



PROJECT BENEFICIARY

Ndlambe Municipality

TENDER DOCUMENT

FOR

**UPGRADE OF SEWER PIPELINE IN CARNATION STREET
(STATION HILL)**

TENDER NO:127/2020(WSIG2020-003)

TENDERER:

TENDER AMOUNT:

CIDB REGISTRATION NUMBER & GRADING:

CLOSING DATE:

CLOSING TIME:

TENDER BOX: Port Alfred Municipal Supply chain Office, No. 44 Campbell Street, Port Alfred, 6170

PREPARED FOR:

NDLAMBE LOCAL MINICIPALITY

The Municipal Manager

47 Campbell Street

Port Alfred

6170

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Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PART T1: TENDERING PROCEDURES

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

T1.1 TENDER NOTICE

NOTICE TO TENDER

PROJECT NAME: UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL)

Tenders are hereby invited from suitably qualified, experienced and skilled Civil Engineering Contractors (**CIDB grade 2 CE PE or higher**) for the UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL).

1. Scope of work

The scope of work for this project is outlined as follows:

- Installation of 400m of 160mmø uPVC sewer reticulation pipework;
- Construction of 4 precast concrete manholes;

2. Evaluation (Functionality , Price and B-BBEE)

BIDS WILL BE EVALUATED ON THE BASIS OF RESPONSIVENESS FIRST THEN FUNCTIONALITY AND ONLY RESPONSIVE BIDS WILL BE EVALUATED ON B – BBEE STATUS LEVEL CONTRIBUTOR AND PRICE AT 90/20 POINTS BASIS.

Functionality: 100 points, Minimum qualifying points will be 70 for further evaluation.

The following table and detailed evaluation is provided on the tender document.

ITEM	Weight
STAGE 1 OF EVALUATION – FUNCTIONALITY	
Functionality	100
• Approach	30
• Experience and Resources	50
• Locality	20
STAGE 2 OF EVALUATION – PRICE & B-BBEE	
B-BBEE	20
Price	80
TOTAL	100

Tender documents may be collected from Ndlambesupply chain offices at No. 44 Campbell street, Port Alfred, 6170 as from **Monday 17 August 2020 till Thursday 27 August 2020** during office hours 8h00 until 16h00. A non refundable cash deposit **R222.60** for each document is required **OR** can be downloaded on the municipal website at **NO CHARGE**. Sold Bid documents will only be issued on receipt of obtained from the cashiers office at ndlambe local municipality. A copy of payment receipt is to be attached on the document.

Due to COVID-19 **NON COMPULSORY Briefing session** will be held through the zoom meeting and bidders who wish to attend the tender briefing should indicate via email at wsigprojects@ndlambe.gov.za and the municipality will forward them the ID for the virtual meeting.. Details of the meeting are:

- Venue: Join Zoom Meeting
- Date: Monday, 17 August 2020
- Time: 11h00

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Completed tender documents in sealed envelopes clearly marked on the outside" Tender Number 127/2020 WSIG2020-003: UPGRADE OF SEWER PIPELINE IN CARNATION STREET(STATIONHILL) must be placed in the tender box at Port Alfred Supply Chain Office, No. 44 Campbell Street by no later than **12:00 on Friday, 28 August 2020** where tenders will be opened on the same date through zoom and all tenderers who want to witness the opening must indicate on the provided email: wsigprojects@ndlambe.gov.za at least 2hours before the closing 12h00.

Tenderers shall take note of the following tender conditions:

1. Prices must be valid for at least ninety (**90**) days from the closing date.
2. Prices quoted must be firm and inclusive of VAT.
3. Ndlambe Local Municipality does not bind itself to accept the lowest bid or any other bid and reserves the right to accept the whole or part of the bid.
4. Bids that are late will not be considered, whilst the lowest or only quotation will not necessarily be accepted. Quotations per facsimile or e-mail will also not be considered.
5. Company profile and registration information must be provided.
6. An original tax clearance certificate issued by SARS must accompany all quotations OR a tax reference number and PIN or TCC number must be provided.
7. MBD4,MBD6.1,MBD8 and MBD 9 must be completed and submitted with the bid as well as original certified copy of the proof of B-BBEE status of contribution.
8. A CIDB grade 2 CEPE certificate must be submitted.
9. A Municipal Billing Clearance Certificate must accompany all bids (in the event of a bidder being a company, also in respect of any of its directors).
10. Evidence of registration of company on the Central Supplier Database (CSD) must be provided (Supplier Number).
11. The successful bidders will be expected to enter into a formal non-exclusive Service Level Agreement, which will contain details of duties and procedures, with the Municipality.
12. A minimum functionality score of **70** is required to be further evaluated. See details on T2.3A of the tender document.
13. Failure to comply with above conditions will result in a disqualification of the bid.

Enquiries relating to the bid documents may be forwarded to the following contact departments below:

Contact persons		
Departments	Phone number	Email address
Technical Services	046 604 5501	wsigprojects@ndlambe.gov.za
Supply chain	046 604 5501	wsigprojects@ndlambe.gov.za

NOTICE NUMBER: 127/2020(WSIG2020-003)

13/08/2020

ADV R DUMEZWENI

MUNICIPAL MANAGER

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

INVITATION TO TENDER**MBD 1**

YOU ARE HEREBY INVITED TO TENDER FOR THE FOLLOWING PROJECT:

TENDER NO:127/2020(WSIG2020-003)**UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL)**

NOTE THE FOLLOWING REQUIREMENTS

TENDER NUMBER:	127/2020(WSIG2020-003)	CLOSING DATE:	28 August 2020	CLOSING TIME:	12:00
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All tenderers fill in and sign the Form of Offer and Acceptance.

Tender documents must be deposited in the tender box situated at Supply Chain Offices, No. 44 Campbell Street, Port Alfred, 6170. The documents must be submitted in a sealed envelope clearly marked with the contract number and project name.

Tenderers should ensure that tenders are delivered timeously to the correct address. If the tender is late, it will not be accepted for consideration.

Tender box is accessible during week days during office hours from 08:00 – 16:00.

All tenders must be submitted on the official forms – **(not to be re-typed or dismantle this document)**

**THE FOLLOWING PARTICULARS MUST BE FURNISHED
(FAILURE TO DO SO MAY RESULT IN YOUR TENDER BEING DISQUALIFIED)**

Name of Tenderer	
Postal Address	
Street Address	
Telephone Number	Code: Number:
Cell phone Number	
Facsimile Number	Code: Number:
Vat Registration Number	

Has an original tax clearance certificate been submitted (MBD 2)?	YES / NO
Are you the accredited representative in South Africa for the goods/services offered	YES / NO (IF YES ENCLOSE PROOF)

SIGNATURE OF TENDERER	
DATE	
CAPACITY UNDER WHICH THIS TENDER IS SIGNED	
TOTAL TENDER PRICE (INCL. VAT)	

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

T1.2 Tender Data

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

The additional conditions of tender are:

Clause number	Tender Data
F.1.1	The Employer is Ndlambe Local Municipality
F.1.2	<p>The tender documents issued by the employer comprise:</p> <p>Part T1: Tendering Procedures</p> <p>T1.1 Tender notice and invitation to tender</p> <p>T1.2 Tender data</p> <p>Part T2: Returnables for tender evaluation purposes</p> <p>T2.1 Returnable documents (Compulsory Submission)</p> <p>T2.2 Returnable documents for tender evaluation</p> <p>T2.3 Returnable documents for scoring</p> <p>Part C1: Agreements and contract data</p> <p>C1.1 Form of offer and acceptance</p> <p>C1.2 Contract data</p> <p>C1.3 Form of guarantee</p> <p>C1.4 Agreement in terms of OH&S act</p> <p>Part C2: Pricing data</p> <p>C2.1 Pricing instructions</p> <p>C2.2 Activity schedules / Bills of Quantities</p> <p>Part C3: Scope of work</p> <p>C3.1 General specifications</p> <p>C3.2 Particular Specifications: Construction works</p> <p>C3.3 Labour and community specifications</p> <p>C3.4 Health and safety specifications</p> <p>C3.5 Environment specifications</p> <p>C3.6 Labour intensive construction specifications</p> <p>Part C4: Site information</p> <p>C4.1 Site information</p> <p>C4.2 Drawing issue slip</p> <p>C4.3 Drawings</p>
F.2.1	<p>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a Contractor grading designation equal to or higher than a Contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25(1b) or 25(7A) of the Construction Industry Development Regulations, for a 2CE PE or higher class of construction work, are eligible to have their tenders evaluated. Registrations must be valid throughout the tender evaluation and adjudication periods.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> (1) every member of the joint venture is registered with the CIDB; (2) the lead partner has a Contractor grading designation in the 2CE PE or higher class of construction work; and (3) the combined Contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum tendered for a 2CE PE or higher class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations.

- F.2.7 The arrangements for a non compulsory clarification meeting are:
- Location: Join Zoom Meeting and link to join will be provided
 - Date: Monday, 17 August 2020
 - Starting time: 11h00
- All clarities regarding the tender must be addressed to Mr S. Babama (wsigprojects@ndlambe.gov.za) and tenderers that will not part of the meeting but will participate on the tender must indicate on the above email in order to get any addendum or any information about the tender.
- F.2.13.5 The employer's address for delivery of tender offers and identification details to be shown
F2.15.1 on each tender offer package are:
Address: Supply Chain Offices, No. 44 Campbell Street, Port Alfred, 6170
Project: **PROJECT NAME: UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL)**
- Tender No:127/2020(WSIG2020-003)
- F2.13.9 Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
The closing time for submission of tender offers is **Friday, 28 August 2020 at 12:00**
- F.2.16 The tender offer validity period is 90 days.
- F.2.23 The tenderer is required to submit with his tender:
- 1) a Certificate of Contractor Registration issued by the Construction Industry Development Board.
 - 2) a Tax clearance certificate
 - 4) B-BBEE certificate
 - 5) all schedules requested under returnable documents
- Where a tenderer satisfies CIDB Contractor grading designation requirements through joint venture formation, such tenderers must submit the Certificates of Contractor Registration in respect of each partner.
- F.3.4 Tenders will be opened immediately after the closing time for tenders at supply chain offices, No. 44 Campbell Street, Port Alfred, 6170 and all tenderers who want to witness the opening must indicate on the provided email: wsigprojects@ndlambe.gov.za at least 2hours before the closing 12h00.
- F.3.11 The procedure for the evaluation of responsive tenders is Method 2 subject to a prerequisite of a score of 70 for functionality.
The financial offer will be scored using Formula 2 (option 1) where the value of W_1 is:
- 2) 80 where the financial value inclusive of VAT of one or more responsive tender offers is less than R50 million.
- F3.13.1 Tender offers will only be accepted if:
- a) the tenderer's tax matters have been declared by the South African Revenue Service to be in order;
 - b) the tenderer is registered with the Construction Industry Development Board in an appropriate Contractor grading designation;
 - c) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;
 - d) the tenderer has not:
 - i) abused the Employer's Supply Chain Management System; or
 - ii) failed to perform on any previous contract and has been given a written notice to this effect; and
 - e) has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.

- f) if requested schedules are not completed as required no scores will be allocated.
- g) failure to provide any mandatory information required in the submission may result in the submission being deemed null and void and may be considered non-responsive.

F.3.17 The number of paper copies of the signed contract to be provided by the employer is one.

STANDARD CONDITIONS OF TENDER



CIDB Standard Conditions of Tender

(July 2015 edition)

As published in Annex F of the CIDB Standard for Uniformity in Construction Procurement in Board Notice 136
Government Gazette No 38960 of 10 July 2015

F.1 General

F.1.1 Actions

F.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

F.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

F.1.1.3 The employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

F.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the Tender data.

F.1.3 Interpretation

F.1.3.1 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 conditions of tender.

F.1.3.2 These conditions of tender, the tender data and tender schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

F.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

- a) **conflict of interest** means any situation in which:
 - i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
 - ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
 - iii) incompatibility or contradictory interests exist between an employee and the organisation which

employs that employee.

- b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;
- c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;
- d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;
- e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body; and
- f) **functionality** means the measurement according to the predetermined norms of a service or commodity designed to be practical and useful, working or operating, taking into account quality, reliability, viability and durability of a service and technical capacity and ability of a tenderer.

F.1.4 Cancellation and Re-Invitation of Tenders

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. 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 name and contact details of the employer's agent are stated in the tender data.

F.1.5 The employer's right to accept or reject any tender offer

F.1.5.1 An organ of state may, prior to the award of the tender, cancel a tender if:

- a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or
- b) funds are no longer available to cover the total envisaged expenditure; or (c) no acceptable tenders are received.

F.1.5.2 The decision to cancel a tender must be published in the CIDB website and in the government Tender Bulletin for the media in which the original tender invitation was advertised.

F.1.6 Procurement procedures

F.1.6.1 General

Unless otherwise stated in the tender data, 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.1.6.2 Competitive negotiation procedure

F.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of F.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of F.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

F.1.6.2.2 All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of F.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

F.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

F.1.6.2.4 The contract shall be awarded in accordance with the provisions of F.3.11 and F.3.13 after tenderers have been requested to submit their best and final offer.

F.1.6.3 Proposal procedure using the two stage-system

F.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

F.1.6.3.2 Option 2

F.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

F.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

F.2 Tenderer's obligations

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.

F.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

F.2.2 Cost of tendering

F.2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer 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 comply with requirements.

F.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

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 of documents

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.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

F.2.7 Clarification meeting

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

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.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

F.2.10 Pricing the tender offer

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 Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies

F.2.11 Alterations to documents

Do 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.

F.2.12 Alternative tender offers

F.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

F.2.12.3 An alternative tender offer may only be considered in the event that the main tender offer is the winning tender.

F.2.13 Submitting a tender offer

F.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

F.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

F.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

F.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

F.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

F.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

F.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

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

F.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

F.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

F.2.16 Tender offer validity

F.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

F.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

F.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

F.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of F.2.13 with the packages clearly marked as "SUBSTITUTE".

F.2.17 Clarification of tender offer after submission

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.

Note: *Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.*

F.2.18 Provide other material

F.2.18.1 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.

F.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

F.2.20 Submit securities, bonds, policies

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

F.2.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

F.2.22 Return of other tender documents

If so instructed by the employer, return all retained tender documents within 28 days after the expiry of the validity period stated in the tender data.

F.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

F.3 The employer's undertakings

F.3.1 Respond to requests from the tenderer

F.3.1.1 Unless otherwise stated in the tender Data, 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.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

- a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
- b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
- c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

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 three 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.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

F.3.4 Opening of tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, 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, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

F.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.

F.3.6 Non-disclosure

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.

F.3.8 Test for responsiveness

F.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

- a) complies with the requirements of these Conditions of Tender,
- b) has been properly and fully completed and signed, and
- c) is responsive to the other requirements of the tender documents.

F.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

- a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
- b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
- c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

F.3.9 Arithmetical errors, omissions and discrepancies

F.3.9.1 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.3.9.2 The employer must correct the arithmetical errors in the following manner:

- a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.
- b) 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.
- c) 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.

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

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.

F.3.11 Evaluation of tender offers

F.3.11.1 General

Appoint an evaluation panel of not less than three persons. Reduce each responsive tender offer to a comparative offer and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

F.3.11.2 Method 1: Price and Preference

In the case of a price and preference:

- a) Score tender evaluation points for price
- b) Score points for BBBEE contribution
- c) Add the points scored for price and BBBEE.

F.3.11.3 Methods 2: Functionality, Price and Preference

In the case of a functionality, price and preference:

- 1) Score functionality, rejecting all tender offers that fail to achieve the minimum number of points for functionality as stated in the Tender Data.
- 2) No tender must be regarded as an acceptable tender if it fails to achieve the minimum qualifying score for functionality as indicated in the tender invitation.
- 3) Tenders that have achieved the minimum qualification score for functionality must be evaluated further in terms of the preference points system prescribed in paragraphs 4 and 4 and 5 below.

80/20 system for requirements with a Rand value equal to or above R 30 000 and up to R 50 million (all applicable taxes included);

- 4)(a)(i) The following formula must be used to calculate the points for price in respect of tenders (including price quotation) with a rand value equal to, or above R 30 000 and up to Rand value of R 1 000 000 (all applicable taxes included):

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

P_s = Points scored for price of tender under consideration;
 P_t = Price of tender under consideration; and
 P_{\min} = Price of lowest acceptable tender.

- 4)(a)(ii) An employer of state may apply the formula in paragraph (i) for price quotations with a value less than R30 000, if and when appropriate:
- 4)(b) Subject to subparagraph(4)(c), points must be awarded to a tender for attaining the B-BBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

- 4)(c) A maximum of 20 points may be allocated in accordance with subparagraph (4)(b).
- 4)(d) The points scored by tender in respect of B-BBEE contribution contemplated in contemplated in subparagraph (4) (b) must be added to the points scored for price as calculated in accordance with subparagraph (4)(a).
- 4)(e) Subject to paragraph 4.3.8 the contract must be awarded to the tender who scores the highest total number of points.

90/10 system for requirements with a Rand value above R 50 million (all applicable taxes included).

- 5)(a) The following formula must be used to calculate the points for price in respect of tenders with a Rand value above R1 000 000 (all applicable taxes included):

$$P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

P_s = Points scored for price of tender under consideration;
 P_t = Price of tender under consideration; and
 P_{\min} = Price of lowest acceptable tender.

- 5)(b) Subject to subparagraph(5)(c), points must be awarded to a tender for attaining the BBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points
1	10
2	9
3	6
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

- 5)(c) A maximum of 10 points may be allocated in accordance with subparagraph (5)(b).
- 5)(d) The points scored by tender in respect of B-BBEE contribution contemplated in contemplated in subparagraph (5) (b) must be added to the points scored for price as calculated in accordance with subparagraph (5)(a).
- 5)(e) Subject to paragraph 4.3.8 the contract must be awarded to the tender who scores the highest total number of points.

F.3.11.6 Decimal places

Score price, preference and functionality, as relevant, to two decimal places.

F.3.11.7 Scoring Price

Score price of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

Where N_{FO} is the number of tender evaluation points awarded for price.

W_1 is the maximum possible number of tender evaluation points awarded for price as stated in the Tender Data.

A is a number calculated using the formula and option described in Table F.1 as stated in the Tender Data.

Table F.1: Formulae for calculating the value of A

Formula	Comparison aimed at achieving	Option 1 ^a	Option 2 ^a
1	Highest price or discount	$A = (1 + \frac{P - P_m}{P_m})$	$A = P / P_m$
2	Lowest price or percentage commission / fee	$A = (1 - \frac{P - P_m}{P_m})$	$A = P_m / P$
^a P_m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.			

F.3.11.8 Scoring preferences

Confirm that tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where tenderers are not eligible for such preferences.

Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the tender data.

F.3.11.9 Scoring functionality

Score each of the criteria and subcriteria for quality in accordance with the provisions of the Tender Data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

where: S_O is the score for quality allocated to the submission under consideration;

M_S is the maximum possible score for quality in respect of a submission; and

W_2 is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data.

F.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

F.3.13 Acceptance of tender offer

Accept the tender offer, if in the opinion of the employer, it does not present any risk and only if the tenderer:

- is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,
- 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,
- has the legal capacity to enter into the contract,
- is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, 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,
- complies with the legal requirements, if any, stated in the tender data, and
- is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

F.3.14 Prepare contract documents

F.3.14.1 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:

- addenda issued during the tender period,
- inclusion of some of the returnable documents, and
- other revisions agreed between the employer and the successful tenderer.

F.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

F.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.16 Notice to unsuccessful tenderers

F.3.16.1 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.

F.3.16.2 After the successful tenderer has been notified of the employer's acceptance of the tender, notify other tenderers that their tender offers have not been accepted.

F.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

F.3.19 Transparency in the procurement process

F.3.19.1 The CIDB prescripts require that tenders must be advertised and be registered on the CIDB Tender system.

F.3.19.2 The employer must adopt a transparency model that incorporates the disclosure and accountability as transparency requirements in the procurement process.

F.3.19.3 The transparency model must identify the criteria for selection of projects, project information template and the threshold value of the projects to be disclosed in the public domain at various intervals of delivery of infrastructure projects.

F.3.19.4 The client must publish the information on a quarterly basis which contains the following information:

- Procurement planning process
- Procurement method and evaluation process
- Contract type
- Contract status
- Number of firms tendering
- Cost estimate
- Contract title
- Contract firm(s)
- Contract price
- Contract scope of work
- Contract start date and duration
- Contract evaluation reports

F.3.19.5 The employer must establish a Consultative Forum which will conduct a random audit in the implementation of the transparency requirements in the procurement process.

F.3.19.6 Consultative Forum must be an independent structure from the bid committees

F.3.19.7 The information must be published on the employer's website.

F.3.19.8 Records of such disclosed information must be retained for audit purposes.

PART T2: RETURNABLES FOR TENDER EVALUATION PURPOSES

List of Returnable Documents

The tenderer must complete the following returnable documents:

T2.1 Returnable Documents – Compulsory Submissions

- A. Tax Clearance Certificate (MBD 2)
- B. Letter of Good Standing on receipt of appointment Letter
- C. Proof of Company Registration
- D. Certificate of Contractor Registration issued by the Construction Industry Development Board
- E. Supplier Database Registration Form
- F. Valid Original or Certified B-BBEE Certificate
- G. Joint Venture Disclosure Form
- H. Declaration of Interest (in the Service of the State) (MBD 4)
- I. Declaration (Validity of Information Provided)
- J. Declaration of Bidder's Past Supply Chain Management Practices (MBD 8)
- K. Certificate of Independent Bid Determination (MBD 9)
- L. Compulsory Enterprise Questionnaire

T2.2 Returnable Documents – Tender Evaluation

- A. Non Compulsory Tender Clarification Meeting
- B. Certificate of Authority for Signatory
- C. Record of Addenda to Tender Documents
- D. Proposed Amendments and Qualifications
- E. Surety and Bank Details
- F. Schedule Showing Anticipated Local Spending per Category
- G. Intension to Provide Performance Guarantee
- H. Copies of ID Document of Directors
- I. JV Formal Agreement
- J. Municipal Rate Clearance Certificate

T2.3 Adjudication of Tenders for Scoring

- A. Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2017 (MBD 6.1)

T2.1 Returnable Documents – Compulsory Submissions

It is a condition of Tender that the taxes of the successful Tenderer must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the Tenderer's tax obligations.

1. In order to meet this requirement Tenderers are required to complete in full the attached form TCC 001 "Application for a Tax Clearance Certificate" and submit it to any SARS branch office nationally. The Tax Clearance Certificate Requirements are also applicable to foreign Tenderers / individuals who wish to submit Tenders.
2. SARS will then furnish the Tenderer with a Tax Clearance Certificate that will be valid for a period of 1 (one) year from the date of approval.
3. The original Tax Clearance Certificate must be submitted together with the Tender. Failure to submit the original and valid Tax Clearance Certificate will result in the invalidation of the Tender. Certified copies of the Tax Clearance Certificate will not be acceptable.
4. In Tenders where Consortia / Joint Ventures / Sub-Contractors are involved, each party must submit a separate Tax Clearance Certificate.
5. Copies of the TCC 001 "Application for a Tax Clearance Certificate" form is available from any SARS branch office nationally or on the website www.sars.gov.za.
6. Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

2.1B LETTER OF GOOD STANDING ON RECEIPT OF APPOINTMENT LETTER

Supply a valid Letter of Good Standing from the Compensation Commissioner

2.1C PROOF OF COMPANY REGISTRATION

Provide a proof of company registration stating that the company is registered.

**2.1D CERTIFICATE OF CONTRACTOR REGISTRATION ISSUED BY THE
CONSTRUCTION INDUSTRY DEVELOPMENT BOARD**

Supply a valid certificate from CIDB showing the company's grading.

2.1E Central supplier database report

Submit proof of CSD registration

2.1F VALID ORIGINAL OR CERTIFIED B-BBEE CERTIFICATE

Provide a certified copy of your B-BBEE certificate issued by a Verification Agency accredited by SANAS or a registered Auditor approved by IRBA or an Accounting Officer as contemplated in the CCA or Affidavit.

2.1G JOINT VENTURE DISCLOSURE FORM

GENERAL

- i) All the information requested must be filled in the spaces provided. If additional space is required, additional sheets may be used and attached to the original documents.
- ii) A copy of the joint venture agreement must be attached to this form, in order to demonstrate the Affirmable, Joint Venture Partner's share in the ownership, control, management responsibilities, risks and profits of the joint venture, the proposed joint venture agreement must include specific details relating to:
 - a) the contributions of capital and equipment
 - b) work items to be performed by the Affirmable Joint Venture Partner's own forces
 - c) work items to be performed under the supervision of the Affirmable Joint Venture Partner.
- iii) Copies of all written agreements between partners concerning the contract must be attached to this form including those, which relate to ownership options and to restrictions/limits regarding ownership and control.
- iv) The joint venture must be formalised. All pages of the joint venture agreement must be signed by all the parties concerned. A letter/ notice of intention to formalise a joint venture once the contract has been awarded will not be considered.
- v) Should any of the above not be complied with, the joint venture will be deemed null and void and will be considered non-responsive.

1. JOINT VENTURE PARTICULARS

- a) Name
- b) Postal address
.....
.....
- c) Physical address.....
.....
.....
- d) Telephone
- e) Fax

2. IDENTITY OF EACH NON-AFFIRMABLE JOINT VENTURE PARTNER

- 2.1(a)** Name of Firm.....
Postal Address
Physical Address
Telephone.....
Fax.....
Contact person for matters pertaining to Joint Venture Participation Goal requirements:
.....
- 2.2(a)** Name of Firm.....

Postal Address
Physical Address
Telephone.....
Fax.....
Contact person for matters pertaining to Joint Venture Participation Goal requirements:
.....

(Continue as required for further non-Affirmable Joint Venture Partners)

3. IDENTITY OF EACH AFFIRMABLE JOINT VENTURE PARTNER

3.1(a) Name of Firm
Postal Address
Physical Address
Telephone.....
Fax.....
Contact person for matters pertaining to Joint Venture Participation Goal requirements:
.....

3.2(a) Name of Firm
Postal Address
Physical Address
Telephone.....
Fax.....

Contact person for matters pertaining to Joint Venture Participation Goal requirements:
.....

3.3(a) Name of Firm
Postal Address
Physical Address
Telephone.....
Fax.....

Contact person for matters pertaining to Joint Venture Participation Goal requirements:
.....

4. BRIEF DESCRIPTION OF THE ROLES OF THE AFFIRMABLE JOINT VENTURE PARTNERS IN THE JOINT VENTURE

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

5. OWNERSHIP OF THE JOINT VENTURE

- a) Affirmable Joint Venture Partner ownership percentage(s)%
- b) Non-Affirmable Joint Venture Partner ownership percentage(s)%

- c) Affirmable Joint Venture Partner percentages in respect of : *
- (i) Profit and loss sharing
- (ii) Initial capital contribution in Rands
.....
.....
- (*Brief descriptions and further particulars should be provided to clarify percentages).
- (iii) Anticipated on-going capital contributions in Rands
.....
.....
- (iv) Contributions of equipment (specify types, quality, and quantities of equipment) to be provided by each partner.
.....
.....
.....

6. **RECENT CONTRACTS EXECUTED BY PARTNERS IN THEIR OWN RIGHT AS PRIME CONTRACTORS OR AS PARTNERS IN OTHER JOINT VENTURES**

	NON-AFFIRMABLE JOINT VENTURE PARTNERS	PARTNER NAME
a)		
b)		
c)		
d)		
e)		

	AFFIRMABLE JOINT VENTURE PARTNERS	PARTNER NAME
a)		
b)		
c)		
d)		
e)		

7. CONTROL AND PARTICIPATION IN THE JOINT VENTURE

(Identify by name and firm those individuals who are, or will be, responsible for, and have authority to engage in the relevant management functions and policy and decision making, indicating any limitations in their authority e.g. co-signature requirements and Rand limits).

(a) Joint Venture cheque signing

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

(b) Authority to enter into contracts on behalf of the Joint Venture

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

(c) Signing, co-signing and/or collateralising of loans

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

(d) Acquisition of lines of credit

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

(e) Acquisition of performance bonds

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

(f) Negotiating and signing labour agreements

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

8. MANAGEMENT OF CONTRACT PERFORMANCE

(Fill in the name and firm of the responsible person).

(a) Supervision of field operations.....

(b) Major purchasing

(c) Estimating

(d) Technical management

9. MANAGEMENT AND CONTROL OF JOINT VENTURE

- (a) Identify the “managing partner”, if any,

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

- (b) What authority does each partner have to commit or obligate the other to financial institutions, insurance companies, suppliers, SubContractors and/or other parties participating in the execution of the contemplated works?

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

- (c) Describe the management structure for the Joint Venture's work under the contract

Management function / designation	Name	Partner*

(Fill in “ex Affirmable Joint Venture Partner” or “ex non-Affirmable Joint Venture Partner”.

10. PERSONNEL

- (a) State the approximate number of operative personnel (by trade/function/discipline) needed to perform the Joint Venture work under the Contract.

Trade/ function/ discipline	Number ex affirmable joint venture partners	Number ex non-affirmable joint venture partners

(Fill in “ex Affirmable Joint Venture Partner” or “ex non-Affirmable Joint Venture Partner”).

- (b) Number of operative personnel to be employed on the Contract who are currently in the employ of partners.
- (i) Number currently employed by Affirmable Joint Venture Partners
.....
- (ii) Number currently employed by the Joint Venture
.....
- (c) Number of operative personnel who are not currently in the employ of the respective partner and will be engaged on the project by the Joint Venture
.....
- (d) Name of individual(s) who will be responsible for hiring Joint Venture employees
.....
.....
- (e) Name of partner who will be responsible for the preparation of Joint Venture payrolls
.....
.....

11. **CONTROL AND STRUCTURE OF THE JOINT VENTURE**

Briefly describe the manner in which the Joint Venture is structured and controlled.

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

The undersigned warrants that he/she is duly authorised to sign this Joint Venture Disclosure Form and affirms that the foregoing statements are true and correct and include all material information necessary to identify and explain the terms and operations of the Joint Venture and the intended participation of each partner in the undertaking.

The undersigned further covenants and agrees to provide the Employer with complete and accurate information regarding actual Joint Venture work and the payment therefore, and any proposed changes in any provisions of the Joint Venture agreement, and to permit the audit and examination of the books, records and files of the Joint Venture, or those of each partner relevant to the Joint Venture, by duly authorised representatives of the Employer.

Signature

Duly authorised to sign on behalf of

Name

Address.....

Telephone.....

Date

Signature

Duly authorised to sign on behalf of

Name

Address.....

Telephone.....

Date

Signature

Duly authorised to sign on behalf of

Name

Address.....

Telephone.....

Date

(Continue as necessary)

2.1H DECLARATION OF INTERESTS (In the Service of the State)

MBD 4

DECLARATION OF INTEREST

1. Any legal person, including persons employed by the state¹, or persons having a kinship with persons employed 1069+by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes a price quotation, advertised competitive bid, limited bid or proposal). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-

- the bidder is employed by the state; and/or
- the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

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

2.1 Full Name of bidder or his or her representative:

2.2 Identity Number:

2.3 Position occupied in the Company (director, trustee, shareholder²):

2.4 Company Registration Number:

2.5 Tax Reference Number:

2.6 VAT Registration Number:.....

- 2.6.1 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / persal numbers must be indicated in paragraph 3 below.

¹"State" means –

- (a) 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);
- (b) any municipality or municipal entity;
- (c) provincial legislature;
- (d) national Assembly or the national Council of provinces; or
- (e) Parliament.

²" Shareholder" means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

- 2.7 Are you or any person connected with the bidder presently employed by the state?
..... YES / NO

- 2.7.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder/ member:

Name of state institution at which you or the person connected to the bidder is employed:.....

Position occupied in the state institution:

- Any other particulars:.....
- 2.7.1 If you are presently employed by the state, did you obtain **YES / NO**
the appropriate authority to undertake remunerative
work outside employment in the public sector?
- 2.7.1.1 If yes, did you attach proof of such authority to the bid **YES / NO**
document?
(Note: Failure to submit proof of such authority, where
applicable, may result in the disqualification of the bid.
- 2.7.1.2 If no, furnish reasons for non-submission of such proof:
.....
.....
.....
- 2.8 Did you or your spouse, or any of the company's directors / **YES / NO**
trustees / shareholders / members or their spouses conduct
business with the state in the previous twelve months?
- 2.8.1 If so, furnish particulars:
.....
.....
.....
- 2.9 Do you, or any person connected with the bidder, have **YES / NO**
any relationship (family, friend, other) with a person
employed by the state and who may be involved with
the evaluation and or adjudication of this bid?
- 2.9.1 If so, furnish particulars.
.....
.....
.....
- 2.10 Are you, or any person connected with the bidder, **YES/NO**
aware of any relationship (family, friend, other) between
any other bidder and any person employed by the state
who may be involved with the evaluation and or adjudication
of this bid?
- 2.10.1 If so, furnish particulars.
.....
.....
.....
- 2.11 Do you or any of the directors / trustees / shareholders / members **YES/NO**
of the company have any interest in any other related companies
whether or not they are bidding for this contract?

2.11.1 If so, furnish particulars:

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

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

Full Name	Identity Number	Personal Tax Reference Number	State Employee Number / Persal Number

4. DECLARATION

I, the undersigned (name)..... certify that the information furnished in paragraphs 2 and 3 above is correct. I accept that the CSIR may reject the bid or act against me in terms of paragraph 23 of the general conditions of contract should this declaration prove to be false.

SIGNED

.....

DATE

.....

NAME

.....

POSITION

.....

TENDERER

.....

2.1I DECLARATION (Validity of information provided)

I..... declare that the information provided is true and correct, the signature to the Tender document is duly authorised and documentary proof regarding any Tendering issue will, when required, be submitted to the satisfaction of the municipality.

SIGNED

.....

DATE

.....

NAME

.....

POSITION

.....

TENDERER

.....

2.1J DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES MBD 8

- 1 This Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used 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 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. wilfully 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.

Declaration of Fair Bidding Practices

The essence of competitive tendering is that CSIR will receive bona fide competitive proposal from all tenderers. In recognition of these principles, we hereby declare that this is a bona fide tender, intending to be competitive, and that we have not engaged in price-fixing with any other tenderer or person, or in any way colluded with any other tenderer or person in an attempt to alter or pre-empt the outcome of the competitive tender.

SIGNED

DATE

NAME

POSITION

TENDERER

2.1KCERTIFICATE OF INDEPENDENT BID DETERMINATION : MBD 9

- 1 This Standard Bidding Document (MBD) must form part of all bids¹ 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 *per se* prohibition meaning that it cannot be justified under any grounds.
- 3 Treasury Regulation 16A9 prescribes that accounting officers and accounting authorities must take all reasonable steps to prevent abuse of the supply chain management system and authorizes accounting officers and accounting authorities to:
 - a. disregard the bid of any bidder if that bidder, or any of its directors have abused the institution's supply chain management system and or committed fraud or any other improper conduct in relation to such system.
 - b. cancel a contract awarded to a supplier of goods and services if the supplier committed any corrupt or fraudulent act during the bidding process or the execution of that 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:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Institution)

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 consortium³ 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.
- 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

2.1L COMPULSORY ENTERPRISE QUESTIONNAIRE

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

Section 1: Name of enterprise:

Section 2: VAT registration number, if any:

Section 3: CIDB registration number, if any:

Section 4: Particulars of sole proprietors and partners in partnerships.....

Name*	Identity number*	Personal income tax number*

* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

Section 5: Particulars of companies and close corporations

Company registration number:

Close corporation number:

Tax reference number:

Section 6: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:

- | | |
|--|---|
| <input type="checkbox"/> a member of any municipal council | <input type="checkbox"/> an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) |
| <input type="checkbox"/> a member of any provincial legislature | |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | |
| <input type="checkbox"/> a member of the board of directors of any municipal entity | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |

- ☐ an official of any municipality or municipal entity ☐ an employee of Parliament or a provincial legislature

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

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	< 12 months

*insert separate page if necessary

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise:

- ii) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Service that my / our tax matters are in order;
- iii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears in the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iv) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- v) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for controlling the scope of work that could cause or be interpreted as a conflict of interest; and
- vi) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

SIGNED

.....

DATE

.....

NAME

.....

POSITION

.....

TENDERER

.....

T2.2 Returnable Documents – Tender Evaluation

2.2A CERTIFICATE OF TENDERER'S ATTENDANCE AT CLARIFICATION MEETING

MBD 5

This is to certify that, I
representative of (Tenderer)

.....
of (address)

.....
Telephone number:

Fax number:

.....
in the company of (Employer's Agent's representative)

attended tender clarification meeting on (date)

I further certify that I have made myself familiar with all local conditions likely to influence the work and the cost thereof, that I am satisfied with the description of the work and the explanations given by the said Employer's Agent's Representative and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

TENDERER'S REPRESENTATIVE: (Signature).....

(Name)

EMPLOYER'S AGENT'S REPRESENTATIVE: (Signature)

(Name)

Contractor ____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2B CERTIFICATE OF AUTHORITY FOR SIGNATORY

Signatory for companies shall confirm their authority thereto by attaching a duly signed and dated copy of the relevant resolution of the boards of directors to this form.

An example is given below:

"By resolution of the board of directors passed at a meeting held on

Mr/Mrs....., whose signature appears below, has been duly authorised to sign all documents in connection with the Tender for Contract No. and any Contract that may arise there from on behalf of (name of Tenderder in block capitals)

.....

SIGNED ON BEHALF OF THE COMPANY:

IN HIS/HER CAPACITY AS:

DATE:

SIGNATURE OF SIGNATORY:

WITNESSES: 1.

2.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2C RECORD OF ADDENDA TO TENDER DOCUMENTS

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

SCHEDULE T2.2C – RECORD OF ADDENDA

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

Attach additional pages if more space is required.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2D PROPOSED AMENDMENTS AND QUALIFICATIONS

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

The Tenderer's attention is drawn to clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material deviations and qualifications.

SCHEDULE T2.2D – PROPOSED AMENDMENTS AND QUALIFICATIONS

PAGE	CLAUSE OR ITEM	PROPOSAL

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2E PROVIDE SCHEDULE SHOWING ANTICIPATED LOCAL SPENDING PER CATEGORY

The information required can be seen in the sample below.

Labour employment

Category	No. People	Man days	Amount
Local Labour			

Sub-Contractor required

Category	Activity	Amount
Contract 1		

SMME involved (Transport, Security...)

Category	Activity	Amount
Appointment 1		

Goods and Services procured (Fuel, Accommodation....)

Category	Product	Amount
Supplier 1		

Material procured (Pipes, Cement, aggregates....)

Category	Material	Amount
Supplier 1		

SIGNED _____ **DATE** _____

NAME _____ **POSITION** _____

TENDERER _____

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

2.2F INTENTION TO PROVIDE PERFORMANCE GUARANTEE

Provide a letter of intention to provide Performance Guarantee on a company letterhead and signed by authorized person from the intended guarantor.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2G COPIES OF ID DOCUMENT OF DIRECTORS

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2H JV FORMAL AGREEMENT

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.2I MUNICIPAL RATES CLEARANCE CERTIFICATE

Provide a certificate from the municipality stating that the company is up to date with rates payments.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

T2.3 Adjudication of Tenders for Scoring

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3A PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

MBD 6.1

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

1. GENERAL CONDITIONS

ITEM	Weight
STAGE 1 OF EVALUATION – FUNCTIONALITY	
Functionality	100
• Approach	30
• Experience and Resources	50
• Location support	20
STAGE 2 OF EVALUATION – PRICE & B-BBEE	
B-BBEE	20
Price	80
TOTAL	100

1.1 FUNCTIONALITY – PRE-QUALIFICATION

The following functionality criterion is to be utilized. A minimum threshold obtaining a total score of **70%** and above will be evaluated in terms of price and BBEE.

DETAILED BREAKDOWN OF FUNCTIONALITY POINTS		
Details	Points Score	Item Max. Points
Criteria 1: Approach		30
1.1 Construction Programme		10
Detailed Construction Programme relevant to the Scope of Work. The Programme must demonstrate the Tenderer's approach and allocation of resources to achieve activities within the prescribed timeframes:		
Unacceptable (Does not demonstrate basic programming techniques & capabilities to meet project objectives. Prescribed timeframes are not met.)		0
Poor (Provided a construction programme but details are missing.)		2
Acceptable (Provided a detailed and convincing construction programme and demonstrated implementability to meet project objectives.)		5
Good (Submitted a construction programme acceptable for approval by the Employer's Representative with innovative programming interventions to accelerate project objectives.)		10
1.2 Methodology and Execution Strategy		20
Tenderer demonstrates the ability to implement the Construction Programme and have a work implementation strategy assigned to the respective tasks for the optimisation of resources and activities.		

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Unacceptable (Does not demonstrate a basic implementation strategy linked with the construction programme and project objectives.)		0
Poor (Provided a basic implementation strategy but lacks a clear understanding of the project scope and detailed deliverables (multi-disciplinary.)		5
Acceptable (Provided a detailed methodology and execution strategy with associated activities and resource optimization synchronized to meet the project objectives. The methodology is to include a schedule of required construction plant and resources required for the successful implementation of the project.)		15
Good (Submitted an excellent methodology and execution strategy that demonstrates clearly how the project objectives will be met along with a clear risk management plan. An innovative approach is to be presented that ensures successful implementation of critical activities.)		20
Criteria 2: Tenderer's Expertise and Resources		50
2.1 Key Staff		
2.1.1 Contract Manager (CM) Must have at least NQF level 6 / National Diploma in Civil Engineering.		10
If CM has ≥ 15 years' appropriate experience and has completed similar projects successfully in the last 5 years.		10
If CM has ≥ 10 years' appropriate experience and has completed similar projects successfully in the last 5 years.		8
If CM has ≥ 7 years' appropriate experience and has completed similar projects successfully in the last 5 years.		5
If CM has not completed a similar project (either water or sewer) in last 5 years, regardless of other experience.		0
2.1.2 Site Agent (SA) Must have at least NQF level 6 / National Diploma in Civil Engineering.		10
If SA has ≥ 10 years' appropriate experience.		10
If SA has ≥ 7 years' appropriate experience.		8
If SA has ≥ 5 years' appropriate experience.		5
If SA has < 5 years' appropriate experience.		0
2.2 Relevant Experience		10
2.2.1 Completed sewer reticulation/bulk pipeline project (Provide Completion certificate and assessment form with signature of the client)		10
2.2.2 Completed water reticulation/bulk pipeline project (Provide Completion certificate and assessment form with signature of the client)		5
2.3 Local Office / Director of Company		20
2.3.1 Within South Africa (Provide proof of address, proof of paying rates and signed lease agreement where the tenderer does not own the building).		5
2.3.2 Within Eastern Cape Province (Provide proof of address, proof of paying rates and signed lease agreement where the tenderer does not own the building).		10

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

2.3.3	Within Sarah Baartman District Municipality (Provide proof of address, proof of paying rates and signed lease agreement where the tenderer does not own the building).		15
2.3.4	Within Ndlambe Municipality (Provide proof of address, proof of paying rates and signed lease agreement where the tenderer does not own the building).		20
		Total Point Score	Maximum Points
TOTAL EVALUATION SCORE FOR FUNCTIONALITY			100

1.2 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value equal to or above R 30 000 and up to R 50 million (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R 50 million (all applicable taxes included).

1.3 The value of this bid is estimated to be below R 50,000,000 (all applicable taxes included).

1.4 Method 2 system shall be applicable.

Preference points for this bid shall be awarded for:

- Price; and
- B-BBEE Status Level of Contribution.

