cooperative governance

Department:
Cooperative Governance
REPUBLIC OF SOUTH AFRICA

MISA
MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Municipal Infrastructure Support Agent (MISA)

Cooperative Governance & Traditional Affairs (CoGTA)

REPUBLIC OF SOUTH AFRICA

TENDER NO: MISA/NC/PWS/021/2023/24

Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

PROCUREMENT DOCUMENT

(Based on NEC3 Engineering and Construction Contract –Option B: Priced Contract with Bill of Quantities)

February 2024

Issued by:

Chief Executive Officer
Municipal Infrastructure Support Agent
1303 Heuwel Avenue
Riverside Office Park, Letaba House
Centurion, PRETORIA 0046
TEL: 012 848 5300

Name Tenderer:……

INDEX

The Tender

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

Tender Procedure: Open procedure

Based on

MISA Supply Chain Management Policy of 11 May 2023

SANS 10845-1, Construction procurement Part 1: Processes, methods and procedures

SANS 10845-2, Construction procurement Part 2: Formatting and compilation of procurement documentation

SANS 10845-3, Construction procurement Part 3: Standard conditions of tender

Preferential Procurement Regulations 2022 *(Ref: government gazette no. 40553; dated: 20 January 2017 issued according to the preferential procurement policy framework act (PPPFA), act no. 5 of 2000)*

Contract Documents

1. Form of offer and acceptance
2. Contract data
3. Part 1: Data Provided by the Employer
4. Part 2: Data Provided by the Contractor
5. Conditions of Contract: NEC 3
6. Pricing Data
7. Works Information
8. Site Information

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Tender no.:**MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

T1 TENDERING PROCEDURE

T1.1 TENDERING NOTICE AND INVITATION TO TENDER

Municipal Infrastructure Support Agent (MISA) hereby, invites proposals from suitably qualified Contractors for the construction of infrastructure for Appointment of a contractor for the provision of potable water supply to the settlements of farm Pniel 281, Barkley West in the Northern Cape.

Tenderers should have a CIDB contractor grading of **6CE** or higher.

The project details are hereunder,

TENDER NO.	PROJECT NAME	COMPULSORY BRIEFING SESSION AND SITE VISIT: PLACE, DATE & TIME	TENDER CLOSING DATE & TIME
MISA/NC/PWS/021/2023/24	**Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape**	**A Compulsory Briefing session will be held @ NC COGHSTA (MISA) Offices, 38 Dunell Street, Kimberley followed by a site visit to LAT: 28°35'10.77"S LON: 24°30'37.69"E Farm Pniel 281, Pniel Settlement** **Date: 27 February 2024** **At 10:00 AM**	**11 March 2024** **@11.00 AM** **All Bid Proposals to be submitted @ MISA Head office** **Riverside office Park, 1303 Heuwel avenue, 1st floor Letaba House, Centurion 0046**

Compulsory briefing session and site visit will take place at the place and on the date and time shown above unless otherwise amended later. Representative(s) from MISA will meet prospective Tenderers to provide details of the Contract.

The Tender Documents will be available from the **e-Tender Publication Portal** (www.etenders.gov.za) of the National Treasury of the Republic of South Africa from the date of publication of the Notice of Request for Tenders in Government Tender Bulletin and/ or any national media. Any queries related to the e-Tender Publication must be communicated with eTenders@treasury.gov.za or by contacting the Office of the Chief Procurement Officer Call Supply Chain Centre on 012 406 9222.

The requirement of submissions is detailed in the Tender Data (Ref: T1.2 Tender Data). The tenderers who satisfy the eligibility criteria as set in the tender documents (Ref: T 1.2 Tender Data) are to submit their tenders.

Telegraphic, telephonic, telex, facsimile, e-mail and late tenders will not be accepted. Tenderers must submit their tenders using only the tender documentation issued.

Tenders will be evaluated based on preferential procurement framework Act 5 of 2000 and on functionality as prescribed in the Preferential Procurement Regulation 2022.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

Issued by:

Municipal Infrastructure Support Agent

1303 Heuwel Avenue

Riverside Office Park, Letaba House

Centurion, PRETORIA 0046

TEL: 012 484 5300

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT
Cooperative Governance & Traditional Affairs

Tender No: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

T1.2 TENDER DATA

The conditions of tender are as contained in the latest edition of SANS 10845-3, *Standard conditions of tender*.

SANS 10845-3 makes 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 provisions of SANS 10845-3.

Each item of data given below is cross-referenced to the Clause in SANS 10845-3 to which it mainly applies.

Clause number	Tender Data
3.1	The employer is the **Municipal Infrastructure Support Agent (MISA)**, an entity within the South African Ministry for Cooperative Governance and Traditional Affairs (CoGTA), established in terms of Presidential Proclamation No. 29 of 2012.
3.3	The Tender documents issued by the employer comprise the documents listed on the contents page.
3.4	The Employer's Representative is: **Name:** Ms Mapatani Kgomo **Physical Address**: 1303 Heuwel Avenue, Riverside Office Park, Letaba House, Centurion, Pretoria 0046 Private Bag X 105, Centurion 0046 **Telephone**: 012 848 5300 **Email**: tenders@misa.gov.za
3.5	The language of communications is English

Clause number	Tender Data
4.1	**ONLY** those tenderers who satisfy the following **ELIGIBILITY CRITERIA** and who provide the required evidence in their tender submission, are eligible to submit tenders and have their tenders evaluated: The tenderer: 1. 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 **6CE Or Higher** class of construction work, are eligible to have their tenders evaluated. 2. Joint ventures are eligible to submit tenders provided that: a. every member of the joint venture is registered with the cidb; b. the lead partner has a contractor grading designation in the **6CE Or Higher** class of construction work; or not lower than one level below the required grading designation in the class of works construction works under considerations and possess the required recognition status. c. 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 **6CE 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. 3. In case of a Joint Venture/Consortium submission, shall submit a Joint Venture agreement signed by all parties. 4. Is registered in terms of the Companies Act, 2008 (Act 71 of 2008) or Close Corporation Act, 1984, (Act No. 69 of 1984) or, if a partnership, has a partnership agreement (buy and sell agreement for participating partners in this tender) in place that enables the partnership to automatically continue to function in the event of death or withdrawal of one of the partners or registered on National Treasury portal Central Supplier Database (CSD) 5. In case of having a subsidiary arrangement, shall submit an audited proof (letter or shareholding certificate) of agreement between the holding company and the subsidiary. 6. Bill of quantities or Pricing schedule and or Form of offer/Total tender amount shall not contain correction fluid on them. Any wrong entry, in case of correction, must be cancelled by a single stroke and initialled by the Authorised signatory. 7. Attendance of compulsory briefing meeting 8. The tender documents must be completed and signed by the authorised person of the tenderer wherever spaces are provided in permanent ink.
4.7	The arrangements for a compulsory clarification meeting and a site visit are as stated in the Tender Notice and Invitation to Tender (ref: T1.1). **No Tender will be considered unless the Tenderer attends the compulsory briefing session and site visit.** Tenderers/their authorised representatives must sign the attendance register and detailed contacts in favour of the tendering entity therein. Addenda, if any, will be issued to the tenders only who attended the compulsory briefing sessions.

Clause number	Tender Data
4.12	No alternative tender offer will be considered.
4.13 4.15	The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are: **Location of tender box:** Reception area of MISA Offices Municipal Infrastructure Support Agent's Office **Physical Address**: 1303 Heuwel Avenue, Riverside Office Park, Letaba House, 1st Floor, Centurion, Pretoria 0046 Private Bag X 105, Centurion 0046 **Telephone**: 012 848 5300 **Identification details on the Tender package(s):** 1. Name and Reference number of the tender; 2. Address of the employer; 3. Names of the tendering entity and the contact person; 4. Physical address and contacting details of the tenderer; 5. Date of submission
4.13.4	The tenderer is required to meet the following conditions in addition to the requirement for eligibility criteria as mentioned in Clause 4.1.
4.13.5	Tender offer shall be submitted as **original**, **one copy of the original** and **one scanned copy of the original completed and signed tender documents in a memory stick.**
4.13.6	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
4.15	The closing time for submission of tender is as stated in the Tender Notice and invitation to Tender (ref: T1.1)
4.16	The tender offer validity period is 90 days, exclusive of closing date but inclusive of the 90th day.
5.1	The employer will respond to requests for clarification received up to 7 working days before the tender closing time.
5.2	The employer shall issue addenda until 3 working days before tender closing time.
5.4	The time and location for opening of the Tender offers are as detailed in the Tender notice and invitation to tender (ref: T1.1) or in any addendum thereafter if applicable.
SFU (clause 4.3.1)	The procedure for the evaluation of responsive tenders is **Functionality, Financial offer & Preference** as explained in the **CIDB**'S Standard for Uniformity in Construction Procurement August 2019 (clause 4.3.1). Breakdown points for Functionality points are outlined in 5.11.9 below.

Clause number	Tender Data
	The procedure for the evaluation of responsive tenders is **detailed as follows:** **Phase 1:** Administrative requirements and Mandatory requirements **Phase 2:** Tenderers must meet the minimum requirements outlined in the functionality criteria and score the at least the minimum functionality points to be considered for further evaluation in Stage 3. Tenderers which do not meet minimum functionality of **70 points** will then be rejected. **Phase 3:** Price and preference (80/20 system) **1. PHASE ONE: RESPONSIVENESS TO THE ELIGIBILITY CRITERIA, BID AND MANDATORY REQUIREMENTS AND RULES:** Tenderers' proposals must meet the following minimum requirements and supporting documents must be submitted with the completed bid document in a sealed envelope in the bid box at the closing date and time. Failure to comply will automatically eliminate the bid for further consideration: 1. 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 **6CE Or Higher** class of construction work, are eligible to have their tenders evaluated. 2. Joint ventures are eligible to submit tenders provided that: a. every member of the joint venture is registered with the cidb; b. the lead partner has a contractor grading designation in the **6CE Or Higher** class of construction work; or not lower than one level below the required grading designation in the class of works construction works under considerations and possess the required recognition status. c. 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 **6CE 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. 3. In case of a Joint Venture/Consortium submission, shall submit a Joint Venture agreement signed by all parties. 4. Is registered in terms of the Companies Act, 2008 (Act 71 of 2008) or Close Corporation Act, 1984, (Act No. 69 of 1984) or, if a partnership, has a partnership agreement (buy and sell agreement for participating partners in this tender) in place that enables the partnership to automatically continue to function in the event of death or withdrawal of one of the partners or registered on National Treasury portal Central Supplier Database (CSD) 5. In case of having a subsidiary arrangement, shall submit an audited proof (letter or shareholding certificate) of agreement between the holding company and the subsidiary. 6. Bill of quantities or Pricing schedule and or Form of offer/Total tender amount shall not contain correction fluid on them. Any wrong entry, in case of correction, must be cancelled by a single stroke and initialled by the Authorised signatory. 7. Attendance of compulsory briefing meeting 8. The tender documents must be completed and signed by the authorised person of the

Clause number	Tender Data
	tenderer wherever spaces are provided in permanent ink. **Other Conditions of bid (Non eliminating, unless expressly mentioned in the document):** 9. The bidder must be registered on the Central Supplier Database (CSD) prior the award 10. All tenderer's tax matters must be in order prior award. Bidders' tax matters will be verified through CSD. 11. Failure to complete section 7: SUB-CONTRACTING as per the SBD 6.1, will automatically results in the non-awarding of points for B-BBEE. 12. Should the tenderer intends to sub-contract more than **30%,** it is compulsory to submit valid B-BBEE certificates or a valid original or certified copy of a CSC000 sector code Sworn Affidavit attested by a Commissioner of Oaths (for EMEs/QSEs) for all proposed sub-contractors. Failure will automatically result in no points awarded for B-BBEE, irrespective if the main tenderer submitted an original or certified copy of his/her own B-BBEE certificate. 13. A valid original or certified copy of amended Construction Sector Codes (CSC000) **B-BBEE Certificate verified by SANAS** must be submitted with the tender OR a valid original or certified copy of an attested by a commissioner of Oaths prepared and issued in terms of the amended B-BBEE Construction Sector Codes (CSC000) must be submitted with the tender in order to qualify for preference points for B-BBEE. In case of a joint venture or consortium a valid original or certified copy of consolidated amended Construction Sector Codes (CSC000) **B-BBEE Certificate verified by SANAS** B-BBEE Certificate verified by SANAS must submitted. Failure to comply, will automatically results in the non-awarding of points for B-BBEE. 14. Tenderers which are EMEs or QSEs should make use of the attached Construction Sector Codes (CSC000) compliant Sworn affidavits, if not having their own, to claim B-BBEE points. A tenderer should only select an appropriate Sworn affidavit, complete it in full and have it attested by a commissioner of oaths, signed and dated before submission. Generic sector codes or any other sector code sworn affidavits (which are not Construction Sector Codes) will not be accepted for purposes of claiming B-BBEE points. **2. PHASE TWO: TENDER WHO PASS STAGE 1 WILL THEN BE EVALUATED ON FUNCTIONALITY CRITERIA, AS OUTLINED BELOW:** 15. The tender will be expected to submit substantial information (valid copies and detailed information as ordered) in order to claim points for each of the criteria or sub criteria set. 16. The tenderer must demonstrate to the satisfaction of the Employer that it has sufficient skill and capacity to execute the works.

Clause number	Tender Data

17. The form or the evaluation criteria and maximum score in respect of each of the criteria listed in 5.11.9.
18. A Tender scoring an average score below **70 points** in Functionality will be considered as DISQUALIFIED from evaluation and will be discarded from any further evaluation.
19. Non-submission or poorly completed schedule or incomplete information will result in a tenderer losing points on Functionality. CVs which do not substantially detail relevant experience will also lead to a bidder losing points on Functionality, It is the responsibility of the tenderer to ensure that all copies are clear and certified when the conditions require them to be so.

3. PHASE THREE: EVALUATION POINTS ON PRICE AND B-BBEE REGULATIONS OF 2017

The **80/20 preference point system** shall be applied for the purposes of this bid as per the requirements of the *Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000)* and B-BBEE/ PPPFA Regulations *of 2022*

Criteria	Points
POINTS ON PRICE	**80**
Specific Goals (B-BBEE)	**20**
TOTAL	**100**

SPECIFIC GOALS

The Employer reserves the right to apply other specific goals in accordance with PPPF Regulations 2022 as contemplated in section 2(1)(d)&(e) of the PPPF Act No 5 of 2000 which may include contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender and disability including the implementation of programmes of the Reconstruction and Development Programme as published in Government Gazette No. 16085 dated 23 November 1994.

The 80/20 preference point system for acquisition of services, works or goods up to Rand value of R50 million:

(a) 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 50 000 000 (all applicable taxes included):

The financial offer will be scored using the following formula:

$$Ps = 80\left(1 - \frac{Pt - Pmin}{Pmin}\right)$$

Where

Ps = Points scored for price of bid under consideration

Pt = Price of bid under consideration

Pmin = Price of lowest acceptable bid

The table below must be used to calculate the score out of 20 for B-BBEE.

Clause number	Tender Data

B-BBEE Status Level of Contribution	Number of Points
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-Compliant Contributor	0

5.11.9 **A Tender scoring below 70 points in Functionality shall be considered as DISQUALIFIED for further evaluation and shall be discarded from evaluation.**

Quality criteria	Evaluation schedule	Maximum number of points
Experience of the tenderer	Schedule 1	25
Experience of Key Personnel	Schedule 2	55
Plant and Equipment	Schedule 3	20
Maximum possible score for functionality		**100**

<table>
<tr><th>Clause number</th><th>Tender Data</th></tr>
<tr><td>5.11.9</td><td>
Functionality criteria broken down into sub criteria:
1. Experience of the Tenderer
2. Experience of Key Personnel
3. Plant and Equipment Schedule

Evaluation schedule 1: Experience of the Tenderer

The experience of the company (as opposed to key staff members) in the construction of water supply infrastructure over the last ten years.

This experience must only relate to instance where the tenderer acted as the main contractor.

The scope and nature of projects must cover Water Supply Services: Construction of new infrastructure and/or Refurbishment and/or Rehabilitation and/or Repair and Maintenance of Existing Water Supply Services Infrastructure including river extraction works and water treatment plants (particularly package plants).

Tenderers should briefly describe their experience in this regard, emphasising the nature of the works and complexity by using the template below which must be appended to this tender.

The Tenderer should submit completion certificates as a means of verification of listed projects completed. In addition, appointment letters of purchase orders should be submitted to support the listed highest value of project completed.

<table>
<tr><th rowspan="2">Employer, contact person and contact details (telephone, email address, etc.)</th><th rowspan="2">Project Name and brief description of works</th><th rowspan="2">Contract value</th><th colspan="2">Planned dates</th><th colspan="2">Actual dates</th></tr>
<tr><th>Start</th><th>End</th><th>Start</th><th>End</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Means of Verification is completion certificates and appointment letters on the client's letterhead should be included for each project for ease of reference to support the listed highest value of project completed.

Points will only be awarded upon submission and verification of completion certificates and appointment letters.

The scoring of tenderer's experience will be as below:

1. Number of Projects <u>10 points</u>
• 1-2 projects = 3 points
• 3-4 projects = 6 points
• 5 or more projects = 10 points

2. Highest value of projects completed (completion certificate must be attached) <u>15 points.</u>
a) < R3.00 M = 4 points
b) ≥ R3.00 M but < R6.00 M = 7 points
c) ≥ R6.00 M but < R9.00 M = 10 Points
d) ≥ R9.00 M = 15 points
</td></tr>
</table>

Clause number	Tender Data

Total **25 points**

Evaluation schedule 2: Experience of Key Personnel.

The qualification and experience of key personnel allocated to the project responsible for various functions, on behalf of the Contractor, will be evaluated in relation to her/his academic and professional qualifications (Were Applicable) and experience on projects having scope of work relevant to this project as presented in A to D below.

A CV of each of the key personnel of no more than 3 pages should be submitted along with the tender.

Enclosure:

1. Certificates of academic qualifications
2. Certificates of Professional registration (Where Applicable)

The CV of individuals will be used for evaluation of the each of the personnel for this section.

The scoring of key personnel will be as below:

(Contracts Manager = 20, Site Agent = 15, General Foreman/Supervisor = 10, Health and Safety Officer = 10).

A.Contracts Manager (Total 20 points)

Competency:

- Minimum Qualification = National Diploma in Civil Eng/Construction Management
- Minimum years of experience = 5 years after qualification

1.1. Number of years of relevant experience post qualification. **10 points**

a) Below 5 years = 0 points
b) 5 to below 7 years = 5 points
c) 7 to below 10 years = 7 points
d) 10 years and above = 10 points

1.2. Qualifications for Contracts Manager = **10 points**

a) National Diploma in Civil Eng/Construction Management = 7 points
b) Degree or B Tech in Civil Eng/Construction Management = 10 points

B. Site Agent – (Total 15 points)

Competency*:*

- Minimum Qualification = N6 Certificate in Civil Eng/Construction Management
- Minimum years of experience = 5 years after qualification

2.1.Number of years of relevant experience post qualification. **10 points**

a) Below 5 years = 0 points
b) 5 to below 7 years = 6 points

Clause number	Tender Data

c) 7 to below 10 years = 8 points
d) 10 years and above = 10 points

2.2 Qualifications for Site Agent **5 points**
a) N6 certificate in civil engineering = 3 points
b) Diploma in Civil Engineering = 5 points

C. Foreman/Supervisor – (Total 10 points)

Competency*:*

Minimum Qualification = Matric Certificate or Grade 12 or Std 10 or Equivalent

Minimum years of experience = 5 years after qualification

3.1 Number of years of relevant experience post qualification. **5 points**
a) Below 5 years = 0 points
b) 5 to below 7 years = 1 points
c) 7 to below 10 years = 3 points
d) 10 years and above = 5 points

3.2 Qualifications for Site Agent **5 points**
a) Matric/Grade 12/Std 10/Equivalent = 3 points
b) N6 certificate in civil engineering = 5 points

D.OH&S Officer – (Total 10 points)

Competency*:*

- Minimum Qualification = SAMTRAC or Equivalent
- Minimum years of experience = 5 years after qualification

4.1.Number of years of relevant (as a health and safety officer in construction of municipal infrastructure projects **5 points**
a) Below 5 years = 0 points
b) 5 to below 7 years = 1 points
c) 7 to below 10 years = 3 points
d) 10 years and above = 5 points

4.2 Qualifications for Health and Safety Officer **5 points**
a) SAMTRAC or equivalent = 2 points
b) Diploma / Degree in Health and Safety = 5 points

Schedule 3: Plant and Equipment 20 points

Type of Equipment (Owned or Hired)	Total Points

Clause number	Tender Data

TLB (3 points) (1 required)	**3**
Excavator (20 Tons minimum) (5 points) (1 required)	**5**
Tipper (10m^3 minimum). (3 points for each) (2 required)	**6**
Bomag type pedestrian roller. (3 points for each) (2 required)	**6**

1. **In case where plant is owned by the Tenderer**, Proof of ownership must be in the form of a license disc or certificate of ownership as per e-natis requirements in the name of the company or directors must be attached.

2. **In case where the plant is to be hired by the Tenderer**, a letter from a Plant Hire Company addressed to the tenderer with reference to this project clearly indicating the list of plant to be hired must be attached.

3. **In case where the Tenderer own part of the required plant and part will be hired,** the tenderer must attach proof of ownership as per 1 above and plant hire letter as per 2 above accordingly.

Note: No other proof of ownership will be considered.

5.11.9	Functionality will be scored using quantitative method as outlined in the Evaluation criteria.
5.13	Before award, successful Tenderers will be accepted only if: 1. The tenderer or any of its directors/ shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector. 2. The tenderer is not prohibited in terms of any legislation from submitting a tender. 3. The tenderer demonstrated that they have capacity and capability to complete the works. 4. The tenderer does not pose a risk to the employer such as not having capacity in the chosen region. 5. The Tenderer submitted realistic financial offers which are market related. 6. The tenderer has not: a. abused the Employer's Supply Chain Management System; or b. failed to perform on any previous contract and has been given a written notice to this effect;
5.14	The number of paper copies of the signed contract to be provided by the employer is one to the successful Tenderer.
5.17	The additional conditions of tender are:

Clause number	Tender Data
	Wherever a brand name is specified in this document (i.e. specifications, pricing schedule, bill of quantities or anywhere), the department requires an item similar/equivalent or better.
5.17	**Cancellation and re-invitation of tenders** MISA may, prior to the award of the tender, cancel the 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; or (d) Tender validity period has expired; or (e) Gross irregularities in the tender processes and/or tender documents; or (f) No market related offer received (after attempts of negotiation processes) Where applicable, the decision to cancel the tender will be published in the CIDB website and in the Tender Bulletin or the media in which the original tender invitation as advertised.
	TENDER AWARD A. The tender obtaining the highest number of total points may be awarded the contract, unless the Employer decided otherwise (ref: T1.1 Tender notice and invitation to tender). B. Preference point 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. C. Point scored must be rounded off to the nearest 2 decimal places. *(If the value of the 3rd decimal place is 1 up-to 4, the points up to 2nd decimal place will be considered and if it is 5 up to 9, 1 will be added to the number at 2nd decimal place and the resulting point will be considered.)* D. In the event that two or more Tenders have scored equal total point, the successful Bid must be the one scoring the highest number of preference points for B-BBEE. E. However, in the event that two or more Tenders have scored equal point including equal preference points for B-BBEE, the successful tender must be the one scoring the highest points for quality. F. Should two or more Tenders be equal in all respects, the award shall be decided by drawing of lottery by the Employer. **ADDITIONAL CONDITIONS OF TENDER** The additional conditions of Tender are: **A. Joint Venture** Tenders may form a joint venture acceptable to the Employer as detailed in the tender documents. **B. Costs incurred by Bidder**

Clause number	Tender Data
	The Employer will neither be responsible for nor pay any expenses incurred or losses suffered by any Tenderer in the preparation of the tender or in attending the compulsory briefing session in connection therewith. **C. Acceptance of Bid** The Employer does not bind itself to accept the lowest or any Tender or to furnish any reason for the acceptance or rejection of a tender. **D. Withdrawal of Tender during validity or Failure in signing Contract Agreement at Award** **Should a Tenderer** a) Withdraw his Tender during the period of its validity; or b) Give notice of his inability to execute the Contract or fail to execute the Contract; or c) Failure to sign the Contract Agreement or furnish the required security/ insurance(s) within the period fixed in the Contract Data (ref: C1.2) in the Tender documents or any extended time agreed to by the Employer; **then the Tenderer shall be liable for and pay to the Employer –** i. All expenses incurred in calling for fresh Tender, if it should be deemed necessary by the Employer to do so; ii. The difference between Tender's tender and any less favourable tender accepted either by fresh tender being called or by another tender being accepted from those already received; iii. Any escalation of the Final Contract Price resulting from any delay caused in calling for fresh tender or accepting another tender from those already received, as the case may be. And the Employer shall have the right to recover such sums by set-off against any money which may be due or become due to the Tenderer, under this or any other tender or Contract between the Employer and the Tenderer, or against any guarantee or deposit which may have been furnished by or on behalf of the Tenderer for the due fulfilment of this or any other tender or Contract between the Employer and the Tenderer. Pending the ascertainment of the amount of the Tenderer's liability to the Employer in terms of this Condition of Tender, the Employer may retain such monies, guarantee or deposit as security for any loss, which the Employer may sustain by reason of the Tenderer's default. Provided always that the Employer may exempt a Tenderer from the provisions hereof, if it is of the opinion that the circumstances justify such exemption. **E. Repudiation of Tender or Invalidation of Contract** If the Employer is satisfied that the Tenderer or any person is being an employee, partner, director, member or shareholder of the Tenderer or a person acting on behalf of or with the knowledge of the Tenderer has offered, promised or given a bribe or other gift or remuneration to any person in connection with obtaining or execution of a Contract;

Clause number	Tender Data
	a) has acted in a fraudulent or corrupt manner in obtaining or executing a Contract; b) has approached an officer or employee of the Employer with the object of influencing the award of a Contract in the Tenderer's favour; c) has entered into any agreement or arrangement, whether legally binding or not, with any other person, firm or company: d) to refrain from Tendering for this Contract; e) as to the amount of the Tender to be submitted by either party; f) has disclosed to any other person, firm or company other than the Employer, the exact or approximate amount of his proposed Tender except where the disclosure, in confidence, was necessary in order to obtain insurance premium and surety quotations required for the preparation of the Bid. The Employer may, in addition to using any other legal remedies, repudiate the Bid or declare the Contract invalid should it have been concluded already. **F. South African Jurisdiction** The laws of the Republic of South Africa shall be applicable to each Contract created by the acceptance of a Tender and each Tenderer shall indicate a place in the Republic and specify it in his Tender as his domicilium citandi et executandi where any legal process may be served on him. Each Tenderer shall bind her/ himself to accept the jurisdiction of the Courts of Law of South Africa. **G. Amendments to Tender by Employer** **a) Arithmetical Errors** The Employer shall check and correct arithmetical errors for responsive Tenders in the following manner as per CIDB guideline (Ref: Practice # 2, version 1 – August 2006): i. Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern. ii. If the pricing (or bills of quantities or schedule of quantities or schedule of rates) 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. iii. 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 bidder'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. **b) Imbalance in Tender Rates** In the event of there being Tendered rates or lump sums being declared by the Employer to be unacceptable to him because they are either excessively low or high or not in proper balance with

Clause number	Tender Data
	other rates or lump sums, the Tenderer may be required to produce evidence and advance arguments in support of the tendered rates or lump sums objected to. If, after submission of such evidence and any further evidence requested, the Employer is still not satisfied with the tendered rates or prices objected to, s/he may request the Tenderer to amend these rates and prices along the lines indicated by him. The Tenderer will then have the option to alter and/ or amend the rates and lump sums objected to and such other related amounts as are agreed on by the Employer, but this shall be done without altering the total tendered sum.
	TENDER AWARD G. The tender obtaining the highest number of total points may be awarded the contract, unless the Employer decided otherwise (ref: T1.1 Tender notice and invitation to tender). H. Preference point 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. I. Point scored must be rounded off to the nearest 2 decimal places. *(If the value of the 3rd decimal place is 1 up-to 4, the points up to 2nd decimal place will be considered and if it is 5 up to 9, 1 will be added to the number at 2nd decimal place and the resulting point will be considered.)* J. In the event that two or more Tenders have scored equal total point, the successful Bid must be the one scoring the highest number of preference points for B-BBEE. K. However, in the event that two or more Tenders have scored equal point including equal preference points for B-BBEE, the successful tender must be the one scoring the highest points for quality. L. Should two or more Tenders be equal in all respects, the award shall be decided by drawing of lottery by the Employer. **ADDITIONAL CONDITIONS OF TENDER** The additional conditions of Tender are: **H. Joint Venture** Tenders may form a joint venture acceptable to the Employer as detailed in the tender documents. **I. Costs incurred by Bidder** The Employer will neither be responsible for nor pay any expenses incurred or losses suffered by any Tenderer in the preparation of the tender or in attending the compulsory briefing session in connection therewith. **J. Acceptance of Bid** The Employer does not bind itself to accept the lowest or any Tender or to furnish any reason for the acceptance or rejection of a tender. **K. Withdrawal of Tender during validity or Failure in signing Contract Agreement at Award**

Clause number	Tender Data
	Should a Tenderer d) Withdraw his Tender during the period of its validity; or e) Give notice of his inability to execute the Contract or fail to execute the Contract; or f) Fail to sign the Contract Agreement or furnish the required security/ insurance(s) within the period fixed in the Contract Data (ref: C1.2) in the Tender documents or any extended time agreed to by the Employer; **then the Tenderer shall be liable for and pay to the Employer –** iv. All expenses incurred in calling for fresh Tender, if it should be deemed necessary by the Employer to do so; v. The difference between Tender's tender and any less favourable tender accepted either by fresh tender being called or by another tender being accepted from those already received; vi. Any escalation of the Final Contract Price resulting from any delay caused in calling for fresh tender or accepting another tender from those already received, as the case may be. And the Employer shall have the right to recover such sums by set-off against any money which may be due or become due to the Tenderer, under this or any other tender or Contract between the Employer and the Tenderer, or against any guarantee or deposit which may have been furnished by or on behalf of the Tenderer for the due fulfilment of this or any other tender or Contract between the Employer and the Tenderer. Pending the ascertainment of the amount of the Tenderer's liability to the Employer in terms of this Condition of Tender, the Employer may retain such monies, guarantee or deposit as security for any loss, which the Employer may sustain by reason of the Tenderer's default. Provided always that the Employer may exempt a Tenderer from the provisions hereof, if it is of the opinion that the circumstances justify such exemption. **L. Repudiation of Tender or Invalidation of Contract** If the Employer is satisfied that the Tenderer or any person is being an employee, partner, director, member or shareholder of the Tenderer or a person acting on behalf of or with the knowledge of the Tenderer has offered, promised or given a bribe or other gift or remuneration to any person in connection with obtaining or execution of a Contract; g) has acted in a fraudulent or corrupt manner in obtaining or executing a Contract; h) has approached an officer or employee of the Employer with the object of influencing the award of a Contract in the Tenderer's favour; i) has entered into any agreement or arrangement, whether legally binding or not, with any other person, firm or company: j) to refrain from Tendering for this Contract;

Clause number	Tender Data
	k) as to the amount of the Tender to be submitted by either party; l) has disclosed to any other person, firm or company other than the Employer, the exact or approximate amount of his proposed Tender except where the disclosure, in confidence, was necessary in order to obtain insurance premium and surety quotations required for the preparation of the Bid. The Employer may, in addition to using any other legal remedies, repudiate the Bid or declare the Contract invalid should it have been concluded already. **M. South African Jurisdiction** The laws of the Republic of South Africa shall be applicable to each Contract created by the acceptance of a Tender and each Tenderer shall indicate a place in the Republic and specify it in his Tender as his domicilium citandi et executandi where any legal process may be served on him. Each Tenderer shall bind her/ himself to accept the jurisdiction of the Courts of Law of South Africa. **N. Amendments to Tender by Employer** **c) Arithmetical Errors** The Employer shall check and correct arithmetical errors for responsive Tenders in the following manner as per CIDB guideline (Ref: Practice # 2, version 1 – August 2006): iv. Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern. v. If the pricing (or bills of quantities or schedule of quantities or schedule of rates) 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. vi. 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 bidder'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. **d) Imbalance in Tender Rates** In the event of there being Tendered rates or lump sums being declared by the Employer to be unacceptable to him, because they are either excessively low or high or not in proper balance with other rates or lump sums, the Tenderer may be required to produce evidence and advance arguments in support of the tendered rates or lump sums objected to. If, after submission of such evidence and any further evidence requested, the Employer is still not satisfied with the tendered rates or prices objected to, s/he may request the Tenderer to amend these rates and prices along the lines indicated by him. The Tenderer will then have the option to alter and/ or amend the rates and lump sums objected to and such other related amounts as are agreed on by the Employer, but this shall be done without altering the total tendered sum.

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT
Cooperative Governance & Traditional Affairs

Reference No: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

T2 RETURNABLE DOCUMENTS

T2.1 LIST OF RETURNABLE DOCUMENTS

A. Documentation to demonstrate eligibility to have tenders evaluated

The required documentation as listed in **Clause 4.1 of T1.2 Tender Data**, must be submitted along with the tender for determining the eligibility of the tender.

Failure to provide the above documents (A) shall result in the tenderer's tender not being evaluated.

B. Returnable schedules required for tender evaluation purposes

The tenderer must complete the following returnable schedules as relevant, which are attached here with the tender documents.

1. SBD 1 - Invitation to Bid
2. SBD 4 - Declaration on Interest
3. SBD 6.1 – Preference Points claim form
4. Samples of CSC000 sector coders Sworn Affidavits- A. EMEs and B. QSES (For tenderers with no B-BBEE Certificates)
5. CSD report Annexure
6. Tender's certificates Annexure
7. Resolution for Signatory
8. Certificate of Joint Ventures

9. Schedule 1: Experience of the tenderer
10. Schedule 2: Experience of key person
11. Schedule 3: Plant and Equipment

C. Other documents contained herein in the tender documents required for tender evaluation purposes as listed below.

1. Record of Addenda to Tender Documents
2. Proposed Amendments and Qualifications

D. Documentation that will be used for evaluation and to incorporate into the contract, if the tender offer resulted in an award

1. The offer portion of C1.1 Form of offer and acceptance
2. Part 2 of C1.2 Contract data relevant to tenderer
3. C2.2 Price List

T2.2 RETURNABLE SCHEDULES

1. PART A – INVITATION OF BID

SBD 1

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (*NAME OF DEPARTMENT/ PUBLIC ENTITY*)					
BID NUMBER:	**MISA/NC/PWS/021/2023/24**	CLOSING DATE:	11 March 2024	CLOSING TIME:	11am
DESCRIPTION:					
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT *(STREET ADDRESS)*					

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		**TECHNICAL ENQUIRIES MAY BE DIRECTED TO:**	
CONTACT PERSON	**Anele Ndamase**	CONTACT PERSON	
TELEPHONE NUMBER	**0128485300**	TELEPHONE NUMBER	
FACSIMILE NUMBER		FACSIMILE NUMBER	
E-MAIL ADDRESS	**tenders@misa.gov.za**	E-MAIL ADDRESS	

SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		**OR**	CENTRAL SUPPLIER DATABASE No:	MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] ☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT	[TICK APPLICABLE BOX] ☐ Yes ☐ No	

[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]

1 ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐Yes ☐No [IF YES ENCLOSE PROOF]	**2** ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES, COMPLETE QUESTIONNAIRE BELOW]

QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO
DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.

PART B – TERMS AND CONDITIONS

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.

1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**

1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

1.4. **THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).**

2. TAX COMPLIANCE REQUIREMENTS

2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.

2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.

2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.

2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.

2.6 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

SBD 4 - BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest[1] in the enterprise, employed by the state? **YES/NO**

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	**Identity Number**	**Name of State institution**

[1] the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:
……
……

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:
……
……

3 DECLARATION

I, the undersigned, (name)…… in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

3.1 I have read and I understand the contents of this disclosure;
3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[2] will not be construed as collusive bidding.
3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.

3.6 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.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

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

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

…… ……
Signature Date

…… ……
Position Name of bidder

3. SBD 6.1: PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATION 2022

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, 2022.

1. GENERAL CONDITIONS

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

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

1.2

a) The value of this bid is estimated to not exceed R50 000 000 (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable; or
b) Either the 80/20 preference point system will be applicable to this tender Points for this bid shall be awarded for:

(a) Price; and

(b) B-BBEE Status Level of Contributor.

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

	POINTS
PRICE	80
B-BBEE STATUS LEVEL OF CONTRIBUTOR	20
Total points for Price and B-BBEE must not exceed	**100**

1.4 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor 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

(a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

(b) "**B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

(c) **"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 goods or services, through price quotations, advertised competitive bidding processes or proposals;

(d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);

(e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(f) **"functionality"** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

(g) **"prices"** includes all applicable taxes less all unconditional discounts;

(h) **"proof of B-BBEE status level of contributor"** means:

1) B-BBEE Status level certificate issued by an authorized body or person;

2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;

3) Any other requirement prescribed in terms of the B-BBEE Act;

(i) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(j) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

3. POINTS AWARDED FOR PRICE

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

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

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

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

Where

Ps = Points scored for price of bid under consideration
Pt = Price of bid under consideration
Pmin = Price of lowest acceptable bid

4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

4.1 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	8	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. BID DECLARATION

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

6. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1

6.1 B-BBEE Status Level of Contributor: . = ……(maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

7. SUB-CONTRACTING

7.1 Will any portion of the contract be sub-contracted?

(***Tick applicable box***)

YES		NO	

7.1.1 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 or QSE

(Tick applicable box)

YES		NO	

Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations, 2017:

Designated Group: An EME or QSE which is at last 51% owned by:	**EME** √	**QSE** √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

8. **DECLARATION WITH REGARD TO COMPANY/FIRM**

8.1 Name of company/firm:…….

8.2 VAT registration number:……

8.3 Company registration number:……

8.4 TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

……
……
……
……

8.6 COMPANY CLASSIFICATION

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

[*TICK APPLICABLE BOX*]

8.7 Total number of years the company/firm has been in business:……

8.8 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 contributor indicated in paragraphs 1.4 and 6.1 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 paragraphs 1.4 and 6.1, 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 contributor 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) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be

restricted by the National Treasury 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

WITNESSES 1. …….. 2. …….	…… SIGNATURE(S) OF BIDDERS(S) DATE: …….. ADDRESS …….. …….. ……..

4. SAMPLES OF GENERIC SECTOR CODERS SWORN AFFIDAVITS- A. EMES AND B. QSES (FOR TENDERERS WITH NO B-BBEE CERTIFICATES SWORN AFFIDAVIT - TEMPLATES

(IF APPLICABLE, CHOOSE THE CORRECT FORM AND COMPLETE)

NB:CHOOSE ONE i.e EME or QSE!!!!)

B-BBEE EXEMPTED AFFIDAVIT FOR <u>EXEMPTED MICRO ENTERPRISES</u> (EME)

I, the undersigned,

Full name & Surname	
Identity number	

Hereby declare under oath as follows:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.
2. I am a Member / Director / Owner of the following enterprise and am duly authorized to act on its behalf:

Enterprise Name:			
Trading Name (If Applicable):			
Registration Number:			
Enterprise Physical Address:			
Type of Entity (CC, (Pty) Ltd, Sole Prop etc.):			
Nature of Construction Business:	BEPs (Built Environment Professional)	Contractor	Supplier
Definition of "Black People"	As per the Broad-Based Black Economic Empowerment Act 53 of 2003 as Amended by Act No 46 of 2013 "Black People" is a generic term which means Africans, Coloureds and Indians – (a) Who are citizens of the Republic of South Africa by birth or descent; or (b) Who became citizens of the Republic of South Africa by naturalization- i. Before 27 April 1994; or ii. On or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalization prior to that date		

3. I hereby declare under Oath that as per Amended Code Series 100 of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

- The Enterprise is _____% Black Owned
- The Enterprise is _____% Black woman Owned
- The Enterprise is _____% Owned by Black Designated Group (provide Black Designated Group Breakdown below as per the definition in the table above)

o Black Youth % _____%

- o Black Disabled % _____%
- o Black Unemployed % _____%
- o Black People living in Rural areas % _____%
- o Black Military Veterans % _____%

Based on the Financial Statements/Management Accounts and other information available on the latest financial year-end of_____(DD/MM/YY), the annual Total Revenue was equal to/or less than the applicable amount confirmed **by ticking the applicable box below**.

Contractor / Consultancy	R10 million	
Supplier	R10 million	

If the turnover exceeds the applicable amount in the table above then this affidavit is no longer applicable and an EME certificate must be obtained from a rating agency accredited by SANAS or when applicable a B-BBEE Verification Professional Regulator appointed by the Minister of Trade and Industry.

 Please confirm on the table below the B-BBEE level contributor, **by ticking the applicable box.**

100% Black Owned	**Level One** (135% B-BBEE procurement recognition level)	
At least 51% Black Owned but less than 100% black owned	**Level Two** (125% B-BBEE procurement recognition level)	
Less than 51% black owned	**Level Four** (100% B-BBEE procurement recognition level)	

4. I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent in this matter.
5. The sworn affidavit will be valid for a period of 12 months from the date signed by commissioner.

Deponent Signature:_____

Date:_____

_____

Commissioner of Oaths
Signature & stamp

Date:_____

B-BBEE EXEMPTED AFFIDAVIT FOR QUALIFYING SMALL ENTERPRISES (QSE)

Issued in terms of paragraph(s) 9.6 and 12.6 (Implementation Guide for PPRegs 2017) and Paragraph(s) 3.7 & 5.1 of NT Circular No. 5 of 2016/2017

I, the undersigned,

Full name & Surname	
Identity number	

Hereby declare under oath as follows:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.
2. I am a Member / Director / Owner of the following enterprise and am duly authorized to act on its behalf:

Enterprise Name:		
Trading Name (If Applicable):		
Registration Number:		
Enterprise Physical Address:		
Type of Entity (CC, (Pty) Ltd, Sole Prop etc.):		
Nature of Construction Business:	Supplier / Service provider	Consultancy services Supplier
Definition of "Black People"	As per the Broad-Based Black Economic Empowerment Act 53 of 2003 as Amended by Act No 46 of 2013 "Black People" is a generic term which means Africans, Coloureds and Indians – (a) Who are citizens of the Republic of South Africa by birth or descent; or (b) Who became citizens of the Republic of South Africa by naturalization- i. Before 27 April 1994; or ii. On or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalization prior to that date	

3. I hereby declare under Oath that as per Amended Code Series 100 of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

- The Enterprise is _____% Black Owned
- The Enterprise is _____% Black Female Owned
- The Enterprise is _____% Owned by Black Designated Group (provide Black Designated Group Breakdown below as per the definition in the table above)
  - o Black Youth % _____%

- o Black Disabled % _____%
- o Black Unemployed % _____%
- o Black People living in Rural areas % _____%
- o Black Military Veterans % _____%

Based on the Financial Statements/Management Accounts and other information available on the latest financial year-end of_____(DD/MM/YY), the annual Total Revenue was equal to/or less than the applicable amount confirmed **by ticking the applicable box below**.

Contractor / Consultancy services	R50 million	
Supplier	R50 million	

If the turnover exceeds the applicable amount in the table above then this affidavit is no longer applicable and an EME certificate must be obtained from a rating agency accredited by SANAS or when applicable a B-BBEE Verification Professional Regulator appointed by the Minister of Trade and Industry.

