provide a box-out in the wall and cast the unit in at a later stage. When constructing such box-outs reinforcement shall not be cut but shall run through the opening. Reinforcement shall be cut and/or bent out at a later stage to suit the item being cast in. After installation of the item the remaining reinforcement shall be bent back in position.

Where entry holes for pipes/specials have been provided in the walls, the Contractor shall be responsible for the concreting in of such pipes/specials regardless of whether or not these have been supplied by himself.

Before commencing the positioning in holes of any pipes/specials the Contractor shall:

a) remove all formwork and boxing remaining in the holes;

b) make any alternations required to the position and shape of the holes and cut reinforcement to suit the item, as directed by the Employer's Agent; and

c) thoroughly scabble the sides of the holes so as to obtain a satisfactory bond surface for the new concrete and treat the surface as specified in Sub-clause 5.5.7.3, as amended.

Immediately prior to the placing of mortar and concrete around the pipes, the surface of the existing concrete shall be saturated with water. All surplus water shall be removed and the surface covered with a layer, approximately 12 mm thick, of mortar made of the same mix as the concrete in which the pipes/specials are to be placed.

The concrete ingredients shall be mixed and placed as dry as possible to obtain a dense, waterproof concrete. The concrete shall be carefully worked around the puddle flange, if any, and the pipe barrel or body of the special, and shall be vibrated in layers so as to obviate a falling away from pipe/special surfaces of the concrete already placed. The whole shall, when set, form a dense, homogeneous, and waterproof mass.

PSG 5.5.17 Precast paving slabs

The area to be paved shall be compacted to a minimum of 93% Mod AASSHTO density (100% for sand), trimmed and then treated with an approved weedkiller, with care being taken to avoid contaminating surrounding areas. The paving slabs shall be laid on a sand bed approximately 25 mm thick, which shall be graded to the required levels and slopes as approved by the Engineer. The joints between the slabs shall be 2 mm to 6 mm wide and shall be grouted with cement mortar. Gaps in the pattern of slabs shall be filled with Grade 15MPa/19 concrete and given a wood floated finish.

PSG 5.5.18 Items to be cast in or grouted into concrete

PSG 5.5.18.1 Fixings for equipment supplied under separate contract

a) The Contractor will be responsible for the forming of pockets to the details shown on the drawings to accommodate holding down bolts for equipment supplied under a separate contract. Holding down bolts will be supplied by and positioned by others.

b) After casting of the concrete all shuttering shall be removed and the sides of the bolt holes and surface on which the machine base is to be placed shall be scabbled to remove all defective concrete, laitance, dirt, oil, grease and loose material.

c) Upon completion of the positioning and alignment of equipment and when instructed by the Engineer the Contractor shall in collaboration with the mechanical contractor, grout up pockets and baseplates by filling pockets and voids under the baseplates with an approved non-shrink grout.

PSG 5.5.18.2 Fixings for items supplied under this Contract

Holding down bolts or other fixings required for the installation of items supplied under this Contract shall be provided by the Contractor. These fixings shall be cast in or grouted into pockets or installed by other means as approved by the Engineer.

Where anchor bolts are used which are installed into holes drilled into concrete or masonry these shall be of a type approved by the Engineer. All such bolts used shall be manufactured from stainless steel or a metal with a resistance to corrosion equal to that of grade 304 stainless steel. The metal used for bolts shall be compatible with galvanized mild steel.

Anchor bolts shall have minimum pull-out forces and minimum ultimate lateral loads at least equal to those specified below:

Specified Anchor Size	Minimum Pull-out Force (kN)	Minimum Ultimate Lateral Load (kN)
M6	10,35	7,60
M8	13,70	11,15
M10	19,44	15,95
M12	31,85	26,90
M16	50,45	45,80
M20	60,50	71,20

PSG 5.5.18.3 Plastic puddle pipe items supplied under this Contract

Plastic puddle pipe cast-in fittings as indicated per drawing required for the installation of items supplied under this Contract shall be provided by the Contractor. These fittings shall be cast in or grouted into pockets or installed by other means as approved by the Engineer.

All such fittings shall be manufactured from mPVC CLASS 16 according to the drawings in accordance with SANS 966. The welded puddle shall be governed in accordance with standards DVS 2207 and SANS 10268. All welded items shall be issued with an accredited quality certificate from an accredited manufacturer.

PSG 5.5.18.3 Supervision

The Contractor shall be responsible for ensuring that the erection of the concrete work is carried out under the supervision of a person with adequate knowledge of the mixing, transporting, placing and curing of concrete.

Programme and Plant

Prior to carrying out any concrete work, the Contractor shall obtain the approval of the Engineer in respect of:

a) Structural programme
b) Concrete plant details
c) Materials to be used in concrete
d) Details of concrete
e) Construction joints.

PSG 7 TESTS

PSG 7.1.2 Frequency of sampling

Add the following to this clause:

One sample shall consist of three concrete test cubes.

For each sample taken the position in the structure shall be recorded where the batch represented by that sample is placed as also the date sampled.

Sampling of concrete of a particular grade shall be as specified in Sub-clause 7.1.2 with the following frequency of sampling referred to in Sub-clause 7.1.2.2 being amended to read as follows:

"A minimum of 4 samples per day of each grade of concrete placed or 6 samples for pours in excess of 10 m³ shall be taken."

PSG 7.2 Testing

Add the following Sub-clause:

PSG 7.2.5 Watertightness Testing of Concrete

The Clear/potable water retaining structures shall be disinfected before testing. Any re-testing that may be required shall be at the Contractor's expense.

The entire inside surface of the reservoir including columns and roof shall be thoroughly hosed down with water and brushed until properly cleaned off all dirt and other foreign matter.

The floor of the structure shall then be flooded to a depth of 150 mm with chlorinated water and dosed at the rate of 150 grams of chloride or lime to every cubic meter of water. The entire inside surface shall again be scrubbed using this water. The workers engaged in this operation shall wear clean rubber boots. On completion the floor of the structure shall be swept clean.

The chlorinated water shall be stored until the free chlorine level has dropped to an acceptable level. Excess dirt swept from the floor into the sump may be discharged subject to written approval being obtained from the Local Authority.

Payment shall be a lump sum. The rate shall cover the costs of all materials and water used.

The reservoir shall be tested for water tightness in accordance with BS 8007 1987 Section 9.

a) <u>Testing of the Structure:</u>

For testing the liquid retention, the structure shall be cleaned and initially filled to the normal maximum level with the water at a uniform rate of not greater than 2 m in 24 hours.

When first filled, the water level should be maintained by the addition of further water for a stabilising period while absorption and autogenous healing take place. After a stabilization period of 21 days, refill (top up) and record the water level at 24 hour intervals for a test period of 7 days. During this 7 day test period the total permissible drop in level, after allowing for evaporation and rainfall, should not exceed 10 mm.

Notwithstanding the satisfactory completion of the test, any evidence of seepage of the liquid to the outside faces of the liquid-retaining walls shall be assessed by the Engineer against the requirements of the specification. Any necessary remedial treatment of the concrete, cracks, or joints shall be carried out from the liquid face where practicable. If a lining is used for this purpose, it shall be sufficiently flexible and not be in any way detrimental to the water quality.

In the event of any leakage or dampness being evident at any stage of the filling or testing or in the event of the Engineer considering the final degree of water-tightness to be unsatisfactory, the Contractor when ordered by the Engineer shall discontinue such filling or testing and shall, at his own expense, immediately take approved steps to rectify the leakage and to make the work thoroughly sound to the complete satisfaction of the Engineer. All such rectification work shall be continued assiduously until a satisfactory test is obtained, which shall prove to the Engineer that water-tightness has been obtained.

If required by the Engineer, the structure shall be retested before the expiry of the Defects Liability Period.

The Works will not be certified complete until the structure has been proved by testing to be watertight to the satisfaction of the Engineer.

b) Testing of the Roof of water retaining structures

The roof shall be tested on completion by using a hose or sprinkler system to obtain a sheet flow over the whole area of the roof for a period of not less than 6 hours.

The roof shall be considered satisfactory if no leaks or damp patches appear on the soffit.

PSG7.2.6 Durability Testing:

Concrete shall comply with the durability parameters defined below:

a) Water Sorptivity:

Sorptivity is sensitive to surface effects and may be used to assess the effectiveness of initial curing.

b) Oxygen Permeability:

Permeability is sensitive to changes in the coarse pore fraction and is thus a means of assessing the degree of compaction of concrete. It may be used to quantify the microstructure of the concrete and is sensitive to macro-defects such as voids and cracks.

c) Chloride Conductivity:

Chloride conductivity provides a method of characterisation of concrete in the marine environment and may be used to assess the chloride resistance of concrete.

Unlike oxygen permeability and water sorptivity, chloride conductivity is not really a measure of construction quality, but it shall be used for materials selection and design of mixes in aggressive chloride conditions. It will therefore only be used as a check on mix designs during the initial stages of construction.

d) Concrete Cover:

Concrete cover is a dimensional indicator of cover concrete depth. Cover concrete is the outer concrete layer which protects the internal reinforcing steel, and its depth varies according to the requirements of the different environmental exposure classes.

Test for cover shall be conducted using an approved calibrated electromagnetic cover meter.

This test shall be conducted when instructed by the Engineer to confirm that the specified depth of concrete cover has been achieved. The cover meter tests shall cover at least 1 m2 for every 10 m2 exposed. The average cover of the 1 m2 subjected to the test shall be used to determine the payment as per Table PSG 7.3.10.3 unless the Contractor chooses to carry out additional tests as detailed under clause PSG 7.3.8. The cover meter must be calibrated for each project by drilling and measuring actual cover in at least 3 locations to validate the readings.

e) General:

Durability predictions will be based on the following tests that shall be arranged by the contractor. The durability testing shall be carried out by a laboratory approved by the Engineer.

For testing, water sorptivity, oxygen permeability and chlorine conductivity, cores of 68 mm diameter shall be extracted from the structure when the concrete reaches the age of at least 28 days and tested for the durability criteria set out in PSG 7.3.7. The frequency of the testing at the start of the contract shall be such that there is at least one test (consisting of 2 cores) per discrete concrete element, or per 15 m3 poured (whichever is the lesser), until such time that the Engineer is satisfied that the specified criteria are consistently achievable. Hereafter testing shall be limited to one test per discrete concrete element or maximum concrete pour of 40 m3 (whichever is the lesser), or as directed by the Engineer. Depending on access requirements, the frequency and locations of the tests may be changed to suit site requirements as directed by the Engineer. Note that for decks and walls, the cores shall be taken on the exposed faces of the concrete i.e. the soffit and side wall face, taking care not to cut the reinforcing bars. Where the cores do contain pieces of reinforcing steel,

they shall not be used for the tests, particularly in the chloride conductivity test or where bleeding cavities may have formed.

The cores shall be extracted through the cover concrete from the constructed concrete element and a slice (25 mm thick) shall then be cut from the outer surface of this core such that the slice is representative of the middle layer of the cover concrete, i.e. the middle layer being a 25 mm thick slice of concrete, 5 mm from the exposed outer surface extending in towards the reinforcement, and tested. The positions at which the cores shall be extracted shall be as indicated by the Engineer.

Filling of the holes left by the drilling of the cores shall be the responsibility of the contractor and shall be carried out using an approved proprietary non-shrink repair mortar so as to restore structural integrity and durability of the structural element tested. The cost of drilling and filling of the holes shall be included in the rate make-up of pay items for durability testing.

PSG 7.2.7 Depth of Concrete Cover

The procedure for testing for depth of reinforcement from concrete surface shall be in accordance with the manufacturer's requirements for the relevant electromagnetic cover meter. The number of readings taken to each 1 m^2 to be tested shall be such that an accurate average cover can be determined for the tested area.

PSG 7.2.8 Shrinkage

The dry shrinkage tests shall be conducted in accordance with SABS 1085. The drying shrinkage shall not exceed 0.04%.