1.3.1 The maximum points for this bid are allocated as follows:

	POINTS
Price	80
B-BBEE status level of contribution	20
Total points for Price and B-BBEE must not exceed	100

1.4 Failure on the part of a bidder to fill in and/or to sign this form and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS) or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA) or an Accounting Officer as contemplated in the Close Corporation Act (CCA) together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

2.1 **“all applicable taxes”** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;

2.2 **“B-BBEE”** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

2.3 **“B-BBEE status level of contributor”** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

2.4 **“bid”** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals;

2.5 **“Broad-Based Black Economic Empowerment Act”** means the Broad-Based Black

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Economic Empowerment Act, 2003 (Act No. 53 of 2003);

- 2.6 **“comparative price”** means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- 2.7 **“consortium or joint venture”** 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;
- 2.8 **“contract”** means the agreement that results from the acceptance of a bid by an organ of state;
- 2.9 **“EME”** means any enterprise with an annual total revenue of R5 million or less.
- 2.10 **“Firm price”** means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the Contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;
- 2.11 **“functionality”** means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;
- 2.12 **“non-firm prices”** means all prices other than “firm” prices;
- 2.13 **“person”** includes a juristic person;
- 2.14 **“rand value”** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;
- 2.15 **“sub-contract”** means the primary Contractor’s assigning, leasing, making out work to, or employing, another person to support such primary Contractor in the execution of part of a project in terms of the contract;
- 2.16 **“total revenue”** bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the Government Gazette on 9 February 2007;
- 2.17 **“trust”** means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and
- 2.18 **“trustee”** means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

- 3.1 The bidder obtaining the highest number of total points will be awarded the contract.
- 3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;
- 3.3 Points scored must be rounded off to the nearest 2 decimal places.
- 3.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.
- 3.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.
- 3.6 Should two or more bids be equal in all respects; the award shall be decided by the drawing of lots.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

4. POINTS AWARDED FOR PRICE

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

A maximum of 80 or 90 points is allocated for price on the following basis:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right) \quad \text{or} \quad P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

P_s = Points scored for price of tender under consideration;
 P_t = Price of tender under consideration; and
 P_{\min} = Price of lowest acceptable tender.

5. Points awarded for B-BBEE Status Level of Contribution

- 5.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

- 5.2 Bidders who qualify as EMEs in terms of the B-BBEE Act must submit a certificate issued by an Accounting Officer as contemplated in the CCA or a Verification Agency accredited by SANAS or a Registered Auditor. Registered auditors do not need to meet the prerequisite for IRBA's approval for the purpose of conducting verification and issuing EMEs with B-BBEE Status Level Certificates.
- 5.3 Bidders other than EMEs must submit their original and valid B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.
- 5.4 A trust, consortium or joint venture, will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate.
- 5.5 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate bid.
- 5.6 Tertiary institutions and public entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.

6. BID DECLARATION

- 6.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

following:

7. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.3.1.2 AND 5.1

- 7.1 B-BBEE Status Level of Contribution: = (maximum of 10 or 20 points)
(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 5.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA or an Accounting Officer as contemplated in the CCA).

8 SUB-CONTRACTING

- 8.1 Will any portion of the contract be sub-contracted? YES / NO (delete which is not applicable)

- 8.1.1 If yes, indicate:

- (i) what percentage of the contract will be subcontracted?%
- (ii) the name of the sub-Contractor?
- (iii) the B-BBEE status level of the sub-Contractor?
- (iv) whether the sub-Contractor is an EME? YES / NO (delete which is not applicable)

9 DECLARATION WITH REGARD TO COMPANY/FIRM

9.1 Name of firm :

9.2 VAT registration number :

9.3 Company registration number :

9.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Company
- ☐ (Pty) Limited

[TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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

9.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional service provider
- ☐ Other service providers, e.g.transporter, etc.

[TICK APPLICABLE BOX]

9.7 MUNICIPAL INFORMATION

Municipality where business is situated

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Registered Account Number

Stand Number

9.8 TOTAL NUMBER OF YEARS THE COMPANY/FIRM HAS BEEN IN BUSINESS?

9.9 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contribution indicated in paragraph 7 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we 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 paragraph 7, the Contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- (iv) If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) disqualify the person from the bidding 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) restrict the bidder or Contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, 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

Signed in the presence of the subscribing witnesses:

Atfor and on behalf of

on this the day of 20.....

SIGNATURE :

CAPACITY :

ADDRESS :

:

:

AS WITNESSES : 1

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3B CONSTRUCTION PROGRAMME

Attach a construction programme.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3C METHODOLOGY AND EXECUTION STRATEGY

Attach a detailed methodology of how the work will be executed.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3D HEALTHY AND SAFETY FILE

Attach a health and safety file ready for approval by the OHS Agent.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3E SKILLS FOR KEY PERSONNEL

Provide an adequately resourced project organogram with supporting CV's and qualifications.

A separate schedule for Contracts Manager and Site Agent are to be incorporated, indicating the required information as per example below:

SCHEDULE T2.3E-(a) – SKILLS OF KEY PERSONNEL – CONTRACTS MANAGER

Name and Surname	References for past projects	
Tertiary Qualifications	Project Description (Similar in Nature)	Project Value (Minimum of R20mil)
Years' Experience (Post qualification)		

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

SCHEDULE T2.3E-(b) – SKILLS OF KEY PERSONNEL – SITE AGENT

Name and Surname	References for past projects	
Tertiary Qualifications	Project Description (Similar in Nature)	Project Value (Minimum of R20mil)
Years' Experience (Post qualification)		

Note:

In the event that Schedules T2.3E a, & b is not completed, no points will be awarded and the proposal will be scored as not meeting the specific requirement.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3F ENTITIES EXPERIENCE (REFERENCE)

A schedule is to be incorporated which summarizes the Contractor's experience. A similar format to the example below is required.

The experience of the Contractor, in this similar nature projects will be evaluated. A detailed company profile is to be submitted as part of your proposal.

Contractors should briefly describe their experience in this regard by completing the schedule below by providing details of at completed similar Sewer/water reticulation/ bulk pipeline project.

All the required information requested below should be provided and a general listing of contracts completed will not suffice. Stamped and signed completion certificates and assessment form with contactable references for each completed project to be attached.

SCHEDULE T2.3F (a) – SIMILAR PROJECTS

Employer:	Description of Project	Project Value
Contact Person:		Date Completed:
Tel No:		

Notes:

- 1) In the event that Schedule T2.3F (a) is not completed, no points will be awarded and the proposal will be scored as not meeting the specific requirement.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2.3G LOCATION OFFICE

Proof of the location of the local operational office / Director of the tenderer.

(Proof of address or lease agreement or proof of paying municipal rates must be provided)

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

PART C1: AGREEMENT AND DATA

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Part C1: Agreement and Contract Variables

PART C1 AGREEMENT AND CONTRACT DATA

C1.1 FORM OF OFFER AND ACCEPTANCE

C1.2 CONTRACT DATA

C1.3 AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993
(ACT NO 85 OF 1993)

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Part C1: Agreement and Contract Data

C1.1 LETTERS OF TENDER AND ACCEPTANCE

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

LETTER OF TENDER

Name of Contract: **UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL)**

Contract No.: WSIG2020-003

To: Ndlambe Local Municipality

We have examined the Conditions of Contract, Employer's Requirements, Schedules, Contract Data, and the attached Appendices and Addenda No.s [Number].

for the above-named Contract. We have understood and checked these documents and have ascertained that they contain no errors or other defects except as identified in our Tender. We accordingly offer to execute and complete the Works and remedy any defects therein so that they are fit for the purposes defined in the Contract for the period and in conformity with the terms and conditions contained in the Contract for the lump sum amount of [South African Currency and amount in figures] ([Currency and amount in words]).

or such other amount as may be determined in accordance with the Contract.

This amount is made up of the following components:

For the UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL), the amount of:

Amount in figures: _____

Amount in words: _____

We agree to abide by this Tender for duration of 90 days and it shall remain binding upon us and may be accepted at any time before that date.

If this offer is accepted, we will provide the required Performance Security, and commence and complete the Works in accordance with the above-named documents and the agreed programme.

We further undertake, together with the Employer, to jointly appoint the DAB and the Auditing Body in accordance with the requirements of the Contract.

Unless and until a formal Contract Agreement is prepared and executed, this Letter of Tender, together with your written acceptance thereof, shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any tender you may receive.

Signed by (signature):

in the capacity of:

duly authorised to sign
tenders for and on
behalf of:

Address:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

LETTER OF ACCEPTANCE

Name of Contract:

Contract No.:

To:

We thank you for your Tender dated _____ for the execution and completion of the Works comprising the above-named Contract and remedying of defects therein so that they are fit for the purposes defined in the Contract and all in conformity with the terms and conditions contained in the Contract as amended by the attached Memorandum, signed by you and ourselves.

We have pleasure in accepting your Tender for the Accepted Contract Amount of:

This amount is made up of the following components:

For the UPGRADE OF SEWER PIPELINE IN CANATION STREET (STATION HILL), the amount of:

Amount in figures: _____

Amount in words: _____

In consideration of you properly and truly performing the Contract, we agree to pay you the Accepted Contract Amount or such other sums to which you may become entitled under the terms of the Contract, at such times and as prescribed by the Contract.

We acknowledge that this Letter of Acceptance creates a binding Contract between us, and we undertake to fulfil all our obligations and duties in accordance with the terms of this Contract.

Signed by (signature):

For and behalf of:

Date:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

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, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract and 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:
.....

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

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

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

For the Employer

Signature _____ Date _____

Name _____ Capacity _____

(Name and address of organization) **Ndlambe Local Municipality
No. 44 Campbell Street
Port Alfred
6170**

Name and signature of witness _____

Date: _____

For the tenderer

Signature _____ Date _____

Name _____ Capacity _____

(Name and address of organization)

Name and signature of witness _____

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

1. C1.2.1 PART 1: DATA PROVIDED BY THE EMPLOYER

CONDITIONS OF CONTRACT

The General Conditions of Contract for Construction Works, Second Edition, 2015, published by the South African Institution of Civil Engineering Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtained from www.saice.org.za.

The pro-formas bound with the General Conditions of Contract for Construction Works, Second Edition, 2015, shall not apply to this Contract and shall be replaced with the documentation bound into this document.

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.

The General Conditions of Contract shall be read in conjunction with the variations, amendments and additions set out in the Contract Specific Data below. Each item of data given below is cross-referenced to the clause in the General Conditions of Contract to which it mainly applies.

Where reference is made to the standard specifications in this Contract, it shall mean the SANS/ SABS 1200 SERIES complete with any corrections and amendments applicable at the time of Tendering. Amendments to the standard specifications are bound in the Contract documents in Part C3: Section B: Project Specifications.

The SANS/ SABS 1200 SERIES documents, may be obtained / purchased from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.

This SANS/ SABS 1200 SERIES documents may also be inspected, by appointment, at the offices of the Employer and the Consulting Engineer's during normal office hours.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

APPOINTMENT OF CONTRACTORS FOR THE CONSTRUCTION PROJECTS

The procurement process will be as follows:

1 Preferential Procurement Procedures

Tenders will be evaluated in terms of the latest Ndlambe Municipality's Supply Chain Management.

2 Preferred subcontractors/suppliers

Subcontractors and suppliers shall be Black Enterprises. A black enterprise (BE) is defined as a company or economic activity that is owned by black persons and where there is substantial management control by Black People. Ownership refers to economic interest, whilst management refers to the membership of any board or similar governing body of the enterprise. The Broad-Based Black Economic Empowerment Act No. 53 of 2003, principles shall apply to BE's.

Enterprises shall comply with the following:

- *Business shall be registered within the Ndlambe Municipality boundaries,*
- *Owners shall reside within the **Ndlambe Local Municipality***

CONTRACT SPECIFIC DATA

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

Clause 1.1: Definitions

Add to Clause 1.1 - Definitions, Interpretations and General Provisions – the following:

"The terms Client, Principal Contractor and Designer, as used in the Occupational Health and Safety Act - Construction Regulations are synonymous with the terms Employer, Contractor and Engineer as defined in this Clause 1.1 of the GCC."

Clause 1.1.1.13:

The Defects Liability Period is 12 months.

Clause 1.1.1.14:

The time for achieving Practical Completion is SIX (6) months, including all special non-working days and the year-end breaks as determined by SAFCEC.

Clause 1.1.1.15:

The name of the Employer is the NDLAMBE MUNICIPALITY, represented by the Municipal Manager and/or such other person or persons duly authorized thereto by the Employer in writing.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Clause 1.1.1.26:

The Pricing Strategy is a Re-measurement Contract

Clause 1.2.1.2:

The Employer's address for receipt of communications and notices is:

Physical address : **NDLAMBE MUNICIPALITY
Civic Centre,
Causeway,
PORT ALFRED
6170**

Postal address : **NDLAMBE MUNICIPALITY
PO Box 13
PORT ALFRED
6170**

Tel No. : **(046) 604 5500**

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Clause 2.4.1:

Add the following:

"In the event of any ambiguity, conflict or discrepancy between the various Contract documents, lists and schedules, the order of precedence (from highest to lowest) shall be as follows:

1. The Forms of Offer and Acceptance
2. Contract Forms
3. The Contract Data
4. General Conditions of Contract (GCC 2015)
5. Scope of the Work
6. SANS/ SABS 1200 SERIES
7. Site Information
8. Construction Drawings
9. Bill of Quantities
10. The Returnable Schedules

Clause 3.1.3:

The Engineer shall obtain specific approval from the Employer before executing any of his functions or duties according to the following Clauses of the General Condition of Contract:

- The issuing of instructions for dealing with fossils and the like in terms of Clause 4.7
- Authorising the Contractor to repair and make good excepted risks in terms of Clause 7.5.5
- The issuing of variation orders in terms of Clause 6.3.2
- The issuing of an instruction to accelerate progress in terms of Clause 5.12.4
- The reduction of a penalty for delay in terms of Clause 5.13.2
- The determination of additional or reduced costs arising from changes in legislation in terms of Clause 6.8.4
- The giving of a ruling on a Contractor's claim in terms of Clause 10.1.5
- The agreeing of the adjustment of the sums for general items in terms of Clause 6.11

Clause 3.1.4:

Delete the last sentence of the Clause.

Clause 3.2.4:

Add the following:

"The time limit for referring the matter to the Engineer by the Contractor shall be twenty one (21) days after the decision in question was given by the Engineer's Representative".

Clause 4.3.3:

Add the following new subclause:

"The Employer and the Contractor hereby agree, in terms of the provisions of section 37 (2) of the Occupational Health & Safety Act, 1993 (Act 85 of 1993, hereinafter referred to as 'the Act') that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

- (a) The Contractor undertakes that the appropriate officials and employees of the Contractor will fully acquaint themselves with all relevant provisions of the Act and the Regulations promulgated in terms of the Act;
- (b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with;
- (c) The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations, and expressly absolves the Employer from itself being obliged to comply with any of the aforesaid duties, obligations, and prohibitions; with the exception of such duties, obligations and prohibitions expressly assigned to the Employer in terms of the Act and its associated Regulations.
- (d) The Contractor agrees that any duly authorised official of the Employer shall be entitled to take such steps as may be necessary to ensure that the Contractor has complied with his undertakings as set out more fully in paragraphs (a) and (b) above, which steps may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or to inspect any appropriate records or Safety Plans held by the Contractor;
- (e) The Contractor shall be obliged to report forthwith to the Employer any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and regulations, pursuant to work performed in terms of this Contract, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.
- (f) The Contractor shall furthermore, in compliance with the Construction Regulations of 2003 (Notice No. R1014, dated 18 July 2003) to the Act:
 - (i) Acquaint himself with the requirements of the Employer's health and safety Specification as laid down in regulation 4(1)(a) of the Construction Regulation of 2003 and prepare a suitably and sufficiently documented health and safety plan as contemplated in regulation 5(1) of the Construction Regulation of 2003 for approval by the Employer or his assigned agent. The Contractor's health and safety plan and risk assessment shall be submitted to the employer for approval within 14 days from the date of the Letter of Acceptance and shall be implemented and maintained from the Commencement of the Works.
 - (ii) The Employer, or his assigned agent, reserves the right to conduct periodic audits, as contemplated in the Construction Regulations 2003, to monitor that the Contractor is compliant in respect of his obligations. Failure by the Contractor to comply with requirements of these Regulations shall entitle the Engineer, at the request of the Employer or his Agent, to suspend all or any part of the Works, with no recourse whatsoever by the Contractor for any damages incurred as a result of such suspension, such time as the Employer or his Agents are satisfied that the issues in which the Contractor has been in default have been rectified."

Clause 4.4.3:

Add the following:

- 1 All specialists' merchants, tradesmen and others executing any work or supplying any goods for which provisional or prime cost sums are provided in the Schedule of Quantities and who are selected for this purpose by the Contractor and the Employer as specified hereafter, shall in the execution of such work be Sub Contractors of the Contractor and are herein referred to as "Selected Sub Contractors".

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

- 2 The Contractual relationship between the Contractor and the selected sub Contractor shall be the same as those which normally apply between Contractors and ordinary Sub Contractors as specified inter alia in clause 3 hereafter.
- 3 Unless another procedure is specified in the Special Conditions of Contract, the procurement of Selected Sub Contractors by the Contractor is to be carried out using the legislated Standard Conditions of Tender (as published and amended from time to time by the Construction Industry Development Board).

It is intended that the Sub Contract Agreement and Provisions of Sub Contract Third Edition (2003) Incorporating General Conditions of Sub Contract 2003 for use in accordance with Sub Contractors Works of Civil Engineering Construction as provided by the South African Federation of Civil Engineering Contractors be used as the basis of the Sub Contract between the Contractor and each selected Sub Contractor

The Contractor shall incorporate in the Sub Contract provisions that:

- (a) In respect of the work of the goods that are subject of the Sub Contract the Selected Sub Contractor undertakes to the Contractor *mutatis mutandis* the obligations and liabilities as are imposed upon the Contractor to the Employer in terms of the Contract, and hold the Contractor harmless from and indemnifies him against the same and in respect of all claims, demands, lawsuits, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out or in connection with any failure to perform such obligations or to fulfil such liabilities, and
- (b) the Selected Sub Contractors hold the Contractor harmless from and indemnifies him against:
 - (i) shortcomings in the Sub Contract works if and where the works were designed by the Selected Sub Contractor;
 - (ii) defects in the goods if and where the goods were manufactured and/or supplied by the Selected Sub Contractor;
 - (iii) any negligence by the Selected Sub Contractor; his agents, workmen and servants;
 - (iv) any misuse by the Selected Sub Contractor of any Construction Plant, Temporary Works or materials provided by the Contractor for the purposes of the Contract; and
 - (v) any claims as aforesaid
- (c) entitles him to pay direct to local and other labourers all payments the selected Sub Contractor has failed to make to any local and other labourers and to deduct, by way

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

of settlement, the amounts paid by the Contractor from money owing to or that may become owing to selected Sub Contractor.

Clause 4.11.1:

Add the following:

"The employer reserves to himself the right, in his sole discretion, to reject any Tender where it appears to the employer that the Tenderer does not comply with any of the requirements.

Clause 5.3.1:

The documentation required before commencement with Works execution are:

Health and Safety Plan (Refer Clause 4.3)

Initial programme (Refer Clause 5.6)

Security (Refer Clause 6.2)

Insurance (Refer Clause 8.6)

Clause 5.3.2:

The time to submit the documentation required before commencement with Works execution is within 14 days of receipt of the signed Form of Offer and Acceptance.

Clause 5.4.4:

Add the following new clause:

"The Contractor shall bear all costs and charges for special and temporary rights of way required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works."

Clause 5.8.1:

The non-working days are Sundays.

The special non-working days are:

All gazetted public holidays and the Contractor's year-end break as specified by SAFCEC.

Clause 5.13.1:

The penalty for failing to complete the Works is R 1 000.00 excluding VAT per calendar day or part thereof.

Clause 6.2.1:

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Add the following:

"The Contractor shall deliver the Form of Guarantee selected in the Contract Data to the Employer within 14 days of receipt of the signed Form of Offer and Acceptance. Any expenditure incurred in doing so shall be borne by the Contractor."

The security to be provided by the Contractor shall be a Performance guarantee of 5% of the Contract Sum.

Clause 6.8.2:

Contract Price Adjustment is not applicable to this Contract:

Clause 6.10.1.5:

The percentage advance on materials not yet built into the Permanent Works is 80%.

Clause 6.10.2:

Add the following:

"Payment to the Contractor for any materials on site shall only be authorized after proof of ownership by the Contractor has been lodged with the Engineer in the form of receipted invoices or other acceptable documents, or if ownership is ceded to the Employer."

Clause 6.10.3:

The percentage retention on the payment certificates due to the Contractor is 5%.

The limit of retention money is 5% of Contract sum

Clause 8.2.1:

Add the following:

"The Contractor shall protect the Works properly and shall so arrange his operations that the minimum danger and inconvenience are caused to the public and to vehicle and pedestrian traffic. For this purpose, he shall, inter alia, provide and maintain sufficient road traffic signs, lights, barricades, fencing and guarding as may be necessary or required by the Engineer or by any act, regulation or statutory authorities.

All operations required in connection with the execution and completion of the Works shall, as far as the provisions of the Contract permit, not unnecessarily or in any improper manner encroach upon the use of public roads or upon access to private property, and the Contractor hereby indemnifies the Employer against any claims, demand, damage and costs that may arise in this regard.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Compensation for such obligations shall be included in the Contractor's prices for provisional and general costs, except in as far as provision is made in the specifications for payment in respect of specific items pertaining to these obligations."

Clause 8.6.1.1.2:

The value of Plant and materials supplied by the Employer to be included in the insurance sum is zero (R0.00) rand.

Clause 8.6.1.6:

Add the following as 8.6.1.6: Insurances to be effected

"Where the Contract involves manufacturing and/or fabrication of the Works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the Works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such Works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's policies of insurance."

Clause 10:

Add the following:

"Dispute resolution shall initially be by means of ad-hoc adjudication as per Clause 10.5.2. Should adjudication not be successful, then the dispute shall be referred to Arbitration under the provisions of Clause 10.7.1."

Clause 10.5.3:

The number of Adjudication Board Members to be appointed is three (3).

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

2. PART 2: CONTRACT DATA PROVIDED BY THE CONTRACTOR

Clause 1.1.1.9:

The name of the Contractor is:
[The Legal name of the Contractor].

Clause 1.2.1.2:

The address of the Contractor is

Physical Address:
.....
.....

Postal Address:
.....
.....

Telephone No:

Fax No:

E-mail:

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

**C1.4 AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY
ACT, 1993 (ACT NO 85 OF 1993)**

AGREEMENT MADE AND ENTERED INTO BETWEEN THE

.....
(Hereinafter called the “**EMPLOYER**”)

and

.....
(Contractor / Mandatary / Company / CC Name)

**IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT NO.
85 OF 1993 AS AMENDED**

I,,

representing,
as an Employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable,
that all work will be performed, and all equipment, machinery or plant used in such a manner as to
comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations
promulgated there under.

I furthermore confirm that I am / we are registered with the Compensation Commissioner and that all
registration and assessment monies due to the Compensation Commissioner have been fully paid or
that I / we are insured with an approved licensed compensation insurer.

COID ACT Registration Number:

Or Compensation Insurer:

Policy No.:

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the
requirements of OHSA and the Regulations and to charge him / them with the duty of ensuring that the
provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way
Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any Subcontractors employed by me will enter into an Occupational
Health and Safety Agreement separately, and that such Subcontractors comply with the conditions
set.

I hereby declare that I have read and understand the appended Occupational Health and Safety
Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Signed at.....this..... day of 20.....

.....
WITNESS

MANDATARY

Signed at.....this..... day of 20

.....
WITNESS

FOR AND ON BEHALF OF THE EMPLOYER

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.
2. All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations 2003.
3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.
4. The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that he, his employees, and any subcontractors, comply with them.
5. Discipline in the interests of occupational health and safety shall be strictly enforced.
6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.
7. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.
8. No substandard equipment/machinery/articles or substances shall be used on the site.
9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.
10. The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or his employees and/or his Subcontractor/s.
11. No use shall be made of any of the Employer's machinery / plant / equipment / substance / personal protective equipment or any other article without prior arrangement and written approval.
12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to, or allowed to remain on the site.
13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

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

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

An example is given below:

"By resolution of the Board of Directors passed at a meeting held on 20.....,

Mr/Ms whose signature
appears below, has been duly authorised to sign the AGREEMENT in terms of THE OCCUPATIONAL

HEALTH AND SAFETY ACT, 1993 (ACT 85 of 1993) on behalf of

SIGNED ON BEHALF OF THE COMPANY :

IN HIS/HER CAPACITY AS :

DATE :

SIGNATURE OF SIGNATORY :

WITNESS: 1. 2.

NAME (IN CAPITALS): 1. 2.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

PART C2: PRICING DATA

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

Part C2: Pricing Data

C2.1 Pricing Instructions

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

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

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

Clause 8 of each Standardized Specification, and the measurement and payment clause of each Particular Specification, read together with the relevant clauses of the Project Specifications, all set out which ancillary or associated activities are included in the rates for the specified operations.

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

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

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

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

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

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

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

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

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

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- 8 For the purposes of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

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

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

%	=	percent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kPa	=	kilopascal
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimeter
m ²	=	square metre
m ² -pass	=	square metre-pass
m ³	=	cubic metre
m ³ -km	=	cubic metre-kilometre
MN	=	meganewton
MN.m	=	meganewton-metre
MPa	=	megapascal
No.	=	number
Prov sum	=	Provisional sum
PC sum	=	Prime Cost sum
R/only	=	Rate only
Sum	=	lump sum
t	=	ton (1000 kg)
W/day	=	Work day

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

C2.2 Bill of Quantities

CONTRACTOR:					
CONTRACT NO: 127/2020(WSIG2020-003)					
PROJECT NAME: UPGRADE OF SEWER PIPELINE IN CARNATION STREET (STATION HILL)					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	UPGRADE OF SEWER PIPELINE IN CARNATION STREET (STATION HILL)				
1	PROVISION AND GENERAL				
	1.1 Site Establishment	Sum	1		
	1.2 Security	Sum	1		
	1.3 Community Liason Officer	Sum	1		
2	HEALTH AND SAFETY COMPLIANCE				
2.1	Pe rsonal Protective Equipment	Sum	1		
2.2	Health and Safety File	Sum	1		
2.3	Medical Surveillance	Sum	1		
2.4	Safety Rep.	months	2		
3	CLEARING AND GRUBBING				
3.1	Clear vegetation and trees of girth up to 1 m	No	24		
3.2	Clear 2m wide strip form vegetation	m ²	720		
4	EXCAVATIONS				
	Excavate in all materials for trenches backfill, compact, and dispose of surplus/unsuitable material, shoring and dewatering for pipes up to & including 160mm dia. for total trench depth:				
4.1	Average Depth of 4m	m3	2 160		
3.	BEDDING				
	Commercial Sources				
3.1	Selected bedding material from the cormercial source.	m ³	260		

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

5.	PIPEWORK				
	Supply, lay, joint ,backfill and test the following sewer pipes with flexible joints, incl. couplings & all specials:				
5.1	110mm diam., Class 34 solid wall	m	20		
5.2	160mm diam., Class 34 solid wall	m	400		
	Extra-over item 6.1.1 abd 6.1.2 for supply, lay, joint, bed Class B bedding and test the following specials:				
5.3	160mm x 110mm uPVC Y-Junctions	No.	8		
5.4	160mm end caps	No.	5		
6.	MANHOLES				
6.1	Over 2.5m up to 3.0m	No.	1		
6.2	Over 3.0m up to 3.5m	No.	1		
6.3	Over 3.5m up to 4.0m	No.	1		
6.4	Over 4.0m up to 4.5m	No.	1		
6.5	Over 4.5m up to 5.0m	No.	1		
6.6	Casting and building of manhole bases	No.	5		
6.7	Break into and connect to existing manhole including flexible joints as per Standard Details (See annexure E, Section C3.7) and make good all benching	No.	3		
7.	ERF CONNECTIONS				
	Supply and install erf connections to Standard Details as per complete, including extra excavation, formwork, joints, fittings, etc., for:				
7.1	Type 1	No.	1		
7.2	Type 2	No.	1		
7.3	Type 3	No.	1		
7.4	Type 4	No.	1		
7.5	Type 5	No.	1		
8	Name Boad	No.	1		
SUB – TOTAL				R	-
VAT @ 15%				R	-
TOTAL (Vat Inclusive)				R	-

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

PART C3: SPECIFICATIONS

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C3.1: Employer's Requirements

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

1. DESCRIPTION OF THE WORKS

1.1. Employer's Objectives

The Employer's objectives are to ensure the upgrade of carnation sewer pipe line (Station hill) to avoid blockages in the area. It is crucial that the works in this contract are to be executed within the applicable timeframes.

Furthermore, it is vital that during construction, local residents are identified and form part of construction.

The work as described in this section must be executed in accordance with the general and particular specifications, which forms part of the agreement.

1.2. Overview of the Works

The Employer's requirements pertaining to the Works are as follows:

- Installation of 400m of 160mmø uPVC sewer reticulation pipework;
- Construction of 4 precast concrete manholes;
- Occupational Health and Safety.
- Maximise employment of local labour

1.3. Requirements

Site preparation

The site needs to be cleaned before the start of any excavations for the pipeline (Site clearance and grubbing of any material that might be obstructing the works).

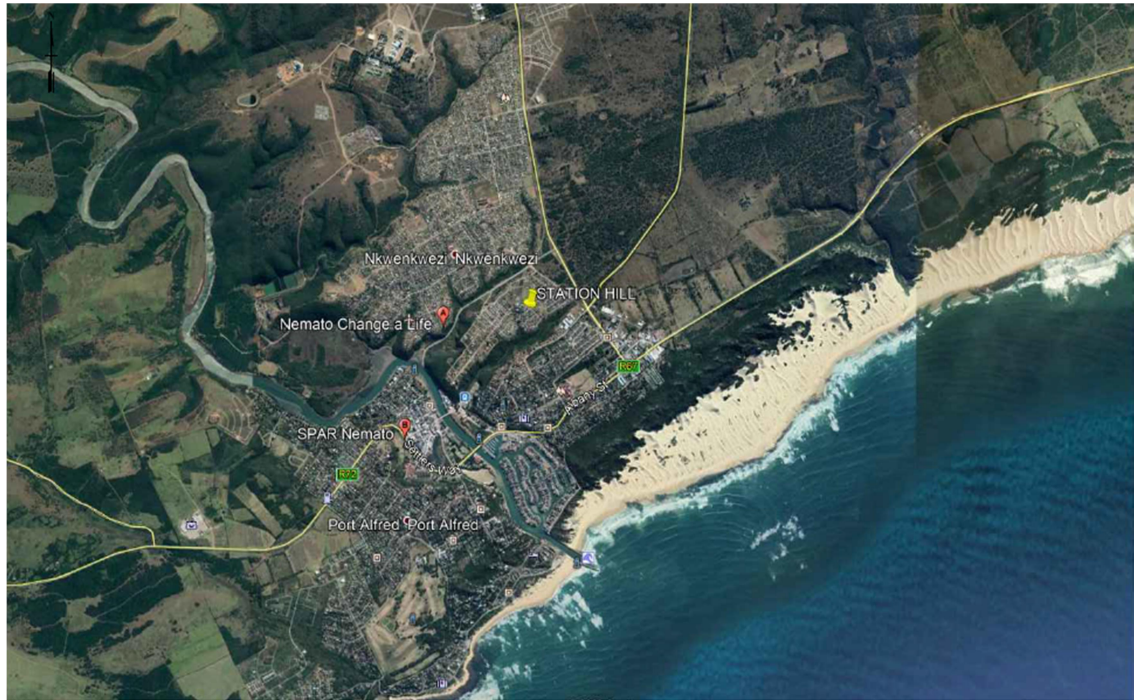
Area where material will be stored must be arranged before the actual works can start to ensure smooth running of the project.

And all information or other requirements of the project must be in place preparing the start of the project.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

1.4 Location of the Works

Port Alfred is part of Ndlambe Local Municipality in the Sarah Baartman District of the Eastern Cape. It is situated 150 km to the east of Port Elizabeth and 150 km west of East London. Refer to Appendix 1: Locality Plan. Station Hill Township is located at latitude 33° 34' 58.07" south and longitude 26° 53' 36.95" East.



1.5 Temporary Works

The Contractor is responsible for the upgrade of carnation sewer pipeline and temporary works will be dealing with existing spillage and any water issues that might arise during construction.

No major temporary works is expected for the completion of the works.

1.6 Material Sources and Spoil Areas

Material will be sourced from commercial sources. The Contractor will be expected to comply with material specifications and testing that will be required by the tender such as bedding material and pipe testing.

Spoil areas will be indicated to the Contractor by the municipality.

1.7 Local SMME

The Contractor is responsible for sourcing SMMEs, through the municipal procurement system, and ensuring they are competent to do the required work. The Contractor will be fully responsible for the quality and timeframe of all the Works done by the local SMME Contractors.

A full copy of the agreement between the SMME subcontractor and the Contractor must be submitted to the Employer. Proof of the monthly transaction between the Contractor and the SMME subcontractor must be submitted to the Employer.

1.8 Mentoring and Supervision of Local SMMEs

No SMMEs are expected to supervised in this contract as the project value is low and it can be also be implemented by SMME"s without the main contractor.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

1.9 Local Labour

All local labour used on this project must be appointed through the municipal labour procurement system. Labour must be paid in accordance with the wages as specified by the Employer.

Labour reports must be submitted monthly indicating all local labour used on the project, including for subcontractors, in the EPWP format.

1.10 Local Expenditure

The Contractor must be submitted monthly reports indicating all local expenditure pertaining to this project, including for accommodation, fuel, groceries, purchases and hardware stores, etc.

2 CHARACTER OF STRATA AND MATERIALS ON SITE

The Contractor will be held to have satisfied himself as to the subsurface conditions to be encountered and to have allowed accordingly in his tendered rates.

Take note of the following:

- The contractor might hit hard rock as the excavations are too deep in some other sections of the trench excavations.
- Due to deep excavation collapsed material can be experienced.

3 ENGINEERING

3.1 Design Services and Activity Matrix

Design Item / Level of Design	Party Responsible for Design/Supply of drawings
Site location	Employer
Detailed design and drawings of permanent works	Employer
All temporary works	Contractor
Detailed design	Employer
Record Drawings	Contractor

3.2 Drawings

3.2.1 General

The tender drawings that form part of the tender documents shall be used for tender purposes only. These drawings are bound at the back of this tender document. The drawings form an integral part of the tender and have to be included in the tender to be submitted.

3.2.2 Drawing to be provided by the Contractor

All drawings that are to be provided by the Contractor will be provided on paper and in electronic format in both PDF and DXF/DWG format. Drawings are to be metric.

As the work progresses, the Contractor shall keep full records of all amendments to and deviations from the drawings as issued to the contractor at the start of the contract. The true positions (coordinated), invert levels, ground levels, capacities, duty points, etc. of all services shall be indicated on the drawings.

The completion certificate shall only be issued after the Contractor has properly completed the project. No separate payment shall be made for this service as all costs related thereto shall be deemed to be included in the related items.

Any information in the possession of the Contractor, which is requested for the Employer for record purposes, must be submitted to the Employer before a certificate of completion will be issued.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

3.2.3 Drawing to be provided by the Employer

Construction drawings will be issued by the Employer.

4 CONSTRUCTION

4.1 Applicable Standardised Specifications

The South African Bureau of Standards, Standardized Specifications for Civil Engineering Construction, SABS/SANS 1200 series is applicable to this contract.

Project specific variations to these standardized specifications are included as Scope of Work. In the event of any discrepancy with a part or parts of the standard specifications, the bill of quantities or the drawings, the project specifications described in Scope of Work shall take precedence.

4.2 Material Compliance with SABS/SANS Requirements

Where materials to be used in the works are required to comply with a SABS/SANS specification, they will be accepted as complying with the SABS/SANS specification if one of the following is satisfied.

- The display of a SABS/SANS mark on the product with a copy of the SABS/SANS certificate that allows the manufacturer to use the mark, or
- All the criteria in the relevant SABS/SANS specification is measured and confirmed on site or in an approved laboratory.

The same will apply to materials specified to comply with ISO, BS, ASTM or other international specifications.

4.3 Existing Service

The Contractor shall so carry out all his operations as not to encroach on, or interfere with, trespass on, or damage adjoining lands, buildings, properties, road structures, pipelines, places and things, in the vicinity of the Works and so not to interfere in any way with the smooth and continuous operation of the existing facilities.

The Contractor's attention is drawn to the fact that information regarding any existing services given on the plans or in the documents is given in good faith and without guarantee. The Contractor is deemed to have made provision in his pricing for the location of existing services.

4.4 Site Establishment

Services Provided by the Employer

The Employer will not provide any services to the site during construction.

Facilities Provided by the Contractor

The Contractor shall make his own arrangements regarding the establishment of a campsite and housing for his construction personnel. The location and standard of the Contractor's camp, offices, accommodation, ablution and other facilities shall comply with the requirements of the authorities and local communities concerned. No residential accommodation on site will be allowed. Details of the Contractor's proposals for these facilities shall be submitted to the Employer's Agent for approval prior to their erection. All regulations stipulated by the local authorities concerned must be adhered to.

4.5 Permits and Wayleaves

The Contractor shall be responsible to obtain all the wayleaves required for this contract.

4.6 Water for the Works

The Contractor will be charged for the water used. Where the municipal system cannot provide sufficient water, Contractor will make his own arrangements with regard to obtaining water for construction.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Under no circumstance may water be abstracted from the existing reservoirs or pipeline on site without prior approval from the Employer's Agent.

4.7 Survey control and settings

A system of benchmarks has to be established on site. The coordinates and locations are to be indicated on the drawings. The WGS84 LO27 coordinate system is to be used.

5 PROGRAMME

5.1 General programme

The duration of the Contract is as indicated in the Contract Data. The Contractor is to ensure that he prices accordingly in the Bill of Quantities.

5.2 Submitted programme

The Contractor's programme shall be in a bar chart form. The contractor is to ensure all the contractually required items are included in the programme.

All programmes shall be submitted in both PDF and MS Projects format.

If any change to the critical path occurs, the Contractor shall as soon as practicable notify the Employer in writing.

The Contractor's programme and method statement will not be accepted as the basis for claims for additional compensation without due reference to all relevant associated factors.

5.3 General allowances

When drawing up his programme, the Contractor shall, take into consideration and make allowance for, inter alia:

- a) Expected weather conditions and their effects,
- b) Known physical conditions or artificial obstructions,
- c) Searching for, dealing with and carrying out alterations to any existing services,
- d) The accommodation and safeguarding of access and traffic,
- e) The provision and implementation of the health and safety plan in terms of the Construction Regulations, 2014 of the Occupational Health and Safety Act.
- f) The restrictions on the length of trench open at any one time,
- g) The testing and approval of the concrete mixes, and
- h) Allowance for response time as per the Contract.

5.4 Review of progress

The Contractor shall review his progress every month and should progress lag behind the latest accepted programme, by more than one week, 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, such revised programme will not make up the lost time, the Employer 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.

6 DETAILS OF PLANT AND SUPERVISORY STAFF

Within two weeks of receipt of notification of the acceptance of his offer, the Contractor shall provide the Employer with:

- a) A list of plant to be used on the Contract together with the year of manufacture, power output, and registration number of such plant, and
- b) A list detailing the supervision to be used by the Contractor. The list shall provide the title of the supervisors (e.g. foreman, assistant foreman, etc.) and the number of person on Site with these titles.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

7 THE WORKING DAY

For the purpose of this contract, a “working day” is defined as being 9 hours in length (excluding any breaks for meals or machine servicing) on Monday to Friday, excluding public holidays. Work shall take place during daylight hours only.

8 SITE FACILITIES AVAILABLE

8.1 Water and power supply and other services

The Contractor shall make his own arrangements for obtaining water, power and other services. The Employer will indicate a position at the wastewater treatment works where the Contractor may install a metered water and electricity connection. The Contractor will be responsible for this cost and any charges related to the usage of the service. The Contractor must also be able to provide water required for testing the pipelines at his own cost.

8.2 Camps and depot

The Contractor may erect his site storage depot within the boundaries of the site.

No housing is available, and the Contractor shall make his own arrangements to house his employees and transport them to and from the Site. All arrangements for housing workmen shall be made in accordance with and subject to applicable regulations and requirements.

The Contractor will be permitted to locate structures which he may require anywhere on site provided permission is obtained from the Employer. Temporary buildings and fencing are to be neat and presentable and the surrounding areas must at all times be kept in a neat, clean and orderly condition.

The Contractor must not cut down or damage any trees nor make any excavations without the written permission of the Employer and will be required to restore the site to its original condition on completion of the Works.

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

8.3 Disposal sites

The Employer will indicate to the Contractor suitable sites, off site, for the disposal of cleared vegetation, rubble, unsuitable material or surplus material.

9 SITE FACILITIES REQUIRED

9.1 Employer’s Agent’s Office

The Employer will visit the site when required; hence no office will be required.

9.2 Laboratory Facilities

It is recommended that the Contractor establishes ways to ensure testing is done as per the contract requirements.

9.3 Sanitary Facilities

All latrines shall conform to the requirement of the Local Authority. All sanitary fees and charges due under the Local Authority or State Health Regulations for bylaws shall be paid by the Contractor. Throughout the progress of the Contract, all latrines shall be maintained by the Contractor in a clean sanitary condition to the satisfaction of the Employer. Sanitary facilities shall be placed at least 100m away from natural water courses or as approved by the Employer.

The Contractor shall be responsible for disposal of refuse and waste generated by his staff on a daily basis at a site approved by the local authority and the Employer’s Agent. The site is to be kept clean, neat and tidy, to the Employer satisfaction.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

9.4 Nameboard

The Contractor will be required to erect one nameboard as per the specifications and details on the drawing attached to this document. The Contractor will be allowed to remove the nameboard after a final completion certificate has been submitted by the Employer.

The placement of the nameboard shall be as specified by the Employer on site. The nameboard must be erected within 2 weeks of site establishment.

10 ADDITIONAL REQUIREMENTS AND CONSTRAINTS

10.1 Health and Safety Requirements

As per Clause 5(1) (a) of the Construction Regulations (2014) a Health and Safety Specification is included in this contract as Particular Specification PA. The Contractor will take the requirements of this specification into account during the tendering and execution of the works.

Furthermore, any reference to the "Machinery and Occupational Safety Act" in any specification shall be replaced with reference to the "Occupational Health and Safety Act, 1993" and Covid 19 OHS requirements.

10.2 Environmental Management Requirements

The Contractor will be responsible for implementing and managing an Environmental Management Plan. Refer to the Particular Specification, which defines the roles and responsibilities of various members of the Contractor's staff in terms on the Environmental Management Plan.

10.3 Traffic Accommodation

Interruptions to traffic on public roads will be kept to a minimum and where interruptions are unavoidable they will be done with the full complement of warning signs as required by the Road Traffic Sign Manual.

12 FEATURES REQUIRING SPECIAL ATTENTION

12.1 Blasting

In the event that blasting is necessary in the construction of the Works, the Contractor shall satisfy the Employer that his proposed blasting methods and controls are such that no damage will be caused to any adjoining structures, pipelines or services.

12.2 Length of Open Trenches

The Contractor must ensure that all open excavations are adequately protected to prevent persons and/or animals falling into holes and/or trenches.

Except with written permission of the Employer, the length of open trench along any section of pipeline, in advance of pipe laying operations, shall at no time exceed **100m**.

Special precautions and provisions must be made to maintain accesses to any public meeting place, private residences, schools or marketplace.

12.3 Liaison with Community and Property Owners

The Contractor shall in his dealings with the communities affected by the project, work with the municipality's ISD manager. The process of appointing the **Community Liaison Officer (CLO)** is also facilitated by the municipality's ISD manager. The CLO acts as a link between the Contractor and the labourers, and attends to all labour related issues. The Contractor must include in his rates the costs of attending an average of one meeting every two weeks. The CLO will be appointed for the period of physical construction, plus a period of 14 days prior to this period. The Contractor will provide office and stationery to the CLO to be able to perform his or her duties.

The ISD manager shall prepare and facilitate the signing of the Contract between the

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

CLO and the Contractor. Remuneration of the CLO shall be **R8000** per month for the period of employment and will change in accordance with change in rates from the Department of Labour.

A CLO who fails in the responsibilities he/she is given will be replaced following the procedures as stipulated in his/her Contract with the Contractor.

The Terms of reference for the CLO shall be provided by the ISD manager.

12.4 Assistance with Training

The Contractor is expected to provide the skills training of the local labour as required to ensure the Works are constructed to the required quality and specifications. The Contractor is at liberty to determine the extent of the training required and the most appropriate training methods.