 Please confirm on the table below the B-BBEE level contributor, **by ticking the applicable box.**

100% Black Owned	**Level One** (135% B-BBEE procurement recognition level)	
At least 51% Black Owned but less than 100% black owned	**Level Two** (125% B-BBEE procurement recognition level)	

4. I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent in this matter.

5. The sworn affidavit will be valid for a period of 12 months from the date signed by commissioner.

Deponent Signature:_____

Date:_____

_____

Commissioner of Oaths
Signature & stamp
Date: _____

5. CSD REPORT ANNEXURE - PROOF OF REGISTRATION ON THE NATIONAL TREASURY CENTRAL SUPPLIER DATABASE (CSD REPORT)

(ATTACH HERE)

6. VALID CERTIFICATES OF A TENDERER

(ATTACH HERE)

7. RESOLUTION FOR SIGNATORY

A: CERTIFICATE OF AUTHORITY FOR SIGNATORY

Signatory for companies shall confirm their authority hereto by attaching a duly signed and dated copy of the relevant resolution of the board of directors to this form or on company letter head.

An example is given below:
"By resolution of the board of directors passed at a meeting held on _____

Mr/Ms_____, whose signature appears below, has been duly authorised to

sign all documents in connection with the tender for Contract No. _____

and any Contract which may arise there from on behalf of (Block Capitals) _____

_____

_____

SIGNED ON BEHALF OF THE COMPANY: _____
IN HIS/HER CAPACITY AS: _____
DATE:_____
SIGNATURE OF SIGNATORY: _____

WITNESSES:

DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	

If you cannot complete this form, attach a separate sheet (in a company letter head, project specific and signed by all directors):

8. CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This Returnable Schedule is to be completed by joint ventures.

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

PROJECT TITLE	
SCMU NUMBER	**MISA/NC/PWS/021/2023/24**

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

6.Evaluation schedule 1: Experience of the Tenderer

The experience of the company (as opposed to key staff members) in the construction of water supply infrastructure over the last ten years.

The information shall be for completed projects within last **10 years** only.

Tenderers should very briefly describe their experience in this regard, emphasizing the nature of the works and complexity. The description should be presented in tabular form with the following headings and appended to this page. The Tenderer should submit completion certificates as a means of verification of listed projects completed. In addition, appointment letters of purchase orders should be submitted to support the listed highest value of project completed.

Employer, contact person and contact details (telephone, email address, etc.)	**Project Name and brief description of works**	**Contract value**	**Planned dates**		**Actual dates**	
			Start	**End**	**Start**	**End**

The scoring of tenderer's experience will be as below:

3. Number of Projects 10 points
   - 1-2 projects = 3 points
   - 3-4 projects = 6 points
   - 5 or more projects = 10 points

4. Highest value of projects completed (completion certificate must be attached) 15 points
   e) < R3.00 M = 4 points
   f) ≥ R3.00 M but < R6.00 M = 7 points
   g) ≥ R6.00 M but < R9.00 M = 10 Points
   h) ≥ R9.00 M = 15 points

Total **25 points**

The undersigned, who warrants that s/he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.

Signed Date

Name Position

Enterprise name

7. Evaluation schedule 2: Experience of Key Personnel

The qualification and experience of key personnel allocated to the project responsible for various functions, on behalf of the Contractor, will be evaluated in relation to her/his academic and professional qualifications (Were Applicable) and experience on projects having scope of work relevant to this project as presented in A to D below.

A CV of each of the key personnel of no more than 3 pages should be submitted along with the tender.

Enclosure:

3. Certificates of academic qualifications
4. Certificates of Professional registration (Where Applicable)

The CV of individuals will be used for evaluation of the each of the personnel for this section.

The scoring of key personnel will be as below:

(Contracts Manager = 20, Site Agent = 15, General Foreman/Supervisor = 10, Health and Safety Officer = 10).

A.Contracts Manager (Total 20 points)

Competency:

- Minimum Qualification = National Diploma in Civil Eng/Construction Management
- Minimum years of experience = 5 years after qualification

1.1.Number of years of relevant experience post qualification.		**10 points**
a) Below 5 years	=	0 points
b) 5 to below 7 years	=	5 points
c) 7 to below 10 years	=	7 points
d) 10 years and above	=	10 points

1.2.Qualifications for Contracts Manager	=	**10 points**
c) National Diploma in Civil Eng/Construction Management	=	7 points
d) Degree or B Tech in Civil Eng/Construction Management	=	10 points

B. Site Agent – (Total 15 points)

Competency*:*

- Minimum Qualification = N6 Certificate in Civil Eng/Construction Management
- Minimum years of experience = 5 years after qualification

2.1.Number of years of relevant experience post qualification.		**10 points**
a) Below 5 years	=	0 points
b) 5 to below 7 years	=	6 points
c) 7 to below 10 years	=	8 points
d) 10 years and above	=	10 points

2.2 Qualifications for Site Agent		**5 points**
a) N6 certificate in civil engineering	=	3 points
b) Diploma in Civil Engineering	=	5 points

C. Foreman/Supervisor – (Total 10 points)

Competency*:*

Minimum Qualification = Matric Certificate or Grade 12 or Std 10 or Equivalent

Minimum years of experience = 5 years after qualification

3.1 Number of years of relevant experience post qualification.		**5 points**
a) Below 5 years	=	0 points
b) 5 to below 7 years	=	1 points
c) 7 to below 10 years	=	3 points
d) 10 years and above	=	5 points

3.2 Qualifications for Site Agent		**5 points**
c) Matric/Grade 12/Std 10/Equivalent	=	3 points
d) N6 certificate in civil engineering	=	5 points

D. OH&S Officer – (Total 10 points)

Competency*:*

- Minimum Qualification = SAMTRAC or Equivalent
- Minimum years of experience = 5 years after qualification

4.1.Number of years of relevant (as a health and safety officer in construction of municipal infrastructure projects		**5 points**
a) Below 5 years	=	0 points
b) 5 to below 7 years	=	1 points
c) 7 to below 10 years	=	3 points
d) 10 years and above	=	5 points

4.2 Qualifications for Health and Safety Officer		**5 points**
a) SAMTRAC or equivalent	=	2 points
b) Diploma / Degree in Health and Safety	=	5 points

The undersigned, who warrants that s/he is duly authorised to do so on behalf of the enterprise, confirms that the content of the reference letter(s) presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.

Signed ---------- Date ----------

Name ---------- Position ----------

Enterprise name ----------

8. Schedule 3: Plant and Equipment 20 points

Type of Equipment (Owned or Hired)	Total Points
TLB (3 points) (1 required)	**3**
Excavator (20 Tons minimum) (5 points) (1 required)	**5**
Tipper (10m^3 minimum). (3 points for each) (2 required)	**6**
Bomag type pedestrian roller. (3 points for each) (2 required)	**6**

4. **In case where plant is owned by the Tenderer**, Proof of ownership must be in the form of a license disc or certificate of ownership as per e-natis requirements in the name of the company or directors must be attached.

5. **In case where the plant is to be hired by the Tenderer**, a letter from a Plant Hire Company addressed to the tenderer with reference to this project clearly indicating the list of plant to be hired must be attached. Proof of ownership must be in the form of a license disc or certificate of ownership as per e-natis requirements in the name of the hiring company

6. **In case where the Tenderer own part of the required plant and part will be hired,** the tenderer must attach proof of ownership as per 1 above and plant hire letter as per 2 above accordingly.

   Note: No other proof of ownership will be considered.

A Tender scoring below <u>70 points</u> in Quality will be considered as DISQUALIFIED for evaluation and will be discarded from any further evaluation.

The undersigned, who warrants that s/he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct

Signed ---------- Date ----------

Name ---------- Position ----------

Enterprise name ----------

The Contract

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape.

Reference no.: **MISA/NC/PWS/021/2023/24**

Based on

NEC 3: Engineering and Construction Contract (Option B: Priced Contract with bill of quantities)

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

C1 AGREEMENTS AND CONTRACT DATA

C1.1 FORM OF OFFER AND ACCEPTANCE

OFFER

The *Employer*, identified in the Acceptance signature block, has solicited offers to enter into a contract for the provision of services as described in Part 1 of the Contract Data.

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

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VAT AND EXPENSES, calculated in accordance with the *conditions of contract as detailed hereunder:*

Total Amount: R_____(**in figure), (**Rand _____

_____

_____

) (in words)

_____

Signature ..... Date: .....

Name ....

Capacity ....

For the tenderer:

....

(Insert name and address of organisation)

....

Name & signature of witness		Date	

ACCEPTANCE

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

The terms of the contract, are contained in:

Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)

Part C2 Pricing Data

Part C3 Scope of Work

Part C4 Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the *Employer* during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the *Employer's* agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

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

Signature _____ Date: _____

Name(s)	Mr Ntandazo Vimba
Capacity	Chief Executive Officer
For the Employer	Municipal Infrastructure Support Agent

Schedule of Deviations

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 returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Tenderer and the *Employer* during this process of offer and acceptance.

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

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the Settlements of Farm Pniel 281, Barkley West in the Northern Cape

C1.2 CONTRACT DATA

The *Conditions of Contract* are the core clauses and the clauses for main Option B, dispute resolution option W1 and Secondary options X7, X13, X16, Z of the NEC3 Engineering and Construction Contract (April 2013 edition) published by the Institution of Civil Engineers (ICE), copies of which may be obtained from Engineering Contract Strategies (+27) 011 803 3008

Each item of data given below is cross-referenced to the clause in the NEC3 Engineering and Construction Contract to which it mainly applies.

C1.2.1 Part One - Data provided by the *Employer.*

Clause		Data
1 General		
10.1	*The Employer is*	Municipal Infrastructure Services Agent
	Physical Address:	Letaba House, Riverside Office Park 1303 Heuwel Avenue, Centurion, Pretoria 0046
	Postal Address:	Private Bag X105, Centurion 0046
	Telephone:	012 848 5300
10.1	*The Project Manager is*	Mr. Walter Moroane
	Physical Address:	Letaba House, Riverside Office Park 1303 Heuwel Avenue, Centurion, Pretoria 0046
	Postal Address:	Private Bag X105, Centurion 0046
	Telephone:	012 848 5300
10.1	*The Supervisor is Keabeng Nkwada* Wayo Consulting cc	

Clause	Data
	Physical Address: 414 Jacqueline Street Garsfontein, Pretoria 0082 Postal Address: PO Box 869, Bedor park, Polokwane 0713 Telephone: 012 664 0086
11.2 (1)	The Accepted Programme is the programme identified in the Contract Data or the latest accepted by the Project Manager. The latest accepted programme supersedes previously accepted programmes.
11.2 (13)	The *works* are the pipelines associated with the provision of potable water supply as well as the two package plants.
11.2 (14)	The following matters will be included in the Risk Register. • *A record of all identified risks,* • *The likelihood and consequences of a risk occurring,* • *The actions proposed to be taken to reduce those risks, and* • *Who is responsible for managing the risk*
11.2 (15)	The *boundaries* of the site are the area covering the reticulation piping and the two package plants, including the three storage tanks.
11.2 (16)	The Site Information is in section Part C4: Site information of this tender document
11.2 (19)	The Works Information is in section Part C3: Scope of works of this tender document
12.2	The *law of the contract* is the law of the Republic of South Africa
13.1	The *language of this contract* is English
13.3	The *period of reply* is 2 weeks
2	**The Parties' main responsibility**
26.1	If the *Contractor* subcontracts work, he is required to submit a signed agreement with proposed Subcontractor detailing the proposed scope and exclusivity of the relationship and intention to get into a subcontracting agreement based on the NEC3 Engineering and Construction Subcontract should he be successful.
26.2	The Contractor must submit proposed Subcontractor with a CIDB Grading of 6CE (appropriate certificates to be submitted).
26.3	The conditions of contract for the Subcontractor shall be the NEC3 Engineering and Construction Subcontract Edition: 3 Reprinted with Amendments 2013, which is to be signed by both parties should the Contractor be successful.
3	**Time**

Clause	Data
30.1	The *starting date* is **14 days** after receipt of award letter unless otherwise agreed by the Parties.
33.1	The *access* date is on or a day after the inception meeting.
11.2(2)	The *completion date* for the whole of the *services* is **8 months** after the site handover meeting.
31	The *Contractor* submits programme with the tender according to the *Scope*, considering the *starting date* and *completion date*, which will be adjusted, if need be, based on proposed duration in the programme through consultation.
32	The *Contractor* submits revised programme at intervals no longer than 4 weeks.
4	**Testing and Defects**
42	The *defects date* is 52 weeks after Completion of the whole of the works.
43	The *defect correction period* is two weeks after completion of the whole of the works.
5	**Payment**
50.1	The *assessment interval* is monthly on or before the 20th day of each successive month.
51.1	The *currency of this contract* is the South African Rand.
51.2	Each certified payment is made within 30 days of the receipt of invoice.
51.4	The *interest rate* is the Prime lending rate of the *Employer's* Bank.
6	**Compensation events**
60.1 (13)	The place where the weather is to be recorded is Pniel Farm 281
60.1 (13)	The weather measurements to be recorded for each calendar month are • The cumulative rainfall (mm) • The number of days with rainfall more than 7mm
7	**Title** No data required for this section of the *conditions of contract*.
70.2	80% of the value of materials on site could be claimed by the contractor. Proof of ownership of material and delivery notes must be provided for claims to be certified.
8	**Indemnity, Insurance and Liabilities**
84.1	The Contractor is to provide the insurances stated in the Insurance Table in Section 84.2

<table>
<tr><th>Clause</th><th>Data</th></tr>
<tr><td>84.2</td><td>The minimum amount of cover for insurance against the Contractor's liability for loss of or damage to property (except the works, Plant and Materials and Equipment) and liability for bodily injury to employees of the Contractor to or death of a person (not an employee of the Contractor) caused by activity in connection with this contract as prescribed in section 84.2 of the NEC 3 ECC
<table>
<tr><th>Insurance against</th><th>Minimum amount of cover or minimum limit of indemnity</th><th>Period following Completion of the whole of the services or earlier termination</th></tr>
<tr><td>Loss of or damage of the works, Plant and Materials</td><td>The replacement cost, including the amount stated in the Contract Data for the replacement of any Plant and Materials provided by the Employer</td><td>Till the end of the defects date.</td></tr>
<tr><td>Loss of or damage to Equipment</td><td>The replacement cost</td><td>Till the end of the completion date.</td></tr>
<tr><td>Liability for loss of or damage to property (except the works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the Contractor) caused by activity in connection with this contract.</td><td>R10 million without limit to the number of claims</td><td>Till the end of the completion date.</td></tr>
<tr><td>Liability for death of or bodily injury to employees of the Consultant arising out of and in the course of their employment in connection with this contract</td><td>That which is prescribed by the Compensation injuries and Diseases Act No. 130 of 1993 as amended and whatever the Consultant deems desirable in addition</td><td>Till the end of the completion date.</td></tr>
</table></td></tr>
<tr><td>85.1</td><td>Before the starting date and on each renewal the Contract shall provide applicable insurance policies to the Project Manager for acceptance. The certificates are signed by the Contractor's insurer or insurance broker</td></tr>
<tr><td>86.1</td><td>The Employer provides no insurance cover.</td></tr>
<tr><th>Option W1</th><th>DISPUTE RESOLUTION</th></tr>
<tr><td>W1.2</td><td>The Adjudicator is the person selected by the Parties in terms of the relevant Z Clause from the Panel of NEC Adjudicators set up by ICE-SA, a Joint Division of the Institution of Civil Engineers and the South African Institution of Civil Engineering (see www.ice-sa.org.za).</td></tr>
</table>

Clause	Data
W1.2	The *adjudicator nominating body* is the Chairman of ICE-SA, a Joint Division of the Institution of Civil Engineers and the South African Institution of Civil Engineering (see www.ice-sa.org.za).
W1.4	The *tribunal* is **arbitration**
W1.4	The *arbitration procedure* is as set out in the latest edition of Rules for the Conduct of Arbitrations published by the Association of Arbitrators (Southern Africa) or its successor body The place where arbitration is to be held is to be Advised The person or organisation who will choose an arbitrator if the Parties cannot agree a choice or if the *arbitration procedure* does not state who selects an arbitrator, is the Chairman of the Association of Arbitrators (Southern Africa) or its successor body
Option X7	**Delay Damages**
X7	The *delay damages* for completion of the wholes of the works are **R2,000.00** per calendar day
Option X13	**Performance Bond**
X13	The amount of the performance bond is **10 %** of value of Contract
Option X16	**Retention**
X16	The retention percentage is **10%**
Z	***Additional Conditions of Contract*** The *additional conditions of contract* are
Z1	**Selection and appointment of the *Adjudicator*** A Party may at any time notify the other Party of the names of two persons he has chosen from the Panel of NEC Adjudicators set up by ICE-SA, a Joint Division of the Institution of Civil Engineers and the South African Institution of Civil Engineering (see www.ice-sa.org.za) whose availability to act as the *Adjudicator* the notifying Party has confirmed. The other Party selects one of the two persons chosen to be the *Adjudicator* within four days of receiving the notice, failing which the person chosen by the notifying Party will be the *Adjudicator.* The Parties appoint the selected *Adjudicator* under the NEC3 Adjudicator's Contract, April 2013.
Z2	**Tax invoices** **The *Contractor*'s invoice.** Delete the first sentence of core clause 51.1 and replace by: The Employer makes each payment within **thirty** days from the date of receipt (exclusive) of the *Contractor's* tax invoice from the Consultant showing the

Clause	Data
	details, which this contract requires or, if a different period is stated in the Contract Data, within the period stated.
Z3	**Acts or omissions by mandatories** In terms of Section 37(2) of the Occupational health and Safety Act of 1993 (Act 85 of 1993), the *Contractor hereby* agrees that the *Employer* is relieved of any and all of its liabilities in terms of Section 37(1) of this Act in respect of any acts or omissions of the *Contractor* and his employees to the extent permitted by this Act, and that this contract comprises the written agreement between the *Employer* and the *Contractor* contemplated in section 37(2).
Z4	**Subcontractors** The *Contracto*r submits the name of each proposed subcontractor to the *Employer's* representative for acceptance. A reason for not accepting the subcontractor is that his appointment will not allow the Contractor to Provide the Works. The Contractor does not appoint a proposed subcontractor until the Project Manager has accepted him. Where the contractor intends subcontracting the electrical and mechanical work, the Contractor shall also submit a signed agreement stating the intention to subcontract the proposed Subcontractor based on the NEC3 Engineering and Construction Subcontract format
Z5	**Guarantee** The maximum guaranteed sum is equal to **10** % of the total of the Prices and reduces to the following diminishing amounts:

Guarantor's liability expressed as a percentage of the total of Prices	**Period of liability**
Maximum guaranteed sum of **10 %**	From the date this demand bond comes into effect and until the date by when the Price for Work Done to Date has reached or exceeds **50** % of the total of Prices
Reducing to the guaranteed sum of **6** %	From the date by when the Price for Work Done to Date has reached or exceeds the amount stated above and until the date of Completion of the whole of the *works*
Reducing to the guaranteed sum of **3** %	From the day after the date of Completion of the whole of the *works* and until the date of issue of the last Defects Certificate.
Reducing to the guaranteed sum of **1** %	From the day after the date of issue of the last Defects Certificate and up to and including the day on which there are no amounts due by either Party to the other.

Clause	Data
	Transfer of rights The *Employer* owns the *Contractor's* rights over material prepared for this contract by the *Contractor* except as stated otherwise in the Works Information. The *Contractor* obtains other rights for the *Employer* as stated in the Works Information and obtains from a subcontractor equivalent rights for the *Employer* over the material prepared by the subcontractor. The *Contractor* provides to the *Employer* the documents which transfer these rights to the *Employer*

C1.2.2 Part Two – Data Provided by the Contractor

The *Contractor* is advised to read the NEC3 Engineering and Construction (Third edition of June 2005) and the relevant Guidance Notes and Flow Charts, published by the Institution of Civil Engineers, in order to understand the implications of this Data, which is required. Copies of these documents may be obtained from Engineering Contract Strategies (telephone (27) 011 803 3008).

Each item of data given below is cross-referenced to the clause in the NEC3 Engineering and Construction Short Contract to which it mainly applies.

Clause	Data
10.1	*The Contractor is* Name: _____ Physical Address: _____ _____ Post Code: _____ Postal Address: _____ Post Code: _____ Telephone: _____ Fax: _____ Mobile: _____ Email: _____
11.2 (8)	The Direct fee percentage is _____
11.2 (8)	The subcontracted fee percentage is _____
11.2 (18)	The working areas are the site and _____
24.1	The *Contractor's* key persons are: 1 Name: Position in the Project Team: _____ Responsibilities: _____ Qualifications: _____ Experience: _____ Physical Address: _____ _____ Post Code: _____ Postal Address: _____ Post Code: _____ Telephone: _____ Fax: _____

	Mobile: _____ Email: _____ (Please use separate pages referring to this clause for detailing this information for all *Contractor's* key persons)
11.2(14)	The following matters will be included in the Risk Register
11.2 (21)	The *bill of quantities* is ……
11.2 (31)	The tendered total of the Prices is ……
52.1	The percentage for overheads and profit added to the Defined Cost for people is **. . . . . %**
52.1	The percentage for overheads and profit added to other Defined Cost is **. . . . . %**

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the settlements of farm Pniel 281, Barkley West in the Northern Cape

C1.3 SECURITIES: PERFORMANCE BOND

(to be reproduced exactly as shown below on the letterhead of the Surety)

{Insert name and registered address of the Contractor}

Date:

Dear Sirs,

Performance Bond for Contract No.

With reference to the above numbered contract made or to be made between

{Insert registered name and address of the *Employer}* (the *Employer*) and

{Insert registered name and address of the *Contractor}* (the *Contractor*), for

(the *Contractor*), for

{Insert details of the *works* from the Contract Data} (the *works)*. (the *works*).

I/We the undersigned .....

on behalf of the Surety .....

of physical address .....

.....

and duly authorised thereto do hereby bind ourselves as Surety and co-principal debtors in solidum for the due and faithful performance of all the terms and conditions of the Contract by the *Contractor* and for all losses, damages and expenses that may be suffered or incurred by the *Employer* as a result of non-performance of the Contract by the *Contractor*, subject to the following conditions:

1. The terms *Employer*, *Contractor*, *works* and Defects Certificate have the meaning as assigned to them by the *conditions of contract* stated in the Contract Data for the aforesaid Contract.

2. We renounce all benefits from the legal exceptions "Benefit of Excursion and Division", "No value received" and all other exceptions which might or could be pleaded against the validity of this bond, with the meaning and effect of which exceptions we declare ourselves to be fully acquainted.

3. The *Employer* has the absolute right to arrange his affairs with the *Contractor* in any manner which the *Employer* deems fit and without being advised thereof the Surety shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the Surety. Without derogating from the foregoing compromise, extension of the construction period, indulgence, release or variation of the *Contractor's* obligation shall not affect the validity of this performance bond.

4. This bond will lapse on the earlier of

   - the date that the Surety receives a notice from the *Employer* stating that the last Defects Certificate has been issued, that all amounts due from the *Contractor* as certified in terms of the contract have been received by the *Employer* and that the *Contractor* has fulfilled all his obligations under the Contract, or

   - the date that the Surety issues a replacement Performance Bond for such lesser or higher amount as may be required by the *Employer*.

5. Always provided that this bond will not lapse in the event the Surety is notified by the *Employer*, (before the dates above), of the *Employer's*

intention to institute claims and the particulars thereof, in which event this bond shall remain in force until all such claims are paid and settled.

6. The amount of the bond shall be payable to the *Employer* upon the *Employer's* demand and no later than 7 days following the submission to the Surety of a certificate signed by the *Employer* stating the amount of the *Employer's* losses, damages and expenses incurred as a result of the non-performance aforesaid. The signed certificate shall be deemed to be conclusive proof of the extent of the *Employer's* loss, damage and expense.

7. Our total liability hereunder shall not exceed the sum of:

_____

R _____

8. This Performance Bond is neither negotiable nor transferable and is governed by the laws of the Republic of South Africa, subject to the jurisdiction of the courts of the Republic of South Africa.

Signed at ---------- on this ..... day of ..... 200_

Signature(s)		
Name(s) (printed)		
Position in Surety company		
Signature of Witness(s)		

Name(s) (printed)		

C1.4 SECURITIES: REDUCING VALUE GUARANTEE

(to be reproduced exactly as shown below on the letterhead of the Surety)

{Insert name and registered address of the Employer}

Date:

Dear Sirs,

Reducing Value Guarantee for Contract No.

With reference to the above numbered contract made or to be made between

{Insert registered name of the *Employer*} (the *Employer*) and

{Insert registered name and address of the *Contractor*}

(the *Contractor*), for

{Insert details of the *works* from the Contract Data} (the *works*).

I/We the undersigned .....

on behalf of the Guarantor .....

of physical address .....

and duly authorised thereto, do hereby undertake to pay the *Employer* forthwith on receipt of written demand from the *Employer* up to the maximum guaranteed sum of

(say)

R _____

in respect of amounts due by the *Contractor* to the *Employer* for whatever reason in terms of the contract between the *Employer* and the *Contractor* in respect of the *works.* The following further terms shall apply:

1 The Guarantor's liability shall be limited to the diminishing amounts of the guaranteed sum as set out below:

	Guarantor's Liability	**Period of Liability**
1.1	Maximum guaranteed sum: R _____	From the date this demand bond comes into effect and until the date by when the Price for Work Done to Date has reached or exceeds R _____
1.2	Reducing to the guaranteed sum of: R _____	From the date by when the Price for Work Done to Date has reached or exceeds the amount stated in 1.1 above and until the date of Completion of the whole of the *works*
1.3	Reducing to the guaranteed sum of R _____	From the day after the date of Completion of the whole of the *works* and until the date of issue of the last Defects Certificate.
1.4	Reducing to the guaranteed sum of: R _____	From the day after the date of issue of the last Defects Certificate and up to and including the day on which there are no amounts due by either Party to the other.

1.5 Thereafter this demand guarantee shall lapse.

2 The terms *Employer*, *Contractor*, *works*, Price for Work Done to Date, Completion, Defects Certificate and Party have the meaning given to them by the *conditions of contract* stated in the Contract Data for the aforesaid Contract.

3 The *Employer* shall have the absolute right to arrange his affairs with the *Contractor* in any manner which the *Employer* deems fit and the Guarantor shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the Guarantor. Without derogating from the foregoing, any compromise, extension of the Completion Date, indulgence, release or variation of the *Contractor's* obligation shall not affect the validity of this demand guarantee.

4 The Guarantor chooses domicilium citandi et executandi for all purposes in connection herewith at the address appearing above.

5 This Reducing Value Guarantee is neither negotiable nor transferable and is governed by the laws of the Republic of South Africa, subject to the jurisdiction of the courts of the Republic of South Africa.

6 The *Employer* returns this Guarantee to the Guarantor when it has lapsed in terms of clause 1 above or on payment in full thereof whichever is the earlier.

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

Guarantor: .....

Representative	Representative
Name (printed)	Name (printed)
Capacity	Capacity
As Witness	As Witness
Guarantor's stamp or seal	

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the settlements of farm Pniel 281, Barkley West in the Northern Cape

PART C2: PRICING DATA

INDEX

PART C2: PRICING DATA

C2.1 PRICING INSTRUCTIONS

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

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

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 project specifications. 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.

8 Contingencies allowed for in this schedule of quantities shall be utilised at the discretion of the Employer represented by the Acting Chief Director: Infrastructure Delivery, Maintenance & Stakeholder Coordination

9 Provisional Sums in the schedule of quantities shall be utilised at the discretion of the Project Manager. In addition, provisional sums may be omitted entirely by the Project Manager if so required.

10 Those parts of the works to be constructed using labour-intensive methods **have been marked in the schedule of quantities with the letters LI in a separate column** filled in against every item so designated. The works, or parts of the works so designated are to be constructed using labour-intensive methods only. The use of plant to provide such works, other than plant specifically provided for in the scope of work, is a variation to the contract. The items marked with the letters LI are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not over-ride any of the requirements in the generic labour-intensive specification in the Scope of Works.

11 Where minimum labour intensity is specified by the design the contractor is expected to use his/her initiative to identify additional activities that can be done labour intensively in order to comply with the set minimum labour intensity target.

12 . Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment.

13 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

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

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

C2.2 SCHEDULE OF QUANTITIES

The Bill of Quantities is structured as outline below. Where there is gaps and omissions in specifications and/or BOQ the applicable Standard shall apply.

				SECTION 1: PRELIMINARY AND GENERAL		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
1.0	SANS 1200 A	**SECTION 1 : PRELIMINARY AND GENERAL**				
	8.3	**FIXED-CHARGE ITEMS**				
1.1.1	8.3.1	Contractual Requirements	Sum	1,0		
	8.3.2	Establish Facilities on the Site :				
	PSAB 8.3.2.1	Facilities for Engineer (SABS 1200 AB)				
1.1.2		a) Engineers Office	Sum	1,0		
1.1.3		b) Survey equipment	Sum	1,0		
1.1.4		c) Carports: 2 carports for the sole use of the Engineer as per PSAB 3.3	Sum	1,0		
1.1.5		d) Contract Nameboard	No	2,0		
	8.3.2.2	Facilities for Contractor				
1.1.6		a) Offices and storage sheds	Sum	1,0		
1.1.7		b) Workshops	Sum	0,0		
1.1.8		c) Laboratories	Sum	0,0		
1.1.9		d) Living accommodation	Sum	1,0		
1.1.10		e) Ablution and latrine facilities	Sum	1,0		
1 .1.11		f) Tools and equipment	Sum	1,0		
1 .1.12		g) Water supplies, electric power and communications	Sum	1,0		
1 .1.13		h) Dealing with water (Subclause 5.5)	Sum	1,0		
1.1.14		i) Access (Subclause 5.8)	Sum	1,0		
1.1.15		j) Plant	Sum	1,0		
1.1.16	PSA 8.3.5	Setting out of the works	Sum	1,0		
Total Carried Forward						

				SECTION 1: PRELIMINARY AND GENERAL		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.1.17	PSA 8.9	Compliance with OHS Act and Regulations (includig the Construction Regulations 2003) **together with the COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS) 2020**	Sum	1,0		
1.1.18	PSA 8.10	Environmental Management Plan	Sum	1,0		
1.1.19	8.3.4	Remove Engineer's and Contractor's Site establishment on completion	Sum	1,0		
1,2	**8,4**	**TIME-RELATED ITEMS**				
1.2.1	8.4.1	**Contractual Requirements**	Month	8,0		
	8.4.2	**Operate and maintain facilities on the Site:**				
	8.4.2.1	Facilities for Engineer for duration of construction (SANS 1200 AB)				
1.2.2		a) Offices: 2 rooms, etc., as for item .1.2	Month	8,0		
1.2.3		b) Survey assistants and materials	Month	8,0		
1.2.5		c) Carports: 2 carports as for item .1.4	Month	8,0		
	8.4.2.2	Facilities for Contractor for duration of construction, except where otherwise stated				
1.2.6		a) Offices and storage sheds	Month	8,0		
1.2.7		b) Workshops	Month	0,0		
1.2.8		c) Laboratories	Month	0,0		
1.2.9		d) Living accommodation	Month	8,0		
1.2.10		e) Ablution and latrine facilities	Month	8,0		
1.2.11		f) Tools and equipment	Month	8,0		
1.2.12		g) Water supplies, electric power and communications	Month	8,0		
1.2.13		h) Dealing with water (Subclause 5.5)	Month	8,0		
1.2.14		i) Access (Subclause 5.8)	Month	8,0		
1.2.15		j) Plant	Month	8,0		
Total Carried Forward						

				SECTION 1: PRELIMINARY AND GENERAL		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.2.16	PSA 8.3.5	Setting out of the works	Month	0,0		
1.2.17	PSA8.9	Compliance with OHS Act and Regulations (includig the Construction Regulations 2003) **together with the COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS) 2020**	Month	8,0		
1.2.18	PSA 8.10	Environmental Management Plan	Month	8,0		
1.2.19	8.4.3	Supervision	Month	8,0		
1.2.20	8.4.4	Company and head office overhead costs	Month	0,0		
1.2.21	8.4.5	Other time-related obligations	Month	0,0		
1.2.22	PSA 8.4.6	Opportunities to, and co-operation with others on site	Month	0,0		
1.2.23		Workmen's Compensation Act (Application)	Month	8,0		
1,3	**8,5**	**SUMS STATED PROVISIONALLY BY ENGINEER**				
1.3.1	PSA 8.5.1	Control Testing	Prov Sum	1,0	30 000,00	30 000,00
		For work to be done by Contractor and valued and approved by the Project Manager in line with the provisions of the contract				
1.3.2		b) Community Liason Officer	Prov Sum	1,0	60 000,00	60 000,00
1.3.3	8,5	c) Accredited Training	Prov Sum	1,0	80 000,00	80 000,00
1.3.3		a) Payment to PSC	Prov Sum	1,0	24 000,00	24 000,00
1.4	8,7	**Daywork**				
		Labour				
1.4.1		(a) Artisans	h	40		Rate only
1.4.2		(b) Skilled labourers	h	40		Rate only
Total Carried Forward						

				SECTION 1: PRELIMINARY AND GENERAL		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.4.3		(c) Semi-skilled labourers	h	80		Rate only
1.4.4		(d) Un-skilled labourers	h	120		Rate only
		Plant - intended for use on contract				
1.4.5		(a) Excavator : (type .....)	h	40		Rate only
1.4.6		(b) Loader : (type .....)	h	40		Rate only
1.4.7		(c) Tipper truck : (type .....)	h	40		Rate only
1.4.8		(d) Pedestrian compactor : (type 900-1000 roller)	h	40		Rate only
		Other plant type				
1.4.9		(e) Welding plant : (type .....)	h	20		Rate only
1.4.10		(f) Compressor : 175 cfm	h	20		Rate only
1.4.11		(g) Compressor : 365 cfm	h	20		Rate only
1.4.12		(h) Crane : (type .....)	h	16		Rate only
1.4.13		(i) Hand held equipment type tools : (type .....)	h	40		Rate only
1.4.14		Materials	Prov Sum	1	50 000,00	50 000,00
1.4.15		Percentage adjustment to item 1.5.14 for materials	%	50 000,0		
1.4.16		Plant	Sum	1,0		Rate only
1.4.17		Percentage adjustment to item .3.14 for plant	%			Rate only
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 1 : PRELIMINARY AND GENERAL						

				SECTION 2 : EARTHWORKS (PIPELINES)		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
2		**SECTION 2 : EARTHWORKS (PIPE TRENCHES)**				
	SANS 1200 DB	**EARTHWORKS (PIPE TRENCHES)**				
2.1	8.3.1	**SITE CLEARANCE**				
2.1.1		a) Clear vegetation and trees of girth up to 1 m (2 m wide strip)	m	6 500,0		
2.1.2		b) Clear trees of girth over 1,0 m and designated obstacles	No.	8		
2.1.3		c) Remove topsoil (strip to 150 mm deep x 700 mm wide)	m²	4 550,0		
		(on pipeline centre line, stockpile and prevent dust nuisance)				
2.1.4	PSDB 8.3.1	d) Place topsoil (150 mm thick x 700 mm wide) and compact to 90% Mod AASHTO	m²	4 550,0		
2.2	8.3.2	**EXCAVATION**				
		a) Excavate in all materials, backfill and compact to 90% Mod AASHTO density and dispose of surplus and unsuitable material (trenches 600 mm wide)				
2.2.1		(1) Depth 1.0m to 1.5m	m^3	4 720,0		
		b) Extra-over Item 2.2.1 above for:				
2.2.2		(1) Intermediate erxcavation	m³	710,0		
2.2.3		(2) Hard rock material	m³	710,0		
2.3	8.3.3	**EXCAVATION ANCILLARIES**				
	8.3.3.1	Make up deficiency in backfill material (Provisional)				
2.3.1		a) From other necessary excavations on site	m³	390,0		
2.3.2		c) By importation from commercial or off-site sources selected by the Contractor	m³	390,0		
	8.3.3.3	Compaction in road reserves				
2.3.3		(1) Additional compaction to 93% Mod AASHTO in road reserves	m³	20,0		
Total Carried Forward						

				SECTION 2 : EARTHWORKS (PIPELINES)		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
	8.3.3.5	Services that intersect a trench				
2.3.4		1) Fences	No	3		
2.3.5		2) Water Pipes (Provisional)	No	4		
	8.3.6	Finishing				
	8.3.6.1	Reinstate road surfaces complete with all courses				
2.3.6		d) Gravel surfaced	m²	9,0		
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 2 : EARTHWORKS (PIPELINES)						

					SECTION 3 : BEDDING (PIPES)	
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
3		**SECTION 3 : BEDDING (PIPES)**				
	SANS 1200 LB	**BEDDING (PIPES)**				
	8.2	**SCHEDULED ITEMS**				
3.1	8.2.1	Provision of bedding from trench excavation				
3.1.1		a) Selected granular material	m^3	1 180,0		
3.1.2		b) Selected fill material	m^3	880,0		
3.2	8.2.2	Supply only of bedding by importation				
	8.2.2.1	From other necessary excavation (Provisional)				
3.2.1		a) Selected granular material	m^3	180,0		
3.2.2		b) Selected fill material	m^3	140,0		
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 3 : BEDDING (PIPES)						

				SECTION 4 : MEDIUM PRESSURE PIPELINES		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
4		**SECTION 4 : MEDIUM PRESSURE PIPELINES**				
	SANS 1200 L	**MEDIUM PRESSURE PIPELINES**				
4.1	PSL 8.2.1	Supply, Lay and Bed pipes complete with Couplings				
		Class 9 Pipes				
4.1.1		50 mm diameter	m	440,0		
4.1.2		63 mm diameter	m	3 580,0		
4.1.3		75 mm diameter	m	1 500,0		
4.1.4		90 mm diameter	m	2 080,0		
4.2	8.2.2	Extra-over 8.2.1 for supply, lay, joint, bed and test the following fittings, including cutting of pipes, couplings, etc.				
		(a) uPVC Class 9 pressure long radius bends				
4.2.1		63 mm diameter 11.25°	No	8,0		
4.2.1		63 mm diameter 22.5°	No	8,0		
4.2.3		63 mm diameter 45°	No	3,0		
4.2.4		75 mm diameter 11.25°	No	3,0		
4.2.5		75 mm diameter 22.5°	No	3,0		
4.2.6		75 mm diameter 45°	No	3,0		
4.2.7		90 mm diameter 11.25°	No	5,0		
4.2.8		90 mm diameter 22.5°	No	3,0		
		(b) uPVC Class 9 pressure fittings				
4.2.9		75 / 63 mm diameter reducer M&F	No	1,0		
4.2.10		90 / 75 mm diameter reducer M&F	No	1,0		
4.2.11		75 / 50 mm diameter socketed reducing tee	No	2,0		
4.2.12		63 / 50 mm diameter socketed / flanged on branch reducing tee	No	1,0		
4.2.13		63 / 50 mm diameter socketed reducing tee	No	3,0		
		(c) C.I. pressure fittings for uPVC Class 9				
4.2.14		50 mm diameter socketed end cap	No	5,0		
Total Carried Forward						

				SECTION 4 : MEDIUM PRESSURE PIPELINES		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
4.2.15		63 mm diameter socketed end cap	No	1,0		
4.2.16		75 mm diameter socketed end cap	No	2,0		
4.2.17		75 mm diameter hydrant tee (all flanged)	No	4,0		
4.2.18		75 / 80 mm diameter flange adaptor	No	8,0		
4.2.19		90 / 50 mm reducing tee (socketed / flanged)	No	1,0		
		VALVES				
4.3	8.2.3	Extra-over 8.2.1 for the supplying, fixing, and bedding of valves, including cutting of pipes, couplings, etc.				
4.3.1		25mm Vent-O-Mat double orifice flanged Air Valve RBX2521, or similar approved	No	1,0		
4.3.2		50mm diameter RSV isolating valve	No	2,0		
4.3.3		50mm diameter RSV gate valve (cap top socketed) to SANS664 Series 01/80	No	4,0		
4.3.4		63mm diameter RSV gate valve (cap top socketed) to SANS664 Series 01/80	No	3,0		
4.3.5		75mm diameter RSV gate valve (cap top socketed) to SANS664 Series 01/80	No	2,0		
4.3.6		80mm diameter RSV isolating valve	No	4,0		
4.3.7		80mm underground fire hydrant (left hand closing)	No	4,0		
4.4	8.2.4	Extra-over Items 8.2.1 for cutting of pipe, and for suplying and fixing of extra couplings				
4.4.1		63 mm diameter	No	3,0		
4.4.2		75 mm diameter	No	2,0		
4.4.3		90 mm diameter	No	2,0		
4.5	8.2.5	Supply and place pipes, valves, and specials (short pipe runs)				
4.5.1		(i) 50 mm diameter C.I. flanged short pipe (250mm long)	No	1,0		
4.5.2		(i) 50 mm diameter C.I. flanged / plain ended short pipe (1000mm long)	No	1,0		
4.5.3		(i) 80 mm diameter C.I. flanged short pipe (250mm long)	No	4,0		
Total Carried Forward						

				SECTION 4 : MEDIUM PRESSURE PIPELINES		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
4.5.4	8.2.7	Recover old pipeline (depth 1.0 to 1.5m)	m	1 390,0		
4.5.5	8.2.9	Test and relay recovered pipes				
		(a) Test recovered pipes on site before relaying	No	232,0		
		(b) Relay pipeline	m	1 390,0		
		(c) Joints and couplings for recovered pipeline (Provisional)	No	115,0		
4.6		ANCILLARIES				
4.6.1	8.2.11	Anchor, thrust blocks and pedestals, 25MPa concrete mix	m^3	5,0		
4.6.2	8.2.12	Casing to pipes, 25MPa concrete mix	m^3	20,0		
4.6.3	8.2.13	Valve and Hyrdant chambers, etc…				
		(i) Air valve chamber as per drawing no. FP281WS-C-216	No.	1,0		
		(ii) Valve chamber as per drawing no. FP281WS-C-219	No.	6,0		
		(iii) Fire hydrant chamber as per drawing no. FP281WS-C-220	No.	4,0		
4.6.4	PSL 8.2.16	Marker posts, complete, installed	No.	36,0		
4.6.5	PSL 8.2.17	Supply, install, disnifect and test communal stand pipes, as per drawing FP281WS-C-218	No.	8,0		
4.6.6	PSL 8.2.18	Supply, install, disnifect and test 32mm diameter HDPE pipes to communal stand pipes, incl. saddles	m	1 716,0		
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 4 : MEDIUM PRESSURE PIPELINES						

			SECTION 5: YARD CONNECTIONS (PROVISIONAL)			
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
5		**SECTION 5: YARD CONNECTIONS (PROVISIONAL)**				
5.1		Provide yard connection, complete with plastic Aqualoc meter and 32 mm dia. HDPE connection pipe to the water main, as per drawing ….	No.	320		Rate only
		The rate shall cover all the cost of providing the pipes and meter box, saddle, ferrules, marker posts and excavating, connecting to the water main, laying in light sanding material, jointing, backfilling, testing, stand pipes and scomplete the service connection				
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 5 : YARD CONNECTIONS (PROVISIONAL)						

		SECTION 6: MECHANICAL EQUIPMENT- SUPPLY AND DELIVERY				
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
6		**SECTION 6 : MECHANICAL EQUIPMENT- SUPPLY, DELIVERY AND INSTALLATION**				
6.1	C4.5.2	Potable Water Package Plant at Pniel Settlement, complete with flash mixing, flocculation, clarification, sand filtration and disinfection but excluding elevated tank - Supply and Deliver	No.	1,0		
6.2	C4.5.2	Potable Water Package Plant at Pniel Settlement, complete with flash mixing, flocculation, clarification, sand filtration and disinfection but excluding elevated tank - Install and Commission	No.	1,0		
6.3	C4.5.2	Potable Water Package Plant at Pniel Estate, complete with flash mixing, flocculation, clarification, sand filtration and disinfection but excluding elevated tank - Supply and Deliver	No.	1,0		
6.4	C4.5.2	Potable Water Package Plant at Pniel Estate, complete with flash mixing, flocculation, clarification, sand filtration and disinfection but excluding elevated tank - Install and Commission	No.	1,0		
6.5	C4.5.2	Elevated Tower - Pniel Settlement ($90m^3$ on 6m stand) - Supply and Deliver	No.	1,0		
6.6	C4.5.2	Elevated Tower - Pniel Estate ($11m^3$ on 10m stand) - Supply and Deliver	No.	1,0		
6.7	C4.5.2	Elevated Tower - Pniel Estate ($10m^3$ on 12m stand) - Supply and Deliver	No.	1,0		
6.8	C4.5.2	Elevated Tower - Cottonfield ($5m^3$ on 6m stand) - Supply and Deliver	No.	1,0		
6.9	C4.5.2	Elevated Tower - Pniel Settlement (90m3 on 6m stand) - Install and Commission	No.	1,0		
6.10	C4.5.2	Elevated Tower - Pniel Estate (11m3 on 10m stand) - Install and Commission	No.	1,0		
6,11	C4.5.2	Elevated Tower - Pniel Estate (10m3 on 12m stand) - Install and Commission	No.	1,0		
6.12	C4.5.2	Elevated Tower - Cottonfield (5m3 on 6m stand) - Install and Commission	No.	1,0		
	8,5	**SUMS STATED PROVISIONALLY BY ENGINEER**				
6.13	C4.5.1	New Raw Water Pumpstation at Pniel Settlement - excluding solar power	Prov Sum	1,0	300 000,00	300 000,00
6.14	C4.5.1	New Raw Water Pumpstation at Pniel Estate - excluding solar power	Prov Sum	1,0	250 000,00	250 000,00
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 6 : MECHANICAL EQUIPMENT - SUPPLY AND DELIVERY						

		SECTION 7: ELECTRICAL WORKS-SUPPLY AND DELIVERY				
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
7		**SECTION 7 : ELECTRICAL WORKS - SUPPLY, DELIVERY AND INSTALLATION**				
7.1	C4.5.1	Solar plant to run 4kW absorbed power Package WTW between 09h30 and 16h00 (15kWp off grid photovoltaic Plant with monocrystiline Pannels 10kVA 3 phase Inverter and 10/8 LiFePo4 battery)	Sum	1		
7.2		Solar plant to run 4.2kW absorbed power Package WTW between 09h30 and 16h00 (16kWp off grid photovoltaic Plant with monocrystiline Pannels 10kVA 3 phase Inverter and 10/8 LiFePo4 battery)	Sum	1		
7.3		Solar plant to run 2.4kW absorbed power raw water extraction points at Pniel Estate between 09h30 and 16h00 (10kWp off grid photovoltaic Plant with monocrystiline Pannels 5kVA 3 phase Inverter and 5/4 LiFePo4 battery)	Sum	1		
7.4		Solar plant to run 2.4kW absorbed power raw water extraction points at Pniel Settlement between 09h30 and 16h00 (10kWp off grid photovoltaic Plant with monocrystiline Pannels 5kVA 3 phase Inverter and 5/4 LiFePo4 battery)	Sum	1		
7.5		16mm^2 4 Core PVC/SWA/PVC Cu Cable from Solar Plant to MCC	m	150		
7.6		16mm^2 4 Core PVC/SWA/PVC Cu Cable from Solar Plant to MCC	m	350		
7.7		Termination of cables	each	12		
7.8		Site lights, complete with bakcup batteries	each	6		
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 7 : ELECTRICAL WORKS-SUPPLY AND DELIVERY						

				SECTION 8: SECURITY FENCING		
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
8		**SECTION 8 : SECURITY FENCING**				
	PSVC 4.2	**SECURITY FENCING**				
8.1	B55.01	Cleaning the fence line 2m wide strip	m	144,00		
8.2	B55.02	Supply and erect new fencing material for new fence (inlc. frame, excavation and backfill, as specified on drawing no. FP281WS-C-220):				
8.2.1		(a) Zinc-coating 500mm razor wire flatwrap coil (SABS 675)	m	280,00		
8.2.2		(b) Zinc-coating smooth wire 2.24mm diameter. high tensile fencing wire (SABS 675)	m	280,00		
8.2.3		(c) Zinc-coating 50x30x3.15mm diamond wire mesh 1.80m high (SABS 675)	m	140,00		
8.2.5		(d) Single motor gate (2.4 x 2.4 mm)	No	2,00		
TOTAL CARRIED FORWARD TO SUMMARY - SECTION 8 : SECURITY FENCING						

SUMMARY OF SECTIONS

SECTION	DESCRIPTION	AMOUNT R
1	SECTION 1: PRELIMINARY AND GENERAL	
2	SECTION 2: EARTHWORKS (PIPE TRENCHES)	
3	SECTION 3: BEDDING (PIPES)	
4	SECTION 4: MEDIUM PRESSURE PIPELINES	
5	SECTION 5: YARD CONNECTIONS	
6	SECTION 6 : MECHANICAL EQUIPMENT- SUPPLY, DELIVERY AND INSTALLATION	
7	SECTION 7: ELECTRICAL EQUIPMENT- SUPPLY, DELIVERY AND INSTALLATION	
8	SECTION 8: SECURITY FENCING	
	SUBTOTAL 1	
	CONTINGENCIES @ 10%	
	SUBTOTAL 2	
	Add 15% VAT	
	TOTAL CARRIED FORWARD TO THE FORM OF OFFER AND ACCEPTANCE	

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECTS: Appointment of a contractor for the provision of potable water supply to the settlements of farm Pniel 281, Barkley West in the Northern Cape

PART C3: SCOPE OF WORK

PART C3 : SCOPE OF WORK

C3.1 PROJECT DESCRIPTION AND SCOPE OF CONTRACT

C3.1.1 BACKGROUND

The current borehole water supply to the three communities of Farm Pniel 281 (Barkly West in the Northern Cape) is unreliable, not sustainable and typically of poor water quality. This project aims to address these challenges and to ensure sustainable water supply to each community.