PSG 7.3 Acceptance Criteria for Strength Concrete

Add the following Sub-clauses:

PSG 7.3.6 Durability Parameters Acceptance Ranges

When tested in accordance with the test procedures described below for each potential durability parameter, the concrete shall meet the limits given in the tables below:

PSG 7.3.6.1 Water Sorptivity And Oxygen Permeability

Table PSG 7.3.6.1 Water Sorptivity and Oxygen Permeability

Acceptance Category	Test No. / Description / Unit	
	Water Sorptivity (mm/h)	Oxygen Permeability (log scale)
Concrete made, cured and tested in laboratory	6	> 10.0
Full acceptance of in-situ cast concrete	< 8	> 9.15
Conditional acceptance of in-situ cast concrete (with remedial measures)	8 - 15	8.75 – 9.15
Rejection	> 15	< 8.75

PSG 7.3.6.2 Chloride Conductivity

Table PSG 7.3.6.2 Chloride Conductivity (severe to very severe conditions)

Concrete	100% PC		10% CSF		30% FA		50% GGBS	
Curing Period	28d	90d	28d	90d	28d	90d	28d	90d
Full wet cured	1.25	1.00	0.50	0.45	1.50	0.40	1.25	1.00
Moist cured (3 – 7d)	1.75	1.60	0.60	0.55	2.25	1.25	2.25	2.00

PSG 7.3.6.3 Concrete Cover

Table PSG 7.3.6.3 Concrete Cover			
Test Description	**Specified Cover (mm)**	**Acceptance Range**	
		Minimum	**Maximum**
Concrete cover to reinforcement	20 – 30	As specified	As specified + 5 mm
	30 - 80	As specified	As specified + 10 mm

PSG 7.3.7 Criteria for the Compliance with the Requirements

No extra payment shall be made for cube strength testing. The cost of cube strength testing shall be included in the rates tendered for concrete.

Water used for testing shall be free of charge except for failed tests when water will be charged at standard municipal rates.

In the event that the actual achieved average cube strengths of an element are less than 85% of the target mean strength, the Engineer may instruct the taking of cores for additional strength testing. The cost of taking the cores and repairing the holes in the structures shall be for the Contractor's account.

The Engineer will conduct routine tests for the durability parameters on cores taken from the completed elements during the construction, the costs for which shall be to the Employer's account unless the parameters are not met.

The test results shall be accepted or rejected based on the criteria as set out in Tables PSG 7.3.6.1, PSG 7.3.6.2 and PSG 7.3.6.3 based on the following categories:

(a) Full Acceptance:

Concrete shall be accepted unconditionally and full payment shall be made.

(b) Conditional Acceptance:

Concrete may be accepted at the Engineer's discretion with a warning that construction methods be examined to improve the durability criteria. A reduced payment shall be applied to all the relevant pay items under SABS 1200 G for the non-conforming element or concrete pour as set out in Tables PSG 7.3.10.1, PSG 7.3.10.2 and PSG 7.3.10.3. Alternatively, the Contractor may elect to carry out remedial work to improve the durability of the concrete to the criterion of "Full Acceptance" to the satisfaction of the Engineer, and receive full payment. All proposed remedial measures shall be subject to the approval of the Engineer. The cost of all such remedial work shall be for the Contractor's account.

(c) Rejection:

The concrete shall be removed and replaced with fresh concrete at the expense of the Contractor, as directed by the Engineer.

Should the test result(s) indicate conditional acceptance or rejection of the item tested, the Contractor shall have the option of carrying out additional tests on that item, at his own expense, to confirm or disapprove the original test result(s). Not more than two such additional tests shall be carried out. Should one additional test confirm the original test result, then the original result shall serve to determine payment in accordance with Tables PSG 7.3.10.1, PSG 7.3.10.2 and PSG 7.3.10.3. If two additional tests are carried out and both such tests contradict the original test result(s) then the effective penalty as per Tables PSG 7.3.10.1, PSG 7.3.10.2 and PSG 7.3.10.3, based on the original test result(s), shall be halved.

PSG 7.3.8 Procedure In The Event Of Non-Compliance with the Requirements

Structural concrete elements or concrete pours shall be represented by test cubes and extracted cores, which shall be tested for strengths and the appropriate durability parameters.

If the durability parameters have been proved acceptable, the costs for such testing shall be borne by the Employer. However, where non-compliance to the specified parameters has been identified,

the assessed element shall be rejected and at the Engineer's sole discretion any of the following measures may be considered at the Contractor's expense:

a) Coating with an approved product specifically designed to improve the non-conforming parameter depending on the severity of the test results
b) Acceptance at reduced payment
c) Demolition and rebuilding.

Where the Engineer allows conditional acceptance, reduced payment shall be applied to all the relevant pay items under SABS 1200 G for the non-conforming element or concrete pour according to Tables PSG 7.3.10.1, PSG 7.3.10.2 and PSG 7.3.10.3.

PSG 7.3.9 Tests Ordered By the Engineer

One concrete cube strength test shall comprise the results of tests carried out on three standard test cubes made from concrete sampled from one batch of concrete in accordance with these specifications.

PSG 7.3.10 Determination of Reduced Payment

Payments for all durability concrete shall be based on the test results. The durability parameters are calculated according to Tables PSG 7.3.10.1, PSG 7.3.10.2 and PSG 7.3.10.3 below.

Table PSG 7.3.10.1 Water Sorptivity

TEST	Coastal (≤ 5 km from coast and up to 15 km up river valleys/estuaries)		Inland (> 1 km from coast)	
Water sorptivity (mm/h)	TEST RESULT	% PAYMENT	TEST RESULT	% PAYMENT
	< 8	100%	< 8	100%
	8 < 12	90%	≥ 8 < 12	90%
	12 < 15	85%	≥ 12 < 15	85%
	≥ 15	0%	≥ 15	0%

Table PSG 7.3.10.2 Oxygen Permeability

TEST	Coastal (≤ 5 km from coast and up to 15 km up river valleys/estuaries)		Inland (> 1 km from coast)	
Oxygen Permeability Index (log scale)	TEST RESULT	% PAYMENT	TEST RESULT	% PAYMENT
	> 9.15	100%	> 9.5	100%
	> 9.0 ≤ 9.15	90%	>9.25 ≤ 9.5	90%
	> 8.75 ≤ 9.0	85%	>9.0≤ 9.25	85%
	≤ 8.75	0%	≤ 9.0	0%

Table PSG 7.3.10.3 Concrete Cover

TEST	Coastal (≤ 5 km from coast and up to 15 km up river valleys/estuaries)		Inland (> 1 km from coast)	
	TEST RESULT	% PAYMENT	TEST RESULT	% PAYMENT
30 mm specified	≥ 30 ≤ 40	100 %	≥ 30 ≤ 40	100 %
	≥ 25 < 30	40 %	≥ 20 < 30	40 %
	< 25 or > 40	0 %	< 20or> 40	0 %

40 mm specified	≥ 40 ≤ 50	100 %	≥ 40 ≤ 50	100 %
	≥ 35 < 40	40 %	≥ 30 < 40	40 %
	< 35 or > 50	0 %	<30or>50	0 %
50 mm specified	≥ 50 ≤ 60	100 %	≥ 50 ≤ 60	100 %
	≥ 45 < 50	40 %	≥ 40 < 50	40 %
	< 45 or > 60	0 %	< 40or> 60	0 %
60 mm specified	≥ 60 ≤ 70	100 %	≥ 60 ≤ 70	100 %
	≥ 55 < 60	40 %	≥ 50 < 60	40 %
	< 55 or > 70	0 %	< 50or> 70	0 %
65 mm specified	≥ 65 ≤ 75	100 %	≥ 65 ≤ 75	100 %
	≥ 60 < 65	40 %	≥ 55 < 65	40 %
	< 60 or > 75	0 %	< 55or > 75	0 %
75 mm specified	≥ 75 ≤ 85	100 %	≥ 75 ≤ 85	100 %
	≥ 70 < 75	40 %	≥ 65 < 75	40 %
	< 70 or > 85	0 %	<65 or> 85	0 %
80 mm specified	≥ 80 ≤ 90	100 %	≥ 80 ≤ 90	100 %
	≥ 75 < 80	40 %	≥ 70 < 80	40 %
	< 75 or > 90	0 %	<70 > 90	0 %

Percentage payment for concrete cover shall be based on the average result of the total number of cover meter tests performed on a particular concrete element.

The overall percentage payment applied to a concrete member shall be based on the average of the percentage payments applicable to each durability parameter, together with the percentage payment based on the strength requirements described in the project specifications.

The reduced payments shall apply to the relevant payment items scheduled in the Schedule of Quantities.

PSG 7.3.11 Grouting

The Contractor shall, where so ordered, carry out a site test for each grouting procedure. The tests shall be carried out on a dummy bedplate similar in configuration to that which is to be grouted, but not exceeding 1 m2 in area unless otherwise ordered. When the dummy bedplate is dismantled, the underside shall show a minimum grout contact area of 80% with reasonably even distribution of the grout over the surface grouted except that, in the case of expanding grout, the minimum grout contact area shall be 95%. The test shall show evidence of good workmanship and materials and the results shall be to the satisfaction of the Engineer.

The Contractor shall, when so ordered, make standard test cubes from various grout mixtures and also subject them to compression tests to determine whether the specified strength has been achieved. Test procedures shall comply with the relevant requirements of Sub-clauses 7.2.1 to 7.2.3.

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1.1 Formwork

Add the following Sub-clauses:

PSG 8.1.1.7 Edges of blinding layer and no-fines concrete

No separate payment will be made for formwork to the edge of the blinding or “no-fines” concrete layer. The rates tendered for concrete to the blinding or ‘no-fines” layer shall cover the cost of such formwork.

PSG 8.1.1.8 Chamfers and fillets

No additional payment will be made for chamfers and fillets up to 40 mm wide. Larger fillets and chamfers will be measured by length in accordance with Sub-clause 8.2.5.

PSG 8.1.2 Reinforcement

Add the following to Sub-clauses 8.1.2.2 and 8.1.2.3:

Notwithstanding the method of measuring and paying for reinforcement specified in Sub-clauses 8.1.2.2 and 8.1.2.3, reinforcement will be measured and paid for as scheduled.

PSG 8.1.3 Concrete

Add the following to Sub-clauses 8.1.3.3:

The rates for concrete shall also cover:

a) the use of dolomitic aggregate where prescribed,
b) the cost of the preparation of design mixes by an approved laboratory and submission for approval by the Employer's Agent,
c) screeded finish of unformed surface as specified,
d) inclusion of admixtures where specified, and
e) addition of crystalline additive where prescribed for watertight concrete.

PSG 8.2 Scheduled Formwork Items

Add the following payment item to this clause:

PSG 8.2.7 Kickers .....Unit: m^2

Formwork to the edges of kickers will be measured as plane (or circular) vertical (not as narrow widths).

PSG 8.2.8 Edges of blinding layer

No separate payment will be made for formwork to the edge of the blinding layer. The rates tendered for concrete to the blinding layer shall cover the cost of such formwork.

PSG 8.2.9 Chamfers and fillets.....Unit: m^2

No additional payment will be made for chamfers and fillets up to 40 mm wide. Larger fillets and chamfers will be measured by length in accordance with Sub clause 8.2.5.

PSG 8.4 Concrete

PSG 8.4.4 Unformed surface finishes .....Unit: m^2

Add the following to this Sub-clause:

The rates for unformed surface finishes shall cover the cost of providing the respective surface finish as specified in PSG 5.5.10, as amended, Concrete Surfaces.

PSG 8.5 Joints

Add the following to this clause:

Only designated joints as shown on the drawings will be measured for payment according to the length of each type of joint constructed. The rate shall cover the cost of all materials, labour and construction equipment required

to construct each type of joint specified on the drawings, including the cost of all shuttering, treatment of the joint as specified in Sub-clause 5.5.7.3, as amended, as well as testing and repairing where necessary.

Non-designated joints will not be measured for payment.

Add the following Sub-clause to this payment clause:

PSG 8.5.1 Formed joints .....Unit: m

Formed joints will be measured by the length of the joint.

The rates shall cover the cost of all operations and materials specified in Sub-clause 5.5.7, as amended, and Sub-clause PSG 5.5.7.2, as amended, Formed joints (generally vertical or near vertical), and detailed on the drawings such as joint filler, dowel bars and tubes, bitumen coats, etc., including waterstops or waterbars.

Waterstops and waterbars will be measured by length separately for each type.

PSG 8.7 Grouting .....Unit: m^2

Add the following to this payment clause:

Grouting of base plates and equipment bases will be measured by the volume of grout used.

The rate shall cover the cost of the supply and floating in of grout under the plates to ensure solid and complete filling of the gap.

PSG 8.8 HD Bolts and miscellaneous Metal Work .....Unit: t

Add the following to this payment clause:

Fixing of holding down bolts will be measured by number. The rate shall cover the cost of all things necessary to ensure that the bolts are effectively and rigidly held in position during casting, complete with sleeved pockets, all as detailed on the drawings.

Add the following payment items:

PSG 8.9 Impervious membrane .....Unit: m^2

The impervious membrane will be measured by the surface area covered excluding laps and wastage. The rate shall cover the cost of the supply, laying, jointing of sheets as recommended by the supplier and final trimming of outer edges.

PSG 8.10 No-fines concrete .....Unit: m^2

No-fines concrete will be measured by area.