Should it be found that an individual or a group, assigned for specific tasks that will require training, does not have sufficient aptitude for the requirements of the work, the Contractor must advise the Labour Officer that in his opinion training of the individual or group for the specific task will not be cost effective. The Labour Officer should attempt to recruit labour with the aptitude for the Work.

The Cost of construction skills training must be included in the tendered rates for the work and no separate payments will be made in this regard.

13 EXTENSION OF TIME RESULTING FROM ABNORMAL RAINFALL

$$V = (Nw - Nn) + \frac{(Rw - Rn)}{X}$$

Where:

- V = Extension of time in calendar days in respect of the calendar month under consideration.
- Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded.
- Nn = Average number of days in the relevant calendar month, as derived from existing rainfall records, to be obtained from the Contractor from the South African Weather Services, on which a rainfall of 10 mm or more has been recorded for the calendar month.
- Rw = Actual rainfall in mm recorded for the calendar month under consideration.
- Rn = Average rainfall in mm for the calendar month as derived from existing rainfall records as obtained by the Contractor from the South African Weather Services.
- Extension of time in respect of delays resulting from wet climatic conditions on the Site will only be considered in respect of abnormally wet climatic conditions and shall be determined for each calendar month or part thereof.
 - The Contractor shall, at his own cost, provide and erect on the Site at a location approved by the Employer's Agent, an approved rain gauge, which shall be fenced off in a manner which will prevent any undue interference by workmen and others. The Contractor shall, at his own cost, arrange for the reading of the rain gauge on a daily basis for the duration of the Contract. The gauge readings, as well as the date and time at which the reading was taken shall be recorded in a separate record book provided by the Contractor for this purpose. All entries in the rainfall record books shall be signed by the person taking the reading and the gauge shall be properly emptied immediately after each reading has been taken. The Employer's Agent shall be entitled to witness the reading of the gauge.
 - The extent of any extension of time which may be granted to the Contractor in respect of wet climatic conditions (whether normal or abnormal) shall be determined as the

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

algebraic sum of the "V" values for each month between the Commencement Date and the Due Completion Date of the Contract, provided always that

- (i) rainfall occurring within the period of the Builder's Break (referred to in the Conditions of Contract) shall not be taken into account in the calculation of the monthly "V" values;
 - (ii) rainfall occurring during any period during which the Contractor was delayed due to reasons other than wet climatic conditions on the Site, and for which delay an extension of time is granted by the Employer's Agent, shall not be taken into account in the calculation of the monthly "V" values;
 - (iii) if the algebraic sum of the "V" values for each month is negative, the time for completion will not be reduced on account of subnormal rainfall, and
 - (iv) where rainfall is recorded only for part of a month, the "V" value shall be calculated for that part of the month using pro rata values for Nn and Rn.
- d) The Employer's Agent shall, simultaneous with granting any extension of time in terms of this clause, revise the Due Completion Date of the Contract to reflect an extension of time having been granted in respect of wet climatic conditions, to the extent of the algebraic sum of all the "V" values for all the preceding months of the Contract, less the aggregate of the "Nn" values for the remaining (unexpired) months of the Contract (viz less aggregate of the potential maximum negative "V" values for the remaining Contract Period). This, provided that where such period is negative, the Due Completion Date shall not be revised.
- e) Any extension of time in respect of wet climatic conditions granted in terms of this clause shall not be deemed to take into account delays experienced by the Contractor in repairing or reinstating as regards damage to or physical loss of the Works arising from the occurrence of abnormal climatic conditions. Extension of time in respect of any such repairs or reinstatement as regards damage shall be the subject of a separate application for extension of time in accordance with the provisions of the Contract.

Employer's Requirements

This Appendix forms part of the Agreement.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

C3.2: Particular Specifications – Construction Works

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

NOTE

In certain clauses, the general specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in Particular Specifications – Construction Works. It also contains some additional specifications required for this particular contract.

The number of each clause in this part of the project specifications consists of the prefix PS followed by a letter corresponding to the part of SABS/SANS 1200 being changed and a number corresponding to the number of the relevant clause in the general specifications.

The number of a new clause which does not form part of a clause in the standard specifications and which is included herein, is also prefixed by PS followed by a letter corresponding to the part of SABS/SANS 1200 being added, followed by a new number. The new numbers follow on the last clause number used in the relevant section of the standard specifications.

PSA

GENERAL

PSA 1

SCOPE

REPLACE THE CONTENTS OF SUBCLAUSE 1.1, INCLUDING THE NOTES, WITH THE FOLLOWING:

"1.1 This specification covers requirements, principles and responsibilities of a general nature which are generally applicable to civil Engineering construction and building works contracts, as well as the requirements for the Contractor's establishment on the Site."

PSA 2

INTERPRETATIONS

PSA2.2

Applicable edition of standards

ADD THE FOLLOWING AT THE BEGINNING OF SUBCLAUSE 2.2

"Unless a specific edition is specified (see the List of Applicable Specifications),"

PSA 2.3

Definitions

IN THE OPENING PHRASE BETWEEN THE WORDS "specification" AND "the following", INSERT THE WORDS "the definitions given in the Conditions of Contract and".

(a) General

ADD THE FOLLOWING DEFINITIONS:

" 'General Conditions' and 'Conditions of Contract': The General Conditions of

Contract specified for use with this Contract, together with the Particular Conditions of Contract as applicable.

'Specified': As specified in the Standardized Specifications, the Drawings or the Project Specifications. 'Specifications' shall have the corresponding meaning."

(b) Measurement and payment

REPLACE THE DEFINITIONS FOR "Fixed charge", "Time-related charge" AND "Value-related charge" WITH THE FOLLOWING:

" 'Fixed charge': A charge that is not subject to adjustment on account of variations in the value of the Contract Price or the time allowed in the Contract for the completion of the work.

'Time-related charge': A charge, the amount of which varies in accordance with the Time for Completion of the Works, adjusted in accordance with the provisions of the Contract.

'Value-related charge': A charge, the amount of which varies pro rata with the final value

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

of the measured work executed and valued in accordance with the provisions of the Contract."

PSA 2.4

Abbreviations

(a) Abbreviations relating to standard documents

ADD THE FOLLOWING ABBREVIATION:

"CKS: SABS Co-ordinating Specification."

ADD THE FOLLOWING TO SUBCLAUSE 2.4(b):

"MAMDD: Modified AASHTO maximum dry density".

Except for references to "the (official) SABS mark", the term "SABS" shall mean "SANS".

PSA 2.8.1

Items in bill of quantity

In the fourth line of Subclause 2.8.1, after the word "specification", add: "or in the measurement and payment clause of the standard specification, particular specification or Specification Data".

PSA 3

MATERIALS

PSA 3.1

Quality

ADD THE FOLLOWING AT THE END OF SUBCLAUSE 3.1:

"All manufactured materials supplied shall be new materials unless the contrary is specified. All materials specified to be in accordance with SABS Specifications shall bear the SABS mark, where such a mark is available for the type of product.

Where proprietary 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, it is to be understood that the approval shall be at the sole discretion of the Employer's Agent."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 3:

"PSA 3.3

Ordering of materials

The quantities set out in the Bill of Quantities have been carefully determined from calculations based on data available at the time of its compilation, but are to be considered as approximate quantities only. Before ordering materials of any kind the Contractor shall be solely responsible for determining, from the drawings issued or approved by the Employer's Agent for construction purposes, the actual quantities of materials required for the execution of the Works. No liability or responsibility whatsoever shall be attached to the Employer or the Employer's Agent in respect of materials ordered by the Contractor except when ordered in accordance with the drawings issued or approved by the Employer's Agent for construction purposes."

PSA 4

PLANT

PSA 4.1

Silencing of plant

REPLACE THE CONTENTS OF SUBCLAUSE 4.1 WITH THE FOLLOWING:

"The Contractor's attention is drawn to the applicable regulations pertaining to noise and hearing conservation, framed under the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) as amended.

The Contractor shall at all times and at his own cost, be responsible for implementing all necessary steps to ensure full compliance with such regulations, including but not restricted to the provision and use of suitable and effective silencing devices for pneumatic tools and other plant which would otherwise cause a noise level in excess of that specified in the said regulations.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Where appropriate, the Contractor shall further, by means of temporary barriers, effectively isolate the source of such noise in order to comply with the said regulations."

PSA 4.2

Contractor's offices, stores and services

ADD THE FOLLOWING PARAGRAPH BEFORE THE EXISTING FIRST PARAGRAPH IN SUBCLAUSE 4.2:

"The Contractor buildings, sheds and other facilities erected or utilised on the Site for the purposes of the Contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor. The facilities shall always be kept in a neat and orderly condition.

No personnel may reside on the Site. Only night-watchmen may be on the Site after hours."

ADD THE FOLLOWING IN THE SECOND PARAGRAPH OF SUBCLAUSE 4.2:

"The Contractor shall provide on the Site and in close proximity to the actual locations where the work is being executed, toilets for workmen as specified, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

The suitable sanitary services shall be of the bucket or chemical type and shall be readily accessible to workers at all areas of the site.

The Contractor shall make all the necessary arrangements with the relevant local authority for the disposal of the contents of the toilets on a regular basis.

The suitable first aid services required in terms of Subclause 4.2 of SANS 1200 A shall include, inter alia, a First Aid cabinet fully equipped and maintained with at least the minimum contents as listed in the Annexure (Regulation 3) to 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.

The Contractor shall provide personal safety equipment and facilities as required by Regulation 2 of the General Safety Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 4:

"PSA 4.3

Restriction on the use of plant

Except for the type of plant, and to the extent permitted in terms of the Specification Data or approved by the Employer's Agent, the Contractor shall use only hand tools and equipment in the construction of the Works, or portion(s) of the Works, that are required in terms of the Specification Data to be constructed using labour intensive methods.

PSA 5

CONSTRUCTION

PSA 5.1

Survey

PSA 5.1.1

Setting out of the Works

ADD THE FOLLOWING PARAGRAPH:

"The installed benchmarks shown on the Drawings shall be used by the Contractor for setting out the works.

Where labour intensive work is specified, the Contractor shall be responsible for the setting out of the task work.

The Contractor shall be required to check and verify, prior to commencement of any construction work, all benchmarks and boundary reference pegs, as shown and detailed on the Drawings. Reference and benchmark pegs disturbed and/or removed during the construction period shall be replaced by a Professional Land Surveyor and the Contractor shall bear the cost of such replacement. Payment to check and verify the reference and

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

benchmark pegs will be made in terms of PSA 8.12"

The Contractor shall be required prior to commencement of any construction work to have all erf boundary pegs, as specified on the drawings, pegged by a registered Land Surveyor. Any erf peg disturbed and/or removed during the construction period shall be replaced by the Land Surveyor and the Contractor shall bear the cost of such replacement. The Land Surveyor shall verify all erf pegs upon completion of the works. The cost of placing the erf pegs if applicable shall be paid for under Section 1200 A: Bill of Quantities."

The Contractor shall be responsible for setting out of the pipeline routes, positions of reservoirs and other structures indicated by the Employer's Agent on the relevant drawings, along the best available alignment and/or at the best position. The Ward Committee shall confirm that the position of any pipeline or structure is acceptable to the local residents and advise the Contractor accordingly before construction work commences.

The Contractor shall advise the Employer's Agent of any conflict between the position of any part of the Works and an existing feature.

PSA 5.1.2

Preservation and replacement of survey beacons and pegs subject to the Land Survey Act

DELETE THE SECOND SENTENCE" Before the commencement....."TO" apparently in their correct positions" *AND REPLACE WITH THE FOLLOWING:*

"Immediately on taking over the site, the Contractor, in consultation and liaison with the Employer's Agent, shall search for all pegs and the Contractor shall compile a list of pegs that are apparently in their correct position."

ADD THE FOLLOWING AFTER THE SECOND SENTENCE OF SUBCLAUSE 5.1.2:

"The Contractor and the Employer's Agent shall record on the said list, their concurrence or disagreement (as the case may be) regarding the completeness and accuracy of the details recorded therein."

REPLACE THE THIRD SENTENCE OF SUBCLAUSE 5.1.2 WITH THE FOLLOWING:

"At completion of the Contract, the Contractor shall expose and mark all pegs that were listed at the commencement of the construction as being in order and the Contractor shall arrange with a registered Land Surveyor the replacement of pegs that have become disturbed or damaged. The Contractor shall, as a precedent to the issue of the Certificate of Completion, provide to the Employer's Agent, a certificate from the Registered Land Surveyor, certifying that all the pegs listed at the commencement of construction in accordance with the provisions of this Clause, have been checked and that those found to have been disturbed, damaged or destroyed have been replaced in their correct positions, all in accordance with the provisions of the said Act.

The costs of replacement and certification as aforesaid shall be entirely for the Contractor's account, provided always that the Contractor shall not be held liable for the cost of replacement of pegs which:

- (a) cannot reasonably be re-established in their original positions by reason of the finished dimensions of the Permanent Works;
- (b) the Contractor can prove beyond reasonable doubt and to the satisfaction of the Employer's Agent, were disturbed, damaged or destroyed by others beyond its control; and
- (c) were in close proximity to the work and which would unavoidably be removed, subject to the Employer's Agent's approval being given to remove such pegs."

PSA 5.1.3

Setting out of testing location

ADD NEW SUBCLAUSE 5.1.3 AS FOLLOWING:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

"PSA 5.1.3 Setting out of testing locations. The Contractor shall have available on site survey equipment suitable to obtain y,x,z accuracy of 200mm to set out and record the location of each density test. GPS systems or traditional systems may be used."

PSA 5.2 Watching, barricading and lighting and traffic crossings

ADD THE FOLLOWING TO SUBCLAUSE 5.2:

"The Contractor shall comply in all aspects with the requirements of the Occupational Health and Safety Act (Act 85 of 1993), refer also PSA 5.10."

PSA 5.3 Protection of existing structures

REPLACE "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)" *WITH* "Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended," *AND INSERT THE FOLLOWING AFTER* "(Act No. 27 of 1956)": "as amended".

PSA 5.4 Protection of overhead and underground services

REPLACE THE HEADING AND THE CONTENTS OF SUBCLAUSE 5.4 WITH THE FOLLOWING:

"PSA 5.4 Location and protection of existing services

PSA 5.4.1 Location of existing services

Before commencing with any work in an area, the Contractor shall ascertain the presence and actual position of all services which can reasonably be expected by an experienced and competent Contractor to be present on, under, over or within the Site.

Without in any way limiting his liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Employer's Agent, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where he intends to work. Neither the Employer nor the Employer's Agent offers any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site.

Thereafter, the Contractor shall, by the use of appropriate methodologies, carefully expose the services at such positions as are agreed to by the Employer's Agent, for the purposes of verifying the exact location and position of the services. Where the exposure of existing services involves excavation to expose underground services, the further requirements of Subclause 4.4 and 5.1.2.2 of SABS 1200 D (as amended) shall apply.

Wherever there is existing water reticulation the Contractor is to verify the position, sizes and type of pipes, or other infrastructure prior to commencing with construction in the area. The Contractor will be held responsible for maintaining access at all times. No trenches will be permitted within 2 m of telephone/electrical poles or stay.

The aforesaid procedure shall also be followed in respect of services not shown on the plans but which may reasonably be anticipated by an experienced Contractor to be present or potentially present on the site.

All services, the positions of which have been determined as aforesaid at the critical points, shall henceforth be designated as 'known services' and their positions shall be indicated by the Contractor on a separate set of drawings, a copy of which shall be furnished to the Employer's Agent without delay.

As soon as any service which has not been identified and located as described above is encountered on, under, over or within the site, it shall henceforth be deemed to be a known service and the aforesaid provisions pertaining to locating, verifying and recording its position on the balance of the site shall apply. The Contractor shall notify the Employer's Agent immediately when any such service is encountered or discovered on the Site.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Whilst he is in possession of the Site, the Contractor shall be liable for all loss of or damage as may occur to

- (a) known services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified as aforesaid, due cognizance being taken of such deviations in line and level which may reasonably be anticipated; and
- (b) any other service which ought reasonably to have been a known service in accordance with the provisions of this clause, as well as for consequential damage, whether caused directly by the Contractor's operations or by the lack of proper protection; provided always that the Contractor will not be held liable in respect of damages occurring to services not being Known Services.

The Contractor shall also be liable for consequential damage in regard to (a) and (b), whether caused directly by the Contractor's operations or by the lack of proper protection.

No separate payment will be made to the Contractor in respect of his costs of providing, holding available on the Site and utilising the said detecting and testing equipment, nor for any costs incurred in preparing and submitting to the Employer's Agent the Drawings as aforesaid. These costs shall be deemed included in the Contractor's other tendered rates and prices included in the Contract.

Payment to the Contractor in respect of exposing services at the positions agreed by the Employer's Agent and as described above will be made under the payment items (if any) as may be provided for in the respective sections of the specifications pertaining to the type of work involved.

PSA 5.4.2

Protection during construction

The Contractor shall take all reasonable precautions and arrange its operations in such a manner as to prevent damage occurring to all known services during the period which the Contractor has occupation and/or possession of the Site.

Services left exposed shall be suitably protected from damage and in such a manner as will eliminate any danger arising therefrom to the public and/or workmen, all in accordance with the requirements of the prevailing legislation and related regulations.

Unless otherwise instructed by the Employer's Agent, no services shall be left exposed after its exact position has been determined and all excavations carried out for the purpose of exposing underground services shall be promptly backfilled and compacted. In roadways, the requirements of subclause 5.9 of SABS 1200 DB should be observed. In other areas compaction is to be to 90% modified AASHTO density.

PSA 5.4.3

Alterations and repairs to existing services

Unless the contrary is clearly specified in the Contract or ordered by the Employer's Agent, the Contractor shall not carry out alterations to existing services. When any such alterations become necessary, the Contractor shall promptly inform the Employer's Agent, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.

Should damage occur to any existing services, the Contractor shall immediately inform the Employer's Agent, or when this is not possible, the relevant authority, and obtain instructions as to who should carry out repairs. In urgent cases, the Contractor shall take appropriate steps to minimise damage to and interruption of the service. No repairs of telecommunication cables or electric power lines and cables shall be attempted by the Contractor, unless approved by the Employer's Agent."

PSA 5.7

Safety

REPLACE THE CONTENTS OF SUBCLAUSE 5.7 WITH THE FOLLOWING:

"Pursuant to the provisions of the Conditions of Contract, and without in any way limiting the Contractor's obligations thereunder, the Contractor shall at his own expense (except

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

only where specific provision (if any) is made in the Contract for the reimbursement to the Contractor in respect of particular items), provide the following:

- (a) Provide to its Employees on the site of the works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and associated Regulations as amended (hereinafter referred to as the Act) at all times, and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times;
- (b) Provide, install and maintain all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public;
- (c) Implement on the site of the works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times;
- (d) Implement all necessary measures so as to ensure compliance with the Act by all SubContractors engaged by the Contractor and their employees engaged on the works; and
- (e) Comply fully with all other requirements pertaining to safety as may be specified in the Contract.

The Employer and the Employer's Agent shall be entitled, although not obliged, to make such inspections on the Site as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the Site of all parts of the Site and shall co-operate fully in such inspections and shall make available for inspection, all such documents and records as the Employer's and/or Employer's Agent's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Employer's Agent's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Employer's Agent shall, in accordance with the provisions of Clause 39 of the Conditions of Contract, be entitled to suspend progress on the Works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Employer's Agent, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the Works or any part thereof is suspended by the Employer's Agent in terms of this clause and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 43 of the Conditions of Contract should the Contractor fail to complete the Works on or before the specified Due Date for Completion in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this Clause shall constitute grounds for the Employer's Agent to act in terms of Clause 55.1.3 of the Conditions of Contract and for the Employer to cancel the Contract in accordance with the further provisions of the said Clause 55."

ADD THE FOLLOWING TO CLAUSE 5:

"PSA 5.9

Construction regulations, 2014

The Contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2014 (the regulations) as promulgated in Government Gazette of 07 February 2014. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

The proposed type of work, materials to be used and potential hazards likely to be encountered on this Contract are detailed in the Project Specifications, Bill of Quantity and Drawings, as well as in the Employers' health and safety specifications (regulation 4(1)) of the Construction Regulations 2014, which will be issued separately by the Employer.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The Contractor shall in terms of regulation 5(1) provide a comprehensive health and safety plan detailing his proposed compliance with the regulations, for approval by the Employer.

The Contractor shall at all times be responsible for full compliance with the approved plan as well as the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the abovementioned plan or regulations.

A payment item is included in the Bill of Quantities to cover the Contractor's cost for compliance with the OHS Act and the abovementioned regulations.

PSA 5.10 Maintaining services in use

The Contractor shall take note that he shall not cut off any service in use without the prior approval of the Employer's Agent.

Failure on the part of the Contractor to comply with any of the above provisions will constitute sufficient reason for the Employer's Agent to stop the works until the situation has been remedied, or should he deem it necessary, arrange for the situation to be remedied at the Contractor's cost.

No direct payment will be made for the cost of maintaining services in use. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

PSA 5.11 Dealing with and accommodating traffic

The Contractor shall take note that the existing roads and tracks within the Sites shall remain operational throughout the contract period. To this end the Contractor shall provide and maintain all temporary fences, security, barriers, kerb ramps, signs, markings, flagmen, drums, lighting, personnel and all other incidentals necessary to ensure safe and easy passage of all traffic.

Temporary traffic signs etc. as well as all necessary markings shall be erected and maintained by the Contractor and 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.

Traffic signs shall have a yellow background with either a red / black border.

No direct payment will be made for the cost of dealing with and accommodating traffic. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the contract. Further, the provision of PSA 5.2 shall apply.

PSA 5.12 Site meetings

The Contractor or its authorised agent will be required to attend regular site meetings, which shall normally be held once a month on dates and at times determined by the Employer's Agent, but in any case whenever reasonably required by the Employer's Agent. Unless otherwise indicated in the Contract or instructed by the Employer's Agent, such meetings shall be held at the Contractor's offices on the Site. At such monthly meetings, matters such as general progress on the Works, quality of work, problems, claims, payments, and safety etc, shall be discussed, but not matters concerning the day-to-day running of the Contract."

PSA 5.13 Providing access to erven and properties

Access to erven and properties along the route of trenches and roads shall be provided by the Contractor at all times. To this end suitable crossings shall be constructed where required.

Temporary crossings shall be in the form of portable bridges, temporary backfill or other approved means and shall be capable of permitting the safe passage of all vehicles and pedestrians. The Contractor shall also be responsible for maintaining crossings and for removing same when they are no longer required.

If as a result of restricted road reserve widths and the nature of the Works the construction of bypasses is not feasible, construction shall be carried out under traffic in order to provide

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

access to the properties.

The Contractor may, with the approval of the Employer's Agent, arrange with the occupiers of the affected properties to temporarily close off a portion of a road, footpath entrance, property access road or other access, provided that the Contractor shall give due notice of the intended closure and its probable duration to the occupiers and shall as punctually as possible re-open the route at the prescribed time. Where possible roads shall be made safe and re-opened to traffic overnight. Any such closure shall be an arrangement between the Contractor and the occupiers and shall not absolve the Contractor from his obligations under the Contract to provide access at all times. Barricades, traffic signs and drums shall be provided by the Contractor to suit the specific conditions.

No direct payment will be made for the cost of providing access. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract.

PSA 5.14 Accommodation of other Contractors

The Contractor shall be required to accommodate other Contractors on the Site of the Works during the Contract period. Adequate access to the site of their works shall be given the above stated Contractors at all times.

No direct payment will be made for the cost of providing adequate access and accommodating the stated Contractors on the Site of the Works, as well as the cost of any inconvenience or disruption experienced in attending to the aforementioned. Payment shall be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

PSA 6 TOLERANCES

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 6:

"PSA 6.4 Use of tolerances

No guarantee is given that the full specified tolerances will be available independently of each other, and the Contractor is cautioned that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work.

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorised' dimensions. These are specified dimensions or those shown on the Drawings or, if changed, as finally prescribed by the Employer's Agent, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorised' dimensions.

If the work is constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the calculation of quantities will be based on the 'authorised' dimensions, regardless of the actual dimensions to which the work has been constructed.

When the work is not constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the Employer's Agent may nevertheless, at his sole discretion, accept the work for payment. In such cases no payment shall be made for quantities of work or material in excess of those calculated for the 'authorised' dimensions, and where the actual dimensions are less than the 'authorised' dimensions minus the tolerance allowed, quantities for payment shall be calculated based on the actual dimensions as constructed."

PSA 7 TESTING

PSA 7.1 Principles

PSA 7.1.2 Standard of Finished Work Not to Specification

INSERT THE WORDS "or checks by an approved laboratory ..." AFTER THE WORDS "Where the Employer's Agent's checks ..." IN THE FIRST LINE OF CLAUSE 7.1.2.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSA 7.2 Approved laboratories

REPLACE THE CONTENT OF CLAUSE 7.2 WITH THE FOLLOWING:

"Unless otherwise specified in the relevant specification or elsewhere in the Scope of Work, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a specification for the purposes of acceptance by the Employer's Agent of the quality of materials used and/or workmanship achieved, may be carried out:

- (a) any testing laboratory certified by the South African National Accreditation Systems (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract;
- (b) any testing laboratory owned, managed or operated by the Employer or the Employer's Agent;
- (c) any testing laboratory established and operated on the Site by or on behalf of the Employer or the Employer's Agent;
- (d) any testing laboratory designated by the Employer's Agent."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 7:

PSA 7.5 Employer's Agent laboratory

The Employer's Agent's acceptance control testing will be carried out by an independent commercial laboratory either on or off Site as may be necessary. Such testing will not relieve the Contractor of his obligations to carry out his own quality control testing to ensure that the materials and workmanship are within specification.

PSA 7.6 Quality control testing by Contractor

The Contractor shall carry out quality control tests on all portions of the Works as specified in the applicable specification, and shall make available all test results of quality control testing to the Employer's Agent as soon as they become available, prior to seeking approval of the works for commencement of the next stage of construction.

PSA 7.7 Making good work disturbed by testing

On completion of the testing, the Contractor shall make good, in an acceptable manner, work disturbed by testing, whether it be due to either his own quality control testing or acceptance control testing.

PSA 7.8 Acceptance control testing

Where control testing is ordered by the Employer's Agent in addition to the required testing specified, the Contractor shall arrange for acceptance control testing to be carried out according to TMH1 by an approved commercial laboratory.

These results shall be made available to the Employer's Agent by the Contractor, within five days from date of order for all tests, except for soaked CBR's for which results shall be made available within twelve days from date of order. The Contractor shall make good the work disturbed by testing.

PSA 8 MEASUREMENT AND PAYMENT

PSA 8.1 Measurement

PSA 8.1.1 Method of measurement, all sections of the Schedule

DELETE THE WORDS "and South West Africa".

PSA 8.1.2 Preliminary and General Item or section

PSA 8.1.2.1 Contents

The "tools and equipment "referred to in item b) will be regarded to include the survey equipment required under PSA 5.1.3 and the nuclear density testing device required under PSD 7.5.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

REPLACE THE LAST SENTENCE OF SUBCLAUSE 8.1.2.1(b) WITH THE FOLLOWING:

"Separate items will be scheduled to cover the fixed, value-related and time-related components of the Contractor's preliminary and general costs."

REPLACE THE CONTENTS OF ITEM (c) WITH THE FOLLOWING:

"The 'duration of construction' applicable to a time-related item shall be the tendered contract period for the total works, plus as applicable, the Civil Engineering Industry Holiday (Dec / Jan) and all gazetted public holidays for the Civil Engineering Industry."

PSA 8.1.2.2 Tendered sums

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Except only where specific provision is made in the Specifications and/or the Bill of Quantities for separate compensation for any of these items, the Contractor's tendered sums under items PSA 8.3 and PSA 8.4 shall collectively cover all charges for:

- risks, costs and obligations in terms of the Conditions of Contract and of this standardized specification;
- head-office and site overheads and supervision;
- profit and financing costs;
- expenses of a general nature not specifically related to any item or items of the permanent or temporary work;
- providing such facilities on site as may be required by the Contractor for the proper performance of the Contract and for its personnel, including, but without limitation, providing offices, storage facilities, workshops, ablutions, services such as water, electricity, sewage and rubbish disposal, access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and cleaning-up of the site of the Contractor's establishment and reinstatement to not less than its original condition; and
- providing the facilities for the Employer's Agent and his staff as specified in the Contract and their removal from the site on completion of the Contract. The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB and all cost deemed to be included under the tendered rates for PSA 8.3 and PSA 8.4, except where items in the Bill of Quantities are not provided for."

PSA 8.2 Payment

PSA 8.2.1 Fixed-charge and value-related items

REPLACE THE CONTENTS OF SUBCLAUSE 8.2.1 WITH THE FOLLOWING:

PSA 8.2.1.1 Fixed-charge items

"Payment of fixed charges in respect of item 8.3.1 will be made as follows:

- (a) EIGHTY PER CENT (80%) of the sum tendered will be paid when the facilities have been provided and approved;
- (b) The remaining TWENTY PER CENT (20%) will be paid when the works have been completed, the facilities have been removed and the site of the Contractor's establishment has been cleared and cleaned to the satisfaction of the Employer's Agent.

No adjustment will be made to the sum tendered in respect of item 8.3.1 should the value of the works finally executed or the time for completion vary in any way from that specified in the tender.

ADD TO SUBCLAUSE 8.2.1 THE FOLLOWING:

The fixed charged items will include all associated cost to deal with the compulsory sub-contracts, other than cost already included under item 8.3

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSA 8.2.1.2 Value-related items

Payment for the sum tendered under item 8.3.2 will be made in three separate instalments as follows:

- (a) The first instalment, which is 40% of the sum, will be paid when the Contractor has fulfilled all his obligations to date under this specification, the General Conditions of Contract and the Special Conditions of Contract, and when the value of work certified for payment, excluding materials on site and payments for preliminary and general items, is equal to not less than 5% of the total value of the work listed in the Bill of Quantities.
- (b) The second instalment, which is 40% of the sum, will be made when the amount certified for payment, including retention moneys but excluding this second instalment, exceeds 50% of the tender sum.
- (c) The final payment, which is 20% of the sum, will be made when the works have been certified as completed and the Contractor has fulfilled all his obligations to date under this Specification, the General Conditions of Contract and the Special Conditions of Contract.

Should the value of the measured work finally completed be more or less than the tender sum, the sum tendered under item 8.3.2 will be adjusted up or down in accordance with the provisions of the Conditions of Contract, and this adjustment will be applied to the third instalment."

PSA 8.2.2 Time-related items

REPLACE THE CONTENTS OF SUBCLAUSE 8.2.2 WITH THE FOLLOWING:

"Subject to the provisions of subclauses 8.2.3 and 8.2.4, payment under item 8.4.1 (time-related item) will be made monthly in equal amounts, calculated by dividing the sum tendered for the item by the tendered Contract period in months, 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.

Should the Employer's Agent grant an extension of time for the completion of the total works, the Contractor will be entitled to an increase in the sums tendered for time-related items, which increase shall be in the same proportion to the original tendered sums, as the extension of time is to the duration of construction as defined in PSA 8.1.2.1. The Contractor shall however note that the aforementioned will not apply to extensions of time granted in terms of PSA 8.4.1.

Payment of such increased sums will be taken to be as full compensation for all additional preliminary and general costs, either time-related costs or fixed costs that result from the circumstances pertaining to the extension of time granted."

The payment to the Contractor for Time-Related Items shall be adjusted in accordance with the following formula in the event of the Contract being extended by means of a Variation Order:

*Sum of Tendered amounts for Time Related Items x Extension of Time authorised by Variation Order
Tender Contract period*

The abovementioned adjustment of the payment for Time-Related Items shall be made in the completion Payment Certificate and shall be the only payment for additional Time-Related costs irrespective of the actual period required to complete the Contract including its authorised extensions.

In the case of fixed price contracts, the amount by which the Time-Related Items is adjusted shall not be subject to the Contract Price Adjustment formula.

In the case of contracts subject to Contract Price Adjustment the amount by which the time-related items are adjusted shall be subject to the Contract Price Adjustment formula.

PSA 8.3 Scheduled fixed-charge and value-related items

PSA 8.3.1 & Contractual requirements

8.4.3.1

ADD THE FOLLOWING:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

"The sum tendered shall cover all initial costs incurred in complying with the requirements of the Conditions of Contract and include for the cost of providing and maintaining the special risks insurance stipulated in the Conditions of Contract, if applicable."

PSA 8.3.2.1 Facilities for Employer's Agent

REPLACE THE CONTENTS OF THIS CLAUSE WITH THE FOLLOWING:

- "(a) Furnished office Unit: Sum
(b) 2 ways radio, charger and adaptor that operate on license frequency.. Unit: No
(c) Nameboard..... Unit: Sum

The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB."

PSA 8.3.2.2 Facilities for Contractor

All items included in the Contractor facility will be measured and priced according to subclause 8.3.2.2.

ADD THE FOLLOWING:

- (k) Professional Land Surveyor Unit: Sum

PSA 8.4 SCHEDULED TIME-CHARGE RELATED ITEMS

PSA 8.4.1 Contractual requirements Unit: Sum

ADD THE FOLLOWING:

"The sum shall further cover all the time-related establishment costs and be the full compensation to the Contractor for:

- (i) The maintenance of his whole organisation as established for this Contract.
- (ii) The maintenance of all insurances, indemnities and guarantees required in terms of the Conditions of Contract, where applicable.
- (iii) Compliance with all general conditions and requirements which are not specifically measured elsewhere for payment in these Contract Documents.

Payment shall be made monthly in compliance with the method laid down in PSA 8.2.2.

The Contractor will not be paid Time-Related Preliminary and General Charges for any special Non-Working Days, as stipulated in the Conditions of Contract, which shall be deemed to have been allowed for in his rates.

The sum shall also include, where applicable, for the cost of providing and maintaining the special risks insurance stipulated in the Conditions of Contract."

PSA 8.4.2.1 Facilities for Employer's Agent

REPLACE THE CONTENTS OF THIS CLAUSE WITH THE FOLLOWING:

- (a) Furnished office..... Unit: Sum
(b) Survey assistants and materials..... Unit: Sum
(c) Nameboard..... Unit: Sum

The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB.

Payment for the provision of survey labourers will be made pro-rata the period the labourers are provided."

PSA 8.4.2.2 Facilities for Contractor

All items included in the Contractor facility will be measured and priced according to subclause 8.3.2.2.

ADD THE FOLLOWING:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

(k) Professional Land Surveyor Unit: Sum

PSA 8.4.2.3 *REPLACE THE WORDS "periods stated" IN THE SECOND LINE OF THIS CLAUSE WITH THE FOLLOWING:*

"duration of construction as defined in PSA 8.1.2.1".

PSA 8.5 Sums stated provisionally by the Employer's Agent

REPLACE THE CONTENTS OF SUBCLAUSE 8.5 WITH THE FOLLOWING:

"PSA 8.5 Sums stated provisionally by the Employer's Agent

The Contractor will be reimbursed in substitution of the Provisional Sums (if any) allowed in the Bill of Quantities for work to be executed by the Contractor, in the amounts determined in accordance with the provisions of Sub-Clause 6.6 of the GCC 2015."

(a) Work to be executed and performed Unit: Prov Sum

(b) Overheads, charges and profit on item (a) above Unit: %

Sub-items (a) and (b) will be provided in the Bill of Quantities for the works to be performed included in the Contract. Payment will be made on the basis of the sums actually paid for such work, exclusive of VAT."

The Contractor shall be reimbursed under sub-item (a), in substitution of the respective Provisional Sums (if any) allowed in the Bill of Quantities, the amounts actually paid or payable by the Contractor.

The percentage or sum (as applicable) paid under sub-item (b) as aforesaid, shall be deemed to include for full and final compensation to the Contractor for all costs as may be incurred and all charges and profits associated in fulfilling its obligations under the contract as the principal Contractor.

ADD THE FOLLOWING TO CLAUSE 8.5:

PSA8.5.1 Wages for the Pump Operator

No provision is made in the Contract for paying wages to a local pump operator.

PSA 8.5.2 Contingencies

A percentage is provided in the summary of the Schedule of Quantities to cover contingent and additional expenditure on the Works. The expenditure of the contingencies amount, in whole or in part, or not at all, shall be entirely at the discretion of the Employer's Agent.

The provision of this amount shall not in any way imply that the Contractor's tender does not include for the provision of all resources and the fulfilment of all obligations necessary to complete the Works as specified, without payment of the amount so provided.

The Employer's Agent shall, if he deems necessary, reduce the scope of work to ensure that expenditure on the Works remains within the limit of the project's budget.

REPLACE CLAUSE 8.6 WITH THE FOLLOWING:

"PSA 8.6 **Prime cost items**

PSA 8.6.1 Prime Cost Sums

(a) Description of Item to which Prime Cost Sum Applies Unit: PC. Sum

(b) Charge Required by Contractor on Sub-item (a) above Unit: %

Sub-items (a) and (b) will be provided in the Bill of Quantities for each different item to which a Prime Cost Sum applies.

"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."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The Contractor shall be reimbursed under sub-item(s) (a) in substitution of the respective Prime Cost Sums included in the Contract, the actual price(s) paid or payable by him in respect of the goods, materials or services supplied, but excluding any charges for the Contractor's labour, profit, carriage, establishment or other charges related to such goods, services or materials.

The Contractor shall be paid under sub-item (b), the respective percentage, as stated by the Contractor in its Tender, of the amount certified by the Employer's Agent for payment under the related sub-item (a). The percentages tendered by the Contractor for each respective sub-item (b) included in the Bill of Quantities shall be deemed to in full and final compensation to the Contractor in respect of any charge by the Contractor for labour, carriage profit, establishment and for any other charges related to the goods, services or materials supplied under the related sub-item (a).

If the Contractor shall have omitted within its Tender to insert a tendered percentage under sub-item (b), or tendered a zero percentage, the Contractor's tendered rate for sub-item (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under sub-item (b)."

Note:

1. Only payments for successful test will be made under the Prime Cost Sum provided in the Bill of Quantities for "additional acceptance control testing by the Employer's Agent".
2. The Contractor is responsible for the cost of process control testing. Payment in terms of the above will only be made for acceptance control testing ordered by the Employer's Agent.

PSA 8.7

Daywork

ADD THE FOLLOWING:

Provisional items for Daywork are scheduled as follows:

- a) Labour at hourly rates for skilled, semi-skilled and unskilled labourers.
- b) Material as a Provisional Sum with a percentage allowance on the net cost.
- c) The Contractor's own plant at hourly rates for various types.
Tendered unit rates or unit rates that are agreed in terms of the GCC (2015) for the Contractor's own plant used for Daywork shall cover the full cost of the use of such plant and shall therefore include the cost of plant operators, consumable stores, fuel and maintenance.
- d) Hired plant as a Provisional Sum with a percentage allowance on the net cost.
The Contractor will be paid the actual net cost of plant hired by him for Daywork 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.

"To ensure that the plant is achieving a reasonable output of work, the Employer's Agent's personnel will randomly monitor and measure work produced. Poor performance of any item of plant will be noted by the Employer's Agent and certain reductions in payment may be applied.

Furthermore, should the performance of a machine be poor, or persistently break down, the Employer's Agent may order that it be replaced, all at the cost of the Contractor."

PSA 8.8

Temporary works

PSA 8.8.2

Dealing with Traffic

DELETE THE ENTIRE CLAUSE AND REPLACE WITH:

"The provision of PSA 5.10 shall apply. Refer also PSA 5.2, PSA 5.3, PSA 5.7, PSA 5.10 and PSA 5.1"

PSA 8.8.4

Dealing with existing services

ADD THE FOLLOWING TO CLAUSE 8.8.4 WITH:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Careful excavation carried out by the Contractor on the instruction of the Employer's Agent to locate and expose existing services of which the exact location is not known, or where the existing service is found to be further than 2.0 m from the position indicated, will be measured by volume. The rate shall cover all costs of materials, labour and plant, including specialist detecting equipment required to locate and expose the service.

ADD THE FOLLOWING SUBCLAUSES TO CLAUSE 8.8:

PSA 8.8.7 Dealing with water

The cost involved in the control of surface water, precautions against flooding and the drainage and removal of ground water in the trenches or the protection of the road prism for the proper execution of the Works will be covered by the amount tendered for the related items (e.g. trenching, sub-base, etc.). The sum shall cover all costs with regard to the preventive measures that must be taken with regard to water and the repair of damaged portions of the Works.

PSA 8.8.8 Freehaul and overhaul

Notwithstanding any clauses in any Standardized Specification or Standard Specification Section dealing with the definition, measurement and/or payment for transport, the freehaul and overhaul is classified into two categories, namely for unsuitable material and then for backfill/bedding materials, as shown in the table below.

Material Description	Freehaul Distance	Overhaul
Unsuitable/surplus/spoil material	5 km	Distances > 5 km
Imported Backfill/bedding material	5 km	Distances > 5 km

Imported material is to be transported directly to the work area/trench where possible or to the designated stockpile areas along the pipeline; whichever distance is the shorter. Imported Backfill/bedding material required from stockpile within 5km freehaul distance will be measured and paid for in accordance with subclause 8.3.4 a) of SANS 1200 D. Imported material required outside the freehaul distance of 5km will be regarded as overhaul and will be measured and paid for in accordance with subclause 8.3.6 b) of SANS 1200 D.

Material to be spoiled outside the freehaul distance of 5km will be measured and paid for in accordance with subclause 8.3.6 b) of SANS 1200 D."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSAB EMPLOYER'S AGENT'S OFFICE

PSAB 3 MATERIALS

PSAB 3.2 Office building(s)

REPLACE THE WORDS "as scheduled" IN PARENTHESIS IN THE FIRST LINE OF SUBCLAUSE 3.2 OF SABS 1200 AB WITH "as specified in the General specification";

REPLACE THE SECOND SENTENCE WITH THE FOLLOWING

Two offices will be required.

One of 12m² for the exclusive use by the Employer's Agent and the Employer's Agents Representative and one of 4 x 8m for a meeting/training room that can be used by both parties, and ceiling height of at least 2.5m. The meeting room will be equipped with a table and chairs suitable for 12 persons to be seated.

AND REPLACE SUBCLAUSE 3.2(j) OF SABS 1200 AB WITH THE FOLLOWING:

"(j) an air-conditioning unit capable of both heating in winter and cooling in summer;

ADD THE FOLLOWING TO CLAUSE 3.2

(k) steel plan cabinet;

(l) a whiteboard, size 2,0 m² securely fitted to the wall

(m) a raingauge (one only)

(n) a minimum / maximum thermometer (one only)

(o) 100 litre fridge (one only)

(p) The Contractor shall construct the number of carports specified in the General specification for the sole use of the Employer's Agent and his staff. Each carport shall be constructed so that the vehicle parked under it is always protected against the direct rays of the sun. The carport area shall be at least 20 m² and the floor shall be covered with a layer of crushed stone to alleviate dusty and muddy conditions. The carport(s) shall be positioned so as to provide easy and convenient access to the Employer's Agent's office."

ADD THE FOLLOWING SUBCLAUSES TO CLAUSE 4:

PSAB 4.2 Survey equipment

The Contractor shall provide on-site and make available for the exclusive use of the Employer's Agent.

All survey equipment provided by the Contractor shall be in good condition, properly calibrated and fit for the purpose.

In addition to survey equipment provided by the Contractor for the exclusive use of the Employer's Agent and his staff, the Contractor shall make available for use by the Employer's Agent, the further survey equipment listed in the General Specification, at all times when such is reasonably required by the Employer's Agent and his staff for the purposes of the Contract.

PSAB 5 CONSTRUCTION

PSAB 5.1 Nameboards

REPLACE THE CONTENT OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The Employer's Agent's nameboards shall be erected within fourteen days of the Commencement Date and shall be placed where ordered. Any damage to this board shall be repaired within seven days of a written instruction issued by the Employer's Agent.

Further to the above, the Contractor will not be allowed to erect more than two of his own name boards in the area of the Works. The position of these shall be agreed to by the Employer's Agent.

No payment will be made for the supply, erection or maintenance of the Contractor's nameboards and the Employer's Agent reserves the right to order the removal of the name boards if not properly maintained. All name boards shall be removed within 7 days of the issue

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

of the Final Approval Certificate”.