It is the objective of the employer to provide potable water to the three communities by means of water extracted from the Vaal River, treated on-site by means of a package plant and distributed to the three communities by uPVC piping. The three communities are:

Area (Farm Pniel 281)	**Number of households**	**Population** *(estimated)*
Pniel Settlement	250	1 000
Pniel Estate	57	228
Cotton Fields	13	52
Total	**320**	**1 280**

C3.1.2 OVERVIEW OF THE WORKS

The Works will include construction of water supply infrastructure which includes raw water extraction from the Vaal River, water purification, bulk water supply pipelines, on site storage and reticulation to communal stand pipes.

C.3.1.3 EXTEND OF THE WORKS

This project is for the construction of water supply infrastructure to the three communities of Farm Pniel 281 as described above. All the construction works will happen within Farm Pniel 281, from the specified river abstraction points to the water purification plants and the terminal water supply points. The components of the project are described below under C3.1.5 - Description of Works.

C3.1.4 DELIVERABLES

The deliverables of this projects are the completed and commissioned water supply infrastructure which is described below and the supply of relevant operation and maintenance (O&M) manuals for the electro-mechanical works. The contractor will be required to train operators from the municipality before submitting the required O&M manuals.

C3.1.5 DESCRIPTION OF WORKS

C3.1.5.1 SCHEME COMPONENTS

The proposed water scheme will compromise the procurement, delivery, installation, commissioning, testing and maintaining for the defect's liability period of the following equipment and not limited to:

- All equipment associated with the proposed raw water extraction points in the Vaal River including piping, valves, pumps (duty and standby) and solar electricity;
- Feeder pipes to the two package plants;
- Potable package plant consisting of flocculant dosing, flocculation, clarification, sand filtration and chlorination;
- Solar power at four stations namely the two raw water extraction points, one each at the Pniel Settlement and Pniel Estate areas, and the two package plants;
- uPVC piping from the two package plants to the communities;
- 10m high water towers (elevated steel tanks) at the three areas of supply;
- Installation of street taps;
- Finishing-off and site clearance; and
- De-establishment of site on completion of the works.

C3.1.5.2 WORK FROM PREVIOUS CONTRACT

Some work, which forms part of the scope of work for this project was partly completed in the previous contract that was terminated. This work includes the following:

- Excavation of trenches and laying of 90mm diameter uPVC pipes over approximately 1380m length in Pniel Settlement.
- Only pipe surround has been completed around the pipes laid (that is. no general backfilling done).

The condition of this work will be assessed at commencement of the project to establish whether its quality is still acceptable and / or remedial work would be required. Nonetheless, possible remedial work was measured and is included the Bill of Quantities (BOQ).

C3.1.5.3 BENEFICIARIES

The beneficiaries of this project are the people in the three communities of Farm Pniel 281, with a total estimated population of 1 280 (320 households).

C3.1.5.4 DESIGN CRITERIA

The general design criteria of the scheme can be summarised as follows:

- Design Horizon 10 years
- Future Population 1415

- Design Water Usage 40 l/c/d
- Storage Reservoir 48hours
- Design Peak Factor 6

The potable water package plants are to meet the following minimum requirements:

Location	Population served	Capacity / performance requirements
Pniel Settlement	1105	Minimum flow rate 11m3/h, complete with treatment processes as specified under C.4.5.3
Pniel Estate	310	Minimum flow rate 3.1m3/h, complete with treatment processes as specified under C.4.5.3

C3.1.6 DESCRIPTION OF SITE AND ACCESS

The project site is in Farm Pniel 281, which is located south of Barkley West in the Northern Cape Province, across the Vaal River and can be accessed by gravel roads off the provincial route R31. There are three communities situated within the project site. The three communities of Farm Pniel 281 are located as follows:

Site Coordinates

Area (Farm Pniel 281)	Latitude (S-Coordinates)	Longitude (E-Coordinates)
Pniel Settlement	28°35'10.5"	24°30'37.7
Pniel Estate	28°34'46"	24°33'42.9"
Cotton Fields	28°33'9.7"	24°32'58.7"

The location of the project site is also shown on Drawing no. FP281WS-G-101.

The coordinates where the two package plants will be situated are:

- Pniel Settlement - 28°35'1.21"S 24°30'24.08"E
- Pniel Estate - 28°34'31.60"S 24°33'59.50"E

The Elevation is approximately 1100 m above sea level.

C3.1.7 NATURE OF GROUND AND SUBSOIL CONDITIONS

According to the geotechnical report, the site along the investigated pipeline routes is mainly covered by alluvium, hillwash, residual soils/gravel, and hard rock andesite. The report also indicates that soft excavation should be expected in 65 % to 75 % of the pipeline path, and the combination of intermediate and hard excavation class should be expected in 30 % to 40 % of the pipeline.

C3.2 PROJECT SPECIFICATIONS

C3.2.1 GENERAL

C3.2.2 STANDARD AND VARIED SPECIFICATIONS

C3.2.2.1 Standard Specifications

C3.2.2.2 Amendments/Variations to the Standard Specifications

C3.2.3 PARTICULAR SPECIFICATIONS

C3.2.3.1 Generic Labour-Intensive Specification (PLI)

C3.2.3.2 Occupational Health and Safety Specification including COVID 19

C3.2.3.3 Environmental Specification (PZ)

C3.2.4 CONTRACT AND STANDARD DRAWINGS

C3.2 : PROJECT SPECIFICATIONS

PREAMBLE

In the event of any discrepancy between a part or parts of the Standard or Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Engineer before the execution of the work under the relevant item.

C3.2.1 GENERAL

The following are discussed hereunder:

PS.1 Programme, Method of Work, and Accommodation of Traffic

PS.2 Services

PS.3 Watermains

PS.4 Sewers

PS.5 Stormwater

PS.6 Electrical Plant

PS.7 Telkom S.A. Limited / Neotel Plant / Data Infrastructure

PS.8 CCTV Plant

PS.9 Management of the Environment

PS.10 Occupational Health and Safety

PS.11 Construction and Management Requirements, Testing and Quality Control

PS.12 Site Facilities Available

PS.13 Site Facilities Required

PS.14 Blasting

PS.15 Adverse Weather Conditions

PS.16 Contract Participation Goals

PS.17 Employment of Local Labour

PS.1 PROGRAMME, METHOD OF WORK, AND ACCOMMODATION OF TRAFFIC

This Clause is to be read in conjunction with the provisions and obligations as contained in SANS 1921-1 and SANS 1921-2.

PS.1.1 Preliminary Programme

The Contractor shall include with his tender a preliminary programme. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data. The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions and special non-working days as specified in the in the Contract Data.

PS.1.2 Programme in Terms of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to the General Conditions of Contract, be furnished within the time stated in the Contract Data.

The preliminary programme to be submitted with the tender shall be used as basis for this programme.

The Tenderer's attention is drawn to the fact that a number of factors will affect the programming of and method of carrying out the works. The more important of these are:

(1) Time allowances to be made for the ordering of special items.

(2) Project Lag / Suspension of works

(3) Vehicular access to private property is to be maintained.

(4) The contract area is within a semi developed area.

The Contract requires the laying of pipes for about 5.6 kilometres. The majority of the area is of an undisturbed soil and no existing services are known in these areas. Closer to the Pniel Estate area of supply, some irrigation and electricity existing services are in place and the Contractor shall work closely with the CLO when excavations are required to determine these services. As such, due allowance must be exercised for the proving of services.

PS.1.3 Requirements for Accommodation of Traffic

PS.1.3.1 General

Accommodation of traffic, where applicable for example when the package plants and water towers are transported, shall comply with SANS 1921-2: 2004: Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor shall obtain this specification from Standards South Africa if accommodation of traffic will be involved on any part of the construction works. Clause 4.10.4 of SANS 1921-2: 2004 shall be replaced with the following:

“Road signs and markings shall comply with the requirements of “The South African Road Traffic Signs Manual - Volume 2 : Roadworks Signing”.

PS.1.3.2 Basic Requirements

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road. The Contractor shall ensure that all road signs, barricades, delineators, flagmen and speed controls are effective, and that courtesy is extended to the public at all times. Failure to maintain road signs, warning signs or flicker lights, etc., in a good condition shall constitute ample reason for the Employer's Agent to suspend the work until the road signs, etc., have been repaired to his satisfaction. The Contractor may not commence constructional activities affecting existing roads before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual. The Contractor shall ensure that the existing property accesses are maintained at all times. Where necessary the Contractor shall make allowance in the rates for completing the work required to the accesses out of normal hours.

PS.1.3.3 Traffic Safety Officer

Where warranted by traffic conditions on or near the site, the Contractor shall nominate a suitable member of his staff as traffic safety officer to be responsible for the arrangement and maintenance of all the measures for the accommodation of traffic for the duration of the project. Duties of the traffic safety officer shall be in compliance with the Occupational Health and Safety Act 1993 and the Construction Regulations 2014.

PS.1.3.4 Payment

The Contractor's tendered rates shall include full compensation for all possible additional costs which may arise from this, and no claims for separate payment nor extra payment due to inconvenience as a result of the modus operandi will be considered.

PS.1.3.5 Pedestrian movement

The Contractor shall make provision for accommodating all pedestrian movements in the area of the works. Allowance shall be made in the relevant rates for any barricades and signs required.

PS.2 SERVICES

This Clause is to be read in conjunction with the provisions and obligations as contained in SANS 1921-1 and SANS 1921-2.

PS.2.1 Existing Services

The Tenderer's attention is drawn to some existing services in close proximity to the proposed position of the Pniel Estate package plant. No information exists on the locality of any irrigation piping or electrical cables and excavation can only commence once the CLO has cleared the area for construction.

PS.2.2 Proving Underground Services

This clause must be read in conjunction with SANS 1200 D 5.1.2, the requirements of which shall be extended to cover all earthworks operations whether for trenching or bulk earthworks, in the vicinity of underground services. It is stressed that all services in a particular area must be proven before commencing work in that area. Insofar as bulk earthworks are concerned, where services are indicated on the drawings or where from

site observations can reasonably be expected that such services are likely to exist where excavations are to take place, the Contractor shall without instructions from the Employer's Agent carefully excavate by hand to expose and prove their positions. The cost of the proving trenches is to be included in the tendered rates. When a service is not located in its expected position the Contractor shall immediately report such circumstances to the Employer's Agent who will decide what further searching or other necessary action is to be carried out and shall instruct the Contractor accordingly. The cost of this additional searching shall be to the Employers cost and shall be paid for under SANS 1200 D. Should any service be damaged by the Contractor in carrying out the works and should it be found that the procedure as laid down in this clause has not been followed then all costs in connection with the repair of the service will be to the Contractor's account. It should be noted that 33,000 Volt and 132,000 Volt cables may only be exposed by the Municipalities Electricity's personnel. The cables are usually protected by concrete covering slabs, and therefore if the slabs are inadvertently exposed, excavation work must stop, and the Municipalities Electricity Department shall be contacted immediately on the above telephone numbers. Proving of services shall be completed at least two weeks in advance of the actual programmed date for commencing work in the area. The position of these services located must be co-ordinated and levelled by the Contractor, and the information given in writing to the Employer's Agent's Representative. The requirements of this clause do not relieve the Contractor of any obligations as detailed in the Conditions of Contract or Clause 4.17 of SANS 1921-1.

PS.2.3 New Services and Relocation of Existing

This clause shall be read in conjunction with Clause PS.1. New services are either to be installed by the Contractor as part of the contract or by others during the contract period. In the latter case excavation and subsequent backfilling of the trench from the top of the bedding layer shall generally be carried out by the Contractor. Relocation of services shall generally be carried out by the relevant services organisation. Generally, their work shall include the excavating and bedding the service which will include backfilling to a depth of approximately 300 mm above the service. The remainder of the backfilling shall be carried out by the Contractor. Generally, work shall only commence on the installation of new services once the bulk earthworks have been completed and roughly trimmed to level along a substantial portion of the services route. In addition, no sidewalk, verge, median or island shall be surfaced or topsoiled until all work on the services has been completed. Services possibly affected by the contract are described as follows:

PS.2.3.1 Water mains

There are localised water reticulation pipes which are mainly in relation to the existing borehole water supply. The pipes are not extensive as they are generally for the supply from the borehole to the associated JoJo tank.

Further to the above, tenderers are referred to the services drawing and are to note that several minor cables / pipes may be encountered during excavation works which may require to be relocated to some extent. It is anticipated that the two-week period required under PS.2.2 will allow sufficient time for these relocations.

PS.2.4 Accommodation of Services

Further to Clauses PS.1 and PS.2 of this specification, tenderers are to note that allowance must be made under this item and / or the appropriate rates, for all costs incurred as a result of complying with these clauses. It shall also cover liaison with the services organisations and accommodation of their work gangs / contractors on site.

PS.3 WATERMAINS

There may be isolated cases of crossing or running parallel to a localised borehole supply line, particularly when installing reticulation pipes to connect to the street taps.

PS.4 SEWERS

Not applicable to this Contract.

PS.5 STORMWATER

Not applicable to this Contract.

PS.6 ELECTRICAL PLANT

Tenderer's attention is drawn to the following points regarding the electricity services possibly affected as part of this contract.

PS.6.1 General

Various types of electrical cables including high voltage, low voltage and domestic connection cables might be affected by the contract. The laying, relocation and jointing of all cables will be carried out by Municipalities Electricity's work gangs, or agents appointed by them if such a service is found and deemed to be relocated. Close liaison will therefore be necessary with Electricity Department throughout the contract.

PS.6.2 Street Lighting

Not applicable to this Contract.

PS.6.3 MV / LV Cables

Certain M.V, L.V. cables may need to be relocated/replaced within the contract area. The actual cable work associated with this relocation and / or replacement of these cables will be carried out by Municipalities Electricity Department and it is stressed that the two-week period referred to in Clause PS.2 is the minimum period required to enable Municipalities Electricity Department to be on site timeously.

PS.6.4 Relocation of Existing Services

Should it be necessary to adjust the line, level and / or position of any service not catered for in the contract to enable the construction to proceed the Contractor shall on no account effect such adjustment himself but shall notify the Employers Agent who will arrange for the work to be carried out.

PS.7 TELKOM S.A. LIMITED / NEOTEL PLANT / DATA INFRASTRUCTURE

Not applicable to this Contract.

PS.8 CCTV PLANT

Not applicable to this Contract.

PS.9 MANAGEMENT OF THE ENVIRONMENT

The Contractor is reminded of his duty of care towards the environment in terms of the Environmental Management Act.

PS.9.1 Natural Vegetation

The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works. No natural vegetation: trees or crops may be damaged by the Contractor without the written approval of the Engineer. The contractor must keep the Site neat and free of refuse, etc. to prevent possible damage to crops or livestock. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer. The Contractor's construction activities shall be performed by methods that will prevent the entrance of, or accidental spillage of solid matter, debris, contaminants and other pollutants and wastes into streams and water-courses. Any dewatering for earthworks or structure foundations adjacent to or encroaching on streams or water-courses shall be conducted in a manner to prevent muddy or contaminated water from entering streams or water-courses by means of the construction of intercepting and bypassing ditches, barriers, ponds and other approved means. Construction activities shall be performed in a manner to keep dust nuisance to a minimum by means of the application of sufficient water or other efficient measures wherever and as often as may prove necessary. The Contractor will be required to submit a Construction Method Statement at the Site handover. Activities having an effect on the environment must be addressed in this Construction Method Statement. A list of possible activities, but not limited to, is included below.

Possible activities having an effect on the environment (but not limited to):

- Collection, storage and disposal of solid waste.
- Protection of indigenous plant species.
- Protection of natural water sources from liquid and solid wastes.
- Control of noise and dust.

No separate payment will be made to the Contractor in respect of discharging his obligations in terms of this subclause nor for the Compliance with the Environmental Management Regulations. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work, or in the Contractor's preliminary and general items as the case may be.

PS.9.2 Preservation of flora and fauna and soil conservation

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

The Contractor shall:

a) Take all precautions to prevent:

i) the erosion of soils and/or

ii) loss of or injury to domestic and other animals from any lands used or occupied by the Contractor;

b) Refrain from destroying, removing or clearing trees, timber and scrub to any extent greater than is necessary for the execution of the Contract,

c) Take care to cause the minimum of disturbance to the fauna and flora.

d) Erect temporary fences on the servitude lines during the construction period to prevent loss of fauna. The fences shall be removed as soon as construction and testing are complete.

e) Take precautions to keep the risk of fire to a minimum,

f) Arrange that timber for firewood be obtained only from such places as may be approved by the Engineer.

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

PS.9.3 Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire, the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees. Burning of vegetation and trees cleared from the Site and/or any other material may only be done on site if permitted in writing by the relevant authority, and shall then be strictly controlled by a competent supervisor, shall be carried out strictly in accordance with any directions given and shall be carried out solely at the risk of the Contractor.

PS.9.4 Indigenous forest

Oak, palm, yellowwood, stinkwood, blackwood, wild olive, and other trees that have a high commercial value in the timber trade, are defined as "valuable indigenous trees" for the purposes of this Contract, and shall not be damaged in any way. Other than as specifically directed by the Engineer, felling of valuable indigenous trees is strictly forbidden.

PS.10 OCCUPATIONAL HEALTH AND SAFETY

PS.10.1 General Statement

When considering the safety on site the Contractor's attention is drawn to the following:

(1) The works will require machinery and plant of varying size.

(2) The manual moving of heavy precast products will be required.

(3) The gradient of the site varies. Plant and machinery need to be well controlled. Run-off from the site will have to be well managed.

(4) Open excavations and other hazardous conditions on site are to be barricaded and/or fenced and precautions shall be taken to protect the public from the same.

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the OHSA 1993 Construction Regulations 2003 issued on 18 July 2003 by the Department of Labour. For the purpose of this contract the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of Section 37(2) of the Occupational Health and Safety Act.

PS.10.2 Health and Safety Specifications and Plans to be submitted at tender stage

(a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification is included in the tender documents.

(b) Tenderer's Health and Safety Plan

At tender stage only a brief overview of the tenderer’s perception on the safety requirements for this contract will be adequate.

Only the successful Tenderer shall submit a separate Health and Safety Plan as required in terms of Regulation 7 of the Occupational Health and Safety Act 1993 Construction Regulations 2014.

The detailed safety plan will take into consideration the site-specific risks as mentioned under the specifications and must cover at least the following:

(i) A proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 9 to 29;

(ii) Pro-active identification of potential hazards and unsafe working conditions;

(iii) Provision of a safe working environment and equipment;

(iv) Statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 7)*;

(v) Monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;

(vi) Details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 8 and other applicable regulations; and

(vii) Details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan. Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs. A generic plan will not be acceptable.

PS.10.3 Cost of compliance with the OHSA Construction Regulations

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

PS.11 CONSTRUCTION AND MANAGEMENT REQUIREMENTS, TESTING AND QUALITY CONTROL

PS.11.1 General

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

PS.11.2 Quality Assurance (QA) *(Read with SANS 1921 – 1: 2004 clause 4.4)*

The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure. The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer’s representative to act as foreman or surveyor.

PS.11.3 Process control

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

PS.11.4 Acceptance control

(i) Contractor to engage services of an independent laboratory

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an approved independent laboratory to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract. These results will be taken into consideration by the Engineer in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications. The aforegoing shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Engineer or by the Contractor. The Contractor shall be responsible for arranging with the independent testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less than the frequencies and in the manner specified. The Contractor shall promptly provide the Engineer with copies of the results of all such testing carried out by the independent laboratory. For the purposes of this clause, an "independent laboratory" shall mean an "approved laboratory" (SANAS) which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control or financial interest in the Contractor.

(ii) Additional testing required by the Engineer

In addition, the Engineer shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in the specifications, at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Engineer, and copies of the test results shall be promptly submitted to the Engineer.

(iii) Costs of testing

(a) Contractors Works Testing

The costs of all testing carried out by the independent laboratory shall be borne by the Contractor and shall be deemed to be included in the tendered rates and prices for the respective items of work as listed in the Bill of Quantities and which require testing in terms of the Specifications. No separate payments will be made by the Employer to the Contractor. Where, as a result of the consistency of the materials varying or as a result of failure to meet the required specifications for the work, it becomes necessary to carry out additional tests (e.g. re-tests on rectified work and/or replacement materials), the costs of such additional testing shall be for the Contractor's account.

(b) Additional tests required by the Engineer

Additional testing required by the Engineer, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Bill of Quantities; save for which the costs of any such additional tests ordered by the Engineer, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

PS.11.5 Management and disposal of water (Read with SANS 1921-1: 2004 clause 4.6)

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

PS.11.6 Disposal of spoil or surplus material (Read with SANS 192-1: 2004 clause 4.10)

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

PS.11.7 Survey beacons (Read with SANS 1921 - 1 : 2004 clause 4.15)

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

PS.11.8 Security

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

PS.12 SITE FACILITIES AVAILABLE

PS.12.1 Contractor's camp site and depot (Read with SANS 1921 - 1 : 2004 clause 4.14)

The Contractor will be permitted to locate his offices, storage facilities, workshops, latrines, etc., on a site approved by the Engineer, in liaison with the community. Temporary buildings and fencing are to be neat and presentable, and the surrounding areas must at all times be kept in a neat, clean and orderly condition. The Contractor must not cut down or damage any trees nor make any excavation without the written permission of the Engineer and will be required to restore the site to its original condition on completion of the Works. All buildings and latrines shall be in accordance with the Local Authority and State Heath regulations and shall be kept in a clean, sanitary condition to the satisfaction of the Engineer.

PS.12.2 Accommodation of Employees

No employees except for security guards will be allowed to sleep or be accommodated on the site in urban areas. No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site. No informal housing or squatting will be allowed. The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS.12.3 Source of Water Supply

The Contractor shall make his own arrangements for the supply of water for construction purposes. The source of water shall be subject to the approval of the Engineer. It is foreseen that raw water from the Vaal River can be used for construction purposes without any cost implications, while potable water need to be organised with the relevant authority at the Barkly West WTP.

PS.12.4 Source of Power Supply

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

PS.13 SITE FACILITIES REQUIRED

PS.13.1 Facilities Required for the Engineer

PS.13.1.1 Temporary/Permanent Offices

The Contractor shall be asked to provide a temporary office for use by the Engineer. The offices should be able to accommodate one full time Engineer's Representative and one assistant. The temporary offices should be of modular type (Parkhomes Specification/M Projects or similar). The walls and doors should be made of 40mm polystyrene insulation with Chromadek cladding internally and externally. The ceiling shall be made of 40mm white Chromadek insulated panels. The 2 No. windows are to be made of aluminium with aluminium burglar guards and vertical blinds.

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

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

It is foreseen that site meetings will be held at a separate facility in Barkly West following a site walk through before the meeting. No facilities for meetings will be required from the Contractor except water and refreshments for 12– 16 people during progress site meetings, to be held on monthly intervals.

The facilities are to be provided, to the satisfaction of the Engineer, within 14 days of commencement date. The Engineer may withhold certification of the first progress payment (and subsequent payments, as appropriate) until these facilities are provided.

PS.13.1.2 Computer/IT Facilities

The Contractor shall provide the Engineer's Representative with the following computer equipment to be used solely to generate site administration documents such as Minutes of Site Meetings, Inspection Forms, etc.:

A functional laptop complete with mouse and bag, with at least 500GB Hard Drive, I5 Processor and 6GB RAM, all supplied new. The laptop software to include MS Windows and full MS Office software(Excel, MSWord, MS Power Point,)

A 3 in 1 (printer/scanner/fax) printer capable of printing black and white copies at the rate of 7 pages per minute to a resolution of 600 x 600 rendered dpi.

The hardware and software will revert to the Contractor on completion of the contract. Perishables such as toners (for the printer) paper for printing, will be paid for separately under a Provisional Sum provided for in the Schedule of Quantities.

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

PS.13.1.3 Sanitary Facilities

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

PS.13.1.4 Telephone Facilities

The Contractor will not be required to provide a telephone for use by the Engineer. The contractor will however be required to cover cellphone costs for the engineer's site staff (2) for airtime valued at R150/week each. Appropriate items have been provided in the Schedule of Quantities to cover these costs.

PS.13.1.5 Housing Facilities

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

PS.13.1.6 Parking Facilities

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

PS.13.2 Security

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

PS.13.4 Survey Equipment

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

- ✓ A dumpy level
- ✓ Measuring tape
- ✓ An assistant, when required, to assist the Engineer to operate survey equipment, when provided

PS.14 BLASTING

Not applicable to this Contract.

PS.15 ADVERSE WEATHER CONDITIONS

The Contractor will be responsible for keeping accurate records of weather conditions in the site diary. The Contractor shall inform the Engineer in advance that he/she is unable to proceed with the Works in accordance with approved contract programme.

Subject to the approval of the Engineer it will be noted in the Daily Site Diary for the day(s). After the event the Contractor will provide a revised contract programme motivating if the delay affects his/her schedule to the extent that he/she will need to motivate for an extension of time in accordance with the relevant Clause 5.12 of the GCC 2010. The Engineer, together with the approving authority, will be responsible for granting the extension of time.

With regard to payment for time lost once approved, the Contractor in this tender will specify the costs he/she intends claiming based on the assumption that due to abnormal rain he/she is unable to perform the specified works. It will be used as a basis for determining the payment. The rate shall be described as standing time and be shown to comprise sufficient detail to adequately assess the time related costs of the delay. If the information is insufficient, the Engineer will use the information available to him in the offer to assess the compensation.

An Extension of Time for Completion will be granted on account of 'adverse weather conditions' occasioned by abnormal rainfall or wet conditions; provided that the calculation of such an Extension of Time in calendar days shall be in accordance with the formulae given below, and shall be determined separately for each calendar month or part thereof.

The Extension of Time shall be calculated for the whole period for completion of the Contract including any granted extension thereof, as follows:

The Formulae

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

and in which the symbols shall have the following meanings respectively:

Vt = Extension of time in calendar days for the calendar month under Consideration.

Nw = Actual number of days during the relevant calendar month on which a rainfall of 7 mm/24-hour day or more is recorded for the Contract. Days falling in the builders break will not be counted.

Nn = Average number of days in the relevant calendar month, as derived from existing rainfall records - see below table, on which rainfall has been has been recorded.

Rw = Actual rainfall in mm as recorded for the Contract during the relevant calendar month.

Rn = Average rainfall in mm for the relevant calendar month, as determined from existing rainfall records – see below table.

X = 20

(a) Specified Values

Only values in excess of the values stated or pre-agreed upon for Nn and Rn respectively shall be deemed to constitute 'adverse weather conditions' in terms of the Conditions of Contract.

(b) Application of the Formulae

When calculating the values of Vt for a part of a month, pro-rata values of Rn and Nn shall be applied. The total extension of time shall be the algebraic sum of all monthly totals for the contract period, but if the algebraic sum is negative the time for completion shall not be reduced due to subnormal rainfall.

The total Extension of Time for Completion shall be calculated in accordance with the formula : provided that the authorised Time for Completion of the Contract or part thereof (as the case may be) shall not be decreased on account of abnormal rainfall.

Except for flood damage which could cause further or concurrent delays and which will be treated separately (when applicable) in the calculation of an extension of time, the factor (Nw - Nn) shall be considered to represent a fair allowance for days during which rainfall exceeds 7 mm and the factor (Rw - Rn)/x shall be considered to represent a fair allowance for those days when rainfall does not exceed 7 mm but wet conditions prevent or disrupt work.

(c) Rainfall Recording

Before the commencement of the permanent Works, the Contractor shall, at his/her cost, provide and erect an approved rain gauging apparatus at an approved place on the Site of Works. The Contractor shall at his/her cost also take the necessary measures to ensure that access to the said apparatus can be controlled by the Engineer's Representative or by an approved observer, as the case may be, who shall both and simultaneously record on each working day the rain gauging. The said gauging shall be the only and actual recorded rainfall for the Contract.

The Contractor is responsible for the protection of the Works against flood damage resulting from his/her own activities. Any damage resulting from the failure of the Contractor to provide protection will be made good at the cost of then Contractor.

Month	Rainfall	
	Nn = Average rainy days	Rn = Average monthly rainfall (mm)
January	8	75
February	8	60
March	7	62
April	4	38
May	2	15
June	1	11
July	1	4
August	1	8
September	2	12
October	4	32
November	5	45
December	7	58
Source of Information :	www.climate-data.org	

PS.16 CONTRACT PARTICIPATION GOALS

Contract Participation Goal is based on the value of work that the main contractor intends subcontracting to targeted Enterprises, Individuals, suppliers and manufacturers. The Contract Participation Goal for this contract shall be a minimum of 10% and the targeted group shall be the PBE's (Priority Business Enterprise) that are substantially owned (76% to 100%) by PBE's.

PS.16.1: EMPLOYMENT OF AFFIRMATIVE BUSINESS ENTERPRISE (ABE)

Target values of work to be executed by and goods & services to be procured from ABEs shall be **10%**.

Schedule Item No	Name of ABE	Item Description/ Goods & Services to be provided	Value	
			Rands (Excl VAT)	% of Tender Sum (Excl VAT)
TOTAL				

Notes to tenderer:

1. **Regardless whether the tenderer fits the classification of an SMME/PDI, as defined in Section 3.3 of this specification, the tenderer nevertheless retains the obligation to commit to the target values prescribed**
2. **Tenderers shall insert "unknown" if an SMME/PDI has not been selected prior to tender closing date.**
3. **The penalty will be applied for non-compliance during the contract or for fraudulent disclosure**

SIGNED ON BEHALF OF THE TENDERER ……

PS.16.2 EMPLOYMENT OF AFFIRMATIVE BUSINESS ENTERPRISE DECLARATION AFFIDAVIT (ABE).

It is understood and agreed that should this contract be awarded to me, an ABE Declaration Affidavit will be completed by each and every ABE employed by me on this contract and will be submitted to the Employer immediately upon demand by the Employer.

SIGNED ON BEHALF OF THE TENDERER ……

PS.17 EMPLOYMENT OF LOCAL LABOUR

The contractor will be required to employ local labour as part of this Contract. The contractor will be required to ensure that 100% of unskilled labour utilized must reside within the boundaries of the Municipality Ward where this contract is executed, with preference to the local community closest or a walking distance to the contract site. A minimum of 50% of the local labour shall comprise of women and, where appropriate, disabled labour shall be employed. It is a requirement that tenderers acquaint themselves fully with requirements for registration with Unemployment Insurance Fund. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources. The contractor will be required to provide proof of authenticity of local labour. Signed confirmation by the appointed CLO will suffice for this. No additional costs will be entertained due to this Particular Specification. The contractor will remain responsible for providing proper supervision of all labour, and will be responsible for the quality of work produced.

PS.18 SCHEDULE OF LABOUR CONTENT

The Tenderer must complete the table below to reflect the labour force anticipated to be employed on this contract, including labour employed by sub-contractors.

The specified target value is **30%** of the Contract Sum {Where, Contract Sum = Contract Price - (P&G's+ Prov Sums+VAT)}

Type of Labour	Man-hours	Minimum Wage Rate per Unit	Total Wage Cost (Excl VAT)
Permanent Labour			
Temporary Labour			
SMME/HDI's Labour			
		TOTAL	
		PERCENTAGE	

Notes to Tenderer:

(1) Labour is defined as hourly paid personnel.

(2) The penalty will be applied for non-compliance during the contract or for fraudulent disclosure

(3) The minimum wage rate to be R203.36 per day

SIGNED ON BEHALF OF THE TENDERER: ……..

C3.2.2 : STANDARD AND VARIED SPECIFICATIONS

C3.2.2.1 STANDARD SPECIFICATIONS

The Specifications on which this contract is based are the SANS 1200 Standardised Specifications (hereafter referred to as the Standard Engineering Specifications). This document is obtainable separately, and Tenderers shall obtain their own copies of the applicable Sections.

The following SANS specifications shall apply for the construction of the Works:

SANS 1 200 A	**:**	**General**
SANS 1 200 AB	**:**	**Engineers Office**
SANS 1 200 C	**:**	**Site Clearance**
SANS 1 200 D	**:**	**Earthworks**
SANS 1 200 DB	**:**	**Earthworks (Pipe Trenches)**
SANS 1 200 DK	**:**	**Gabions and Pitching**
SANS 1 200 DM	**:**	**Earthworks (Roads, Subgrade)**
SANS 1 200 G	**:**	**Concrete**
SANS 1 200 GE	**:**	**Precast concrete**
SANS 1 200 HA	**:**	**Structural Steelwork (small works)**
SANS 1 200 H	**:**	**Structural Steelwork**
SANS 1200 HB	**:**	**Cladding and Sheeting**
SANS 1 200 L	**:**	**Medium pressure pipelines**
SANS 1 200 LB	**:**	**Bedding (Pipes)**
SANS 1 200 LC	**:**	**Cable ducts**
SANS 1 200 MF	**:**	**Base**
SANS 1 200 MJ	**:**	**Precast paving**
SANS 1 200 MK	**:**	**Kerbing and channelling**
SANS 1 200 MM	**:**	**Ancillary Road works**
SANS 1 200 LE	**:**	**Stormwater drainage**
SANS 1 200 LF	**:**	**Erf connections**

Wherever any reference is made to the South African Bureau of Standards (SABS) in either the Bill of Quantities or the document, this reference shall be deemed to read “SANS standard”

The following SANS specifications are also applicable to this contract:

SANS 1921 (2004):	Construction and Management Requirements for Works Contracts
Part 1:	General Engineering and Construction Works
Part 2:	Accommodation of Traffic on Public Roads Occupied by the Contractor
Part 3:	Structural Steelwork
Part 6:	HIV/AIDS Awareness
SANS 10396: 2003:	Preferential Construction Procurement Policies using Targeted Procurement Procedures
SANS 1914-1 to 6 (2002):	Targeted Construction Procurement
SANS 1921-1 (2004):	Construction and Management Requirements for Works Contracts
Part 1:	General Engineering and Construction Works and where accommodation of traffic is involved

The Tenderer is expected to be in possession of a copy of the Standard Specifications. The successful Tenderer will be required to provide a full set of the applicable standard specifications at the commencement of the Contract which is to be kept available on site at all times.

Copies of the “Standardised Specification for Civil Engineering Construction” SANS 1200 are available from the:

South African Bureau of Standards
Private Bag X191
Pretoria, 0001

C3.2.2.2 AMENDMENTS / VARIATIONS TO THE STANDARD SPECIFICATIONS

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

List of Amendments / Variations To The SANS 1200 Standardised Specifications:

- PSA GENERAL
- PSC SITE CLEARANCE
- PSD EARTHWORKS
- PSDB EARTHWORKS (Pipe Trenches)
- PSDK GABIONS AND PITCHING
- PSDM EARTHWORKS (Roads, Subgrade)
- PSG CONCRETE
- PSHA STRUCTURAL STEEL (SUNDRY ITEMS)
- PSL MEDIUM PRESSURE PIPELINES
- PSLB BEDDING
- PSLC CABLE DUCTS
- PSLD SEWERS
- PSLE STORMWATER DRAINAGE
- PSME SUBBASE
- PSMF BASE
- PSMK KERBING AND CHANNELLING
- PSVC FENCING

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

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 Special Conditions of Contract / Contract Data

'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 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."

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."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 3:

"PSA 3.4 MATERIALS SUPPLIED BY THE EMPLOYER

Materials designated in the Contract documents to be supplied by the Employer shall not be obtained by the Contractor from any other source than from the Employer. Requisitions for materials to be supplied by the Employer shall be submitted timeously by the Contractor in writing and shall be signed by the Contractor or his authorised representative and countersigned by the Engineer.

The Contractor or his authorised representative shall, upon delivery of all such materials, sign a receipt therefore and having been accepted by the Contractor, such materials will, except only for such defects and deficiencies as may have been recorded by the Contractor in writing on the said receipt, be deemed to be in a sound and satisfactory condition and will then be deemed to be his sole responsibility, as if such materials had been supplied by the Contractor himself.

The onus shall be entirely on the Contractor to ensure that he accepts only sound materials from the Employer, and notwithstanding the supply of materials by the Employer, the Engineer is authorised to reject as unsuitable any such material on the Site of the Works which, in his opinion, is unsound, defective or in any way not in compliance with the specifications. The Contractor shall immediately remove such rejected materials from the Site of the Works and shall replace them at his own expense, with new and sound materials which are in accordance with the Specifications to the satisfaction of the Engineer.

In the event of any circumstances arising which necessitate the replacement of any materials which were supplied by the Employer, the Contractor shall, unless otherwise instructed in writing by the Engineer, obtain such replacement materials only from the Employer. In such circumstances, the Contractor shall be liable to and pay to the Employer, all costs incurred by the Employer in supplying such replacement materials, irrespective of whether the Contractor could have obtained the said replacement materials from another source at a lesser cost than the Employer.

The aforesaid shall always apply, provided that the Contractor will not be held liable for the costs of the replacement by the Employer of unsound materials which were not accepted by the Contractor as aforesaid."

PSA 5 CONSTRUCTION

PSA 5.1 SURVEY

PS A 5.1.1 SETTING OUT OF THE WORKS

SUBSTITUTE THE FIRST SENTENCE IN A 5.1.1 WITH THE FOLLOWING:

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

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 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 Engineer, 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 Engineer 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 7.2 APPROVED LABORATORIES

REPLACE THE CONTENTS OF SUBCLAUSE 7.2 WITH THE FOLLOWING:

"Unless otherwise specified in the relevant specification or elsewhere in the Project Specification, 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 Engineer 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 Engineer;

(c) Any testing laboratory established and operated on the Site by or on behalf of the Employer or the Engineer.

(d) Any other laboratory that the Engineer approves in his absolute discretion."