The rate shall cover the cost of supplying materials, constructing and placing in position the no-fines concrete, and shall include for the steel floated 20 mm mortar skim.

PSG 8.11 Items cast in concrete …….....Unit: No.

Items cast in concrete will be measured by number separately for each type of item.

Notwithstanding Sub-clause 8.2.6, the rate shall cover the cost of fixing in position and casting in the item as construction proceeds, irrespective of whether the Contractor chooses to fix the item in the formwork and cast it in directly or to box out a hole and grout the item in subsequently.

The item will be measured and paid separately.

The rate for the puddle pipes shall cover the cost of all things necessary to ensure that the fitting are effectively and rigidly held in position during casting including the certification and all as detailed on the drawings. Repairs for leaking cast in items will not be paid for.

PSG 8.12 Granolithic screeds.....Unit: m^2

Special floor finish will be measured by area. The rate shall cover the cost of the supply and application of the specified material, complete as specified by the manufacturer and to the approval of the Engineer. Repairs to unsatisfactory work will not be paid for.

Measurement of granolithic screeds will be by the surface area covered.
The unit rate or lump sum shall cover the cost of all materials, labour and equipment required to provide the screed as specified in Sub-clause PSG 5.5.10.4, as amended, Granolithic screeds. The rate shall include the steel float finish.

PSG 8.13 Precast paving slabs.....Unit: m^2

Precast paving slabs will be measured by the area paved.
The rate shall cover the cost of compacting the area, application of weed-killer, supplying, laying and bedding the slabs, grouting the joints and filling any gaps, all as specified.

PSG 8.14 PFA concrete.....Unit: m^3

Measurement and payment for PFA concrete shall be as specified in Sub-clause 8.1.3 as amended.

The tendered rate shall cover all costs in connection with the supply, storage, handling on site and mixing in of PFA.

PSG 8.15 Watertightness test.....Unit: No.

The watertightness test will be paid by a lump sum separately for each structure.

The sum shall cover the cost of all labour, equipment and materials to carry out the tests, as specified in Sub-clause PSG 5.5.11, as amended, Watertightness test, to rectify faults and to achieve a test result to the satisfaction of the Engineer.

The sum shall include for all water required over and above that required for one filling of the water retaining structure based on taking water from the adjacent reservoir of completed connections.

PSG 8.16 Crystalline Waterproofing Additive .....Unit: kg

Supply & mix crystalline waterproofing additive in watertight concrete for the reservoir floor slab, walls, columns and bases.

The rate shall cover for the supply and mixing into watertight concrete according to Sub-clause PSG 5.5.1.1, as amended.

PSG 8.16 Miscellaneous Metalwork.....Unit: No.

Payment shall be by number. Separate items shall be scheduled for the following where required:

a) Manhole covers

The manhole cover in the reservoir roof shall be installed to the details shown on the drawings. The rate shall include supply, bitumen coating, installation and casting of the frame into the supporting concrete.

b) Reservoir ventilators

The reservoir ventilators in the reservoir roof shall be installed to the details shown on the drawings. The rate shall include fabrication, galvanising, shuttering, grouting and installation.

c) Step irons

Cast iron step irons shall be cast into the side of the reservoir wall, sump and manholes as detailed. The rate shall include for the supply and installation of the step irons.

PSG 8.17 Black Plastic Bond Breaker.....Unit: m^2

A 500 micron black plastic continuous layer is to be laid over the no-fines concrete under the reservoir floor. The side and end laps shall not be less than 100mm. Just before casting the sheeting shall be perforated in a grid pattern at 1 m centres.

Payment shall be by the square meter laid. Care shall be taken not to rip or tear the sheeting. All repairs shall be at the Contractor's expense.

PSG 8.18 Teflon Sliding Bearings.....Unit: m

Neoprene (Kilcher or similarly approved) Teflon sliding bearings shall be placed on the top of the reservoir wall prior to casting the roof slab. A 3T50/50 bearing shall be used for the reinforced

concrete reservoir, while a 3T50/100 bearing shall be used for the post tensioned concrete reservoir. The top of the wall shall be cast to a smooth steel float finish.

Payment shall be per linear metre for the preparing and placing of the bearings. The rate shall include the supply, laying, jointing and masking of the bearings to the polystyrene strip.

PSG 8.19 Poly-urethane sealants.....Unit: m

A one part polyurethane sealant shall be used in the outside joint between the reservoir roof and walls to the details shown and shall be finished off neatly leaving a smooth regular finish.

Payment shall be per linear metre. The rate shall include the supply, preparation, sealing and finishing.

PSG 8.20 Commercial Laboratory.....Unit: Prov Sum

A Provisional Sum for the services of a commercial laboratory has been included in the Bill of Quantities for the Engineer's Acceptance Testing. The use of this laboratory is for additional testing required over and above the testing specified in SANS 1200 G and the variations to SANS 1200 G specified above. Testing shall only be paid on written instruction for additional testing from the Engineer.

The procedure for sampling and manufacturing, storing, curing and testing test cubes shall be in accordance with SABS 863.

PSHA STRUCTURAL STEELWORK (SUNDRY ITEMS) (SANS 1200HA)

PSHA 3 MATERIALS

PSHA 3.1 Structural Steel

Delete the Sub-Clause and substitute:

Except where scheduled to the contrary or shown on the drawings, the grade of steel to be used in the manufacture of the following shall be that grade normally supplied by reputable manufacturers approved by the Engineer:

All structural steelwork which shall include ladders, safety cages and platforms, shall be manufactured from 300W grade steel in conformity with SABS 1431, except where shown to the contrary on the drawings or in the schedule of quantities.

All stainless steel shall be grade 304, except where shown to the contrary on the drawings or in the schedule of quantities.

Grade 3Cr12 steel shall be used where scheduled or shown on the drawings and shall be fully pickled and passivated prior to installation.

PSHA 5 CONSTRUCTION

PSHA 5.1.2 Contractor to Provide Shop Details

Add to the Sub-Clause:

The Contractor shall prepare his own shop details based on the dimensions and details given on the drawings and will be required to submit his shop details to the Engineer at least 3 weeks prior to fabrication. Written consent must be obtained from the Engineer, prior to commencing fabrication. The Contractor is still responsible for ensuring that the shop details are dimensionally correct.

PSHA 5.2.6 Handrails

Add to the Sub-Clause:

Hand railing shall be of tubular construction in Grade 304L stainless steel of an approved proprietary make.

Hand and knee rails shall be not less than 32 mm O.D. (wall thickness not less than 1,6 mm) and the height of the handrails (centre) shall be 1 000 mm above walk-way level, with knee rails located approximately midway between.

Stanchions shall be not less than 44 mm O.D. (wall thickness not less than 1,6mm) and shall have ball type or spun and flared connectors to suit horizontal or angled hand railing as required. The base plates shall not be less than 8mm thick.

In general all bends in the hand and knee railing shall be 140 mm radius. Handrails shall be either side or top mounted and shall be fastened with stainless steel nuts, bolts and washers.

Spacing between stanchions shall be determined by site conditions but in no case shall it exceed 1 800 mm c/c. At bends, stanchions shall be provided on either side at a distance of 300 mm from mid-bend.

Finished handrailing shall be true to line and level and connections shall be securely fixed by means of 2 No. stainless steel pins, finished flush on each side of the joints (to the approval of the Engineer).

All ends shall have closures joining the hand and knee railing.

The rate quoted per metre is to include for the supply and installation of the handrail, knee rail, portion of a stanchion, footing, holding down bolts and nuts and is to be inclusive of all cutting, mitring, welding, grinding and waste.

PSHA 5.2.7 Ladders

Add to the Sub-Clause:

Stairs and ladders are to be provided in accordance with the details shown on the drawings.

PSHA 5.2.8 Open Grid Floors

Add to the Sub-Clause:

Open grid steel flooring is to be cut and framed to the required panel shapes and sizes all in accordance with the details shown on the drawings.

PSHA 5.2.10 Protective Treatment

Add to the Sub-Clause:

All mild steel shall be hot-dip galvanised except where shown to the contrary on the drawings or in the schedule of quantities. Hot-dip galvanising shall conform to SABS 121;2000 for heavy duty coatings or equivalent. Screwed and socketed tubing shall be galvanised in compliance with BS 1387. Galvanised malleable cast iron fittings shall comply with SABS 509.

PSHA 5.2.11 Pipe Clamps and Brackets and/or Supports (New Sub-Clause)

Clamps and brackets around pipes and supports under pipes and valves are to be constructed to the details shown on the drawings and are to be provided with all necessary bolts for fixing to concrete.

Where pipes and valves are supported inside concrete chambers on fabricated steel pipe supports, a layer of 6 mm thick GP rubber sheet (Shore hardness 65) shall be attached to the top surface of the steel support by contact adhesive prior to receiving the pipe or valve to be supported. The rubber is to extend 20mm beyond the edges of the plate.

PSHA 5.3.6 Grouting

Add to the Sub-Clause:

The Contractor will be fully responsible for all grouting work under this Contract.

PSHA 6 TOLERANCES

PSHA 6.1.3 Accuracy of Erection

Add to the Sub-Clause:

The accuracy of erection shall be the degree of accuracy II as tabulated but amended as follows:

In items d)1) and d)2) of the table the Degree of Accuracy given as "± 5" shall be read as "± 3".

PSHA 7 TESTING

PSHA 7.1 Test Certificates

Delete the part sentence "in terms of the project specification" from the wording of the Sub-Clause and add the words "when so requested by the former" at the end of the sentence.

PSHA 8 MEASUREMENT AND PAYMENT

PSHA 8.3 Scheduled Items

Add the following introduction to the subsequent Sub-Clauses:

The tendered rates shall cover the cost of preparing shop details (where applicable), the supply of all materials, fabrication, process control, loading, transporting to Site, off-loading, erection (unless separately included), setting into concrete or brickwork and grouting in. They shall also include for the supply of all nuts, bolts, holding down bolts, washers, rivets, cutting to waste, all temporary bracing, templates and shuttering necessary for installing, transporting and erecting.

Where the scheduled items for steelwork include corrosion protection, then the price stated shall also include for such protection as specified in SABS 1200 HC as amended by PSHC. Similarly the materials and corrosion protection for nuts, bolts, washers etc shall match the steelwork ordered.

Where the requirements of the above introduction conflict with the requirements of Sub-Clauses 8.3.1 to 8.3.6 inclusive the requirements of the introduction shall take precedence.

PSL MEDIUM-PRESSURE PIPELINES (SANS 1200L)

PSL1 ABBREVIATIONS

Add the following:

mPVC : Modified polyvinyl chloride

PSL3 MATERIALS

The materials and construction of all pipes, fittings, valves and specials shall comply with the appropriate SANS, BS or other appropriate specification, whether stated or not, and shall be approved by the Engineer. Only full-length pipes bearing the relevant standard's mark will be acceptable. Cut pipes shall only be used at pipe junctions to position valves and specials as shown on the drawings, and at connections to structures. When laying the pipes the markings shall be visible from above.

The Contractor shall be responsible for the structural and hydraulic design of all bends and fittings where these are not standard off the shelf items designed and guaranteed by the manufacturer for the purpose intended.

The Engineer shall at all reasonable times have free access to the place where the goods are manufactured for the purpose of examining and sampling the materials and goods, and if necessary for supervising the testing and marking of goods. The manufacturer shall supply free of charge every facility and all labour required for such examination, sampling, inspection, testing and marking before delivery and shall provide and maintain in good order suitable, convenient and accurate apparatus for testing goods.

PSL3.1 MPVC Pipes (Clause 3.7.3)

Add a new Clause:

MPVC pipes and fittings shall be fitted with spigot and socket rubber ring joints and shall comply with the requirements of SANS 966-2: 2010 (MPVC).

PSL3.3 Steel pipes, fittings and specials (Clauses 3.4.2 and 3.4.3)

All steel pipes and specials, irrespective of diameter, shall be fabricated from plain ended pipes. The use of screwed flanges and fittings shall not be permitted, except for use on air-valve assemblies. All fabrication shall take place in a suitable workshop prior to galvanising, and no cutting or welding of pipes on site shall be permitted.

The Contractor shall, when called upon to do so, make available to the Engineer the manufacturer's certificates covering the chemical analysis and physical properties of the steel used in the manufacture of the pipes. The pipes shall be hydraulically tested before leaving the factory to the test pressure specified in sub-clause 7.3 of SANS 1200 L. The methods of sampling and testing of the manufactured pipes shall comply with Sections 6 and 7 of SANS 719. Tests shall be carried out at the place of manufacture and at the expense of the Contractor. On delivery of the goods concerned the Contractor shall supply a signed certificate giving results of the tests and certifying that the goods have been manufactured in accordance with the Specification.