PSAB 5.5 Survey assistants

ADD THE FOLLOWING:

A survey assistant will be required from time to time to assist the Employer’s Agent’s Representative.

ADD THE FOLLOWING NEW SUBCLAUSES TO CLAUSE 5 OF SABS 1200 AB:

PSAB 5.6 Survey equipment

All survey equipment provided by the Contractor shall be kept fully serviceable at all times by the Contractor. The Contractor shall have any defective equipment repaired or replaced at his own cost within 12 hours after notification by the Employer’s Agent’s staff.

Where required by the Employer’s Agent, the Contractor shall, at his own cost, promptly arrange for the recalibration of survey equipment provided.”

PSAB 8 MEASUREMENT AND PAYMENT

DELETE THE CONTENTS OF THIS CLAUSE AND REPLACE WITH:

“The appropriate measurement and payment clauses have been included under Clause 8 of SABS 1200 A and PSA.”

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSC SITE CLEARANCE

PSC 3 MATERIALS

PSC 3.1 Disposal of material

ADD THE FOLLOWING:

"Material obtained from clearing and grubbing, including builder's rubble, and other unwanted debris, shall be disposed of.

The Contractor shall obtain his own dumping sites for the disposal of material and all transport costs shall be included in the rates tendered for site clearance."

PSC 5 CONSTRUCTION

PSC 5.1 Areas to be cleared and grubbed

ADD THE FOLLOWING:

"Pipeline routes shall be cleared to a distance of 2,5 m on both sides of the pipeline centre line. Route pegs or markers shall not be destroyed or damaged during clearing operations."

Except for the above, only the approved minimum area required for the execution of the Works including areas on which material shall be stockpiled for later reuse or on which material shall be dumped and spread, shall be cleared and grubbed. This area is to be confirmed by the Employer's Agent prior to Construction.

PSC 5.5 Reclearing of vegetation

ADD THE FOLLOWING:

"Except if otherwise agreed, where areas have to be recleared on the written instruction of the Employer's Agent, such reclearing shall be carried out at the Contractor's own cost and the Contractor is advised therefore, not to clear areas at such an early stage that reclearing may become necessary."

PSC5.6 Conservation of topsoil

REPLACE THE CONTENTS OF SUBCLAUSE 5.6 OF SABS 1200 C WITH THE FOLLOWING:

Topsoil up to a depth of 150 mm, if available, shall be removed from the above specified cleared areas stockpiled and maintained on approved sites for later reuse. Until required for spreading, the stockpiles of topsoil material shall be stabilized by watering or other approved means.

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.1 Basic principles

ADD THE FOLLOWING:

"Levels to be used for earthworks quantity calculations will be surveyed once the clearing operation has been completed."

"Site clearance for pipe trenches will not be measured where such trenches lie within the carriageway of any road. "

PSC 8.2 Payment

PSC 8.2.1 Clear and grub

REPLACE THE FIRST LINE WITH THE FOLLOWING:

"The area designated by the Employer's Agent to be cleared and grubbed will be measured in square metre to the nearest square metre or, "

DELETE "(except where 8.2.9 is applicable)" IN THE SEVENTH LINE OF THIS CLAUSE,

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD THE FOLLOWING:

"The tendered rate shall also cover the cost of loading, transporting and disposing of vegetation, builder's rubble, and other unwanted debris encountered in road reserves or along service routes at the designated spoil site described in the General specification.

DELETE THIS SUBCLAUSE:

PSC 8.2.9 Transport material and debris to unspecified sites and dump

Notwithstanding the fact that a disposal site will not be designated by the Employer's Agent, the transportation of material and debris generated by any clearing operation will not be measured for payment."

REPLACE THE HEADING AND CONTENTS OF SUBCLAUSE 8.2.10 WITH THE FOLLOWING:

PSC 8.2.10 Removal of topsoil to nominal depth of 150mm, stockpile and maintain.....Unit: m²

The rate shall cover the cost of removing topsoil, together with such vegetation and small roots as occur within the specified depth. It shall also covers the rate of stockpiling and maintaining on designated sites.

ADD THE FOLLOWING:

PSC 8.2.11 Final finishing and cleaning up of site..... Unit: Sum

The tendered sum shall include full compensation for the clearing, disposal of material, finishing, tidying and all other work required to finish and clean up the Site of the works and affected areas by removing excess earth, stones, boulders, debris and other waste material, by clearing stormwater inlets and outlets and pipe barrels, by clearing the surfacing of all dirt, mud and foreign material, and by neatly finishing off all junctions, intersections and kerbing.

All material resulting from the finishing operations shall be disposed of to a spoil site furnished by the Contractor.

The tendered rate shall make provision for the reinstatement of existing driveways to their original condition where these have been affected by the works, as these items will not be measured and paid for separately."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSD EARTHWORKS

PSD 2 INTERPRETATIONS

PSD 2.1 Supporting specifications

REPLACE SUBCLAUSE 2.1.2 WITH THE FOLLOWING:

PSD 2.1.2 Any of the other SABS 1200 Specifications may form part of the Contract Documents."

PSD 2.3 Definitions

REPLACE THE WORD AND THE DEFINITION FOR "Borrow" WITH THE FOLLOWING:

"Borrow material: Material, other than material obtained from excavations required for the Works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning."

REPLACE THE DEFINITION FOR "Specified density" WITH THE FOLLOWING:

"Specified density: The specified dry density expressed as a percentage of modified AASHTO or PROCTOR dry density."

REPLACE THE DEFINITION FOR "Stockpile" WITH THE FOLLOWING:

"Stockpile (verb): The process of selecting and, when necessary, loading, transporting and off-loading material in a designated area for later use for a specific purpose."

ADD THE FOLLOWING DEFINITIONS:

"Commercial Source: A source of material provided by the Contractor, not the Employer, and including any borrow pit, provided by the Contractor.

Fill: An embankment or terrace constructed of material obtained from excavations or borrow pits. In roads it includes the earthworks up to the underside of the selected subgrade level.

Fill (material): Material used for the construction of an embankment or terrace.

Roadbed: The natural in situ material on which the fill, or in the absence of fill, the pavement layers, are constructed."

PSD 3 MATERIALS

PSD 3.1 Classification for excavation purposes

PSD 3.1.1 Method of Classifying

ADD THE FOLLOWING:

"The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence.

The Contractor shall immediately inform the Employer's Agent if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Employer's Agent in good time shall entitle the Employer's Agent to reclassify, at his discretion, such excavated material.

PSD 3.2.3 Material suitable for backfill or fill against structures

REPLACE THE CONTENTS OF THIS SUBSUBCLAUSE WITH THE FOLLOWING:

"Material used for backfill behind structures shall generally be the material excavated, subject to the following conditions:

- (a) The material shall not contain an excessive number of stones retained on a 50 mm sieve; and
- (b) The material shall not contain large clay lumps that do not break up under the action of the compaction equipment; and
- (c) The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

(d) The minimum modified AASHTO density shall be 93%."

PSD 3.3 Selection

PSD 3.3.1 General

REPLACE THE SECOND PARAGRAPH WITH THE FOLLOWING:

"The Contractor shall deal selectively with materials from all excavations to ensure that no acceptable backfill or bedding material is contaminated by material unfit for use. No additional payment shall be made in this regard and all costs related to the above selection process shall be included in the applicable payment items. Should useful material be contaminated to such an extent that it is regarded as unfit for use the Contractor shall at his own cost dispose of this material and replace it with material of an equivalent standard to the acceptable in situ material."

ADD THE FOLLOWING SUBSUBCLAUSE:

"PSD 3.3.3 Selection in borrow pits and excavations

Approval of a borrow area for a certain purpose does not necessarily mean that all the material in that area is suitable for the specified purpose. What it does mean is that the borrow area contains some suitable material. The onus shall rest on the Contractor to ensure that only material that is indeed suitable is removed and used for the specified purpose.

When the Contractor has to select excavated material for a specific purpose, the above provisions relating to borrow areas shall apply *mutatis mutandis* to excavations.

The Contractor shall not waste or contaminate material that has been selected for a specific purpose."

PSD 4 PLANT

PSD4.2 Compaction plant

ADD THE FOLLOWING TO SUBSUBCLAUSE 4.2:

Where it is required that the work be carried out using labour intensive methods, the Contractor shall not use compaction plant larger than a walk-behind compactor.

PSD 4.4 Detectors

REPLACE THE CONTENTS OF SUBCLAUSE 4.4 WITH THE FOLLOWING:

"The Contractor shall, for the purposes of detecting and locating underground services in accordance with the provisions of Subclause 5.4 of SABS 1200 A and Subsubclause 5.1.2 of SABS 1200 D, at its own cost, provide and use detecting equipment which is suitable for the detection of underground cables and pipes."

PSD 5 CONSTRUCTION

PSD 5.1 Precautions

PSD 5.1.1 Safety

PSD 5.1.1.1 Barricading and lighting

REPLACE "Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)" *WITH* "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014".

PSD 5.1.1.2 Safeguarding of excavations

REPLACE "Machinery and Occupational Safety Act" *WITH* "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014".

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSD 5.1.1.3 Explosives

REPLACE THE CONTENTS OF THIS SUBSUBCLAUSE WITH THE FOLLOWING:

"The Contractor will generally be permitted to use explosives for breaking up hard material during excavations, for demolishing existing structures, and for other purposes where explosives are normally required, subject to the following conditions:

- (a) The Employer's Agent may prohibit the use of explosives in cases where, in his opinion, the risk of injury to persons or damage to property or to adjoining structures is too high. Such action by the Employer's Agent does not entitle the Contractor to additional payment for having to resort to less economical methods of construction.
- (b) The Employer's Agent's prior written approval shall be obtained for each and every blasting operation. This approval may be withheld if the Contractor does not use explosives responsibly and carefully.
- (c) The Contractor shall comply fully with the requirements of the Explosives Act, Act 83 of 1997 and all other legislation and regulations as may be applicable to blasting and the use of explosives.
- (d) Before blasting is undertaken, the Contractor shall satisfy the Employer's Agent that he has established whether or not the insurers concerned require pre- and post-blasting inspections of buildings and structures within a certain radius of the proposed blasting.

Should such inspections be required, the Contractor shall, together with the Employer's Agent and the insurer, examine and measure the buildings, houses or structures in the vicinity of the proposed blasting site and establish and record, together with the owner, lessee or occupier, the extent of any existing cracking or damage before the commencement of blasting operations. During the inspection, pictures or video must be taken.

- (e) When there is a possibility of damage to power and telephone lines or any other services or property, the Contractor shall adapt his method of blasting and the size of the charges and shall use adequate protective measures (e.g. cover-blasting, to reduce the risk of damage.
- (f) All accidents, injury to persons and animals and damage to property shall be reported to the Employer's Agent in detail and in writing as soon as is practicable.
- (g) The Employer's Agent shall be given 24 hours' notice by the Contractor before each blasting operation is carried out.
- (h) When blasting to specified profiles, the Contractor shall so arrange the holes and charges that the resulting exposed surfaces are as sound as the nature of the material permits. The Contractor shall make good, at its own expense, any additional excavation necessitated by the shattering of rock in excess of any overbreak allowances specified in the Project Specifications or given on any drawing.

Notwithstanding the Contractor's compliance with the above provisions, the Contractor shall remain liable for any injury to persons and animals and loss of or damage to property occurring as a result of blasting operations."

PSD 5.1.2 Existing services

PSD 5.1.2.2 Detection, location and exposure

REPLACE THE CONTENTS OF SUBSUBCLAUSE 5.1.2.2 WITH THE FOLLOWING:

"The exposure by the Contractor of underground services, as required in terms of Subclause 5.4 of SABS 1200 A (as amended) shall be carried out by careful hand excavation at such positions and consist of digging a 1000 x 600 x 1500mm hole where specified by the Employer's Agent.

Unless otherwise instructed or agreed by the Employer's Agent, no service shall be left exposed after its exact position has been determined and all excavations carried out for the

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

purposes of exposing underground services shall be promptly backfilled and compacted to the following densities:

- (a) In roadways : 93% Mod AASHTO density; and
- (b) In all other areas : 90% Mod AASHTO density.

Where hand excavations to expose underground services have to be carried out in roadways, the Contractor shall reinstate the road layerworks in accordance with the provisions of Subclause 5.9 of SABS 1200DB.

Payment in respect of the reinstatement of layerworks in roadways will be made in accordance with Subclause 8.3.6.1 of SABS 1200DB (as amended).

Where a service is damaged because of the Contractor ' s negligence, the penalty payable by the Contractor shall be as specified in the project specification and he shall make good such damage or bear the cost of the repairs, as specified.

PSD 5.1.2.3 Protection of cables

REPLACE SUBSUBCLAUSE 5.1.2.3 WITH THE FOLLOWING:

“PSD5.1.2.3 Protection during construction

Further to the requirements of Subclause 5.4.2 of SABS 1200A (as amended), major excavating equipment and other Plant shall not be operated dangerously close to Known Services. Where necessary, excavation in close proximity to Known Services shall be carefully carried out with suitable hand tools, excluding picks wherever their use could damage the services. No additional payment will apply to such more difficult work.

Should any service not being a Known Service be discovered or encountered during the course of the Contract, the Contractor shall, in addition to complying with the requirements of Subclause 5.4.2 of SABS 1200A (as amended), immediately notify the Employer's Agent thereof and implement such measures as will prevent damage of such service or, if it was damaged in the course of discovery, will prevent and minimise the occurrence of any further damage occurring.

PSD 5.1.3 Stormwater and groundwater

ADD THE FOLLOWING:

"The Contractor shall, where applicable and at the earliest practicable opportunity, install the permanent drainage specified or shown on the Drawings and shall at his own cost provide the temporary drainage required to protect the Works."

PSD 5.1.6 Road traffic control

DELETE THE SECOND SENTENCE OF SUBSUBCLAUSE 5.1.6.

PSD 5.2 Methods and procedures

PSD 5.2.1 Site preparation

PSD 5.2.1.2 Conservation of topsoil

ADD THE FOLLOWING TO SUBCLAUSE 5.2.1.2:

"Topsoil shall not be stockpiled higher than 2,0m. Care shall be exercised to prevent the compaction of topsoil in any way especially by vehicles travelling over such material."

PSD 5.2.2 Excavation

PSD 5.2.2.1 Excavation for general earthworks and for structures

ADD THE FOLLOWING TO PARAGRAPH (b):

"When the nature of the material precludes the above procedure, additional excavations shall be carried out to provide working space for the erection of formwork. In general, payment will be made for excavating a working width of 600 mm, but the Contractor may excavate a greater working width at no additional cost to the Employer."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

REPLACE THE FIRST SENTENCE OF PARAGRAPH (e) WITH THE FOLLOWING:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved gravel compacted to 90% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.

Where excavations for structures have been carried out in hard material, the Employer's Agent may direct that over-excavation be backfilled with weak concrete if there is a danger of settlement or differential settlement of the foundations.

Where the sides of excavations against which concrete is to be cast have been over-excavated or have collapsed partially, the Contractor shall retrim the excavations if necessary and, unless other remedial measures are agreed to by the Employer's Agent, shall cast the concrete for the structure, including the additional concrete that may be required as a result of the over-excavation or partial collapse. The cost of the additional concrete or remedial measures shall be for the Contractor's account."

Where concrete is to be cast against an excavated face, no protrusion of the excavated face will project more than 100 mm past the designated line of the excavation or be so close to the designated position of any reinforcing as to cause less than the specified concrete cover to the reinforcing to occur.

PSD 5.2.2.3 Disposal

REPLACE SUBCLAUSE 5.2.2.3 WITH THE FOLLOWING:

All surplus material will be disposed of on the stockpiles designated for the type of material.

All surplus material and all unsuitable material from excavations and clearing and grubbing operations shall be removed from the Site by the Contractor and disposed of at the site identified by the Contractor and agreed to by the Employer's Agent.

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 slopes and finished off to the satisfaction of the Employer's Agent.

ADD THE FOLLOWING SUBSUBCLAUSE IN SUBSUBCLAUSE 5.2.2:

PSD 5.2.2.4 Selection and stockpiling

Approval or designation of the material in a particular borrow pit or excavation for a particular purpose does not imply that all the material in the borrow pit or excavation is suitable for the particular purpose for which the said approval or designation relates, nor that all material in the borrow pit or source should be used for the particular purpose. The Contractor shall select suitable material from that borrow pit or source, discard unsuitable material and reserve material for other purposes as necessary.

The Contractor shall organise and carry out its operations in such a manner as will prevent the contamination of suitable embankment and backfill material with unsuitable materials. Any excavated material which becomes, in the Employer's Agent's opinion, unsuitable for use in embankments or backfill as a result of contamination, shall be disposed of in a manner acceptable to the Employer's Agent and shall be replaced by the Contractor with materials acceptable to the Employer's Agent, all at the Contractor's cost.

When required, or when ordered by the Employer's Agent, material shall be stockpiled for later use. The additional costs of stockpiling material shall be paid to the Contractor in accordance with the provisions of Subclause PSD 8.3.12."

PSD 5.2.3 Placing and compaction

PSD 5.2.3.1 Embankments

OMIT "98% in the case of non-cohesive soil" AND SUBSTITUTE "100% in the case of non-cohesive soil".

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD THE FOLLOWING SUB CLAUSE:

"PSD 5.2.3.3 The material of each area of fill shall, unless otherwise approved, be deposited in layers of thickness, before compaction, not exceeding 150 mm. The material shall be spread to form a layer that is approximately uniform thickness, and graded over the whole area of the fill site.

Each layer shall be compacted at OMC to a density of at least 93% of modified AASHTO density in the case of cohesive soil or 100% in the case of non-cohesive soil. Should the material be too wet, owing to rain or any other cause, it shall be harrowed and allowed to dry out to the correct moisture content before compaction is undertaken.

The Contractor shall ensure that stormwater will at all times be discharged uniformly over the full fill area or through specially prepared and protected drainage ditches to prevent scouring of the slopes."

PSD 5.2.4 Finishing

PSD 5.2.4.2 Topsoiling

REPLACE THE LAST SENTENCE WITH:

"The final thickness of the topsoil shall be as directed by the Employer's Agent or as required by the Drawings, to a nominal thickness of 100 mm after light compaction. ."

PSD5.2.4.3 Vegetation

ADD THE FOLLOWING TO SUBCLAUSE 5.2.4.3:

"The vegetation mix to be used is described in the construction Environmental Management Plan."

PSD 5.2.5 Transport for Earthworks

REPLACE THE CONTENTS OF SUBSUBCLAUSE 5.2.5 WITH THE FOLLOWING:

"The transport of all excavated materials from works and use in the works, irrespective of the distance and source, shall be deemed to be freehaul. All haul to and from stockpiles will be freehaul, the cost of which is included in the Contractor's tendered rates and prices for the excavation of the materials. No separate compensation shall apply for the transportation of excavated materials."

ADD NEW SUBCLAUSE TO CLAUSE 5:

PSD 5.3 Recording of original ground levels

Before commencing any earthworks, the Contractor shall assist the Employer's Agent in establishing the original ground level in the area for record purposes.

PSD 6 TOLERANCES

PSD 6.1 Level Tolerances

ADD NEW ITEM c) AS FOLLOWS:

"

		Permissible deviation (PD)		
		Degree of Accuracy		
		III	II	I
		mm	mm	mm
c)	1) Specified individual layer thickness	+ 50	+50 -0	+20 -0
	2) Overall group layer thickness for multi-layer earthworks	± 50	+50 -0	+50 -0

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSD 7 TESTING

ADD THE FOLLOWING BETWEEN 7 AND 7.1:

"GENERAL. The terms of clause 7 of SABS/SANS1200 M shall apply. Judgement of quality will be done on a statistical basis for the density and the moisture content properties of the worked material"

PSD 7.2 Taking and testing of samples

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

The Contractor shall arrange with the approved independent laboratory engaged by the Contractor to carry out sufficient tests on a regular basis, as specified in SANS1200 or as required by the Employer's Agent, to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the results of these tests to the Employer's Agent in a form approved by him.

ADD NEW SUBCLAUSE 7.4 TO AS FOLLOWS;

PSD 7.4 Process Control

PSD 7.4 PROCESS CONTROL. Notwithstanding clause 7.2 the testing frequency will be according to Table 1.

Table 1- Testing Frequency (for large scale open earthworks)

1	2	3	4
Test	Portion	Testing Frequency	
		Volume or area to which one test is applied, max	No of tests per lot, min
Relative Compaction at OMC	(a) Ordinary fill	500m ³	3
	(b) Selected layers	500m ²	4
Indicator Tests	(a) Selected layers	2 500m ²	1
CBR/UCS	(a) In-situ founding material	5 000m ²	1
	(b) Selected layer and gravel surface	10 000m ²	1

Irrespective of the frequencies given in Table 1 the minimum Process Control for compaction and OMC testing will be that one lot of tests will be taken per day's work on a layer, within 4 hours from the work being done. "

ADD NEW CLAUSE PSD 7.5 AS FOLLOWS:

PSD 7.5 Compaction Testing

For the duration of the earthworks portion of the project the Contractor will supply and maintain a calibrated nuclear density testing device on site. The Contractor will also have available on site suitably trained staff to operate the device."

PSD 8 MEASUREMENT AND PAYMENT**PSD 8.3 Scheduled items****PSD 8.3.1 Site preparation**

REPLACE SUBSUBCLAUSES 8.3.1.1 AND 8.3.1.2 WITH THE FOLLOWING:

"Where Site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil is required, the provisions and scheduled items of SABS 1200 C and PSC shall apply."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSD 8.3.6 Overhaul

ADD THE FOLLOWING:

"No overhaul shall apply to material from commercial sources or to material disposed of on sites provided by the Contractor or disposed by other means employed by the Contractor."

PSD 8.3.8 Existing services

PSD 8.3.8.1 Location and expose existing services

REPLACE ITEM 8.3.8.1 WITH THE FOLLOWING:

8.3.8.1 Hand excavation for locating and exposing existing services:

- (a) Locate underground electrical cables using cable indicator Unit: hrs
- (b) Excavate around electrical cables Unit: No
- (b) Water, sewer and stormwater pipelines Unit: No

The tendered rates shall cover the cost of excavating in all materials by means of hand tools within authorised dimensions and at locations approved by the Employer's Agent in accordance with the requirements of subclause PSA 5.4.1 for all precautionary measures necessary to protect the services from damage during excavation and backfilling, and for subsequent backfilling and compacting. Compaction of material in all areas except in roadways shall be to 90% of the modified AASHTO density.

The tendered rate for excavation in roadways shall include compensation for compacting excavated or selected backfill material to 93% of modified AASHTO density. Reinstating layerworks and surfacing shall be measured and paid for in terms of SABS 1200 DB.

The tendered rates shall also include for keeping excavations safe, for dealing with surface and subsurface water, for removing surplus excavated material from the site, for transporting all material, and for supplying adequate supervision during both excavation and backfilling operations.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB 2 INTERPRETATIONS

PSDB 2.2 Application

Substitute "pipe trenches" with "pipe, cable and duct trenches".

PSDB 3 MATERIALS

PSDB 3.1 Classes of excavation

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Except that material will not be classified as boulder excavation (Class A or Class B) the excavation of material will, for purposes of measurement and payment, be classified as specified in PSD 3.1.2."

PSDB 3.5 Backfill materials

DELETE THE CONTENTS OF CLAUSE 3.5(b) AND REPLACE WITH THE FOLLOWING:

"Materials used in the reinstatement of trenches beneath or within a new roadway, up to underside of the road layers, shall be sub base quality material conforming to SABS 1200 ME compacted in 150mm layers to 95% Mod. AASHTO density unless specified. The area subject to loads from road traffic shall be held to apply for a width of 150 mm beyond the back of kerb."

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 3.5:

"(c) Cement-stabilised backfilling

Backfilling shall, where directed by the Employer's Agent, be stabilised with 5% cement. The aggregate shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed with 5% cement and shall be compacted in layers of 100 mm thick to 90% of modified AASHTO density.

(d) Soilcrete backfilling

The aggregate for soilcrete shall be mixed with 5% cement and shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed in a concrete mixer with the cement and enough water to acquire a consistency that allows the mixture to be placed with vibrators to fill all voids between the pipe and the sides of the trench. Shuttering shall be used where necessary."

ADD NEW SUBCLAUSE TO CLAUSE 3.6 AS FOLLOWS:

PSDB3.6.5 Properties of materials for reinstatement of existing road layers

The materials used in the reinstatement of existing access road layers, shall comply with the following physical properties:

- a) Subbase: PI maximum 10.
CBR at least 25% at 93% of MAMDD.
- b) Gravel wearing course: PI maximum 14 but not less than 10.
The size of the aggregate shall not exceed 40 mm.
CBR at least 45% at 95% of MAMDD.

PSDB 3.7 Selection

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

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

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

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 Employer's Agent.

Material which, in terms of Subclause 6.2 of SANS 1200 D or Subclause 6.1 of SANS 1200 LB, is too wet for immediate use in the trench (but which is otherwise suitable) will not be regarded as "unsuitable" material and, if so ordered by the Employer's Agent, 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 Employer's Agent, 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.

PSDB4 PLANT

PSDB4.1 Excavation equipment

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 4.1:

Where it is required that the work is to be carried out using labour intensive methods, 4.1 shall read:

"Except that the Contractor may use the tools, equipment and plant specified for the classification of the material in the excavation of that material, the Contractor shall use only hand tools such as picks, shovels and sledgehammers".

PSDB4.3 Compaction equipment

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 4.3:

Where it is required that the work is to be carried out using labour intensive methods, 4.3 shall read:

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

PSDB 5 CONSTRUCTION

PSDB 5.1 Precautions

PSDB 5.1.2.2 Special water hazards

The Contractor shall take note that no special water hazards are designated. The Contractor shall therefore deal with all water as specified in SABS 1200 DB 5.1.2.1, including flow into trenches due to a high or perched water table and any overland flow and shall report that to the Employer's Agent.

ADD THE FOLLOWING NEW SUBCLAUSE:

"PSDB 5.1.5 Excavation for the removal of existing pipelines

Where existing pipes have to be recovered, lifted, removed and relayed, they shall be carefully opened up by machine trenched excavation up to 300 mm above the crown of the pipes, after which the whole pipe shall be fully exposed by means of hand excavation. The trench excavation width shall comply with Subclause 5.2.

If so instructed by the Employer's Agent, the Contractor shall, before commencing with the trench excavation of the pipeline, expose the pipeline to be removed by means of careful hand excavation at positions and interval agreed with the Employer's Agent, in accordance

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

with the requirements of subclause PSA 5.4.1.

Measurement and payment for locating the exact positions of the pipelines, where required by the Employer's Agent, shall be made in accordance with PSD 8.3.8.

The Contractor shall thereafter expose and remove from the ground, the existing water pipelines. The pipes shall be pulled out of their sockets and removed from the trench in a manner approved by the Employer's Agent and brought to the surface for inspection and re-use.

All pipes and specials encountered shall be removed from the trench in a manner as to avoid causing damage to the pipe itself and as approved by the Employer's Agent and cleaned sufficiently as to allow inspection of the pipes and specials by the Employer's Agent and stacked in such a manner as will facilitate the inspection of each pipe and special.

Pipes that are declared suitable for re-use and pipes declared unfit for re-use shall be dealt with in accordance with the respective manner described in the specifications, or on the Drawings or the Employer's Agent's instructions, as relevant.

Pipes and specials that are suitable for re-use shall be transported to the Contractor's yard where they shall be off-loaded and neatly stacked to the satisfaction of the Employer's Agent. The Contractor shall be responsible for compiling a written report on all pipes and special recovered.

Pipes and specials which are declared by the Employer's Agent as unsuitable for re-use shall be transported to a spoil site and covered with spoil material to a depth of not less than 300 mm.

After the successful removal of the pipes, the remaining portion of the trench and the existing bedding shall be excavated to the original trench bottom level. The provisions of subclauses PSDB 5.6 and PSDB 5.7 shall apply."

PSDB 5.4 Excavation

ADD THE FOLLOWING:

"Except where otherwise specified, trenches shall be of such a depth that the minimum cover over the pipes shall be 600 mm except at road-crossings where the minimum cover shall be 1 000 mm.

Trench excavations for road crossings shall, except where otherwise specified, be completed and satisfactorily backfilled before the construction of any sub base layer may commence.

The excavation of trenches across a concurrently constructed carriageway shall commence after the subgrade layer has been accepted. The pipe/duct shall be laid and the trench backfilled to the acceptable requirements, including density testing before the construction of the next layer may commence.

Where trenches have to be excavated under this Contract adjacent to live services/other services laid under other contracts, it may be necessary to shore trenches to prevent damage to the live services/other services. It will be the responsibility of the Contractor to ensure that services constructed under other contracts of live services are not damaged by his operations during this Contract."

REPLACE THE TITLE OF SUBCLAUSE 5.5 "Trench bottom" WITH "Unstable trench bottom"

PSDB5.5 Unstable trench bottom

REPLACE THE FIRST PARAGRAPH OF SUBCLAUSE 5.5 AS FOLLOWS:

The Employer's Agent may, upon consideration of the condition of the trench bottom, particularly with regard to the properties of the soil materials, order the use of a crushed stone layer in order to provide a stable platform for placing of the pipe bedding and laying the pipe in certain sections of the trenches. The stone layer shall consist of 19 mm single-sized crushed stone, and shall have a specified thickness of 150 mm over the specified minimum base width.

Should the material in the trench bottom or the bedding material be of such a nature that it can

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

penetrate the stone layer, the Employer's Agent may instruct the Contractor to enclose the stone layer completely within a geotextile filter blanket which shall comply with the requirements of SANS 1200 DK and PSDB3-3.

PSDB 5.6 Backfill

PSDB 5.6.1 General

REPLACE THE FIRST SENTENCE WITH THE FOLLOWING:

"Backfilling of pipe trenches may only commence after the pipe has been laid, firmly bedded in the specified cradle, the blanket placed and compacted as specified and after the pipe has been tested in terms of Clause 7 of SABS 1200 L."

PSDB 5.6.2 Material for backfilling

REPLACE THE LAST PARAGRAPH OF THIS SUBCLAUSE "In areas backfill" WITH THE FOLLOWING:

"The material for backfilling in areas subject to road traffic loads shall comply with PSDB 3.5."

PSDB 5.6.3 Disposal of soft excavation material

REPLACE THE WORDS "unless otherwise required in the project specification." AT THE END OF SUBSUBCLAUSE 5.6.3 WITH:

"or to spoil in accordance with the requirements of subclause PSD 5.2.2.3, as instructed by the Employer's Agent."

PSDB 5.6.6 Completion of backfilling

ADD THE FOLLOWING TO SUBCLAUSE 5.6.6:

"If in the opinion of the Employer's Agent's Representative the Contractor is lagging in the backfilling of trenches, he will be entitled to order that no further excavation takes place until the backfilling operation has caught up."

"Where compaction is carried out using labour intensive methods, the required compaction shall be 90% of MAMDD for all materials."

ADD THE FOLLOWING TO SUBCLAUSE 5.6:

"PSDB 5.6.9 Backfilling around structures

Backfilling around a structure shall not be commenced before it has been approved by the Employer's Agent.

Granular material shall be used as backfill material around structures as shown on the drawings and shall be placed in layers not exceeding 150 mm compacted thickness, each layer being thoroughly compacted to 100% of modified AASHTO density as instructed by the Employer's Agent before the succeeding layer is placed. Unsuitable or surplus excavated material shall be spoiled off site."

PSDB 5.7 Compaction

PSDB 5.7.1 Areas not subject to traffic loads

ADD THE FOLLOWING SENTENCE:

"All non-cohesive material shall be compacted to 100% MOD AASHTO density."

PSDB 5.7.2 Areas subject to traffic loads:

DELETE "98%" AND SUBSTITUTE WITH "100%".

ADD THE FOLLOWING:

"All pipe trenches that fall within the road reserves shall be regarded as areas subject to traffic loads."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 5:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSDB5.11 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 400 m per pipe laying team or between fence crossings, whichever is the shorter. Similarly, the maximum length of open trenches within the villages shall be 100m.

PSDB5.12 Crossing fences

Where, in the opinion of the Employer's Agent, it is necessary to remove existing fences or portion of fences and gates, the Contractor shall dismantle and stack the various components of the fence at a safe place for later re-erection. No gate, fence or portion of fence shall be removed without the prior approval of the Employer's Agent. Where the Contractor wishes the fence line to be open for more than one week he shall erect a temporary fence across the opening at his own expense. On completion of the Contractor's operations in the area the existing fence line shall be reinstated either with new fencing or by using the materials which were dismantled and stacked from the existing fence.

The Contractor is strongly advised to make sketches and where applicable, take photographs of existing fences before they are removed so as to avoid, as far as possible, arguments that may arise between himself and the property owner as to the quality of the removed fences.

PSDB5.13 Ripping trenches prior to hand excavation

The Contractor may request permission from the Employer's Agent to rip the trench routes with a single line. This activity is to assist the Contractor to achieve higher productivity.

PSDB5.14 Shoring

The Employer's Agent may request the Contractor to install shoring according to the OHS Act. If the Contractor decides to use shoring, that will not be separately measured and paid for. However, the cost of shoring requested by the Employer's Agent, as well as the cost of any additional excavations required to install the shoring, will be deemed to be included in the rates tendered for excavation.

PSDB7 TESTING

PSDB7.1 Testing the compaction of backfill to trenches and reinstatement of surfaces

REPLACE SUBCLAUSE 7.1 THE FOLLOWING:

The Contractor shall carry out density tests as specified in TMH1, in the positions indicated by the Employer's Agent, to determine the compaction of the backfill material in the trenches and the material used for reinstating the road construction layers. No single test result which is below the specified density, will be accepted.

In the case of trenches in areas subject to traffic loads, the Contractor shall, notwithstanding the terms of the second sentence of Subclause 7.1, bear the cost of all density tests carried out except as follows. Where the test results are equal to or exceed the specified density, the Employer will bear the cost of that number of those tests ordered by the Employer's Agent in excess of one test per 20 m³ of compacted material, based on the total volume of backfill and reinstated road layers, including the replacement of any over-excavation, in areas subject to traffic loads.

The Contractor shall also bear the cost of those density tests, carried out by the Employer's Agent, of which the test results are below the specified density.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.1 BASIC PRINCIPLES

PSDB 8.1.1 *REPLACE "along the route of the pipeline" IN THE THIRD LINE OF SUB-CLAUSE 8.1.1 WITH "as specified in PSDB 5.6.3".*

PSDB 8.1.2 *ADD THE FOLLOWING:*

"In the road prism the ground surface from which depth will be measured will always

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

(irrespective of operation sequenced) be the road bed level at centre-line."

PSDB 8.3 Scheduled items

PSDB 8.3.2 Excavation:

(a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material

REPLACE "of 1,0 m" IN THE FIRST SENTENCE OF 8.3.2(a) WITH :

"as specified in the Bill of Quantities".

ADD THE FOLLOWING TO CLAUSE (a):

"The rate tendered shall also cover the cost of complying with PSDB 3.5, as well as the cost of any disruption or delay in complying with PSDB 5.4 and PSL 5.1.4.

PSDB 8.3.3 Excavation ancillaries:

PSDB 8.3.3.3 Compaction in road reserves

REPLACE THE HEADING OF THIS SUBITEM WITH THE FOLLOWING:

"PSDB 8.3.3.3 Compaction in road crossings"

AND REPLACE THE SENTENCE "The volume will be measured as specified in 8.2.2, 8.2.3 and 8.3.3.1" WITH THE FOLLOWING:

"In the case of gravel roads, determining the volume, the depth will be measured from the underside of the gravel wearing course to the top of the fill blanket, and in the case of bitumen roads, from the underside of the subbase to the top of the fill blanket.

The rest of the trench shall be backfilled as specified in Clauses 5.9.3, 5.9.4 and 5.9.5, as applicable, and payment will be made under item 8.3.2

PSDB 8.3.3.4 Overhaul

REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"Measurement and payment shall be in accordance with subclause PSD 5.2.5."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG CONCRETE (STRUCTURAL)

PSG2 INTERPRETATIONS

PSG2.1 Definitions (Subclause 2.3)

Under (a) add:

“Construction joint: a joint required on account of constraints or convenience in the method of construction and that is not a movement, contraction or expansion joint.”

PSG2.2 Designated Joints

Notwithstanding Subclause 2.4.3, “designated joints” will only be joints that are shown on the drawings.

PSG2.3 Strength concrete (Subclause 2.4.2)

Grade 30MPa/40mm means strength concrete grade 30MPa with 37.5mm stone.

PSG2.4 Exposure conditions (Subclause 2.4.1)

All concrete on the Works shall be as specified for severe exposure condition.

PSG 3 MATERIALS

PSG 3.2 Cement

PSG3.2.1 Cement Specifications

REPLACE CLAUSE 3.2.1 ENTIRELY WITH THE FOLLOWING:

“Subject to the provisions of clause 3.2.2, cement will comply with the specifications of SANS 50197-1”

PSG 3.2.2 Alternative types of cement

The type of cement to be used for concrete is indicated below:

MEMBER/USE	TYPE	STRENGTH CLASS
Concrete not further specified below	CEM I or II	≥32,5
Floor, road and pavements with saw cut joints or to carry traffic	CEM I or II	≥42,5

PSG 3.2.3 Storage of cement

ADD THE FOLLOWING:

“Unless approved by the Employer’s Agent, cement kept in storage for longer than 8 weeks shall not be used in the Works.

Any cement that contains lumps that cannot easily be crumbled to powder between the fingers, may not be used.”

PSG 3.4 Aggregates

PSG 3.4.1 Application specification

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

The nominal stone size specified in the concrete grade (e.g. 30 MPa/40 mm) shall mean stone conforming to the grading specified in SANS 1083 for the nearest equivalent size, i.e. 20 mm means stone that complies with SANS 1083 for 19 mm size.

PSG 3.4.3 Storage of aggregates

ADD THE FOLLOWING:

“When aggregates of different chloride content are stored on the Site, their use in the various classes of concrete shall be strictly controlled.”

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD THE FOLLOWING SUBCLAUSE:

PSG3.4.4 Aggregates for grouting

Notwithstanding the requirements of Subclause 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 gradings 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

PSG3.4.5 Samples

At least two weeks before commencement of concrete work the Contractor shall supply at his own cost representative samples to the Employer's Agent of the aggregates he intends using, together with certificates from an approved laboratory indicating that the aggregates comply with the specifications. Approximately 50 kg of each sample of aggregate shall be supplied.

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.

PSG 3.5 **Admixtures**

PSG 3.5.1 Approval of admixture requirement

REPLACE THE FIRST SENTENCE THIS SUBCLAUSE WITH THE FOLLOWING:

The use of further admixtures will be subject to the approval of the Employer's Agent. The information listed in Subclause 3.5.1 shall be provided. "

ADD THE FOLLOWING NEW CLAUSE:

"PSG 3.9 **Curing compound**

Curing compound shall be white pigmented natural resin based liquid curing compound complying with ASTM 309-74."

PSG3.10 **Precast paving slabs**

The paving slabs shall comply with the requirements of SANS 541, shall be as billed 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.

ADD THE FOLLOWING NEW CLAUSE:

"PSG 3.12 **Materials for building work**

PSG 3.12.1 Cement

The requirements stipulated for subclause 3.2.1 and PSG 3.2.1 shall apply.

PSG 3.12.2 Sand

Sand for mortar shall comply with SABS 1090.

PSG 3.12.3 Bricks

Brickwork shall be built in stretcher bond. The walls shall be built to the dimensions shown on the drawings or ordered. All bricks shall be well soaked in water immediately before being laid

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

and the previous course of bricks shall be well wetted before the laying of the following course.
Walls shall be carried up regularly so that no brickwork is more than 1m higher than adjoining brickwork.

All bricks shall comply with SABS 227 and shall be NFX burnt clay masonry units free of stones, cracks and other defects. The bricks shall be obtained from an approved manufacturer and samples of the bricks shall be submitted to the Employer's Agent for approval.

PSG 3.12.4 Mortar

Mortar shall comprise of the cement, lime and sand mixed in the proportions given below:

Cement: 50 kg

Lime: 0 – 40L

Sand: 130L (measured loose and damp)"

"PSG 3.13 Classification of no-fines concrete

No-fines concrete shall be type NF19, the prefix denoting the size of the aggregate, namely 19mm.

Each size of aggregate shall be a single size aggregate graded in accordance with SABS 1083.

The volume of aggregate per 50kg of cement shall be 0,3m³."

ADD THE FOLLOWING NEW CLAUSE:

PSG3.11 Materials for movement joints

PSG3.11.1 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.

PSG3.11.2 Waterstops

Waterstops shall be of approved manufacture and of the pattern and the material and widths billed and specified and shown on the drawings. They shall comply with the national standards, and have the appropriate physical properties as set out below:

	PVC	Rubber
Tensile strength (@ 25°C)	12,2 MPa	20,7 MPa
Elongation at break (@ 25°C)	250%	500%
Hardness BS degrees (IRHD @ 25°C)		60 to 65
Softness (BS)		28 to 52

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.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG3.11.3 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% 25% 50%	kPa 175 kPa 210 kPa 340	DIN 53577 DIN 53577 DIN 53577
Compression set after 24 hours Recovery	% 14	
Tensile Strength	kPa 680	DIN 53571
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.

PSG3.11.4 Bondbreakers, 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 4 PLANT

PSG 4.1 General

ADD THE FOLLOWING SUB-CLAUSE:

PSG4.3 & 4.4 Mixing plant and vibrators

REPLACE THE CONTENTS OF THESE SUBCLAUSES WITH THE FOLLOWING:

"Stand-by mixers and 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 mixers or vibrators or failure of the power supply."

PSG 4.5 Formwork

PSG 4.5.1 Design

ADD THE FOLLOWING:

"All formwork or scaffolding required for any part of the Works shall be designed by the Contractor, and before commencing with the erection of any formwork or scaffolding, the Contractor shall submit the methods he proposes to use to the Employer's Agent for approval. The Employer's Agent has the authority to order alterations to the design or the sizes of any part of the formwork or scaffolding. The Contractor shall check the safety and suitability of all such alterations. The fact that the Employer's Agent has approved or altered any part of the formwork or scaffolding shall not be construed as relieving the Contractor of his responsibility with regard to the strength and stability of the formwork or scaffolding."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG 4.5.2 Finish

ADD THE FOLLOWING:

If no formwork finish is indicated on the drawings then the concrete finishes shall be as follows:

CRITERIA	FINISH
Exposed walls	Smooth
Surfaces that will be buried	Rough

PSG 4.5.3 Ties

ADD THE FOLLOWING:

"No plugs, bolts, ties or clamps of any description used to hold the formwork will be allowed to project into or through the concrete unless expressly approved by the Employer's Agent.

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.

Only approved tie-rods consisting of solid rods (that remain embedded in the concrete) and with removable ends shall be used to hold the formwork of the walls. The removable tie-rod ends shall facilitate removal without damage to the concrete, and no permanently embedded parts of such tie-rods shall have less than 50 mm of cover to the finished concrete surface.

The cavities left in the concrete when the tie-rod end cones are removed shall be soundly caulked with a cement mortar to which an approved shrinkage-reducing agent has been added, and shall be neatly finished to a smooth surface uniform with that of the surrounding concrete.

The cost of supplying special tie-rods as well as the filling of cavities left by the tie-rod cones shall be included in the rates tendered for formwork under the appropriate pay items.

On no account shall formwork be secured to reinforcing bars."

ADD THE FOLLOWING TO SUBCLAUSE 4.5:

PSG4.5.4 Formwork: chamfers and fillets

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.

Internal corners in concrete work need not have fillets unless such fillets have been specified on the drawings or ordered by the Employer's Agent.

PSG 5 CONSTRUCTION

PSG 5.1 Reinforcement

PSG 5.1.2 Fixing

ADD THE FOLLOWING:

"The Employer's Agent will inspect the reinforcing after it has been fixed in place, the formwork has been cleaned, cover blocks have been positioned, and before concreting commences.

Welding of reinforcing steel will not be permitted."