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

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."

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 Schedule 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 Engineer and his staff as specified in the Contract and their removal from the site on completion of the Contract."

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 Engineer.

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.

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 Schedule 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."

PSA 8.5 **SUMS STATED PROVISIONALLY BY THE ENGINEER**

REPLACE THE CONTENTS OF SUB-CLAUSE 8.5 WITH THE FOLLOWING:

PSA 8.5.1 **Control Testing** ..... Unit: Prov Sum

The Contractor will be reimbursed in accordance with the Provisional Sums (if any) allowed in the Schedule of Quantities, in the amounts determined in accordance with the provisions of Clause 6.6 of the General Conditions of Contract for Construction Works."

PSA 8.6 **PRIME COST ITEMS**

REPLACE SUB-CLAUSE 8.6 WITH THE FOLLOWING:

PSA 8.6 **PRIME COST SUMS**

(a) Description of item to which Prime Cost Sum applies ..... Unit: PC Sum

(b) Charge required by Contractor on subitem (a) above ..... Unit: %

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different item to which a Prime Cost Sum applies.

The Contractor shall be reimbursed under subitem(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 subitem (b), the respective percentage, as stated by the Contractor in his tender, of the amount certified by the Engineer for payment under the related subitem (a). The percentages tendered by the Contractor for each respective subitem (b) included in the Schedule of Quantities shall be deemed to be 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 subitem (a).

If the Contractor shall have omitted within his tender to insert a tendered percentage under subitem (b), or tendered a zero percentage, the Contractor's tendered rate for subitem (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under subitem (b).

Note in connection with additional tests required by the Engineer:

When a PC sum is included in the Schedule of Quantities for additional tests required by the Engineer, the Contractor shall be responsible for both the cost of normal testing as described in the Standard Specifications and for the cost of any additional test that indicates that the specifications have not been complied with."

PSA 8.9 **COMPLIANCE WITH OHS ACT AND REGULATIONS (INCLUDING THE CONSTRUCTION REGULATIONS 2003) TOGETHER WITH THE COVID-19 OCCUPATIONAL HEALTH AND SAFETY MEASURES IN WORKPLACES COVID-19 (C19 OHS) 2020** ..... Unit: sum

The tendered sum shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and Regulations (including the Construction Regulations 2003) and the Covid-19 Occupational Health and Safety Measures in Workplaces at all times for the full duration of the Contract, as described in the project specifications and Employers' OHS policy. The tendered sum shall amongst other things include full compensation for the following:

a). Preparation and Implementation of Health and Safety Plan;

b). Personnel and protective clothing and equipments;

c). Costs for ensuring compliance with the Covid-19 directive issued by the Minister in terms of Regulations 10(8) of the National Disaster Regulations.

The successful tenderer shall provide the Engineer with a complete breakdown of the tendered sum.

This sum will be paid to the Contractor in equal monthly amounts subject to proper/substantial compliance.

PSA 8.10 COMPLIANCE WITH ENVIRONMENTAL MANAGEMENT PLAN .....Unit: sum

The Tenderer shall carefully read the provisions of Clause C3.1.34 "Environment and Safety" and refer to Annexure 1 included at the end of the document for the applicable Environmental Management Plan (EMP) and shall make adequate allowance in the time-related rates for compliance to the said Specification during the period of construction of the Works. The successful tenderer shall provide the Engineer with a complete breakdown of this tendered sum.

This sum will be paid to the Contractor in equal monthly amounts subject to proper/substantial compliance.

PSA 8.11 <u>ACCOMMODATION OF TRAFFIC</u>

Accommodating traffic and re-use of temporary traffic control facilities …Unit: month

"The tendered rate shall include full compensation for accommodating traffic and maintaining temporary deviations, including roads used as temporary deviations during construction

The tendered rate shall also include full compensation for the re-use, moving, transporting and re-erection of temporary road signs, barricades, as well as the dismantling and storing irrespective of the number of times such traffic control facilities need to be moved during the construction period. The tendered rate shall include the temporary covering of road signs and shall include all labour cost including flagmen"

PSAB ENGINEER'S OFFICE

PSAB 3 MATERIALS

PSAB 3.1 NAMEBOARDS

REPLACE THE FIRST SENTENCE OF SUB-CLAUSE 3.1 WITH THE FOLLOWING:

"The Contractor shall supply and erect at locations approved by the Engineer, 1 name-board, which, unless otherwise specified in the Contract, shall comply with the recommendations for the standard board of the Consulting Engineers South Africa, with regards to size, painting, decorating and detail, and the requirements described hereunder."

PSAB 3.2 OFFICE BUILDING(S)

REPLACE SUB-CLAUSE 3.2(j) WITH THE FOLLOWING:

"(j) a heater and fan or air conditioning unit capable of both heating in summer and cooling in winter."

PSAB 3.3 CARPORT

The Contractor shall construct the 2 carports for the sole use of the Engineer 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 m^2 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 Engineer's office."

PSAB 4 PLANT

REPLACE SUB-CLAUSE 4.1 WITH THE FOLLOWING:

"**PSAB 4.1 CELLPHONE**

The Contractor shall provide 2 cellular telephones and associated service contracts from a reputable cellular service provider, for the exclusive use of the Engineer and his staff. The Contractor shall further insure the cellular phones against loss or damage from whatever cause arising, and shall ensure that all cellular phone accounts are promptly paid on the due dates for payment. The Contractor shall further, at its own cost, ensure the prompt repair of all cellular phones provided under this clause, when reasonably required by the Engineer."

ADD THE FOLLOWING NEW SUB-CLAUSES TO CLAUSE 4:

PSAB 4.4 SURVEY EQUIPMENT

The Contractor shall provide on site and make available for the exclusive use of the Engineer and his staff, the survey equipment and labour listed below:

1. Automatic level (including staff and tripod stand)
2. 5m steel measuring tape
3. 30m plastic measuring tape
4. 2 survey assistants
5. 3 ranging rods
6. 4kg hammer

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 Engineer and his staff, the Contractor shall make available for use by the Engineer any further survey equipment when such is reasonably required by the Engineer and his staff for the purposes of the Contract.

PSAB 5 CONSTRUCTION

REPLACE THE CONTENTS OF SUB-CLAUSE 5.4 WITH THE FOLLOWING:

"**PSAB 5.4 Cellular Telephone Costs**

The costs of any necessary repairs and/or the replacement of components to the handsets of the cellular telephones shall be for the Contractor's account.

The Contractor shall ensure that all accounts for cellular phone calls and the respective service contracts are promptly paid. The Contractor shall, on production of an itemised statement, be reimbursed the cost of the Engineer's cellular telephone calls and a 10% handling charge."

PSAB 5.8 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 its own cost within 12 hours after notification by the Engineer's staff.

Where required by the Engineer, the Contractor shall at its own cost, promptly arrange for the re-calibration of survey equipment provided.

PSC SITE CLEARANCE

PSC 3 MATERIALS

PSC 3.1 DISPOSAL OF MATERIAL

ADD THE FOLLOWING:

"The Contractor shall obtain his own dumping sites for the disposal of material."

PSC 5 CONSTRUCTION

PSC 5.2 CUTTING OF TREES

PSC 5.2.3 Preservation of trees

PSC 5.2.3.2 Individual trees

REPLACE THE LAST SENTENCE WITH THE FOLLOWING:

"An amount of R3000,00 (per tree) will be deducted from moneys due to the Contractor as a penalty for each and every tree that is damaged or removed unnecessarily."

PSC 5.5 RECLEARING OF VEGETATION

ADD THE FOLLOWING:

"When areas have to be recleared on the written instructions of the Engineer, such reclearing shall be carried out at the Contractor's own cost."

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.2 PAYMENT

PSC 8.2.1 Clear and grub

REPLACE THE FIRST LINE WITH THE FOLLOWING:

"The area designated by the Engineer to be cleared and grubbed will be measured in square metre to the nearest square metre or, "

ADD THE FOLLOWING ITEMS IN SUBCLAUSE 8.2:

"PSC 8.2.12 Remove topsoil to spoil site furnished by Contractor..... Unit: m³

The tendered rate shall include full compensation for removing topsoil to a depth of 150 mm and for loading and transporting the material to spoil sites furnished by the Contractor."

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 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 3.2.3 Material suitable for backfill or fill against structures

ADD THE FOLLOWING:

"The material shall not contain large clay lumps that do not break up under the action of the compaction equipment and The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18."

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)".

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)".

PSD 5.1.1.3 Explosives

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The use of explosives is prohibited on this project."

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 5.1.5 Reinstatement and maintenance of roads

ADD THE FOLLOWING:

"Where crossings have been made, the roads shall be reinstated in accordance with the details specified in subclause 5.9 of SABS 1200 DB."

PSD 5.2 METHODS AND PROCEDURES

PSD 5.2.2 Excavation

ADD THE FOLLOWING SUBCLAUSE IN SUBCLAUSE 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 to 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 his 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 Engineer's opinion, unsuitable for use in embankments or backfill as a result of contamination, shall be disposed of in a manner acceptable to the Engineer and shall be replaced by the Contractor with materials acceptable to the Engineer, all at the Contractor's cost.

When required, or when ordered by the Engineer, material shall be stockpiled for later use. The additional costs for stockpiling material shall be paid to the Contractor in accordance with the provisions of subclause PSD 8.3.14."

PSD 7 TESTING

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 in terms of the Project Specifications to carry out sufficient tests on a regular basis as agreed between him and the Engineer 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 Engineer in a form approved by him.

The compaction requirements for fills shall be deemed complied with when at least 75% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentage points below the specified value."

PSD 8 MEASUREMENT AND PAYMENT

PSD 8.3 SCHEDULED ITEMS

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 of by other means employed by the Contractor."

PSD 8.3.10 Topsoiling

CHANGE THE UNIT TO "m³" *AND REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:*

"The unit of measurement shall be the cubic metre and the quantity shall be calculated from the authorised dimensions.

The tendered rate shall include loading of the topsoil from stockpiles, transporting it for the free-haul distance, and off-loading, spreading, shaping and lightly compacting the topsoil."

PSD 8.3.12 Road traffic signs and markings

REPLACE THE WORD "Separate" IN THE FIRST SENTENCE OF ITEM 8.3.12 WITH THE FOLLOWING:

"Where the Engineer requires the provision of road traffic signs and/or road markings and/or any other measures additional to those to be provided by the Contractor in accordance with subclause 5.1.6, separate …".

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB 3 MATERIALS

PSDB 3.5 BACKFILL MATERIALS

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 3.5:

"(c) Cement-stabilized backfilling

Backfilling shall, where directed by the Engineer, be stabilized with 3% 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 3% 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."

PSDB 3.7 SELECTION

REPLACE THE WORDS "if he so wishes" *IN THE FIRST LINE OF THE SECOND PARAGRAPH WITH THE WORDS* "at his own cost".

PSDB 5 CONSTRUCTION

ADD THE FOLLOWING NEW SUBCLAUSE TO SUBCLAUSE 5.1:

"PSDB 5.1.5 Removal of existing pipelines

Where existing pipes have to be removed, they shall be carefully opened up by machine excavation to 300 mm above the pipes after which the whole pipe shall be fully exposed by means of hand excavation. The excavation width shall comply with subclause 8.2.3.

The pipes shall be removed from the trench in a manner approved by the Engineer, and brought to the surface for inspection by the Engineer.

Pipes that are declared suitable for reuse and pipes declared unfit for reuse shall be dealt with in an applicable manner described in the specifications, or on the Drawings or on the Engineer's instructions, as relevant."

PSDB 8 MEASUREMENT AND PAYMENT

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 Schedule of Quantities."

(b) Extra over item (a) above for:

ADD THE FOLLOWING AT THE END OF THE EXISTING SUBITEM 2:

"No payments will be made under subitems (1) and (2) in respect of any materials measured and paid for under subitem 3 below."

(3) Backfill stabilized with 5% cement where directed by the Engineer ..... Unit: m³

The unit of measurement shall be the cubic metre of backfill material, measured in place after compaction according to the authorised dimensions, which was stabilized on the Engineer's instructions in accordance with subclause PSDB 3.5(c).

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing, backfilling and compacting the stabilized material to 90% of modified AASHTO density.

(4) Soilcrete backfill where directed by the Engineer ..... Unit: m³

The unit of measurement shall be the cubic metre of soilcrete placed on the Engineer's instructions in accordance with subclause PSDB 3.5(d), measured in place according to the authorised dimensions.

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing and placing the soilcrete as well as for the cost of shuttering if required."

PSDK GABIONS AND PITCHING

PSDK 3 MATERIALS

PSDK 3.2.1 Stone

REPLACE THE CONTENTS OF TABLE 2 WITH THE FOLLOWING:

"TABLE 2 SIZE AND MASS OF INDIVIDUAL STONES FOR PITCHING

1	2	3	4
Size/mass of pitching	Thickness of pitching mm, min	Least dimension mm, min	Mass kg, min
Extra heavy	600	300	180
Heavy	400	190	50
Medium	300	150	27
Light	200	110	11

"

PSDM 3 MATERIALS

PSDM 3.2 CLASSIFICATION FOR PLACING PURPOSES

PSDM 3.2.3 Selected layer

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The following requirements shall apply in respect of the selected layer:

(a) Maximum particle size: 60% of compacted layer thickness

(b) Unstabilized selected layer

(i) Upper selected layer

Minimum CBR at 93% of modified AASHTO density: 15

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

(ii) Lower selected layer

Minimum CBR at 90% of modified AASHTO density: 7

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

(c) Stabilized selected layer

Minimum grading modulus of natural material: 0,75

UCS of stabilized material 300 kPa - 500 kPa at 93% of modified AASHTO density

Maximum PI for stabilized material: 10"

PSDM 5 CONSTRUCTION

PSDM 5.2 METHODS AND PROCEDURES

PSDM 5.2.2 Cut and borrow

PSDM 5.2.2.3 Use of material

ADD THE FOLLOWING PARAGRAPH:

"(e) Commercial sources

The provisions of subclause PSD 5.2.2.5 of SABS 1200 D as amended shall apply."

PSDM 5.2.2.6 Catchwater mounds and channels and mitre banks and channels

ADD THE FOLLOWING SENTENCE:

"Catchwater mounds and mitre banks shall be compacted to a minimum density of 90% of modified AASHTO density."

PSDM 5.2.3 Treatment of the road-bed

PSDM 5.2.3.2 Removal of unsuitable ground

REPLACE THE SECOND SENTENCE OF PARAGRAPH (a) WITH THE FOLLOWING:

"The excavated spaces shall then be backfilled with approved imported material compacted to the required density."

ADD THE FOLLOWING SENTENCE TO PARAGRAPH (b):

"Unsuitable excavated material will be paid for as cut to spoil."

PSDM 5.2.4 Fill

PSDM 5.2.4.3 Finishing

(e) Topsoiling

REPLACE THE SECOND SENTENCE WITH THE FOLLOWING:

"The thickness of the topsoil shall be as directed by the Engineer."

PSDM 5.2.5 Selected layer

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Except with regard to density, the requirements of subclause 5.2.4 shall apply. The degree of compaction shall be:

Upper selected: 93% of modified AASHTO density

Lower selected: 90% of modified AASHTO density."

PSDM 5.2.6 Gravel surfacing

REPLACE THE THIRD SENTENCE OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The relevant requirements in sub-subclause 5.2.4.2 shall apply, except that the material shall be compacted to 93% of modified AASHTO density."

PSDM 5.2.8 **Transport**

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The provisions of subclause PSD 5.2.5 of SABS 1200 D, as amended, shall apply."

"

PSDM 8 MEASUREMENT AND PAYMENT

PSDM 8.3 SCHEDULED ITEMS

PSDM 8.3.4 Cut to fill, borrow to fill

REPLACE THE LAST SENTENCE OF THIS ITEM WITH THE FOLLOWING:

"The unit of measurement shall be the cubic metre of fill and the volume will be calculated in accordance with the authorised dimensions of the embankment and levelled cross-sections.

The tendered rates shall include full compensation for excavating the material as if in soft material, for selecting, loading, transporting for the free-haul distance, off-loading, watering, mixing and compacting the material as specified. Borrow to fill in this item relates to material from designated borrow areas (provided by the Employer).

Where it is required that material be obtained from commercial sources, payment for procuring the material will be made under item PSDM 8.3.17."

PSDM 8.3.5 Selected layer compacted to 93% of modified AASHTO maximum density

REPLACE THE HEADING AND THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"PSDM 8.3.5 Selected layer using material from designated borrow pits or excavation:

(a) Compacted to 90% of modified AASHTO density ..... Unit: m³

(b) Compacted to 93% of modified AASHTO density ..... Unit: m³

The unit of measurement shall be the cubic metre and the quantity will be calculated from the authorised dimensions of the compacted layer.

The tendered rates shall include full compensation for excavating the material as if in soft material for loading, transporting for the free-haul distance, off-loading, spreading, watering, mixing, breaking down and compacting the layer."

PSDM 8.3.6 Extra over items 8.3.4 and 8.3.5 for excavating and breaking down material in

REPLACE THE HEADING OF THIS ITEM WITH THE FOLLOWING:

"PSDM 8.3.6 Extra over items 8.3.4, 8.3.5 and 8.3.16 for excavating and breaking down material in"

REPLACE THE WORDS "items 8.3.4 and 8.3.5*" WITH THE WORDS "*items 8.3.4, 8.3.5 and 8.3.16".

PSDM 8.3.7 Cut to spoil or stockpile from

REPLACE THE HEADING WITH THE FOLLOWING:

"PSDM 8.3.7 Cut to spoil from"

PSDM 8.3.12 Overhaul

REPLACE THIS ITEM WITH THE FOLLOWING:

"PSDM 8.3.12 Overhaul

Delete this item as no overhaul will be paid on material for the purposes of this Contract and all the costs for transporting material shall be included in the applicable tendered rates and amounts.

PSDM 8.3.16 Gravel surface layer

REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"The unit of measurement shall be the cubic metre of gravel surface layer and the quantity will be determined from the authorised dimensions of the compacted layer.

The tendered rate shall include full compensation for excavating the material as if in soft material, for loading and transporting the material for the free-haul distance, off-loading, spreading, breaking down, watering, mixing and compacting the material."

ADD THE FOLLOWING ITEMS:

"PSDM 8.3.17 Extra over items 8.3.4, 8.3.5 and 8.3.16 for obtaining material from commercial sources ..... Unit: m³

The tendered rate shall include full compensation for the additional cost of finding a suitable source of material, for procuring the material and paying all royalties or other charges to the owner of the source, for transporting the material to the point of use regardless of the distance hauled and for excavating in intermediate, hard or boulder material as required.

Items PSDM 8.3.6, PSDM 8.3.12 do not apply to material obtained from commercial sources.

PSDM 8.3.18 Final finishing and cleaning up of the site of the works..... 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.

PSG CONCRETE (STRUCTURAL)

PSG 3 MATERIALS

PSG 3.2 CEMENT

PSG 3.2.2 Alternative types of cement

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Only CEM I 42,5 (Portland cement) or CEM II/A-V 42,5 (Portland fly ash cement) according to (SANS 50197-1), may be used. The cement may not consist of more than 20% siliceous fly ash blended with the OPC (Ordinary Portland Cement). Should the Contractor wish to use any other type of cement, he shall obtain the Engineer's prior written approval (see 8.1.3.2 and 8.1.3.3)."

PSG 3.2.3 Storage of cement

ADD THE FOLLOWING:

"Cement shall not be stored for longer than 12 weeks without the Engineer's permission."

PSG 3.4 AGGREGATES

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."

ADD THE FOLLOWING SUB-SUBCLAUSE:

"PSG 3.4.4 Aggregate of dolomitic origin

Aggregates for structural concrete shall be of dolomitic origin. The quantity of insoluble matter in respect of concrete made with aggregates of dolomitic origin, determined according to the method described in SABS 677, Appendix C, shall not be more than 15%."

ADD THE FOLLOWING SUBCLAUSES:

"PSG 3.9 WATERSTOPS

PVC waterstops shall comply with the requirements of CKS 389.

PSG 3.11 BUTYL RUBBER SEALING STRIPS

The strips shall have a factory-applied bonding layer on one side and shall be permanently bonded to the prepared concrete surface in accordance with the manufacturer's instructions.The strip shall have a breaking elongation of not less than 300% and a tensile strength of 8,0 MPa. The completed joint shall be guaranteed 100% watertight and resistant to the long-term effects of chemically treated water.

PSG 3.12 LAMINATED BUTYL RUBBER WATERPROOFING STRIPS

3-mm thick laminated butyl rubber strips shall be permanently fixed to the concrete where shown on the Drawings. The preparation of the concrete surface, the installation of bond breakers and aluminium backing strips, the fixing of the laminated butyl rubber waterproofing strip with an epoxy-resin-based adhesive and the forming of lapped joints shall all be done according to the manufacturer's specifications to provide a watertight joint."

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 Engineer for approval. The Engineer 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 Engineer has approved or altered any part of the formwork of scaffolding shall not be construed as relieving the Contractor of his responsibility with regard to the strength and stability of the formwork or scaffolding."

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 Engineer. 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."

PSG 5 CONSTRUCTION

PSG 5.1 REINFORCEMENT

PSG 5.1.2 Fixing

ADD THE FOLLOWING:

"The Engineer 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."

PSG 5.1.3 Cover

ADD THE FOLLOWING:

"The distance between pipes in the concrete and the reinforcing steel shall nowhere be less than

(a) 40 mm or

(b) 5 mm plus the maximum size of the coarse aggregate, whichever is the largest.

PSG 5.2 FORMWORK

PSG 5.2.2 Preparation for formwork

ADD THE FOLLOWING:

"Construction joints shall be positioned as shown on the Drawings."

PSG 5.2.5 Removal of formwork

ADD THE FOLLOWING SUBCLAUSE:

"PSG 5.2.5.7 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 Engineer.

The holes or cavities left by ferrule heads in the concrete of water-retaining structures shall be filled with an approved non-shrink grout applied strictly in accordance with the manufacturer's specifications."

PSG 5.4 PIPES AND CONDUITS

ADD THE FOLLOWING:

"All pipes passing through concrete floors, walls or slabs shall be cast into a concrete member simultaneously with the casting of the member. Openings for pipes shall only be left in concrete members when so directed by the Engineer or when shown on the Drawings. Pipes shall be installed in such openings according to the details shown on the Drawings. If watertightness is a requirement where pipes are cast into walls, floors and slabs, the Contractor shall ensure watertightness where smooth-surfaced pipes are used by using an approved method such as tape wrapping the pipes prior to casting in. The cost of such method will be deemed to be included in the rates tendered for item PSG 8.14."

PSG 5.5 CONCRETE

PSG 5.5.1 Quality

PSG 5.5.1.5 Durability

The exposure conditions of the concrete are classified as "severe".

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."

PSG 5.5.3 Mixing

PSG 5.5.3.2 Ready-mixed concrete

ADD THE FOLLOWING:

"Ready-mixed concrete may be used on the Site. The Contractor shall take samples for testing from every load delivered to the Site."

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."

PSG 5.5.7 Construction joints

ADD THE FOLLOWING:

"Horizontal construction joints are permitted in structure walls in positions indicated on the Drawings or approved by the Engineer. Vertical construction joints in the walls are subject to the written approval of the Engineer 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. This also applies to the preparation of concrete to form construction joints in flume walls as specified on the Drawings. 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 Engineer in writing. The cost of such joint shall be included in the tendered rates and shall include scabbling of the concrete where steel reinforcement is continuous. The walls 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 Engineer 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 the formwork in place or covering with a waterproof membrane are strongly recommended. Concrete will not be paid for unless properly cured and proof of curing is continuously visible on site."

PSG 5.5.10 Concrete surfaces

ADD THE FOLLOWING SUBCLAUSES:

"**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.

PSG 5.5.10.5 FLOOR SLABS AND SCREEDS FOR SETTLING UNITS

(a) Surface of floor slab below screed

The top surface of the floor slab is to have a finish which is rough enough for bonding of the screed. This finish and the preparation thereof is to be discussed with the Engineer before the floor slab is cast. All laitance on the surface of the slab must be removed completely to expose the course aggregate by means of scrabblers, abrasive blasters, hard brooms or a high pressure water jet, immediately after concrete has set. All joints shall be sealed in the manner shown on the Drawings. All dust, debris, etc. must be removed immediately prior to the application of the bonding agent and screed.

(b) Materials

Only ordinary Portland cement shall be used. Coarse aggregate maximum size: 10 mm 28-day cube strength: 30 MPa.

A plasticizer approved by the Engineer shall be used to reduce the water content of the mix to an absolute workable minimum. The mix design shall be submitted to the Engineer for approval.

(c) Placing of screed

All surface water shall be removed after which an approved (by Engineer) slowset bonding agent or similar approved shall be applied strictly according to the manufacturer's specifications. The screed shall be placed according to the recommendations and/or specifications of the manufacturer of the bonding agent.

(d) Joints

The joints in screeds shall be constructed according to the details shown on the Drawings and must in all cases be aligned with the joints in the floor slab below.

(e) Surface finish of screeds

The finishing-off of the screed shall be done in conjunction with the mechanical contractor to ensure that the surface fits the mechanical equipment. The maximum allowable deviation of the floor from the design level is ± 3 mm."

PSG 5.5.11 Watertight concrete

ADD THE FOLLOWING:

"The minimum cement content shall be 325 kg/m³. The maximum water:cement ration shall be 0,55 for ordinary Portland cement (OPC), CEM I 42,5 according to SANS 50197-1, or 0,50 for ordinary Portland cement blended with pulverized fuel ash (PFA).

The cement content shall not exceed 400 kg/m³ OPC in reinforced concrete or 450 kg/m³ OPC blended with PFA in reinforced concrete."

ADD THE FOLLOWING SUBCLAUSES:

PSG 5.5.17 Pipes and conduits

All pipes passing through concrete floors, walls or slabs shall be cast into the concrete member simultaneously with the casting of the member. Openings for pipes shall only be left in the concrete members when so directed by the Engineer or when shown on the Drawings. Pipes shall be installed in such openings according to the details shown on

the Drawings. If watertightness is a requirement where pipes are cast into walls, floors and slabs, the Contractor shall ensure watertightness where smooth-surfaced pipes are used by using an approved method such as tape wrapping the pipes prior to casting in. The cost of such method will be deemed to be included in the rates tendered for in item PSG 8.13.

PSG 5.2.21 FLUME STRUCTURE

The structure shall be rigid and watertight and capable of withstanding flood-flow conditions without damage from outflanking or from downstream erosion. The axis shall be in line with the direction of flow in the upstream channel, and the geometry shall conform with the dimensions given on the Drawings.

The surfaces of the flume, particularly those of the entrance section and throat, shall be smooth. The flume shall be constructed of concrete with a smooth cement finish and shall be surfaced with a smooth non-corrosive material. The surface finish is of particular importance within the prismatic part of the throat but the requirements may be relaxed beyond a distance along the profile 0,5 h_{max} upstream and downstream of the throat proper.

To minimize uncertainty in the discharge measurements, the tolerances specified under subclause PSG 6.2.3 shall be satisfied in construction.

PSG 5.5.23 Mechanical devices for flumes

(a) Linear scale plates and pointers

(i) Linear scale plates to be installed at all Parshall flumes for measuring flow shall be manufactured from 2 mm thick 304L stainless steel.

(ii) All linear scale plates shall be calibrated in litres per second and shall have a width of 50 mm and a length of 1 000 mm. All numbers shall be punched onto the stainless steel plate and shall be filled with a suitable yellow paint to the satisfaction of the Engineer. The units of calibration shall be in litre/s in increments of 50 litre/s. The linear scale plates shall be fixed into position with the aid of stainless steel chemical anchor bolts in a position as indicated on the Drawings and flush with the concrete.

(iii) Mechanical pointers for elevated linear scale plates shall be manufactured from grade 304 stainless steel. They shall be robust devices which facilitate the easy and accurate reading of linear scale plates."

PSG 6 TOLERANCES

PSG 6.2 PERMISSIBLE DEVIATIONS

PSG 6.2.3 Specified permissible deviations

ADD THE FOLLOWING:

"Degree-of-accuracy II is applicable.

Every specified permissible deviation is binding in itself. The cumulative effect of permissible deviations will not be considered. The maximum permissible vertical deviation is subject to the other permissible deviations."

ADD THE FOLLOWING:

"(h) Floors

The maximum permissible deviation from a 3 m long straight line connecting two points on the surface of the finished settling tank floor is ± 3 mm.

(j) Flume structure

(i) On the bottom width *b* of the throat, 0,2% of *b* with an absolute maximum of 0,01 m;

(ii) on point deviations from a plane surface in the throat, 0,1% of litre;

(iii) on the width between vertical surfaces in the throat, 0,2% of this width with a maximum of 0,01 m;

(iv) on the average longitudinal and transverse slopes of the base of the throat, 0,1%;

(v) on the slope of inclined surfaces in the throat, 0,1%;

(vi) on the length of the throat, 1% of litre;

(vii) on point deviations from a plane surface in the entrance transition to the throat, 0,1% of litre;

(viii) on point deviations from a plane surface in the exit transition from the throat, 0,3% of litre;

(ix) on deviations from a plane or curve on other vertical or inclined surfaces, 1%;

(x) on deviation from a plane of the bed of the lined approach channel, 0,1% of litre.

The structure shall be measured on completion of construction, and average values of relevant dimensions and their standard deviations at 95% confidence limits shall be computed. The average values of dimensions shall be used for computation of the discharge of their standard deviations to obtain the overall uncertainty in the determination of discharge. Construction tolerances of the concrete flume must allow for the final application of a 3 mm thick abrasive resistant coating to be applied to the concrete surfaces."

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 7.3 **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."

ADD THE FOLLOWING SUBCLAUSE:

"PSG 7.3.6 **Testing for watertightness**

Water for testing shall be provided by the Contractor and he shall be responsible for providing all necessary equipment that may be required for filling the structures.

The costs of emptying a water-retaining structure which cannot be drained shall be borne by the Contractor. The water shall be discharged in a manner approved by the Engineer and shall be such that the Employer can utilise the water if he so desires.

The water shall not be used as a medium for additives to effect remedial work or to stop leaks. The costs of retesting the structure for watertightness shall be borne by the Contractor."

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1 MEASUREMENT AND RATES

PSG 8.1.2 Reinforcement

REPLACE THE CONTENTS OF THIS SUBCLAUSE 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 Engineer.

The unit of measurement for welded steel fabric shall be the kilogram of fabric reinforcement in place, and the quantity shall be calculated from the net area covered by the mesh, excluding overlaps.

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 8.1.3 Concrete

Delete ", or the plan size of the excavation where additional excavation is provided to facilitate erection of forms" from the second line of paragraph 8.1.3.1(c).

PSG 8.4 SCHEDULED CONCRETE ITEMS

PSG 8.4.3 Strength concrete

ADD THE FOLLOWING AFTER THE LAST SENTENCE:

"In the case of structural floor screeds, the unit of measurement shall be the square metre and the average thickness and proportions will be stated."

REPLACE "Unit: m³" *WITH* "Unit: m³, m²"

PSG 8.5 JOINTS

REPLACE "Unit: m" *with* "Unit: m or m²".

ADD THE FOLLOWING ITEMS:

"PSG 8.9 MISCELLANEOUS WORK OTHER THAN METALWORK..... Unit: as scheduled

Separate items will be scheduled for each type of miscellaneous work.

The tendered rates shall include full compensation for providing all labour, materials and equipment required to carry out the work, for all preparatory work, for constructing the work scheduled in a workmanlike manner and for finishing off and cleaning up when the work has been completed.

PSG 8.13 SCREEDS

(a) Floor screeds (1:3) with falls including V-joints to form panels

and a smooth steel-trowelled finish/power float finish to top:

(i) Description of application and thickness..... Unit: m²

(ii) Etc for other applications and thicknesses

The unit of measurement shall be the square metre of screeds constructed.The tendered rate shall include full compensation for constructing the screeds as specified including supplying of all materials, preparing the concrete surface to receive the screeds and for all else that may be necessary to complete the work.

PSG 8.17 **SUPPLY AND DELIVERY OF LINEAR SCALE PLATES**

EXCLUDING POINTERS FOR PARSHALL FLUMES ..... Unit: number

The quoted rate shall include full compensation for the manufacture, corrosion protection, supply, handling, transport and delivery of the complete units.

All work shall be carried out in accordance with the Specifications and the appropriate Drawings, and to the Engineer's approval.

PSG 8.18 **INSTALLATION, CALIBRATION, TESTING, COMMISSIONING**

AND MAINTENANCE OF LINEAR SCALE PLATES EXCLUDING

POINTERS FOR PARSHALL FLUMES..... Unit: number

The quoted rate shall include full compensation for the installation, testing, calibration, commissioning, maintenance, the making good of damaged corrosion-protection areas, etc., and all other actions required for establishing an efficient working system."

PSHA STRUCTURAL STEELWORK (SUNDRY ITEMS)

PSHA5 CONSTRUCTION

PSHA 5.1.2 Shop Details

REPLACE THE FIRST SENTENCE OF SUB-CALUSE 5.1.2 WITH:

"The Engineer's drawings issued for construction purposes are preliminary with regards to structural steel items and the Contractor shall prepare shop drawings of all structural steel items for the Engineers approval."

ADD THE FOLLOWING SENTENCE TO THE END OF SUB-CLAUSE 5.1.2:

"No payment shall be considered for any structural steel item without shop details being provided and approved by the Engineer in writing."

PSHA 5.2 FABRICATION AND ASSEMBLY

PSHA 5.2.10 Protective Treatment

This clause shall be replaced with the requirements of Particular Specification PTV (Corrosion Protection).

PSHA 8 MEASUREMENT AND PAYMENT

PSHA 8.3 SCHEDULED ITEMS

PSHA 8.3.2 Handrails:

Replace sub-item c(3) with the following:

"(c)(3) Extra over rails for bends, end closures and accessories:

(i) (Description of item stated)…… .....Unit: No

PSHA 8.3.3 Ladders, complete and installed (drawing number or type and length stated)

REPLACE ITEM 8.3.3 WITH THE FOLLOWING:

"**PSHA 8.3.3 Ladders, complete and installed (Drawing number or type and length stated)**

Separate items will be scheduled for grid ladders of different materials, dimensions and height. …….....Unit: number

The tendered rates shall include full compensation for the cost of supplying the specified or scheduled ladders complete, including welding where applicable."

PSHA 8.3.4 Flooring, Complete and installed with frames (Drawing number stated)

REPLACE ITEM 8.3.4 WITH THE FOLLOWING:

"**PSHA 8.3.4 Flooring. Complete and installed with frames:**

(a) Open grid floors…… ..... Unit: m²

(b) Floor plate floors…….....Unit: m² or t

(c) Frames and kerbs for flooring……. .....Unit: m

Separate items will be scheduled for grid floors, floor-plate floors, frames and kerbs of different materials, dimensions, weight and different methods of fixing.

The tendered rates shall include full compensation for the cost of supplying the specified or scheduled types of flooring, frames or kerbing complete, including welding where applicable."

PSL MEDIUM PRESSURE PIPELINES

PSL MEDIUM-PRESSURE PIPELINES

PSL 3 MATERIAL

PSL 3.1 GENERAL

ADD THE FOLLOWING PARAGRAPHS TO SUB-CLAUSE 3.1:

"Each type of pipe delivered to the Site shall have a standard length corresponding with the standard lengths offered by the pipe manufacturer in his catalogue, with a maximum permissible variation in length of ± 2%.

A pipe that is a shorter or longer than the defined standard will be rejected by the Engineer, except when such non-standard lengths are required in terms of the Contract and have been specifically manufactured or cut as such by the pipe manufacturer or supplier."

PSL 3.4 STEEL PIPES, FITTINGS AND SPECIALS

PSL 3.4.2 Pipes of Nominal Bore up to 150 mm

ADD THE FOLLOWING TO SUB-CLAUSE 3.4.2:

"The pipes shall be 'normalised' or seamless steel pipes and shall be used with malleable cast-iron fittings complying with the requirements of SANS 509."

PSL 3.4.3 Pipes of Nominal Bore over 150mm

ADD THE FOLLOWING TO SUB-CLAUSE 3.4.3:

All steel pipes shall be flanged heavy-duty mild steel pipes. Flanges shall be welded on prior to coating. No screwed-on flanges will be allowed, nor will welding to galvanised pipes be allowed.

All bolts and nuts to be used for connecting flanges, joints, fittings, specials, etc. shall be manufactured from stainless steel.

Provide appropriate bolt units, consisting of a standard length bolt, nut and two washers of a material to conform to the requirements of SANS 1123 where applicable, otherwise to the requirements of the Engineer for each set of flanges and for flange adaptor to flange installations.

NB: The shortest standard bolt or stud that protrudes beyond the nut by a minimum of two threads, when the assemblies are fully tightened, shall be used. A washer shall be fitted under all bolt/screw heads and nuts.

Gaskets for flanged connections shall be of compressed asbestos fibre to BS 2815 Grade A, ring type with a minimum thickness of 3 mm, unless otherwise specified.

PSL 3.7 OTHER TYPES OF PIPES

PSL 3.7.2 Polyethylene pipes

REPLACE THE CONTENTS OF SUB-CLAUSE 3.7.2 WITH THE FOLLOWING:

"Polyethylene pipes shall be HDPE type IV pipes with compression fittings and shall comply with SANS 533 Part II."

PSL 3.8.2 Flexible Couplings

ADD THE FOLLOWING:

“Where detachable flexible couplings or flange adaptors are used these shall be of the Viking-Johnson type except where otherwise specified or approved by the Engineer.

Detachable flexible couplings for nominal pipe diameters up to 600mm shall be suitable for an angular deflection of 5 degrees without leakage. Flange adaptors shall be suitable for half the angular deflection stated.”

PSL 3.8.3 Flanged and Accessories

ADD THE FOLLOWING:

“Flanges to other standards shall be used only if approved by the Engineer and provided that any differences do not effect mating dimensions.”

PSL 3.9 CORROSION PROTECTION

PSL 3.9.2 Steel pipes

PSL 3.9.2.1 Steel pipes of Nominal Bore up to 150 mm

ADD THE FOLLOWING:

"Steel pipes shall be galvanised where shown on the Drawings."

PSL 3.9.2.2 Steel pipes of Nominal Bore over 150 mm

ADD THE FOLLOWING TO SUB-CLAUSE 3.9.2.2:

“Steel pipes shall receive heavy duty galvanising, unless otherwise stated on the drawings”.

PSL 3.9.5 Joints, Bolts, Nuts and Washers

REPLACE THE CONTENTS OF SUB-CLAUSE 3.9.5 WITH THE FOLLOWING:

"Where no other protection is specified, joints, bolts, nuts, and washers shall be hot-dip galvanising."

PSL 3.9.6 Corrosive Soil

ADD THE FOLLOWING TO SUB-CLAUSE 3.9.6:

"Where shown on the Drawings, steel pipes in contact with corrosive soil shall be wrapped with Densopol Tape 60 or an equivalent approved product, strictly in accordance with the manufacturer's instructions, prior to the commencement of the backfilling.

All flanges and other fittings in contact with natural ground shall be covered with Denso putty prior to the commencement of the backfilling.

All bolts and nuts, which are to be painted, shall be covered with Genstick L prior to the commencement of the painting.

All valves shall be epoxy coated internally as well as externally with Copon KZIR88.

PSL 3.10 **VALVES**

REPLACE THE CONTENTS OF THIS SUB-CLAUSE WITH THE FOLLOWING:

"Sluice valves shall be of approved pattern and finish. They shall be of the non-rising spindle type, clockwise closing with hand wheel and shall be Class 16 valves complying with SANS 664.

Butterfly valves shall be of approved pattern and finish. They shall be standard 16 bar valves, gearbox operated, conforming to BS-5155: 1984, and fitted between flanges specified elsewhere.

Air valves shall be of approved pattern and finish. They shall be standard 16 bar double orifice air release and vacuum break valves, with anti-shock orifice mechanism, and fitted to flanges specified elsewhere.

All 80mm nominal bore and larger valves to be flanged valves, with all flanges being drilled in accordance with SANS 1123 Table 10.

All smaller sized valves (less than 80mm nominal bore) to be female threaded valves."

PSL 5 CONSTRUCTION

PSL 5.1 LAYING

PSL 5.1.4.1: Depth and cover

ADD THE FOLLOWING TO SUB-CLAUSE 5.1.4.1:

"The minimum cover to pipelines shall be 1000 mm, unless otherwise shown on drawings."

PSL 5.6 VALVE AND HYDRANT CHAMBERS

PSL 5.6.1 General

REPLACE THE WORDS "drawing L-1" *IN THE SECOND LINE WITH* "the Drawings".

PSL 5.6.2 Construction of chambers

REPLACE THE WORDS "drawing L-1, L-2 and L-3" *IN THE FOURTH LINE WITH* "the Drawings".

PSL 5.9 LIFTING AND REPLACING OF EXISTING PIPE

ADD THE FOLLOWING TO SUB-CLAUSE 5.9:

"Where new pipes, valves or specials are to be connected to, or inserted into existing mains, the Contractor shall excavate back along the existing main only as far as is necessary in order to complete the connection satisfactorily - he shall ensure that suitable material is carefully placed and properly compacted beneath all existing and new work so that the pipes, specials, etc. are properly bedded on sound material.

Where necessary, the Contractor shall cut the existing pipes so that new valves and/or specials can be installed. Care shall be taken that the lengths cut from existing pipes, etc. are accurate so as to ensure a proper joint when the new material is installed. Similarly, where specials and/or valves are removed from existing pipes, closure pieces shall be accurately cut to length and the gaps properly closed.

Whereas nominal pipe/fitting sizes are specified and/or shown on the drawing, it shall be the responsibility of the Contractor to confirm the accurate sizes of the pipes involved and to supply the new materials according to these measured sizes."

ADD THE FOLLOWING NEW SUB-CLAUSES:

"PSL 5.11 MARKER BLOCKS

Type 1 and Type 2 marker blocks shall be manufactured and positioned as shown on the Drawings.

PSL 5.12 PIPELINE ROUTE MARKERS

Route markers for the various water pipelines shall be erected in the positions and shall be manufactured according to the details shown on the Drawings."

PSL 7 TESTING

PSL 7.1 GENERAL

REPLACE THE FIRST SENTENCE OF SUB-CLAUSE 7.1 WITH THE FOLLOWING:

Pipes shall be tested in convenient lengths not exceeding 1000 m. Longer lengths require the Engineer's approval.

AND ADD:

The Contractor must include in his rates for all equipment, thrust block arrangements and overhead costs necessary for testing.

PSL 7.3 STANDARD HYDRAULIC PIPE TEST

PSL 7.3.1 Test pressure and time of test

PSL 7.3.1.2 Testing pressure shall be 1,5 times Working Pressure as scheduled or labelled by the manufacturer.

Hydraulic pipe tests shall be carried out in the presence of both the Engineer and the Contractor, and for each test a form shall be completed and certified by both parties, as a record of the test.

PSL 8 MEASUREMENT AND PAYMENT

PSL 8.2 SCHEDULED ITEMS

PSL 8.2.1 Supply, Lay and Bed pipes complete with Couplings .....Unit : m

ADD THE FOLLOWING UNDER ITEM 8.2.1:

The price tendered and paid for pipelines of various diameters and types shall include for the supply and installation of all fittings, joints and specials not specifically scheduled.

Payments of pipes laid shall be affected as follows:

a) 90% of the laid rate on successful completion of laying, cutting, jointing and flushing of the line plus selected fill.

b) 100% on successful completion of the hydraulic testing of the line.

Pipe work is to be bedded on a Flexible Pipes bed as per drawing SANS 1200 LB-2.

Disinfection of the pipes and the joints is relevant for this project.