The ends of pipes, fittings and specials used with mPVC pipes shall be suitably spigotted.

Pipes shall be longitudinally and circumferentially butt-welded by the submerged arc welding process. Spirally welded pipes will also be accepted. The welding processes and materials used for the fabrication of the pipes shall conform to SANS 1 0044-1. The Contractor shall, when called upon to do so, provide written confirmation that welding has been carried out by coded welders.

Plain ends shall be machined to suit the outside dimensions of connecting pipework. Steel pipes shall be cement mortar lined and bitumen/glassfibre coated in accordance to Particular specification CLCSP.

The Contractor shall be responsible for the structural design of all steel bends, tees, fittings and specials, which design shall be carried out by a registered Professional Engineer. Costs for design shall be included in the rates for design, supply and laying. The Contractor shall submit certification of the designs and manufacture to the Engineer prior to delivery to site.

All steel specials shall be lined and coated with Copon EP 2300 or approved equivalent to the manufacturer's specifications and to a minimum dry film thickness of 350 micron unless otherwise indicated on the drawings or scheduled.

PSL3.4 Flanges and accessories (Clause 3.8.3)

All flanges shall be to BS 4504 (25 Bar) or SANS 1123 Table 2500/3 unless otherwise specified or shown on the drawings. The contractor shall be responsible for ensuring that the flange drillings on all pipeline components including valves, fittings, specials and fixtures etc. are compatible

Where used with mild steel pipes underground, the connections shall be bitumen mastic wrapped.
All gaskets for flanged joints shall be 3mm thick, full face rubber insertion in accordance with the requirements of BS 3063.

Where services are relocated or connected to existing pipes, the dimensions of existing flanges and pipes shall be verified by the Contractor prior to ordering of materials.

All bolts and nuts for jointing of pipe flanges shall be in accordance with SANS 1700.

PSL3.5 Gate valves (Clause 3.10)

Unless otherwise scheduled, gate valves shall be double flanged with ductile iron bodies and stainless steel trim, and shall conform with all relevant sections of SANS 664 or BS 5163, specifications and subsequent amendments. Flanges shall be drilled to BS4504 or SANS 1123 for 25 bar or 16 bar working pressure as specified, and compatible with pipework flanges.

Gate valves shall be of the wedge gate type, VOSA or similar approved. Approval shall only be given for the specified or equivalent valves from well-established and well known manufacturers with a proven record of supply and service of equivalent products within the southern African region. Valves shall be Class 16 or 25 as specified or shown on the drawings, clockwise closing and shall have non-rising spindles of high quality high tensile manganese bronze. The direction of closing shall be cast into the hand wheel (where specified) or valve casing with the words "OPEN" and "CLOSE"

respectively. The gate shall be guided within the body of the valve to fit accurately onto the seat and to avoid possible buckling. Where extended spindles are required, they shall be suitably supported to prevent swaying and buckling, and to guarantee the intended use of the valve. All gate valves shall be drop tight when tested in accordance with the requirements of BS 5163.

All gate valves shall be capable of being operated manually with a maximum applied torque of 150Nm for valves with a nominal diameter of more than 450mm and 100Nm for valves with a nominal diameter less than 450mm.

Valves shall be grit blast cleaned to S15 standard and a solvent-free sintered epoxy powder applied in one coat by the use of arc-spray machines to provide a dry film thickness of not less than 450 micron.

Flanged valves shall be complete with galvanised or titanium coated bolts and nuts, gaskets and insertion rings.

All isolating valves for air valves shall be supplied with a cast iron hand wheel. All other valves shall be provided with a cap top for use with a valve key.

PSL 3.6 Air Valves

Air release and vacuum break valves shall be double orifice with anti-shock orifice mechanism, of type "Vent-O-Mat Series RBX" or similar approved with flanged inlets and rated for a minimum of 16 or 25 bar working pressure as specified.

The valve shall have an integral surge alleviation mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure due to high velocity air discharge or the subsequent rejoining of separated water columns. The limitation of pressure rise must be achieved be deceleration of approaching water prior to valve closure.

The intake/discharge orifice area shall be equal to the nominal size of the valve.

The inlet shall be fitted with an isolating valve with vertical spindle, key operated from above.

Air valves shall be able to withstand twice the maximum rated pressure and must provide a positive drop tight closure from a minimum pressure of 50 kPA up to the maximum rated pressure.

PSL3.7 Jointing Materials (Flexible Couplings) (Clause 3.8.2.1)

Detachable couplings shall be of the "Viking - Johnson" or other similar and approved type without central register unless otherwise specified. Coupling flanges shall be designed to withstand the hydrostatic test pressures and all stresses due to tightening of the bolts, and the rubber rings shall generally comply with BS 2494 Class D. Detachable couplings shall suit the outside dimensions of pipe-work complying with either BS 2035 or the relevant SANS specification as the case may be.

Mild steel "Viking – Johnson"-type couplings shall be lined and coated with Copon EP 2300 or approved equivalent to the manufacturer's specification, and a minimum dry film thickness of 350 micron.

PSL3.8 Corrosion Protection (Clause 3.9)

PSL3.8.1 Cast iron pipes and specials (Clause 3.9.1)

All cast iron pipes, specials and valves shall be given two coats of approved epoxy paint except where cast into concrete. The cost of this work shall be included in the rates tendered for supplying and fixing pipes, specials and valves.

PSL3.8.2 Bolts, nuts and washers (Clause 3.9.5)

All bolts, nuts and washers shall be hot-dip galvanised in accordance with SANS 121:2011. Under no circumstances shall electro-plating be accepted as an alternative means of corrosion protection.

PSL3.8.3 Corrosive soil (Clause 3.9.6)

All underground screwed steel joints and saddles are to be treated with a compatible primer, packed with a bitumen or tar based mastic and wrapped with "Denso Tape". The cost of this work shall be included in the rates tendered for supplying and fixing pipes and specials.

PSL 3.9 Non-return valves

Non-return valves shall comply with the requirements of BS 5153 or the relevant SANS specification for working pressures as specified for each application. They shall be double flanged and of general construction details as specified for gate valves with anti-shock closing characteristics. Flanges shall be drilled to BS4504 or SANS 1123 for 25 bar or 16 bar working pressure as specified, and compatible with pipework flanges.

Check valves shall be RGR axial flow, Vent-O-Mat Maxiflow or similar approved. Valves shall be fast acting with short travel and designed to minimise slamming.

PSL 3.10 Flow Meters

Magnetic Flow Meters specified shall be IP68 rated Endress & Hauser or similar approved magnetic flow type meters suitable for measuring flows in the ranges specified and for installation in a pipelines of diameter specified. The unit shall be capable of link up to the existing telemetry system and shall have 2 x 4 to 20mA outputs and two relays.

Measurement accuracy shall be within 0.2%. Maximum head loss through the meter and taper sections (if any) shall not be greater than 0.3m.

The rate tendered shall include for selection, supply and fitting of the meter with all necessary fittings and specials to fit the meter in a nominal 150mm diameter pipe, linking up to power supply, link up to the existing telemetry system located within 50m, including all necessary fittings and sundries to provide a complete working installation, testing and commissioning.

Mechanical flow meters, where specified, shall be able to provide pulsed output for continuous flow rate monitoring suitable for telemetry link-up. Flanged in-line strainers shall be provided with all mechanical flow meters installed. The strainers shall have removable components to allow access for cleaning and maintenance without removing the flanged strainer body."

The rate tendered shall include for selection, supply and fitting of the mechanical meter with all necessary fittings, specials and sundries to provide a complete working installation, testing and commissioning.
Supply and installation of strainers shall be measured separately.

PSL3.11 Water Meters

Add the following clause:

The meters shall be of the semi-positive rotary piston volumetric type and be to Class C specification.

Bulk water meters shall be supplied and built into the meter chambers as detailed in the drawings. Fittings and the construction of the chambers will be measured elsewhere.

Water meters must comply with the SANS Specification No. 1529-1: 2006 and must be approved in terms of Section 18 of the Trade Metrology Act, Act No. 77 of 1973, as amended by the Trade Metrology Amendment Act, Act No. 42 of 1994.

All water meters offered must be tested and sealed by an authorised official in an SANS 17025 accredited laboratory, situated within the borders of the Republic of South Africa.

PSL5 CONSTRUCTION

Pipes shall be handled and laid in accordance with the manufacturer's specifications.

Large changes in horizontal or vertical alignment of the pipeline will be accommodated by special bends as detailed on the drawings.

Small changes in horizontal or vertical alignment will be accommodated at the pipe joints. In no case shall the deflection exceed two thirds of the recommendations of the relevant SANS, BS or other relevant specification, or of the pipe manufacturer.

PSL5.1 Depths and cover (Clause 5.1.4)

During construction there shall be not less than 0.9 m of cover over the pipes, where construction traffic is liable to cross them, hence road crossings shall not be constructed until the construction of the road layers has reached the stage where 0.9 m cover is available.

Where the actual clearance between pipe crossings is less than 150 mm the main shall be laid beneath the service crossed at an invert level which allows for the minimum clearance. The main shall be laid horizontally at this level for a distance of at least 3.0 m on either side of the centreline of the service crossed and then gradually revert to the minimum cover as specified in subclause 5.1.4.1.

No decrease in cover or clear space between the pipe barrels as specified will be permitted unless otherwise instructed by the Engineer in writing.

A minimum cover of 900 mm from natural ground level and maximum of 1.2 m to top of pipe shall be maintained throughout, unless otherwise specified.

PSL5.2 Disinfection of pipeline (Clause 5.10)

Add the following:

PSL5.3 Introduction

The price for testing and disinfecting pipelines and fittings is included in the schedule of 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.

PSL5.3.1 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 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 possess a current certificate of medical suitability signed on behalf of the Authority.

PSL5.11* General requirements for disinfection of potable water apparatus

PSL5.11.1 Completed installation

Ensure that all water used for disinfection purposes has a free chlorine residual of at least 20 mg/ℓ. Refer to Table 1 and 2 in PSL5.13.2 for volumes or dose rates.

During chlorination the pipeline shall be kept full of water.

PSL5.12* Mains

PSL5.12.1 New mains

Do not connect any new main into supply until the water from designated sampling points, having stood in the main for at least 20 hrs, 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 procedure, which should follow pressure testing, include:
a) swabbing and flushing of the main
b) soaking of the main for a minimum period of 20 hrs, using a minimum concentration of 20 mg/ℓ of available chlorine in mains water.
c) removal of excess chlorine by flushing the main.

PSL5.13* Dosage of chlorination agents

PSL5.13.1 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.

PSL5.13.2 Dose rates

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

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

Pipe diameter	**Volume of 1 000m of pipeline**	**Weight of bleaching powder granules or tablets to 20 mg/ℓ**	**Weight of chlorine to give 20mg/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 20mg/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	10,9	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

Flow rate in pipeline*
- Hypochlorite solution injection rate for 20 mg/ℓ
- Chlorine injection rate for 20mg/ℓ

* For flows greater than 9 litre/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

PSL5.14* Disposal of chlorinated water

PSL5.14.1 Introduction

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

PSL5.14.2 Methods of disposal

The following can be explored as the possible methods, and the most suitable method will be employed.

- Overland
- Foul Sewer
- Watercourse

PSL 5.15 Chambers

The Contractor shall provide the Engineer with all relevant dimensions of valves fittings and specials for the purposes of finally sizing chambers and designing of reinforcement at least 40 working days prior to such sizes and reinforcement schedules being required. No extensions of time for delays resulting from failure to supply this information timeously will be entertained.

Any redesign costs due to supply of incorrect information will be to the Contractor's account.

PSL 5.16 Marker Posts (New sub-Clause)

Add new Sub-Clause:

Pre-cast concrete marker posts as shown on the drawings and painted white in colour shall be set at all horizontal direction changes and where otherwise indicated by the Engineer.

The standard marker post rate shall include the supply and erection of painted, inscribed posts. The rate shall be inclusive of erection and shall include for all necessary excavation, mass concrete footing and formwork.

PSL 5.17 End Caps (New Sub-Clause)

Add new Sub-Clause:

The Contractor shall, at the end of each day's work, fit end caps to the open ends of the pipeline under construction. The end caps shall be manufactured in such a manner that it can be fitted to seal off the pipeline to the extent that it is totally dust and water proof. The end cap must be able to withstand a pressure of 1 m head of water externally when fitted.

End caps shall be maintained during non-working periods.

The tendered rates for the laying of pipe shall be deemed to include for the supply, fitment, and maintenance of the end caps.

PSL7 TEST PRESSURE AND TIME OF TEST

The test pressure shall be 1.5 times the maximum allowable working pressure for the classes of pipes specified.