PSG5.1.3 Cover

IN SUBCLAUSE 5.1.3(A) REPLACE THE words "bar or stirrup" TO READ: "bar, secondary reinforcement, tie, stirrup, tying-wire knots or wire ends".

ADD TO SUBCLAUSE 5.1.3: "Tying wire may not encroach on the specified minimum cover by more than a single strand thickness."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD THE FOLLOWING SUBCLAUS:

PSG5.1.6

Spacers

Spacers of approved design include approved plastic or other proprietary spacers, or purpose made precast mortar blocks.

Where mortar blocks are used they shall be properly shaped so as not to slip out of position and shall be made of the same mix as the mortar of the concrete in which they are to be placed. The mortar shall be well compacted by approved means into the moulds to result in blocks with a density of at least 2 300 kg/m³ and which are free from honeycombing. The mortar blocks shall be cured in water for at least 7 days. Blocks which have not been manufactured and cured strictly in accordance with these requirements or which are in any other way considered unsatisfactory by the Employer's Agent, will be rejected and shall be removed from the Site.

PSG 5.2

Formwork

PSG 5.2.1

Classification of finishes

(c) **Special**

ADD THE FOLLOWING:

"This finish is obtained by first giving the surface a smooth finish with the joints between formwork panels forming an approved regular pattern suitable for the appearance of the structure. All projections shall then be removed, irregularities repaired and the surface rubbed or otherwise treated until it is smooth with an even texture, appearance and colour.

If the finish of exposed surfaces does not comply with the requirements for uniformity of the texture and appearance, the Contractor shall, when instructed to do so by the Employer's Agent, rub down the exposed surfaces of the entire structure or any part thereof as specified below, entirely at his own cost. All repairs must be completed before the rubbing commences.

The surface shall be saturated with water for at least one hour. The initial rubbing of the face shall be carried out with a medium coarse carborundum stone together with a small amount of mortar of the same cement/sand ratio as the concrete being repaired. Rubbing shall continue until all form marks, projections and irregularities have been removed and a uniform surface has been obtained. The paste produced by the rubbing shall be kept in place. The final rubbing shall be carried out with a fine carborundum stone and water. This rubbing shall continue until the entire surface has a smooth, even texture and is uniform in colour. The surface shall subsequently be washed with a brush to remove surplus paste and powder."

PSG 5.2.2

Preparation of formwork

ADD THE FOLLOWING:

"Construction joints shall be positioned as shown on the Drawings."

PSG 5.2.5

Removal of formwork

ADD THE FOLLOWING NEW SUB-CLAUSE:

PSG 5.2.5.6

The Contractor shall make provision for the continued support of beams and slabs while the formwork is being removed and/or for back propping of beams and slabs."

PSG 5.3

Holes, chases and fixing blocks

ADD THE FOLLOWING:

"Cover blocks for reinforcing and fixtures may be placed into the concrete provided that neither the strength nor any other desirable characteristic (such as the appearance) of the concrete section is affected or impaired in the opinion of the Employer's Agent."

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG 5.5 Concrete

PSG5.5.1.1 General

REPLACE THE CONTENT FOR THIS SUBCLAUSE:

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.

No concrete shall be cast until the mix designs have been approved by the Employer's Agent. The Employer's Agent may call for revised mix designs at any stage during the Contract.

The relevant requirements of SPEC RC shall apply to all reinforced concrete water-retaining structures.

PSG 5.5.1 Quality

PSG 5.5.1.5 Durability

The exposure conditions of the reservoir concrete are classified as "severe".

PSG5.5.1.6 Prescribed mix concrete

Notwithstanding the requirements of Subclause 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 Subclause 3.4.1, for the production of prescribed mix concrete.

Unless otherwise directed by the Employer's Agent in writing, prescribed mix concrete shall be mixed in the following proportions:

Grade	By mass			By volume		
	Cement	Sand	Stone	Cement	Sand+	Stone
30	1	2.2	2.9	1 sk ^{\$}	0,08 m ³	0,09 m ³
25	1	2.5	3.2	1 sk ^{\$}	0,09 m ³	0,11 m ³
20	1	2.9	3.6	1 sk	0,11 m ³	0,13 m ³
15	1	3.6	4.2	1 sk	0,14 m ³	0,15 m ³
10	1	4.5	5.0	1 sk	0,17 m ³	0,17 m ³

+ Assuming 5% moisture in sand

\$ sk = 50 kg sack

PSG 5.5.1.7 Strength concrete

ADD THE FOLLOWING

"The concrete mixes shall be designed by the Portland Cement Institute or a similar approved laboratory.

The minimum ordinary Portland cement content for strength concrete with a 28 day characteristic compressive strength of 25MPa and higher shall be 325kg/m³. The maximum ordinary Portland cement content shall be 400kg/m³ in reinforced concrete and 500kg/m³ in prestressed concrete.

The maximum water: cement ratio shall be 0,55 for ordinary Portland cement."

PSG 5.5.2 Batching

Notwithstanding the requirements of this subclause, the method of batching shall be subject to approval. If volume batching is allowed, only full standard 50kg bags of cement may be used to make up a batch.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG 5.5.3 Mixing

PSG 5.5.3.2 Ready-mixed concrete

ADD THE FOLLOWING:

"The use of ready-mixed concrete will only be allowed if its test cubes on site is successful. The mix shall be produced from the proposed ready-mix facility and transported to the site by the proposed transporters."

PSG 5.5.5 Placing

ADD THE FOLLOWING:

"Concreting of the wall between horizontal construction joints shall be carried out in both directions from a point on the wall in order to close the gap with fresh concrete.

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 may be cast directly against the side of the excavation. Concrete for thrust/anchor blocks shall be cast directly against the side of the excavation."

PSG 5.5.6 Compaction

DELETE"or (if approved).... by spading, rodding or forking" in the first sentence of subclause 5.5.6.3.

PSG 5.5.7 Construction joints

ADD THE FOLLOWING:

"Construction joints shall be limited to the minimum.

Horizontal construction joints are permitted in the structure walls in positions indicated on the Drawings or approved by the Employer's Agent. Vertical construction joints in the walls are subject to the written approval of the Employer's Agent and the cost of all such vertical or horizontal construction joints will be deemed to be included in the rates for cast-in-situ concrete.

The construction joints in water-retaining structures shall be made strictly in accordance with the details shown on the Drawings. The joints between screeds and concrete floors shall be regarded as construction joints and the surface of the floor shall be prepared as described for construction joints.

Should the Contractor's method of construction necessitate the placing of a construction or other joint in a position not shown on the Drawings, such method of construction and position of the joint shall be approved by the Employer's Agent in writing. The cost of such joint shall be included in the tendered rates and shall include scabbling or the concrete where steel reinforcement is continuous.

The wall shall be cast in lifts of a height that permits each lift to be poured without interruption in one continuous operation during normal working hours.

It is the Contractor's responsibility to ensure that construction joints are watertight. The Contractor's proposed method for ensuring the watertightness of such joints shall be submitted to the Employer's Agent for his approval.

For construction joints at kickers all additional costs for concrete, preparation, etc. will be deemed to be included in the rates tendered for concrete in walls or sides and kicker joints or construction joints will not be measured separately."

PSG 5.5.8 Curing and protection

ADD THE FOLLOWING:

"The curing methods of retaining for formwork in place, covering with a waterproof membrane and use of a curing compound of the type specified in PSG 3.9 are strongly recommended.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Concrete will not be paid for unless properly cured and proof of curing is continuously visible on site.”

ADD THE FOLLOWING SUBCLAUSES:

PSG5.5.8.1 Horizontal surfaces

Horizontal and near horizontal surfaces shall be treated in accordance with Subclause 5.5.8.

Other surfaces of the concrete shall be treated with a curing compound complying with the Employer’s Agents requirement.

PSG5.5.8.2 Formed surfaces

In order to improve the effectiveness of the curing treatment, the specified minimum time for the removal of the formwork shall be four days.

PSG5.5.8.3 Acceptance Criteria

Tests from a ready-mix plant of ready mixed concrete provided will not be acceptable for acceptance testing. All samples will be taken on-site, as close to the point of use as is practical.

PSG5.5.8.4 Curing compound

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 Employer’s Agent, 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 Employer’s Agent 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 Employer’s Agent, is unsatisfactory. The curing compound used shall be to the approval of the Employer’s Agent. 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 Employer’s Agent 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.

PSG5.5.9.2 Hot weather conditions

No placing of concrete shall take place if the ambient temperature exceeds 32°C, or is likely to rise to above 32°C during the casting period or within eight hours after casting is completed.

PSG 5.5.10 Concrete surfaces

All unformed concrete surfaces shall, except where otherwise ordered, be given a steel float finish.

ADD THE FOLLOWING NEW SUB-CLAUSE:

“5.5.10.4 Where the surfaces of the concrete are to be additionally hardened or protected the positions of such surfaces and the method to be used will be shown on the Drawings and will be scheduled. Materials or products with a ferrous content will not be allowed.”

PSG5.5.13 Grouting to Machine and Structural Bedplates

Replace Clause 5.5.13 with the following

“PSG 5.5.13.1 Materials

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- a) Water. Water for grout shall comply with the requirements given in Subclause 3.3 of SABS/SANS 1200G.
- b) Aggregates. Notwithstanding the requirements of Subclause 3.4.1 of SABS/SANS 1200 G, the grading of fine aggregate (sand) and coarse aggregate (stone or pea gravel) shall conform to the gradings given in Tables 1 and 2, respectively, below.
- c) Cement. Cement shall be ordinary portland cement.
- d) Admixtures. Admixtures shall comply with the requirements of Subclause 3.5 of SABS/SANS 1200 G and shall have a proven record of satisfactory performance under conditions encountered in the Republic of South Africa.
- e) Proprietary grouting materials. Unless otherwise approved by the Employer's Agent, proprietary grouting materials shall be obtained ready mixed in sealed pockets as supplied by the manufacturers.

TABLE 1 – SAND

1	2
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,75	95-100
1,18	45-65
0,3 (300 µm)	5-15
0,15 (150 µm)	0-5

TABLE 2 – STONE OR PEA GRAVEL

1	2
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,75	95-100
2,36	0-5

PSG 5.5.13.2 Preparation and procedures

- a) Before a machine or structural bedplate is placed on the concrete the following steps shall be carried out:
 - 1) All defective concrete, laitance, dirt, oil, grease, and loose material shall be removed from the concrete foundation by bush-hammering, chipping, or other means until sound clean concrete is obtained. The surface of the foundation shall be scabbled, but shall not be so rough as to interfere with proper placing of the grout. All foundation bolt sleeves shall be cut out, or cut off flush if the sleeves cannot be removed. The top of the foundation shall be re-shaped if necessary.
 - 2) The underside of each steel base, particularly in the bearing areas, shall be cleaned and any burrs and ragged edges removed before the base is placed in its final location.
 - 3) All holding-down bolt sleeves shall be thoroughly cleaned of any materials that may prevent the grout from flowing freely to the bottom of the bolt sockets.
- b) The base shall be properly aligned and leveled and shall be maintained in that position during grouting.
- c) After the machine or structural bedplate has been placed the following precautions shall be observed:
 - 1) Shimming shall be kept to a minimum. Steel plates shall be used for packing and shall be ground to the required thickness, where necessary.
 - 2) Before grouting is started all loose dirt, oil, grease, and other foreign matter on the surface of the foundation, the undersides of bedplates, and in the bolt holes shall be removed by means of oil free compressed air or other approved means. The surface of the foundation slab shall be thoroughly saturated with clean water, and all free water shall be removed from the surface and the boltholes just before the grout is placed.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- 3) Grouting shall not be carried out until the alignment of all units to be grouted has been checked and approved by the Employer's Agent.
- 4) Special care shall be taken with grouting in hot or cold weather to ensure proper setting and gain of strength and, in the case of proprietary grouting materials, by having ice or hot water available, as the case may be, in accordance with the instructions of the manufacturer.

Enclosures shall be provided for the grout such that, until it has set, its temperature will be in the range 15 - 27°C.

Shields to protect the grout from the sun and from hot winds shall be provided by the SubContractor when so ordered.

PSG 5.5.13.3 Formwork

Formwork for grouting shall comply with the applicable requirements of Subclause 5.2 of SABS/SANS 1200 G. Forms shall be caulked where necessary. Adequate clearance between forms and bedplates shall be provided to enable the grout to be worked into place.

PSG 5.5.13.4 Mixing (all free-flowing grouts except epoxy grouts)

The grout shall be mixed to a homogeneous uniform mixture and delivered ready for placing at a temperature between 15°C and 25°C.

The materials and water shall be mixed in a mortar mixer for at least 3 min or, in the case of small jobs only, shall be thoroughly mixed by hand, the entire mass being turned over enough times to ensure even distribution of its components.

The mixing shall be done as close as possible to the place(s) where the grout is placed.

No more grout shall be mixed at any one time than can be placed in a period of 20 min. After the grout has been mixed it shall not be re-tempered by the addition of water.

PSG 5.5.13.5 Grouting (all free-flowing grouts except epoxy grouts)

The grout shall be placed quickly and continuously to avoid the undesirable effects of over-working. (These effects are segregation, bleeding, and breaking-down of initial set). The method of placement shall be subject to approval. The means of placing the grout shall be such that the grout will completely fill the space to be grouted, will be thoroughly compacted, will be free of air pockets, and will have evenly distributed contact over an area in excess of 80% or, in the case of expanding grout, 95% of the bearing area of the item to be supported.

Where practicable, grout shall be placed from one side only and where this is not practicable, care shall be taken to ensure that any entrapped air is released.

After the grout has taken its initial set,

- a) the forms shall be removed;
- b) excess grout shall be so cut away as to leave a smooth and neatly finished job;
- c) except where the grout is intended to provide resistance to side thrust, all edges shall be trimmed at 45° to the vertical, from the bottom edge of the bedplate; and
- d) all excess grout on or about the bedplates shall be removed.

Damage to paintwork, if any, shall be repaired within 24 hours.

Packing plates, shims, and other levelling devices shall remain in position.

PSG 5.5.13.6 Dry-packed grout (standard dry sand and cement grout)

Dry-packed grout shall have a minimum compressive strength at 28 d of 20 MPa. The quantity of water added after placing shall be kept to a minimum consistent with placing conditions, and the cement, sand and, where applicable, pea gravel proportions by mass shall be as follows:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- a) Where the clearance between bedplate and foundation is 25 mm or less : 1 part of Portland cement, and 2 parts of sand;
- b) Where the clearance exceeds 25 mm: 1 part of Portland cement, 1 part of sand, and 1 part of pea gravel.

Dry-packed grout shall be rammed by means of tamping rods against formwork placed along three sides of the bedplate.

PSG 5.5.13.7 Non-shrink grout with metallic aggregate

The manufacturer's instructions shall be observed when non-shrink grout with metallic aggregate is used.

Where the clearance between the bedplate and the foundation is less than 50 mm a sand-based mix shall be used. Where the clearance exceeds 50 mm the Employer's Agent may order a mix with a base of sand plus pea gravel to be used.

PSG 5.5.13.8 Expanding grout with powdered aluminium additive

The manufacturer's instructions shall be observed when an expanding grout with powdered aluminium additive is used.

Where the clearance between the bedplate and the foundation is less than 25 mm, a sand-based mix shall be used.

Where the clearance exceeds 25 mm the Employer's Agent may order mix with a base of sand plus pea gravel to be used.

Each batch shall be mixed for at least 6 min after the powdered aluminium has been added. Where a ready-mixed grout is used, the powdered aluminium shall be added at the placing site and the batch mixed as specified in PSG 5.5.13.4. Grout shall be placed within 45 min after the addition of the powdered aluminium.

The Contractor shall not use powdered aluminium additive when the ambient temperature is below 5°C.

PSG 5.5.13.9 Epoxy grout (epoxy mortar type only)

The manufacturer's instructions shall be observed when an epoxy grout is used.

PSG 5.5.13.10 Testing

The Contractor shall, where so ordered, carry out a site test for each grouting procedure and each grouting gang to be used. 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 Employer's Agent.

The Contractor shall, when so ordered, make standard test cubes from various grout mixtures and subject them to compression tests to determine whether the specified strength has been achieved. Test procedures shall comply with the relevant requirements of Subclauses 7.2.1-7.2.3 of SABS/SANS 1200 G."

PSG5.5.14 Defects

ADD THE FOLLOWING TO SUBCLAUSES 5.5.14:

All defects shall be repaired as soon as possible after the formwork has been removed and the Employer's Agent has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Employer's Agent for his approval before any work is carried out. The Employer's Agent may prohibit the further placing of concrete in the particular area concerned until he is satisfied that the repair has been satisfactorily executed.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD NEW SUBCLAUSES TO CLAUSE 5.5.14:

PSG5.5.14.3 Prevention and repair of plastic shrinkage cracks

The Contractor shall take whatever measures are necessary to prevent plastic shrinkage cracking in the concrete. Particularly on dry windy days or hot sunny days the Contractor shall make provision for fine spraying of the concrete surface with water within one hour of casting or covering of the concrete with black plastic sheeting. It may be necessary to change the aggregates or the concrete mix proportions.

ADD THE FOLLOWING NEW SUB-CLAUSES:

“PSG 5.5.16 Soilcrete

Where soilcrete is specified for filling under floor slabs, the soilcrete shall comply with the requirements of subclause PSDB 3.5 (c) of section 1200 DB as amended and shall be placed as specified in the subclause.”

“PSG 5.5.17 Brickwork

Brickwork shall be built in stretcher bond to the dimensions shown on the drawings. All bricks shall be well soaked in water immediately before being laid and the previous course of bricks shall be well wetted before the laying of the following course.”

“PSG 5.5.18 Plasterwork

Plasterwork shall consist of a single coat, comprising one application of a 1:6 cement:sand mixture with a woodfloat finish. The thickness of the plaster shall be between 13 and 20 mm. All plaster shall be finished smooth, shall be plumb and corners shall be rounded and square.”

“PSG 5.5.19 No-fines concrete

PSG 5.5.19.1 Batching and mixing

Cement shall be measured by mass or full bags of 50kg each and aggregate shall be measured by volume in approved measuring boxes or barrows.

The quantity of water added shall be just sufficient to form a smooth grout that will adhere to and completely coat each and every particle of aggregate and that is just wet enough to ensure that at points of contact of the aggregate the grout will run together to form a small fillet to bond the aggregate together. The mix shall contain no more than 20 ℓ of water per 50kg of cement.

Mixing shall be carried out in an approved batch-type mechanical mixer, but small quantities may be hand mixed.

PSG 5.5.19.2 Placing

No-fines concrete shall be placed in accordance with the procedure approved by the Employer's Agent. It shall be placed in its final position within 15 minutes of having been mixed.

The concrete shall be worked sufficiently to ensure that it will completely fill the space to be concreted and that adjacent aggregate particles are in contact with one another. Excessive tamping or ramming shall be avoided and under no circumstances shall the concrete be vibrated.

PSG 5.5.19.3 Protection

All no-fines concrete shall be protected from the elements and loss of moisture. Protection against loss of moisture shall be accomplished by one or more of the following methods:

- (a) Retaining formwork in place
- (b) Covering exposed surfaces with sacking or other approved material kept continuously wet
- (c) Covering exposed surfaces with plastic sheeting

No-fines concrete placed during cold weather shall be adequately protected against frost for at least 3 days.”

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ADD NEW SUBCLAUSES AS FOLLOWS:

PSG5.6 Holding Down Bolts for Equipment

The treatment-plant/pump Contractor will supply all holding-down bolts for all items of plant and penstocks together with all dimensions and other details necessary for the construction of the pedestals and holding-down bolt pockets, or the fixing of the bolts. The Contractor shall either form pockets or cast in the bolts, as ordered. The items of plant will be aligned and levelled on site by the plant Contractor (by means of metal blocks and shims under the base at the anchor studs and also midway between studs in the case of heavy equipment) and, after the Employer's Agent is satisfied with the alignment and the level of each unit, the Contractor shall grout up the units solidly by filling the voids inside and under the baseplate with an approved non-shrink grout."

PSG5.7 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 alterations 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 Subclause 5.5.7.3.

Immediately prior to concreting being carried out by 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.

PSG5.8 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 Employer's Agent.

Where anchor bolts are used which are installed into holes drilled into concrete or masonry these shall be of a type approved by the Employer's Agent. 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. No GMS in close proximity to stainless steel will be permitted.

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

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Specified Anchor Size	Minimum Pull-out Force (kN)	Minimum Load (kN)	Ultimate	Lateral
M12	31,85	26,90		
M16	50,45	45,80		
M20	60,50	71,20		

PSG6 Tolerances

PSG6.2 Permissible deviations

ADD THE FOLLOWING:

Degree of Accuracy II shall apply except that abrupt changes in a continuous surface shall not be more than 3 mm.

PSG 7 TESTS

PSG 7.1 FACILITIES AND FREQUENCY OF SAMPLING

PSG 7.1.1 Facilities

ADD THE FOLLOWING:

"The Contractor shall provide sufficient storage capacity for the concrete cubes and shall arrange to have them tested by an approved laboratory.

The cost of all testing, including the cost of sampling, storage and transport of samples shall be included in the rates tendered for concrete work."

PSG 7.1.2 Frequency of sampling

Notwithstanding the requirements of this subclause, the Contractor shall take note that he is responsible for taking an adequate number of tests to ensure that the concrete being used complies with the specification. The Employer's Agent will only carry out such control testing as he requires.

PSG7.2.4 Early strength testing of concrete in wall panels

Two samples of the concrete used in the construction of the wall panels shall be tested prior to lifting of the panels.

Where lifting frames are not used the lifting of the panels will not be allowed unless an average strength of 25 MPa has been achieved.

PSG 7.3 Acceptance criteria for strength concrete

ADD THE FOLLOWING:

"Test results obtained from the supplier of ready-mixed concrete will not be accepted for evaluation in terms of Subclause 7.3, but samples for testing shall be taken of such concrete at the point of placing."

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1 Measurement and rates

PSG8.1.1 Formwork

Notwithstanding the method of measuring and paying for formwork specified in Subclauses 8.1.1, 8.1.2.1 and 8.1.2.2, formwork will be measured per square metre.

This item in the bill will cover the cost of kickers, transportation, placing, removal of formwork including all operations involved in this work.

PSG 8.3.1 Reinforcement

REPLACE THE CONTENTS OF THIS CLAUSE WITH THE FOLLOWING:

"The unit of measurement for steel bars shall be the ton of reinforcement in place, in accordance with the Drawings or as authorised by the Employer's Agent.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Clips, ties, separators, stools and other steel used for positioning reinforcement will not be measured, unless these are shown on the bending schedules.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the steel reinforcement, including all tying wire, stools, supports and waste."

PSG 8.3.2 Mesh

REPLACE THE CONTENTS OF THIS CLAUSE WITH THE FOLLOWING:

The unit of measurement for welded mesh shall be square meter of fabric reinforcement in place, and the quantity shall be calculated from the net area covered by the mesh, excluding overlaps.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the mesh, including all tying wire, stools, supports and waste."

PSG8.4 Concrete

PSG8.4.1 Blinding layer

REPLACE THE CONTENTS OF THIS CLAUSE WITH THE FOLLOWING:

The unit of measurement for blinding layer shall be square meter, and the quantity shall be calculated from the dimension given on the drawings.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the mesh, including all tying wire, stools, supports and waste."

PSG8.4.3 Strength concrete grade

The rates for concrete shall also cover:

- a) The cost of the preparation of design mixes by an approved laboratory and submission for approval by the Employer's Agent (see PSG5-5-1-1),
- b) The cost of non-designated joints (see PSG5-5-7-2), and
- c) Screeded finish of unformed surface as specified in PSG5-5-10-2
- d) Chamfers and fillets (No additional payment will be made for chamfers and fillets up to 40 mm wide)
- e) Holding down bolts. The rate shall cover the cost of supplying and installing the bolts including 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.
- f) 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. 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.

PSG8.4.4 Unformed surface finishes

The rates for unformed surface finishes shall cover the cost of providing the respective surface finish as specified in PSG5-5-10.

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.

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.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSG8.4.5	<p><u>Aggregates.....Unit:m³</u></p> <p>ADD THE FOLLOWING:</p> <p>The rate shall cover the cost of supplying, laying and tools and labour involve for ths work.</p>
PSG8.4.4	<p><u>Additives</u></p> <p>This item is measured per cubic meter.</p> <p>The rate shall cover the cost of supplying and tools and labour involve for ths work.</p>
PSG8.5	<p><u>Joints.....Unit:m</u></p> <p>Only designated joints as shown on the drawings will be measured for payment according to the length of each type of joint constructed (see PSG5-5-7). The rate shall cover the cost of all materials, labour and plant required to construct each type of joint specified on the drawings, including the cost of all shuttering, treatment of the joint as specified in Subclause 5.5.7.3, the provision of chamfers as specified where concrete is exposed, as well as testing and repairing where necessary.</p> <p>Non-designated joints will not be measured for payment.</p>
PSG8.9	<p>Water tightness tests</p> <p>The water tightness test of water retaining structures will be paid by a lump sum separately for each structure.</p> <p>The sum shall cover the cost of all labour, equipment and materials to carry out the tests, as specified hereafter, to rectify faults and to achieve a test result to the satisfaction of the Employer's Agent.</p> <p>Water shall be provided free of charge for one filling of the structure. The sum shall include for all water required over and above that required for one filling of the water retaining structure.</p> <p><u>Test</u></p> <p>The structure shall be cleaned and initially filled with the specified water at a uniform rate that does not exceed 2m in height every 24hours. Structures shall not be backfilled unless specified.</p> <p>When first filled, the water level shall be maintained by the addition of further water for a stabilizing period of 7 days while absorption and autogenic healing takes place. After the stabilizing period, the level of the water surface shall be recorded at 24 hour intervals for a test period of 7 days. During this 7 day test period, the total permissible drop in water level shall not exceed 1/500 of the average water depth of the full tank or 10mm, whichever is less.</p> <p>Notwithstanding the satisfactory completion of the test, any evidence of seepage of water to the outside faces of the structure or intensified flow of the underfloor drainage system shall be assessed against the requirements of the specification. Any necessary remedial treatment of the concrete to the cracks of joints shall, where applicable, be carried out from the internal water face. When a remedial water lining is applied to inhibit leakage at a crack it shall have adequate flexibility and have no reaction with the stored water.</p> <p>Where the structure fails the to satisfy the 7 day test then, after completion of the remedial work, it shall be refilled and a further 7 day test undertaken in accordance with this clause.</p>
PSG8.10	<p>Disinfection of potable water retaining structures</p> <p>Water retaining structures shall be disinfected in the same manner as potable water pipelines. The Employer's Agent is to confirm the availability of water for disinfection. The disinfection shall take place before testing of the structure commences. The disinfection shall take place in the following manner if there is adequate water available,</p> <p>A) The structure shall be flushed out with clean water until all sediment and foreign matter is removed.</p>

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- B) The structure shall be filled with a solution of calcium hypochlorite at 0.15g/l at the adding rate of not more than 2m per 24hours and allowed to stand for 24 hours.
- C) The reservoir shall be emptied and sprayed internally with clean water and the walls broomed down to remove the solution from the walls.

In the case of water unavailability for disinfection, the reservoir will be sprayed internally with a high pressure cleaner and the walls, columns and floor scrubbed with the calcium hypochlorite solution by means of stiff brooms. After completion of this step C applies again.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

PSLB BEDDING (PIPES)

PSLB 2 INTERPRETATIONS

PSLB 2.3 Definitions

Flexible pipe

ADD THE FOLLOWING:

“mPVC and HDPE pipes shall be classified as flexible pipes.”

PSLB 3 MATERIALS

PSLB 3.1 Selected granular material

REPLACE SUB-CLAUSE 3.1 WITH THE FOLLOWING:

"Selected granular material shall be an aggregate, sand or granular material, all of a non-cohesive nature, the grading analysis of which shows 100 % passing a 13,2 mm sieve and not more than 5% passing a 0,075 mm sieve and has a compactability factor not exceeding 0,4.

In the case of flexible pipes, the selected granular material shall consist of sand.”

PSLB3.4 Selection

PSLB3.4.1 Suitable material available from trench excavation

ADD THE FOLLOWING:

Suitable selected bedding material will be generally available from trench excavations along the route. Additional material may be obtained from the stockpiles of granular material that were made during bulk earthworks operations.

ADD THE FOLLOWING NEW CLAUSE:

“PSLB 3.5 Bedding in waterlogged conditions

Where ordered by the Employer’s Agent a bedding cradle of the specified thickness, comprising of 6,7 mm concrete stone complying with SABS 1083, shall be used in waterlogged conditions.”

“PSLB3.4.2 Crushed Stone Bedding

Where the conditions on the trench bottom are so wet that the use of selected granular material is not practical, use will be made of 19mm single sized crushed stone material from commercial sources. The use of such stone will be entirely at the Employer’s Agent’s discretion.”

PSLB4 PLANT

PSLB4.1.1 Placing and compacting

ADD THE FOLLOWING:

Except that the Contractor may use a tractor with trailer or a truck as the case may be to haul bedding material, where it is required that the work is to be carried out using labour intensive methods, the SubContractor shall use only hand tools such as shovels, wheelbarrows and hand tampers in the placing and compaction of bedding.

The bedding and fill material on each side of the pipe must be well compacted to 90% MOD AASHTO over the full depth of the bedding layers. The bedding cradle and fill directly above the pipe must not be compacted until the depth of cover to pipe is 200mm for all pipe sizes.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSLB 5 CONSTRUCTION

PSLB 5.1 General

PSLB5.1.1.2 Bottom

ADD THE FOLLOWING:

"Where expansive clay is encountered in the trench bottom, the selected fill blanket shall comprise selected granular material."

PSLB 5.1.2 Details of bedding

ADD THE FOLLOWING PARAGRAPHS:

"The dimension 'X' for flexible and rigid pipes as indicated on drawing LB-1 will be 100 mm unless otherwise indicated on the Drawing. The dimension 'X' will be measured from the invert of the pipe.

Notwithstanding the provisions of this subclause, and except for Class A bedding, pipes shall be bedded and protected in accordance with the details shown on the drawings, which shall supersede, as applicable, drawings LB 1 through to LB 5."

PSLB 5.2 Placing and compacting of rigid pipes

Notwithstanding the provisions of this subclause, the bedding for rigid pipes shall be constructed to the dimensions shown on the drawings and using the bedding material specified.

PSLB 5.2.1 Class A Bedding

ADD THE FOLLOWING TO SUBCLAUSE 5.2.1(c)

"or a period of 5 days has elapsed after the placing of the concrete in that section, whichever occurs first"

PSLB 5.3 Placing and compacting of flexible pipes

Notwithstanding the provisions of this subclause, the bedding for flexible pipes shall be constructed to the dimensions shown on the drawings and using the bedding material specified.

PSLB7 TESTING

PSLB7.2 Compaction

Where compaction is carried out using labour intensive methods, the required compaction shall be 90% of MAMDD for all materials.

The method implemented for testing of the bedding compaction shall be the sand replacement test method.

PSLB 8 MEASUREMENT AND PAYMENT

PSLB 8.1 Principles

PSLB 8.1.3 Volume of bedding materials

Notwithstanding the provisions of this subclause, the volume of bedding will be computed from the dimensions shown on the drawings.

REPLACE THE LAST SENTENCE WITH THE FOLLOWING:

"No allowance will be made for bulking of material or any additional volume of bedding material required due to overbreak or any other cause.

Further, the volume of bedding displaced by the pipeline will not be measured for payment."

PSLB 8.1.5 Disposal of displaced material

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

"Material displaced by the pipeline and by imported material from sources other than trench excavation, shall be disposed of at an approved site furnished by the Employer. No haulage is payable for such material."

PSLB8.1.6 Freehaul

REPLACE THE CONTENT OF THIS SUBCLAUSE WITH THE FOLLOWING:

The freehaul specified in SANS 1200 D sub-clause 5.2.5.1 shall be the entire length of the pipelines under construction and shall be applicable to selected fill material and selected granular material obtained from the excavations.

PSLB 8.2 Scheduled items

PSLB 8.2.2 Supply only of bedding by importation

PSLB 8.2.2.3 From excavated material

ADD THE FOLLOWING NEW CLAUSE:

Importing of bedding and supply..... Unit: m³

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

PSX ADDITIONAL CLAUSES

PSX 1 GENERAL

PSX 1.1 Scope

This specification covers the procedures and requirements for the supply, delivery, installation, testing and commissioning of pump building, mechanical and electrical equipment, that are generally applicable to all mechanical and electrical construction works forming part of civil Engineering construction works.

Note

Terminology used throughout the standard specifications is explained because, in terms of the conditions of contract, the Employer, the Contractor, and the Employer's Agent have certain rights and obligations which can be exercised most equitably when all parties have a clear understanding of the operations that are covered by each item in the contract.

PSX 1.2 Approval

No approval of any equipment or plant and its operation, or of any installation procedure to be used, will imply any relaxation of the requirements governing the quality of the materials or of the finished work, or relieve the Contractor of his responsibilities under the contract.

PSX 1.3 Design and manufacture (supply and delivery)

PSX 1.3.1 Standards

The material and workmanship throughout shall be of the highest quality generally accepted in the manufacturing and/or construction industry, as applicable, and consistent with the type of work to be executed under this Contract. Where available, all materials used and the standards of workmanship employed for the execution of the Works shall comply with the appropriate SABS, IEC, ISO, or BS Standard and /or Code and if they do not carry the relevant standard mark the items comply with the appropriate standard. All inferior work will be rejected.

PSX 1.3.2 Machinery and Occupational Safety Act

All apparatus and material supplied, and all work carried out shall comply in all respects with the Machinery and Occupational Safety Act 6 of 1983, as amended (ACT). This particularly applies to the guarding or provision of guarded for plant and apparatus as well as codes of practice and approval.

PSX 1.3.3 Delivery of Goods

Inspection and Vesting of ownership.

The Employer's Agent or a person appointed by him will inspect the goods for provisional approval as soon as possible after they are stored in terms of the Employer's Agent's order. Notwithstanding that any of the goods are stored, ownership therein shall pass to and vest in the Employer upon payment.

PSX 1.3.4 Storage of Goods on site

In the event of the Employer's Agent not being satisfied with the provisions for storage provided by the Contractor in Site, he may order all goods and erection equipment to be delivered to the employer's stores and stored there in at the Contractor's risk and cost.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX.2 SHOP DRAWINGS and GENERAL ARRANGEMENT of SWITCHBOARDS, CONTROL PANELS and MCC's

Shop drawings showing the proposed layouts and arrangement of switchboards and panels housing the control equipment shall be submitted to the Employer's Agent for approval before the commencement of manufacturing.

PSX.3 TESTING

The electrical panels shall be tested at the factory or at the premises of the Pump / Electrical Sub-Contractor and shall be witnessed by the Employer's Agent and/or the Client.

All equipment necessary to test the performance and the operation of the panels shall be provided.

After completion of the installation and putting into proper operation of the pumping equipment, the Sub-Contractor will be required to make suitable arrangements for the testing of the plant and equipment supplied under this contract, in the presence of the Employer's Agent or his representative, so as to determine whether the installation is in compliance with the guaranteed figures submitted by the Sub-Contractor.

Before the Employer's Agent is called to witness any testing, at the factory or on the respective sites, the Sub-Contractor must test and commission the equipment/installation on his own.

In the case of commissioning the results of the commissioning must be handed to the Employer's Agent. These results must be accepted by the Employer's Agent before final arrangements for the hand-over inspection will be made.

The Sub-Contractor shall make provision in his pricing for these factory tests, commissioning tests, as well as the results of the hand-over tests and the necessary Operation and Maintenance Manual/s.

PSX.4 GUARANTEE

The Contractor shall submit performance details of the plant, where called for in the information sheets and these details shall be taken as the guaranteed figures of the performance of the plant. Should the overall performance of the plant fail to comply with these figures by more than 5 % on the flow rate and 8 % on the power absorbed by the plant, the Employer's Agent shall have the right to reject the plant, to recover all monies paid to the Contractor under the Contract for such plant and to confiscate the surety by way of liquidated damages, whereupon the Contractor at his own expense shall remove all rejected plant when ordered to do so by the Employer's Agent.

PSX5 PAYMENT AND MEASUREMENT

All payments will be proceeded as scheduled in the Bill of Quantities.

PSX6 ELECTRICAL AND ELECTRONICS CONTROL

PSX6.1 Scope

The Contractors responsibility will include the delivery, supply, installation and commissioning of the electrical supply from the existing substation transformer to the electrical cubicle. All equipment including all cabling and conductor from the point of supply to the control gear and there from the motors.

Detailed drawings for proposed electric layouts will be required from the Contractor for approval prior to construction and installation.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Furthermore, the Contractor will be responsible for the placing of sleeves and/or cable trays where cables might pass through or under concrete works.

The work covered by this contract comprises the complete electrical-/ electronic installation in working order. It includes the supply and installation of all materials and equipment according to Bills of Quantities for the works.

PSX6.2 Installation, cabling, commissioning and maintenance

All equipment shall be manufactured and assembled as far as possible on the Contractor's premises.

All equipment shall be fully tested for compliance to the specification before delivery to site. The Contractor shall submit test schedules to the Employer's Agent for this approval at least two weeks before any test. The Employer's Agent shall witness such tests. The Employer's Agent shall be informed for such, and all other tests, at least seven days in advance.

It is assumed that the installation programme shall be started when the outstation has been factory tested.

Only the most professional installation practice shall be acceptable. The Contractor shall follow the guidelines of the general specifications meticulously. Aspects that are often overlooked include the following: (this is not a comprehensive specification/abridgement).

Installation material shall suit the environment. Galvanised conduit, Raw bolt, screws, termination boxes, etc shall be used for surface mounted installations;

All cables shall have spars conductors – at least two cores/one pair;

No in-line crimped or soldered-and-taped cable connections shall be allowed.

Conduit run shall conform to SABS 0142.

No signal conductors shall be less than 1mm stranded.

Earthing and bonding:

- 70 mm² earthing conductors shall be welded or hard soldered to the air terminations and earth mat (pipe work)
- A 10mm² stranded bare copper earth/bonding conductor shall be installed to run along the same route (in the same wire way) as the antenna coaxial cable, the electrical supply conductors and the field sensor cables, to the common node (earth bar)
- For ease of installation, the bonding of the metal work shall be done in 8mm diameter solid round aluminium conductor. All terminations of this earthing/bonding conductors shall be in cadmium plated lugs.
- All earth conductors runs shall be reported at intervals not exceeding 1m and supports shall be neatly spaced. All runs shall follow the shortest practical route.

Environment aspects shall be considered e.g. cabling and conduit shall not be installed where it can easily become submersed.

The installation shall be aesthetically pleasing. If the Contractor has any doubts about this aspect, he shall confirm the acceptability of his installation plan with the Employer's Agent before he commences with the actual work.

No deviation from the above procedures will be considered.

PSX6.3 Lightning protection and earthing

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX6.3.1 General

The reliability of the electrical installation will depend on the thoroughness of the earthing and lightning protection system. The Contractor shall therefore take care providing the following system.

The neutral shall be solidly earthed to the earth equalising bus bar (EEB).

PSX6.3.2 Earth electrode system

- SANS 10199 is applicable;
- Maximum resistance 5 ohms, 1ohm if possible;
- Test point are to be provided;
- Concealed joints and interconnections brazed or welded.

PSX6.3.3 Steelwork

Bonding all exposed steelwork and steelwork that may become “live” due to equipment faults, static builds up or lightning strikes are to be bonded.

PSX6.3.4 Lightning protection

All equipment should be considered exposed to lightning strikes and suitable protection must be provided.

A set of lightning arresters shall be installed on the incoming supply to the MCC. Modules of 25 kA for phases and neutral shall be installed and be earthed to the EEB.

All instrument boxes shall be earth by a 70mm copper earth wire.

PSX6.4 **Documentation and training**

Complete maintenance and operation manuals must form part of the scope of supply. As built documentation must be provided and must include;

- Control logic;
- Cabling and
- Physical layout.

Operating and maintenance manual shall also be provided.

PSX6.5 **Spares**

Three sets of spares shall be supplied on all outstation equipment. Spares of the following shall be supplied under the contract.

- The telemetry outstation Control unit
- Analogue Input Cards
- Digital input Cards
- Digital (Relay)outputs Cards
- Transceiver

PSX6.6 **Safety**

Control panel construction methods shall take into account provisions to ensure operator safety from electrocution. Safety standards shall be observed. In addition, all terminals on power circuits carrying greater than 50V shall be made finger-safe if this provision does not already exist in the original component manufacturer's design. This provision may be accomplished with the addition of appropriate safety shields over exposed terminals.

PSX6.7 **Quality control**

PSX6.7.1 Manufacturer Experience

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- PSX6.7.1.1 **Certification**
- The manufacturer of the control system shall be certified by the appropriate authority, and certified to install a serialized label for quality control and insurance liability considerations.
- PSX6.7.1.2 **Experience**
- The manufacturer of the control system must be able to document experience in successfully designing and manufacturing similar control systems using telemetry in pumping applications.
- PSX6.7.2 **Manufacturer quality control**
- The control system shall be functionally tested by the manufacturer and/or supplier and certified as a complete system to assure proper operation per specification. The result for the test shall be reported in writing to the Employer's Agent.
- PSX6.8 Measurement and payment**
- Payment for particular items scheduled shall conform to the payment clauses of the conditions of the tender as amended by the following:
- PSX6.8.1 **General**
- Unless scheduled separately, the tendered rates shall cover the cost of all additional costs related to the tender (OHS requirements etc.).
- PSX11 GENERAL METALWORK**
- PSX 11.1 Scope**
- This Specification covers the requirements for the supply, detailing, fabrication, delivery, erection, testing and maintenance of all structural steelwork and aluminium in the Contract.
- PSX 11.2 Interpretations**
- PSX 11.2.1 **References**
- PSX 11.2.1.1 Supporting specifications
- As per the Particular Specifications.
- PSX 11.2.2 **Application**
- This specification contains clauses that are generally applicable to mechanical engineering construction. Interpretations of and modifications to this specification are set out in the Project Specification which precedes this specification in a contract document.
- PSX 11.2.3 **Definitions and abbreviations**
- For the purposes of this specification the definitions and abbreviations given in the applicable specifications listed in 2.1.1 (b) to (d) shall apply.
- PSX 11.3 Design, materials and manufacture**
- PSX 11.3.1 **Materials**
- PSX 11.3.1.1 **General**
- Unless otherwise shown on the drawings or scheduled, all structural steelwork shall be fabricated from mild steel sections, and all jointing and fixing bolts shall be supplied by the Contractor.
- PSX 11.3.1.2 **Mild steel**

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

All structural steelwork shall comply with the requirements of BS 4360, and shall be legibly marked with the maker's name or trade mark and identification marks. The grade of steel used for trusses, bridges and ancillary structures shall be 43A.

The country of origin of the steel and the maker's name shall be stated in tendering if the steel offered is not produced in the Republic of South Africa.

PSX 11.3.1.3 Aluminium

All aluminium sheeting shall be Grade M57S material anodized for coastal areas. Structural sections, bolts and nuts, shall be Grade D65S.

PSX 11.3.1.4 Stainless steel

All stainless steel items shall be Grade 316 material.

PSX 11.3.1.5 Electrodes

Electrodes shall comply with the requirements of BS 639.

PSX 11.3.1.6 Bolts and nuts

Bolts and nuts in their respective sizes shall comply with BS 4190. Bolts shall be of Grade 4.6 and nuts of Grade 4 with threads of the "coarse pitch series".

All nuts and bolts shall be coated in accordance with BS 729 "Hot dip galvanized coatings" or BS 4921 "Sherardized coatings".

Washers shall be provided at each nut and generally shall comply with BS 4320 of "normal" diameter, and shall be coated to match the bolt and nut. Single coil square section spring washers - Metric series (Type A) complying with BS 4464 shall be fitted to all nuts subject to vibration.

High strength friction grip bolts, if used, shall comply with the requirements of BS 3139, and their use and design shall be as specified in BS 3294 (Part 1) and BS 4604.

PSX 11.3.2 Manufacture

PSX11.3.2.1 General

The steelwork shall be constructed, fabricated and erected in accordance with SANS Standard Building Regulations, Chap. 6, "Structural Steelwork", and with Part 2 of BS 449 and in accordance with details shown on the drawings.