PSL 8.2.11 Anchor blocks/Thrust blocks and pedestals

INSERT "concrete" *BEFORE* "and" *IN THE LAST LINE OF THE LAST PARAGRAPH*.

ADD THE FOLLOWING:

"The tendered rates shall also include the wrapping of uPVC pipes and fittings with Densopol 80 or a similar approved material whe

PSLB BEDDING (PIPES)

PSLB 3 MATERIALS

PSLB 3.1 SELECTED GRANULAR MATERIAL

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Selected granular material shall have a PI not exceeding 6 and shall be free from sharp-edged particles exceeding 19 mm."

PSLB 3.2 SELECTED FILL MATERIAL

ADD THE FOLLOWING:

"Selected fill material used for bedding shall be stabilized with 3% cement as specified under subclause PSDB 3.5(c)."

PSLB 3.3 BEDDING

ADD THE FOLLOWING:

"uPVC and HDPE pipes are deemed to be flexible pipes for the purposes of this subclause."

PSLB 3.4 SELECTION

PSLB 3.4.1 Suitable material available from trench excavation

REPLACE THE WORDS "(but is not required)" *IN THE FIFTH LINE WITH THE WORDS* "(at his own cost)".

PSLB 8 MEASUREMENT AND PAYMENT

PSLB 8.1 PRINCIPLES

PSLB 8.1.5 Disposal of displaced material

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"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 Contractor. No haulage is payable for such material."

PSLB 8.1.6 Free-haul

DELETE THE WORDS "of 0,5 km" *IN THE FIRST LINE OF THIS SUBCLAUSE.*

PSLB 8.2 SCHEDULED ITEMS

ADD THE FOLLOWING ITEM:

"PSLB 8.2.6 Extra over items 8.2.1 and 8.2.2 for bedding stabilized with 3% cement ..... Unit: m³

The tendered rate shall include full compensation for selecting, mixing, backfilling and compacting the stabilized material to the specified density."

PSLC CABLE DUCTS

PSLC 3 MATERIALS

PSLC 3.1 DUCTS

ADD THE FOLLOWING:

"PSLC 3.1.2 Split uPVC pipes

Split pipes shall only be used to provide ducts for existing services that cannot be severed and threaded through the ducts. The pipes shall be cut accurately in the middle, and opposite halves shall be matched as sawn. Split pipes shall be placed around the service, firmly bound by steel straps, and encased in concrete."

PSLC 3.4 CABLE DUCT MARKERS

ADD THE FOLLOWING:

"A cable duct marker shall consist of a 300 mm x 300 mm x 100 mm deep, class 20 MPa/19 mm concrete block, connected by means of a non-ferrous metal strip to a temporary plug to seal the end of the duct. The plug shall prevent moisture or soil from entering the duct. The metal strip shall be firmly connected to both the plug and the concrete block. The concrete block shall be positioned not further than 0,5 m horizontally from the end of the cable duct. The face of the concrete block shall be clearly marked "E" to indicate electricity cables."

ADD THE FOLLOWING SUBCLAUSE:

"PSLC 7.4 FINAL INSPECTION

A final inspection will take place on completion of the work. The Contractor shall, at his own cost, expose all pipe ends prior to the final inspection, after which they may be finally plugged and closed."

PSLC 8 MEASUREMENT AND PAYMENT

PSLC 8.2 SCHEDULED ITEMS

PSLC 8.2.5 Supply, lay, bed, and prove duct

REPLACE THE PAYMENT PARAGRAPH WITH THE FOLLOWING:

"Separate items are scheduled for each diameter of duct.

The rates shall cover -

(a) for Telkom ducts, the cost of collecting the ducts, draw wire and screening wire and the cost of laying the ducts and screening wire, installing the draw wire, jointing, bedding and providing all as specified, and

(b) for all other ducts, the cost of providing all the material and the cost of laying the ducts, installing the draw wire, jointing, bedding and providing all as specified."

PSLD SEWERS

PSLD 3 MATERIALS

PSLD 3.5 MANHOLES, CHAMBERS, ETC

PSLD 3.5.2 Precast concrete sections

ADD THE FOLLOWING:

"Sectional spun-concrete cylinders shall be manufactured from dolomitic aggregate.

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

PSLD 8 MEASUREMENT AND PAYMENT

PSLD 8.2 SCHEDULED ITEMS

PSLD 8.2.11 Connection to existing sewer at

REPLACE THIS ITEM WITH THE FOLLOWING:

"PSLD 8.2.11 Connection to existing sewer.....Unit: sum

The tendered sum shall include full compensation for excavation, making an opening in the existing manhole, installing new pipes in the new opening, breaking out and modifying the channelisation inside the manhole to suit the new pipe layout, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material and debris, all labour and equipment required to make the connection, and liaison with the local authorities."*ADD THE FOLLOWING ITEM:*

"PSLD 8.2.13 Breaking into existing sewer and building a new manhole Unit: number

The tendered rate shall include full compensation for excavation, building a new manhole over the sewer, breaking into the existing sewer, building the channelisation under wet conditions, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material, all labour and equipment required to make the connection, and liaison with the local authorities."

PSLE STORMWATER DRAINAGE

PSLE 3 MATERIALS

PSLE 3.1 CULVERT UNITS AND PIPES

(d) Skewed ends

ADD THE FOLLOWING:

*"*Skewed ends for pipe culverts may be cut on Site."

PSLE 3.4 MANHOLES, CATCHPITS, AND ACCESSORIES

PSLE 3.4.1 Bricks

ADD THE FOLLOWING:

"Bricks shall be engineering bricks complying with the requirements of SABS 227."

ADD THE FOLLOWING SUBCLAUSE:

"PSLE 3.6 MATERIALS FOR SUBSURFACE DRAINS

(a) Pipes and fittings

Pipes for subsurface drains shall be normal duty, perforated or slotted uPVC pipes complying with SABS 791. Fittings shall be heavy duty and shall also comply with SABS 791. The size of the perforations in perforated pipes shall in all cases be 8 mm in diameter ± 1,5 mm, and the number of perforations per metre shall not be less than 26 for 100 mm pipes and 52 for 150 mm pipes. Perforations shall be spaced in two rows for 100 mm pipes and in four rows for 150 mm pipes, as shown on the Drawings. Slotted pipes shall have a slot width of 8 mm with a tolerance of 1,5 mm in width. The arrangement of the slots is subject to the Engineer's approval, but the total slot area shall not be smaller than that specified for perforations.

(b) Crushed stone

Crushed stone shall be 19 mm single-sized and shall comply with the requirements of SABS 1083.

(c) Geotextiles

Geotextiles shall be a non-woven, spun or thermic-bonded continuous filament fabric consisting of at least 85% by mass of polypropylene, polyester or other approved material and manufactured for civil-engineering applications by a recognised manufacturer."

PSLE 5 CONSTRUCTION

PSLE 5.2 BEDDING AND LAYING

PSLE 5.2.2 Pipe culverts

ADD THE FOLLOWING:

"The class of bedding required for the various pipe culverts is shown on the Drawings."

PSLE 8 MEASUREMENT AND PAYMENT

PSLE 8.2 SCHEDULED ITEMS

ADD THE FOLLOWING ITEMS:

"PSLE 8.2.14 Pipes in subsurface drains:

(a) Normal duty uPVC pipes complete with couplings:

(i) (Diameter and whether perforated or not, indicated) .....Unit: m

(ii) Etc for other diameters

(b) Heavy-duty fittings:

(i) (Type and diameter indicated) ..... Unit: number

(ii) Etc for other types and diameters

The tendered rates per metre of pipe measured in place along its centre line including the length of fittings shall include full compensation for procuring, furnishing, laying and jointing the pipes as specified. The tendered rates for fittings shall include full compensation for procuring, furnishing, laying and jointing the fittings as specified, irrespective of the type of fitting.

PSLE 8.2.15 Geofabric (description of type, grade, etc.) ..... Unit: m²

The filter fabric will be measured in place after installation. The tendered rate shall include full compensation for procuring, supplying, cutting, overlapping, jointing, placing and protecting the filter fabric as specified, as well as for wastage.

PSLE 8.2.16 Crushed stone in subsurface drains: ..... Unit: m³

The tendered rate shall include full compensation for procuring, supplying, transporting and placing the material as specified. The quantity shall be calculated from the authorised dimensions.

PSLE 8.2.17 Grade 20 MPa/19 mm concrete outlet structures for subsurface drains (including framework) ..... Unit: m³

The tendered rate shall include full compensation for procuring and supplying of all materials, providing and erecting formwork, reinforcing and mixing, transporting and placing concrete.

PSLE 8.2.18 Concrete caps for subsurface drain pipes ..... Unit: number

The tendered rate shall include full compensation for supplying and installing the concrete caps.

PSME SUBBASE

PSME 3 MATERIALS

PSME 3.2 PHYSICAL PROPERTIES

PSME 3.2.1 Subbase material

REPLACE THE CONTENTS OF PARAGRAPH (a) WITH THE FOLLOWING:

"(a) The maximum particle dimension of the gravel shall not exceed 63 mm."

REPLACE THE CONTENTS OF PARAGRAPH (d) WITH THE FOLLOWING:

"(d) The CBR at specified density shall be 45 for unstabilized material as well as for stabilized material prior to stabilization."

DELETE PARAGRAPH (e).

PSME 5 CONSTRUCTION

PSME 5.2 EXCAVATION

PSME 5.2.2 Borrow pits

INSERT THE WORDS "designated by the Engineer and" *BETWEEN THE WORDS* "pits" *AND* "established" *IN THE FIRST LINE.*

ADD THE FOLLOWING SUBCLAUSES:

"PSME 5.8 WEED-KILLER

The subbase layer shall be treated before compaction by applying and mixing in granular HYVAR X or TENOC X or similar approved weed-killer in accordance with the manufacturer's instructions.

PSME 5.9 INSECTICIDE

An approved insecticide such as Termidan or an approved equivalent shall be applied strictly in accordance with the manufacturer's instructions over the total area of the subbase. The instructions indicate whether the poison is to be applied before or after compaction of the layer."

PSME 8 MEASUREMENT AND PAYMENT

PSME 8.1 BASIC PRINCIPLES

INSERT A SEMICOLON IN THE FIRST LINE OF PARAGRAPH (b) AFTER THE WORDS "will be paid for once only" *AND DELETE THE REST OF THE PARAGRAPH.*

AMEND PARAGRAPH (d) AS FOLLOWS:

"(d) that, in the case of material from a commercial source or from borrow pits selected by the Contractor, no additional payment will be made for the class of excavation, method of processing (except stabilizing), or overhaul."

PSME 8.3 **SCHEDULED ITEMS**

ADD THE FOLLOWING ITEM:

"PSME 8.3.11 **Treatment of subbase with:**

(a) Weed-killer ..... Unit: m²

(b) Insecticide ..... Unit: m²

The tendered rates shall include full compensation for supplying, spreading and mixing-in or applying the poison.

Only areas that were treated on the written instructions of the Engineer will be measured for payment."

PSMF BASE

PSMF 3 MATERIALS

PSMF 3.3 PHYSICAL AND CHEMICAL PROPERTIES

PSMF 3.3.1 Natural gravel (stabilized or unstabilized)

REPLACE THE CONTENTS OF PARAGRAPH (a*) WITH THE FOLLOWING:*

"(a) The maximum particle dimension of the gravel shall not exceed 63 mm."

PSMF 5 CONSTRUCTION

PSMF 5.9 TRANSPORT

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"All movement of material will be considered as free-haul. No haulage cost will be paid."

PSMF 8 MEASUREMENT AND PAYMENT

PSMF 8.3 SCHEDULED ITEMS

PSMF 8.3.5 Process base material by the following processes, as relevant, and use in base (applicable to 8.3.1 or 8.3.2 or both):

ADD THE FOLLOWING SUBITEM:

"(e) Process base material by chemical modification

(applicable to item 8.3.1)..... Unit: m³

The tendered rate shall include full compensation for the chemical modification as specified, including all labour, transport, etc. The modifying agent will be paid for under item PSMF 8.3.8."

PSMF 8.3.8 Stabilizing agent

REPLACE THE HEADING OF THIS ITEM WITH THE FOLLOWING:

"PSMF 8.3.8 (a) Road lime for modification..... Unit: t"

"PSMF 8.3.8 (b) Cement for modification..... Unit: kg"

PSMK KERBING AND CHANNELLING

PSMK 5 CONSTRUCTION

PSMK 5.11 TRANSITION SECTIONS AND INLET AND OUTLET STRUCTURES

DELETE THE WORDS "and with the requirements of the Project Specification" *IN THE SECOND PARAGRAPH.*

PSMK 8 MEASUREMENT AND PAYMENT

PSMK 8.2 SCHEDULED ITEMS

PSMK 8.2.1 Concrete kerbing

REPLACE "5.8.2" *IN THE THIRD LINE OF PARAGRAPH (e) WITH* "5.8.3".

PSMK 8.2.3 Variation of tests on extruded kerbing

DELETE THIS SUBCLAUSE.

ADD THE FOLLOWING ITEM:

"PSMK 8.2.14 Removal of existing kerbing and:

(a) Disposing of them off the Site.....Unit: m

(b) Reusing them elsewhere on the Site .....Unit: m

The tendered rates shall include full compensation for providing all labour and equipment, excavations, lifting the kerbs and, in the case of subitem (a), loading and transporting the kerbs from the Site and, in the case of subitem (b), cleaning the kerbs, and temporarily storing them and relaying them elsewhere on the Site."

PSVC FENCING

PSVC 1SCOPE

This specification covers the erection of a new 2.4m high fence with 1 x motor gate 2.4 x 2.4m.

PSVC 4.2 SECURITY FENCING

Add this item to cover the erection of a new 2.4m high fence

PSVC 4.2.1 Material

(a) Straining posts, stays, standards and droppers

Straining posts, stays, standards and droppers shall be of the type and size indicated on the drawings. Steel sections shall be comply with the requirements of CKS 82 and timber posts with the requirements of SABS 457, Timber posts shall treated with a preservative in accordance with the requirement of sub clause 5402 (b)(i)

Droppers shall be 0.56 kg/m ridgeback pattern droppers

Tubular staining shall be posts and stays shall be galvanized in accordance with SABS 763 for class B1 articles, or shall be painted as specified in section 8400 as may be required on the drawings, and shall have a wall thickness of at least 2.95 mm. Unless otherwise shown on the drawing on the drawing, all tubular posts shall be provided with a 230 mm x 230 mm footplate and a pressed steel or cast-iron cap. Tubular stays shall have a nominal bore of at least 60 mm.

Rolled steel section shall be provided with a protective coating of tar or other approved material.

(b) Bolts for stays

Bolts shall be galvanized steel bolts of the required length and a diameter which shall not be less than 12 mm. All the necessary bolts, nuts and washers, shall be supplied with each post.

B 5507 Erecting fence wire

All fence wire shall be tied to the sides of standards or posts to prevent the wires from being displaced or becoming loose. The wire shall be carefully tensioned without sagging and true to line, care being exercised not to tension the wire to such an extent that it will break, or that end, corner, straining or gate posts will be pulled out or that it will be easily damaged during veld fires.

Each strand of fencing wire shall be securely tied in the correct position hard \up to each standard with soft galvanized tying wire. The tying wire for each strand shall pass through a hole or notch in the standard, while the ends of the tying wire shall be wound at least four times around the fencing wire to prevent it from moving in a vertical direction

B 5513 GENERAL REQUIREMENTS

The completed fence shall be plumb, taut, true to line and ground contour, with all posts, standards and stays firmly set. The height of the lower fencing wire above the ground at posts and standards shall not deviate by more than 25 mm from that shown on the drawings. Other fencing wires shall not deviate by more than 10 mm from their prescribed vertical positions.

B 5514 MEASUREMENT AND PAYMENT
Item

55.01 Cleaning the fence line 2m wide strip……..……Unit m(m)
The removal of trees and stumps with a girth exceeding 1 m shall be paid as specified in section 1700

B 55.02 Supply and erect new fencing material for new fence:

(a) Zinc-coating 500mm razor wire flatwrap coil (SABS 675)……Unit (m)

(b) Zinc-coating smooth wire 2.24mm diameter. high tensile fencing wire (SABS 675)……..…….……Unit (m)

(c) Zinc-coating 50x30x3.15mm diamond wire mesh 1.80m high (SABS 675)……Unit (m)

The unit of measurement shall be erected as specified in the drawings completely drilled with steel cap and base plate and painted. The price shall also include full compensation for the supply and installation of the frame (being, corner posts, standard posts at specified centres, straining posts and steel rods welded to the frame for fixing the mesh) and excavation of 300mm x 300mm x 800mm deep holes and the backfill with concrete.

(d) Gate: Single motor gate (2.4 x 2.4 mm) ……..……...Unit (No.)

The unit of measurement shall be the number of new gate erected. The two wings of the double gates shall be considered as one gate. The tendered rate shall include full compensation for the procurement and supply of all material including gates, gate posts, hinges, bolts, mesh, binding wire, concrete, etc., as well as the erection of the gates as specified and indicated on the drawings.

PSES ELECTRICAL

PSES1.1 Standards

All materials and equipment to be supplied and installed under this contract shall be new and of the best quality available.

All materials and equipment shall comply with the requirements laid down in the latest editions of the BS, SABS and IEC specifications and their amendments (if any) as well as those laid down in this specification.

Where items bearing the SABS mark are available for any of the materials and equipment specified, only materials bearing the said mark, will be acceptable.

The following Standard Specifications and drawings shall apply:

SANS 97	-	**Medium voltage cables**
SANS 152	-	**Low voltage air break switches**
SANS 156	-	**Moulded Case Circuit Breakers**
SANS 164	-	**Plugs and socket outlets**
SANS 172	-	**Low-voltage fuses**
SANS 529	-	**Heat-resisting wiring cables**
SANS 555	-	**Transformer oil**
SANS 556	-	Switchgear
SANS 767	-	**Earth leakage protection units**
SANS 780	-	**Distribution Transformers**
SANS 890	-	**Fluorescent lamp reference ballasts**
SANS 891	-	**Fluorescent lamp reference ballasts**
SANS 908	-	**Meter cabinets**
SANS 950	-	**Unplasticized polyvinyl chloride rigid conduit and fittings for use in electrical installations**
SANS 1012	-	**Electric light dimmers**
SANS 1029	-	**Miniature substation**
SANS 1063	-	**Earth rods and couplers**
SANS 1065-1	-	**Metal conduits**
SANS 1065-2	-	**Metal fittings**
SANS 1085	-	**Wall boxes for the enclosure of electrical accessories**
SANS 1091	-	**Paint colour**
SANS 1195	-	**Bus bars**
SANS 1213	-	**Mechanical cable glands**
SANS 1239	-	**Plugs, socket-outlets and couplers for industrial purposes**
SANS 1371	-	**Bushings**
SANS 1411-1	-	**Materials of insulated electric cables and flexible**

		cords: conductors
SANS 1418-1	**-**	**Aerial bundled conductor system: Cores**
SANS 1433-1	**-**	**Terminal blocks having screw and screwless terminals**
SANS 1433-2	**-**	**Flat push-on connectors**
SANS 1473-1	**-**	**Low-voltage switchgear and control gear assemblies: Type-tested and partially type-tested assemblies**
SANS 1473-2	**-**	**Low-voltage switchgear and control gear assemblies: Busbar trunking systems**
SANS 1507-1	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): General**
SANS 1507-2	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): Wiring cables**
SANS 1507-3	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): PVC distribution cables**
SANS 1507-4	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): XLPE distribution cables**
SANS 1507-5	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): Halogen free distribution cables**
SANS 1507-6	**-**	**Electrical cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V): Service cables**
SANS 1574	**-**	**Electric cables and flexible cords**
SANS 1576	**-**	**Welding cables**
SANS 1607	-	Electromechanical watt-hour meters
SANS 1619	-	Small power distribution units (ready boards) for single-phase 230V service connections
SANS 1765	-	Safety of distribution boards
SANS 1777	-	Photoelectric control units for lighting
SANS 1799	-	Watt-hour meters - AC electronic meters for active energy
SANS 1885		Switchgear
SANS 1973	-	Switchgear
SANS 10086-1	**-**	**The installation, inspection and maintenance of**

		equipment used in explosive atmospheres
SANS 10108	**-**	**The classification of hazardous locations and the selection of apparatus for use in such locations**
SANS 10142	**-**	**Code of Practice for the wiring of Premises**
SANS 10198-4	**-**	**The selection, handling and installation of electric power cables of rating not exceeding 33kV: Current ratings**
SANS-10198-11	**-**	**The selection, handling and installation of electric power cables of rating not exceeding 33kV: Jointing and termination**
SANS-10198-14	**-**	**The selection, handling and installation of electric power cables of rating not exceeding 33kV: Installation of aerial bundled conductor cables**
SANS 10199	**-**	**The design and installation of an earth electrode**
SANS 10222-3	**-**	**Electrical security installations: Electric security fences**
SANS 10292	**-**	**Earthing of low-voltage distribution systems**
SANS 10313	**-**	**The protection of structures against lightning**
SANS 60044	**-**	**Current Transformers**
SANS 60269	**-**	**Low voltage fuses: General requirements**
SANS 60309-1	**-**	**Plugs, socket-outlets and couplers for industrial purposes: General requirements**
SANS 60309-2	**-**	**Plugs, socket-outlets and couplers for industrial purposes: Dimensional interchangeability requirements for pin and contact-tube accessories**
SANS 60335-2	**-**	**Safety of household and similar electrical appliances: Particular requirements for electric fence energizers**
SANS 60439-1	**-**	**Low-voltage switchgear and control gear assemblies: Type-tested and partially type-tested assemblies**
SANS 60439-2	**-**	**Low-voltage switchgear and control gear assemblies: Particular requirements for busbar trunking systems**
SANS 60439-4	**-**	**Low-voltage switchgear and control gear assemblies: Particular requirements for assemblies for construction sites**
SANS 60439-5	**-**	**Low-voltage switchgear and control gear assemblies: Particular requirements for assemblies intended to be installed outdoors in public places**
SANS 60529	**-**	**Degrees of protection provided by enclosures**

SANS 60570	**-**	**Electrical supply track systems for luminaires**
SANS 60614	**-**	**Metal conduit**
SANS 60669-1	**-**	**Switches for household and similar fixed-electrical installations: General**
SANS 60669-2	**-**	**Switches for household and similar fixed-electrical installations: Electronic switches**
SANS 60906-3	**-**	**IEC systems of plugs and sockets for household and similar purposes**
SANS 60921	**-**	**Ballasts for fluorescent lamps**
SANS 60947-2	**-**	**Low-voltage switchgear and control gear: Circuit breakers**
SANS 60947-3	**-**	**Low-voltage switchgear and control gear: Switches and disconnectors**
SANS 60947-4-1	**-**	**Low-voltage switchgear and control gear: Contactors and motor starters (Electromechanical)**
SANS 60947-4-2	**-**	**Low-voltage switchgear and control gear: Contactors and motor starters (semiconductor motor controllers)**
SANS 60947-4-3	**-**	**Low-voltage switchgear and control gear: Contactors and motor starters (For non-motor loads)**
SANS 60947-5-1	**-**	**Low-voltage switchgear and control gear: Electromechanical control circuit devices**
SANS 60947-5-2	**-**	**Low-voltage switchgear and control gear: Proximity switches**
SANS 60947-5-2	**-**	**Low-voltage switchgear and control gear: Electrical emergency stop device with mechanical latching function**
SANS 60947-6-1	**-**	**Low-voltage switchgear and control gear: Automatic transfer switching equipments**
SANS 61000-4-5	**-**	**Testing and measuring techniques: Surge immunity test**
SANS 61000-4-7	**-**	**Testing and measuring techniques: Harmonics and interharmonic measurement**
SANS 61084	**-**	**Cable trunking and ducting for electrical installations: General requirements**
SANS 61035	**-**	**Metal fittings**
SANS 61347	**-**	**Ballasts for fluorescent lamps**
NRS 002	**-**	**Graphical symbols for electrical power, telecommunications and electronic diagrams**

NRS 003	-	**Switchgear**
NRS 013	-	**Medium voltage cables**
NRS 029	-	**Current Transformers**
NRS 030	-	**Distribution Transformers**
BS 89	-	**Ammeters**
BS 142	-	**Electrical Protection relays**
BS 148	-	**Specification for unused mineral insulating oils for transformers and switchgear**
BS 159	-	**Bus bars**
BS 162	-	**Switchgear**
BS 638	-	**Welding cables**
BS 923	-	**Testing**
BS 1650	-	**Specification for capacitors for connection to power – frequency system**
BS 2631	-	**Switchgear**
BS 3938	-	**Current Transformers**
BS 3941	-	**Potential Transformers**
BS 4504		**Circular flanges for pipes, valves and fittings (PN Designated)**

All equipment must comply with Government Notices as well as any other regulation in respect of noise and interference.

Any noise and interference caused by any equipment after commissioning must be suppressed to the satisfaction of the Employer and any cost involved will be for the contractors account.

PSES1.2 System and Site Conditions

All materials and equipment supplied under this contract shall be suitable for operation under the following existing conditions unless specifically specified otherwise elsewhere in this document:

Medium voltage system:
11 000 V, 50 Hz, 3 phase, 3 wire, alternating current with solidly earthed neutral and fault capacity of 250 MVA and able to withstand a short time current of 20 kA for 3 seconds at 11 kV.

Impulse level 95 kV (at sea level) (1,2/50 impulses in accordance with IEC Publications 60-2)

Low voltage system:
415/230 V, 50 Hz, 3 phase, 4 wire, alternating current with solidly earthed neutral.

PSES1.3 Radio and TV Interference

All equipment installed under this Contract shall comply with the Government Notice No. R.2246 and any other applicable rules and regulations in respect of radio and TV interference. Any equipment found producing interference after commissioning, shall be suppressed or replaced to the satisfaction of the Engineer without any additional cost.

PSES1.4 Protection of Equipment Against Voltage Surges and Spikes

Tenderers shall allow in their tender prices for adequate protection of the equipment supplied and installed under this Contract against direct as well as induced voltage surges and spikes which may be experienced on the system.

Electronic equipment shall be adequately protected on both the incoming and outgoing terminals as well as on both ends of cables leaving and entering a building by means of suitable arrestors compatible with the relevant equipment.

PSES1.5 Interchange Ability

All equipment must be manufactured to such close tolerances that all similar components and spares must be fully interchangeable without any further alterations or adjustment being necessary.

PSES1.6 Water and Debris Accumulation

All outdoor equipment shall be designed so that water and debris will not readily accumulate to cause deterioration of equipment or an electrical discharge hazard. Where this cannot be avoided, such places shall be easily accessible for cleaning.

PSES1.7 Name tags

Identification tags shall be attached to all equipment, sub-assemblies, components such as instruments, fuses, junction boxes, cable ends etc. The tags shall be screwed on with brass or plated steel screws (no self tapping screws will be permitted). Where it is not possible to use screws such as on the cables, other means of attachment must be submitted for approval to the Engineer.

Cables shall be tagged at either end, whether the end terminates in a distribution board, inverter or an end box. Cable ends shall be tagged with the destination name e.g. DB 1 Feeder No.1.

All cable cores and internal panel wiring shall be identified at both ends by means of durable colour coded wire marking ferrules in accordance with numbering systems in cable and wiring diagrams. Only closed ring interlocking type identification ferrules shall be used.

Outdoor tags shall be of stainless steel or brass type.

Tags mounted indoors or protected by an enclosure shall be made of Ivorene or similar sandwich material with black letters on a white background.

Letter sizes must be compatible with the application, e.g.

i. 3 to 5 mm for fuses, terminals, relays etc.
ii. 12 to 20 mm for panels or cubicles
iii. about 50 mm for switchboard or MCC board names
iv. about 80 mm for building or structure names

PSES1.8 Fasteners

All bolts and studs shall protrude at least one thread but not more than four threads through the nut, with all washers in position. All bolts and studs shall be equipped with spring and flat washers.

If any bolts, nuts, screws or other fasteners are placed in a position that are not accessible to conventional tools, then the Contractor shall provide special tools. This also applies where the size or shape of the fastener is not conventional.

PSES1.9 Colour and Finishing

All metal parts of equipment shall either be finished in baked enamel or powder coating or galvanized (depending on the circumstances) after manufacture and treatment to SANS 10064. Surface preparation shall comply with SANS 10064. Prior to painting, all metal parts shall be thoroughly cleaned of rust, mill, scale, grease and foreign matter to a continuous metallic finish. Sand or shot blasting or acid pickling and washing shall be employed for this purpose.

Colours of paint to be used shall be confirmed with the Electrical Engineer / Architect prior to ordering of materials. All Colours of paint shall be in accordance with SANS 1091 - National colour standard.

In the case of switchboards and large equipment enclosures, a tin of matching touch-up paint not smaller than 1 litre shall be provided.

All steel areas subjected to corrosive atmospheres, which cannot be painted and the paintwork must be maintained afterwards, or specified to be galvanized must be hot dip galvanized to SANS 763 and SANS 121 - Hot dip galvanized coatings on fabricated iron and steel articles. The galvanizing must be clean, smooth, of uniform thickness and unblemished.
The galvanizing must not affect the mechanical properties of the covered metal.

All drilling, welding, cutting and bending must be complete and the metal must be cleaned of any machining blemishes, mill scale, rust and lubricants before galvanizing. If site trimming, drilling and cutting cannot be avoided then all such denuded surfaces must be dressed with a cold galvanizing paint.

Galvanized areas must be kept free of lubricants.

Wire must be galvanized to SANS 935.

PSES1.10 Inspections And Tests

All equipment will be inspected by the Engineer and tested in his presence both in the factory during manufacturing and on site during installation. The Engineer will do all inspections accompanied by the Contractor and the Contractor will do all tests with the Engineer as witness.

The Engineer will require seven (7) days notification to avail himself for any test or inspection and the Contractor must arrange for the maximum number of inspections and tests to be done on the same day.

The Contractor must provide all testing facilities and instruments, all equipment required for a test or inspection and all safety clothing prescribed by the Engineer.

The instruments must have valid test certificates issued by an accepted testing authority and the results of the test done must be recorded on a test certificate, of which the Engineer must receive two copies.

The Engineer reserves the right to call for a calibration test on any instruments used during the test.

The cost of all tests must be included in the tender price.

PSES1.11 Performance Tests

On completion of erection and installation the Contractor must carry out the following tests before commissioning, where applicable, in addition to any other tests, which may be specified elsewhere:

i. Cable Insulation test.
ii. Earth Continuity test.
iii. Module Flash test
iv. Thermographic Imaging of modules, cable joints and terminations
v. Performance Ration test
vi. Short Circuit Current
vii. Open Circuit Voltage
viii. Polarity test
ix. IV Curve test on 10% sample of strings

On completion of installation and putting into proper operation all the plant and equipment, the Contractor will be required to make suitable arrangements for the testing of all plant and equipment supplied under this Contract and running the plant for at least one week, during which time he shall also train all the operators in the correct running of the plant. He shall also explain the maintenance manuals to the operator during this time.

The entire cost of testing, including supply of test equipment, must be borne by the Contractor and an adequate allowance for such tests must be made in the Tendered price.

PSES1.12 Operating and Maintenance Instructions

Before completion of the testing of the plant, the Contractor shall provide the Employer with adequate and complete working, operating and maintenance instructions in triplicate, with the necessary drawings and diagrams clarifying the instructions.

Instructions are to be made up in book form and particular reference is to be made to:

i. Maintenance of equipment;
ii. Precautions to be taken in running the plant;
iii. All instruments and components must be fully described in data sheets supplied by the relevant suppliers;
iv. Wiring diagrams of the complete electrical installation.

The manual must be specific for the plant supplied and all extraneous material not connected with the relevant plant shall be deleted, leaving the manual as a comprehensive coherent document, bound in a professional way such that this may be used frequently without falling apart.
Standard pamphlets may be supplied as addendums, bound separately in a good quality file to serve as reference but will not be allowed as part of the main manual.

NB. The prices Tendered in the Schedule of Prices will be held to include for the supply of these operating and maintenance instructions.

PSES1.13 Low tension PVC cables

The cables shall be of 600/1 000 V AC grade PVC SWA PVC cable complying with SANS 1507. The number of cores shall be as specified in the Detail Specification or in the BOQ, as required for a specific purpose.

PSES1.14 Low tension DC cables

The cables shall be flexible 900/1 500V DC grade Halogen free cross-linked insulation and a sheath of Halogen free cross-linked, flame retardant cable suitable for internal and external PV installations. The cable to be used shall have a temperature rating between -40°C and +90°C and a derating factor of 1 at +60°C.

PSES1.15 Laying of Mulitcore AC & DC Cables

The storage, transportation, handling and laying of the AC and DC cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to the cables during such operations.

DC cables shall not be buried in ground directly. They shall be protected mechanically in suitably sized sleeves at all times. Where DC cables are exposed to sunlight radiation, they shall be installed in surface mounted galvanized containment.

Trenching

The tenderer shall base his prices for trenching on the following definition of the various types of ground:

Hard rock shall mean granite, quarzitic sandstone, slate and rock of similar or greater hardness, solid shale and boulders over 0,03 mm^3 in volume.

Soft rock shall mean rock that can be loosened by handpick and includes hard shale, compact ouklip and boulders from 75 mm in diameter up to 0,03 m³ in volume.
Earth shall mean ground that can be removed by pick and hand shovel and includes loose gravel, clay, made-up ground, loose or soft shale, loose ouklip and boulders less than 75 mm in diameter.

No guarantee is given or implied that blasting shall be required, but should this method of removal be necessary and permitted, then the contractor shall take all responsibility and observe all conditions set forth in Government and Local Authority Regulations.

Power driven mechanical excavators may be used for trenching operations along some sections of the route provided that they are not used in close proximity to other plant liable to be damaged by the use of such machinery. The engineer's representative must in each case approve their use along sections of the route.

For low voltage cables, the trenches shall be excavated to a depth of 825 mm below ground level and for HT cables to a depth of 1 075 mm below ground level and trenches shall be not less than 450 mm wide for two cables. The low voltage cables shall be spaced at least 75 mm apart throughout the entire route, while HT cables shall be spaced at least 150 mm apart. The bottom of the trench shall be level and clear and the bottom and sides free from rocks and stones liable to cause damage to the cable.

The contractor must take all necessary precautions to safeguard all structures, roads, sewage works or other property on the site from any risks of subsidence and damage.

When laying cables in trenches excavated in soft or hard rock or containing sharp stones, rocks or other items most likely to injure cables, the following precautions shall be taken:

a) Before laying the cables injurious items shall be removed from the bottom of the trench. The floor of the trench shall be evenly covered with a layer of sifted backfill or sand to a level, which is 75 mm above the highest unevenness of the trench.

b) Suitable cable rollers onto which the cable shall be drawn must be placed in the cable trench. The rollers must preferably be spaced 2 metres apart, but the spacing must under no circumstances exceed 3 metres. Where cables are coiled from an approved cable trailer and laid directly, rollers are not necessary.

The laying of cables shall not commence until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused, and must be adequately supported at short intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

The cables shall then be covered with a 150 mm layer of sifted backfill or sand. The backfill shall be well consolidated.

Should the soil used for bedding and the covering layer of 150 mm be run through a screen the whole diameter of screen shall not exceed 6 mm.
Backfilling shall then be continued with proper grading of material to ensure settling without voids, and the material is to be stamped down after the addition of every 150 mm. The surface is to be made good to approval.

Should the backfill or sand, to specification, not be available at any particular point of the trench, the contractor shall transport it from elsewhere.

Where cables are cut and not immediately made off, the ends are to be sealed without delay.

All surplus ground and rocks shall be removed from the works and dumped at a site to be obtained by the contractor. The cost of this work shall be included in the contractor's price.

At all positions where LT cables cross HT cables approved concrete slabs shall be placed over the HT cables and shall extend for a distance of 2 metres on either side of the crossing. Where communication cables are

crossed, the power cables shall cross over the communication cables and slabs shall be put on top of the power cables extending 2 metres on either side of the crossing.

PSES1.16 Jointing of Cables

Jointing will only be allowed in multicore cables and joints must be restricted to the absolute minimum. All joints shall be made to the best practice by competent cable jointers using first class material.

The contractor shall maintain the electrical continuity of the armouring in an approved manner at all straight through joints.

Low voltage power and control cables
Joints shall only be allowed where more than one drum length of cable is necessary to complete a specific circuit.

The jointing kit shall be of an approved type of epoxy-resin pressure type. The joints shall be made to the manufacturer's instructions and with materials stipulated in such instructions.
The joint boxes shall be large enough to accommodate both the wire armouring and the PVC of the cable to avoid electrolytic corrosion.

Conductors shall be jointed with crimped or soldered ferrules being separately insulated with PVC tape prior to the filling of the box with resin.

Low voltage DC cables
DC cables shall not be jointed unless approved by the Engineer. Only suitable MC-4 certified joint kits, rated at 1000V shall be used where cables are joined above ground level and below ground level, within the sleeves.

PSES1.17 Termination of Cables

Low voltage multicore power and control cables
Cables are to be terminated with cable glands manufactured of bronze and comprising a barrel with sealing washer and bush nut screwed into one end and a compression nipple with wire clamping ring screwed onto the other end.

The opposite end of the compression nipple must have a male electrical thread with locknut. The glands shall be suitably sized for the relevant cables, be of the adjustable type complete with armour clamps and with watertight neoprene shrouds.

The contractor shall be held responsible for damage to any existing service brought to his attention by the relevant authorities and shall be responsible for the cost of any repairs.

The contractor shall acquaint himself thoroughly on site, with the cable routes, before submitting a tender.

Low voltage DC cables
DC cables shall be terminated, using high quality MC4 connectors, certified and rated at 1000V.

PSES1.18 Testing of Cables

On each completed section of laid and jointed cable, the insulation shall be tested to approval with an approved "Megger"-type instrument of not less than 500 V.

PSES1.19 Containment, Conduits and Accessories

All conduit and conduit accessories shall comply with the requirements of SANS 162 and shall bear the SABS mark.

All surface mounted conduit and conduit accessories shall either be finished in black stove enamel on the inside as well as on the outside, or shall be hot-dip galvanised on the inside as well as on the outside, depending on the circumstances. All conduit fittings shall be of heavy gauge pressed metal, zinc base alloy or die cast fittings will not be acceptable.

All conduit cast into concrete shall be of the heavy-duty type with threaded fittings. Only brass bushes and bushnuts will be acceptable.

Standard 100 x 100mm AND 100 x 50 mm Boxes
These boxes shall be heavy gauge, hot dip galvanised, pressed steel boxes, complying with SANS specification no. 518.

Cover plates
All cover plates shall comply with the requirements of SANS specification no. 518 and shall be finished in white baked enamel.

VC Insulated Conductors
These conductors shall be of high conductivity, stranded copper with polyvinyl chloride insulation of the 1000 V grade, complying with the requirements of SANS specification no. 1507, with special reference to table XX.

Cable Tray
Cable trays shall be of the heavy duty or medium duty type.

Cable trays shall be of the welded mesh type manufactured from resistance welded high tensile wire (4mm or 5 mm) with a mesh aperture of 50 mm x 25 mm.

The cable trays shall be secured on suitable lengths of P1000 channel sections, which shall be suspended from the roof slab by means of suitable lengths 8 mm ϕ threaded rods. The maximum distance between the supporting P1000 channels shall be according to the manufacturer's specification.

The threaded rods shall be secured to the roof slab with suitable sized rawl bolts and shall be secured to the channel sections by means of two nuts with washers.

After manufacture, all cable trays, accessories and hangers shall be hot dip galvanised to the requirements of SANS 763.

Cable Ladders
Cable ladders shall be of the heavy or medium duty type equal and similar to Cabstrut Powerrack cable rack.

Cable ladders shall be of the welded construction type or weld-free construction type and hot dip galvanised.

The cable ladders shall be secured:

i. on suitable lengths of P1000 channel sections, which shall be suspended from the roof slab by means of suitable lengths Ø8mm threaded rods. The maximum distance between the supporting P1000 channels shall be according to the manufacturer's specification. The threaded rods shall be secured to the roof slab with suitable sized rawl bolts and shall be secured to the channel sections by means of two nuts with washers.

ii. on suitable lengths of P1000 channel sections, which shall be supported by means of the typical cantilever arm installation according to the manufacturer's specification.

After manufacture, all cable ladders, accessories and hangers shall be hot dip galvanised to the requirements of SANS 763.

Busbars and accessories
Busbars and accessories shall be of the metal clad type, of the prescribed current rating and shall conform to the requirements of SANS 784 and SANS 1195.

The systems shall be equal and similar to the Schneider Electric Canalis system and shall be complete with all matching mounting pieces, joints, branching off, elbows, end covers, arcing shields and expansion pieces. Provision shall be made for absorption of thermal expansion to prevent damage to the busbars.

The outside finish of the systems and accessories after manufacturing shall be "Dove grey" baked enamel (colour No. G22 to SANS 1091-2004) for the "normal" busbars.

PSES1.20 Photovoltaic Panels

General
PV panels used shall be **monocrystalline** panels.

The PV modules shall be from a reputable tier 1 company. Tiering shall be according to the system developed by Bloomberg New Energy Finance.

The PV panels shall be suited to conditions on site. Special attention should be given to this in the proposal considering dust and temperature extremes that may be experienced.

Standards
The PV panels shall adhere to IEC 61215 and IEC 61730 and comply with
ISO 9001:205 Quality Management Systems.

Warranties
The PV panels shall have at least the following warranty:
25-year linear power output warranty which means a first-year degradation of less than 2,5% and thereafter less than 0,8% per year.

Product warranty of 20 years.

PSES1.21 Power Optimizers

General
The power optimizers shall be from a reputable manufacturer that offers support for their products in South Africa. The power optimizers used shall be specifically designed for use with the inverter.

One optimizer shall be frame mounted module add-on type for commercial installations.

Standards
The optimizer and inverter combinations shall adhere to IEC 62116; IEC 62109-1; IEC 61727 and NRS 097.

Warranties
The power optimizers shall have a product warranty of 25 years.

PSES1.22 Inverters

General
The inverters shall be fixed voltage string inverters from a reputable manufacturer that offers support for their products in South Africa. The inverter proposed shall be specifically designed for the photovoltaic systems and have Maximum Power Point Tracking (MPPT).

Where power optimizers are used then the MPPT can be done on the optimizers. In this case the inverter and optimizers should be designed to work together and seamlessly integrate with one another.

The inverters shall have built in surge protection on the DC inputs and communications ports and shall have rapid shutdown upon AC grid connect.

Inverters shall be able to communicate with each other in a master slave configuration using RS485 and be able to communicate with Ethernet switches or external PV system control via Ethernet.

The inverter shall have a built in DC disconnect switch.

DC inputs shall be by means MC4 connectors.

Standards
The inverter shall adhere to IEC 62116; IEC 62109-1; IEC 61727 and NRS 097.

Warranties
The inverters shall have a product warranty of at least 12 years.

PSES1.23 DC Cables

General
The cables shall be flexible 600/1 00 V AC and 900/1 500V DC grade Halogen-free cross-linked insulation and a sheath of Halogen-free cross-linked flame retardant cable suitable for internal and external PV installations.

Temperature rating of -40°C to +90°C.

Conductor temperature of +120°C.

Standards
The cables shall adhere to UL 4703, shall be tested at 6.5kV AC to BS EN 50395, ozone resistant to BS EN 50396, UV resistant to HD 605 S2 and tested for durability to EN 60216.

Other standards to adhere to:
EN 50618
TUV 2 PfG 1169/08.2007
BS EN 50288-3-7
BS EN 60068-2-78
BS EN/IEC 61034-2
BS EN 60754-1/2
BS EN/IEC 60332-1-2

Cables shall be tested in an ISO/IEC 17025 laboratory.