In addition to the testing specified in Clause 7.3.1 the mains and the connections shall be tested in sections not exceeding a maximum length of 500m and must be between thrust walls and in accordance with section CCP.

The cost of this work shall be included in the rates tendered for supplying and laying pipes.

PSL8 MEASUREMENT AND PAYMENT

PSL8.2.1 Supply, lay and Bed Pipes complete with Couplings

Add the following:

This will be paid to a maximum of 70% when laid, bed, jointed, cutted, etc. The remaining 30% will be paid once the pipeline has successfully been tested and disinfected.

PSLB BEDDING (PIPES) (SANS 1200LB)

PLSB5 CONSTRUCTION

PSLB5.1 Selected granular and selected fill materials (Clauses 3.1 and 3.2)

These materials shall not be used for the bedding of pipes. Materials used for bedding shall comprise either silty sand or sabunga, used in accordance with the details shown on the drawings.

Silty sand shall be free from vegetation and from lumps and stones of diameter exceeding 30mm, and shall be obtained from the trench excavations or other necessary excavations on the site, on the approval of the Engineer.

Sabunga shall comply with the following requirements:

- a maximum particle size of 30mm
- a minimum grading modulus of 0,5
- a minimum CBR of 15 at 93% of modified AASHTO maximum density
- a maximum plasticity index of 12.

PSLB5.2 Bedding (Clause 3.3)

The type of bedding to be used shall be in accordance with the details shown on the drawings.

PSLB5.3 Selection from trench excavation (Clause 3.4.1)

Refer to clause PSDB5.1.

PLSB8 MEASUREMENT AND PAYMENT

PSLB8.1 Volume of bedding materials (Clause 8.1.3)

The volume of bedding material will be computed from:

- the trench width specified or scheduled, and
- the depth of each bedding layer as shown on the drawings, and
- by deducting the volume occupied by the pipe.

The material shall comply with PSLB5.1 above.

PSLB8.2 Disposal of displaced material (Clause 8.1.5)

Displaced material shall be disposed of in the manner specified in clause PSD5.1.

Sub-Letting of the Works

PA SUB-LETTING OF THE WORKS

PA1 SCOPE

This Particular Specification covers the requirements to be met by the Contractor in respect of the sub-letting of Work to local Subcontractors in accordance with the provisions of Sub-clause PS9.5.

PA2 DEFINITIONS

PA2.1 "Local Subcontractor" shall mean an individual person, group of persons in association, or firm (whether formally registered or otherwise) not being associated with the Contractor other than by way of an existing Subcontract Agreement of the nature as contemplated in this Particular Specification:

(a) who shall have been resident in the area in which the Works are to be executed for a continuous period of not less than six months prior to the Closing Date for Bids; or

(b) who shall have been economically active and conducting business in the area in which the Works are to be executed, for a continuous period of not less than six months prior to the Closing Date for Bids; or

(c) whose "domicilium et executandi" shall have been within the area in which the Works are to be executed, for a continuous period of not less than six months prior to the Closing Date for Bids; and

(d) whose presence on the Site and engagement on the Works is acceptable or tolerable to the local community;

(e) and who shall be employed by the Contractor to undertake the execution of defined portions of the Works on a Subcontract and/or Task work basis.

PA2.2 The term "the area in which the Works are to be executed" shall for the purposes of this Particular Specification, be deemed to mean the Lesseyton Villages receiving water from the scheme.

PA2.3 "Sub-letting" shall mean the engagement of individual persons, groups of persons in association or firms or companies for the specific purpose of executing defined portions of the works, or of supplying specific materials or services necessary for the works, and who shall be remunerated for their services at pre-determined rates, which rates shall be directly related to the progress and/or extent of the work executed or service or materials supplied and not to the time expended thereon.

PA2.4 "Local Community" shall mean the community normally resident in the area in which the Works are to be executed.

PA3 MATERIALS

All materials incorporated in the Works undertaken by Subcontractors shall be in accordance with the requirements as set out in the drawings and in the relevant specifications.

PA4 PLANT

The Contractor shall provide all plant, tools and equipment as may be necessary for the execution and completion of the works undertaken by the Subcontractors, in all cases where the provision of such is not provided for in the Subcontract agreement.

PA5 THE SUBCONTRACT AGREEMENT

The Contractor shall be required to enter into a written Subcontract Agreement with each and every Subcontractor employed on the Works in compliance with the provisions of Sub-clause PS9.5.

The Subcontract Agreement shall set out the scope of the works to be executed by the Subcontractor and the amounts which the Contractor will remunerate him for work satisfactorily executed.

The terms and conditions of the Subcontract Agreement between the Contractor and any Subcontractor employed by the Contractor in terms of this Clause shall, (subject to the provisions of the Conditions of Contract as well as this Particular Specification), be at the discretion of the Contractor and the Subcontractor, provided always that such Agreement shall be no more onerous on the Subcontractor than are the terms and provisions of this Contract on the Contractor.

Before entering into any Subcontract Agreement, the Contractor shall be responsible for ensuring that every Subcontractor fully understands his rights and liabilities under the Subcontract.

PA6 COPIES OF SUBCONTRACT AGREEMENT TO BE PROVIDED TO THE ENGINEER

The Contractor shall, on the request of the Engineer, provide the Engineer with full and complete copies of all Subcontract Agreements entered into in terms of this Contract.

PA7 REMUNERATION OF SUBCONTRACTORS

The method and units of measurement adopted by the Contractor for the purposes of remunerating Subcontractors for work satisfactorily executed, shall be appropriate to the nature and scope of the works executed by the Subcontractor and as agreed upon between the Contractor and the Subcontractor and recorded in the Subcontract Agreement.

In relation to the remuneration of Subcontractors the Contractor shall not be obligated in any way to adopt the units and method of measurement specified in this Contract for remuneration of the Contractor by the Employer.

The Contractor shall be fully liable for the payment of all amounts due to the Subcontractors in terms of their respective Subcontract Agreements.

PA8 CONTRACTOR TO INDEMNIFY THE EMPLOYER

In accordance with the provisions of Sub-clause 23(1) of the Conditions of Contract, all Subcontractors employed by the Contractor in compliance with Clause PS9 are deemed to be the agents, servants or workmen of the Contractor.

The Contractor shall indemnify the Employer in respect of all claims and liabilities of whatever nature arising from the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen.

PA9 SERVICES TO BE PROVIDED DIRECTLY BY THE CONTRACTOR

Notwithstanding the provisions of Sub-clause PS9.5 above, the Contractor shall, in accordance with the provisions of Clause 4.4 of the Conditions of Contract, remain fully liable in all respects, for the execution and completion of all the Works included in the Contract, including inter-alia:

(a) The timeous completion of the Works as specified in the Contract;

(b) The identification and employment of the Subcontractors;

(c) The provision of the Contract performance Surety Bond as required in terms of Clause 6.2 of the Conditions of Contract;

(d) The provision of all insurances specified in the Contract;

(e) The provision and maintenance of the Site Establishment;

(f) The management and administration of the Contract;

(g) The provision of all materials, transport, plant and hand-tools as may be necessary for the completion of the Works and which in terms of the Subcontract Agreements entered into, are not to be provided by the Subcontractors;

(h) The provision of all training, supervision and all assistance of whatever nature arising as may be necessary for the completion of the Works in accordance with the provisions of the Contract;

(i) The setting out of the Works;

(j) The provision of all "bridging finance" to the Subcontractors, as may be necessary to ensure the successful conclusion of the Contract.

(k) Training and developing the local Subcontractors in aspects pertaining to contract and site management, financial management, bidding etc, ensuring successful local entrepreneur development. Such training may be done by the Contractor, Engineer or a third party, but only on the express instruction of the Engineer in writing.

PA10 DEFAULT OF THE CONTRACTOR

The onus shall at all times rest entirely with the Contractor to prove to the Engineer, beyond reasonable doubt that:

(a) the Works referred to in Sub-clause PS9.5 are being executed or have been executed by "Local Subcontractors" in accordance with the provisions of this Clause; and

(b) all amounts due and payable to the Subcontractors have been paid, or that reasonable grounds exist for the withholding of payment.

Should the Contractor fail to execute the Works as defined in Sub-clause PS9.5 above, or any portions thereof, on a Subcontract basis strictly in accordance with the provisions of the Contract, he shall pay to the Employer, in addition to any other penalty amounts as may become due and payable by the Contractor under the Contract, a penalty in the amount of TEN PERCENT (10%) of the value of the Works as the Engineer shall certify as not having been executed by Subcontractors as contemplated in this Clause.

All penalty amounts which shall become due and payable by the Contractor to the Employer in terms of this clause, shall be calculated at the rates as tendered for the particular items concerned and as listed in the Schedule of Quantities less the costs of the materials, shall be deducted from the amounts otherwise due and payable to the Contractor for work satisfactorily executed, in each interim payment certificate.

The payment by the Contractor or the deduction by the Employer, of any penalty amount in terms of this Sub-clause shall not relieve the Contractor of any of his obligations to complete the Works by the Due Completion Date for the Contract, nor of any other obligation set forth in the Contract.

Save and except as provided for below, persistent failure on the part of the Contractor to comply with the provisions of Sub-clause PS9.5 shall be deemed to constitute circumstances contemplated in clause 15.2 (c) (ii) of the Conditions of Contract.

Where the Engineer is satisfied that the sub-letting of any particular portion of the works required to be sub-let in terms of Sub-clause PS9.5 to "Local Subcontractors" is impractical, he may, on the receipt of a written, fully motivated and substantiated application from the Contractor :

(a) extend in writing, the boundaries of the "area in which the Works are to be executed" (as defined in Sub-clause PA2.2) by such an amount as he may determine to be appropriate in the circumstances concerned; or

(b) authorise in writing that particular portions of the works, which are required in terms of Sub-clause PS9.6 above to be Sub-let, be executed directly by the Contractor utilising his own directly employed resources;

provided always that any extension of the boundaries of the area in which the Works are to be executed (in terms of Sub-clause (a) above), and any authorization granted by the Engineer in terms of Sub-clause (b) above, shall apply only in respect of the particular portions of the work mentioned in the Engineer's written extension or authorization as the case may be.

PA11 MEASUREMENT AND PAYMENT

The rates, sums and prices tendered for the various work items listed in the Schedule of Quantities, shall include for full and final compensation to the Contractor as described in the respective measurement and payment clauses set out in the Specifications, including normal training as described in sub-clause PA9(h) but excluding all costs relating to the sub-letting of the works.

Measurement and payment to the Contractor, in respect of the contractual obligation to undertake certain sections of the work on a Subcontract and/or sub-letting basis, shall be by way of Lump Sum price.

The lump sum price shall include for full and final compensation to the Contractor in respect of all additional costs incurred by the Contractor in executing the Works concerned on a Subcontract and/or Sub-Let basis, in compliance with the provisions of Sub-clause PS9.5, this Particular Specification and all other related provisions of the Contract.

No payments shall be made to the Contractor under this item, in respect of:

(a) any work which has not been executed on a Subcontract or Sub-Let basis in accordance with the provisions of Sub-clause PS9.5 and this Particular Specification, notwithstanding any exemption as may have been granted by the Engineer in terms of Sub-clause PA10; nor

(b) any work not required to be executed by Subcontractors in terms of Sub-Clause PS9.5; nor

(c) any work executed by Nominated Subcontractors.

Labour Intensive Methods

LIC LABOUR INTENSIVE METHODS

LIC1 SCOPE

This Particular Specification covers the requirements to be met by the Contractor and his appointed Subcontractors in respect of the employment of labour on the construction of the Works.

LIC2 INTERPRETATIONS

LIC2.1 SUPPORTING SPECIFICATIONS

Where this Particular Specification is applicable, the following specifications shall, inter alia, form part of the contract document.

SANS 1200 A	-	1986 GENERAL (SMALL WORKS)
SANS 1200 AB	-	1986 ENGINEER'S OFFICE
SANS 1200 C	-	1980 (as amended 1982) SITE CLEARANCE
SANS 1200 DA	-	1988 (as amended 1990) EARTHWORKS (SMALL WORKS)
SANS 1200 DB	-	1989 EARTHWORKS (PIPE TRENCHES)
SANS 1200 G	-	1982 CONCRETE (STRUCTURAL)
SANS 1200 L	-	1983 MEDIUM-PRESSURE PIPELINES
SANS 1200 LB	-	1983 BEDDING (PIPES)
SANS 1200 LC	-	1981 CABLE DUCTS
SANS 1200 LF	-	1983 ERF CONNECTIONS (WATER)
SANS 1200 M	-	1996 ROADS (GENERAL)
SANS 1200 ME		1981SUBBASE

LIC2.2 APPLICATION

This Particular Specification contains clauses that are applicable wherever labour intensive methods of construction are to be employed.