The Contractor shall prepare his own shop details and other necessary drawings which shall be submitted in duplicate to the Engineer for approval. The Contractor shall include with his shop detail drawings full details as to which of the welding procedures, outlined in Clause 23 of BS 5135 he proposes to adopt. Should these details, in the opinion of the Engineer, be insufficient or unsatisfactory, revised details shall be prepared and submitted for approval. One copy of the drawing will be retained by the Engineer and the other copy will be returned to the Contractor with the Engineer's comments or written approval as the case may be.

Details are to be submitted at least one month before approval is required and no work is to be put in hand before such approval is obtained.

The Contractor shall be responsible for all dimensions and details in his working drawings and for the perfect fitting of all material supplied, and he shall replace at his own cost any material which does not fit properly into position.

The checking of detail and working drawings by the Engineer shall not absolve the Contractor in any way from inaccuracies of fitting.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX 11.3.2.2 Handrails, ladders, prefabricated flooring and the like

a) Handrails

Handrails shall be manufactured from steel tubing not less than 34 mm outside diameter for the two rails, and from tube 2.65 mm thick and not less than 42 mm outside diameter for the preformed one piece stanchions. The bases of the stanchions shall be preformed for platform or side and for horizontal or sloped mounting on concrete or steel. The stanchion spheres shall be preformed to suit right angled or other angled intersections all as indicated on the general arrangement drawings. Stanchions shall be spaced at intervals not exceeding 2.0 m and all handrails shall be supplied complete with fixing bolts, nuts, etc.

Where "heavy duty" stanchions are scheduled, they shall be manufactured from tube 3.24 mm thick and be not less than 48 mm in outside diameter.

All tubing and stanchions shall be galvanized before erection and all joints shall be welded after erection of handrails. Welded joints shall be repaired with "Metalgalv" or equal as specified in the Particular Specifications.

The Contractor shall set and grout in fixing bolts.

b) Ladders

Ladders shall be manufactured in accordance with the details and general arrangements shown on the drawings in lengths suitable for hot dip galvanizing. All ladders and their fixings shall be galvanized.

The galvanizing at site welds and/or joints shall be repaired with "Metalgalv" or equal as specified in the Particular Specifications.

All ladders shall be supplied complete with all necessary bolts, nuts and washers for fixing.

c) Prefabricated open and chequer plate covers

Open grid steel covers and floor panels shall be pressure locked and welded as "Maclock" type "Eggcrate" or equal approved, and together with frames shall be hot dip galvanized to SANS 121 after manufacture. All span bars shall have a depth of 40 mm and be of such a width and at such a spacing that the maximum deflection of any bar under a 10 kN/m² uniformly distributed load shall not exceed 1:360 of the clear span.

Under no circumstances will cutting and welding be permitted on Site.

Framing to open grid "Maclock" or "Eggcrate" covers or panels shall be assembled and welded to the detail as shown on the drawings.

The galvanized steel flooring shall be fully washed and cleaned as specified in the Project Specifications and when dry shall receive one coat of epoxy tar compound to a dry film thickness of 100 micrometres.

Chequer-plate flooring shall be of 6 mm minimum thickness Aluminium "Treadplate" flooring or equal approved with raised 5-bar pattern and lifting key holes at each end of each plate.

Frames shall be of aluminium angle and bar welded together and as detailed on the drawings.

PSX 11.3.2.3 Welding

All welding of steelwork shall be carried out in accordance with BS 5135. The Contractor shall submit with his shop drawings full details of welding procedures as outlined in Clause 23 of BS 5135. Unless otherwise approved, no longitudinal or overhead welding shall be carried out on Site. Site welding must be the minimum possible. Welders undertaking manual

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

welding of permanent steelwork shall be experienced competent artisans meeting the requirements of BS 4872.

PSX 11.3.2.4 Painting/Protection coating

a) General and surface preparation

The Particular Specifications shall apply.

b) Painting of mild steel un-galvanized items

The Particular Specifications shall apply.

c) Painting of galvanized mild steel items

The Particular Specifications shall apply.

All galvanized items which are intermittently or permanently in contact with sewage shall be feather blasted after galvanizing. The surface shall be moisture-free and free of soluble salts and airborne contaminants, and shall be painted with a twin pack polyamide-cured high build epoxy coating, as specified in the Particular Specifications.

d) Cast iron items

All cast iron items to be installed underground or not exposed to view shall be twice hot bitumen dipped, using different shading bitumen, inside and outside.

Cast iron items to be cast into concrete shall be degreased using "Oakite 31" and nylon brushes.

Cast iron items which are intermittently or permanently in contact with sewage shall be blast cleaned and painted with a twin pack polyamide-cured high build epoxy coating, all as specified in the Particular Specifications.

Cast iron items which are exposed, but not in contact with sewage, shall be wire bush cleaned and degreased. The surface shall be painted with one coat of aluminium barrier coating and finished with universal enamel to give a dry coat thickness of at least 110 micrometres.

e) Testing and inspection of corrosion protection

The Particular Specifications shall apply.

f) Repairs to paint

The Particular Specifications shall apply.

PSX 11.4 Plant

PSX 11.4.1 General

The Contractor shall provide all plant that is necessary to install, test and commission all items of equipment covered by this Specification.

PSX 11.5 Installation and operating requirements

The Particular Specifications shall apply.

PSX 11.6 TOLERANCES

The Particular Specifications shall apply.

PSX 11.7 Testing/commissioning

PSX 11.7.1 Mild steel

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The steel shall be tested in accordance with the relevant clauses of BS 4360 Part 1, at the Contractor's expense.

PSX 11.8 Measurement and payment

PSX 11.8.1 General

The prices tendered for the steel items will be held to include for the cost of protective coatings as specified, unless a separate item is provided in the Schedule of Quantities.

PSX 11.8.2 Steelwork general

Unless otherwise scheduled, steelwork will be measured by mass of the steelwork as erected, excluding wastage and fastenings.

The rate shall cover the cost of the supply, testing, fabrication, delivery and erection of the steelwork, together with all operations specified in all subclauses of 3.2 and also for the supply and fixing of all anchor/holding down bolts, bolts, nuts, washers and plates.

Where erection of steelwork on Site is measured separately as a lump sum, the sum shall cover the cost of taking delivery on Site, erection, making good and site paintwork and fixing anchor/holding down bolts, etc.

PSX 11.8.3 Hand railing

Handrailing will be measured by the length of the complete balustrading including top rail, middle rail and stanchions. The rate shall cover the cost of all materials and fastenings supplied, for welding, erection and protective coatings.

PSX 11.8.4 Ladders

Ladders will be measured by number of specified length. The rate shall cover the cost of all materials and fastening supplied, for welding, erection and protective coatings.

PSX 11.8.5 Prefabricated open and chequer plate covers and flooring

The open grid or chequer-plate flooring covers or panels will be measured by area. The rates shall cover the cost of all cutting and welding, etc., at the factory - prior to galvanizing if applicable - and the cost of any protective coatings.

The framing will be measured by length of the edge. The rate shall cover the cost of the supply and fixing complete including all cement mortar and bolts which may be required to secure the frame.

PSX 11.9 Appendix A: applicable standards

BS449	Specification for the use of structural steel in building.
BS439	Covered electrodes for the manual metal-arc welding of carbon and carbon-manganese steels.
BS729	Specification for hot dip galvanized coatings on iron and steel articles.
BS3139	High strength friction grip bolts for structural engineering.
BS3294	The use of high strength friction grip bolts in structural steelwork: Part 1: General grade bolts.
BS4190	Specification for ISO metric black hexagon bolts, screws and nuts.
BS4320	Specification for metal washers for general engineering purposes.

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	Metric series.
BS4360	Specification for weldable structural steels.
BS4464	Specification for spring washers for general engineering and automobile purposes. Metric series.
BS4604	The use of high strength friction grip bolts in structural steelwork (metric series). TIG or MIG welding of aluminium and its alloys.
BS4872	Specification for Sherardized coatings on iron and steel articles.
BS4921	Specification for arc welding of carbon and carbon manganese steels.
SANS 121	Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods.

PSX 12 CORROSION PROTECTION FOR STEEL AND CAST IRON

PSX 12.1 Scope

This specification covers the requirements for coating and lining of metal surfaces of plant, equipment and pipework in pump stations and water and wastewater treatment works.

Incoming and outgoing pipelines are not covered in this specification.

This specification shall be read in conjunction with SANS 1200 HC. Where conflicts between this specification and SANS 1200 HC occur, the provisions of this specification shall apply.

PSX 12.2 Interpretations

PSX 12.2.1 References

PSX 12.2.1.1 Supporting references

Where this specification is required for a project, the following specifications shall, inter alia, form part of the Contract Document:

- a) Project Specification;
- b) SANS 1200 HC.

PSX12.2.2 Application

This specifications contains clauses that are generally applicable to mechanical engineering construction. Interpretations of and modifications to this specification are set out in Portion 2 of the Project Specification which precedes this specification in a Contract Document.

PSX 12.2.3 Definitions and abbreviations

For the purpose of this specification the definitions and abbreviations given in 2. 1.1 (b) and the following shall apply:

Abrasive blast cleaning. The process of projecting a stream of abrasive particles at high velocity towards a surface for the purpose of removing contaminants from that surface and to produce a textured surface which will increase the surface area and thus increase adhesion of the coating.

Dry film thickness (OFT). The thickness of a coating or lining after it is hard dry.

Electrical insulation defect {EID}. Defects in a coating or lining that impair the protective properties of the coating or lining and that are detected instrumentally by either:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- a low-voltage, wet-sponge detector,
- or a high-voltage, sparking detector,
- operated in each case within the parameters specified.

Note: EID's include such defects as steel projections from the substrate, conductive particles embedded in the coatings or linings, voids and those defects commonly known as pinholes and holidays.

Fusion bonded epoxy (FBE). A thermoset epoxy powder coating. (The powder is normally applied by electrostatic spray to a preheated surface. The powder normally melts, fuses and cures at a temperature of 220°C to 250°C.)

Inspector. A person authorised by the Engineer to act as his representative in examining the work and materials and drawing such samples and carrying out such tests as may be necessary to ensure compliance with the specification.

Lining. A coating applied to the inside of a component such as a pipe, valve or pump body, for the protection of the inside surface. A lining may also be applied in order to reduce wall friction.

Lot. A number of similar or related items submitted for inspection at one time by the Contractor and of such size that the inspector can reasonably be expected to examine adequately in not more than one working day.

Paint. A liquid material that, when applied as a thin film to a suitably prepared surface by an appropriate method, undergoes a physical or chemical change (or both) that converts it to a solid coating or lining bonded to the surface to which it is applied.

Pinhole. An electric insulation defect detected by the use of a wet sponge detector (see EID).

Pot life. The period, after the contents of the packs of a two-pack paint have been mixed together, during which the paint remains suitable for use without the addition of further solvent.

Powder coating. A material in the form of a dry, free flowing powder that, when applied to a suitably prepared steel surface by an appropriate method, can be fused by application of heat and subsequent cooling to form a continuous coating or lining that is bonded to the surface. A powder coating is classified as thermoplastic, when the applied coating may be re-melted by heating, or thermoset, when it cannot be re-melted by heat. Low or medium density polyethylene powder is thermoplastic whilst FBE is a thermoset material.

Significant surface. The part of the article covered or to be covered by the coating and for which the coating is essential for serviceability and/or appearance.

Steel. This term embraces carbon steels, 3CR12 and all grades of Stainless Steels.

Water break free. A surface which, when wetted all over with plain potable water, maintains a continuously wet surface and the water does not break up into islands of unwetted surfaces.

Wet film thickness (WFT). The thickness of a coating or lining immediately after application and before any volatile matter has evaporated.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Quality control. The operational techniques and activities that are employed by the Contractor to sustain the required quality of a product, process or service. SAHDGA. South African Hot Dip Galvanisers Association.

Sa: followed by a number refers to a photographic illustration of the standard of blast cleaning required, as shown in ISO 8501-1

St: followed by a number refers to a photographic illustration of the standard of mechanical cleaning required, as shown in ISO 8501-1.

PSX 12.3 Design, materials and manufacture

PSX 12.3.1 Materials

PSX 12.3.1.1 Abrasive and compressed air for blast cleaning

The abrasive shall comply with the requirements of SANS 064 and/or BS 2451 as applicable, and shall have been designed and manufactured for abrasive blast cleaning. It shall be of a size, grading and shape suitable to obtain the required profile. It shall have been manufactured from copper or platinum slag. For 3CR12, stainless steel, cast iron or cast alloy surfaces it shall be new abrasive which has not been recycled and contains no trace of metallic contaminants.

Compressed air used for blast cleaning shall be free from oil and water when tested at the blast cleaning nozzle.

Cast surfaces shall be blast cleaned with new iron slag, or platinum slag abrasives designed for blast cleaning.

PSX 12.3.1.2 Hot-dip galvanizing

The composition of the zinc bath shall comply with the requirements of the latest edition of SANS 763.

PSX 12.3.1.3 Paints and organic coatings

The Contractor shall provide the Engineer with details of the paints he intends using, including the manufacturer's data sheets for each product and shall only proceed with the purchase of the paints upon receipt of written approval from the Engineer.

All materials in a paint system shall be purchased from one supplier. The Contractor shall provide the paint supplier with a copy of the relevant sections of the specification. The Contractor shall obtain a certificate from the paint supplier certifying that the materials to be supplied comply with the relevant specification and are suitable for the intended purpose.

No variation in brand or materials from those quoted in the tender documents and/or as approved by the Engineer shall be permitted without the approval of the Engineer in writing.

All paints shall be delivered in the manufacturer's original sealed containers, clearly marked with the following:

- a) Manufacturer's name,
- b) Product Brand and Reference Number,
- c) Batch Number which may incorporate the date of manufacture,
- d) Date of manufacture, unless already incorporated in the Batch Number,

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- e) Abbreviated instructions for storage and use of the material, which shall include mixing ratios of components of multi-component materials, minimum temperature of application, method of application, and minimum and maximum overcoating times, where applicable,
- f) The SANS mark where applicable.

Any conflict between the manufacturer's data sheet and the specification shall be referred to the Engineer for adjudication.

Verbal information by the manufacturer's representative will not be accepted unless confirmed in writing by the manufacturer and/or the Contractor, on its printed letterhead, and signed by an authorised Officer of the manufacturer and/or the Contractor.

Materials shall comply with the appropriate SANS specifications when relevant and the following:

Two component epoxy primer for galvanized steel shall comply with the requirements of SAHDGA 1 for galvanized steel.

Two component epoxy primer for steel shall be a two component solvent based polyamide cured epoxy primer. It shall have a volume of solids of at least 50%. It shall dry to handle within 2 h at 20°C.

Two component high build recoatable epoxy intermediate coat shall be a two component solvent based high build polyamide cured recoatable micaceous iron oxide pigmented epoxy coating. It shall be able to be overcoated without requiring abrading at any time after the minimum overcoating period has elapsed.

Two component liquid solvent borne high build epoxy polyamide coating shall comply with the requirements of SANS 1217 Types 1A or 1S. It shall be non-toxic and non-tainting when it will be in contact with potable water. It shall be supplied in at least two contrasting colours.

Two component recoatable polyurethane shall be a two component polyester based polyurethane cured with an aliphatic isocyanate. It shall be modified with acrylic resin to render it recoatable for maintenance purposes, without significant reduction of its gloss and colour retention when exposed to South African exterior conditions.

Two component solvent free epoxy coating shall comply with the requirements of SANS 1217 Type 1C. It shall be non-toxic and non-tainting when it will be in contact with potable water.

Two component solvent borne epoxy tar shall comply with the requirements of SANS 801 Type 1. It shall be manufactured from refined tar designed for use in epoxy tar compositions. It shall be available in brown and black.

Fusion bonded epoxy powder shall comply with the requirements of SANS 1217 Type 2.

Alkyd zinc phosphate primer for steel shall comply with the requirements of SANS 1319.

General purpose alkyd undercoat shall comply with the requirements of SANS 681 Type 2.

Alkyd enamel shall comply with the requirements of SANS 630.

Polyurethane polymer powder coating shall be a polyurethane polymer powder. It shall have the following ratings when tested according to SANS 157. Humidity 1,000 h, Salt fog 500 h, Artificial weathering 2,000 h.

Vinyl primer shall be a single pack anti-corrosive primer based on plasticised and stabilised vinyl chloride copolymers.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Vinyl high build intermediate coat shall be single pack high build coating based on polyvinyl chloride copolymers. It shall provide film building and sag resistance up to 75 µm per coat.

Vinyl enamel shall be single pack coating based on polyvinyl chloride copolymers. It shall provide a gloss appearance and be available in the desired colour range. It shall be touch dry within 4 h of application.

Thinners shall be those specified in the manufacturer's product data sheet for the particular product to be thinned.

PSX 12.3.1.4 Storage

All coating materials shall be kept in an approved well ventilated store, which shall be dry, enclosed and where the temperature is unlikely to exceed 40°C or drop below 0°C. No smoking shall be permitted in or near a paint store. Solvent containers shall be kept sealed in the store. Solvent or paint soaked rags, cotton waste or other spontaneously combustible material shall not be kept in or near the store. Stores shall be provided with adequate and suitable fire extinguishers placed outside the entrance in a prominent position. A separate store shall be provided for tools, equipment, protective clothing and personnel. The paint store shall not be used to accommodate personnel at any time.

PSX 12.3.1.5 Cement mortar lining

Cement shall be ordinary portland cement complying with SANS 50197-1. It shall be fresh and shall be stored at least 50 mm off the floor in dry conditions. Cement showing any signs of water absorption shall be rejected.

Aggregate shall be clean sharp double washed river sand, free from clay, humus, organic matter, soluble salts and other deleterious materials. It shall comply with the requirements of Fine Aggregate for Concrete specified in SANS 1083. The maximum size of aggregate shall not exceed one-third of the lining thickness.

Water shall be clean potable water complying with SANS 241.

Whilst the design of the mix is left to the discretion and experience of the Contractor, he shall comply with the following requirements:

- a) the aggregate:cement ratio shall not exceed 1.5:1 by mass
- b) the water:cement ratio shall not exceed 0.5:1 by mass, inclusive of any water contained in the aggregate.

Additives shall not be used unless prior approval by the Engineer has been obtained in writing. Full motivation shall be given with any request for the use of additives.

The end finish of the lining shall be such that either:

- a) the cement mortar lining at the joint between pipes can be repaired on site, or
- b) the design of the joint is such that the gap between the lining of adjacent pipes is not greater than 1.5 mm.

The Contractor shall advise the Engineer of the proposed method of jointing and repair of the lining, with appropriate drawings.

The lining shall be smooth, uniform and free from excessive roughness, depressions, blow holes, foreign matter or other visual defects. Fine hair cracks are acceptable. Cracks wider than 1.5 mm after full cure of lining or after delivery to site, will be cause for rejection of the lining.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX 12.3.1.6 Plastic tape wrapping

Plastic tape for tape wrapping shall be a specially formulated polyethylene film laminated to a pressure sensitive, non-hardening rubber bitumen adhesive. It shall have a centre line marking and shall comply with SAnS 1117 Type C and the following:

Peel strength, min.:	1.65 N/mm	
Area of the cathodic disbandment, when tested by ASTM Method G8 B, max.:	450 mm ²	
Dielectric strength, min.:	25 kV	
Adhesion, min.:	2.2 N/mm	
Tensile strength, min.:	15 MPa	
	For pipes of ND;	
	Up to 450 mm	450mm and larger
Overall thickness, min.:	0.75 mm	1.0 mm
Polyethylene backing thickness, min.:	0.3 mm	0.4 mm
Adhesive thickness, min.:	0.45 mm	0.6 mm

PSX 12.3.1.7 Rockshield

A rockshield shall be a non-woven synthetic fibre material which is rot proof, highly tear resistant, shock absorbing and loading distributing. It shall have a mass of 340 g/m² minimum, thickness of 2.0 mm minimum and a breaking strength of 25 N/mm width. It shall have a proven track record as a pipeline rockshield.

PSX 12.4 Plant

PSX 12.4.1 Handling and transportation

The plant and equipment used by the Contractor for handling of pipes, valves, pumps and other equipment, for the purpose of corrosion protection shall be such that no pipe shell, valve or pump casing or any other piece of equipment is over stressed during any operations covered by this specification.

PSX 12.4.2 Surface preparation equipment

The Contractor shall provide all the equipment required for abrasive blast cleaning, preparation and cleaning of all surfaces to be coated.

PSX 12.4.3 Compressor

Compressors used for abrasive blast cleaning shall be fitted with an after-cooler and oil and water traps such that the air delivered at the nozzle is completely free from oil and water. The volume displacement of the compressors shall be adequate for the number and bore of blast nozzles, the spray equipment and flame spray equipment that may be necessary to carry out the specified coating operations.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX 12.4.4 Coating equipment

The Contractor shall provide all the equipment required for airless spray painting, two component hot airless spray painting, electrostatic powder coating, fluidised bed powder coating, or any other approved method of applying the coating in the shop or required for site painting and repairs to shop applied coats. All equipment shall be thoroughly cleaned on completion of each day's work and maintained in clean working order.

PSX 12.4.5 Inspection of equipment

All facilities and equipment shall be subject to inspection by the Engineer or the independent inspectorate and defects in the equipment shall be rectified when so required.

PSX 12.4.6 Inspection equipment

The Contractor shall supply all facilities and equipment for inspecting and testing the specified preparation and corrosion protection of all items supplied under the Contract. Recent calibration certificates shall be available for all equipment requiring calibration. This equipment shall be made available to the Engineer or his independent inspectorate for the purpose of testing the specified corrosion protection systems and verifying the accuracy of the test equipment.

PSX 12.5 Application/requirements

PSX 12.5.1 General

PSX 12.5.2.1 Workmanship

PSX 12.5.2.2 Finishing

Repairs, finish painting and cleaning up the site are regarded as inherent parts of the installation. On completion of erection, all pipework, control gear and indicating gear shall be thoroughly cleaned.

After erection, paint work shall be washed down, using nylon brushes and detergent to remove all adhering contamination. It shall then be washed with clean water to remove all traces of detergent and allowed to dry. The finishing coat shall then be applied as specified.

All surfaces which cannot be painted after erection shall be painted as specified before erection. The painting system so applied shall be allowed to become fully hard dry before erection. For coatings such as epoxies, having a limited overcoating time as specified in the manufacturer's data sheets, the surface shall be washed and thoroughly abraded to a matt finish before application of further coats in accordance with the manufacturer's instructions.

PSX 12.5.2 Surface preparation

PSX 12.5.2.1 General

All pipes, fittings and specials shall be tested and inspected for compliance with the applicable specifications before any cleaning of the surface is commenced.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

All surfaces to be corrosion protected by coating shall have had all protrusions, weld spatter, laminations and tool marks ground smooth drill holes shall be deburred and sharp edges radiused. The radius shall be a minimum of 3 mm for steel of thickness 6 mm or greater, or a minimum of 50% of the steel thickness for steel of thickness less than 6 mm.

All surfaces to be corrosion protected shall be degreased prior to any other method of surface preparation.

PSX 12.5.2.2 Mild steel

Sheet steel items less than 2 mm in thickness shall be degreased, acid pickled and phosphated with an approved proprietary 7 or 9 stage process to produce a fine grain zinc phosphate surface complying with SANS 064 Table 2 Lightweight.

All surfaces of steel 2 mm or more in thickness shall be abrasive blast cleaned in accordance with SANS 064 Section 4.3 and cleaned to achieve the requirements given in Table 1 for the standard of abrasive blast cleaning specified.

TABLE 1: STANDARDS OF CLEANING REQUIRED

1	2	3	4
Cleanliness to ISO 8501-1 (minimum)	Sa3	Sa 2112	St2
Residual dust and debris (SANS Method 769)	0.3%	0.5%	5%
Oil, grease and perspiration	Nil	Nil	Nil
Surface Profile - (µm) (minimum)	50	25	n/a
(SANS Method 772) (maximum)	100	75	
Water soluble iron salts - maximum at any one point (Weber Reilly Test)	100 mg/m ²	400 mg/m ²	n/a

The time interval between abrasive blast cleaning and paint application shall not exceed those given in Table 2.

TABLE 2: MAXIMUM TIME INTERVAL- Between Blast Cleaning and Coating

Ambient Relative Humidity	Maximum Time (hours)
Below 50%	6
50%- 70%	4
70%-85%	2
Over 85%	Coating not permitted - Reblast and coat when rel. humidity below 85%

PSX 12.5.2.3 Cast iron and cast alloys

Cast iron shall be abrasive blast cleaned until all sand particles, residual burnt-on sand and casting skin have been completely removed. Cast iron surfaces shall be abrasive blast cleaned in accordance with SANS 064 Section 4.3 to achieve the requirements given in Table 1 for the standard of abrasive blast cleaning specified.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Blowholes and omegas in cast surfaces shall be opened up where necessary and filled with a two component solvent free epoxy filler. When the filler has set hard, the surface shall be abraded to be flush with the surrounding metal.

PSX 12.5.2.4 3CR12

3CR12 surfaces shall be thoroughly degreased using a water rinsable detergent and allowed to dry.

For normal exposure conditions no further preparation is required.

For heavy duty exposure (immersion, impact and abrasion) 3CR12 shall be abrasive blast cleaned to produce a profile depth of 40 to 70 µm.

PSX 12.5.2.5 Painted surfaces

a) Surfaces coated with primer only

Where the surface has been contaminated it shall be washed and dried to remove dust and deposits before overcoating.

The succeeding coats shall be compatible with the primer. Where the type of primer is unknown, a test patch shall be applied. There shall be not loss of adhesion or other defects of the primer or between primer and undercoat. If defects or adhesion loss occur, the primer shall be completely removed, feather blasted and replaced by a primer which is compatible with the specified system.

Where the surface has been contaminated it shall be washed and dried to remove dust and deposits before overcoating.

b) Surfaces painted with recoatable materials such as vinyl or recoatable polyurethane

Surfaces painted with recoatable paints shall be washed and dried to remove dust and deposits before overcoating.

c) Surfaces painted with fully cured non-recoatable paints

Surfaces painted with fully cured non-recoatable coatings that have exceeded their overcoating time shall be thoroughly abraded to a matt finish, washed and dried before overcoating. The edges of any damage shall be smoothly feathered into the sound paint. Repairs to damaged areas shall extend 20 mm beyond the damage.

d) Surfaces painted with two component paints within their overcoating time

Surfaces painted with two component paints where the paint is still within the overcoating time specified by the manufacturer shall be recoated without special surface preparation. Where the surface has become contaminated, it shall be cleaned.

PSX 12.5.2.6 Hot-dip galvanized surfaces

Hot-dip galvanized surfaces shall be thoroughly degreased by scrubbing with water rinsable solvent degreaser, followed by thorough washing with clean, potable water. If the water breaks up into islands of non-wetted surface, the degreasing shall be repeated until a water break free surface is obtained. Small areas may be abraded with a non-metallic abrasive paper prior to painting. Large surfaces may be sweep blast cleaned, using ultra fine abrasive (particle size 0.2 to 0.8 mm) and a nozzle pressure not exceeding 300 kPa. A uniform matt surface shall be obtained. Loss of

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

zinc thickness shall not exceed 10 µm. Cracking and flaking of the galvanized layer is indicative of excessive blast cleaning by using too coarse abrasive or too high blast pressure. Such surfaces will be rejected. The article shall then be stripped and re-galvanized.

PSX 12.5.3 Application of protective systems

PSX 12.5.3.1 Paints and coatings

a) Application method

The recommendations of the manufacturer on his data sheets or given in writing on his letterhead shall be followed.

Apart from touch up, all liquid paints applied in the shop shall be applied by means of airless spray machines, or two component hot airless spray. Before use all paints shall be thoroughly stirred so as to be completely homogeneous. Two component paints shall be thoroughly mixed in the correct proportions as specified in the manufacturer's data sheet. Painting on site shall be carried out to the Engineer's approval. Significant surfaces to be painted shall be those specified in the Project Specification or shown on the drawings. Application methods shall comply with the paint manufacturer's recommendations.

b) Colour

Successive coats shall have distinctively different shades to facilitate coverage of each coat. Unless otherwise specified in the Project Specification, or directed by the Engineer, the final paint colour shall be that given in Appendix S of this specification and shall be a commercial match to the appropriate colour in SANS 1091 - National Colour Standards for Paint.

c) Wet film thickness

The Contractor shall regularly and frequently monitor wet film thickness and shall calculate the dry film thickness from the volume solids of the paint.

d) Overcoating intervals

The minimum and maximum overcoating intervals provided in the manufacturer's data sheets shall be strictly observed. Times and dates of application shall be recorded for each separate item and coat in the quality control records.

PSX 12.5.3.2 Powder coatings

Powder shall be applied in the shop by electrostatic spray or by fluidised bed as applicable. Items for powder coating shall after surface preparation, be pre-heated to the required temperature, usually in the range 200 to 250°C, coated by electrostatic spray or by fluidised bed, then post cured if necessary to obtain complete fusion and cure. For surfaces to be immersed the applied coating shall be tested for defects by high voltage spark testing. No defects will be permitted. Thermoset materials such as FSE shall be fully cured.

PSX 12.5.3.3 Hot-dip galvanizing

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Hot-dip galvanizing shall be carried out in accordance with SANS 763. The coating thickness shall comply with the values specified for General Applications or Heavy-Duty Applications as specified in the Project Specification or Drawings.

Galvanized surfaces which are to be painted shall not be passivated by the galvanizer. Repairs to damaged galvanizing shall be carried out in accordance with the procedures specified in SANS 763 by hot metallic zinc spraying unless the use of an appropriate solder is approved. Conventional solder shall NOT be used. Solder composition shall have been approved in writing by the SANS (Metallurgy Division) or by the SAHDGA.

PSX 12.5.3.4 Cement mortar lining

a) Mixing of mortar

Components of the mix shall be accurately weighed. Each batch shall be identical. Mixing shall be carried out in a suitable mechanical mixer. Aggregate and cement shall be measured in correct proportions, then dry mixed in the mixer. When homogeneous, water shall be added from a measuring vessel to achieve the correct consistency but shall not exceed the amount stated previously. When correctly mixed, the material shall be used as soon as possible and not later than 1 hour after the first addition of water. Re-tempering of the mix by further addition of water or other material shall not be permitted.

From a random batch of each day's production prepare three 150 mm test cubes, in accordance with SANS Method 863. After 28 days curing, the compressive strength shall not be less than 30 MPa.

b) Placing of cement mortar

Cement mortar shall be placed to the specified thickness by spin casting (preferred method) or by mechanical drag trowel. In either case, sufficient centrifugal force shall be used to ensure optimum bonding to the pipe wall and optimum compaction of the cement mortar, with minimum segregation of different sizes of aggregate. The finished lining shall be smooth and uniform. Hand application is not permitted except on specials or by prior agreement of the Engineer.

c) Curing of lining

After completion of placing, spinning, troweling an end finish, the lining shall not be disturbed until set. The pipe ends shall be closed with waterproof end covers or caps and the pipe shall be left undisturbed for at least 40 hours. After 48 hours the lining shall be sprayed with a fine mist of water and the covers and caps replaced or shall be steam cured by an approved method. The lining shall be kept wet for not less than 7 days. Pipes shall not be transported within 21 days from the date of applying the lining.

During placing of the cement mortar and the whole of the curing period, the pipes shall be kept constantly in the shade or under cover. Pipes shall not be exposed to direct sunlight.

PSX 12.5.3.5 Plastic tape wrapping

Pipes shall be helically wrapped on site with minimum 25 mm overlap, using a tape wrapping machine to ensure uniform tension. Wrinkling, bubbling or other visible defects are not permitted. Comply with SANS 0129. The tape manufacturer shall approve the tape wrapping procedure and equipment.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX 12.5.4 Corrosion protection systems

Items (other than electrical and other control panels) to be protected against corrosion shall be coated with one of the following systems as specified in the Project Specification.

PSX 12.5.4.1 System 1 (Copon type)

Corrosion protection system 1 shall consist of:

- Degreasing and abrasive blast cleaning to Sa 3.
- Four coats of a two component liquid solvent borne high build polyamide coating to a dry film thickness of not less than 65 µm per coat, and not greater than 85 µm DFT per coat and not less than 250 µm total DFT.
- EID testing by wet sponge with tester set at 90 V 10 MOhm.

PSX 12.5.4.2 System 2 (Hotcote type)

Corrosion protection system 2 shall consist of:

- Degrease and abrasive blast clean to Sa 3.
- One coat of a two component solvent borne epoxy tar coating, applied by dual component hot airless spray, to a dry film thickness of not less than 300 µm, and not greater than 500 µm.
- EID testing by wet sponge with tester set at 90 V 10 MOhm.

PSX 12.5.4.3 System 3 (epoxy tar)

Corrosion protection system 3 shall consist of:

- Degrease and abrasive blast clean to Sa 3.
- Four coats of a two component solvent borne epoxy tar, to a dry film thickness of not less than 75 µm, and not greater than 125 µm per coat.
- EID testing by wet sponge with tester set at 90 V 2 MOhm.

PSX 12.5.4.4 System 4 (FBE)

Corrosion protection system 4 shall consist of:

- Degrease and abrasive blast clean to Sa 3.
- Four coats of factory applied fusion bonded epoxy powder, to a dry film thickness of not less than 250 µm, and not greater than 400 µm per coat.
- EID testing by wet sponge with tester set at 3.5 kV.

PSX 12.5.4.5 System 5 (Epoxy/pu)

Corrosion protection system 5 shall consist of:

- Degrease and abrasive blast clean to Sa 2½.
- One coat of a two component epoxy primer for steel, to a dry film thickness of not less than 60 µm.
- One coat of a two component high build recoatable epoxy intermediate coat, to a dry film thickness of not less than 60 µm.
- One or two coats of a two component recoatable polyurethane, to a (total) dry film thickness of not less than 40 µm, to achieve full obliteration, in the colour specified by the Engineer.

PSX 12.5.4.6 System 6 (HB epoxy/pu)

Corrosion protection system 6 shall consist of:

- Degrease and abrasive blast clean to Sa 2½.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- One coat of a two component epoxy primer for steel, to a dry film thickness of not less than 60 µm.
- One or two coats (depending on the maximum thickness permitted by the manufacturer) of a two component high build recoatable epoxy intermediate coat, to a dry film thickness of not less than 120 µm.
- One or two coats of a two component recoatable polyurethane, to a dry film thickness of not less than 40 µm to achieve full obliteration in a colour specified by the Engineer.

PSX 12.5.4.7 System 7 (epoxy/pu for galvanizing)

Corrosion protection system 7 shall consist of:

- Degrease and abrade to achieve a water break free uniform matt surface.
- One coat of a two component epoxy primer for galvanized steel, to a dry film thickness of not less than 40 µm.
- One or two coats of a two component recoatable polyurethane, to a dry film thickness of not less than 40 µm to achieve full obliteration in the colour specified by the Engineer.

PSX 12.5.4.8 System 8 (alkyd)

Corrosion protection system 8 shall consist of:

- Degrease and abrasive blast clean to Sa ½.
- One coat of an alkyd zinc phosphate primer, to a dry film thickness of not less than 30 µm.
- One coat of a general purpose alkyd undercoat, to a dry film thickness of not less than 30 µm.
- One or two coats of an alkyd enamel, to a dry film thickness of not less than 30 µm.

PSX 12.5.4.9 System 9 (for immersed galvanizing)

Corrosion protection system 9 shall consist of:

- Degreasing and abrade to a uniform matt finish.
- One coat of a two component epoxy primer for galvanized steel, to a dry film thickness of not less than 40 µm.
- Two coats of a two component liquid solvent borne high build polyamide coating to a dry film thickness of not less than 65 µm per coat, and not greater than 85 µm OFT per coat.

PSX 12.5.4.10 System 10 (Polyurethane powder coating)

Corrosion protection system 10 shall consist of:

- Steel substrates and galvanized substrates shall be chemically cleaned and phosphated.
- Galvanized surfaces shall be prepared by applying a lightweight zinc phosphate coating. The processes shall comply with BS 3189/1959 Class C for zinc phosphate and Class D for iron phosphate.
- One coat of polyurethane polymer powder to a minimum thickness of 50 µm and a maximum thickness of 100 µm.

PSX 12.5.4.11 System 11 (Cement mortar lining)

Corrosion protection system 11 shall consist of:

- Degreasing and abrasive blast cleaning Sa 2
- Application of a cement mortar lining. The lining thickness shall be as set out in the following table:

Pipe Nominal Diameter (mm)	Minimum Lining Thickness (mm)
up to 150	6
150 to 300	10

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

300 to 600	12,5
600 to 1200	19
greater than 1200	25

PSX 12.5.4.12 System 12 (Plastic tape wrapping)

System 12 shall consist of:

- Degreasing and abrasive blasting to standard Sa 2½.
- Application of a plastic tape wrapping to the pipe.

PSX 12.5.4.13 System 13 (Vinyl system)

System 13 shall consist of:

- Degreasing and abrasive blasting to standard Sa 2½.
- One coat of a vinyl primer, to a dry film thickness of not less than 30 µm.
- One coat of a vinyl high build intermediate coat, to a dry film thickness of not less than 75 µm.
- One or two coats of a vinyl enamel, to a dry film thickness of not less than 25 µm.

PSX 12.5.4.14 Nuts, bolts, washers etc.

Carbon steel nuts, bolts, washers and other fasteners shall be galvanized in accordance with SANS 763. Nuts shall be tapped after galvanizing. Where specified in the Project Specification fasteners shall be cadmium plated or sherardized. Washers shall be fitted to both bolt head and nut. After installation, nuts bolts and washers shall be painted with a self-etch primer and thereafter painted together with the items on which they are used.

PSX 12.6 Tolerances

PSX 12.6.1 Film thickness tolerances

PSX 12.6.1.1 Individual coatings

At least 90% of all thicknesses measured shall comply with the minimum thickness of the system specification. Up to 10% of all readings may be below the specific minimum thickness, but no reading shall be less than 70% of the specified minimum thickness.

PSX 12.6.1.2 Total dry film thickness

Not more than 10% of readings shall be less than the minimum specified and no reading shall be less than 90% of the specified minimum. For immersion conditions no reading shall exceed the mean specified thickness by greater than 60% of the minimum, unless a concession is granted by the Engineer.

PSX 12.6.2 Blast profile tolerances

Refer to Table 1 - Standards of Cleaning Required.

PSX 12.7 Testing and inspection

PSX 12.7.1 General

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The Contractor shall accept full responsibility for the quality of his work and of materials used, irrespective of any quality surveillance that may be carried out by the Engineer or his representative.

PSX 12.7.2 Data sheets, specifications and codes of practice

The Contractor shall have the latest issues of each of the manufacturer's data sheets for the materials to be used, National Specifications and Codes of Practice relevant to the work to be carried out, as well as a copy of this specification, all of which shall be available to the Contractor's Quality Control Manager.

PSX 12.7.3 Quality control

Fourteen days before commencing corrosion protection operations the Contractor shall have the necessary equipment and staff knowledgeable in test procedures to carry out all the quality control required to ensure compliance with the specification.

The Contractor shall provide the Engineer with his Quality Plan and Quality Programme for approval.

The Contractor shall:

- a) carry out and record results of such tests as are required to ensure compliance with the specification,
- b) maintain Quality Control records in accordance with the Quality Plan during execution of the contract.

These records shall be available for inspection by the Engineer or his representative at the time of Quality Surveillance. Incomplete, inaccurate or inadequate records shall be regarded as non-compliance with the specification.

PSX 12.7.4 Independent surveillance

The Engineer may employ an independent organisation to carry out quality surveillance of the work on his behalf. In the event of dispute, the Engineer's decision shall be final.

PSX 12.7.5 Programme

The Contractor shall advise the Engineer or his representative inspectorate, timeously, in writing, when and where the following processes will be carried out:

- a) Completion of fettling or dressing prior to leaving the fabricator's works.
- b) Abrasive blast cleaning and application of the first or primer coat.
- c) Completion of all coats to be applied at the Contractor's works.
- d) Commencement of repairs to be carried out on site.

Failure of the Contractor to advise the Engineer of his program may result in rejection of his work.

PSX 12.7.6 Access for surveillance

For the purpose of carrying out quality surveillance, the Engineer or his representative shall be granted access to any part of the premises relevant to the work being carried out, at any reasonable time. The Contractor shall provide, at his own cost, any equipment or labour necessary to gain access to surfaces which are coated, to be coated or are in the process of being coated.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PSX 12.7.7 Samples

The Engineer or his representative may remove any reasonable samples of materials to be used in the coating application. Rejection of the sample will place a hold on the use of material of the same batch number and may lead to rejection of all that batch of material and the reworking of any components that have already been coated with the rejected material.

PSX 12.7.8 Destructive testing

The Engineer or his representative may carry out reasonable destructive tests to ascertain compliance with the specification. Areas thus damaged shall be repaired by the Contractor to the satisfaction of the Engineer at no additional cost.

PSX 12.7.9 Quality surveillance report

A report will be completed by the inspector at each visit. A copy of the report will be given to the Contractor on completion of each surveillance visit. No payments will be authorised by the Engineer unless a copy of an approval report has been received by him. The Engineer may withhold payment until a final report has been issued, giving approval to the components after repair of damage to the coating.

PSX 12.7.10 Test methods and references

Unless otherwise agreed in writing by the Engineer, the following test methods shall be used:

a) Determination of cleanliness after surface preparation

SANS Test Method 767 and ISO 8501-1. Refer also to SANS 064 Section 4.3 and 4.4

b) Determination of surface profile

SANS Test Method 772 (Micrometer Gauge)

c) Freedom from dust and debris

SANS Test Method 769

d) Dry film thickness

SANS Test Method 141, using an electromagnetic thickness gauge approved by the Engineer.

The gauge shall be calibrated on a flat polished steel plate.

e) Soluble salts test (Weber Reilly Reagent)

This test may only be applied to a freshly cleaned bare steel surface. It shall be carried out as follows:

Shake well the bottle of Weber Reilly Reagent before use. Apply only by spray to the area to be tested to give a solid white coating. Allow 5 minutes for reaction, then observe pink or red colouration. Compare the darkest colour with the standard colour card and estimate the iron concentration.

PSX 12.8 Measurement and payment

PSX 12.8.1 Corrosion protection and painting

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Payment for corrosion protection and painting will be held to have been included in the tendered rate for the items protected or painted unless a separate item is scheduled, in which case measurement and payment will be by the sum.

The tendered sum shall cover the cost of the surface preparation, supply and application of the corrosion protection material and/or paint and the provision of inspection equipment (see 4.6). No separate payment will be made for site repairs to paintwork, which will be held to be included in the rate for supplying and installing the equipment.

PSX 12.8.2 Cost of quality surveillance

Cost of quality surveillance will be borne by the Employer, except when surveillance results in rejection of the lot or when notice by the Contractor results in a fruitless trip, in which cases the cost of surveillance may be debited against the Contractor's account, at the discretion of the Engineer.