Construction
Conductor: Class 5 flexible tinned copper conductor
Insulation: Halogen-free cross-linked compound
Sheath: Halogen-free cross-linked flame retardant compound
Sheath colour: Black

PSES1.24 Design procedures

Helioscope or similar solar design Software will be utilised to determine the most effective position and placement of the PV panels on the unit block roofs, to eliminate shaded spots and orientations positioned to be facing as North as possible. Inverter quantities and cable sizes are then calculated accordingly, based on the PV Panel field arrangements. A report will be submitted to the Employer, by the Electrical Engineer, with the following:

The proposal shall provide the following technical data:
- kW peak DC
- kW peak AC
- All system losses in the system.
- Specific kWh yield
- Performance ratio
- Availability

The proposal shall give the following:

- Internal rate of return
- Payback period
- Exchange rates on which offer is based as at completion.
- Proportion of costs linked to relevant currency
- Price validity
- R/kWp
- R/kWh produced over 10, 20 and 25 years.

The parameters used shall be as follows:

- Blended kWh tariff of R 0,85/kWh for the first year.
- Tariff to escalate by 7% year on year.
- Rebates, incentives etc. will not be taken into consideration.
- Inflation of 6%

PSES1.25 Procurement requirements

All materials and equipment supplied under this contract shall be suitable for operation under the following conditions unless specifically specified otherwise elsewhere in this document:
High voltage system: 11 000 V, 50 Hz, 3 phase, 3 wire alternating current with solidly earthed neutral and fault capacity of 250 MVA.
Low voltage system: 420/240 V, 50 Hz, 3 phase, 4-wire alternating current with solidly earthed neutral.
Ambient temperature: Minimum: -6°C
Maximum: +40°C
Humidity: Up to saturation
Altitude: 1600m

Immediately on his Tender being accepted, the Contractor shall purchase all those materials to be supplied by him and which are in short supply or for which the delivery period for equipment may have a long lead time.

No liability or responsibility whatever shall attach to the employer for materials ordered by the Contractor except if these have been ordered in accordance with written instructions issued by the Engineer or the Employer.

System MUST be able to work without a grid connection

PSES1.26 Subcontracting – Special Conditions of Contract

No sub-Contractor shall be employed on the works who will not enter into a Contract with the Contractor upon terms and conditions consistent with those in this Contract and securing the due performance and maintenance of the Work supplied or executed by such sub-Contractor and indemnifying the Contractor against the claims arising out of the misuse by the sub-Contractor or his workmen of any portion of the Works of the Contractor in consequence of any act, omission or default of the sub-Contractor, his servants or agents and against any liability under the Workmen's compensation Act, no. 30 of 1941, and any amendments thereto or the Common Law for Personal Injury.

The Contractor shall not assign, sublet or sub-Contract any portion of the work without first obtaining the written permission of the Engineer which, if given shall not exempt the Contractor from responsibility for the complete execution of the Works in accordance with the Contract.

The Employer does not undertake any responsibility for the payment of any moneys due by the Contractor to any sub-Contractor.

PSES1.27 Testing And Commissioning

On completion the Contractor shall test and commission the complete installation in accordance with the latest edition of SANS 10142 and submit a detailed test report and a Certificate of Compliance to the engineer to be forwarded to the Client.

During commissioning, and after if necessary, the Contractor shall instruct an attendant or attendants of the Client in the operation of the installation and equipment until he/they is/are fully conversant with the operation and maintenance of the installation.

During testing and commissioning the contractor shall with the engineer verify system performance and compare it with design performance.

Testing, commissioning and documentation shall be in line with IEC 62446.

Include flash tests and thermal imaging of the completed installation.

C3.2.3 : PARTICULAR SPECIFICATIONS

In addition to the General, Standardized and Variation Specifications the following Particular Specifications / Policies shall apply to this contract:

C3.2.3.1 GENERIC LABOUR-INTENSIVE SPECIFICATION (PLI)

C3.2.3.2 OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

C3.2.3.3 ENVIRONMENTAL SPECIFICATION (PZ)

C3.2.3.1 GENERIC LABOUR-INTENSIVE SPECIFICATION (PLI)

PLI 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

PLI 2 PRECEDENCE

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.

PLI 3 HAND EXCAVATABLE MATERIAL

Hand excavatable material is material:

(a) Granular materials:

(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.

(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; requires 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.

PLI 4 TRENCH EXCAVATION

All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

PLI 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 come 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.

PLI 6 EXCAVATION

All hand excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand. The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

PLI 7 CLEARING AND GRUBBING

Grass and small bushes shall be cleared by hand.

PLI 8 SHAPING

All shaping shall be undertaken by hand.

PLI 9 LOADING

All loading shall be done by hand, regardless of the method of haulage.

PLI 10 HAUL

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.

PLI 11 OFFLOADING

All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage.

PLI 12 SPREADING

All material shall be spread by hand.

PLI 13 COMPACTION

Small areas may be compacted by hand provided that the specified compaction is achieved.

PLI 14 GRASSING

All grassing shall be undertaking by sprigging, sodding, or seeding by hand.

PLI 15 STONE PITCHING AND RUBBLE CONCRETE MASONRY

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must to 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.

PLI 16 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 320 kg. In addition, the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper handhold on them.

C3.2.3.2 OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

FOR

Tender No. MISA/NC/PWS/021/2023/24

THE PROVISION OF POTABLE WATER SUPPLY TO THE SETTLEMENTS OF FARM PNIEL 281, BARKLEY WEST IN THE NORTHERN CAPE

MANAGED ON BEHALF OF

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT (MISA)

(THE "CLIENT")

KEY ROLE PLAYERS

CLIENT

Principal Agent: _____

Civil Engineer _____

Quantity Surveyor _____

Land Surveyor _____

Mechanical Engineer _____

Environmental Control Officer _____

Health and Safety Agent _____

PRINCIPAL CONTRACTOR

Contracts Manager _____

Site Agent _____

H&S Officer _____

Other: _____

TABLE OF CONTENTS

Initials:_____

ANNEXURES

ANNEXURE A: EXAMPLE HEALTH AND SAFETY AUDIT DOCUMENT

ANNEXURE B: CLOSE OUT REQUIREMENTS

ANNEXURE C: NON-CONFORMANCES

ANNEXURE D: CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

ANNEXURE E: RISK ASSESSMENT FORMAT

ANNNEXURE F: BILL OF QUANITITIES FOR OCCUPATIONAL HEALTH AND SAFETY

ANNEXURE G: HEALTH AND SAFETY (H&S) PRE-TENDER REPORT

ANNEXURE H: TENDER STAGE OHS PLAN EVALUATION

ANNEXURE I: MANDATARY AGREEMENT

1. LIST OF ABBREVIATIONS

MISA	Municipal Infrastructure support Agent
AIA	Approved Inspection Authority
BoQ	Bill of Quantities
CC	Compensation Commissioner
CR	Construction Regulations
DMR	Driven Machinery Regulations
DoL	Department of Labour
FEMA	Federated Employers Mutual Association
GAR	General Administration Regulations
GSR	General Safety Regulations
HCSR	Hazardous Chemical Substances Regulations
HIRA	Hazard Identification Risk Assessment
H&S	Health and Safety
ER	Engineer's Representative
LI	Labour Intensive
OH	Occupational Health
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
SANS	South African National Standards (Authority)
MSDS	Material Safety Data Sheet
SMME	Small, Micro, Medium Enterprise
SWP	Safe Work Procedure

2. DEFINITIONS

The definitions used will be those set out in the Construction Regulations, Gazette No 37305 of 7 February 2014 which are hereunder further emphasised with the following additions:

Client: MUNICIPAL INFRASTRUCTURE SUPPORT AGENT (MISA)

Construction Site: Means a workplace where construction work is being performed

Construction Supervisor: Means a competent person responsible for supervising construction activities on a construction site

Designer: Means a competent person appointed by the Client as Agent to design, supervise and monitor construction on their behalf.

Fall Risk: Means any potential exposure to falling either from, off or into

Hazard: Source of or 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.

Health and Safety Agent:

Means any competent person who acts as a representative for the Client in managing the projects health and safety and who is registered with the South African Council for the Project and Construction Management Profession (SACPCMP).

Health and Safety Plan:

Means a site, activity or project specific documented plan in accordance with the Clients Health and Safety Specification.

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.

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.

Temporary Works: Means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work

The Act: Means, unless the context indicates otherwise, the Occupational Health and Safety Act, No. 85 of 1993 and Regulations promulgated thereunder, as amended.

3. KEY REFERENCES

The following key references apply to the specifications:

- Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)
- Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)
- SANS Code 1921-6
- SANS Code 1200

4. INTRODUCTION

MISA is responsible for the provision of adequate and reliable potable water and sanitation services within the district and takes cognizance that its current scope of works pose inherent risks to the health and safety of its agents and members of the public.

Each year fatalities, serious injuries and poor attitudes of Contractors mar the reputation of the Construction Industry. MISA has a responsibility to limit its risk by ensuring a zero tolerance and better practice approach to Contractors and those affiliated to a particular project. Thus a high premium is placed on the health and safety (H&S) of MISA stakeholders, which include its employees, professional service providers, public and its physical assets. The responsibilities that the MISA and relevant stakeholders have toward its employees are captured in, but not limited to this document. The responsibilities stem from both moral, civil and a variety of legal obligations. The Principal Contractor is to take due cognisance of the above statement.

MISA, as the Client and where there is an appointed H&S Agent on its behalf, shall provide a project specific Health & Safety Specification (PSHSS) for the project and provide the Principal Contractor/s making a bid or appointed to perform construction work for the project, or parts thereof.

4.1 Purpose of the Project Specific Health and Safety Specification (PSHSS)

The PSHSS is a performance specification to ensure that the Client and any bodies that enter into formal agreements with the Client viz. Agents, Professional Service Consultants (Engineers, Quantity Surveyors and Land Surveyors), Principal Contractors and Contractors achieve an acceptable level of OHS performance. No advice, approval of any document required by the PSHSS, such as hazard identification and risk assessments, or any other form of communication from the Client shall be construed as acceptance by the Client of any obligation that absolves the Principal Contractor from achieving the required level of performance and compliance with legal requirements. Furthermore, there is no acceptance of liability by the Client, which may result from the Principal Contractor failing to comply with the PSHSS, i.e. the Principal Contractor remains responsible for achieving the required performance levels.

A Mandatary Agreement in terms of Section 37.2 of the OHSA will be signed between parties prior to any works commencing. The PSHSS 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, or during the construction phase. Any new legislation or standards (legislated, or determined by MISA) that are promulgated or accepted during the contract will automatically be applied.

Environmental management shall receive due attention as per the requirements of the Environmental Control Officer (ECO) but will be managed by the ECO directly.

4.2 Implementation of the Project Specific Occupational Health and Safety Specifications (PSHSS)

The 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.

This specification must be read in conjunction with the OHSA, 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. are detailed in the tender, are to be considered when developing the H&S plan and associated documentation.

The OHSA S.37.2 Mandatary Agreement must be fully completed by the PC, supplied by the Client. These documents shall be deemed to form part of the returnable Contract Documents. No work may commence without written approval of the H&S plan by the H&S Agent, or the responsible person in the MISA.

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 similar information must be provided as it applies to the works to all their Contractors, within 5 working days following notification thereof. The H&S Agent will visit the project as deemed necessary by the Designer and

the H&S Agent to ensure compliance and limit risk. All activities on the site and all appropriate documentation will be monitored and reported on to the Client and the Designer.

Non-conformances will be issued and penalties or work stoppage will be issued where appropriate. Communication between the H&S Agent and the PC will be through the Designer (or Client's responsible person) as determined at the commencement of the project.

4.3 Requirements at Tender Stage

Tenderers are required to undertake to employ as part of the project team a Health and Safety Officer for the duration of the contract. The Health and Safety Officer shall be registered with SACPCMP and shall be responsible for dealing with all OHS requirements on the project including preparation of the project specific OHS Plan. Items are included in the schedule of quantities for pricing for this requirement.

The OHS Officer to be employed shall also declare as part of the tender submission his acceptance of the appointment should the contractor be awarded the tender. Copies of the proposed OHS Officer's qualification, ID document and proof of registration with SACPSPM shall be included in the tender submission as part of the returnables. This declaration by the Tenderer and the OHS Officer is to be made on **Form I** of the returnables Part T2.

Tenderers are to note that that failure to declare and to submit the documentation as detailed above shall retender the submission nonresponsive to the requirements of the tender procedures hence the tender offer shall not be considered for evaluation.

5. GENERAL REQUIREMENTS

5.1 Summary of Risks identified during Design

The intention of the summary of findings from the design risk assessment is to highlight the residual risks identified during the design phase. The summary of risks provided is to point the contractor towards some risks he may not be aware of during tendering stage and while developing his formal risk assessments for the project.

The design risks and the management thereof should be included in the Principal Contractors (PC) risk assessments. Where there are other Contractors appointed to do work, the PC is to ensure that Contractors include such information in their risk assessments.

The Contractor is herein advised that no other residual risks remain which the designers judged as significant and unusual other than those risks that a competent Contractor can reasonably be expected to know or deduce from the documents prepared for this project and supplied to them.

5.2 Specified Hazardous Chemical Substances

The following lists of products or substances are those which have been identified as likely to be used on the project. This list is not inclusive and other products may be considered. Where the PC is likely to supply the product as the product has not been specified, material safety data sheets (MSDSs) need to be considered prior to all selections.

PRODUCTS or SUBSTANCES	POTENTIAL HEALTH OR OTHER RISKS
Cement	• Hand mixing may occur, 50kg bags are an ergonomic risk from handling. • Pumping of concrete may produce extensive vibration, extended hours of work, and potential eye, skin and respiratory irritant from dust exposure, chromates.
Cement/Silica dust	Caused by cutting, grinding, sanding of any concrete/granite/tiled surface/masonry resulting in occupational respiratory health illness or disease
Petrol/diesel/lubricants	Potentially a fuel bowzer on site. Fire, spillage, fumes
Adhesives	Used as a bonding agent and may result in contact Dermatitis and occupational respiratory illness or disease from prolonged exposure
Plaster/mortar/screeds	Contact with products may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure
Sealants/joint fillers	Contact with products may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure
Welding fumes	Inhalation of fumes may result in occupational respiratory illness or disease from prolonged exposure
Lime	The product is classified an irritant, irritating the respiratory system, skin and risk of serious damage to eyes. In contrast to the powder itself, the product, when diluted with water, can produce severe skin damage in humans, (*alkaline burns*), especially if prolonged skin contacts takes place.
Paints	Contact with different paints may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure

6. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

6.1 Structure and Organization of H&S Responsibilities

6.1.1 Notification of Commencement of Construction Work

The Client shall notify the Provincial Director of the Department of Labour (DoL) in writing, in the form of the Annexure 1 in the CRs for all projects requiring a work permit in terms of CR 3.

The PC who intends to carry out any construction work other than work noted in CR 3 shall notify the Provincial Director in writing in the form of the Annexure 2. This shall occur after the award of the contract, but before commencement of construction work. Proof of submission and/or receipt must be provided and kept in the H&S file. 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 H&S Agent, or the Client.

Where changes to the conditions given in the submission are required (i.e. Contractors, completion dates, increase in workers), a revised Annexure 1/2 must be submitted to the Department of Labour. The completion date is to include the defect and liability period. A copy of the notification form and any further submissions/correspondence must be kept in the H&S file.

6.1.2 Health and Safety Plan Framework

The H&S 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 an 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 play a role in reducing the overall risk of a particular activity, or section of the project. The H&S Agent may from time to time request additions or systems as they relate to the works or legislative requirements at the time.

The PC is to prepare a site layout drawing to indicate at least the following:

- The positions of site offices of all Contractors, toilets, drinking water and worker rest areas;
- Indicate the positions of emergency personnel and equipment (fire, first aiders, first aid posts);
- Protection of plant and pedestrians, indicate parking, and
- Storage areas (materials and equipment, waste etc.)
- Access and egress to site for deliveries and intended temporary traffic management
- Emergency assembly point

Such layouts are to be updated regularly throughout the project.

6.1.3 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 Contract Manager (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 appointed H&S 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 H&S Officer.

The Occupational Health and Safety Plan shall include the following, but is not limited to the following key appointments:

6.1.4 Construction Supervision

Competent supervisors will be appointed to manage part or all of the works and have training and/or experience in the area of responsibility. All site supervisors must show evidence of appropriate training in H&S, and an understanding or training in areas of responsibility (i.e. risk assessments, method statements etc.).

Curriculum Vitae (CVs) are to be submitted for approval by the Designer, and/or Client. The Supervisor will be held responsible for the safety of working teams and subordinates, housekeeping and stacking and storage of materials.

6.1.5 Construction Health and Safety Officer

The PC will employ at least one competent, full-time or part time H&S Officer for the duration of the contract depending on the nature of the hazards on site and subsequent risks. The H&S Officer's CV is to be submitted for approval by the H&S Agent or the Client, at time of tender. 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/NEBOSH/Diploma in H&S qualifications or similar together with additional appropriate short courses (i.e. Fall Protection Developer, Risk Assessor, Basic Firefighting and First Aider Level 1) with exposure to civil engineering and building that is appropriate given the level of project complexity and registration with SACPCMP. An in-depth knowledge of legislative requirements and the application thereof is required. The site supervisor may not act as the H&S Officer.

The H&S 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 H&S 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 H&S Officer.
- The H&S Officer/s may not be removed or replaced without the approval of the H&S Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

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 H&S Agent/Client and the H&S Officer. An example of the monthly report is attached as an *Annexure D*.

The H&S Officer will be responsible for collating the H&S documentation at the close out of the project in electronic format. A list of the typical aspects that should be provided is available as *Annexure B* to this document. The PC is to ensure that all Contractors documentation follows the same requirements and closed out H&S documentation must be completed and be available with the close out of the main contract. Failure to do so will be considered a serious offence and penalties applied.

6.1.6 Traffic Safety

The H&S Officer will be responsible for ensuring that daily traffic management is adequately managed and additional care must be taken where workers and public interface.

No worker may be transported in, or on the rear of construction vehicles (bakkies included), or with plant and materials to, on, or from site. The number of passengers in any vehicle is limited to what is stated on the license disc. Vehicles used to transport workers to, from, or on site, shall have secure seats and be covered. No canopies may be used.

Tenderers must indicate in their OHS plans what type of transport is envisaged and how this will be managed.

Penalties will be issued for non-compliances noted.

6.1.7 Health and Safety Representatives and H&S meetings

H&S Representatives representing workers and Contractors are to be appointed following the startup of the project, irrespective of the number of workers on site. The appointed H&S Representatives are to be actively involved with H&S and will assist the H&S Officer and site management in meeting legislative duties.

The H&S Officer shall further ensure that H&S is discussed at all internal production or progress meetings. Issues arising from the H&S Agent audits are to be discussed, as well as all H&S related issues.

Minutes are to be kept for all H&S interventions and meetings. Failure to do so will be deemed to be a moderate offence.

6.1.8 Appointment of Competent Contractors

The Principal Contractor is to ensure compliance with the Clients 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 H&S Officer is to ensure a Contractors appointment and approval of H&S documentation at least seven (7) working days prior to commencing work.
- No Contractor may work under the PCs 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 Mandatary 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 H&S Officer is to ensure the level of H&S documentation is appropriate:

- Mandatary 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
    - Material Safety data sheets (MSDSs)

Failure to provide written approval of H&S documentation will be considered a serious offense, and could result in aspects of, or all the activities being stopped and penalties implemented.

7. GENERAL RISK MANAGEMENT

7.1 Health Risks and Medical Surveillance

The appropriate MSDSs are to be obtained for all products and used to develop the H&S documentation as they relate to the works. Many of the processes may be labour intensive and ergonomic risks are to be noted. All workers (including Contractors) are to be included in the medical surveillance programme.

Workers will be exposed to noise, dust, and physical risks from extended periods of work of a repetitive nature, materials specified and the general nature of the works.

All workers (including those of Contractors) are required to be in possession of a medical certificate of fitness prior to commencing work.

Full medical records are not to be placed in the H&S file. 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); and
- Any other tests identified as relevant from chemical or specifically identified risks of exposure

Failure to do so will be considered a serious offence.

7.2 Noise Risks

All plant from plant hire companies (suppliers) or that of the PC is to be compliant with the Noise Induced Hearing Loss Regulations. Plant identified that has not been tested and marked for noise emissions will result in having to be tested at the Contractors or PCs expense. Failure to do so within a reasonable time period will result in such plant being removed from site.

Audiometric testing of all workers is noted as required in the medical surveillance programme for all permanent workers prior to work commencing. Temporary labour working in identified noise areas will require testing if the noise levels are indicated on plant or through processes as greater than 85dB. Audiometry records are to be available in the H&S file.

Suitable SANS approved hearing protective equipment shall be issued and worn where noise levels are identified as equal to or greater than 85 dB.

Failure to do so will be considered a serious offence.

7.3 Emergency Procedures

A simple emergency plan and procedure that is appropriate to the risks 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.

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
  - Site Camp Fire;
  - Public injury, Motor vehicle accidents;
  - Falls from heights;
  - Serious injury to workers (medical or work-related); and
  - Any other major risks identified during risk assessments

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 general principals of emergency management are to be applied as it applies to the hierarchy of control and management.

7.4 First Aiders and First Aid Equipment

At least 1 first aider will be trained to Level 3. First aiders shall be available and accessible on site at all times, and be able to work as a team when responding to any emergency on the project.

Contractors are expected to ensure compliance and provide/manage their own first aiders and equipment. The number of First aiders will be determined by the complexity and exposed risks of the project, not numbers of workers

Appropriately stocked first aid kits are to be available at all times and to assure continual availability and access on site.

7.5 Fires and Emergency Management

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.

7.6 Incident Management and Compensation Claims

All incidents and accidents are to be investigated. All serious incidents involving any form of disabling injury or fatality are to be reported to the Designer /Client /H&S Agent immediately. This shall be confirmed in writing following the incident. Full details are to be included in each site meeting or when the Client visits site. A summary of incidents is 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.

7.7 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:

- Hard hats;
- Protective footwear;
- Overalls that ensure worker visibility;
- Eye protection;
- Hearing protection;
- Reflective jackets (no bibs)
- Respiratory protection (minimum of FF2), and
- Any other necessary PPE identified from MSDSs and/or risk assessments.

Adequate quantities of PPE shall be available. This shall include necessary PPE for visitors. The procedure for managing PPE is to be in a formal procedure submitted with the H&S plan for approval.

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.

Failure to comply will result in penalties being applied.

7.8 Occupational Health and Safety Signage

On-site H&S signage is required. Signage shall be posted up at fixed or temporary working areas, or other potential risk areas/operations. 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/temporary signage is required.

Temporary signage is to include (*but not be limited to*) the following:

- ‘Report to site office’/ ‘Warning: Construction Site – Keep out’ or similar;
- ‘Site office’ (if relevant);
- ‘hard hat area’ or other PPE requirements noted;
- First aid box positions (*including vehicles*); and
- Fire extinguishers.

Signs shall be posted at areas of work on site indicating that a construction site is being entered and that persons should take note of H&S requirements.

Failure to comply will result in penalties being applied.

7.9 Induction of Employees and Visitors, General H&S Training

A simple, 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 (*including Client, Designers*) to the site.

Pre-task training is required to ensure 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. A record of inductions and pre-task training is to be kept in the H&S file.

Any person found on site without proof of induction will be removed from site until the proof is supplied and, and a penalty issued per non-compliance.

7.10 Management of Plant and Equipment

Close control of 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 H&S Agent's/Client audit. All daily inspection records are to be kept in the H&S file or Contractors where plant and equipment is brought onto site. Registers are not to be more than 1 week behind.

Only competent, medically fit plant operators are to be used. Medical certificates of fitness are required for all operators. Any plant or slings used to lift plant or material require annual load testing by an AIA, and all certificates must have the testers LMI/E number. Operators are to be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the H&S file.

Failure to do so will be considered a serious offence.

7.11 Excavations

A procedure for managing excavations is to be provided as an addendum to the H&S plan describing how excavations are to be managed.

Excavation method statements are to be approved by the Designer and associated risk assessments are required. Designs by competent persons are required where ground conditions are deemed to require shoring.

A competent person is to be appointed for managing all excavations. A permit system is to be available and used for all excavations. All equipment and ground conditions are to be checked daily and prior to work commencing.

Excavations should preferably not be open beyond what can be closed daily. Where excavations need to remain open, all excavations are to be properly protected. Adequate stakes with 1m high demarcation and berms/spoil are required to be a safe distance from the edge of the angle of repose. Danger tape may not be used to demarcate excavations. Cognisance is required of the surrounding area and increased levels of protection are required where work is in the vicinity of members of the public.

Work will be stopped and penalties applied to any work in excavations that is not compliant.

7.12 Working at heights

A Fall Protection Plan (FPP) is to be available and supplied as an addendum to the H&S plan. The FPP 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 engineer (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 50355
- SANS 50361
- SANS 50355

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 by and work managed by a competent person for the duration of the project. The following aspects must be included:

- The public 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.

7.13 Cranes and lifting equipment

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.

7.14 Temporary Works (Scaffolding, support work, formwork)

Temporary works must be properly designed and signed off by a competent person who has sufficient experience in the design of the type of temporary work in question to be able to assess the design. The appropriate competent persons are to be appointed to manage and monitor such works to the satisfaction of the Engineer and H&S Agent. Records and registers are to be properly completed and kept in the H&S file. If temporary works are to be erected by a Contractor, this must be notified to the Designer/H&S Agent.

Failure to do so will be considered a serious offence.

7.15 Auditing

Frequency of external auditing by the H&S Agent or Client will be as agreed with the Client and Designer but will at least conform to the requirements of the Construction Regulations. The site will be inspected and the documentation audited relative to the activities and H&S plan. The H&S Officer of the PC must accompany the Client, or the H&S Agent, on all audits and inspections. Not all audits will be, or need be announced.

The PC will ensure that all their Contractors are audited at a frequency determined by the H&S Agent or Client. Audit frequency may be increased if Contractors are not performing adequately. Audit results will be acted upon and non-conformances and penalties issued where deemed appropriate. The Client, Designer or H&S 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. Comprehensive audit reports are to be made available, the format of the audit reports is to be acceptable by the H&S Agent.

The PC will be audited using a template as supplied in the tender document. The audit template will be adjusted from time to time relative to the activities on site. A similar process is to be used by the PC when auditing their Contractors on site. Compliance with legislative requirements and

the systems provided by the PC to manage the H&S on site will be measured. Full compliance is required. Time limits for corrective actions will be set and must be adhered to.

Failure to address findings or non-conformances will be considered a serious offence.

7.16 Mechanical installations

All mechanical installations are to be carried out in conformity with the manufacturer's instructions. Method statements and risk analyses must be compiled for each type of installation. A competent person must be designated to supervise the work.

7.17 Communication on Site

All H&S communication during the project between the H&S Agent and the PC will be done through the Engineering Consultant 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.

7.18 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. Hand washing facilities will be provided. Arrangements made where existing facilities are shared with existing users must be made in writing and placed in the H&S file.

Failure to ensure compliance will be considered a serious offence.

7.19 Discipline, Alcohol and Substance Abuse

All employees (management included) are to follow instructions given in the interest of H&S. A disciplinary procedure is to be developed and 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 Engineer.

7.20 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 shell 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. Method statements and safe work procedures will be required for all work involving electrical apparatus.

7.21 HIV and AIDS Programme

The PC shall reduce the risk of transfer of HIV between and amongst construction workers and the local community, raise awareness amongst construction workers of the risk of infection with HIV, promote early diagnosis and assist affected individuals to access care and counselling by:-

- making condoms that comply with the requirements of SANS 4074 available for the duration of the contract to all construction workers at points on the site which are readily accessible and suitably protected from the elements
- either by placing and maintaining HIV/AIDS awareness posters of the size not less than an A1 in areas which are highly trafficked by construction workers or providing construction workers with a pamphlet in languages largely understood by the construction workers which reinforces the outcomes of the HIV/AIDS awareness programme
- encouraging voluntary HIV/STI testing
- providing information concerning counselling, support care of those that are affected

7.22 Safety Conflict

Where any conflict exists between the requirements of this PSHSS, the Site Rules or Statutory Requirements/Regulations the higher standard must apply unless such conflict is brought to the attention of the Client or H&S Agent and a direction provided. The PC is deemed to have allowed for the higher standard.

The PC is legally responsible for ensuring that he conforms to all applicable aspects of the Occupational Health and Safety Act 85/1993 and Regulations (OH&S Act) and other relevant Acts and Regulations. If in dispute with the PSHSS and other legislation the most stringent requirement must apply.

8. 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*) as part of the index:

- The PSHSS;
- The H&S Plan and the approval by Client;
- 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, Mandatories etc., H&S specifications issued;
- Record of Competencies (CVs) and appointments;
- Training Records;
- Permits;
- Method statements;
- Risk assessments;
- Safe work procedures;
- Emergency and injury management;
- Material Safety data sheets
- Medical surveillance records;
- Registers; and
- Records of audits, minutes etc.
- Plant lists
- Temporary electrical installations
- Employee records (*who is on site*)

9. NON-CONFORMANCES

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or non-compliance with the Clients or PCs H&S Plan; neither the PC nor any other Contractor shall have a claim for extension of time or any other compensation.

The following non-conformances will attract the following penalties:

Minor: **Penalty: R50/count**	**Medium:** **Penalty: R500/count and a non-conformance**	**Severe** **Penalty: R5000/count, a non-conformance and/or activity stoppage**
Non-use of PPE supplied	Toilets not supplied or regularly serviced; lack of drinking water	Contractors working without Health and Safety Plan approval
Non completion of registers for plant and equipment on site	Contractors 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, approved 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	Non-compliance with traffic accommodation requirements: layout or physical conditions
	No monthly OHS report at site meeting to report on	Any serious breach of legal requirements
	No certificates of fitness for workers as required	
	Working without approved method statements	

9.1 Failure to Comply with Provisions

Failure or refusal on the part of the PC or their Contractors to take the necessary steps to ensure the safety of workers and the general public in accordance with these specifications or as required by statutory authorities or ordered by the Principal Agent (PA), shall be sufficient cause for the PA to apply penalties as follows:

(i) A penalty as shown in the Table above shall be deducted for each and every occurrence of non-compliance with any of the requirements of the PSHSS.

(ii) In addition a time-related penalty of R500,00 per hour over and above the fixed penalty may be deducted for non-compliance to rectify any non-conformance within the allowable time after a site instruction to this effect has been given by the PA. The site instruction shall state the agreed time, which shall be the time in hours for reinstatement of the defects.

Should the Contractor fail to adhere to this instruction, the time-related penalty shall be applied from the time the instruction was given.

10. MEASUREMENT AND PAYMENT

The payment items for Occupational Health & Safety are contained in the Bill of Quantities. The same rules are applicable in respect of the pricing of these items as for every other payment item. Attention is drawn to the Pricing Instructions in this document.

Item and Unit

C.01 Preparation of Contractor's Project Specific Health and Safety Plan. (Lump Sum (L.S))

The rate for this item must cover all expenses incurred in preparing the Contractor's project specific Health and Safety Plan as required by the Client's project specific Health and Safety Specification in this document.

C.02 Principal Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations. (Lump Sum (L.S))

The full amount will be paid in one instalment only when the Client's Agent has verified and approved the following

(a) The Principal Contractor has notified the Provincial Director of the Department of Labour in writing of the project, Annexure 2 to the Regulations.

(b) The Principal Contractor has made the required initial Appointments of Employees and Contractors.

(c) The Client has approved the Principal Contractor's project Health and Safety Plan.

(d) The Principal Contractor has set up his Health and Safety File.

C.03 Principal Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations. (Month (Mth))

The amount shall represent full compensation for that part of the Principal Contractor's general obligations in terms of the Occupational Health and Safety Act and Regulations which are mainly a function of time. Payment will be made when the Client's Agent has verified the Principle Contractor's compliance as part of the audit. This will include the updating and administration of the Health and Safety file.

C.04 Provision of Personal Protective Equipment (PPE) as listed in the Bill of Quantities. (Number (No))

The rates for these items shall include for the procurement, delivery, storage, distribution and all other actions required for the supply of PPE to the employees of the Principle Contractor, full or part time, requiring them. Sub-Contractors are responsible for their own costs in this regard. Any items of PPE not included on the list will be paid for only after the PA has agreed to their acquisition.

Items listed will include, among others which may be noted, are: hard hats, reflective vests, high visibility overalls, protective foot wear, fall arrestor harness, gloves, ear muffs, earplugs and dust masks of appropriate type. Normal items such as standard overalls, waterproof clothing, gum boots and standard workshop safety equipment such as welding masks and goggles will not be paid for.

Payment will be based on the issues register for PPE as kept by the Construction Health and Safety Officer, backed up by paid invoices if requested.

C.05 Provision of a Full/Part Time Construction Health and Safety Officer (Month)

The Tender sum shall include for the cost of a Construction Health and Safety Officer on a fulltime or part time basis.

C.06 Costs of Medical Surveillance (Unit (No))

This item shall cover all costs in involved in the obtaining of baseline medical examinations of temporary labour, including operators for mobile plant as contemplated in CR 23(d) (ii); for temporary workers and workers exposed to noises at or above the limits given in the Noise-induced Hearing Loss regulations, as stipulated.

Workers in the permanent employ of the Contractor will only be paid for if their certificates require updating.

C.06 a) Initial (baseline) medical examinations, including audiometric and lung function testing.

C.07 Induction Training (Unit (No))

This item shall cover all costs incurred for the health and safety inductions as set out in Regulation 7 of the Construction regulations and the proof of induction required. Payment will be made on the figures contained in the induction section of the Health and Safety File.

C.08 Provision of First Aid Boxes. (Unit (No))

The rate for this item shall cover all costs incurred in the provision and maintaining of first aid boxes.

C.09 Establishment of noise levels (Unit (No))

This item shall cover all costs involved in the establishment of noise zones in terms of Regulation 9 of the Noise-induced Hearing Loss Regulations. Where a zone has previously been established for a particular item of plant within the last two years, the test need not be repeated but must be kept valid for the duration of the Contract.

C.10 Submission of the Health and Safety File. (Lump Sum)

Expenditure under this item shall be made in accordance with the general conditions of contract.

This amount will be paid only once the Principal Contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client's satisfaction. This must be done prior to the issue of a Certificate of Completion

ANNEXURE A

H&S AGENT AUDIT SHEET

EXAMPLE OCCUPATIONAL HEALTH AND SAFETY AUDIT DOCUMENT

PROJECT NAME:	
CONTRACT NUMBER:	
HEALTH AND SAFETY AUDIT No:	
CONDUCTED BY :	
DATE :	

EXECUTIVE SUMMARY

INTRODUCTION AND OVERVIEW

Scoring:

The audit has a scoring schedule, which will be used to deem compliance to what is available on site, and what the appropriate systems need to be to match them. The contractor should aim for a score of 3 on each aspect included in the audit. A low score could result in part or all of the work being stopped until compliance is reached.

Scoring schedule	
If the answer is **"No"** the rating will be 0	
If the answer is '**not applicable'** it will be noted as n/a	
If the answer is **"Yes"** the following ratings are applicable	
1	Requirements partially met and no implementation.
2	Requirements partially met and partially implemented
3	Requirements fully met and partially implemented
4	Requirements fully met and fully implemented
5	Requirements and implementation exceeds expectation

Key Abbreviations:

Health and Safety	H&S	Driven Machinery Regulations	DMRs
Occupational Health	OH	Regulations for Hazardous Chemical Substances	RHCSs
Construction Regulations	CRs	Pressure Equipment Regulations	PERs
General Safety Regulations	GSRs	General Administration Regulations	GARs
Explosive Regulations	ERs	South African National Standards	SANS
Noise Induced Hearing Loss Regulations	NIHLs	South African Road Traffic Safety Manual	SARTSM
Facilities Regulations	FRs		
South African Bureau of Standards	SABS		
Occupational Health and Safety Act	OHSA		

Provide a summary of site inspection, significant findings of the site inspection and the audit.

CORE LEGAL RECORDS ON SITE:

This list in not conclusive – to be updated monthly relative to works in progress. However the H&S Officer is to be pro-active and pre-empt requirements with the Construction Supervisor (Site Agent). The content will be linked to the physical conditions, processes and activities noted on site, or programme.

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
1.		Updated project **H&S Organogram**					
2.	OHSA S. 16 (1) and (2)	CEO and subordinate (if required) • Proof of Competency provided					
3.	CR 8 (1) and (2)	Designation of Construction Manager and Subordinate Person(s) • Proof of Competency provided					
4.	OHSA S. 17; GAR 7	• H&S Representatives appointed • Monthly inspections completed					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		• Representation from Contractors					
5.	OHSA S. 18; GAR 5	• H&S Committee appointed • Minutes on file • H&S representatives reports discussed • Incidents discussed • Signed by Chair • Evidence of minutes noted					
6.	GAR 4	Copy of OH&S Act (Act 85 of 1993) available on site					
7.	CR 5(j); 7(c)(iv)	Written proof of registration / **Letters of good standing** available on Site					
8.	OHSA S.37.2	**Copy of the Mandatary (S37.2) agreement between the PC and Client**					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
9.	OHSA S.37.2	**Mandatary agreements** between PC and contractors					
10.	CR 3(1); 4(1)	**Notification to Provincial Director – Annexure 1/2** Available on site					
11.	CR 5(1)(m) 7(1)(b)	• Copy of Principal Contractor's Health & Safety Plan Available on request. • Letter of approval from Agent. • Health & Safety File opened and kept on site (including all documentation-required in respect of the OHSA & Regulations) • Available at all times					
12.	CR 7(1(b)	**Copy of Principal Contractor's Health & Safety File provided to Contractors** • Letters of approval for each contractor on file • List of Contractors on site • Verified monthly by Agent					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
13.		**Copies of technical method statements** approved by Designer • Register available, signed by Designer					
14.	CR 9(1) OHSA CR 9(3)	**Risk Assessments**: • Up to date and available on site for inspection • Review and monitoring programme adhered to • Workers trained in risk assessments					
15.	CR9(1)(c)	**Safe work procedures** **Procedure** • List of available SWPs • Workers trained in SWPs • Proof of training verified					
16.	OHSA	**Induction programme available**					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
	S. 13 CR 7(5)(6)	• Proof of **induction** training available					
17.	CR 6(1)(2)	**Structural information from Designer**: • Geo-science technical report • Design loading of the structure • Methods & sequence of construction • Design risk assessment • Amended H&S Specification • Temporary Works Design					
18.	CR 12(1)(3)	**Temporary Works** • Appointment of temporary works designer • Proof of Competency provided • Approved temporary works drawings • Temporary work inspection register • Competencies of erectors of temporary works • Construction method statements					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
19.	CR 13(1)(2)	**Excavations:** • Competent persons appointed • CVs available • Depth of excavations on site • Shoring in use • Registers in line with open excavations noted at site inspection					
20.	CR 13(f) GSR 13A	**Ladders**: • Competent person appointed • Registers kept • Registers for ladders noted on site					
21.	CR 16(1)	**Scaffolding: SANS 10085** • Competent Erector(s) and Inspector appointed • Proof of Competency provided • Registers in place					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
22.	CR 23	**Construction Vehicles:** • Appointment of competent operators • Plant Management: • Registers on file noting daily inspections • Plant and machine lists available • Inadequacies noted on site • Transportation of workers • Registers for sample of vehicles noted on site					
23.	CR 24	**Temporary Electrical Installations and Machinery** • Competent Person appointed • Proof of Competency provided • Updated weekly installation inspection registers in place • Updated daily inspection registers in place					
24.	CR 25	**Flammable Liquids:** • Competent Person appointed for inspections					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		• Proof of Competency provided • Inspection registers in place					
25.	CR 27, ER 6 GSR 8	**Housekeeping, Stacking & Storage Supervisor:** • Appointed per work area • Proof of Competency provided • Include site conditions • Spoil areas • Register available per area					
26.	GSR 2	**PPE:** • included in Risk Assessment • PPE used and enforced • Records of Issue kept • Training to use (Induction) • Registers for condition checks					
27.	RHCSs CR 7; 23	**Hazardous Chemical Use and Storage**					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
	GSR 4	• Competent Person/s appointed • Proof of Competency provided • Risk Assessments include use of HCSs • Register of HCS kept/used on Site • Flammable Store • Bulk diesel storage • Material Safety Data Sheets on file and utilised • Other					
28.	GSR 3	**Emergency management:** • First aiders available through project • Level 1 • First aid boxes through site • Evacuation procedures • Registers available (noted on site)					
29.	GAR	**Incident Management:** • Emergency co-ordinator appointed • Proof of Competency provided • Emergency plan appropriate					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		• Emergency level included in Risk Assessments • Workers trained • Incident reports available and complete					
30.	CR 1 (g), 7(8)	**Medical Surveillance Programme** • All employee records					
31.	CR 30/ FRs	**Welfare Facilities:** • Toilets available where crews are working/clean • Clean potable water available • Adequate eating facilities					
32.	SANS 1921-6	**HIV AND AIDS PROGRAMME** • HIV and AIDS Policy and plan available • Condoms available • Peer review programme available • Ongoing training of workers					

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
29.		**Other**					

RESPONSIBILITY	SIGNATURE	DATE
H&S AGENT SIGNATURE:		
PC SIGNATURE:		
DESIGNER SIGNATURE:		
CLIENT SIGNATURE:		

ANNEXURE B

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) List of all employees employed on a permanent or contractual basis over the duration of the contract
f) Notification to Department of Labour of commencement of work
g) Letters of Good Standing for the Project
h) Full files for all Contractors as well as their close out reports
    - List of Contractors
    - All employees employed on a permanent or contractual basis over the duration of the contract
    - Letters of Approval of Contractors
    - Mandatary Agreements
    - Letters of Good Standing
    - Appointments
i) Incident Records
j) Non- Conformance records
k) Agent's Audits
l) Method Statements
m) Risk assessments
n) Safe work procedures
o) Medical surveillance certificates of fitness. Medical records are to be kept according to the OH&S Act as amended
p) All drawings for temporary structures (suspended beams/scaffolds etc.)
q) All operating manuals for any systems that require ongoing maintenance
r) 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 OH&S Agent prior to any work commencing.

A copy drawing records for the as-builts are to be placed on file by the Designers once complete.