Machine applications shall only be allowed by the Engineer for the specific operations listed hereunder or, if so directed, by unforeseen or special circumstances on site.

Loss of contract time owing to unsatisfactory progress, poor contract management or whatsoever related reason will not be regarded as “unforeseen or special circumstances”, unless ruled to the contrary by the Engineer on a motivation submitted by the Contractor.

The Contractor shall request permission from the Engineer in writing, at least fourteen calendar days in advance, (if possible), of his intention to use machine operations for work reserved for hand labour execution. The request is to be substantiated by a proper motivation.

No machine operations subject to the above request are to commence without the prior written approval of the Engineer and no additional payment of whatsoever nature shall be allowed should the Engineer agree to the request submitted by the Contractor. The tendered rates and prices applicable to hand labour execution shall suffice.

LISC.3 DEFINITIONS

Labour Intensive – An activity that is undertaken by labour only, specifically excluding the use of any plant or mechanical equipment, except hand tools and related equipment.
Task – A quantified activity or operation.

Daily Rate – The remuneration of a day’s work, regardless of output and only applicable when unable to define tasks.
Task Rate – The remuneration for a completed task.

Labour-Intensive Construction – The economically efficient employment of an as great a portion of labour as is technically feasible to produce as high a standard of construction as demanded by the specifications; thus the effective substitution of labour for equipment. (Note: This definition is not Contract-specific, but applies to the project as a whole. This Contract is a part of such a project.)

Labour-Based Construction – see Labour-Intensive Construction

Local Community" shall mean one of the communities resident in the area in which the Works are to be executed.

The area in which the Works are to be executed" shall for the purposes of this Particular Specification, be deemed to mean the Lesseyton Villages receiving water from the scheme.

Local person" shall mean a person whose "domicilium et executandi" shall have been within the area in which the Works are to be executed, for a continuous period of not less than six months and whose presence on the Site and engagement on the Works is acceptable or tolerable to the local community.

LIC3 ACTIVITIES THAT MAY MAKE USE OF MACHINE INTENSIVE OPERATIONS

The activities listed hereunder may be executed by machine intensive means, if not listed hereunder the execution shall be labour intensive.

- Excavation in Classes 1 or 2 materials as for restricted excavations.
- Excavations in Machine Class or Class 1 materials as for bulk excavations
- Excavations in any Class materials as for bulk excavations in excess of 50 Cu m from a single position, subject to the Engineer's prior approval.
- Excavation of pipe trenches greater than or equal to 250 mm in diameter.
- Excavations in Pickable material as for restricted excavations where the utilization of hand labour has been proved to be impracticable, subject to the Engineer's prior approval.
- Confined excavation with total depth in excess of 1.2 m.
- Stripping and stockpiling of overburden at approved borrow areas.
- Loosening and/or stockpiling of borrow material at approved borrow areas.
- Hauling (including loading) of all materials beyond 150 m.
- Pumping and transporting of water.
- Mixing of concrete for water retaining structures where strength and reinforced concrete is specified and the volume of a particular cast exceeds 5 Cu m.
- Handling and laying of pipes with an individual mass exceeding 350 kg per pipe length.
- Compaction of fill and in-situ material
- Construction of controlled road layers and maintenance of haul roads.
- Execution of major road crossings where time is of the essence.
- Site clearance that requires breaking up of concrete and other permanent structures.
- Placing of bedding and backfill in trenches with collapsing sides
- Any operation as may be specified by the Engineer.

LIC4 MATERIALS

The requirements of the applicable SANS specification and/or Project Specification shall apply except where superseded by this Particular Specification.

LIC5 PLANT

Where plant is to be used, as authorised by this Particular Specification, the requirements of the applicable SANS 1200 Specification and/or Project Specification shall apply except where superseded by this Particular Specification.

LIC6 CONSTRUCTION

The requirements of the applicable SANS 1200 Specification and/or Project Specification shall apply.
Elements manufactured or designed by the contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition, the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper hand hold on them.

LIC7 TOLERANCES

The requirements of the applicable SANS 1200 Specification and/or Project Specification shall apply.

LIC8 TESTING

The requirements of the applicable SANS 1200 Specification and/or Project Specification shall apply.

LIC9 MEASUREMENT AND PAYMENT

The requirements of the applicable SANS 1200 Specification and/or Project Specification shall apply except where superseded by this Particular Specification.

LIC10 COMPOSITION OF LABOUR

Labour should be employed from the local community. The composition of local labour shall be such that there is an equal split between man and women and youth and over 35 years old.

LIC11 PENALTY FOR NON-COMPLIANCE

Should the Contractor during the execution of the Work reserved for labour intensive execution:

a) use unspecified plant; or
b) contravene the requirements of Particular Specification

then the Contractor shall pay to the Employer the penalty as set out hereunder and the Employer may without prejudice to any other method of recovery deduct the amount of such penalty from any monies in the hands due or which may become due to the Contractor.

a) R1 000.00 per occurrence; plus
b) 15% of the value of work so executed calculated as the product of the quantity (calculated by the Engineer) and the applicable tendered rate.

LIC12 AVAILABILITY OF LABOUR AND SKILLS

A CLO will be established, with their main task being to assist the Contractor in obtaining suitable skilled and unskilled labour for the various tasks to be executed under this Contract. The CLO will thus draw up a list of skilled local people who have the potential to undertake one or another of the Subcontract Works included in this Contract, and will also draw up a list of unskilled labour to prevent the Contractor having to go to the local communities in search of labour.

The CLO will thus be requested to advise the local communities of the work opportunities that will become available under this Contract prior to the Bid being awarded.

All labour information received by the CLO regarding skilled and unskilled labour will be passed on to the Contractor.

Training of Community-Based Labour and the CLO will be conducted by Training Consultants prior to the commencement of this Contract.

Project Labour Report

Project/Contract Name & Number	

Month:	**Project/Contract Start Date:**
Contractor:	**Project/Contract End Date:**
Consultant:	**Project/Contract Value (incl. allowance for escalation/excl. VAT):**
CLO Name:	**CLO ID Number:**

Total value of work done to date (incl. escalation/excl. VAT):

Number of workers	Name	Surname	ID Number/DOB	Daily/Task Rate	Number of days worked this month (incl. training)	Disabled (Y/N)	Number of training days this month	Course Name	Training Service Provider
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
	Totals for sheet								
	Sheet	**of**							

Signatures

Contractor: ..... **Date** _____

Consultant: ..... **Date** .....

CONTRACT NAME:

CONTRACT NO.: .....

TARGETED LABOUR CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Total Value of Scheduled Works (Net amount) (A)	R	Excl. provisional sums, escalation, contingencies and VAT

Employed by (Name of Company)	**Total expenditure on wages and allowances on targeted labour (B)**	**Total previous expenditure on wages and allowances on targeted labour**	**Net Amount for this Month**
Main Contractor			
Sub-Contractor A			
Sub-Contractor B			

Tendered Contract Participation Goal in respect of Targeted Labour .....%

Targeted Labour Participation achieved to date (B/A x 100) .....%

Signatures

Contractor: _____ **Date** ----------

Consultant: ---------- **Date** ----------

Construction Environmental Management Plan

PES PROJECT ENVIRONMENTAL SPECIFICATIONS

PES1 ENVIRONMENTAL CONTROL OFFICER (ECO)

An Environmental Control Officer (ECO) will be appointed to ensure and monitor the implementation of the Environmental Management Plan (EMP). The ECO will have the following responsibilities:

PSA1 To advise the Engineer on the interpretation and enforcement of the Environmental Specifications.
PSA2 To supply environmental information.
PSA3 To undertake inspections as required and submit reports on the Contractor's compliance with the Environmental Specifications; these reports shall be copied to the Project Manager and Project Engineer.
PSA4 To demarcate particular sensitive areas and pass instructions through the Engineer concerning works in these areas.

PES2 CONTRACTOR

The Contractor has the responsibility to:

- Be familiar with the Environmental Specifications contained in this document.
- Comply with the Environmental Specifications contained in this document.
- Notify the ECO and Engineer immediately in the event of any accidental infringements of the Environmental Specifications to enable appropriate remedial action to be taken.
- Notify the ECO and Engineer, at least 10 working days in advance, of any activity he has reason to believe may have significant negative impacts, so that mitigatory measures may be implemented timeously.
- Ensure environmental awareness among his employees and sub-contractors so that they are fully aware of, and understand the Environmental Specifications and the need for them.
- Undertake progressive rehabilitation of all areas affected by construction activities to restore them to their original states, as determined by the Engineer.
- Undertake the required works within the designated working areas.

PES3 ENGINEER

The Engineer is required to:

- Be familiar with the contents of the EMP.
- Monitor the Contractor's compliance with the Environmental Specifications on a daily basis and enforce compliance.
- Communicate to the Contractor the advice of the ECO and the contents of the ECO reports and issue site instructions giving effect to the ECO requirements where applicable.
- Communicate to the ECO any proposed actions, which may have negative impacts on the environment, at least 10 working days in advance.
- Designate all working areas.
- Communicate to the ECO any infringements of the Environmental Specifications and accompany the ECO during site inspections.
- Discuss with the ECO and Project Manager the application of any penalties and other possible enforcement measures when necessary.
- Maintain a record of complaints from the public and communicate these to the Project Manager.
- Facilitate communication between all role-players in the interest of effective Environmental Management.
- Monitor the compliance of the Contractor through the ECO reports.
- Allow for environmental protection works within the project budget.
- Determine the imposition of penalties for the infringement of the Environmental Specifications.

PES4 WORKING AREAS

Construction activities may be conducted only in designated working areas. Limitation of construction activities to specific working areas minimises the impact on the natural environment and facilitates control of the works. Sites should be divided into working areas and "no-go" areas:

Working areas are those areas required by the Contractor to construct the works and as approved by the Engineer. These areas include the area of permanent works, borrow areas and haul roads between site and borrow areas. If necessary, the working areas may be demarcated during the construction period. The Contractor will not be permitted beyond the designated working areas.

"No-go" areas are those areas outside of working areas.

PES 5 PROTECTION OF FLORA, FAUNA, NATURAL FEATURES AND ARCHAEOLOGICAL MATERIAL

Natural features, flora and fauna in the vicinity of the project works should be protected and damage or disturbance prevented or minimised, specifically:

1. No plant species may be removed or damaged unless agreed by the ECO.
2. All fauna (including domestic livestock) within and surrounding the site shall be protected; they shall not be caught or killed.
3. Natural features should not be defaced or painted or otherwise tampered with, even for survey purposes, unless agreed by the ECO. Any features defaced by the Contractor shall be reinstated by the Contractor to the satisfaction of the Engineer.
4. In the event of unearthing any artefacts, which may be of significant archaeological or historical value, excavations are to cease until approval for excavating is given by the Engineer and ECO. Should any graves be unearthed, excavations are to cease immediately, and the Engineer and ECO notified.
5. No "working areas" are to be defined within 10 meters of any gravesites.

PES6 CONSERVATION AND STOCKPILING OF TOPSOIL

1. All areas to be excavated;
   Areas to be occupied by roads, Topsoil shall be excavated from the following areas no longer than five days before the start of construction:
2. Including temporary roads;
3. Areas for the storage of fuels;
4. Areas to be used for batching / mixing of concrete;
5. Areas for stockpiling of construction materials.

Topsoil shall be excavated to the base of the A-Horizon or approximately 150mm, whichever is deeper, and stockpiled in the area designated by the Engineer. Topsoil should be stored in piles □ 1 m in height. This soil is valuable for its humus and seed content and shall be used for rehabilitation purposes. Grass should not be removed prior to stripping of the topsoil. Topsoil should not be mixed with any other material (construction rubble, subsoil's etc) and erosion of the topsoil stockpiles should be prevented.

PES7 REHABILITATION

Once the pipeline is laid in the trench and has been covered with soil and once there is no more vehicular movement over that portion of pipeline corridor, rehabilitation can take place. The Contractor should not wait until the end of the project to begin rehabilitation, but should instead begin rehabilitation in a piecemeal manner (i.e. by the time the pipeline has been fully instated the Contractor will be able to see the results of the rehabilitation programme).

Rehabilitation must include:

1. Shallow ripping of the top layer of soil covering the pipeline corridor;
2. Dressing of the recently ripped surface with the previously stockpiled topsoil; and
3. Seeding the areas with appropriate grass species, which will stabilise the topsoil (approx. 75% cover required).

PES8 GENERAL EROSION CONTROL

No erosion will be tolerated on the site. The Contractor should take all reasonable measures to prevent soil erosion resulting from exposed soil surfaces, a diversion, restriction or increase in the flow of stormwater or river flow caused by the presence of temporary / permanent works, operations and activities. Erosion prevention measures must be implemented to the satisfaction of the Engineer.