PSX 12.9 Appendix a: applicable standards

Reference is made to the latest issues of the following standards:

ASTM G 8	Test method for cathodic disbanding of pipeline coatings
BS 2451	Chilled iron shot and grit
BS 3189/1959	Method for specifying phosphate conversion coatings for metals
ISO 8501-1	Preparation of steel substrates before application of paints and related products
SANS 241	Water for domestic supplies
SANS 471	Portland cement (ordinary, rapid hardening, and sulphate-resisting)
SANS 630	Decorative high gloss enamel paint for interior and exterior use
SANS 681	Undercoats for paints
SANS 763	Hot-dip (galvanized) zinc coatings (other than on continuously zinc-coated sheet and wire)
SANS 801	Epoxy-tar paints
SANS 1083	Aggregates from natural sources - Aggregates for concrete
SANS 1091	National colour standards for paint
SANS 1117	Plastics wrappings for the protection of steel pipelines
SANS 1200 HC	Corrosion protection of structural steelwork
SANS 1217	The production of painted and powder-coated steel pipes
SANS 1319	Apparatus for gamma radiography

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

SANS CP 064	Preparation of steel surfaces for coating
SANS CP 0129	Plastics tape wrapping of steel pipelines
SANS M 141	Dry film thickness of paints by means of a magnetic-flux-type gauge
SANS M 157	Resistance to humidity of paint films
SANS M 767	Cleanliness of blast-cleaned steel surfaces for painting (pictorial)
SANS M 769	Cleanliness of blast-cleaned steel surfaces for painting (dust free)
SANS M 772	Cleanliness of blast-cleaned steel surfaces for painting (profile)

PSX 12.10 Appendix B: recommended colour scheme

(Code numbers shown in brackets BS 381C and SANS 1091)

ELECTRICAL ITEMS	COLOUR
Delay and tap change panels	grey (SANS G29)
Eskom equipment	Grey
Essential supply sections of boards	orange (BS 557)
Temperature monitoring and equipment panels	External: semi-matt light orange (SANS 826) Internal: white
Fire CO2 piping	red (BS 537)
Generator	as supplied by manufacturer
Generator board	orange (BS 557)
H.V. Switchgear and boards	grey (SANS G29)
Lift motor room	grey, as supplied
L.V. switchgear	light stone (SANS C37)
Name tags	white lettering on black
Outdoor kiosks	avocado green
Power factor capacitors	as supplied
Power factor capacitors mounting panels	dark grey (BS 632)
Transformers	dark admiralty grey (BS 632)
Transformer yard equipment	as supplied by manufacturer
Hand rails	lemon yellow (or stainless steel) (SANS C54)
MECHANICAL EQUIPMENT	
Couplings and other moving parts	international orange (SANS A15)

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ELECTRICAL ITEMS	COLOUR
Grease nipples	fire orange (SANS A46)
Guards	chevron black and fire orange (SANS A46)
Pumps and motors	arctic blue (BS 112)
Pump and motor bases	dark admiralty grey (BS 632)
OVERHEAD GANTRY CRANES	
Crane hooks	chevron black and fire orange (SANS A46)
Crawl beams	international orange (SANS A15)
Gantry cranes	international orange (SANS A15)
Rails	Black
PIPEWORK	
Air mains	White
Aluminium sulphate	grass green (SANS 014)
Backwash recycle	cloud grey (SANS F48)
Backwash	wedgwood (SANS F59)
Chemical mix water	cornflower (SANS F29)
Chlorine	yellow (SANS C61)
Cooling water	green (SANS 02)
Dewatering	green (SANS 02)
Lime	light green (SANS C37)
Polyelectrolyte	pastel green (SANS 065)
Potable water	blue (BS 166) (SANS F11)
Raw water	green (SANS 02)
Scour valves	deep buff (SANS 824)
Service water	dark blue (SANS F11)
Small bore tubing not listed above	lemon yellow (SANS C54)
Valves	as for the pipeline
Valve handwheels: Delivery	Black
Suction	orange (BS 557)

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C3.3: Labour and Community Specifications

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

ISD1 FEATURES REQUIRING SPECIAL ATTENTION

ISD1.1 Site Establishment

The Contractor shall negotiate the site office space through the Stakeholders and leadership of the area via the ISD facilitator.

The Contractor shall negotiate payment terms if any payment has to be made for use of space for site office via the assistance of the ISD facilitator.

ISD1.2 Project Steering Committee Representatives (PSC)

All communication to the community members of the project areas will be done through the PSC.

The Contractor will reimburse the PSC a seating allowance for every meeting the PSC shall attend.

ISD Facilitator shall submit the attendance registers for all meetings attended.

ISD1.3 Appointment of a Community Liaison Officer (CLO)

The Contractor shall appoint a community liaison officer that will assist with the appointment of local labour

The Contractor shall provide details of skills requirements for the person to be appointed as a CLO, and the PSC will submit at least three names of people to choose from.

The Contractor, ISD Facilitator, chairperson of the PSC and the Ward Councillor where applicable, may interview the candidates to get the preferred candidate from the three names provided by the PSC representatives.

The Contractor shall be responsible for remunerating the CLO for services provided.

The payment periods and amount shall be agreed upon beforehand.

ISD1.4 Lines of Communication –Regarding Community Related Activities of the Project

The Contractor may not at any given moment communicate directly with the community members on project related matters.

The PSC members are the link between the community members and the project team members.

The job seekers list will be channelled through the PSC via the CLO to the Contractor.

ISD1.5 Sourcing of Labour for the Project

All labour to be used for the project will be sourced through the CLO and the PSC representatives of the project.

All labour used in the project will be sourced from a job seekers list approved by the PSC and their respective communities.

No other jobseekers list shall be used or received by the Contractor except the one residing with the CLO of the project.

The Contractor shall consider all the social demographics appointing local labour. (including women and people with disabilities and youth)

Contractor shall explain in detail how payment of local labour shall be made i.e. per day/per task and when will labour be paid (weekly, fortnightly or monthly)

The Contractor shall pay labourers using the rate of pay within the area as per department of labour prescribed rates.

Social Facilitator will facilitate that all those employed as local labour will open a bank account so that the Contractor may not run the risk of carrying cash on site.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

The Contractor will have to bear the consequences for failure to adhere to arrangements and agreements made in relation to labour payments and related matters.

ISD1.6 Conflict Management

The Contractor should immediately report any conflict that may arise in the project to the ISD Facilitator or PSC members.

In the event that the Contractor is in need of local material – local authorities should be consulted prior the use of such material. (e.g. sand or sabunga)

ISD2 UTILISATION OF LOCAL LABOUR

ISD2.1 Employment of labour from the local community

The Contractor's own site staff shall be limited to key personnel only.

It is a prerequisite of this Contract that the Contractor employs members of the local community in the execution of the Works. The Contractor shall recruit all his non-skilled labour from the local community.

Local community defined as persons who normally reside within the project area.

Monthly labour returns shall indicate the numbers and details (i.e. age, gender, etc.) of the local labour employed including the nature of the work undertaken by each labourer.

The Contractor is advised to enter into a written employment contract with the local labour employed.

ISD2.2 Identification of labour

The identification and selection of suitable labour will be undertaken in consultation with the Project Steering Committee, Community leadership, the Employer's Agent, the Community Facilitator and the Contractor.

The Contractor shall train labour to undertake the tasks for which they have been employed to perform.

Should the employment of a labourer or labourers prove unsatisfactory at any stage, the Contractor shall consult with the Employer's Agent's Representative, the Community Facilitator, Ward Councillor and the Project Steering Committee in this regard. This action will in no way relieve the Contractor of his obligation to complete the Works.

All costs incurred by the Contractor in complying with this clause shall be deemed to be included in the rates tendered in the Bill of Quantities.

ISD3 TRAINING

ISD3.1 General

An aspect of the aim of this Contract is to provide training for the local labour employees.

ISD3.2 Practical training of local labour

All local labour employed on this Contract shall receive practical training.

ISD4 COMMUNITY PARTICIPATION

The Contractor shall make allowance for the employment of a CLO in accordance with the following terms of reference (TOR).

ISD4.1 Terms of Reference of CLO

The Community Liaison Officer (CLO) will be accountable to the Project Steering Committee (PSC), who will be involved in the appointment of the CLO. The CLO should be the person with a good standing and respect in the local community and would be selected according to the set criteria by the interviewing panel consisting of ISD Consultant, PSC, and Ward Councillor and or selected local leadership.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The CLO is appointed for the period of physical construction, plus a period of 14 days prior to this period.

The period will include times where small team works are busy in the area e.g. chambers, standpipes etc. The period will end when no further work is required.

The Contractor will provide office space and stationery for the CLO to carry out his / her duties.

Remuneration for the CLO will be R 8000 per month for the period of employment. Where the CLO is engaged for part of the month, they shall be paid an equivalent daily amount. The unit for measurement shall be the man-month of CLO employment.

A CLO who fails in their responsibilities may be replaced in consultation with the PSC, ISD Consultant and local leadership.

The CLO will be expected to perform the following duties/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 temporal employment.
- Attend all site meetings and briefing for work procedures.
- Keep written record of community liaison and consultation 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 in the project.
- 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 register of labour and manage records for local labourers in order to 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 from the labour or Contractor and raise them in the PSC meetings.
- Attend 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.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

- 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 residents of each village being served by the project are represented by a PSC. All liaisons with the community and the committees are the responsibility of the Social Facilitator in conjunction with the Implementing Agent, the Ward Councillor (where applicable), and the Project Manager. The Contractor will be required to liaise through them for any matters to do with the community.

ISD5.3 Conditions of Temporary Employment

The following conditions will apply to the employment of local labour, whether employed directly or through a SubContractor:

- Transport to site will not be provided
- There will be no payment for leave, sick leave, holidays or rain days
- Notice period for termination of employment shall be 2 days and there shall be no severance pay.

The Contractor shall however give, at the earliest possible opportunity, notice of the termination of the project and/or an employee's participation in the project:

- Workmen's Compensation Act (WCA) benefits shall apply
- The Occupational Health and Safety Act will be adhered to
- An employee shall not be required or permitted to work continuously for more than five hours without given a meal interval of not less than half an hour.

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.

ISD5.4 TASK RATES

The following Department of Public Works task units are to be used by the Contractor:

Site Clearing and Setting Out

	Activity	Unit	Task Rate	Remarks
1.1	Setting out alignment and needed setting out of all activities	m/wd	15	
1.2	Bush clearing including disposal of cuttings out clearing width			
	• In thick bush	m ² /wd	150	
	• In light bush	m ² /wd	350	
1.3	Grass cutting	m ² /wd	750	
1.4	Grubbing including disposal of grubbed material out of clearing width			
	• Depth up to 2 cm thick	m ² /wd	200	
	• Depth more than 2c m up to 5 cm think	m ² /wd	100	

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

	Activity	Unit	Task Rate	Remarks
1.5	Tree and stump removal including disposal of cutting out of clearing width	m ² /wd	200	
1.6	Boulder removal including disposal of clearing width	m ³ /wd	2.00	For estimating purpose only. Use daywork
1.7	Sand and silt removal including disposal out of cleared width	m ³ /wd	3.50	In-situ measurement
1.8	Establishment of access to quarry	m/wd	25	Involves different activities
1.9	Excavation of overburden at quarry	m ³ /wd	2.50	In-situ measurement

Excavation

	Activity	Unit	Task Rate	Remarks
2.1	Trench excavation (± 0.5m wide and up to 1.0 deep)	m/wd	7-10	
2.2	Trench excavation (± 0.5m wide and up to 1.25 deep)	m/wd	5~7	
2.3	Trench excavation	m ³ /wd	3~6	
2.4	Backfilling of trenches	m ³ /wd	4~8	

Pipe Laying Works

	Activity	Unit	Task Rate	Remarks
3.1	Laying of water pipes 100~150 mm Ø	m/wd	14~19	
3.2	Laying of sewer pipes 100~150 mm Ø	m/wd	19~24	
3.3	Laying of HDPE pipes 100~150 mm Ø	m/wd	125	

ISD6 MEASUREMENT AND PAYMENT

ISD6.1 Fixed-Charge Items

a)	Allowance for Contractor's initial obligations in respect of the ISD	Sum
b)	Allowance for Submission of the ISD Plan	Sum
c)	Allow for Community Liaison Officer	Psum
d)	Allow for remuneration of PSC Members	Psum
e)	Allow for training of PSC Members	Psum

ISD6.2 Time-related Items

a)	Allowance for Contractor's time related obligations in respect of ISD	Sum
b)	Allowance for provision of part time ISD	Sum

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C3.4: Health and Safety Specifications

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

POHS1 SCOPE**POHS1.1 LIST OF ABBREVIATIONS**

AIA	Approved Inspection Authority
BoQ	Bill of Quantities
CC	Compensation Commissioner
CHS	Construction Health and Safety
CHSA	Construction Health and Safety Agent
CHSO	Construction Health and Safety Officer
CR	Construction Regulations (Gazette 10113 of 7/02/2014)
DPW	Department of Public Works
DME	Department of Mineral and Energy
DMR	Driven Machinery Regulations
DoL	Department of Labour
FEMA	Federated Employers Mutual Association
GAR	General Administration Regulations
GSR	General Safety Regulations
HIRA	Hazard Identification Risk Assessment
H&S	Health and Safety
LI	Labour Intensive
MH&SA	Mine Health and Safety Act No. 29 of 1996 (as amended)
OH	Occupational Health
OHS	Occupational Health and Safety
OHSA	Occupational Health and Safety Act No. 85 of 1993 (as amended)
OHSS	Occupational Health and Safety Specification
PSHSS	Project Specific Health and Safety Specification
PC	Principal Contractor
PPE	Personal Protective Equipment
ER	Employer's Agent's Representative
RHCS	Regulations for Hazardous Chemical Substances
SANS	South African National Standards (Authority)
SMME	Small, Micro, Medium Enterprise
SWP	Safe Work Procedure

POHS1.2 DEFINITIONS

The definitions used will be those set out in the Regulation Gazette No 10113 of 7 February 2014 with the following additions:

Client: Means the Employer as defined in the Contract.

Principal Contractor: Means the Contractor as defined in the Contract.

Contractor: Means the Subcontractor as defined in the Contract.

Employer's Agent: Means the Employer's Agent as defined in the Contract.

Hazard: Source of exposure to danger

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

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

Construction Health and Safety Agent (CHSA):

A person appointed by the Client to carry out the duties of the Client in respect of Occupational Health and Safety on the Project in terms of Regulation 5 sub regs (5) and / or (6)

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Health and Safety Plan:

Means a documented plan which answers to the Project Specific Health and Safety Specification; including all the supporting documentation that indicate how the Principal Contractor or Contractor plans to manage H&S for the duration of the Contract.

Induction Training:

Means once off introductory training on general health and safety issues given to all employees and visitors to the site before commencement of work on site.

Mine: Any excavation from which material (soil, gravel, stone etc) is taken for use in the construction site.

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

Regulation/s: Shall mean the relevant regulation/s promulgated in terms of the Occupational Health and Safety Act, No. 85 of 1993.

Site: Means the area in the possession of the Principal Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas and haul roads which are reasonably required for the activities for the Principal Contractor, and approved for such use by the Employer's Agent.

The Act: Means, unless the context indicates otherwise, the Occupational Health and Safety Act, No. 85 of 1993 and Regulations promulgated thereunder, as amended.

POHS 1.3 KEY ROLE-PLAYERS

Client Representatives:	Mrs Noluthando Vithi- Masiza
Employer's Agent:	
Employer's Agents Representative:	
OHS Agent:	

POHS 1.4 KEY REFERENCES

Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)

Construction Regulations 2014.

Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)

Construction Specifications & Standards 6.0 for Southern Africa. Hans Wegelin 6th Edition 2010.

SANS codes.

South African Road Traffic Signs Manual (SARTSM)

POHS 2. PREAMBLE

Each year fatalities and serious injuries mar the reputation of the Construction Industry. The Client has a responsibility to limit such injuries by ensuring a zero tolerance approach to Contractors and those affiliated to a particular project. Thus a high premium is placed on the H&S of stakeholders, which include its employees, professional service providers, public and its physical assets.

The Client and its Construction Health and Safety (CH&S) Agent acting on its behalf, shall provide a project specific Health & Safety Specification (PSHSS) for the project and provide it to the Principal Contractor/s making a bid or appointed to perform construction work for the project, or parts thereof.

POHS 2.1 PURPOSE OF THE OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION (OHSS)

The OHSS is a performance specification to ensure that the Client and any bodies that enter into formal agreements with the Client, i.e. Employer's Agents, Principal Contractors (PC) and Contractors, achieve an acceptable level of OHS performance. The Client has a zero tolerance to non-compliance and the endangering of the lives of workers, and the public, thereby being placed at risk.

No advice, approval of any document required by the OHSS (i.e. hazard identification and risk assessment, action plans) or any other form of communication from the Client shall be construed as an acceptance by the Client. Nor shall such communication relieve or absolve the PC from any obligation or from achieving

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

compliance with legal requirements. The PC remains responsible for achieving the required performance levels and must sign an OHSA S.37.2 mandatory agreement with the Client.

The H&S Specification highlights the aspects to be implemented over and above the minimum requirements of current legislation. Requirements may be changed should new risks or issues are identified that could not have been foreseen during the design phase of the project.

It should be noted that this OHSS in no way relieves the Contractor of any of his responsibilities set out in the Act and Regulations

POHS 3. IMPLEMENTATION OF THE OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION (OHSS)

This project specific H&S specification (PSHSS) forms an integral part of the Contract, and PCs are required to make it an integral part of their Contracts with Contractors and Suppliers. A PSHSS will be available for each level of Contract and Contractor, and must be complied with. Failure to do so will be noted as a serious offense, and will result in a penalty, stoppage of part of, or the whole works, with no extension of time or allowable claims; this includes the submission of an approved health and safety plan

This specification must be read in conjunction with the OHSA, it's Regulations (as amended) and any other standards relating to work being done, and ensure compliance thereto. The information relative to the scope of the project, the works etc. is detailed in the tender document, is to be taken into account when developing the H&S plan and associated documentation. The detailed design risk assessment is included, as is a summary of risks identified as attached.

The OHSA S.37.2 Mandatory Agreement found in the Tender Document must be fully completed by the PC. These documents shall be deemed to form part of the returnable Contact Documents.

No work may commence without written approval of the H&S plan by the OHS Agent. Failure to comply with this requirement will result in a penalty, stoppage of part of, or the whole works, with no extension of time or allowable claims.

Should there be design changes, or change in the scope of works, an amended PSHSS may be issued. Where amended PSHSSs are issued, the PC will be required to ensure a resubmission of an amended H&S plan for approval. Further to this, the PC must ensure that a similar system must be implemented between all their Contractors.

The OHS Agent will visit the project at least monthly, or more frequently if deemed necessary to ensure compliance. All activities on the site and all appropriate documentation will be monitored and reported on to the Client, Employer's Agent and Contractor. Non-conformances will be issued and penalties or work stoppage instructions will be issued where appropriate. Communication between the OHS Agent and the PC will be through the Employer's Agent or Employer's Agent's Representative (ER) as determined at the commencement of the project.

POHS 4. REQUIREMENTS AT AWARD STAGE

The successful Tenderer is required to submit a project specific H&S plan within 14 days of the tender award. The documentation submitted will be used to assess the competence of the tenderer, as required by the CRs, therefore the information submitted needs to be complete and as close as possible to the final product. A tender stage OHS score sheet is attached as Annexure E. Failure to achieve the required score will render the tender non-responsive.

Adequate pricing for H&S is also required, and the appropriate section in the BoQ is to be completed. Failure to do so could result in the Tender being regarded as non-responsive.

The PC shall ensure the following information is submitted as part of the H&S plan within 14 days of the tender award.

- A project specific H&S Plan in line with this project specification which will be subject to approval by the OHS Agent. This must include all supporting documentation as required to verify the H&S system;
- A declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Construction Regulations 2014;
- A valid Letter of Good Standing with the Compensation Commissioner or similar
- At least one copy of minutes of previous Occupational Health and Safety Committee meetings;
- Incident Investigation Reports for other projects of a similar nature undertaken by the tenderer;

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- Claims ratio receipt from FEM or the Compensation Commissioner for the previous review period;
- A copy of the latest DMR audit of a mine previously worked on (if applicable), and
- Detailed technical method statements for approval by the ER and appropriate risk assessments and safe work procedures for approval by the OHS Agent:
 - Site establishment;
 - Clearing and grubbing;
 - Opening and establishing quarries and borrow pits;
 - Haul road construction, and
 - Construction of the site laboratory, offices and accommodation
 - Appointments of the following, with the relevant CVs: Construction Manager: Construction Supervisor; Construction Health and Safety Officer: risk assessor: fall protection planner: first aider.
 - An organogram of the site relationships showing at least the above appointments. The holders of the various positions must be identified.

Further method statements are to be submitted prior to, and during the project which will require the approval of the ER before work on that aspect or activity can commence.

POHS 4.1 PRE-START UP ACTIVITIES:

Once the H&S plan has been approved there may well be additional documentation that includes appointments, emergency arrangements or further method statements and risk assessments. The inclusion of such aspects for personnel or Contractors commencing work at this time is required to be approved and verified by the Employer's Agent and OHS Agent.

POHS 5 SPECIFIC PROJECT RISKS AND REQUIREMENTS

Principal Contractor to provide a detailed risk assessment for the entire works on site. The Principal Contractor must appoint a competent person in writing to undertake all risk assessments on site.

The baseline risk assessment will be provided to successful tenderer which is to be utilized as a guide and will not be exhaustive.

POHS 6 GENERAL REQUIREMENTS

POHS 6.1 GENERAL DESCRIPTION OF WORKS

Refer to Section C3.1 Clause 1.

POHS 6.2 SUMMARY OF RISKS IDENTIFIED DURING DESIGN

POHS 6.2.1 General Requirements and Provisions

Information in this series cover the start-up aspects of the project, with a number of the activities (excluding establishment) lasting the duration of the contract.

POHS 6.2.2 General Activities/Works Associated with Risk

- Bulk excavation by heavy machinery.
- Large earth moving equipment, compaction machinery and tripper truck will be active on site.
- Cranes may be used for the construction of the Portal frame steel structure..
- Trench excavations.
- Construction of portalframe structure.
- Working at heights.
- Equipment operating overhead.
- Upgrade power supply.

POHS 6.1.3 Specified Hazardous Chemical Substances

The following lists of products or type of substance are those that have been identified as likely to be used on the project. Where the PC is likely to supply the product as the product has not been specified, safer alternatives should be considered. Medical surveillance will be required for those

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PRODUCT	POTENTIAL HEALTH OR OTHER RISKS
Cement	Hand mixing may occur, will be used for structures, stabilizing. 50kg bags delivered on pallets, ergonomic risk from handling, dust exposure, chromates. Eye, skin and respiratory irritant
Lime	Dust, eye and respiratory irritation
Petrol/diesel/lubricants	Storage tanks/ bowsters on site. Fire, spillage, fumes

POHS7. NOTIFICATION OF COMMENCEMENT OF CONSTRUCTION WORK

The PC shall notify the Provincial Director of the Department of Labour (DoL) in writing, in the form of the Annexure A in the CRs. This shall occur after award of the contract, but before commencement of construction work. Proof of submission and/or receipt must be provided. Work will not commence without the Notification being correctly completed and signed by the Client. The Notification shall only be signed by the Client following the approval in writing by the OHS Agent.

Work will not commence without the Notification being correctly completed and signed by the Client and proof of receipt by the Department of labour received. The Notification shall only be signed by the Client following the approval in writing by the OHS Agent, or the Client.

Where changes to the conditions given in the submission are required (i.e. other Contractors, completion dates, increase in workers), a revised Annexure A must be submitted to the Department of Labour. It is preferable that the completion date includes the defect liability period. A copy of the notification form and any further submissions must be kept in the H&S file.

8. HEALTH AND SAFETY PLAN FRAMEWORK

The aspects related to the project outlined in the previous sections are to be taken into account when drawing up the H&S Plan. The PC is required to demonstrate competence by providing a H&S system that will address the requirements of the project.

The current legislative requirements, SANS codes and any other standards that may guide practice are to be taken into consideration. The following aspects must be addressed in the H&S Plan, as they have been identified in the design HIRA, as playing a role in reducing the overall risk of a particular activity, or section of the project. The OHS Agent may from time to time request additions or systems as they relate to the works at the time.

The PC must include in his Health and Safety file an organogram showing all appointments and responsibilities on site. This must include names of personnel where possible.

The PC is to prepare one or more site office area layout drawings to indicate at least the following:

- positions of emergency personnel and equipment at the site camp, or each fixed working area;
- traffic routes for plant and pedestrians, parking;
- storage areas (flammable stores, materials etc.)

Such drawings could be the same as those required by the ECO. Such layouts are to be updated regularly throughout the project.

POHS 8.1 APPOINTMENT OF COMPETENT SITE PERSONNEL

The CEO (OHSA S16.1) of the PC will take overall responsibility for the appointment of competent site staff for the duration of the project. Should the CEO not be personally involved in the project, the H&S responsibilities are to be delegated to the Site Agent (OHSA 16.2)

Knowledge and training in H&S is required, and certificates indicating H&S training as well as experience to be included in CVs.

All other legal appointments are to be made with relevance to the type of work required and kept current with the project programme. The construction team is to ensure the CHS Officer is kept up to date with all planned activities, to ensure all H&S requirements are met.

All construction/technical method statements are to be generated by senior site personnel, and the appropriate risk assessments developed therefrom in conjunction with the CHS Officer.

The Occupational Health and Safety Plan shall include the following, but not be limited to the following key appointments:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

POHS 8.1.1 Construction Supervision

Competent Construction managers who are appointed to manage part or all of the works must have had training and/or experience in their area of responsibility. All site supervisors must show evidence of basic training in H&S, and an understanding or training in areas of responsibility (i.e. risk assessments, method statements etc.).

Multiple competent Assistant Construction Managers may be appointed where justified by the scope and complexity of the works. Curriculum Vitae (CVs) are to be submitted for approval by the Employer's Agent, OHS Agent, and/or Client. Each supervisor will be held responsible for the safety of working teams and subordinates, housekeeping and stacking and storage of materials in their particular area.

POHS 8.1.2 Construction Health and Safety Officer

The PC will employ at least one competent, full-time CHS Officer for the duration of the contract. If the Client approves in writing, a part-time CHSO may be used. The following is to be noted when appointing a CHS Officer:

- The CHS Officer's CV is to be submitted for approval by the Employer's Agent as well as the OHS Agent, preferably at the pre-construction phase. The PC is to ensure adequate resources are provided in order to undertake all responsibilities (i.e. mobile phone, computer and internet access, vehicle etc.) Qualifications shall include at least grade 12, SAMTRAC or similar (e.g. NEBOSH;), with a minimum of two years exposure to Civil Engineering Construction in an OHS capacity.
- He should also have undergone training in the Act and Regulations.
- If proof of registration as a Construction Health and Safety Officer with SACPCMP is supplied, the above requirements will not be required.
- In the case of a contract where Contractors are employed, the CHS Officer must have the competence to evaluate the Contractors Health and Safety plans.
- The CHSO must hold a valid driver's license.
- This person may not hold any other position on the site staff.

The Construction Supervisor assisted by the CHS Officer will be held responsible for all H&S on the project. Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by the CHS Officer at all times. No new workers or Contractors may commence work without approval or following the H&S plan as submitted. Failure to do so will be considered a serious offence.

The CHS Officer shall not be the same person as the Traffic Safety Officer, but will be responsible for ensuring that daily traffic management is adequately managed for all teams.

The CHS Officer/s will be held responsible for all H&S on the project.

- Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by the CHS Officer at all times;
- No new workers or Contractors may commence work without approval or following the H&S plan as submitted, and
- No inductions of Contractor staff until the H&S documentation is approved by the CHS Officer.
- The CHS Officer/s may not be removed or replaced without the approval of the OHS Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

A close out meeting will be held at the end of each formal audit by the OHS Agent and findings will be issued in the form of site instructions. Senior site staff will be obliged to attend the close out meeting.

A monthly report of all H&S activities and incidents is required by the end of the first week of each month, or at a date agreed to by the OHS Agent and the CHS Officer.

The CHS Officer will be responsible for collating the H&S documentation (electronically) at the close out of the project. A list of the typical aspects that should be provided is available as an Annexure to this document.

POHS 8.2 HEALTH AND SAFETY REPRESENTATIVES AND COMMITTEE

H&S Representatives are to be appointed following the start-up of the project, to be made up from both permanent and Contractors or local labour. Representatives from local labour can be appointed to represent such labour for the duration of the contract. Local labour should not be responsible for H&S duties unless appropriate training has been provided and the CHS Officer deems such labour competent to do so.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Development in H&S of such labour would be an advantage to the community and the PC. H&S Representatives are to be actively involved with H&S and serve on the H&S Committee.

The CHS Officer shall ensure there is an H&S Committee made up of active site staff and H&S Representatives, representing each work area, including all Contractors. Meetings will be held at least monthly, and more frequently if so instructed. Key site staff are to be appointed. Issues arising from the OHS Agent audits are to be discussed, as well as all H&S related issues.

Minutes are to be distributed and discussed among all workers and Contractors and records kept thereof. Failure to do so will be deemed to be a moderate offence.

POHS 8.3 APPOINTMENT OF COMPETENT CONTRACTORS

The Principal Contractor is to ensure compliance with at least the Client's minimum standards and all legislative requirements. The same H&S standards required of the PC are to be applied to all Contractors. An index of all Contractors and Suppliers is to be on file and kept updated at all times. The PC is to ensure there is sufficient funding for H&S compliance by each Contractor.

The following minimum aspects are applicable to any Contractor appointed:

- The CHS Officer is to ensure a Contractor's appointment and approval of H&S documentation at least seven (7) working days prior to commencing work.
- No Contractor may work under the PC's Compensation registration number. If required the PC may assist SMMEs with their registration with the Compensation Commissioner. However, such Contractors will not be able to commence work until proof of registration or Letter of Good Standing has been received.
- No work may commence without Mandatory (37.2) agreements between parties in place.

The following aspects are applicable to Suppliers or short-term works (surveying, repairs, servicing, deliveries etc). Cognisance is to be taken of the level of risk involved and the CHS Officer is to ensure the level of H&S documentation is appropriate:

- Mandatory agreements in place
- Letter of Good Standing
- Method statements and risk assessments
- Available information relative to:
 - Load testing and registers for cranes or lifting devices
 - Medical certificates of fitness
 - Safety data sheets (SDSs)

Failure to provide written approval of H&S documentation will be considered a serious offense, and could result in aspects of, or all of, the activities being stopped and/or penalties implemented.

POHS 9. GENERAL RISK MANAGEMENT

POHS 9.1 HEALTH RISKS AND MEDICAL SURVEILLANCE

The specified products have been listed above. As some products have not been identified, the PC is to ensure the CHS Officer and all supervision is responsible for ensuring the safe use of such products, and their inclusion into method statements and risk assessments. The appropriate SDSs are to be obtained for all products and used to develop the H&S documentation as they relate to the works.

Ergonomic risks are to be noted, especially where there are LI components, and all workers (including those of Contractors) are to be included in the medical surveillance programme.

Workers will be exposed to noise, dust, volatiles and vibration (whole body and upper body) due to the type of plant, materials specified and the general nature of the works. Silica and general environmental monitoring for the general construction, as well as works at borrow pit and the quarry have been allowed for in the BoQ, as well as the allowance for medical surveillance.

Environmental monitoring results and risk assessments are to be made available to the occupational health professionals doing the medical surveillance. The use of occupational risk exposure profiling (OREPS) and job descriptions are to be used to determine specific exposures for management.

All permanent workers (including those of Contractors) are required to be in possession of a medical certificate of fitness relevant to their duties prior to commencing work.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Medical surveillance will commence at pre-employment. All workers (including Contractors) are required to be in possession of a medical certificate of fitness prior to commencing work. Annual medical surveillance is required (unless identified as being required more frequently), as well as an exit medical. Arrangements for keeping medical records for the required time are to be noted. It is mandatory that the PC has a medical surveillance plan. Only fitness certificates are to be kept in the H&S file; full medical records are not to be placed in the H&S file. A procedure for managing the medical records which require safekeeping for prescribed periods are to be addressed.

Given the potential health risks the following aspects are to be included in each medical surveillance intervention:

- Full medical, surgical and occupational history;
- Full physical examination of all systems, and
- Referral if required for the management of identified health issues that may affect the worker.

Specific testing for existing conditions and limitations relative to exposure could include, but are not limited to:

- Audiometry (hearing tests);
- Spirometry (lung function testing);
- Chest X-rays;
- Liver function testing (volatiles), and
- Any other tests identified as relevant

Failure to do so will be considered a serious offence.

POHS 9.1.1 Noise Risks

All plant and equipment is to be measured for noise levels as soon as the majority of plant is on site (including Contractors and hired plant). Findings are to be discussed at the H&S Committee and H&S Representatives and Supervisors are to ensure that noise zones are identified and wearing of PPE in them is enforced. All plant brought in by plant hire companies is to be compliant with the Noise Induced Hearing Loss Regulations.

Audiometric testing of all workers is to be included in the medical surveillance programme. Double audiometric testing at pre-employment and single tests thereafter is required. These should be repeated annually and as part of the exit medical. Audiometry records are to be available in the H&S file.

Suitable SANS approved hearing protective equipment shall be issued and worn. Where several items of construction plant are in operation at or near to each other, the noise zone for the combined plant should be established and suitable hearing protective equipment used within this zone.

Failure to do so will be considered a serious offence.

POHS 9.1.2 General Environmental Conditions

Compliance with the Environmental Regulations (as amended), among others is required. Environmental monitoring of ventilation, lighting and dust may be deemed to be required by the Approved Inspection Authority used to measure the environment.

Testing and reporting for airborne silica as required by the 2008 amendment to the HCS Regulations is required.

Copies of the relevant reports and actions taken in respect of these are to be placed in the H&S file.

Any spillages of substances which could be toxic to persons must be dealt with adequately. The Contractor must include his spillage removal system in the OHS Plan.

POHS 9.2 Emergency Procedures

Attention to emergency planning and procedures is very important. The full emergency plan must form part of the supporting documentation with the H&S Plan. The OHS Agents approval of all emergency plans and procedures is required prior to commencement on site. It is advised that the system should be simple and easy for any worker to follow. The plan may be adapted should new information or risks are identified.

First aiders shall be available in each working team, and be able to work as a team when responding to any emergency on the project.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The procedure shall detail the response plan in relation to the works, and include at least (but are not limited to) the following key elements:

- Appointment of a competent emergency response co-ordinator and wardens;
- Lists of first aiders, and
- Requirement in terms of identified risks:
 - Fire;
 - Explosions;
 - Falls from heights, and
 - Public Injury motor vehicle accidents.
 - Serious injury to workers (Medical or work related)
 - Any other major risks identified during risk assessments.

The emergency plan must include local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project. Local emergency telephone numbers must be displayed and made part of the emergency procedure.

POHS 9.2.1 First Aiders and First Aid Equipment

Competent, trained First Aiders are to be formally appointed for the project. If the project is in a remote area, at least 2 workers are to be trained to level 3. In urban areas and close to medical assistance 1 level 3 first aider is required. First aiders are to be available at all times and be able to cover each working team. Further first aiders from the community or SMMs, if not already accredited, are to be sent for accredited first aid training. Contractors are expected to ensure compliance and manage their own first aiders and equipment.

The PC shall provide an on-site First Aid Station with first aid facilities, including first aid boxes containing, at least the requirements of the Annexure to the GAR so as to manage the type of emergencies identified. It is suggested that all supervisors carry an appropriately stocked first aid kit in their vehicles at all times.

POHS 9.2.2 Fires and Emergency Management

Attention to emergency planning and procedures is very important. The full emergency plan must form part of the supporting documentation with the H&S Plan. The OHS Agents approval of all emergency plans and procedures is required prior to commencement on site. It is advised that the system should be simple and easy for any worker to follow. The plan may be adapted should new information or risks are identified.

First aiders shall be available in each emergency team, and be able to work as a team when responding to any emergency on the project.

The procedure shall detail the response plan in relation to the works, and include at least (but are not limited to) the following key elements:

- Appointment of a competent emergency response co-ordinator and wardens;
- Lists of first aiders, and
- Requirement in terms of identified risks:
 - Fire;
 - Explosions;
 - Falls from heights, and
 - Motor vehicle accidents.

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project. The emergency plan is to include the risk of fire on site and related to any specific activities where gas, welding, cutting etc. occur.

Fire extinguishers will be appropriate for the risk and in sufficient numbers to deal with the type of fires that could occur. All mobile plant is to have fire extinguishers. Hot work permits are required for any such activities. Their position is to be shown on the sketch plan of the site.

All construction vehicles and plant must be fitted with an appropriate, accessible, fire extinguisher.

POHS 9.2.3 Incident Management and Compensation Claims

The PC will ensure there is a management system to investigate all incidents. All serious incidents involving any form of disabling injury or fatality are to be reported to the Employer's Agent and OHS Agent telephonically immediately. This shall be confirmed in writing as soon as possible after the incident. Full

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

details are to be included in the H&S meetings, and each site meeting. The details are also to be included in the monthly report.

Failure to comply with emergency provisions will be considered a serious offence, and the operation or project may be stopped if deemed inadequate for the work at the time of assessment or site inspection.

POHS 9.3 PERSONAL PROTECTIVE EQUIPMENT (PPE) AND CLOTHING

The PC is to provide a procedure as an addendum to indicate how PPE is managed within the Company.

The wearing of the identified SANS approved PPE at all times is non-negotiable. The PC shall ensure that all workers (Including Contractors) are issued with and shall wear as required; the first 3 items are mandatory for all workers:

- Hard hats;
- Protective footwear;
- Reflective jackets (no bibs);
- Overalls that ensure worker visibility;
- Fall protection harness;
- Eye protection;
- Hearing protection;
- Respiratory protection (minimum of FF2), and
- Any other necessary PPE identified from SDSs and/or risk assessments.

Adequate quantities of PPE shall be kept on site at all times. This shall include necessary PPE for visitors. The procedures for managing PPE are to be in a formal procedure submitted with the H&S plan for approval; this must include the company policy on the issue and replacement of PPE

Any person (including Client, Designers etc.) found on site without the necessary PPE will be removed from site until the PPE is supplied and worn.

The Contractor shall carry adequate stocks of Hi-visibility Jackets and hard hats for visitors

Failure to comply will result in penalties being applied.

POHS 9.4 OCCUPATIONAL HEALTH AND SAFETY SIGNAGE

On-site H&S signage is required. Signage shall be posted up at the appropriate fixed or temporary working areas, on scaffolding, and other potential risk areas/operations including vehicles. These signs shall be in accordance with the requirements of the General Safety Regulations or SANS requirements as amended. Signage is to be noted on the site drawings indicating where fixed signage is required.

Signage is to include (but not be limited to) the following:

- 'no unauthorised entry';
- 'Warning, Construction site – Keep out' or similar;
- 'report to site office';
- 'site office';
- 'beware of overhead work';
- 'hard hat area' or other PPE requirements noted;
- First aid box positions (including vehicles), and
- Fire extinguishers.

Signs shall be posted permanently or temporarily at areas of work onsite indicating that a construction site is being entered and that persons should take note of safety requirements.

Note should be taken that "omnibus" signs indicating that the entire site requires PPE should not be used. Any areas where PPE is mandatory must be separately signed

The Contractor shall establish a system for controlling and recording entrance to the Site office and camp area.

POHS 9.5 INDUCTION OF EMPLOYEES AND VISITORS, GENERAL H&S TRAINING

A formal induction programme is to be submitted as an addendum for approval with the H&S plan. Inductions must be carried out for all workers and visitors to the site. Pre-task training is required to ensure

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

workers are familiar with the risks and H&S measures of the work or tasks to be done. Such training is to be done at least daily. Records of inductions and pre-task training are to be kept in the H&S file.

Any person found on site without proof of induction in the H&S File will be removed from site until the proof is supplied and, and penalties may be issued for non-compliance.

POHS 9.6 TEMPORARY WORKS

Where the scaffolding, and /or support work is to be supplied and designed by a specialist company, care must be taken to comply with all the requirements of the supplier. Records and registers are to be properly completed and kept in the H&S file. A fall protection plan is to be available and supplied as an addendum to the H&S plan. The fall protection plan must be appropriate for the project. Method statements, appropriate risk assessments, safe work procedures and training are to be available prior to work commencing.

Construction drawings shall be required for all temporary structures as they relate to the project. The drawings shall be accompanied by full calculations, design loads and any relevant test results as required by the SANS code, and ensure adequate allowance for the development of appropriate documentation and training. All drawings are to be checked and signed by a competent structural Employer's Agent (registered with ECSA).

The focus for working at height shall include fall restraint systems where possible except during assembling or dismantling top components or where it is not deemed safe. The relevant SANS codes are to be applied as they apply to the works and the project, such as:

- SANS 10085
- SANS 10333 (parts 1-3)

Should part of the works be contracted out, competent Contractors are to be appointed and submit documentation according to the project requirements. The PC is to note if such work is to be contracted to specialists in the H&S Plan. The plan is to be developed and work managed by a competent person for the duration of the project. The following aspects must be included:

- The public or users of buildings are to be protected at all times by way of hoarding, barricading or fencing
- Notices to be posted
- Restrictions or stoppage when weather conditions are deemed hazardous
- Permit system for working at heights
- Prevention of falling tools or equipment
- Link to emergency plan regarding rescue

All workers are to be in possession of valid certificates of fitness that extend for the duration of the works. Note the requirements in the section relating to medical surveillance.

Registers and all relevant documentation are to be placed in the H&S file. Work will be stopped and penalties applied to any work at heights that is not compliant.

Failure to do so will be considered a serious offence.

POHS 9.7 TESTING LABORATORY AND THE USE OF RADIOACTIVE EQUIPMENT

A joint laboratory may be required, or a service provider will be appointed for the project. The service provider will be seen as a Contractor, or where appointed as a joint laboratory, as a PC. All the H&S rules and requirements are to be met. Where appointed as a PC, the OHS Agent will be responsible for approving the initial H&S plan and ensuring ongoing compliance. All other requirements of the construction PC are to be met. Each PC is to be familiar with the H&S rules of each party. Mandatory agreements, Inductions and emergency requirements among other are to be addressed and managed to ensure limitation of H&S risks.

The use of radioactive equipment for the measuring of compaction parameters shall conform to the requirements of the "Code of Practice for the safe use of soil moisture and density gauges containing radioactive sources" as published by the Department of Health: Directorate: Radiation Control Soil revised September 2001. Method statements, risk assessments and the appropriate training will be required.

Failure to do so will be considered a serious offence.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

POHS 9.8 TRANSPORTATION OF WORKERS ON SITE

Transportation of workers shall comply with the relevant legislative requirements. Vehicles used to transport workers to, from, or on site, shall have secure seats with seat belts and be covered. The cover shall be securely fixed to the vehicle. No equipment or materials shall be transported in the same vehicle at the same time as workers. Failure to transport workers in a safe manner will be regarded as a serious offence. Tenderers must indicate in their OHS plans what type of transport is envisaged and how this will be managed.

Failure to do so will be considered a serious offence.

POHS 9.9 MANAGEMENT OF PLANT AND EQUIPMENT

A substantial amount of large plant and equipment is likely to be used. Close control of the PCs plant and equipment is required, including that of Contractors.

Daily monitoring of all plant and equipment is required prior to commencing work. Full lists of hired and own plant are to be available at the OHS Agent's audit. All daily inspection records are to be kept in the H&S file. Registers are not to be more than 1 week behind. Plant hire or haulage Contractors are to comply with the requirements, and comply with all H&S standards for the project.

Only competent, fit plant operators are to be used. Medical certificates of fitness are required for all operators. Noise levels are to be displayed on plant.

Should any form of lifting device or crane (fixed or mobile) be used during the project for deliveries, moving of supplies or equipment, the appropriate documentation must be made available. Method statements, risk assessments, safe work procedures and training are to be available prior to work commencing. A procedure for managing loads and lifting must be made available as an addendum to the H&S Plan

Any plant or slings used to lift plant or material require annual load testing by an AIA. Operators are to be adequately trained and certified to operate cranes. Certificates and registers are to be placed in the H&S file.

Movement of plant in closures and in confined working areas is to be closely monitored and managed by the TSO and supervisors. The blind spots of plant are to be taken into account and workers and Contractors protected accordingly.

Failure to do so will be considered a serious offence.

POHS 9.10 EXCAVATIONS

A competent person is to be appointed to manage excavations. All equipment and conditions are to be checked daily prior to work commencing. Communal registers for excavations on site are not permitted. Excavations should preferably not be open beyond what can be worked daily. Where excavations need to remain open, all excavations are to be properly protected, candy striped tape is not acceptable. Plastic mesh supported on adequate droppers 1m high should be used (approved by the Employer's Agent). Berms are required to be a safe distance from the edge of the excavation. Stepped excavations are encouraged.

Adequate numbers of ladders are to be available to ensure safe access and egress from excavations. Ladders are required for excavations of greater than 300mm, and the ladder is to extend at least 1m above the edge of the excavation. No wooden ladders are allowed on site. Registers are to be kept current and placed in the H&S file.

Failure to do so will be considered a serious offence.