ANNEXURE C

NON CONFORMANCES

HEALTH AND SAFETY SITE INSPECTION NON CONFORMANCE NO	
AGENT:	**PROJECT:**
Consultant:	**Date and time:**
Client	**Area:**
Contractor:	

ASPECTS NOTED:	COMMENTS:	COMPLETION REQUIRED BY (DATE):
	•	

PHOTOGRAPHIC EVIDENCE (if available):
OTHER:
The following penalties are to be applied:

Signature of Designer	
Signature of H&S Officer/Site Agent	
Signature: of H&S Agent	

ANNEXURE D:

CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

(To be submitted by the end of the first week of each month and be available with each audit)

CONTRACT NUMBER:		PROJECT NAME:	CONTRACT DETAILS:
1	GENERAL ACTIVITIES FOR THE MONTH (detail each area of work)		
2	NUMBER OF WORKERS (permanent and local, contractors)		
3	TRAINING DONE (supplier, no of people, type)		
4	INCIDENTS / ACCIDENT (list number and details, attach reports)		
6	NON-CONFORMANCES (closed out or active)		
7	CONTRACTORS (list, approval status)		

8	**AUDITS COMPLETED (internal and external)**	
9	**CRITICAL ISSUES**	

10	**GENERAL**	

H&S Officer		**Signature**	**Date:**
Site Agent			
		Signature	**Date:**

ANNEXURE E

RISK ASSESSMENT FORMAT

ACTIVITY		**RA No.**		**Rev No.**	
CONTRACT		**DATE WRITTEN**		**REVIEW DATE**	
	WRITTEN BY	**REVIEWED BY**			**APPROVED BY**
NAME					
SIGNATURE					

Severity Criteria

Weight No	Hazard Description	Environment	Safety/Health
16	Catastrophic	Irreversible ecological damage	Multiple fatalities due to injury or occupational disease
8	Major	Reversible ecological damage with potential long term impact	Fatality or number of disabilities/disabling diseases
4	Moderate	Ecological disturbance, can be rehabilitated	Disabling injury or occupational illness
2	Minor	Short-term ecological impact. Requires intervention	Minor injuries or exposure requiring medical attention
1	Insignificant	Low impact, natural rehabilitation	First Aid treatment required

Frequency Criteria

Weight No	Hazard Description	Frequency
1	Rare	Less than once every 2 years
2	Infrequent	Every 1-5 years
3	Frequent	Multiple times per year
4	Often	Monthly
5	Consistent	Weekly/Daily

Exposure Criteria

Weight No	Hazard Description	Environmental Exposure	Safety/Health Exposure
1	Minimal	Incident site	A few of the workforce minimal time
2	Restricted	Localised	A few of the workforce, some of the time/some of the workforce minimal time
3	Local	Construction Site Wide	Some of the workforce, some of the time
4	Widespread	Immediate neighbours	Most of the workforce, some of the time/some of the workforce most of the time
5	Extensive	Community exposure	Most of the workforce, most of the time

ANNEXURE F:

TYPICAL BILL OF QUANTITIES FOR OCCUPATIONAL HEALTH AND SAFETY

ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL
C.01	Preparation of the Contractor's site specific Health and Safety Plan	lump sum			
C.02	Principal Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations	lump sum			
C.03	Principal Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations	month			
C.04	Provision of Personal Protective Equipment (PPE)				
	(a) Reflective vests	No			
	(b) Hard hats	No			
	(c) Protective foot wear	No			
	(d) Earplugs	No			

	(e) Dust masks	No			
	(f) Gloves				
	(h) Ear Defenders SABS approved	No			
C.05	Provision of a full time Construction Health and Safety Officer	month			
C.06	Cost of medical certificates and medical surveillance				
	(a) Initial (baseline) medical examinations	prime cost (PC) sum			
	(b) Periodic and exit examinations	prime cost (PC) sum			
	(c) Contractor's charges to allow for handling costs and profit in respect of sub items 13/X.06 (a) and (b)	%			
C.07	Induction training	No			
C.08	Provision of First Aid Boxes to GSR requirements	No			
C.09	Noise monitoring				

	(a) Establishment of noise zones (plant)	No			
	(b) Audiograms (personnel)	No			
C.10	Submission of a Health and Safety File	lump sum			

ANNEXURE G

MISA

HEALTH AND SAFETY (H&S) PRE-CONSTRUCTION REPORT

The successful Tenderer will be required to submit a pre-construction H&S plan for approval as part of the contractual submissions.

The following requirements were set in the tender documentation and have been utilized to assess the completeness of the documentation presented. These requirements fulfil the requirements of the Client in terms of the Construction Regulations, Regulation 5(1)(h). They are to be read in addition to the Act and Regulations but are not a substitute for them.

The documentation submitted will be used to assess the competence of the successful Tenderer, as required in the CRs, therefore the information submitted needs to be complete.

The following scores have been used to determine compliance with the pre-tender requirements:

Scoring as follows:

Not supplied or not adequate **0**

Supplied and complete **1**

If the tenderer has not completed any projects then Items 4 and 5 need not be supplied. A letter to this effect must be attached.

The successful Tenderer will be required to achieve a minimum of 15 out of a total of 17 for their submission to be considered adequate to allow construction works to proceed on site.

Legal or Specification Reference	Pre-Tender Requirement H&S	Tenderers Response	Max Score	Actual Score
Construction Regulations (CRs) 7(1)	1. A project specific H&S Plan in line with this project specification which will support the CRs, therefore the information submitted needs to be complete and as close as possible to the final product. See check sheet		**1**	

Legal or Specification Reference	Pre-Tender Requirement H&S	Tenderers Response	Max Score	Actual Score
CRs 5(1)(g)	2. 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.		**1**	
CRs 5(1)(h)	3. 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;		**1**	
	4. At least one copy of minutes of previous Occupational Health and Safety Committee meetings;		**1**	
	5. Incident Investigation Reports for other projects of a similar nature undertaken by the tenderer		**1**	
CRs 9(1)(b)	6. Detailed technical method statements for approval by the ER and for approval by the H&S Agent: a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layouts		**1** **1** **1** **1**	
CRs 9(1)	7. Appropriate risk assessments:			

Legal or Specification Reference	Pre-Tender Requirement H&S	Tenderers Response	Max Score	Actual Score
	a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layout		**1** **1** **1** **1**	
CR 9(1)	8. Appropriate safe work procedures a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layouts		**1** **1** **1** **1**	
	FINAL SCORE		**17**	

ANNEXURE H

TYPICAL ITEMS TO BE COVERED IN THE OHS PLAN

			Check Box	
OHS Act/regulation	**Specification Section**	**Description**	**Yes**	**No**
8(1)	6.1.4	Construction supervisor		
8(6)	6.1.5	Construction Health and Safety Officer		
	7.1	Health Risks and Medical Surveillance		
NIHLR	7.2	Noise Risks		
	7.3	Emergency Procedures		
GSR 3	7.4	First Aiders and First Aid Equipment		
CR 27	7.5	Fires and Emergency Management		
GAR 8	7.6	Incident Management and Compensation Claims		
GSR 2	7.7	Personal Protective Equipment (PPE) and clothing		
GSR 2B	7.8	Occupational Health and Safety Signage		
CR 7 (5)(6)	7.9	Induction of Employees and Visitors, General H&S Training		
CR 23	7.10	Management of plant and equipment		
CR13	7.11	Excavations		
CR 10	7.12	Working at Heights		
CR 8	7.12	Fall protection plan		
CR 22	7.13	Cranes and lifting equipment		
CR 12	7.15	Temporary works		
CR5(1)(0)	7.18	Auditing		
DMR/GMR	7.19	Mechanical installations		
OHSA 8(2)(j)	7.20	Communication on Site		
CR 30	7.21	Care of Workers on Site (Welfare)		

	Additional requirements			
	6.1.3	Declaration of competency		
Cr 9 (1)		Method statements (SWPs)		
		a) Site Establishment		
CR5(1)(g)		Pricing for OHS		
		TOTAL SCORE		
		TOTAL PERCENTAGE		

Failure to adequately cover the above and other critical project specific items in the OHS Plan will result in the non-approval of the plan.

ANNEXURE I

AGREEMENT IN TERMS SECTION 37.2 OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993 (ACT NO. 85 OF 1993)

THIS AGREEMENT is made at _____ on this the _____day of _____in the year _____ between MISA(*hereinafter called "the Client"*) of the one part, herein represented by _____in his capacity as _____ _____ and delegate of the Client in terms of the Client's standard powers of delegation.

and

_____

(*hereinafter called "the Mandatary"*) of the other part, herein represented by

_____ in his capacity as _____

and being duly authorised by virtue of a resolution appended hereto as Annexure A.

WHEREAS the Client is desirous that certain works be constructed, viz
CONTRACT NO._____, and has accepted a tender by the Mandatary for the construction, completion & maintenance of such works and whereas the Client and the Mandatary have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatary with the provisions of the Occupational Health and Safety Act 1993 (Act 85 of 1993 as updated);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1 The Mandatary shall execute the work in accordance with the contract documents pertaining to this contract;

2 This Agreement shall hold good from its commencement date, which shall be the date determined in terms of the Form of Offer and Acceptance, or other date decided upon, in the Contract Data, to either;

a) The date of the final certificate issued or as contained in this Volume _____of the contract documents pertaining to this Contract, or

b) The date of termination of the Contract;

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

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

i. Section 8: General duties of clients to their employees;
ii. Section 9: General duties of clients and self-employed persons to persons other than employees;
iii. Section 10: General duties of manufacturers and others regarding articles and substances for use at work;
iv. Section 37: Acts or omissions by employees or Mandatories, and
v. Sub-section 37(2) relating to the purpose and meaning of this Agreement.

b) The Contractor shall ensure that he familiarises himself with the requirements of the Clients health and safety specification developed for the project, and that he, his employees and any other Contractors employed during the project comply with them. The Contractor shall ensure that all health and safety documentation required as part of the health and safety plan is maintained for the duration of the project.

4 In addition to the requirements of conditions of contract (as amended by the Contract Data of the contract documents pertaining to this Contract), the Mandatary agrees to execute all the works forming part of this Contract and to operate and utilize all machinery, plant and equipment in accordance with The Act.

5 The Mandatary is responsible for the compliance with the Act by all his Contractors, whether or not selected and/or approved by the Client.

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

7. The Mandatary undertakes to ensure that he and/or subcontractors and/or their respective clients will at all times comply with the following conditions:

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

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

c) The Client hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of the Occupational Health and Safety Act into any incident involving the Mandatary and/or his employees and/or his Contractors.

d) The Mandatary shall conduct such risk assessments, method statements and safe work practices as may be necessary during the course of the contract and shall ensure that all staff are informed of these. Proof of this shall be placed in the project Health and Safety file.

e) Adherence to the Contractor's Health and Safety plan must be enforced including the application of penalties for non-conformance as set out in the Client's Health and Safety Specification.

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

SIGNED FOR AND ON BEHALF OF THE CLIENT:- _____

WITNESS SIGNED:- **1.** _____ **2.** _____

NAME (IN CAPITALS) 1. _____ **2.** _____

SIGNED FOR AND ON BEHALF OF THE MANDATARY:- _____

WITNESS SIGNED:- **1.** _____ **2.** _____

NAME (IN CAPITALS) 1. _____ 2. _____

C3.2.3.3 ENVIRONMENTAL SPECIFICATION (PZ)

EMPLOYER'S ENVIRONMENTAL MANAGEMENT SPECIFICATION FOR ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION PROJECTS

TABLE OF CONTENTS

PZ EMPLOYER'S ENVIRONMENTAL MANAGEMENT SPECIFICATION FOR ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION PROJECTS

PZ1 INTRODUCTION

PZ1.1 SCOPE

This specification is additional to the South African Bureau of Standards Standardised Specification for Civil Engineering Contracts and must be read in conjunction with the said specification.

This specification covers the principles, responsibilities and requirements generally applicable to implement effective environmental management during the execution of any construction contract. The aim of this specification is to ensure that construction activities are conducted in an environmentally and socially responsible manner.

PZ1.2 INTERPRETATIONS

This specification contains clauses that are generally applicable to the implementation of effective environmental management on construction contracts. Interpretations of, and variations to, this specification are set out in the project specification.

PZ1.2.1 Supporting specifications:

Reference is made to the SABS 1200 standards which are to be read in conjunction with this specification. All aspects of these SABS requirements which are relevant to environmental management during construction contracts will apply.

PZ1.2.2 Principles

The following principles should be considered at all times during construction phase activities:

- The Environment is considered to be composed of both biophysical and social components.
- Construction is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities will minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.
- All effort should be made to minimise, reclaim or recycle ‘waste’ material.

PZ1.3 DEFINITIONS

For the purpose of this specification, the definitions given in SABS 1200 shall apply.

Additional definitions which shall apply to this specification are as follows:

Environmental Control Officer: Either an Employer's staff member or an Environmental Consultant assigned to the project on a part or full-time basis. The Environmental Control Officer will be part of the Project staff and will advise the Engineer on all environmental matters relating to the works, in terms of this specification and the project specification, if applicable.

Environmental Officer: Either an Employer's employee (e.g. Quality Assurance Inspector) or Consultant designated to monitor the implementation and compliance with the environmental specifications and environmental management plan on a daily basis.

Cleared surface: "surface vegetation" as referred to in SABS 1200 C 2.3 will be deemed to be any woody or herbaceous vegetation but exclude grasses, sedges, rushes and reeds. Clearing and grubbing shall for the purpose of this specification mean the removal of all woody and herbaceous vegetation including stumps, but excluding grass and groundcover vegetation.

Engineer: Is to read Engineer or Supervisor (in the case of the NEC contract), whichever is applicable to the Contract.

Interested and Affected Parties (IAP): All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project. IAPs include landowners, tribal or local authorities, public interest groups etc.

Liquid Waste Stream: Any reagent solutions, fuels, oils, greases, contaminated run-off, sewerage and wash water, etc.

Open Trench: Open trench will, for the purpose of this specification, be deemed to include: clearing and grubbing; stripping of topsoil; trenching; placing of bedding; pipe-laying; placing of selected fill; backfilling to ground level; removing excess material; construction of cross berms to channel water (if required); and replacement of topsoil to final finished level (refer to Figure 1: Appendix A).

Progressive Reinstatement: Reinstatement of disturbed areas to topsoil profile on an ongoing basis, immediately after selected construction activities (e.g. backfilling of a trench) are completed. This allows for passive rehabilitation (i.e. natural recolonisation by vegetation) to commence. See also 'Open Trench' and 'Rehabilitation'.

Project Manager: The person responsible for co-ordinating and integrating activities across multiple, functional lines.

Rehabilitation: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement revegetation of a disturbed area and the ensurance of a stable land surface. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.

Riparian vegetation: Vegetation occurring on the banks of a river or stream (i.e. vegetation fringing a water body). In this specification, riparian vegetation in terms of removal, storage and replacement (see PZ3 17.1 and PZ3 17.2), is only applied to sedge, grass, ground-cover, reed, bulrush, or herbaceous component of riparian vegetation and excludes the woody component.

Sedges: Grass-like plants growing in wetland/ marshy areas or adjacent to water.

Subsoil: Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

Timeous: At least 5 working days prior to an activity.

Topsoil: This is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Topsoil is deemed for the purposes of this specification as the layer of soil from the surface to the specified depth required for excavation (see PZ3 5.3, relevant SABS 1200 clause and project specification). Where topsoil is referred to, it is deemed to be both the soil and grass / ground cover fraction. (see 'Cleared Surface')

Veld: This is defined for the purpose of this specification as unimproved natural vegetation areas (e.g. grasslands).

Water body: Any open body of water including streams, dams, rivers, lakes, and the sea.

Wetland: A seasonally, temporally, or permanently wet area which also may exhibit a specific vegetation community. It is often marshy in character.

Wetland Vegetation: Vegetation which is indicative of a wetland environment - for example, sedges, rushes, reeds, hydrophilic grasses and ground-covers, but for the purposes of this specification excludes woody species.

Xeriscaping: Landscaping with vegetation which has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). Concept embraces utilising indigenous as opposed to exotic plants.

PZ1.4 ABBREVIATIONS

DWS : Department of Water and Sanitation

ECO : Environmental Control Officer

EMP : Environmental Management Plan

EMPR : Environmental Management Programme Report

EO : Environmental Officer

IAPs : Interested and Affected Parties

IEM : Integrated Environmental Management

MSDS : Material Safety Data Sheet

NEC : New Engineer Contract or The Engineering and Construction Contract

⚐ : Indicates the project specification must be referred to, to clarify the clause.

PZ1.5 DRAWINGS

Drawings referred to in this specification are included in C3.2.4 Drawings and Section C4 Site Information.

PZ1.6 FORMS

Forms referred to in this specification are included in Part T2 or attached to this environmental specification.

PZ1.7 CONDITIONS OF CONTRACT

PZ1.7.1 Duties and Powers of the Project Manager

The Project Manager is ultimately responsible for ensuring compliance with the environmental specification and upholding the Employer's Environmental Policy on a project.

The Project Manager:

- arranges information meetings for or consults with IAPs about the impending construction activities;
- may on the recommendation of the Engineer and /or Environmental Officer order the Contractor to suspend any or all works on site if the Contractor or his Subcontractor/ supplier fails to comply with the said specifications;
- maintains a register of complaints and queries by members of the public at the site office as per attached pro-forma. This register is forwarded to the Environmental Control Officer on a monthly basis.

PZ1.7.2 Duties and Powers of the Engineer / Supervisor (NEC)

The Engineer or Supervisor is responsible for:

- enforcing the environmental specification on site;
- monitoring compliance with the requirements of the specification;
- assessing the Contractor's environmental performance in consultation with the Environmental Officer from which a brief monthly statement of environmental

performance is drawn up for record purposes;

- documenting, in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record.

PZ1.7.3 Duties and Powers of the Environmental Control Officer

The Environmental Control Officer:

- briefs the Contractor about the requirements of the Environmental Specification and/ or Environmental Management Plan, as applicable;
- advises the Project Manager and Engineer/ Supervisor about the interpretation, implementation and enforcement of the Environmental Specification and other related environmental matters;
- attends site meetings, as necessary;
- monitors the Constructor's compliance with this specification and the project environmental specification as applicable;
- undertakes periodic audits of the effectiveness of the environmental specifications on the site;
- communicates environmental policy issues to the Project Manager;
- provides technical advice relating to environmental issues to the Engineer/ Supervisor and Project Manager;
- reports on the performance of the project, in terms of environmental compliance.

PZ1.7.4 Duties and Powers of the Environmental Officer

The Environmental Officer:

- attends site meetings;
- monitors the site for compliance with the Environmental Specification and EMP;
- reports on the performance of the project in terms of environmental compliance to the ECO and Project Manager as per the pro-forma attached;
- liaises with the ECO on matters of policy and those requiring clarity and advice.

PZ1.7.5 Extent of the Contractor's Obligations

The Contractor is required to:

- provide information on previous environmental management experience and company environmental policy;
- supply method statements for all activities requiring special attention as specified and/or requested by the Project Manager, Environmental (Control) Officer and/or Engineer during the duration of the Contract;
- be conversant with the requirements of this environmental specification and the project specification as applicable;
- brief his staff about the requirements of the environmental specification;

- comply with requirements of the Environmental (Control) Officer in terms of this specification and the project specification, as applicable, within the time period specified;
- ensure any sub-Contractors/ suppliers who are utilised within the context of the contract comply with the environmental requirements of the Employer, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf;
- bear the cost of any delays, with no extension of time granted, should he or his Sub-Contractors/ Suppliers contravene the said specifications such that the Engineer orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected;
- bear the costs of any damages/ compensation resulting from non-adherence to the said specifications or written site instructions;
- comply with all applicable legislation in terms of 7.6 below;
- ensure that he informs the engineer timeously of any foreseeable activities which will require input from the Environmental (Control) Officer.

The Contractor will conduct all activities in a manner that minimises disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

PZ1.7.6 Compliance with Applicable Laws

The supreme law of the land is “The Constitution of the Republic of South Africa”, which states:

“Every person shall have the right to an environment which is not detrimental to his or her health or wellbeing”

Laws applicable to protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

Animals Protection Act, Act No 71 of 1962

Atmospheric Pollution Prevention Act, No 45 of 1965

Conservation of Agricultural Resources Act, No 43 of 1983

Environmental Conservation Act, No 73 of 1989

Environmental Planning Act, Act No 88 of 1967

Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

Forest Act, No 122 of 1984

Forest and Veld Conservation Act, Act No 13 of 1941

Hazardous Substances Act, No 15 of 1973

Lake Areas Development Act No 34 of 1975

Land Survey Act, No 9 of 1921

Minerals Act, No 50 of 1991

Mountain Catchment Act, No 63 of 1970

National Monuments Act, No 28 of 1969

National Parks Act, No 57 of 1976

National Resources Development Act, Act no 51 of 1947

Occupational Health and Safety Act, No 85 of 1993

Provincial and Local Government Ordinances and Bylaws

Soil Conservation Act, Act No 76 of 1969

Water Act, No 54 of 1956

Water Services Act No 108 of 1997

and all regulations framed thereunder and amendments there to.

PZ1.7.7 Compliance with the Environmental Specification

The Contractor is deemed not to have complied with the Environmental Specification if:

- within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of clauses;
- if environmental damage ensues due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the Project Manager or Engineer within a specified time,
- the Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

Failure to demarcate working servitudes	R1000
Working outside of the demarcated servitude	R2000
Failure to strip topsoil with intact vegetation	R1000
Failure to stockpile topsoil correctly	R500
Failure to stockpile materials in designated areas	R500
Pollution of water bodies (including increased suspended solid loads)	R1000
Failure to control stormwater runoff	R1000
Failure to provide adequate sanitation	R500
Unauthorised removal of woody vegetation	R2000
Failure to erect temporary fences	R500
Failure to provide adequate waste disposal facilities and services	R500
Failure to reinstate disturbed areas within the specified time-frame	R3000
Failure to rehabilitate disturbed areas within the specified time-frame	R3000
Any other contravention of the project specific specification	R400
Any other contravention of the particular (general) environmental specification	R300

PZ2 SITE ESTABLISHMENT AND HOUSEKEEPING

PZ2.1 LAYOUT

The Contractor will take into account any of the limitations identified in the project specification with regard to establishment of site, in particular the location of access routes, and establishment layout.

Notwithstanding the provision of a project specification, the Contractor will provide the Project Manager and Environmental Control Officer with a layout design of the site indicating the position of all of the following, as applicable: offices, ablution facilities, storage areas, workshops, laboratories, batching plant, particulate matter stockpile area (i.e. soil/ granular chemicals/ cement fines etc.), waste disposal facilities, hazardous substances storage area, access routes, etc. This layout plan is to be submitted prior to site establishment for acceptance. Any changes to this plan require review by the Project Manager in conjunction with the ECO.

The Contractor will take into account prevailing wind directions when designing the site layout to minimise impacts due to dust, unpleasant odours etc.

The Contractor will take into account the positions of residences when designing the site layout in order to minimise noise impacts on the residents.

Site security lighting is to be positioned such that the direct beam is focused away from residential properties and does not pose a nuisance or danger to road users.

No site establishment will be allowed within 100 m of a water body or drainage channel or on a flood plain unless approved by the Environmental (Control) Officer or specified in the project specification.

PZ2.2 SITE CLEARANCE

No trees or shrubs may be removed without the prior permission of the Environmental Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

Topsoil is to be stripped from all areas where permanent or temporary structures and access roads are to be constructed. Topsoil conservation is to be in terms of clause PZ3 5.3 of this document.

PZ2.3 SERVICES

PZ2.3.1 Sanitation

Potable chemical toilets are to be utilised at site unless a connection to sewer is possible or a proper septic tank system is installed. In the case of the septic tank, the installation will require the relevant approvals from the local authority and will require removal upon completion of the contract, unless otherwise directed.

Sanitation facilities will be located within 100 m from any point of work, but not closer than 50 m to a water body.

PZ2.3.2 Solid Waste Facilities

Facilities for solid waste collection are to be provided. These are to be at least a 200 l drum and clearly identified as the point for waste disposal.

Waste is to be separated into paper, glass and metal with separate collection points for each. The Contractor will ensure that the appropriate recycling Contractors receive this waste.

The Contractor is to institute a daily litter collection programme. The collected waste is to be disposed of regularly and proportionately to its generation at a site designated for waste disposal.

No burning will be permitted on any site unless by approved incineration methods and in a low risk fire area. In the case of incineration, ash is to be co-disposed with spoil in a designated spoil dump.

No burying of waste will be allowed on any site.

PZ2.3.3 Cooking and Heating Facilities

No open fires will be allowed anywhere on site.

Contained fires (i.e. in a fire drum) will be allowed for heating and cooking only in designated areas, in other cases cooking is restricted to gas or electrical equipment.

PZ2.4 FUELS, HAZARDOUS SUBSTANCES AND OTHER LIQUID POLLUTANTS

PZ2.4.1 Storage and handling

All potentially hazardous raw and waste materials are to be handled by trained staff and stored on site in accordance with manufacturer's instructions and relevant legal requirements. The product MSDS is to be lodged with the Engineer.

Storage and handling areas for fuels, lubricants, chemicals and other hazardous substances are to be paved with concrete to prevent accidental contamination of the soil. Alternatively, an impermeable liner may be placed beneath above-ground storage tanks. The integrity of the liner is to remain intact for the duration of the contract, until removal.

Open storage vessels, for example shutter lubricant drums, are to be stored under cover to prevent 'splash' contamination.

All storage areas are to be bunded (with at least sandbags) and have a peripheral collection drain, with oil interceptors (if required).

The bunded area is to be sufficiently large to contain a spillage equivalent to the volume of one container of the substances stored.

All products to be dispensed from 200 litre drums will be done so with appropriate equipment, and not dispensed by tipping of the drum.

Daily checks are to be conducted on the dispensing mechanism of above-ground storage tanks to ensure the timeous identification of faults.

Collection containers (e.g. drip trays) are to be placed under all dispensing mechanisms of hydrocarbon or hazardous liquid substances to ensure contamination from leaks and dispensing is contained.

The dispensing mechanism of diesel and petrol storage tanks is to be stored in a container when not in use.

PZ2.4.2 Control of pollutants

A drainage diversion system is to be installed to divert runoff from areas of potential pollution, e.g. batching area, vehicle maintenance area, workshops, chemical and fuel stores, etc. if applicable.

Contaminated runoff and waste water is to be directed into a collection system (e.g. sump, attenuation dam, PVC porta-ponds etc.) for treatment or collection and disposal. The final collection point (e.g. sump) is to be PVC lined.

Collected contaminated runoff/ wastewater is to be pumped out of the final collection point and disposed of at an appropriate landfill site. Sump liners are to be treated in the same manner.

The treated waste water, effluent and contaminated runoff may require analysis prior to discharge as detailed in the project specification or instructed by the Environmental Officer.

Details regarding proposed methods for treatment of pollutants are to be submitted to the Environmental (Control) Officer for acceptance upon award of the Contract.

Any spillages, irrespective of their size, are to be contained and cleaned up immediately. The Pollution Control section may provide technical assistance for clean-up, if required. No spills may be hosed down into a stormwater drain or sewer.

Use of specialised clean-up techniques and/ or products may be required depending on the spill. This will be instructed by the Environmental Control Officer. These will be to the Contractor's cost.

PZ2.5 GENERAL

Site staff are not permitted to use any open water body or other natural water source (e.g. springs) for purposes of bathing, or the washing of clothes, machinery or vehicles. Nor draw water from a spring without the permission of the community utilising that spring.

PZ2.6 MEASUREMENT AND PAYMENT

Measurement and payment for compliance with clauses PZ2.1 to 5 of the specification are deemed to be fully included in the Contractor's rates for fixed and time related Preliminary and General Items scheduled under SABS 1200 A or AA.

PZ3 CONSTRUCTION

PZ3.1 CONSTRUCTION METHODS AND PROGRAMME

PZ3.1.1 Construction Method

The Contractor will provide method statements for construction activities (14 working days prior to the activity commencing) relating to the following environments and those listed in the project environmental specification, unless methods have been prescribed in this or the project environmental specification:

- rivers, streams, or any other open water body;
- wetlands;
- access roads (see PZ3.13 below);
- steep slopes (i.e. steeper than 1:4) or less if friable material is present;
- indigenous bush/ forest;
- close proximity (i.e. 50 m or less) to a residential dwelling;
- drilling and/or blasting of rock.

If a construction method employed by the Contractor is not environmentally acceptable to the Employer, the Contractor may be instructed to cease the utilisation of that method in favour of a more environmentally acceptable one, proposed either by himself or the Employer.

PZ3.1.2 Construction Programme

The Contractor will programme construction so as to minimise the impact on the environment and provide this programme to the Environmental Control Officer for perusal and acceptance at the onset of the contract period. The Environmental Control Officer is to made aware of any amendments to the construction programme or alterations to the scope of work in order that their impacts on the environment can be assessed.

The Contractor (through the Project Manager) will ensure that all affected landowners/ authorities are advised of the proposed programme at the beginning of the contract period.

PZ3.2 AREAS OCCUPIED / DEMARCATION OF SITE

Routes for temporary access and haul roads are to be located within the approved demarcated areas and vehicle movement is to be confined to these roads. Movement of vehicles outside the designated working areas is not permitted without authorisation from the Engineer.

All construction activities are restricted to working areas designated on the drawings and/or demarcated and approved by the Engineer. Materials including spoil are stockpiled at designated areas.

Any areas disturbed outside of the demarcated areas or without permission of the Environmental (Control) Officer or Engineer will be subject to reinstatement and rehabilitation (as per PZ4 below) to the Contractor's cost.

In terms of pipeline projects, a general maximum working servitude width of 15 m will apply for machine excavation unless otherwise indicated in the project specification. A maximum width of 6 m will apply for manual excavation. These maximum working servitude widths may vary depending on the sensitivity of the environment, as detailed in the project specification.

In sensitive biophysical environments, for example wetlands, indigenous forest / bush, pristine natural grasslands, and sensitive social environments, as defined in the project specification or by the Environmental Control Officer, the working servitude is reduced as indicated in the project specification.

The working servitude shall contain all construction related activities, including, stockpiling of materials, placing of toilets, vehicle movement areas, etc.

Demarcation of linear projects (executed with machine excavation) and features (e.g. pipelines, access roads, etc.) will be by means of wooden stakes. These stakes will be at least 1 m high, painted white and placed at least every 15 m, on either side of the linear feature, in all areas where works are occurring. Progressive movement of stakes is required as linear projects progress.

In the case of a fenced site, the boundary fences will be denoted as the outermost limit of the site, but internal areas may be demarcated with stakes as above. The site boundaries of non-fenced, but 'contained' projects are to be delineated using stakes or temporary fencing, depending on the hazard which that site poses.

PZ3.3 SUPPLY OF WORKS FACILITIES

No water may be abstracted from water bodies for the purposes of construction, without approval of the Engineer in consultation with the Environmental Control Officer.

PZ3.4 CLEANLINESS

SABS 1200 AD, clause 5.2.4, second sentence, is to read: “No rubbish or debris shall be deposited below the full supply level (FSL).”

PZ3.5 SITE CLEARANCE

PZ3.5.1 Clearance

Spoil sites will require clearing and grubbing in addition to those areas in terms of SABS 1200 C 5.1.

The site shall only be cleared immediately prior to construction activities commencing i.e. at the last practicable stage.

No trees or indigenous shrubs may be removed without the prior permission of the Environmental (Control) Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

PZ3.5.2 Disposal of materials

Material obtained from clearing and grubbing operations shall be disposed of at appropriate municipal disposal facilities. They are not to be disposed of as per Paragraph 1 of Sub-clause 3.1 of SABS 1200 C.

Wood obtained from clearing and grubbing operation remains the property of the landowner/ community and must be stacked at sites designated by relevant person. The Contractor will be required to remove and dispose of any wood from site at a designated site for vegetation disposal, should the landowner/ community not require it.

All tree trunks and branches of diameter greater than 50mm are to be cut into lengths not exceeding 2400mm.

Brush wood (i.e. < 50mm diameter) is to be disposed of, or utilised as specified in the project specification or upon instruction of the Engineer.

PZ3.5.3 Conservation of topsoil

The Contractor is required to strip topsoil (as defined in this specification) together with grass, groundcover and sedges from all areas where permanent or temporary structures are located, construction related activities occur, and access roads are to be constructed, etc. The depth to which topsoil will be stripped shall be 200mm unless stated otherwise in the project specification.

Topsoil is to be handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.

Topsoil is to be replaced along the contour.

Topsoil is to be replaced by direct return (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods. This is feasible for progressive construction (e.g. pipelines), but not necessarily so for reservoirs, site establishments, dams, etc.

Topsoil stockpiles are not to exceed 2 m in height.

Topsoil stockpiles are to be maintained in a weed free condition (i.e. no ‘broad-leafed’ plants regarded as weeds in terms of the Conservation of Agricultural Resources Act No 43 of 1989, or those plants regarded as a ‘general nuisance in the area’ are to be growing on the stockpiles). The Environmental Control Officer will provide guidance as to which plants are weeds and require removal.

The stockpiles are not to be contaminated with sub-soil, or any other waste material.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil which is to be stockpiled for periods exceeding 4 months is to be vegetated. In summer a mixture of Eragrotis tef (Teff) and Eragrostis curvula (Weeping Lovegrass) (ratio 1:2) is to be applied at an application rate of 6 kg/ha, unless otherwise instructed in the project specification.

In winter, a mixture of Lolium multiflorum (Annual/Italian Rye grass) and Eragrostis curvula (Weeping Lovegrass) (ratio 1:1) is to applied at an application rate of 6kg/ha (see PZ4 5.3 for sowing times), unless otherwise instructed in the project specification. Fertiliser is to be applied as per PZ4 5.2.

PZ3.5.4 Cutting of trees

Any tree branches which require removal are to be properly pruned and sealant applied to the cut surface, if required.

The Contractor's attention is drawn to Sub-clause 5.2.3.3 of SABS 1200 C with respect to work in indigenous forests.

Any indigenous trees or bush which require removal in terms of the project, and which have not been identified in the project specification or EMP, are to be timeously indicated to the Environmental Officer prior to work affecting them.

PZ3.5.5 Landscape Preservation and Conservation of Flora

Notwithstanding Clause 5.7 of SABS 1200 C, the Contractor will be required to transplant designated plants to alternative locations as specified in the project specification or identified by the Environmental Control Officer, upon the instruction of the Engineer.

Transplanting shall be undertaken by employing the following method:

Removal

- Mark the orientation of the tree/shrub (for example, the north-facing side of the trunk indicated by a small arrow made with indelible ink) trunk. Do not scratch a mark on the surface of the trunk;
- Delineate a circle from the trunk with a radius equivalent to the drip-line of the tree, or as indicated by the Environmental Control Officer on site;
- Excavate the tree with an intact rootball.

Replanting

- A hole 500mm larger in diameter than the anticipated rootball must be prepared in advance of the tree removal in order that the tree can be replanted immediately;
- The tree must be positioned as per its original orientation;
- A planting method known as 'puddling' must be employed. This method involves the addition of soil and water simultaneously to expels air from the planting hole. Place the tree in its new hole, making sure the top surface of the rootball is level with the ground level. Place a hose pipe in the hole and leave it running whilst extra soil is added around the rootball;
- 'Compact' the tree in the hole and attach tree stays for stabilisation.

Compensatory planting of species may be required should transplantation not be feasible, as indicated in the project specification or upon instruction of the Engineer.

PZ3.6 EARTHWORKS

PSZ3.6.1 Backfill material

With reference to SABS 1200 DB sub-clause 3.5, no material stripped or excavated which is classed, in terms of this specification, as topsoil, may be used as backfill in any excavation.

PZ3.6.2 Excavation and backfilling

During excavation 'conservation of topsoil', as specified in PZ3 5.3 above will apply.

Excavated material is to be stockpiled along a pipeline trench within the working servitude, unless otherwise authorised.

Surplus excavated soft, intermediate and hard rock material shall not be disposed of along the pipeline trench as indicated in SABS 1200 DB sub-clause 5.6.3 and 5.6.4, but shall be removed to a spoil site (see PZ3.15 below) designated during the project if applicable, or agreed by the Engineer in conjunction with the Environmental Control Officer and Project Manager.

In certain cases, for example to help stabilise the disturbed area or to reinstate the natural aesthetics of an area, excess excavated intermediate and hard material may be disposed of in a designated manner along a pipeline trench, as indicated by the Environmental Control Officer and Project Manager, or in the project specification. In this case, rock material shall not exceed 250mm in maximum dimension (see PZ4 2.1).

In terms of SABS 1200 DB 5.6.5 and SABS 1200 LB 3.4.2, deficiency of backfill material shall not be made up by excavation within the free haul distance of 0.5km of site, without the prior approval of the Engineer of the source of the material. Where backfill material is deficient, it should ideally be made up by importation from an approved borrow pit (i.e. one which operates within the ambient of an EMPR.) (See also PZ3 14 below).

The Contractor will backfill in accordance with the requirements of progressive reinstatement.

The maximum length of open trench shall be specified in the project specification.

PZ3.7 SAFETY

All works which may pose a hazard to humans and animals are to be adequately protected and appropriate warning signs erected. The Contractor's attention is drawn to SABS 1200 D section 5.1 in this regard.

With reference to SABS 1200 D 5.1.1.3, where blasting is required in terms of the project, the Contractor will ensure that all structures in the vicinity that could be affected by the activity will be inspected and their condition photographically recorded (as necessary), prior to blasting.

Notice of intent to blast is to be provided to landowners timeously.

Speed limits, appropriate to the vehicle driven, are to be observed at all times on access roads. Operators and drivers are to ensure that they limit their potential to endanger humans and animals at all times, by observing strict safety precautions.

PZ3.8 PLANT

PZ3.8.1 Silencing of plant

With reference to SABS 1200 A amend: “built up areas”: to read as “all areas within audible distance of residents (albeit urban, peri-urban or rural areas).”

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

Silencer units on equipment and vehicles are to be maintained in good working order.

Construction activities are to be confined to normal working hours (07h30 - 17h00) Mondays to Saturdays, except for the activities designated to be carried out at night.

PZ3.8.2 Appropriate use of plant

The Contractor will at all times use plant which is appropriate to the task in order to minimise the extent of damage to the environment.

PZ3.9 DEALING WITH WATER ON WORKS

PZ3.9.1 Disinfection of Potable Water Infrastructure

Disinfection water is to be neutralised before release of this water to the environment.

PZ3.9.2 Discharge of water from site

Any water which is discharged from site is to comply with the relevant Water Quality Guidelines implemented by DWS.

Water discharged to the stormwater / sewer system may only be done so with the permission of the relevant local authority.

PZ3.10 CONTROL OF EROSION

Surface erosion protection measures will be required to prevent erosion where slopes are steeper than 1:8 on all soil types.

Erosion protection measures required may include all or some of the below, as specified in the project specification or upon instruction of the Engineer in conjunction with the Environmental (Control) Officer:

- use of groundcover or grass
- construction of cut off berms (earth and/or rockpack) - these are to be angled across the contour and normally would approximate an angle of 30^{o} from the bisector of the contour.
- placing of brush wood on bare surface;
- pegging of wattle trunks or branches along the contour;
- hard landscaping, e.g. use of Loffelstein walls, ground anchors, gabions etc.

Scour chambers are to be fitted with energy dissipaters, or the jet of water directed onto a protected (i.e. grouted stone pitching/ rock pack/ reno mattress) area to dissipate water velocity and to control and prevent erosion.

Storm water drainage measures might be required on site to control runoff and prevent erosion.

PZ3.11 CONTROL OF POLLUTION

No waste in a solid, liquid or gaseous state shall be emitted from or spilled on the site without the approval of the Engineer.

No mixed concrete shall be deposited directly onto the ground prior to placing. A board or other suitable platform is to be provided onto which the mixed concrete can be deposited whilst it awaits placing.

Excess concrete from mixing shall be deposited in a designated area awaiting removal to an approved landfill site.

The Contractor will contain wash water from cement mixing operations, by directing the water into a sump for collection. The material contained in the sump will be removed to an appropriate landfill site.

No concrete rubble shall be present at the site.

Liquid wastes will not be disposed of into storm water drains. They may be disposed of into sewer only if permitted by (local council) legislation.

In the event of pollution of a water body (including sediment loading), the Contractor will provide alternative water supply to users of that water body until the quality of the water body is restored to its previous unpolluted state. For the sake of this clause, pollution is deemed to be a state which is substandard to the normal quality of the water body, but is not necessarily in contravention of the South African Water Quality guideline standards for a prescribed activity.

Any ancillary damages resulting from pollution of a water body will be repaired / remediated at the Contractor's cost.

Where, due to construction requirements, pollution of a water body may potentially occur, the Contractor is to ensure adequate measures (e.g. attenuation/ settlement dams / oil absorbent products) are in place to prevent pollution. A method statement is to be provided to this effect (see PZ3 1).

PZ3.12 CONTROL OF FIRE

The Contractor will ensure he has the necessary firefighting equipment on site in terms of SABS 1200. This will include at least rubber beaters when working in 'veld' areas, and at least one fire extinguisher of the appropriate type when welding activities are undertaken, irrespective of the site.

PZ3.13 USE AND MAINTENANCE OF ACCESS FACILITIES

PZ3.13.1 Responsibility

The Project Manager [not the Contractor (SABS 1200 AD 5.3.1)] will be responsible for obtaining permission for temporary and permanent rights of way over all private property affected by project activities.

The Project Manager will ensure that the Contractor has kept a photographic record of all access facilities and that these are reinstated to a state not worse than upon commencement of the project and to the satisfaction of the landowner (not withstanding that the project's objective is not to upgrade landowners' access roads).

PZ3.13.2 Fencing

Temporary fencing is to consist of 1.2 m bonnox fencing, or similar, suitably tensioned and supported on 1.8 m fencing standards at 3 m intervals, with all necessary straining posts and stays.

All temporary fencing as indicated by the Engineer is removed on completion of the contract.

PZ3.13.3 New Access Roads

Any construction roads created for execution of the project are to be designed to incorporate adequate drainage and water attenuation structures.

Any access roads which incorporate 'cut and fill' aspects and/or which are to be surfaced during construction are to be authorised by the Environmental Control Officer and Project Manager. Prior to construction of the road, the Contractor will be required to provide a sketch plan of the road layout (referenced to local topographic, natural and man-made structures). Slope steepness, road width, drainage structures and their frequency will need to be documented and accompany the sketch layout.

Construction access roads may not be wider than that necessary (maximum width 4 m) for movement of vehicles in one direction only. Should two-way traffic be required, points people are to control vehicle movement on the 'single lane' road or passing bays are to be used where specified in the project specification or as identified by the Engineer in conjunction with the Environmental Control Officer, unless otherwise stated in the project specification.

The cut and fill slopes of permanent roads will require grassing, as specified in the project specification or by the Environmental Control Officer, to increase stability and reduce aesthetic impacts. Hard landscaping may be required as per the project specification.

Temporary construction roads will require rehabilitation on completion of construction activities for which they were required. These roads will require rehabilitation as per PZ4 4 or as specified in the project specification. In the case of access 'tracks', only ripping to loosen compaction will be required unless otherwise stated by the Environmental Control Officer or project specification.

Access roads created by the project may only remain unrehabilitated on written request of the landowner, with his acceptance of the state of the road and a clause that the landowner accepts all responsibility for the road and its state.

PZ3.13.4 Maintenance of Existing Access Roads

The Contractor will record, photographically, the state of existing roads which are to be used for access, prior to plant utilising these roads.

During the contract period, the Contractor will ensure that all existing water attenuation and drainage structures are maintained in a state in which they can optimally perform their function.

Upon completion of the construction period, the Contractor will ensure that the access roads are returned to a state not worse than prior to construction commencing.

PZ3.14 BORROW PITS

Where the Contractor is required to import material this shall be from commercial sources or borrow areas specified in the project specification.

The Contractor may source material from alternative borrow pits provided: the site location; method of winning material and reinstatement and rehabilitation are environmentally acceptable and approved by the Environmental Control Officer.

In this regard, the Contractor shall give the Environmental Control Officer in writing, 30 days prior to opening up alternative borrow pits the following information for acceptance:

- quantities of borrow material required;
- method statement for excavation of material including depth and extent of excavation;

- anticipated 'active life' of the borrow area;
- proposal for reinstatement and rehabilitation of borrow area, including final profile;
- written approval from the landowner/ relevant authority that material may be removed from their land subject to their stated conditions, requirements, and royalties, and if the proposal is acceptable to the Environmental Control Officer.

Development and rehabilitation of borrow pit areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Infill of borrow pit with spoil material;
- Contouring of borrow pit to approximate natural topography and/ or reduce erosion impacts on the site;
- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;
- Grassing of topsoil in terms of clause PZ4 4 of this specification.

The Contractor is to familiarise himself with the requirements of the Minerals Act No 50 of 1991 in terms of borrow pit development, and the requirements of the EMPR, as applicable.

PZ3.15 SPOIL SITES

Where the Contractor is required to spoil material, spoil sites must be identified which are environmentally acceptable and approved by the ECO, unless spoil site areas have been identified in the project specification, in which case these will be the designated spoil sites.