Areas affected by construction related activities must be monitored regularly for evidence of erosion. Areas particularly susceptible to erosion are: areas stripped of topsoil, soil stockpiles and steep slopes (gradients > 6 %). In this regard, the contractor is advised to take special precautions when working in the vicinity of the gullies which the pipeline crosses. Where evidence of erosion appears, the construction of contour berms, cut-off drains or planting of grass sods may be necessary.

Where soil erosion does occur the Contractor shall reinstate such areas and areas damaged by the erosion, at his own cost and to the satisfaction of the Engineer and ECO.

PES9 REINSTATEMENT OF TRENCHES AND IMPACTED AREAS

The topsoil shall be replaced on top after backfilling and only lightly compacted e.g. by trampling under foot. Where grass seeding is required it must be carried out within 2 days of topsoil replacement and before lightly compacting the soil.

Care shall be taken to ensure that the surface is finished in a manner, which does not result in the channelling of water or the concentration of flows. Where slope gradients exceed 15% in long-section, anti-erosion berms shall be made which are angled at ±10° across the contours such that they lead water off the disturbed corridor. These berms shall be 300mm high and shall be long enough to lead water off the entire disturbed surface. These berms shall be made immediately after backfilling and before topsoil replacement. Earth berms must be composted and grass seeded if berms are not covered with topsoil.

PES10 GULLY AND DONGA EROSION CONTROL

It is possible that existing erosion gullies or dongas in the landscape may be used for spoiling of rock 100-400 mm diameter in order to arrest erosion. Choice of such sites shall be at the discretion of the Engineer in consultation with the ECO. Spoiling shall be conducted in a manner specified by the Engineer. Only spoiling of rock will be allowed in erosion gullies, as soil will be washed out. Access to such spoil sites must not be permitted to lead to further erosion.

PES11 PREVENTION OF POLLUTION

Pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, waste water containing kitchen waste, detergents, solid waste and litter, etc. The Contractor should ensure that pollution of the ground or water does not occur as a result of any activities on site.

PES12 DUST CONTROL

Dust is regarded as a nuisance when it reduces visibility, soils private property and is aesthetically displeasing. Dust reduces the palatability of grazing grasses and may retard plant growth.

The Contractor shall be responsible for the control of dust arising from his operations and activities. Control measures could include regular spraying of working / bare areas with water, at an application rate that will not result in soil erosion.

PES13 NOISE CONTROL

The Contractor should take reasonable measures to limit noise levels during construction, taking into account the rural setting of the project. If necessary the Contractor should familiarise himself with the legislation pertinent to noise generation.

Vehicles should be fitted with standard silencers, where possible.

PES14 BLASTING

No blasting will be permitted unless the Contractor has satisfied the Project Manager that his proposed blasting methods and controls are such that no damage will be caused to any adjoining structure, pipeline, service or surrounding sensitive environmental areas. The Contractor is advised to take special precautions where local community houses are in close proximity to the site.

The Contractor is to inform the PSC of the days on which blasting is to occur. This notification is to be given at least 48 hours before blasting occurs.

Topsoil may not be used as cover material for blasting. Suitable cover material is to be confirmed with the Engineer.

PES15 TRAFFIC CONTROL

Increased traffic, especially heavy vehicle traffic, has the potential to draw complaints from nearby residents. The Contractor will be expected to address any complaints received.

The Contractor shall comply with all legislation including the applicable local by-laws with regard to road safety and transport. He shall instruct his drivers and plant operators that vehicles will be expected to comply with all road ordinances, such as speed limits, roadworthiness, load securing / covering.

PES16 FIRE PREVENTION AND CONTROL

The Contractor shall take all the necessary precautions to ensure that fires are not started as a consequence of his activities on site. The Contractor, sub-contractors and all employees are expected to be conscious of fire risks. The Contractor shall hold at least one fire prevention talk with staff to create an awareness of the risks of fire. Regular reminders to his staff on this issue are required.

No fires may be made other than for the purpose of cooking, and must be extinguished with water once they have served their purpose. Cooking fires should be contained in a fire drum, in an area approved by the Engineer.
The Contractor shall ensure that there is adequate fire-fighting equipment on site.

The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires and for costs involved in rehabilitation of burnt areas / property / persons, should the fire be the result of the Contractor's activities on site.

PES17 SOCIAL DISRUPTION

The Contractor's employees shall in no way be a nuisance to nearby residents. Any complaints received by the Engineer will be addressed and the relevant persons will be suspended from the project.

The Contractor shall give at least seven days notice to the residents in the vicinity of the construction activities of his intention to begin construction activities in their area. The Engineer may request a representative to be available to discuss issues raised by residents and make information available to them on construction activities.

The Contractor shall ensure that access to property is not unreasonably disrupted.

Where construction activities require the removal of fences from around private land, the occupants shall be warned at least 3 days in advance. These fences / boundary markers shall be reinstated as soon as construction is complete.

PES18 PROTECTION OF THE PUBLIC

The Contractor shall be responsible for the protection of the public, and public property, from any dangers associated with construction activities, and for the safe and easy passage of pedestrians and traffic in areas affected by project activities.

Any obstructions or excavations shall be suitably barricaded and/or demarcated with hazard tape.

PES19 VEHICLES AND ACCESS ROADS

Site vehicles should be permitted only within the demarcated construction sites or on existing roads, as would be required to complete their specific tasks. Vehicles are not permitted on re-vegetated areas and site traffic should be limited to prevent unnecessary damage to the natural environment.

PES20 STOCKPILING OF MATERIALS

The Engineer should approve all stockpiling sites. The stockpiles should be located in demarcated construction sites, or areas such as exhausted borrow pits / quarries. Material stockpiled should be done so in such a way as to minimise the spread of materials and the impact on the natural vegetation. The Contractor should ensure that no materials 'creep' into "no-go" areas.

Areas used for stockpiling should be reinstated upon completion of the project.

PES21 SITE CAMP

Where site camps are to be established the feasibility of removing topsoil from the site, before site establishment, should be investigated. Removed topsoil should then be stockpiled for use in rehabilitation of the site camp.

The site camp shall not be located in an environmentally sensitive area. The site shall be located > 20 m from a watercourse. Runoff from site must be prevented from entering any water bodies; all water requiring discharge should be discharged in a manner approved by the Engineer.

Site camps and surrounds are to be maintained in a clean, tidy and orderly condition at all times.

Tanks for fuels, oils etc should be stored in the site camp and shall be bunded with earth berms to sufficiently contain any possible spills. The earth beneath the tanks should be covered with crusher run (or the likes thereof) and this cover replaced periodically. The Contractor shall remove all oil-, petrol-, and diesel-soaked sand immediately and shall dispose of it as hazardous waste to a registered hazardous waste disposal site.

After completion of the works the Contractor shall restore the area used by him to its former condition, including removal of rubble and foundations. Any compacted ground shall be ripped to loosen soil, topsoil is to be spread evenly over the site and watered to encourage grass cover.

PES22 SANITATION

No staff is to use the river for personal washing, including cleaning of clothes. Toilet facilities, in the form of chemical toilets are to be provided at the site camp and within 200 m of any location where a significant number of workers will be working for an extended period of time.

Contractors shall instruct their staff and sub-contractors that they must use toilets provided and not the veld, bush or streams.

PES23 REFUSE / LITTER

The construction site is to be kept clean and litter free. The Contractor shall provide refuse bins at the work sites and shall be responsible for the disposal of all litter generated by all staff, at an approved landfill site. No burning of refuse is permitted.

PES24 DRINKING AND CONSTRUCTION WATER

Water for drinking and construction purposes should be obtained from local reticulation works, or an approved source. Unless approved by the local authority, water should not be extracted from nearby dams and rivers, and construction activities should not be conducted in or directly adjacent to rivers and dams.

PES25 CONCRETE BATCHING

Concrete batching / mixing plants should be located > 200 m from the nearest watercourse / wetland. The batching site must be bunded with earth berms or sandbags to prevent runoff escaping. Contaminated water should be allowed to soak away in a soak pit. In the event that water with a pH exceeding pH 9 reaches a stream, this would be in contravention of the National Water Act of 1998.

Waste concrete and cement sludge shall be scraped off the site and disposed of in an approved landfill site.

After closure of the batching plant or any area where concrete was mixed, all waste concrete/cement sludge shall be removed together with contaminated soil. The surface shall then be ripped to a depth of 150 mm and the topsoil replaced evenly over the site and watered. Where the site was originally grassed, reseeding may be required.

PES26 EXISTING SERVICES AND INFRASTRUCTURE

The Contractor shall ensure that existing services (road, rail, pipelines, powerlines and telephone services) are not disrupted or damaged, unless required by the contract and with the permission of the Engineer.

PES27 ALIEN VEGETATION

Alien species of vegetation should be removed from any working areas and the site camp(s), unless their removal would lead to increased erosion. Alien vegetation species should also be eradicated when they begin to establish themselves in disturbed areas (disturbance of the natural vegetation will encourage the

establishment of invasive species). In order to discourage the spread of alien species, soil should not be moved from one part of the site to another without the consent of the ECO.

The ECO will assist in the identification and eradication of alien species. Methods or removal / eradication usually involve hoeing by hand. Removed vegetation shall not be burned.

PES28 WORK STOPPAGE

The Engineer shall have the right to order work to be stopped in the event of significant infringements of the Environmental Specifications, until the situation is rectified in compliance with the specifications. In this event, the Contractor shall not be entitled to claim for delays or incurred expenses.

PES29 MONITORING OF COMPLIANCE TO THE ENVIRONMENTAL SPECIFICATIONS

The Engineer will monitor the Contractor's performance in relation to the Environmental Specifications on a daily basis. He will be assisted in his monitoring by the ECO.

The ECO shall inspect the site on a regular basis. After such visits a report will be submitted to the Engineer, the Project Manager and the Client. The reports will contain any infringements of the Environmental Specifications. The reports may also aim at anticipating problems and so alert the Contractor to potential environmental risks and the appropriate action that may be taken. The Engineer will make the content of these reports known to the Contractor.

PES30 PENALTIES

The Responsible Person shall issue fines if the Contractor infringes these Environmental Specifications. The Contractor shall be advised in writing of the nature of the infringement and the amount of the fine. Monies for the fine will be deducted from the monthly certificate. The Contractor shall determine how to recover the fine from the relevant employee and/or sub-contractor. The Contractor shall also take the necessary steps (e.g. training) to prevent a recurrence of the infringement.

The Contractor is also advised that the imposition of spot fines does not replace any legal proceedings the authorities, landowners and/or members of the public may institute against the Contractor.

In addition to the fine, the Contractor shall be required to make good any damage caused as a result of the infringement at his own expense.
A preliminary list of infringements for which fines will be imposed is as follows:

INFRINGEMENT	PENALTY
Infringement of PES 4	R1 000
Infringement of PES 5	R 1 000 per plant
Infringement of PES 6.	R1 000 per 5 m^3.
Infringement of PES 8.	R1 000 per serious erosion incident.
Infringement of PES 11.	R1 000 per pollution incident.
Infringement of PES 16.	R1 000 per incident.
Any other infringement of the Environmental Specifications.	R500 per infringement.

Boreholes Investigation and Construction

A. Overview of the Works

The overview of the works is to supply potable water to communities in Ngqeleni in Nyandeni Local Municipality through the siting, drilling, yield testing, water quality testing, equipping and commissioning of boreholes.

Based on the proposed groundwater programme the following methodologies will be employed.

Desk Study

Existing borehole information from our in-house database and previous studies conducted within thedefined project area will be assessed to compare yields, water levels and water quality in order to determine whether the aquifers are stable or deteriorating.

Siting

Use available and appropriate method to site the boreholes to ensure that it produces adequate yield. The location of the borehole must be at least 30-50m away from a potential pollution source such as on-site toilets, cattle kraals or cemeteries

Hydro-census

Borehole verification within a 2 km radius of the identified community will be conducted to verify the use of groundwater in the area. Existing boreholes and springs in the defined areas will be the direction of groundwater in the area.

Geophysical Investigation

A geophysical survey will be conducted to identify and accurately position any structural features and lithology changes which could influence groundwater movement. The geophysical survey to accurately define the positions of structural features, weathering zones and other features of significance to groundwater occurrence will comprise Electro Magnetic 34(EM-34) and magnetic profiling supported by Vertical Electrical Resistivity Soundings (VES) if required. The survey will assist in selecting sites for the drilling of groundwater boreholes.