POHS 9.11 INCLEMENT WEATHER

High levels of humidity and temperatures during the summer months may be experienced. Workers are at greater risk of heat exhaustion where the discomfort index rises above 100. A weather station has been allowed for to monitor temperature and humidity specifically. Should the discomfort index rise above 105, work may be partially or totally stopped.

During winter in area known for cold weather notice must be taken of the wind-chill factor. Workers must be supplied with adequate protective clothing and shelters provided as necessary.

Flooding may occur during the rainy season. High winds may be experienced and to limit dust or danger when working at heights, a wind speed should be set at which work may be stopped or the workers in an affected area moved.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The emergency plan is to include how these and other weather extremes identified are to be managed. The general aspects as detailed in the Environmental Regulations will be applied.

All decisions regarding work stoppage will be decided between the PC, the CHS Officer and the Employer's Agent.

Failure to manage specific conditions or address issues timeously will be considered a serious offence.

POHS 9.12 AUDITING

External auditing by the OHS Agent will be done at least monthly or more frequently if deemed required by the OHS Agent, Client or Employer's Agent. The site will be inspected and the documentation audited relative to the activities and H&S plan. The CHS Officer of the PC must accompany the Client, or the OHS Agent, on all audits and inspections.

The PC will ensure that all their Contractors are audited at least monthly prior to the OHS Agents monthly audits. Audits may be done more frequently where short term contracts are in place, or deemed high risk. Audit results will be acted upon and non-conformances and penalties issued. The Client, Employer's Agent or OHS Agent may act or require further outcomes if non-compliances are noted or unsafe acts are noted on site. Internal audits are to include site conditions as well as ensuring H&S files are appropriate, and compliant.

Failure to address findings or non-conformances will be considered a serious offence.

POHS 9.13 COMMUNICATION ON SITE

All communication on site will be done through the Employer's Agent to the PC and be in writing, including the issue and responses to non-conformances and H&S audit results.

Failure to address issues timeously will be considered a serious offence.

POHS 9.14 CARE OF WORKERS ON SITE (WELFARE)

Adequate toilets, clean, safe drinking water and decent shelter will be afforded workers at all times.

Toilets will be within reasonable distance of workers, or placed with each working team in safe, with reasonable privacy. Only bacterial or enzyme based products may be used in portable toilets; the use of products containing formaldehyde is not allowed. The ratio of portable toilets on site will be a minimum of 1:10. Daily cleaning and increased removal of waste may be required if deemed necessary. Proof of safe disposal of waste will be required. Waste removal Contractors, or the PC are to ensure the appropriate H&S systems are available to limit exposure to sewage.

Hand washing facilities will be provided. The Environmental and Facilities Regulations will be adhered to at all times.

Failure to address issues timeously will be considered a serious offence.

POHS 9.15 DISCIPLINE, ALCOHOL AND SUBSTANCE ABUSE

All employees (management included) are to follow instructions given in the interest of H&S. Disciplinary action is to be imposed on those who do not follow such instructions or company rules or policies.

No person is allowed to work or access site if under the influence of alcohol or other substances that could impact on their own or others safety. The PC is to have a drug and alcohol policy available to manage such instances.

These requirements are applicable to any employee of any organization providing services on site. Penalties may also be applied by the Client, OHS Agent or Employer's Agent.

POHS 9.16 ELECTRICAL EQUIPMENT

In addition to the requirements of the Electrical Machinery Regulations and the General Machinery Regulations any electrical distribution board used for construction work shall be fitted with suitable earth leakage protection. Leads must be properly and firmly connected. Plugs and sockets shall be in good and safe condition.

All electrical apparatus, other than electrical hand tools, shall have a physical "lock out" system which will prevent any operation other than that authorized by a supervisor. A "lock out" sign shall be displayed when the apparatus is not in use.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Method statements and safe work procedures will be required for all work involving electrical apparatus.

POHS 10. HEALTH AND SAFETY FILE

The documentation submitted and approved following the awarding of the contract will be used to form the H&S file. The H&S file is required to be laid out in a logical manner, and documentation filed within the file is to be easily accessible. The following completed information shall be included (but not be limited to):

- The PSHSS;
- The H&S Plan;
- Appointment by Client;
- Mandatary agreement with Client;
- Notification of construction work;
- A record of all working drawings, calculations and design where applicable;
- Detailed list of Contractors with contact details, appointments, Mandataries etc.;
- Record of Competencies;
- Training Records.
- Permits;
- Method statements;
- Risk assessments;
- Safe work procedures;
- Emergency and injury management;
- Safety data Sheets, Medical surveillance records;
- Registers;
- Records of audits, minutes etc.;
- Plant lists;
- Temporary electrical installations; and
- Employee records (who is on site).

POHS 10.1 SUPPORTING DOCUMENTATION

The following list is not absolute, and the PC is expected to assess if further any further information should be submitted as supporting documentation, as it relates to the H&S plan. The inclusion of other, relevant documents is encouraged.

All documents as required by the Act and Regulations, including (but not limited to):

- Proof of registration with the Compensation Commissioner or FEMA;
- Proposed Organogram;
- Appointments under the Regulations;
- Examples of internal audits;
- Inspection registers of plant and equipment;
- Non-conformance system;
- Information relating to hazardous materials used and stored on site with SDSs;
- All Method Statements, Hazard Identification and Risk Assessments for the project;
- All Health and Safety Plans for the project;
- Examples of minutes of all relevant meetings related to H&S;
- Registers for all plant and equipment;
- Incident records, including investigations and results, and
- Medical certificates of fitness and medical surveillance programme.

The H&S File shall have closed out following the hand-over of the project. A list will be made available and the contents will be agreed to between the OHS Agent and the PC towards the end of the project.

POHS 11 NON-CONFORMANCES

Refer to Annexure C4.3B.

POHS12 MEASUREMENT AND PAYMENT

POHS12.1 Measurement and Payment

The scheduled items for health and safety will be included in the preliminary and general section of the schedule of quantities. Measurement will be in terms of Clause 8.1.2 of SANS 1200 A.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

The Principal Contractor shall price all items scheduled in this section of the schedule of quantities to enable the Employer to comply with clause 4.1.(h) of the Construction Regulations, 2014. Failure by the Contractor to price these items will force the Employer to reject the Contractor's tender in terms of clause 4.(4) of the Construction Regulations, 2014.

Payment for the scheduled items will be in terms of clause 8.2 of SABS 1200 A.

POHS12.2 Scheduled Items

POHS12.2.1 General

The maintenance of safe work practice at all times and in all sections of the execution of the works is embedded in the day to day site activities of all the Contractor's management, staff and workforce on the contract.

However, the introduction of the Construction Regulations in 2014 requires from the Employer to ensure that the Principal Contractor has made adequate provision for the execution of the works within the specifications of said regulations. The following minimum pricing is taken into consideration:

- The Contractor shall tender more than the maximum of either **2% of the contract value** or
- **R15,000 x construction period (in months)** for the work specified by Clause POHS12.2.2 (Fixed-Charge Items) and Clause POHS12.2.3 (Time-related Items)

It must be noted that the lists below are not exhaustive and that many items have been traditionally priced by the Contractor as an integral part of his Preliminary and General items or as part of the overhead costs of other items. The tender document, although not detailed with regards the Construction Regulations, requires that the Contractor ensures adherence to the Occupational Health and Safety Act (Act 85 of 1993) the Construction Regulations, 2014.

POHS12.2.2 Fixed-Charge Items

Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employer's Health and Safety Specification

Allowance for Contractor's obligations in respect of the OHS Act and Construction Regulations ..	Sum
Allowance for Compilation and Submission of the Health and Safety File.....	Sum
Personal protective clothing and equipment	Sum
Fences, signs and barricades.....	Sum
Medical Certification of Employees	Item

POHS12.2.3 Time-related Items

Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employer's Health and Safety Specification

Allowance for Contractor's time related obligations in respect of the OHS Act and Construction Regulations.....	Sum
Allowance for provision of full time Construction Safety Officer.....	Sum
Allowance for provision of a Level 2 First Aider per construction site	Sum
Allowance for the upkeep of the Health and Safety File.....	Sum
Health and Safety training as required	Sum

The time related item shall include but shall not be limited to the following:

- The employment cost of all health and safety personnel including consultants, health and safety officers, inspectors, supervisors and issuers required in terms of the Contractor's Health and Safety Plan,
- Updating the Health and Safety Plan as needed,
- Carrying out of periodic own audits and follow-up audits,
- Compiling ongoing risk assessments and risk assessment reports as required by the Works,
- Convening of regular safety meetings with the Safety Representatives,

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- Accompanying and supporting the Employer or his Safety Agent during ad hoc audits,
- Compilation of monthly safety reports and statistics for the Employer or his Safety Agent,
- Implementation and maintenance of Training
- Maintenance of personal protective clothing and equipment
- Maintenance of fences, signs and barricades
- Implementation and maintenance of safety administration
- Other Health and Safety Time-related Obligations

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

ANNEXURE C3.4A: CLOSE OUT REQUIREMENTS

The H&S files for the Principal Contractors and all Contractors require closure and handover to the Client at the completion of the project. The following list is an example of what should be included, but is not exhaustive. The OHS Agent or the Client may require further information at the time of completion and the Principal Contractor is to ensure that all instructions are met. Documentation would include all records from the start of the project. Daily or monthly plant inspection records are not required unless they are related to an accident. All records to be in electronic format and submitted to the OHS agent for approval in adequately formatted lists and folders. Layout should be logical and in the same order as in the site files.

Health and Safety close out file requirements include:

- a) Client H&S Specification
- b) Principal Contractor's OHS Plan(s)
- c) Organograms
- d) Legal Appointments
- e) Notification to Department of Labour of commencement of work
- f) Letters of Good Standing for the Project
- g) Full files for all Contractors as well as their close out reports
 - List of Contractors
 - Letters of Approval of Contractors
 - Mandatory Agreements
 - Letters of Good Standing
 - Appointments
- h) Incident Records
- i) Non- Conformance records
- j) Agent's Audits
- k) Method Statements
- l) Risk assessments
- m) Safe work procedures
- n) Medical surveillance certificates of fitness. Medical records are to be kept according to the OH&S Act as amended.
- o) All drawings for temporary structures (suspended beams/scaffolds etc)
- p) Copies of test results, policies and procedures for environmental monitoring (silica, noise, dusts etc.)

Defect and Liability Period

The H&S files are to be kept 'live' for the defect and liability period by the Principal Contractor, including those of their Contractors. Any work required during the defect and liability period will require an assessment of the H&S file by the OOHS Agent prior to any work commencing.

A copy of the as-built Drawings is to be placed on file by the Designers once complete.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ANNEXURE C3.4B: NON-CONFORMANCES AND PENALTIES

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or noncompliance with the Clients specifications or PCs H&S Plan; neither the Principal SubContractor nor any other SubContractor shall have a claim for extension of time or any other compensation.

The following constitute the types of non-conformances that will attract penalties:

Minor: Fine: R100/count	Medium: Fine: R500/count and a non-conformance	Severe Fine: R5000/count, a non-conformance and/or activity stoppage
Non-use of PPE supplied	Toilets not supplied or regularly serviced; lack of drinking water	SubContractors working without Health and Safety Plan approval
Non completion of registers for plant and equipment on site	SubContractors not audited	Workers transported in contravention of the OHS plan or legal requirements
Lack of H&S signage at work areas	Working without training or the appropriate H&S method statements	Invalid Letters of Good Standing
Tools and equipment identified in poor condition during inspections	Legal non-conformances identified during the previous audit and not addressed within the agreed time frame	Noncompliance with traffic accommodation requirements: layout or physical conditions
	No monthly OHS report at site meeting to report on	Fall protection harness not tied off/ not worn
	No certificates of fitness for workers as required	Any breach of legal requirements
	Working without approved method statements	Item not attended to as identified in the audit report – second transgression
	Item not attended to as identified in audit report – first transgression	

Failure or refusal on the part of the SubContractor to take the necessary steps to ensure the safety of workers and other person involved in accordance with these specifications, the OHS Act and the regulations shall be sufficient cause to apply the above penalties.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

ANNEXURE C3.4C: IDENTIFIED HEALTH AND SAFETY HAZARDS

In terms of Regulation 4(1)(b) of the Construction Regulations 2014 the following hazards anticipated with the scope of work have been identified.

NOTE:

The list of potential hazards is by no means identified to be all inclusive and is not limited to this list, and it remains the responsibility of the Contractor to identify all possible hazards with regards to his scope of work and to put measures in place to mitigate, reduce or control these hazards.

ACTIVITY/TASK	POTENTIAL HAZARD
Site establishment	<ul style="list-style-type: none"> • Insufficient security • Improper storage of material, plant, equipment • Poor vehicle access to the site
Concrete works	<ul style="list-style-type: none"> • Pouring concrete • Improper handling of reinforcing steel • Hand mixing concrete • Cement dust • Concrete mixer
Working at heights	<ul style="list-style-type: none"> • Incorrect use of ladders • Incorrectly designed temporary structure • Incorrectly erected scaffolding • Inadequate use of fall arrest systems • Not fit to work at heights
Construction Vehicles	<ul style="list-style-type: none"> • Accidents due to lack of care • Incompetent, unfit operators
Excavations	<ul style="list-style-type: none"> • Collapse of an excavation • Open/unprotected excavation • Soil condition, drainage • Inadequate physical barricading
Portable electrical equipment	<ul style="list-style-type: none"> • Substandard equipment • Incorrect use of equipment • Damaged equipment
Work within operational site	<ul style="list-style-type: none"> • Insufficient barricading around work areas. (Adequate snow netting required to fence off work areas) • Insufficient access control to site.
Dust	<ul style="list-style-type: none"> • Insufficient dust control measures

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C3.5: Environmental Specifications

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

SDEM ENVIRONMENTAL MANAGEMENT (SPEC EM)

SDEM1 Scope

The general principles contained within the SPEC EM shall apply to all construction activities. All construction activities shall observe any relevant environmental legislation and in so doing shall be undertaken in such a manner as to minimise impacts on the natural and social environment.

SDEM3 Materials

SDEM3.1 Materials handling, use and storage. (Subclause 4.1.1)

The Employer's Agent shall be advised of the areas that the SubContractor intends to use for the stockpiling of both natural and manufactured materials. No stockpiling shall occur prior to the Employer's Agent's approval of the proposed stockpiling areas. The SubContractor shall avoid stockpiling material in areas with steep gradient. No stockpiling shall be allowed within 50 m of any watercourse or on the floodplain adjacent to a river.

SDEM4 Plant

SDEM4.1 Contaminated water. (Subclause 4.2.3)

The SubContractor shall not discharge the water used in cleaning the equipment into any water body. Water that has been contaminated with suspended solids and silt may only be released into the natural watercourse or stormwater channels once all suspended solids have been removed from the water, by settling out the solids in settling ponds. Apparently sized portable pools may be used to fulfil this role.

Water collected in drip trays shall be treated as a hazardous substance and shall be disposed of in accordance with Subclause 4.1.2.

SDEM4.2 Fuel and oil. (Subclause 4.2.7)

Bunds to be used for storage of fuels shall consist of a concrete slab plastered single brick walls. All walls to be constructed with SANS approved cement bricks. SubContractor to ensure that bund is water tight. An appropriately sized stopcock and sump, to be installed at lowest point to allow for drainage.

SDEM4.3 Workshop, equipment maintenance and storage. (Subclause 4.9)

All stationary plant shall be fitted with drip trays. Drip trays shall be inspected daily and emptied into a re-sealable drum for disposal in accordance with Subclause 4.1.2.

SDEM5 Construction

SDEM5.1 Method statements. (Subclause 5.1)

The following method statement shall be provided by the SubContractor not less than seven days before the start of the relevant activities on site:

- (a) Location and layout of the construction site in the form of a plan showing offices, stores for fuels, vehicle parking, access points, equipment cleaning and maintenance areas and staff toilet placement (Subclause 4.1).
- (b) Location of the fuel storage site, including the type and volume of storage containers to be used and the design and capacity of the bund (Subclause 4.8)
- (c) Solid waste (refuse) control and removal of waste from the Site, including the number, type and location of rubbish bins, the manner and frequency with which the waste will be removed from site and the disposal site (Subclause 4.3)
- (d) Liquid waste (fuel and lubricants) control and removal of liquid waste from the Site, including the number, type and location of drip trays and/or sheets and liquid waste containers, the manner and frequency with which the liquid waste will be removed from site and the disposal site (Subclause 4.8 & SDEM4-3).
- (e) Contaminated water management system, including an indication of the source and volume of contaminated water and how this would be disposed of (Subclause

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

4.4 & SDEM4-1).

- (f) Emergency procedures for fire, and accidental leaks and spillages of hazardous materials (Subclause 5.17).
- (g) Location, layout and preparation of concrete batching facilities including the methods employed for the mixing of concrete and the new management of runoff water from such areas. An indication shall be given of how concrete spoil will be minimised and cleared (Subclause 5.12)
- (h) Undertaking earthworks, including spoil management, erosion, dust and noise controls.
- (i) Detailed plan for any river crossings including pipe protection works; how water flow will be diverted during construction (if applicable); details of sediment barriers and erosion protection measures, reinstatement and rehabilitation of river/stream banks/embankments; and final expected profile of river/stream banks.
- (j) Detailed plan of pipe jacking operations, to include method of spoil management and handling of hydraulic fluids.

SDEM5.2 “No go” areas. (Subclause 4.3.7)

The SubContractor shall restrict his activities to a 20 m working width corridor for the pipe line and demarcated sites for the reservoirs. All areas outside the working corridor and the SubContractor’s camp shall be regarded as “no go” areas for vehicles and other construction equipment. Unless otherwise agreed to in consultation with the Employer’s Agent, the SubContractor shall ensure that no construction activity, stockpiling, dumping or storage of equipment or materials occurs within the “no go” areas.

Property fencing, natural vegetation or any other natural or special features inside and outside the Site, shall not be defaced, painted for benchmarks or otherwise damaged even for survey purposes without the prior approval of the Employer’s Agent. These features shall be demarcated as “no go” areas and may require fencing or similar protection measures, as determined by the Employer’s Agent.

Once construction within an area has been completed and the area has been remediated, it shall be considered a “no go” area.

Site staff shall not be permitted to make use of any natural water sources or open water bodies for the purposes of bathing, washing of machinery or clothes.

SDEM5.3 Access routes/haul roads. (Subclause 4.3.11)

Access to the Construction camp and working areas shall utilise existing roads or tracks. Entry/exit points onto public roads shall take cognisance of traffic safety. Traffic safety measures shall include appropriate signage and signalmen where relevant.

Access to river crossings will only be allowed through the construction corridor. No vehicle traffic shall be allowed across any other part of a flood plain.

A designated turning area shall be approved by the Employer’s Agent and clearly marked. Articulated vehicles shall turn in the designated area.

SDEM5.4 Earthworks. (Subclause 4.3.13)

All earthworks to be limited to areas approved by Employer’s Agent. The SubContractor’s employees and Sub-SubContractor’s employees shall not open any borrow areas. Any borrow operations require authorisation that should be obtained from the relevant authorities via the Employer’s Agent. The SubContractor shall be responsible for all penalties and rehabilitation that might be required due to the illegal commencement of a borrow operation.

SDEM5.5 Blasting

Blasting is to be executed by a suitable qualified person. Prior to blasting the SubContractor shall notify the relevant occupants/owners of surrounding land and address any concerns. Buildings within the potential damaging zone of the blast shall be surveyed preferably with the owner present, and any cracks or latent defects pointed out

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

and recorded either using photographs or video. All Local Authority regulations are to be adhered to and all service infrastructure is to be located prior to commencement of blasting activities.

Blasting or drilling shall take place during normal working hours. The SubContractor shall notify emergency services, in writing, a minimum of 24 hours prior to any blasting activities commencing on Site. Adequate warning must be issued to all personnel on site prior to blasting activities taking place. All legally required signals are to be clearly indicated. The Employer's Agent shall be issued daily updates of the days intended blasting activities.

The SubContractor shall prevent damage to special features and the general environment, which includes the removal of flyrock. Damage caused by blasting/drilling shall be repaired to be satisfaction of the Employer's Agent.

SDEM6 Tolerances

SDEM6.1 Penalties. (Subclause 5.2)

Penalties will be issued for the transgressions listed below. Fines may be issued per incident at the discretion of the Employer's Agent. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications. The Employer's Agent will inform the SubContractor of the contravention and the amount of the fine, and will deduct the amount from monies due under the Contract.

Fines for the activities detailed below, will be imposed by the Employer's Agent on the SubContractor.

- | | |
|--|----------|
| (a) Any employees, vehicles, plant, or thing related to the SubContractor's operations operating within the designated boundaries of a "no-go" area. | R 5 000 |
| (b) Any vehicle driving in excess of designated speed limits. | R 1 000 |
| (c) Persistent and un-repaired oil leaks from machinery | R 3 000 |
| (d) Persistent failure to monitor and empty drip trays timeously | R 1 000 |
| (e) The use of inappropriate methods for refuelling | R 1 000 |
| (f) Litter on site associated with construction activities. | R 1 000 |
| (g) Deliberate lighting of illegal fires on site. | R 5 000 |
| (h) Employees not making use of the site ablution facilities | R 2 000 |
| (i) Failure to implement specified noise controls, particularly during blasting. | R 2 000 |
| (j) Failure to empty waste bins on a regular basis. | R 1 000 |
| (k) Inadequate dust control. | R 5 000 |
| (l) A spillage, pollution, or any damage to any water course resulting from negligence on the part of the SubContractor. | R 10 000 |

The Employer's Agent will determine what constitutes a transgression in terms of this clause, subject to the provisions of Clause 57.1 of the General Conditions of Contract 2004. In the event that transgressions continue the SubContractor's attention is drawn to the provisions of Clause 55.1.3 of the General Conditions of Contract under which the Employer's Agent may cancel the Contract.

SDEM8 Measurement and payment

SDEM8.1 Refuse removal

The unit of measurement shall be a sum for dry and/or wet refuse to be removed by the SubContractor. The tendered rate shall include full compensation for collecting the refuse, for providing and maintaining the refuse vehicles, refuse bins and special refuse enclosures, drivers and assistants, for all transport around and off-site, for loading and unloading all as specified.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

SDEM8.2 Environmental awareness training

The organisation and attendance of the education course will be measures as a sum. The tender shall cover the time cost of all personnel attending the course, the provision of the venue and for any other operation necessary to comply with the requirements of the environmental awareness courses to the satisfaction of the Employer's Agent.

SDEM8.3 All requirements of the environmental management specification

All other work not measured elsewhere, associated with complying with any requirement of the environmental management specification shall be measured as a sum. The tendered rate shall cover any cost associated with complying with the environmental management specification and shall include for all materials, labour and plant required to execute and complete the work as specified, described in the Bill of Quantities or shown on the drawing

The compilation and implementation of the Construction Environmental Management Plan shall meet the minimum requirements as set out in CEMP 1 – CEMP 3 as detailed on the next page.

PSEM8.4 Fixed-Charge Items

- | | |
|---|-----|
| a) Compilation of an approved Environmental Management Plan | Sum |
| b) Other fixed charges | Sum |

PSEM8.5 Time-related Items

- | | |
|--|-----|
| a) Compliance to the approved Environmental Management Plan and File | Sum |
| b) Training | Sum |

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

CEMP 1: PROFORMA CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

For implementation on small or low impact developments approved under the Environment Conservation Act (Act 73 of 1989).

1 TERMS AND ABBREVIATIONS

Audit - regular inspection and verification of construction activities for implementation of the **Bund** - enclosure under / around a storage facility to contain any spillage.

Batch plant - a concrete or plaster mixing facility and associated equipment and materials.

SubContractor - the principal persons / company undertaking the construction of the development

Developer - The developer is the same person as the applicant.

Development site - boundary and extent of development works and infrastructure.

Employer's Agent - A person who represents the client and is responsible for the technical and contractual

ECO - Environmental Control Officer: - Designation is reserved for suitably qualified independent site environmental managers or authorities officer mainly associated with large and complex developments..

ESA - Environmental Site Agent: - Person responsible to applicant tasked with implementing and controlling the environmental requirements during construction. This title is reserved for implementation on small or low impact developments approved by an exemption under the Environment Conservation Act.

2 MANAGEMENT PLAN CONTEXT

2.1 INTRODUCTION

This document describes mitigation measures and is partly prescriptive, identifying specific people to undertake specific tasks, in order to ensure that impacts on the environment are minimised during the construction phase.

This Environmental Management Plan (EMP) serves as a basic standard guideline document for use on small or low impact construction development sites to prevent unnecessary environmental impacts. Expansion or adaptation of this management plan may be required in specific circumstances.

2.2 ENVIRONMENTAL SITE AGENT

The environmental site agent (ESA) is the person involved with the development project who is responsible for the implementation of the environmental management plan. This person is, therefore responsible for the environmental issues involved with the construction phase of the project.

At large developments an independent, qualified Environmental Control Officer is normally appointed. For the implementation of this management plan, the appointment of an ESA is required. This person may be someone involved with the project acting on behalf of the applicant (e.g. a farm manager) or may be the applicant. It must, however, be a person with adequate environmental knowledge to understand and implement this management plan. The ESA may not be someone appointed by the SubContractor, Employer's Agent or other party involved with the project. The ESA must report to the applicant only.

The ESA has the authority to stop works if in his opinion there is a serious threat to or impact on the environment caused directly from the construction operations. This authority is to be limited to emergency situations where consultation with the Employer's Agent or applicant is not immediately available. In all such work stoppage situations the ESA is to inform the Employer's Agent and applicant of the reasons for the stoppage as soon as possible.

Upon failure by the SubContractor or his employee to show adequate consideration to the environmental aspects of this contract, the ESA may recommend to the Employer's Agent to have the

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

SubContractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the SubContractor.

2.3 ENVIRONMENTAL AWARENESS TRAINING FOR SITE PERSONNEL

All SubContractor teams involved in work on the development are to be briefed on their obligations towards environmental controls and methodologies in terms of this EMP prior to work commencing. The briefing will usually take the form of an onsite talk and demonstration by the ESA. The education / awareness programme should be aimed at all levels of management within the SubContractor team. (see "Do's & Don'ts" summery sheet, appendix 1)

2.4 COMMUNICATION PROCEDURES ON SITE

2.4.1 Site Instruction Entries

The Site Instruction book entries will be used for the recording of general site instructions as they relate to the works on site. It will also be used for the issuing of stop work orders for the purposes of immediately halting any particular activities of the SubContractor in lieu of the environmental risk that they may pose.

2.4.2 ESA Diary Entries

The purpose of these entries will be to record the comments of the ESA as they relate to activities on the site.

Each of these books must be available in duplicate, with copies for the Employer's Agent and ESA. These books should be available to the authorities for inspection or on request. SubContractors meeting minutes must reflect environmental queries, agreed actions and dates of eventual compliance. These minutes form part of the official environmental record.

2.4.3 Method Statements:

Method statements from the SubContractor will be required for specific sensitive actions on request of the authorities or ESA. A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the SubContractor and ESA / Employer's Agent, as circumstances unfold. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP main document. (see standard Method statement sheet)

A method statement describes the scope of the intended work in a step by step description in order for the ESA and Employer's Agent to understand the SubContractors intentions. This will enable them to assist in devising any mitigation measures, which would minimise environmental impact during these tasks. For each instance wherein it is requested that the SubContractor submit a method statement to the satisfaction of the ESA, the format should clearly indicate the following:

- What:** a brief description of the work to be undertaken;
- How:** a detailed description of the process of work, methods and materials;
- Where:** a description/sketch map of the locality of work (if applicable); and
- When:** the sequencing of actions with due commencement dates and completion date estimates.

The SubContractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESA.

2.5 RECORD KEEPING

All records related to the implementation of this management plan (e.g. site instruction book, ESA diary, method statements) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for two years and should at any time be available for scrutiny by any relevant authorities.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

2.5.1 Photographs

It is recommended that photographs are taken of the site prior to, during and immediately after construction as a visual reference. These photographs should be stored with other records related to this EMP.

2.6 ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement is a report by the ESA to the relevant authorities stating completion of the project and compliance with the EMP and conditions. This statement replaces the final audit that is normally required for large development projects.

3 STANDARD MANAGEMENT PROGRAMME

3.1.1 Fauna and Flora

Indigenous plants or wild animals (including reptiles, amphibians or birds etc.) may not be damaged or harmed. Vegetation removals as part of the development requirements are excluded.

All incidents of harm to any animal or natural vegetation (apart from the agreed areas) must be reported to the ESA.

3.1.2 Services

Care and due cognisance must be taken of existing services, new service routes and service construction methods and restrictions. This aspect is often overlooked causing unnecessary environmental impact and costs.

3.1.3 Appropriate use of Machinery

SubContractor shall at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage.

3.1.4 Demarcating and fencing

In the event that sensitive features are threatened by construction activities, the temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended. A two-strand barbed wire fence of approximately 1m high is considered adequate. All fencing and fence placement / positioning must be approved by the ESA on site.

Where the construction area is fenced, all activities including stockpiling must occur within this fenced area. The SubContractor should be fined and must pay for reinstatement or rehabilitation of damaged areas and features.

Work areas and access routes must be clearly demarcated to minimise environmental impact. Demarcation can take the form of colour coded pegs at least 1 m high. Danger tape may also be used for this purpose. All pegs and tape must be maintained.

3.1.5 Anti-erosion measures

The SubContractor shall take appropriate and active measures to prevent erosion resulting from his own works, operations and activities as well as stormwater control measures to the satisfaction of the ESA / Employer's Agent. Restoration costs are likely to be for the SubContractor's account, should these measures not be reasonably implemented. Aspects normally covered in construction contracts in terms of "protection of works" are standard and are not to be billed or confused with any details covered under environmental requirements.

During construction the SubContractor shall protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible. Other measures as may be necessary shall be taken to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. All such measures must be discussed with and approved by the ESA / Employer's Agent.

Measures can include cut off trenches, straw stabilising, brush packing etc.

A method statement is required from the SubContractor prior to site clearing.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

3.1.6 Fuel and Service areas

Fuels and flammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

- All vehicles, equipment, fuel and petroleum services and tanks must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies. The following recommendations should be implemented.
- Refuelling areas should be bunded and lined to prevent spilled fuels and oils from contaminating the area. It is suggested that as a minimum that sandbags surround the bulk fuel supply tank, the floor of the area is to be lined with plastic and a layer of sand of approximately 50mm is placed on top of the plastic.
- The park and service area should be treated with a suitable hydrocarbon absorption or remediation product. Absorbent spill mop-up products need to be on hand - Drizzit and products from Enretech should be investigated for these purposes.
- All servicing must have a drip tray present to prevent accidental spillage of oils and fuels.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established. Fuels and oils must be safely located out of harms way from the elements and safety and fire prevention must be strictly adhered to. No fuel may be stored within the 1: 50 year flood line level. No fuel / oil containers may be left unattended within drainage areas.
- All spills are to be recorded in the ESA diary.

3.1.7 Concrete works

Cement powder has a high alkalinity pH rating, which can contaminate and effect both soil and water pH dramatically. A shift in pH can have serious consequences on the functioning of soil and water organisms and plants. The following recommendations must be implemented to minimise impact.

- Cement contaminated water may not enter a natural or man-made (e.g. trench / sloop or dam) water system. Preventative measures include establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.
- Mixing areas to be carefully placed in consultation with the Employer's Agent / ESA.
- If possible/appropriate ready mix concrete should be used.
- Cement bags are to be stored securely out of harms way from the elements (wind and rain).
- Excess or spilled concrete should be confined within the works area and then removed to a waste site.

3.1.9 Blasting / drilling

In the event that blasting or rock drilling is required, the following recommendations should be implemented.

The SubContractor shall take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of flyrock. Environmental damage caused by blasting / drilling shall be repaired at the SubContractors expense to the satisfaction of the ESA and Employer's Agent.

No blasting may be done on Sundays. Adequate warning must be provided prior to all blasting to all site staff and neighbours. All clear signals must also be clearly given.

The Employer's Agent and ESA must be given 24-hour notice before blasting events.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

3.1.10 Fires

No fires may be allowed outside the construction area and adequate firefighting equipment according to the fire hazard during the construction period must be available on site in good working order (at least one type ABC (all purpose) 12.5 kg extinguisher).

Welding, gas cutting or cutting of metal will only be permitted inside the working areas.

The SubContractor shall pay the costs incurred to organisations called to put out any fires started by him. The SubContractor shall also pay any costs incurred to reinstate burnt areas as deemed necessary by the Employer's Agent.

3.1.11 Refuse

The SubContractor shall be responsible for the establishment of a refuse control system that is acceptable to the ESA.

The SubContractor shall ensure that waste and surplus food, food packaging and organic waste are not deposited by his employees anywhere on the site except in refuse bins for removal on a daily basis by the SubContractor. Refuse bins shall be weather and animal-proof.

The SubContractor must transport refuse collected from the working areas from site at least once a week. Refuse must be disposed of at a site approved by the ESA/Employer's Agent.

For the purposes of this document refuse includes discarded construction materials such as steel reinforcing, wooden shuttering and timbers, cement bags, piping etc.

3.1.11 Toilets

The SubContractor shall provide suitable sanitary arrangements near his offices and construction sites for his staff. A minimum of one toilet shall be provided per 15 persons at each working area or as stipulated by local authority or other relevant legislation.

Toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them blowing over.

Sanitation provision and servicing shall be to the satisfaction of the Employer's Agent. The SubContractor shall ensure that toilets are emptied before any builders' holidays.

3.1.12 Dust Control

The SubContractor is to take appropriate measures to minimise the generation of dust as a result of construction works, to the satisfaction of the ESA. On sandy or very dusty sites, mulched indigenous vegetation which is to be removed from the site and is suitable, can be used as a method of stabilisation and dust control on any cleared or exposed sections of the site. Alternatively, straw stabilisation or watering can be used. Seed bearing invasive vegetation should not be used for this purpose.

3.1.13 Top material Removal and Stockpiling

Prior to construction or earthworks commencing on site, top material should be stripped from work sites and separately stockpiled for later use in rehabilitating damaged areas or for landscaping purposes.

3.1.14 Preparation of Building Material

All building materials are to be prepared at the batching plant, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed.

3.1.15 Discharge of construction water

All cement effluent from mixer washings, and run-off from batching areas and other work areas shall be contained in suitable sedimentation ponds. Sedimentation ponds shall be allowed to dry out on a regular basis to allow for solid material to be removed. This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the ESA, in consultation with the local authority.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Care must be taken to ensure that no water from the construction site enters the agricultural land adjacent to the site, or the natural watercourses.

3.1.16 Site Clean Up and Rehabilitation

The SubContractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site shall be cleared, and cleaned to the satisfaction of the ESA.

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

CEMP 2: ENVIRONMENTAL AWARENESS DO'S AND DON'TS

BASIC RULES OF CONDUCT

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid.

NOTE: **ALL new site personnel must** attend an environmental awareness presentation. Please inform your foreman or manager if you have not attended such a presentation or contact the ESA.

DO:

- Use the toilet facilities provided – report dirty or full facilities
- Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away.
- Report all fuel or oil spills immediately & stop the spill continuing.
- Dispose of cigarettes and matches carefully. (littering is an offence.)
- Confine work and storage of equipment to within the immediate work area.
- Use all safety equipment and comply with all safety procedures.
- Prevent contamination or pollution of streams and water channels.
- Ensure a working fire extinguisher is immediately at hand if any “hot work” is undertaken e.g. Welding, grinding, gas cutting etc.
- Report any injury of an animal.
- Drive on designated routes only.
- Prevent excessive dust and noise.

DO NOT:

- Remove or damage vegetation without direct instruction.
- Make any fires.
- Injure, trap, feed or harm any animals – this includes birds, frogs, snakes, lizards etc.
- Enter any fenced off or marked area.
- Allow cement or cement bags to blow around.
- Speed or drive recklessly
- Allow waste, litter, oils or foreign materials into the stream
- Swim in the dam.
- Litter or leave food laying around

Notes:

1. Should any animals such as tortoises, chameleons or snakes be encountered then do not harm them. The ESSO or RE should be contacted to remove these safely. The harming of any animal will result in disciplinary action.
2. Construction and heavy machine operators must be particularly sensitive to staying within access routes and prevention of unnecessary damage. Dust and noise is also of particular concern. Ensure that vehicles and machinery do not leak fuel or oils. Refuelling or maintenance must be done within the maintenance camp area only.
3. Alien plant clearing and control work teams must be closely supervised.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

CEMP 3: METHOD STATEMENT SHEET - ENVIRONMENTAL METHOD STATEMENT

WHAT:	Subject of M/Statement				
WHO:	Site Foreman/contact person:				
	Submitted to (e.g. ESA):		Approved by:		
	Date Submitted on:		Date Approved:		
WHEN:	Date works start		Date works complete		
	Rehabilitation period:		Programme restrictions (critical path, season restrictions etc.)		
	Split work Phasing:	Item	start date	end date	
	Phase 1				
	Phase 2				
WHERE	Area of works – submit plan or sketch if appropriate – stockpile, detention ponds, boundaries / restriction of works, special features or mitigation works landscape specials etc:				
HOW:	Route/site layout pegged:	Date available to inspect		Inspection persons required:	
	Landscape concerns: (Specify items not covered in EMP. Refer to EMP items if required.)				
	Existing features & services affected (e.g. paths, curbing, irrigation etc.)				
	Trees (protection or removal methods).				
	Special vegetation				
	Reinstatement methods				
	Maintenance				
	Restricted areas				
	Access:				

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

	Machinery:
	Earthworks & dust control:
	Concrete works:
	Storm-water control:
	Stockpiles:
	Refuse/rubble:
	Water quality – pumping, source & discharge points, settlement, filtration, duration etc:
	Hydrocarbon control measures:
	I&AP notifications:
	Fire/emergency contingencies:
	Special conditions / mitigation measures (e.g. stream crossings, live sewer proximity etc):
	Comments:

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

C3.6: Labour Intensive Construction Specifications

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

LIC1 LABOUR INTENSIVE WORK**LIC1.1 Use of labour intensive construction methods**

The Contractor shall make use of labour intensive construction methods in the completion of the Works. Hand held tools shall be used wherever possible.

LIC1.2 Competencies of Supervisory and Management


Established Contractors shall only engage supervisory and management staff in labour-intensive works who have either completed, or are registered for training towards, the skills programme outlined in Table 1.

Emerging Contractors shall have personally completed, or be registered on a skills programme for the NQF level 2 unit standard. All other site supervisory staff in the employ of emerging Contractors must have completed, or 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	

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

Personnel	NQF level	Unit standard titles	Skills programme description
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 against this Construction Processes	Skills Programme against this single unit standard
Details of these skills programmes may be obtained from the CETA ETQA manager (e-mail: gerard@ceta.co.za, tel: 011-265 5900)			

LIC1.3 Generic labour-intensive specification

LIC1.3.1 Scope

This Specification establishes general requirements for activities which are to be executed by hand involving the following:

- a) trenches having a depth of less than 1.5 metres
- b) stormwater drainage
- c) low-volume roads and sidewalks

LIC1.3.2 Precedence

Where this Specification is in conflict with any other standard or specification referred to in this Contract, the requirements of this Specification shall prevail.

LIC1.3.3 Hand excavatable material

Hand excavatable material is material:

- a) Granular materials:

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

- i) whose consistency when profiled may in terms of table 1 be classified as very loose, loose, medium dense, or dense; or
- ii) where the material is a gravel having a maximum particle size of 10 mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100 mm;

b) Cohesive materials:

- i) whose consistency when profiled may in terms of table 1 be classified as very soft, soft, firm, stiff and stiff / very stiff; or
- ii) where the material is a gravel having a maximum particle size of 10 mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100 mm;

Note:

- 1) A boulder, a cobble and gravel is material with a particle size greater than 200 mm, between 60 and 200 mm, and between 2 mm and 60 mm respectively.
- 2) A dynamic cone penetrometer is an instrument used to measure the insitu shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400 mm and drives a cone having a maximum diameter of 20 mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 1: Consistency of materials when profiled

GRANULAR MATERIALS		COHESIVE MATERIALS	
Consistency	Description	Consistency	Description
Very loose	Crumbles very easily when scraped with a geological pick	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle
Loose	Small resistance to penetration by sharp end of a geological pick	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure
Medium dense	Considerable resistance to penetration by sharp end of a geological pick	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade
Dense	Very high resistance to penetration by the sharp end of geological pick; required many blows for excavation	Stiff	Can be indented by thumb-nail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick	Very stiff	Indented by thumb-nail with difficulty; slight indentation produced by blow of a geological pick point.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

LIC1.3.4 Trench excavation

Hand excavatable material has to have a consistency of:

- a) Granular Materials – Very loose or Loose
- b) Cohesive Materials – Very soft or Soft
- c) All other consistencies are regarded machine excavatable materials.
- d) Hand excavation only for trenches having a depth of less than 1,5 metres, all other trenches to be done by machine.

LIC1.3.5 Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100 mm. Each layer shall be compacted using hand stampers

- a) to 90% Proctor density;
- b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10 mm and contains no isolated boulders, or
- c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

LIC1.3.6 Excavation

All excavation, as listed under PD9-3.4 classified as hand excavateable shall be excavated by hand. The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

LIC1.3.7 Clearing and grubbing

Grass and small bushes shall be cleared by hand.

LIC1.3.8 Shaping

All shaping shall be undertaken by hand.

LIC1.3.9 Spreading

All material shall be spread by hand.

LIC1.3.10 Compaction

Small areas may be compacted by hand provided that the specified compaction is achieved.

LIC1.3.11 Grassing

All grassing shall be undertaking by sprigging, sodding, or seeding by hand.

LIC1.3.12 Stone pitching and rubble concrete masonry

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, shall be collected, loaded, off loaded and placed by hand.

Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.

Grout shall be mixed and placed by hand.

LIC1.3.13 Manufactured elements

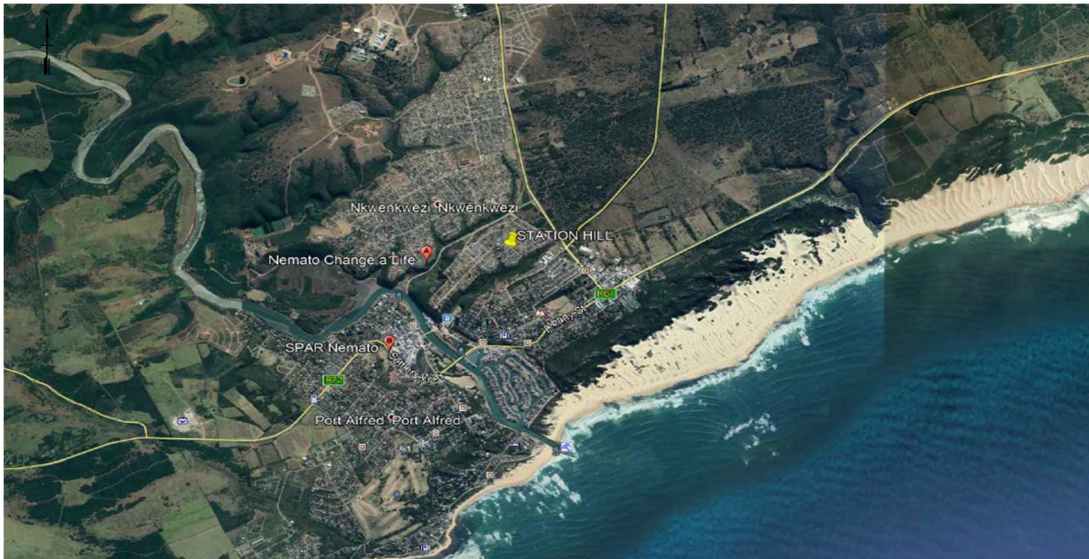
Elements manufactured or designed by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition, the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper handhold on them.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

PART C4: SITE DATA

Contractor____ Witness 1 ____ Witness 2 ____ Employer ____ Witness 1 ____ Witness 2 ____

C4.1: Site Information



LOCALITY PLAN



PROPOSED ROUTE

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C4.2 Drawing Issue Slip

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____

C4.3 Drawings

See the attached standard manhole and erf connection drawings.

Contractor _____ Witness 1 _____ Witness 2 _____ Employer _____ Witness 1 _____ Witness 2 _____