If no spoil sites have been previously identified together with reinstatement and rehabilitation criteria, the Contractor is to provide the following information to the ECO at least 30 days prior to requiring sites to spoil material:

- the location, description of and access to alternative sites identified in order that they may be assessed;
- the quantity of material to be spoiled;
- the type of material to be spoiled (i.e. blast rock/ excavated rock/ soft shale/ subsoil etc.);
- the proposed method of spoiling;
- the proposed reinstatement and rehabilitation plan including final profile;
- written approval from the landowner/ relevant authority that material may be spoilt on land subject to their stated conditions and requirements and if the proposal is acceptable to the ECO.

Development and rehabilitation of spoil areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Placement of spoil material;
- Contouring of spoil site to approximate natural topography and/ or reduce erosion

impacts on the site;

- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;

Grassing of topsoil in terms of clause PZ4 4 of this specification.

PZ3.16 NUISANCE

PZ3.16.1 Dust

At all times the Contractor shall control dust on the site, access roads, borrow pits and spoil dumps with water, chemical soil stabilisers or temporary surfacing as specified in the project specification or upon instruction of the Engineer.

Dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments. These impacts include visual pollution, decreased safety due to reduced visibility, health aspects, and ecological impacts due to dust particle accumulation.

On gravel or earth roads, vehicle speeds may not exceed 30km per hour.

PZ3.16.2 Noise

The operational layout of the construction site is to be designed to control and reduce noise from source (see clause PZ2 1).

Machinery and vehicle silencer units are to be maintained in good working order. Offending machinery and /or vehicles will be banned from use on site until they have been repaired.

Construction activities generating output levels of 85 dB(A) or more (excessively noisy), in residential areas, are to be confined to working hours (08h00 - 17h00) Mondays to Fridays only.

'Normal' or 'noisy' working hours may only be extended with the prior written approval of the Project Manager, who has been notified, at least 7 days in advance, of the impending work requiring extension.

The Project Manager will ensure that the neighbours are timeously forewarned of imminent noisy activities.

Should community complaints be received with regard to noise generation, the Contractor will, at the discretion of the Project Manager and Environmental Control Officer, provide an independent and registered noise monitor to undertake a survey of noise output levels from site, and implement measures to reduce noise to legislated levels.

PZ3.16.3 Visual

All site establishment components, as well as equipment, will be positioned to limit visual intrusion to neighbours (see clause PZ2 1 above).

The type and colour of roofing and cladding materials are to be selected to reduce reflection.

Security lighting (both temporary and permanent) and lighting required for specific works activities must be placed such that it is not a nuisance to residents and the general public.

PZ3.16.4 Interference with neighbours and public

No construction staff may approach site neighbours, for whatever reason, without the knowledge and permission of the Project Manager.

Complaints from neighbours and public with regard to interference from contract staff will be regarded in a serious light, and the offender(s) may be subject to disciplinary action.

PZ3.16.5 Disruption of Services

Disruption of services, e.g. road access, water and electricity, must be kept to a minimum at all times.

Where service disruption is unavoidable, the Contractor is to advise the Project Manager (at least 7 days in advance), who in turn will timeously warn the affected parties.

PZ3.17 SPECIAL ENVIRONMENTS

PZ3.17.1 Wetlands

Pipeline trenches which traverse wetlands shall be constructed as specified in the project specification. The Contractor will submit a method statement for work in wetland areas as per PZ3 1.1

Construction may not permanently alter the surface or subsurface flow of water through the wetland.

The Contractor shall submit a method statement for review at least 14 days prior to commencing construction in a wetland.

The Contractor will remove all wetland vegetation with their root ball intact. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately surface reinstatement is complete.

No construction materials may be stockpiled in any wetland areas.

The pre-construction profile of the wetland shall be returned to one similar as before construction, with no created “ridge or channel” features present.

PZ3.17.2 River/ stream courses

The Contractor shall submit a method statement for review 14 days prior to commencing construction. The method statement should highlight (but not be confined to) the following issues:

- detailed plan of crossing including pipe protection works;
- how water flow will be diverted during construction (if applicable);
- containment of contaminated runoff and waste water;
- width of working servitude (if not already detailed in project specification);
- final expected profile of river/ stream banks;
- reinstatement and rehabilitation of river/ stream banks.

The Contractor will remove herbaceous riparian vegetation as indicated in the project specification or by the Environmental Control Officer, with their root ball intact. This vegetation is to be kept moist by means of placing it in the shade, covered with moistened hessian cloth until it is replanted.

The Contractor shall not modify the banks or bed of a water course unless as specified in the project specification.

Rocks for use in gabion baskets/reno mattresses may not be obtained from a water course.

The Contractor will not pollute any water body as a result of construction activities (see also PZ3 11).

The Contractor shall not cause any physical damage to any aspects of a water course, other than those necessary to complete the works as specified and in accordance with the accepted method statement

Where a stream or river-crossing requires the diversion of water, a method statement is to be provided to the Environmental Control Officer in this regard for review.

PZ4 REINSTATEMENT AND REHABILITATION

Scope: The intention of this section is to ensure that the condition of the areas disturbed by the project are returned to a state that approximates what they were before the project or better, within reason. The concept of progressive reinstatement is fundamental to cost effective (both financial and environmental) rehabilitation of a site. This concept must be followed at all times. Where landscaping is utilised, the concept is to utilise and restore indigenous plants to the site, in terms of the concept of xeriscaping.

Reinstatement will be required for all areas disturbed by the project. For pipeline projects, this will include the full working servitude, not just the top of actual excavation as per SABS 1200 DB (subclause 5.9.1.1)

Reinstatement and rehabilitation will ensure that all areas disturbed by the project are returned, within reason, to a state not worse than before the project commenced.

The Contractor will reinstate and rehabilitate all disturbed areas outside of the demarcated working area (as defined in terms of clause PZ3 2 or the project specification) at his own cost and to the satisfaction of the Environmental Control Officer and Project Manager.

PZ4.1 HOUSEKEEPING

All areas are to be cleared of rubble associated with construction. This includes the removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter, etc.

All soil contaminated by hydrocarbons, for example from leaking machines, refuelling spills etc., is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.

PZ4.2 FINISHING

PZ4.2.1 Final Grading

Final levels of all disturbed areas are, where feasible in terms of the project requirement, to be consistent with the natural topography of the area.

In certain instances, it will be acceptable to reinstate rock onto a works area (e.g. pipeline servitude), provided that that rock does not exceed 250mm in maximum dimension and is placed in a manner consistent with the natural surrounds as indicated by the Environmental Control Officer and Project Manager.

All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the Environmental Control Officer and Project Manager.

All compacted (disturbed) areas (including stockpile areas) are to be ripped (along contour) to a depth of 150mm prior to the replacement of topsoil.

PZ4.2.2 Topsoiling

Topsoil is to be replaced to a minimum depth of 100mm.

Topsoil is not to be compacted, but once replaced is to be scarified (to a depth of 50mm) consistent with the natural contour.

If insufficient topsoil is available, subsoil or similar material may be used that may be a suitable substrate after addition of soil improving substances e.g. compost, pH rectifiers (lime or gypsum) etc. Soil testing may be required at an approved facility.

PZ4.3 REINSTATEMENT OF WATER COURSES AND WETLAND AREAS

The Contractor will ensure that water course banks are returned to their original profile unless the project specification states otherwise.

The surface reinstatement of wetland areas is to ensure that no depressions remain which could act as channels for preferential water flow thereby affecting the hydrological regime of the wetland.

The Contractor will preserve all riparian and wetland vegetation for use in rehabilitation of those environments. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately surface reinstatement is complete.

Plants are to be, as nearly as possible, replanted in areas from which they were removed.

PZ4.4 VEGETATION RE-ESTABLISHMENT

The Contractor will ensure that all areas disturbed by contract activities are revegetated to the specified standard.

This standard is deemed to be an 85 % cover with no areas in excess of 0.04 m2 / m2 remaining unvegetated.

Revegetation shall match the vegetation type which previously existed (e.g. kikuyu pastures are to be returned to kikuyu pasture; ‘veld’ grass to ‘veld’ grass, etc.), unless stated otherwise in the project specification.

Prior to re-grassing, and if required:

- the area is to be scarified or ripped (along contour) to a depth of 50mm to loosen compaction.
- weeds present on site are to be removed.

Re-grassing, where required, will be either by means of seeding, instant turf (sods), sprigs or plugs as specified in the project specification or as specified by the ECO.

Where sprigs or plugs are utilised, they are to be planted at 200mm centres. The fertiliser shall be applied as per PZ4 5.2. During summer, 25mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained. During winter 15mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained. The amount of irrigation to be applied will make up the difference between rainfall recorded on site and minimum requirement.

Where instant turf is utilised, it shall be laid as specified in the project specification. The fertiliser shall be applied as per PZ4 5.2. During summer, 25mm of irrigation shall be applied each week until all the turf is visibly growing. During winter 15mm of irrigation shall be applied each week until all the turf is visibly growing. The amount of irrigation to be applied will make up the difference between rainfall recorded on site and minimum requirement.

Grassing shall be undertaken by a specialist grassing Sub-Contractor, unless permission is granted otherwise by the Engineer upon receipt of a written motivation from the Contractor.

The Contractor shall state in writing when the regrassing operation will commence and its expected duration (dates).

Grassing in 'veld' areas is to be undertaken as per PZ4 5 below. Cynodon dactylon species may be excluded or substituted from this mixture at the discretion of the Environmental Control Officer, or as specified in the project specification. The seed bulk may be made up with the Eragrostis tef.

PZ4.5 "VELD GRASS" GRASSING SPECIFICATION

The area to be grassed should be estimated and converted to hectares,

e.g. 100m X 100m = 10 000m2 = 1ha. All fertilizer and seeding rates used in this specification are with respect to hectares.

PZ4.5.1 Regional areas

For re-grassing three distinctive areas exist. These are defined as:

- the Coastal area (a narrow band running from the coast to ≈15km inland of the coast)
- the Coastal hinterland (a broad band (≈50km wide), generally defined as westwards of the coastal belt, and below 800m a.s.l.)
- the area above ≈ 800m a.s.l. (also called Midlands area).

PZ4.5.2 Fertiliser

Standard 2:3:2 (N:P:K) fertiliser shall be used on all sites.

The rate of application will be:

- 200 kg/ha in the Coastal Hinterland areas, and
- 300 kg/ha in the Midlands and Coastal areas.

PZ4.5.3 Planting times

Summer (includes Spring) is considered to be between the 1 September and 28 (29) February.

Winter (includes Autumn) is considered to be between 1 March and 31 August.

Re-grassing will be undertaken (as far as possible) in summer as germination and establishment of grasses is most effective, assuming reasonable spring rains.

Vegetation re-establishment is likely in many cases to be held off until this suitable growing season.

Hydroseeding with a winter mix will only be specified where regrassing is urgently required and cannot wait until the summer season. In this case irrigation will be required as per PZ4 5.4 below.

PZ4.5.4 Establishment and maintenance

During summer, 25mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

During winter (where annual rye grass is specified) 15mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

If rapid establishment is required, additional watering may be necessary as specified in the project specification

The amount of irrigation to be applied will make up the difference between rainfall recorded on site and the minimum requirement.

PZ4.5.5 Grass Seed Selection and Application Rates

The specific seed selection and application rates for each of the defined areas are covered separately, as follows.

PZ4.5.5.1 Coastal area

Summer mix (1 September - 28 February)

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	5
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Total		25

PZ4.5.5.2 Coastal hinterland.

Summer mix (1 September - 28 February)

Grass species	Common name	General application rate (kg/ha)

Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Cenchrus ciliarus	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	10
Total		37

Winter mix (1 March - 31 August)

Grass species	**Common name**	**General application rate (kg/ha)**
Lolium multiflorum cultivar – Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Cenchrus ciliarus	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	3
Total		30

PZ4.5.5.3 Midlands area

Summer mix (1 September - 28 February)

Grass species	**Common name**	**General application rate (kg/ha)**
Eragrostis tef	Teff	4
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	2
Cynodon dactylon	Couch/KWeek/Star grass	2
Paspalum notatum	Lawn paspalum	2
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Paspalum notatum	Lawn paspalum	2.5
Total		27.5

PZ4.5.6 Seeding methods

Two methods are recommended, namely hydroseeding and hand-broadcasting. The required method shall be as specified in the project specification.

All seed supplied should be labelled in accordance with the Government Seed Act No. 20 of 1961 and the Contractor shall be required to produce such certification, if requested by the Engineer.

PZ4.5.6.1 Hydroseeding

The Grassing Contractor shall be conversant with this method.

Cellulose pulp (consisting of either wood shavings, shredded straw, shredded paper or cotton waste) shall be added to the mix to be applied at a rate of 250 kg/ha.

In addition to the cellulose pulp, compost (consisting of either chicken litter, kraal manure, sugar cane filter cake or mushroom compost) shall be incorporated at a rate of 5m3/ha (≈100 X 50kg fertiliser bags/ha).

PZ4.5.6.2 Hand-broadcasting

Fertiliser, at the appropriate rate, is to be distributed by hand in a manner to ensure that there is an even spread of fertiliser over the site. This is to be done prior to seeding.

The seed mix is to be weighed and made up in an appropriately large container which shall be stirred to ensure no settling out of the grass seed, and a uniform distribution of the different types of seed.

The seed is to distributed by hand in a regular grid broadcasting manner to ensure that there is an even spread of grass over the entire site.

The area seeded is to be raked over once the seed and fertiliser have been applied to incorporate these elements into the topsoil.

PZ4.5.7 General

Where there is a possibility of neighbourhood livestock grazing a rehabilitated site these should, as far as is practicable, be excluded for the first 3 months of re-grassing.

PZ4.6 LANDSCAPING

Landscaping of the site may be required as indicated in the project specification.

Compensatory planting of trees or shrubs may be required should the transplantation of such not be successful in terms of PZ3 5.5 or due to plants removed in terms of PZ3 5.4

Planting of trees will be in accordance with the following method:

- All tree holes shall be square in plan;
- Tree holes shall be a minimum of 600mm by 600mm square by 700mm deep;
- Holes are to be backfilled with excavated soil in a ratio of 3:1 with compost. The compost is to be weed free and have been composted at temperatures in the order of 65^{o}C. Where possible, any available topsoil should be placed in the hole at the level where the tree rootball will rest. A handful (half-a-cup) of each Superphosphate and 2.3.2 should be mixed into the soil-compost mix;
- The tree holes are to be backfilled to the point where the tree and its rootball are in the desired position. The tree is to be removed temporarily and the hole filled with water and allowed to drain away. This operation of watering and draining should be repeated at least four times in order that the surrounding ground and hole are thoroughly moist. The tree is then to be replaced and the remaining soil replaced;
- All trees shall be tied (using a tree tie) to a suitable timber stake planted in the ground to a depth of at least 500mm. The stake shall have a minimum diameter of 35mm and shall be at least 300mm higher than the planted tree;
- Water retaining basins of at least 500mm diameters are to be formed around each tree;
- The Contractor is to apply at least 10 litres of water per tree per fortnight for a period of at least 3 months.

The planting of shrubs will be in accordance with the tree planting method with the exception that the holes are to be a minimum of 400mm by 400mm square by 500mm deep, and that the tree stakes and ties are not required.

PZ4.7 ALIEN PLANT CONTROL

All sites disturbed by construction activities will be monitored for colonisation by invasive alien plant species.

The Environmental Control Officer will identify those plants which require removal during both the construction and maintenance period, for the Contractor’s action.

The Environmental Control Officer will provide advice as to effective methods of removal and control of alien plant species

PUBLIC COMPLAINTS REGISTER

DATE	COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT	ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE	DATE REFERRED TO NW environmental control officer

MONITORING OF COMPLIANCE WITH ENVIRONMENTAL SPECIFICATIONS

PROJECT NAME: ……..

CONTRACT NUMBER: …….

PROJECT MANAGER: ……

ENGINEER'S REPRESENTATIVE / SUPERVISOR: ……..

CONTRACTOR: …….

CONTRACT PERIOD: ……

(including start and completion dates):

PERIOD COVERED: ……

REPORT PREPARED BY: ……

Signature

ENVIRONMENTAL CONTROL OFFICER REPORT

PROJECT NAME: **CONTRACT N°**

DATE OF SITE INSPECTIONS DURING REPORTING PERIOD:

Specification Breach	Spec. No.	Remedial Action Recommended	Due Date	Authority Responsible	Action Taken

PUBLIC COMPLAINTS

Complainant	Designation/ Affiliation	Date of complaint	Reason for Complaint	Action taken and date

GOOD PERFORMANCE REPORT

List any aspects of the Contract in which the Contractor is performing well and beyond that which is required in terms of the specification.

Photographs

Include photographs which illustrate aspects of non-compliance and good performance.

Photograph 1 Caption	Photograph 2 Caption

C3.2.4: CONTRACT AND STANDARD DRAWINGS

The work shall be carried out in accordance with the latest available revision of the drawings approved for construction (AFC).

At commencement of the contract, the Engineer shall deliver to the Contractor copies of the AFC drawings and any instructions required for the commencement of the works. From time to time thereafter during the progress of the works, the Engineer may issue further drawings for construction purposes as may be necessary for adequate construction, completion and defects correction of the works.

Tender drawings are issued separately and are listed hereunder:

MUNICIPAL INFRASTRUCTURE SUPPORT AGENT

Cooperative Governance & Traditional Affairs

Reference no.: **MISA/NC/PWS/021/2023/24**

PROJECT: Appointment of a contractor for the provision of potable water supply to the settlements of farm Pniel 281, Barkley West in the Northern Cape

PART C4: SITE INFORMATION

PART C4 : SITE INFORMATION

PART C4: SITE INFORMATION

C4.1 LOCALITY PLAN

The three communities of Farm Pniel 281 are located south of Barkly West, across the Vaal River and can be accessed by gravel roads off the provincial route R31, at 28°35'10.5"S, 24°30'37.7"E (Pniel Settlement), 28°34'46"S, 24°33'42.9"E (Pniel Estate) and 28°33'9.7"S, 24°32'58.7"E (Cotton Fields). The map below (Figure 1) shows an overview location of the three communities.

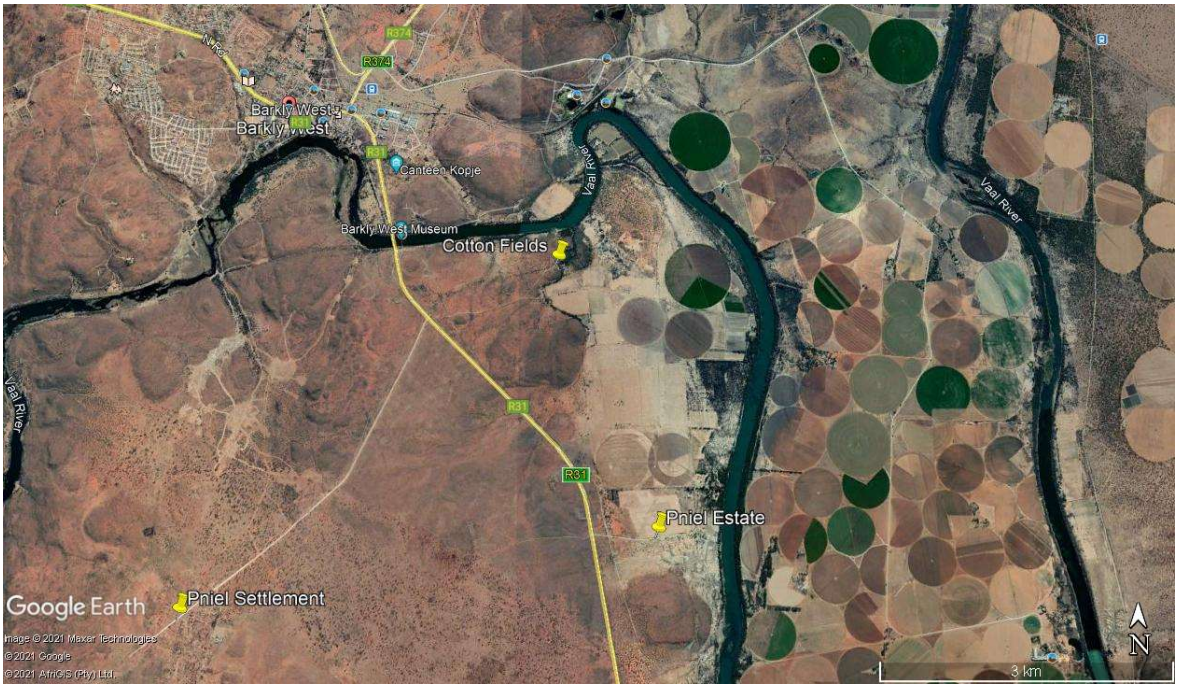

Figure 1 Overview of Location of Settlements of Pniel Farm 281

C4.2 CONDITIONS ON SITE

Refer to the Geotechnical investigation report viz.

"GEOTECHNICAL INVESTIGATION FOR PIPELINE IN PNIEL, DIKGATLONG MUNICIPALITY, NORTHERN CAPE PROVINCE"

(Report No.: 439-09-21 Revision: 0 Date: September 2021)

C4.3 TEST RESULTS

Refer to the Geotechnical investigation report viz.

"GEOTECHNICAL INVESTIGATION FOR PIPELINE IN PNIEL, DIKGATLONG MUNICIPALITY, NORTHERN CAPE PROVINCE"

(Report No.: 439-09-21 Revision: 0 Date: September 2021)

APPENDIX 1: GEO-TECHNICAL REPORT

C4.4 CONSTRUCTION

C4.4.1 Abbreviations

Wherever abbreviations for published national Standard Specifications or named Standard Specifications are used, they shall be deemed to refer to the latest edition of the Specification concerned, including all amendments, published 30 days before the closing date for receipt of Tenders. Typical abbreviations are:

ASTM : American Society for Testing Materials

BS : British Standard

BSCP : British Standard Code of Practice

SABS : South African Bureau of Standards

SIS : Standards Institute Sweden

IEC : International Electro-technical Commission

Metric Symbols

Symbols prescribed by the System International (SI) are used in these Specifications.

C4.4.2 Supply and Delivery

The term “supply and deliver” of materials and equipment includes the purchase thereof from commercial sources, manufacturing thereof, factory corrosion protection, factory testing, provision of test certificates, certifying compliance of the goods with the Specification, provision of drawings and operation manuals, provision of special tools and keys, the handling thereof and delivery to Site.

Tender rates shall provide for all the costs by the Contractor to “supply and deliver”.

No other payment for materials and equipment will be considered other than that under the “supply and deliver” items in the Schedule of Quantities.

Price escalation and retention will be calculated in the normal way. In the event of the delivery period being exceeded, the Contractor will be penalised in accordance with the provisions of Clause 5.13.1 of the GCC 2010, as amended in the Clause C1. : Data Provided by the Employer (Appendix 1 to Part 1).

Equipment can be ordered on receipt of the Letter of Acceptance: Purchasing of Equipment

The Contractor is required to purchase the materials and equipment necessary for the Contract at the earliest possible date thus limiting the effect of escalation. The Contractor must strive to keep the number of suppliers to a minimum.

Payment for materials and equipment will only be effected if the Contractor can prove ownership of the items.

C4.4.3 Guarantee of Equipment

It is an express condition of this Contract that the guarantee period on all equipment given by the suppliers to the Contractor shall only commence once the works is in operation. This stage will be reached once the Certificate of Completion has been issued.

C4.4.4 Particulars of Equipment Offered

The Tenderer must include comprehensive information covering every item of equipment offered with his Tender. The Engineer must be able to determine, without reference to the suppliers, any information regarding delivery, drive, power consumption, efficiency, accuracy, etc. applicable under the specified range of operation conditions.

Technical information regarding the package plant equipment, pumps, valves, flow meters, dimensions, etc. must also be supplied. Failure to comply with the above requirement may lead to the disqualification of the Tender submitted.

C4.4.5 Storage

The Contractor will be required to provide adequate storage facilities on Site for all equipment delivered under this Contract. The Contractor will be responsible for the protection and maintenance of all items in accordance with the manufacturer's requirements until testing, commissioning and handing over have been completed. Special attention must be given to pumps stored on Site. Bearings, impellors, etc. are to be treated according to the specifications of the supplier while the pump is in storage.

C4.4.6 Installation and Commissioning

Commissioning of equipment will be undertaken in two phases. In the first phase, the Contractor must test his equipment as fully as possible and satisfy himself that the equipment is fully functional (dry commissioning – milestone for practical completion). In the second phase, the system will be commissioned with water and the rate tendered for commissioning must allow for both phases of commissioning.

At the start of the second phase, a 1-month reliability run will start, and only after a successful reliability run, the completion certificate will be issued. The local community will operate the plant for the latter two weeks of this month. The purpose of the reliability run is the proof of functional capability; therefore the plants must be operational with all major parts operating trouble free. During the reliability run, distinction will be made between outages and interruptions. The periods required for minor maintenance and repair work during the reliability run are considered to be outage times unless the time required for these exceeds 24 hours. Any interruption longer than 24 hours will constitute failure of the reliability run and the run will start anew. Any outages shorter than 24 hours will be added and will extend the reliability run accordingly. Should the sum of all outages in the 1 month period exceed 33 hours, the reliability run will be considered to be interrupted and will start anew.

C4.4.7 Servicing

Without limiting the obligations or responsibilities of the Contractor for maintenance in any way, the Contractor shall make regular quarterly visits to the Works during the defects liability period to supervise the maintenance of the equipment supplied. During these visits, he shall make all adjustments and do

everything necessary to ensure the proper running of the equipment supplied. After each supervising visit to the Site, the Contractor shall submit to the Engineer a written report on:

- The condition of the equipment supplied and the servicing work carried out;
- Any adjustments which may have been made;
- Any equipment failures which may have occurred; and
- Any problems envisaged.

The last servicing visit shall be carried out during the last week of the defects liability period during which visit the Contractor shall carry out a full inspection on the equipment to check that all necessary settings are correct, and he shall carry out any adjustments necessary. The defects liability period will not terminate until the Engineer is satisfied that the Contractor has finally checked and adjusted the equipment. The maintenance period of any failed component will be extended by 12 months upon re-commissioning.

C4.4.8 Tools and Spares

As part of the equipment supplied, the Contractor shall supply all special tools or keys required for adjustment to any parts of such equipment.

The Contractor shall supply a list of spares recommended to be kept in store on Site by the Employer. Such spares shall only be ordered upon approval by the Engineer.

C4.4.9 Operation Manuals

The Contractor must compile and provide three copies of a complete operation and maintenance manual for the equipment provided. This manual shall contain comprehensive information as set out hereafter:

- A general arrangement drawing showing the position of all the monitoring equipment.
- Drawings of the equipment detailing all part numbers and materials.
- A complete recommended spares list.
- A lubrication and maintenance schedule showing all maintenance and lubrication operations, their recommended frequency and the grades of lubricant required.
- A maintenance brochure describing all maintenance, adjustment and replacement procedures.
- Performance curves as determined from the SABS tests where applicable or factory tests.
- All dismantling and reassembly procedures.
- Maintenance procedure for corrosion protection painting systems.

The Contractor shall amplify and amend such drafts until the Engineer is satisfied that they will fulfil the purpose of ensuring that the Employer's staff is adequately instructed to operate and maintain the

Works. Once the drafts have been approved by the Engineer, the Contractor shall prepare three suitably bound copies and deliver them to the Engineer.

The manuals shall be drawn up in English.

C4.4.10 Provisional Sum and Prime Cost Items

No materials may be ordered and/or no work be undertaken in respect of items which are scheduled in the Schedule of Quantities as “Provisional Sum” items and/or “Prime Cost” items without the written approval of the Engineer.

It is a requirement of this Contract that payment of the supply and delivery of equipment will not be made until such equipment has been delivered to site and proof of ownership submitted to the Engineer together with all test certificates required in terms of this Specifications.

C4.4.11 Quality Control and Testing

Quality Control

An independent quality control authority may be used to inspect pumps, pipes, fittings and valves at the factory as well as to witness tests at the factory. Fourteen days’ notice must be given when items need to be inspected. All tests will be witnessed. An independent laboratory may be used to verify that the media for the filters comply with the specifications.

The Contractor must submit a Quality Control Plan (QCP) on all equipment for the manufacturing, supply, install and commissioning phases withhold points for inspection by the Engineer or his representative. The QCP shall be submitted to the Engineer for approval prior to implementation. At least two months’ lead time to study and approve the QCP is required for major equipment and one month lead time for all other equipment.

Testing

All pumps shall be tested at the manufacturer’s works, or some independent organisation, to confirm that it meets the requirements.

C4.4.12 Commissioning

A commissioning plan will be submitted by the Contractor to the Engineer for approval at least one month prior to the intended commissioning dates. The plan will include all tests and verifications planned during this process and will clearly indicate the commissioning reports which will follow from this process. Commissioning reports shall contain all measurements and calibration certificates required to confirm that the offered equipment complies to the tender requirements. The commissioning report to be included in the O&M manual. No reports shall be accepted if not witnessed or approved by the Engineer or his representative.

C4.5 EQUIPMENT SPECIFICATION (Electrical / Mechanical)

Technical detail of all equipment dimensions, capacities and materials of construction must be submitted with the Tender.

C4.5.1 New Raw Water Pumpstation

Two new inlet raw water pumpstations are to be constructed at positions to be determined by the Engineer and the Client, one at Pniel Settlement and the other at Pniel Estate. The emphasis for this position will fall on ease of extraction by means of a fixed installation of a high NPSH rated pump, an area where flooding will be sheltered, and safe accessibility in terms of service, protection against vandalism and operation of the solar powered system. For this item, a provisional cost item has been allowed and it will be expected of the Contractor to assist in the final design of this setup. During the finalization of this item, the Contractor will be required to provide rates for design/supply/delivery as well as install/commissioning – payment of these items to be as set out below.

Measurement and Payment

Raw Water Pumps – Provisional Cost Item ..... Unit : PC Item

Measurement and payment will distinguish between supply/delivery and install/commissioning. The rate for supply and delivery must include the motor, suction and delivery pressure gauges, coupling, safety covers, anchor bolts, the design of the system, and the painting of the pump and motor to the specified colour code. The rate tendered for installation and commissioning must include mounting on the baseplate, fully aligning the pumpset, grouting in the anchor bolts, fixing, painting, marker plates and training of the Employer's operators.

C4.5.2 Package Plants

The work at the two potable water package plants will comprise of the provision of two units namely:

a) Unit A – Pniel settlement, with a minimum flowrate of 11 m^3/h; and

b) Unit B – Pniel estate, with a minimum flowrate of 3.1 m^3/h

The treatment process will consist of :-

- Coagulant dosage;
- Flash Mixing;
- Flocculation;
- Settling (Clarification);
- Sand Filtration; and

- Final disinfection.

While package plants normally contain proprietary information and the operations of the various unit processes will vary, it is required of the Contractor to make provision for the following processes and adhering to the functional description of each process unit. A brochure of the offered package plant also needs to be provided.

Coagulant storage and dosage

It is foreseen that the coagulant used will be the same chemical used at the Barkly West water treatment plant (Sudfloc 3465), making provision for 45 mg/l as a maximum dosage and an average dosage of 10 mg/l for storage purposes. Two dosing pumps for each package plant must be provided and the pumps must be of a double diaphragm positive displacement type. The Contractor must include for pulsation dampers if required by the pumps offered for this application. The pumps for Unit A must be capable of dosing at a rate of 0.38 l/h once installed, while the pumps for Unit B shall have a maximum delivery rate of 0.02 l/h.

Provision must be made for a 100 litre PVC or similar storage tank at Unit A and a similar container storing 5 litres at Unit B. It is foreseen that the main storage will be at Unit A, while the storage for Unit B will be topped up from Unit A's storage.

Both storage tanks must be complete with vent pipe, access lid, fluid level indicator, filling manifold and pipework, overflow pipework, discharge manifold and pipework connected to the suction side of the dosing pumps, and the necessary valves and must be situated in a bunded area to contain any spillage from the tank and dosing pumps. All necessary valves and check valves to be included in the tendered rates for both the suction and delivery lines. Suction pipes to dosing pumps shall be installed at least 30mm higher than the drainpipes in the holding tanks and the rates tendered must include for reaching the dosing point.

Flash Mixing

The type of flash mixing needs to be indicated by the Contractor. Use can be made of static mixers in the delivery line to the plant if required. It is a requirement that the total head loss associated with the flash mixer should be not less than 0.7mm water (7 kPa).

Clarification

The nature of the raw water requires a pre-filtration step to be used before water is filtered. As a minimum, a clarification (settling) step needs to be included which shall be of the vertical flow, sludge blanket, conical bottom type. Regular desludging will be required and must be done manually. Should a Contractor wish to install an alternative clarification process, or even a roughing filter, it is a requirement that all calculations, specifications and drawings of such a unit be provided for evaluation purposes. It will be a requirement that the clarifier effluent feeding the sand filters will not exceed the highest of 7.5 NTU, or 10% of the incoming raw water turbidity.

Sand Filtration

Due to the size of the plant, pressure filters will be preferred to facilitate ease of operation. It is foreseen that clarified water will be directed to a feeder tank from where water will be pumped through the pressure filters. It is a requirement that the operation of the filters be automated to such an extend as to limit operator intervention. In this regard, automatic backwashing of the unit(s) will be required and preference is stated for units which will not require a stop/start mode of operation and where feed to the units can be continuous. Backwashing of the filters should be triggered automatically based on either loss of head through the filter or on a timer mechanism.

The filter bed should be at least 750 mm deep, and space shall be allowed for bed expansion when backwashing so that there is no loss of media. The filter sand shall be silica sand with a d10 of 0.8-0.9 mm with a uniformity coefficient of less than 1.4 and shall be supported by a suitable baseplate with nozzles for collection of filtered water and for backwashing. The backwash rate shall be selected to suit the media such that washing is effective without incurring loss of media. Due to the harsh weather conditions, preference for steel as material for the filter shells shall be had.

Disinfection

Disinfection by means of chlorine will be a requirement. With chlorine as active ingredient, the requirement will be for the Contractor to price as main offer for the provision of a Calcium Hypochlorite system (HTH). Alternative offers will be allowed under condition that the Contractor provides full details on the type of system e.g. NaOCl or any other system making use as chlorine as active ingredient for the purpose of keeping a residual in the pipes up to the supply point.

Two x 20 litre plastic containers need to be provided for the HTH to be made up in, with 2 x 0.5 l/h dosing pumps and 2 x 0.01 l/h dosing pumps, resistant to chlorine solutions. A 15mm plastic dosing line into the 10m high water need to be provided.

Pipework

The requirements for the pipework are as follows:

(a) Pipework shall be steel or uPVC.

The steel pipes, specials and fittings shall be manufactured in accordance with the Particular Specification M-PPL included in this document which have been written to cover items of work involving a specialist type of operations or material to be encountered on this Contract and that are not adequately covered by the SANS 1200.

The uPVC pipes, specials and fittings shall comply with SANS 966-Type1.

(b) Pipe diameters not specified shall be determined by the Contractor to suit equipment offered and shall conform to the required flow rates.

(c) Pipework shall be adequately supported by brackets or other suitable methods.

Valves

Valves supplied shall be suitable for class NP 16 uPVC piping. Any power operated valves (if offered) shall be provided with a handwheel or other acceptable control for manual operation. All metallic valves supplied shall be in accordance with the included Particular Specification M-PVA

Flow meters

Three flow meters shall be supplied and installed at the raw water inlet side, the filtered water stream which discharges into the final water reservoir as well as the backwash water pipeline to indicate backwash losses. All these flowmeters shall be of the turbine type with an integrator for each flow meter.

Raised final water tank

Inclusive in the package plant payment item must be an elevated storage tank raised to 9m above normal ground level. These tanks shall be housed on a steel tower with an access stairway and be equipped with at least two manholes with mosquito-proof vents. For the two elevated tanks at the package plants, a separate section in the tank must be provided for backwash purposes while a similar tank needs to be erected at the Cottonfields which will receive gravity fed water from Pniel Estate. Each elevated tank shall be made from pressed steel and equipped with an overflow, brackets for holding fast the inlet piping and outlet pipes. Mild steel access ladders need to be provided for access onto the tanks. All materials to be either galvanized steel or epoxy painted.

The tank at Pniel settlement shall have a minimum storage volume of 90m^3, the tank at Pniel Estate a minimum storage volume of 21 m^3, while the tank at Cottonfields shall have a minimum storage volume of 5 m^3. All foundation requirements to be included in the price for these elevated tanks.

Measurement and Payment

Package Plant ..... Unit : No

The tendered rates or sums shall cover the cost of design, drawings, manufacture, supply, testing at the manufacturers works, delivery to site, off-loading, installation, site testing, setting into operation, the supply of O & M manuals, commissioning and maintenance during the warranty period of all equipment specified and also for anything not specifically mentioned but obviously required, (e.g. all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material required for the proper installation of such equipment) to enable the equipment to be installed and/or function safely and correctly as specified.

No claims whatsoever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned.

4.5.3 Solar Power

Scope of Contract

This Contract will further include the supply, delivery, installation, testing, commissioning, and maintenance for a period of 12 months of the following:

- System design of certain components as directed.
- Supply and installation of approved manufacturer solar photovoltaic modules, on secure structures.
- DC combiner boxes at PV Panels.
- Supply and installation of power optimizers at PV Panels.
- Supply and installation of MPPT inverters.
- Supply and installation of electrical works including cables and AC combiner boxes.
- Design, supply, and installation of suitable structure of mounting PV panels 2m of the ground.
- Earthing and lightning protection system for the entire installation.
- Storage of and transport of all equipment to and from site.
- Insurance of equipment during construction.
- Testing, commissioning, handover documentation and operation manual.
- 1 year maintenance contract.

This specification covers the detailed design (of components and installation methods), supply, delivery, installation, testing, commissioning and maintenance of all equipment for a period of 12 months, of the complete photovoltaic plant at the proposed new Water purification plant and raw water pumping stations.

The PV system will consist of PV panels on an elevated structure. This installation is broken down into individual segment groups of PV panels, with 330Wp or bigger PV panels in each group.

The contractor shall also give a cost for a year operation and maintenance contract.

Three PV plants will be so designed and installed to supply two Package plants with a 4kW and 4.2 kW and a raw water pumping station 2,5kW power requirement. The plants are at different positions and the plants must be operational, from the PV plant only between 09h30 and 16h00. The sites are as indicated in the site specifications.

Supply Of Electricity

The PV plant will be the only source of power to the plants, i.e. an ‘off grid’ system.

Photovoltaic Panels

The photovoltaic panels shall be approved supplier PV panels rated at minimum 330Wp and 1 000V. JA Solar, Canadian solar and Longi panels are pre-approved

The PV panels shall be securely mounted on specifically designed aluminium structural elements. Care shall be taken to not damage the panels during installation.

Inverters

The inverters shall be supplied and installed with the following optional extras:

- Extended 20 year warranty
- Compatible to take GSM but excluding the GSM module fitted
- Built in cable covers
- DC input via MC4 connectors
- DC disconnect switch

If the AC run of cable between the inverter and the sub main floor DB is longer than 10m, then a small distribution board shall be installed next to the inverter. This DB shall consist of:

- A circuit breaker correctly rated
- Pre fusing for surge protection
- Class 1&2 combination surge protector

Cables

DC Cables
The DC cables shall be installed in rigid containment where the cables are installed underground or surface mounted.

DC cables shall be neatly installed in containment and laid in areas of the service duct so that they are out of sight and reach, protected and neat.

The DC cables to be used for stringing, connection of optimizers, to and from the isolation switch of the system, shall have 2 cores per cable with a size of 10 AWG/6mm^2 per core.

The cables shall be flexible 600/1 000 V AC and 900/1 500V DC grade Halogen-free cross-linked insulation and a sheath of Halogen-free cross-linked flame retardant cable suitable for internal and external PV installations.

Temperature rating of -40°C to +90°C.
Conductor temperature of +120°C.

AC Cables
The AC cables shall be PVC SWA PVC with a separate earth cable, a 16mm^2 4 core cable will be supplied from the solar plant to the MMC's and installed in sleeves provided by the developer.
SolarEdge SE55K – 35mm² x 4C cable and 25mm² BCEW.

Performance Guarantees

Guaranteed System Capacity
The contractor shall guarantee the installed capacity, which shall be calculated as the sum of the DC nameplate capacity of each module collectively.

Guaranteed Performance Ratio
The Contractor shall guarantee the Performance Ratio calculated during the 7 day trial period after substantial completion of the works.

The performance ratio measured during the trial period shall be adjusted for the seasonal variability to calculate the annual performance ratio. The calculation shall be detailed in the Design and Construction Contract.

Guaranteed Availability
The Contractor guarantees the Availability for the duration of the Operation and Maintenance contract. The Guaranteed Availability shall be subject to the Contractor remaining contracted to operate and maintain the plant and the exclusion of downtime due to:

- Municipal or Eskom outages
- Lack of demand to consume available energy (i.e. reverse feed curtailment)
- Fault of the employer or an agent of the employer

Energy Output/Specific Yield Guarantee
The Contractor shall guarantee the Energy Yield degrading annually at 0.8% on the output of the installed solar rooftop system, subject to the Contractor remaining contracted to operate and maintain the plant and the terms and conditions of the O&M contract.

Any energy shortfall shall be reimbursed to the Client annually at the prevailing electricity energy tariff. The Energy Yield guarantee shall not cover lost energy due to:

- Municipal or Eskom outages
- Lack of demand to consume available energy (i.e. reverse feed curtailment)
- Fault of the employer or an agent of the employer

System Performance

The estimated output of the system shall be modelled accurately but conservatively because the final output of the system will be measured over a year period and compared to the proposal. The contractor shall at his own cost modify the system to increase performance if required.

The system will be monitored on a continual basis over the lifetime of the system to determine requirement for maintenance and to compare performance to product specifications and possible warranty claims.

Performance monitoring shall be in accordance to IEC 61724.

Performance tests to be done and complied with as stated in 1.2.5.11 in the document.

Distribution Boards

The Contractor shall supply and install distribution boards and enclosures as is required.

The distribution boards shall be of sufficient size to accommodate without cramping together all the equipment and space for future equipment as specified.

All distribution boards shall be manufactured and installed in accordance with the relevant clauses of this specification.

Operations And Maintenance

The tenderer shall allow a separate cost for a 1-year operation and maintenance contract. The contract shall include but will not be limited to:

- Module cleaning as required to maintain performance
- Continual monitoring
- Monthly performance reports
- Bi-annual electrical and mechanical inspections
- Warrantee claims
- Required maintenance
- Help client to monitor, in real time, and record system yields and performance
- Documentation to operate and maintain the facility
- Train client in how to operate and maintain the facility

Plant and Materials

All plant and materials to be used, will be listed on the forms to be returned with the tender document, for review.

Construction Equipment

Tenderers must submit with their Tenders a list of the main items of equipment and plant which they propose to provide for the construction of the works stating the type, make, capacity and all other relevant information.

The list should state whether the plant is wholly owned by the Contractor or on hire or under hire purchase and whether the plant is new or second hand.

Measurement and Payment

Solar Power ..... Unit : No

The tendered rates or sums shall cover the cost of design, drawings, manufacture, supply, Inspection before shipping to site, delivery to site, off-loading, installation, site testing, setting into operation, the supply of O & M manuals, commissioning and maintenance during the warranty period of all equipment specified and also for anything not specifically mentioned but obviously required, (e.g. all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material required for the proper installation of such equipment) to enable the equipment to be installed and/or function safely and correctly as specified.

No claims whatsoever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned.

Measurement and payment will distinguish between the supply and installation & commissioning of the entire solar plant.