A proton precision magnetometer (G-856 Memory-Mag.) manufactured by Geometrics will be used for the magnetic surveys as well as EM 34 manufactured by Geonics. The Magnetic and EM surveymethod are useful in identifying intrusive dykes and geological contact zones. A station spacing of 10 m will be used during the survey. Data from the magnetic survey will be processed and presentedas profiles using spread sheets (MS Office Excel).

The magnetic traversing will be done using a proton fluid magnetometer, the magnetic survey will berun in conjunction with the EM-34 survey.

Drilling of Borehole

Groundwater boreholes will be drilled in order to facilitate aquifer parameter testing and groundwatersampling. The boreholes will be drilled using down the hole air percussion equipment. The exploration drilling will be drilled according but not limited to the DWS minimum standards and guidelines.

1) The development of a minimum of 3 production boreholes shall entail hydrogeological investigations, siting, drilling of new boreholes, and test pumping. At least 3 limiting borehole drills, pump testing and water quality tests will be provided per site over the 6 sites. In instances where the borehole sustainable yield is less than 0.5l/s for the limiting allocation of 3 borehole drills per village, one of the boreholes will be equipped with a handpump.

2) O. R. Tambo District Municipality will inform the service provider based on yield tests and water quality which boreholes to equip.
3) The borehole development shall further entail the removal of drilling fines from aquifer pores, removal ofdrilling foam/mud, and establishing a gravel pack filter around the borehole-aquifer interface.
4) Borehole development method for use shall be determined by the hydrogeological investigationrecommendations.
5) The borehole diameter shall be determined by the findings of the hydrogeological investigations and siteconditions.
6) The selection of a pump type and capacity shall be based on
   - Maximum required/available capacity and safe yield
   - Total pumping head
   - Maximum pumping rate feasible and
   - Type of power available.
7) All Boreholes shall be identifiable by a DWS unique number and GPS coordinates.
8) All Boreholes shall be registered on the National Groundwater Database managed by DWS.
9) The boreholes are to be fully screened (from the water table to bedrock) with a 0.5 m sump. A fine screen (5 mm long and 0.6 mm wide) is to be used to prevent sediment entry into the borehole and fine gravel pack is to be installed in the borehole annulus around the screen. The size of the gravel pack particles should be larger than slot/screen sizes. A bentonite pellet seal is to be installed above the depth at which the water table occurs

Borehole and aquifer parameters

The newly drilled boreholes will be subjected to aquifer testing. This will be done with the aid of positive displacement pumps, and it will entail step drawdown test to determine borehole efficiencies and constant rate test to determine the aquifer parameters and yield estimates. It is anticipated that a 24 to 72-hour constant discharge tests will be done in the respective boreholes.

Step Tests

Step drawdown tests will be performed to more clearly define the optimum yield at which the constant discharge test can be run. The tests will involve pumping each of the boreholes at four sequentially higher pumping rates each maintained for an equal length of time, generally not less than 60 minutes. The magnitude of drawdown of the water level in the borehole in response to each of these pumping rates will be measured and recorded on a time schedule as well as the actual pumping rate maintained during each step.

Constant Discharge Tests

Once the step drawdown tests have been completed each borehole will be subjected to a constant discharge test over 24 to 72 hours in order to obtain aquifer parameters such as transmissivity and Distribution.

The constant discharge tests will be performed to assess the productivity of the aquifer according to its response to the abstraction of water.

This response can be analyzed to provide information in regard to the hydraulic properties of the aquifer. These tests will require the boreholes to be pumped at a single pumping rate which is kept constant for the duration of the test. The pumping rates will be set at yields which will be considered to be sustainable for the duration of the tests. The drawdown in water level in the boreholes will be measured during the course of the tests and recorded against a time schedule. Should there be any boreholes within close proximity to pumped borehole, the drawdown in water level will be measured and

recorded on the same time schedule as the pumped borehole. Water level measurements will be recorded during the recovery period following the end of pumping of each borehole.

Groundwater Sampling

Groundwater samples will be collected from the tested boreholes at the end of the pump testing exercise in order to obtain a representative elementary volume of the aquifer. These samples will be submitted to an accredited analytical laboratory for the analyses of major cation and anion distribution, pH, electrical conductivity, total alkalinity and the water quality be classified according DWS Drinking Standards as well as SANS 241-1:2015.

Protecting Ground Water

1) The site conditions and layout shall determine the feasible measures to be put in place to protect thegroundwater from contamination and equipment from theft and damage.
2) The following guidelines shall be followed when determining the feasibility of protecting the borehole:
    - Where required, a pump house shall be designed so that it is easy to do repairs to the pump equipment and allow for the removal of the pipes from the borehole.
    - The perimeter fence around the borehole shall be a protected by a 10m x 10m concrete palisade fenceperimeter.

Equipping

a) Borehole

- The borehole collar is to be below ground surface.
- A section of steel casing with a lockable cap should be installed around the borehole collar
- The borehole name is to be painted on each borehole with a stencil.
- The borehole shall be fitted with a flow meter.
- All boreholes shall be fitted with a conduit pipe to facilitate monitoring of groundwater test levels.
- Boreholes shall be disinfected where the water chemical analysis recommends action.
- A borehole cap shall be used to seal the borehole.
- The site at each borehole is to be cleaned after completion of the borehole.

b) Submersible pump

Submersible borehole pump complete with steel manhole cover.

The pump will be determined as per point number 3 above, under Drilling of Borehole.

c) Water pipework and standpipes

All necessary pipework, connections, standpipes and ancillary works shall be implemented by thecontractor even when they are not expressly mentioned in the BOQ.

d) Electrical Power Supply

Supply and Installation of solar panels to adequately operate borehole pump system. *The sizing of the solar panel installation will also be dependent on the borehole pump size and related electrical system needs.*

e) Securing Borehole Area

The security fence shall meet the specifications as discussed in bullet number 2, under point 2 of ***Protecting of Ground Water*** *above and will include gates and locks.*

f) Commissioning

- Once the boreholes are completed and functional, commissioning must be done on site with representatives of the O. R. Tambo District Municipality and Leko Engineering Consultants.
- The service provider must prepare a close-out report to be submitted to Leko Engineering Consultants.
- The service provider must provide an operational and maintenance manual for the boreholes.
- The service provider must provide certificates of warranty for all applicable moving parts which will include pumps.

B. Extent of the works and services

The extend of the works for this project is mainly focused on;

- Works Design Report works specifications, Construction BOQ, Design Drawings and Procurement Document.
- Drill and equip 3 production boreholes.
- Construction of approximately 2000 m water pipeline
- Connection into the existing water distribution network.

The extent of works further include the Geohydrological study of the drilled of the borehole, design and construction, and supply of all materials and accessories and connection into the existing watersystem works as well as construction monitoring and commissioning of all items listed below.

The extent of the works also includes the supply of all labour, materials, workmanship, machinery, equipment, transport, attendance on others and everything stated or implied which is, or may be, necessary in and for the entire completion of all of the following:

- Establishment of contractor's team with all sub-contractors including local sub-contractors,
- Geohydrological study for the one borehole,
- Supply of all materials and accessories for the refurbishment and connection into the existing water system works.
- Design and construction of a cost-effective security monitoring system for the borehole station,
- Site clearance and general cleaning of the borehole area.
- Additional water pipe reticulation

C. Deliverables

- Field observations and measurements;
- Pumping and yield test graphs and details;
- Groundwater sample chemical results from accredited SANAS laboratory;
- Appendices containing pumping test graphs, and borehole and or springs management recommendations;
- Borehole and or springs locality maps;
- Hydrogeological investigation reports and registration of production boreholes with DWS;
- Project Specifications, Bill of Quantities, Construction drawings, as-built drawings and social facilitation (ISD) reports;
- Secured fully functional springs and or boreholes equipped with power supply, lightning protection, pipework and stand taps;
- Investigations determined if;
    - The spring is not really a stream which has gone underground and is re-emerging;
    - The source and the collecting area are not likely to be polluted by surface runoff;
    - Checking that there are no latrines within 30 meters upstream of the spring' etc.
- Warranty and guarantee certificates for installed infrastructure;
- Health and Safety (OHSA, 2003) and Environmental Management (NEMA, 2003) related documentation and project records;
- Close Out Report and As-built drawings.

D. Additional Deliverables

- Site Assessment Report and Condition Assessment Reports for the project
- Project Implementation Plan,
- Detailed Design Report and Summary of General Legislative Authorisations
- Monthly Implementation Progress Reports
- Monthly Site Meetings Agenda, Minutes and Arrange Site Visits for Relevant Stakeholders
- Close-Out Report including pictures before and after the Works and a file of all Contractual Documentation.
- Approved Work Orders,
- Test results for water samples, bedding compaction and or pipe replacement (where necessary),

Part C4: Site Information **Site Information**

Part C4: Site Information

Part C4: Site Information **Other Reports**

C4.1. Other Reports

ANNEXURE A: Geotechnical Investigation Report is available on request

Annex C3.1.2 Drawings

1. Bound into this Document

Drawing Number	Description
PRJ 040-CT3B-FIG 1	Locality Plan
PRJ 040-CT3B-FIG 2	Nameboard

2. Issued Separately

Drawing Number	Description
PRJ 040-CT3B-T100	Key Plan
PRJ 040-CT3B-T101	Plan and Longitudinal Section (Sheet 1 of 15)
PRJ 040-CT3B-T102	Plan and Longitudinal Section (Sheet 2 of 15)
PRJ 040-CT3B-T103	Plan and Longitudinal Section (Sheet 3 of 15)
PRJ 040-CT3B-T104	Plan and Longitudinal Section (Sheet 4 of 15)
PRJ 040-CT3B-T105	Plan and Longitudinal Section (Sheet 5 of 15)
PRJ 040-CT3B-T106	Plan and Longitudinal Section (Sheet 6 of 15)
PRJ 040-CT3B-T107	Plan and Longitudinal Section (Sheet 7 of 15)
PRJ 040-CT3B-T108	Plan and Longitudinal Section (Sheet 8 of 15)
PRJ 040-CT3B-T109	Plan and Longitudinal Section (Sheet 9 of 15)
PRJ 040-CT3B-T110	Plan and Longitudinal Section (Sheet 10 of 15)
PRJ 040-CT3B-T111	Plan and Longitudinal Section (Sheet 11 of 15)
PRJ 040-CT3B-T112	Plan and Longitudinal Section (Sheet 12 of 15)
PRJ 040-CT3B-T113	Plan and Longitudinal Section (Sheet 13 of 15)
PRJ 040-CT3B-T114	Plan and Longitudinal Section (Sheet 14 of 15)
PRJ 040-CT3B-T115	Plan and Longitudinal Section (Sheet 15 of 15)
PRJ 040-CT3B-T120	200 Kl Reservoir Site Fencing Detail (Sheet 1 of 2)
PRJ 040-CT3B-T121	200 Kl Reservoir Site Fencing Detail (Sheet 2 of 2)
PRJ 040-CT3B-T122	200kl Reservoir Floor Plan
PRJ 040-CT3B-T123	200kl Reservoir Roof Plan
PRJ 040-CT3B-T124	200kl Reservoir Sections and Details
PRJ 040-CT3B-T125	200kl Reservoir Miscellaneous Details
PRJ 040-CT3B-T126	200kl Reservoir Subsoil Drainage, Joints and Headwall Details
PRJ 040-CT3B-T127	200kl Reservoir Chamber Ladder Details Manhole Covers
PRJ 040-CT3B-T130	1Ml Reservoir Site Fencing Detail (Sheet 1 of 2)
PRJ 040-CT3B-T131	1Ml Reservoir Site Fencing Detail (Sheet 2 of 2)
PRJ 040-CT3B-T132	1Ml Reservoir Floor Plan
PRJ 040-CT3B-T133	1Ml Reservoir Roof Plan
PRJ 040-CT3B-T134	1Ml Reservoir Sections and Details
PRJ 040-CT3B-T135	1Ml Reservoir Miscellaneous Details
PRJ 040-CT3B-T136	1Ml Reservoir Subsoil Drainage, Joints and Headwall Details
PRJ 040-CT3B-T137	1Ml Reservoir Chamber Ladder Details Manhole Covers
PRJ 040-CT3B-T140	Anchor and Thrust Block Standard Details
PRJ 040-CT3B-T141	Air Valve Standard Details
PRJ 040-CT3B-T142	Scour Valve Standard Details
PRJ 040-CT3B-T143	Isolating Valve Standard Details
PRJ 040-CT3B-T144	Typical Pipe Bedding Details
PRJ 040-CT3B-T145	Typical Pipe and Valve Markers Details

NOTE:

Originals of reduced drawings are available for inspection at the offices of the Engineer, or copies may be purchased by arrangement with the Engineer. No claims for misunderstanding reduced drawings will be considered.